Note
Before using this information and the product it supports, read the information in “Notices” on page 823.

This edition applies to the IBM® CICS® Transaction Server for z/OS® Version 5 Release 5 (product number 5655-Y04) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Contents

**About this PDF** ...................................................................................................................... xi

### Chapter 1. CICS API command format .............................................................................. 1
- CICS command syntax notation .......................................................................................... 1
- CICS command argument values ....................................................................................... 3
- CICS command restrictions ............................................................................................... 9
- LENGTH options in CICS commands ............................................................................... 10
- NOHANDLE option ............................................................................................................. 10
- RESP and RESP2 options .................................................................................................. 10
- Translated code for CICS commands ............................................................................... 11
  - COBOL translation output .............................................................................................. 11
  - C translation output ........................................................................................................ 12
  - PL/I translation output ................................................................................................... 12
  - Assembler translation output ......................................................................................... 12

### Chapter 2. CICS command summary .............................................................................. 15
- ABEND .............................................................................................................................. 25
- ACQUIRE .......................................................................................................................... 26
- ADD SUBEVENT ............................................................................................................... 28
- ADDRESS ........................................................................................................................ 30
- ADDRESS SET ................................................................................................................ 31
- ALLOCATE (APPC) .......................................................................................................... 32
- ALLOCATE (LUTYPE6.1) ................................................................................................ 35
- ALLOCATE (MRO) .......................................................................................................... 36
- ASKTIME ........................................................................................................................ 38
- ASSIGN ............................................................................................................................ 39
  - Codes returned by ASSIGN ......................................................................................... 53
- BIF DEEDIT ..................................................................................................................... 55
- BIF DIGEST ..................................................................................................................... 56
- BUILD ATTACH (LUTYPE6.1) ........................................................................................ 58
- BUILD ATTACH (MRO) ................................................................................................... 60
- CANCEL ............................................................................................................................ 62
- CANCEL (BTS) ................................................................................................................ 64
- CHANGE PHRASE .......................................................................................................... 66
- CHANGE PASSWORD ...................................................................................................... 68
- CHANGE TASK ............................................................................................................... 69
- CHECK ACQPROCESS ..................................................................................................... 70
- CHECK ACTIVITY .......................................................................................................... 71
- CHECK TIMER ............................................................................................................... 74
- CONNECT PROCESS ........................................................................................................ 75
- CONVERSE (default) ....................................................................................................... 78
- CONVERSE (APPC) ........................................................................................................ 78
- CONVERSE (LUTYPE2/LUTYPE3) .................................................................................. 79
- CONVERSE (LUTYPE4) .................................................................................................. 79
- CONVERSE (LUTYPE6.1) ............................................................................................... 80
- CONVERSE (SCS) ............................................................................................................ 80
- CONVERSE (3270 logical) ............................................................................................. 81
- CONVERSE (3600-3601) ................................................................................................. 81
- CONVERSE (3600-3614) ................................................................................................. 82
- CONVERSE (3650 interpreter) ....................................................................................... 83
<table>
<thead>
<tr>
<th>Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONVERSE (3650-3270)</td>
<td>84</td>
</tr>
<tr>
<td>CONVERSE (3650-3653)</td>
<td>84</td>
</tr>
<tr>
<td>CONVERSE (3650-3680)</td>
<td>85</td>
</tr>
<tr>
<td>CONVERSE (3767)</td>
<td>85</td>
</tr>
<tr>
<td>CONVERSE (3770)</td>
<td>86</td>
</tr>
<tr>
<td>CONVERSE (3790 full-function or inquiry)</td>
<td>86</td>
</tr>
<tr>
<td>CONVERSE (3790 3270-display)</td>
<td>86</td>
</tr>
<tr>
<td>CONVERSE: z/OS Communications Server options</td>
<td>87</td>
</tr>
<tr>
<td>CONVERSE (non-z/OS Communications Server default)</td>
<td>91</td>
</tr>
<tr>
<td>CONVERSE (MRO)</td>
<td>92</td>
</tr>
<tr>
<td>CONVERSE (2260)</td>
<td>93</td>
</tr>
<tr>
<td>CONVERSE: non-z/OS Communications Server options</td>
<td>93</td>
</tr>
<tr>
<td>CONVERTTIME</td>
<td>97</td>
</tr>
<tr>
<td>DEFINE ACTIVITY</td>
<td>98</td>
</tr>
<tr>
<td>DEFINE COMPOSITE EVENT</td>
<td>100</td>
</tr>
<tr>
<td>DEFINE COUNTER and DEFINE DCOUNTER</td>
<td>103</td>
</tr>
<tr>
<td>DEFINE INPUT EVENT</td>
<td>106</td>
</tr>
<tr>
<td>DEFINE PROCESS</td>
<td>106</td>
</tr>
<tr>
<td>DEFINE TIMER</td>
<td>109</td>
</tr>
<tr>
<td>DELAY</td>
<td>112</td>
</tr>
<tr>
<td>DELETE</td>
<td>115</td>
</tr>
<tr>
<td>DELETE ACTIVITY</td>
<td>121</td>
</tr>
<tr>
<td>DELETE CHANNEL</td>
<td>122</td>
</tr>
<tr>
<td>DELETE CONTAINER (BTS)</td>
<td>123</td>
</tr>
<tr>
<td>DELETE CONTAINER (CHANNEL)</td>
<td>125</td>
</tr>
<tr>
<td>DELETE COUNTER and DELETE DCOUNTER</td>
<td>126</td>
</tr>
<tr>
<td>DELETE EVENT</td>
<td>128</td>
</tr>
<tr>
<td>DELETE TIMER</td>
<td>129</td>
</tr>
<tr>
<td>DELETEQ TD</td>
<td>130</td>
</tr>
<tr>
<td>DELETEQ TS</td>
<td>131</td>
</tr>
<tr>
<td>DEQ</td>
<td>133</td>
</tr>
<tr>
<td>DOCUMENT CREATE</td>
<td>134</td>
</tr>
<tr>
<td>DOCUMENT DELETE</td>
<td>137</td>
</tr>
<tr>
<td>DOCUMENT INSERT</td>
<td>138</td>
</tr>
<tr>
<td>DOCUMENT RETRIEVE</td>
<td>141</td>
</tr>
<tr>
<td>DOCUMENT SET</td>
<td>143</td>
</tr>
<tr>
<td>DUMP TRANSACTION</td>
<td>145</td>
</tr>
<tr>
<td>ENDBR</td>
<td>149</td>
</tr>
<tr>
<td>ENDBROWSE ACTIVITY</td>
<td>151</td>
</tr>
<tr>
<td>ENDBROWSE CONTAINER (BTS)</td>
<td>152</td>
</tr>
<tr>
<td>ENDBROWSE CONTAINER (CHANNEL)</td>
<td>152</td>
</tr>
<tr>
<td>ENDBROWSE EVENT</td>
<td>153</td>
</tr>
<tr>
<td>ENDBROWSE PROCESS</td>
<td>153</td>
</tr>
<tr>
<td>ENDBROWSE TIMER</td>
<td>154</td>
</tr>
<tr>
<td>ENQ</td>
<td>155</td>
</tr>
<tr>
<td>ENTER TRACENUM</td>
<td>157</td>
</tr>
<tr>
<td>EXTRACT ATTACH (LUTYPE6,1)</td>
<td>159</td>
</tr>
<tr>
<td>EXTRACT ATTACH (MRO)</td>
<td>162</td>
</tr>
<tr>
<td>EXTRACT ATTRIBUTES (APPC)</td>
<td>164</td>
</tr>
<tr>
<td>EXTRACT ATTRIBUTES (MRO)</td>
<td>165</td>
</tr>
<tr>
<td>EXTRACT CERTIFICATE</td>
<td>167</td>
</tr>
<tr>
<td>EXTRACT LOGONMSG</td>
<td>169</td>
</tr>
<tr>
<td>EXTRACT PROCESS</td>
<td>170</td>
</tr>
<tr>
<td>EXTRACT TCPIP</td>
<td>172</td>
</tr>
<tr>
<td>EXTRACT TCT</td>
<td>175</td>
</tr>
<tr>
<td>EXTRACT WEB</td>
<td>176</td>
</tr>
<tr>
<td>FETCH ANY</td>
<td>181</td>
</tr>
<tr>
<td>FETCH CHILD</td>
<td>182</td>
</tr>
<tr>
<td>Function</td>
<td>Page</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
</tr>
<tr>
<td>FORCE TIMER</td>
<td>184</td>
</tr>
<tr>
<td>FORMATTIME</td>
<td>185</td>
</tr>
<tr>
<td>FREE</td>
<td>189</td>
</tr>
<tr>
<td>FREE (APPC)</td>
<td>189</td>
</tr>
<tr>
<td>FREE (LUTYPE6.1)</td>
<td>191</td>
</tr>
<tr>
<td>FREE (MRO)</td>
<td>191</td>
</tr>
<tr>
<td>FREE CHILD</td>
<td>193</td>
</tr>
<tr>
<td>FREEMAIN</td>
<td>193</td>
</tr>
<tr>
<td>FREEMAIN64</td>
<td>196</td>
</tr>
<tr>
<td>GDS ALLOCATE</td>
<td>197</td>
</tr>
<tr>
<td>GDS ASSIGN</td>
<td>200</td>
</tr>
<tr>
<td>GDS CONNECT PROCESS</td>
<td>201</td>
</tr>
<tr>
<td>GDS EXTRACT ATTRIBUTES</td>
<td>203</td>
</tr>
<tr>
<td>GDS EXTRACT PROCESS</td>
<td>204</td>
</tr>
<tr>
<td>GDS FREE</td>
<td>205</td>
</tr>
<tr>
<td>GDS ISSUE ABEND</td>
<td>206</td>
</tr>
<tr>
<td>GDS ISSUE CONFIRMATION</td>
<td>208</td>
</tr>
<tr>
<td>GDS ISSUE ERROR</td>
<td>209</td>
</tr>
<tr>
<td>GDS ISSUE PREPARE</td>
<td>210</td>
</tr>
<tr>
<td>GDS ISSUE SIGNAL</td>
<td>211</td>
</tr>
<tr>
<td>GDS RECEIVE</td>
<td>213</td>
</tr>
<tr>
<td>GDS SEND</td>
<td>215</td>
</tr>
<tr>
<td>GDS WAIT</td>
<td>217</td>
</tr>
<tr>
<td>GET CONTAINER (BTS)</td>
<td>218</td>
</tr>
<tr>
<td>GET CONTAINER (CHANNEL)</td>
<td>221</td>
</tr>
<tr>
<td>GET COUNTER and GET DCOUNTER</td>
<td>225</td>
</tr>
<tr>
<td>GETMAIN</td>
<td>229</td>
</tr>
<tr>
<td>GETMAIN64</td>
<td>233</td>
</tr>
<tr>
<td>GETNEXT ACTIVITY</td>
<td>236</td>
</tr>
<tr>
<td>GETNEXT CONTAINER (BTS)</td>
<td>237</td>
</tr>
<tr>
<td>GETNEXT CONTAINER (CHANNEL)</td>
<td>238</td>
</tr>
<tr>
<td>GETNEXT EVENT</td>
<td>239</td>
</tr>
<tr>
<td>GETNEXT PROCESS</td>
<td>240</td>
</tr>
<tr>
<td>GETNEXT TIMER</td>
<td>241</td>
</tr>
<tr>
<td>GET64 CONTAINER</td>
<td>243</td>
</tr>
<tr>
<td>HANDLE ABEND</td>
<td>247</td>
</tr>
<tr>
<td>HANDLE AID</td>
<td>249</td>
</tr>
<tr>
<td>HANDLE CONDITION</td>
<td>250</td>
</tr>
<tr>
<td>IGNORE CONDITION</td>
<td>252</td>
</tr>
<tr>
<td>INQUIRE ACTIVITYID</td>
<td>252</td>
</tr>
<tr>
<td>INQUIRE CONTAINER</td>
<td>255</td>
</tr>
<tr>
<td>INQUIRE EVENT</td>
<td>257</td>
</tr>
<tr>
<td>INQUIRE PROCESS</td>
<td>258</td>
</tr>
<tr>
<td>INQUIRE TIMER</td>
<td>259</td>
</tr>
<tr>
<td>INVOKE APPLICATION</td>
<td>261</td>
</tr>
<tr>
<td>INVOKE SERVICE</td>
<td>264</td>
</tr>
<tr>
<td>INVOKE WEBSERVICE</td>
<td>269</td>
</tr>
<tr>
<td>ISSUE ABEND</td>
<td>269</td>
</tr>
<tr>
<td>ISSUE ABORT</td>
<td>270</td>
</tr>
<tr>
<td>ISSUE ADD</td>
<td>272</td>
</tr>
<tr>
<td>ISSUE CONFIRMATION</td>
<td>274</td>
</tr>
<tr>
<td>ISSUE COPY (3270 logical)</td>
<td>275</td>
</tr>
<tr>
<td>ISSUE DISCONNECT (default)</td>
<td>276</td>
</tr>
<tr>
<td>ISSUE DISCONNECT (LUTYPE6.1)</td>
<td>277</td>
</tr>
<tr>
<td>ISSUE END</td>
<td>278</td>
</tr>
<tr>
<td>ISSUE ENDFILE</td>
<td>280</td>
</tr>
<tr>
<td>ISSUE ENDOUTPUT</td>
<td>280</td>
</tr>
<tr>
<td>ISSUE EODS</td>
<td>281</td>
</tr>
</tbody>
</table>
About this PDF

This PDF is a reference of the commands of the CICS application programming interface. This documentation is intended for application programmers who are writing applications to interact with CICS. Before CICS TS V5.4, this PDF was called the *Application Programming Reference*.

For information about how to write applications for CICS, using this API, see *Developing CICS Applications*.

For details of the terms and notation used in this book, see *Conventions and terminology used in the CICS documentation* in IBM Knowledge Center.

Date of this PDF

This PDF was created on June 20th 2019.
Chapter 1. CICS API command format

The general format of a CICS command is EXECUTE CICS (or EXEC CICS) followed by the name of the required **command**, and possibly by one or more **options**.

The command format is as follows:

```
EXEC CICS command option(arg)....
```

where:

- **command**
  - describes the operation required (for example, READ).

- **option**
  - describes any of the many optional facilities available with each function. Some options are followed by an argument in parentheses. You can write options (including those that require arguments) in any order.

- **arg** *(short for argument)* is a value such as “data-value” or “name”. A “data-value” can be a constant, this means that an argument that sends data to CICS is generally a “data-value”. An argument that receives data from CICS must be a “data-area”.

  Some arguments described as “data-area” can both send and receive data. In these cases, you must ensure that the “data-area” is not in protected storage.

An example of a CICS command is as follows:

```
EXEC CICS READ
  FILE('FILEA')
  INTO(FILEA)
  RIDFLD(KEYNUM)
  UPDATE
```

You must add the appropriate end-of-command delimiter; see “CICS command syntax notation” on page 1.

**Note:** If you want to add comments against CICS commands, you can do this, in assembler only, by using a period or a comma as a delimiter after the last argument. For example:

```
EXEC CICS ADDRESS EIB(MYUEIB),    @F1A
```

If a period or a comma is used with an EXEC CICS command, the following line must begin between column 2 and column 16, with the continuation character in column 72. The following line cannot start after column 17. If there is no comma or period added, the following line must begin at or after column 2 and end by column 71, with the continuation character in column 72.

**CICS command syntax notation**

In CICS documentation, CICS commands are presented in a standard way. You interpret the syntax by following the arrows from left to right.

The “EXEC CICS” that always precedes each command's keyword is not included; nor is the “END-EXEC” statement used in COBOL or the semicolon (;) used in PL/I and C that you must code at the end of each CICS command. In the C language, a null character can be used as an end-of-string marker, but CICS
does not recognize this; you must therefore never have a comma or period followed by a space (X'40') in the middle of a coding line.

The conventions are:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="A B C" /></td>
<td>A set of alternatives—one of which you must code.</td>
</tr>
<tr>
<td><img src="image2.png" alt="A B C" /></td>
<td>A set of alternatives—one of which you must code. You may code more than one of them, in any sequence.</td>
</tr>
<tr>
<td><img src="image3.png" alt="A B C" /></td>
<td>A set of alternatives—one of which you may code.</td>
</tr>
<tr>
<td><img src="image4.png" alt="A B C" /></td>
<td>A set of alternatives—any number (including none) of which you may code once, in any sequence.</td>
</tr>
<tr>
<td><img src="image5.png" alt="A B" /></td>
<td>Alternatives where A is the default.</td>
</tr>
<tr>
<td><img src="image6.png" alt="Name A B" /></td>
<td>Use with the named section in place of its name.</td>
</tr>
<tr>
<td><img src="image7.png" alt="Name" /></td>
<td>Punctuation and uppercase characters: Code exactly as shown.</td>
</tr>
<tr>
<td><img src="image8.png" alt="Name" /></td>
<td>Lowercase characters: Code your own text, as appropriate (for example, name).</td>
</tr>
</tbody>
</table>
CICS command argument values

The data associated with a command option is called its argument. Each type of argument can contain different data types; some arguments return information from CICS to the program and others are set by the program.

Options in a CICS command can take the following argument values:

- *data-value*
- *data-area*
- *cvda* (CICS-value data area)
- *ptr-value*
- *ptr-ref*
- *name*
- *filename*
- *systemname*
- *label*
- *hhmmss*

For AMODE(64) programs only, options in a CICS command can also take the following argument values:

- *data-area64*
- *ptr-value64*
- *ptr-ref64*

Data areas and data values

Data areas and data values are the basic argument types. The difference between them is the direction in which information flows when a task executes a command. A *data-value* is always, can only be, a sender; it conveys data to CICS that CICS uses to process the command. A *data-area* is a receiver; CICS uses it to return information to the caller. A *data-area* can also be a sender, for example when the data to convey to CICS is variable length (as in FROM), or where a field is used both for input and output.

COBOL argument values

The argument values can be replaced as follows:

- *data-value* can be replaced by any COBOL data name of the correct data type for the argument, or by a constant that can be converted to the correct type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>COBOL definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfword binary</td>
<td>PIC S9(4) COMP</td>
</tr>
<tr>
<td>Fullword binary</td>
<td>PIC S9(8) COMP</td>
</tr>
<tr>
<td>Doubleword unsigned binary</td>
<td>PIC 9(18) COMP</td>
</tr>
<tr>
<td>Character string</td>
<td>PIC X(n) where n is the number of bytes</td>
</tr>
<tr>
<td>UTF-8 character string</td>
<td>PIC X(n) where n is the number of bytes</td>
</tr>
</tbody>
</table>

- *data-area* can be replaced by any COBOL data name of the correct data type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>COBOL definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfword binary</td>
<td>PIC S9(4) COMP</td>
</tr>
<tr>
<td>Data type</td>
<td>COBOL definition</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Halfword binary</td>
<td>short int</td>
</tr>
<tr>
<td>Fullword binary</td>
<td>long int</td>
</tr>
<tr>
<td>Doubleword binary</td>
<td>char[8]</td>
</tr>
<tr>
<td>Character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
<tr>
<td>UTF-8 character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
</tbody>
</table>

Where the data type is unspecified, `data-area` can refer to an elementary or group item.

- `cvda` is described in CICS-value data areas (CVDAs).
- `ptr-value` can be replaced by a pointer variable or ADDRESS special register.
- `ptr-ref` can be replaced by a pointer variable or ADDRESS special register.
- `name` can be replaced by either of the following values:
  - A character string specified as an alphanumeric literal. If this string is shorter than the required length, it is padded with blanks.
  - A COBOL data area with a length equal to the required length for the name. The value in `data-area` is the name to be used by the argument. If `data-area` is shorter than the required length, the excess characters are undefined, which might cause unpredictable results.

`filename`, as used in FILE(`filename`), specifies the name of the file. The name must contain 1–8 characters from the range A–Z, 0–9, $, @, and #.

`systemname`, as used in SYSID(`systemname`), specifies the name of the system to which the request is directed. The name must contain 1–4 characters from the range A–Z, 0–9, $, @, and #.

- `label` can be replaced by any COBOL paragraph name or a section name.
- `hhmmss` can be replaced by a decimal constant or by a data name of the form PIC S9(7) COMP-3. The value must be of the form 0HHMMSS+ where:

  **HH**
  
  Represents hours from 00 through 99.

  **MM**
  
  Represents minutes from 00 through 59.

  **SS**
  
  Represents seconds from 00 through 59.

In COBOL, you do not need to code the LENGTH option unless you want the program to read or write data of a length that is different from that of the referenced variable.

### C argument values

The argument values can be replaced as follows:

- `data-value` can be replaced by any C expression that can be converted to the correct data type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>C definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfword binary</td>
<td>short int</td>
</tr>
<tr>
<td>Fullword binary</td>
<td>long int</td>
</tr>
<tr>
<td>Doubleword binary</td>
<td>char[8]</td>
</tr>
<tr>
<td>Character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
<tr>
<td>UTF-8 character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
</tbody>
</table>

`data-value` includes `data-area` as a subset.
• `data-area` can be replaced by any C data reference that has the correct data type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>C definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfword binary</td>
<td>short int</td>
</tr>
<tr>
<td>Fullword binary</td>
<td>long int</td>
</tr>
<tr>
<td>Doubleword binary</td>
<td>char[8]</td>
</tr>
<tr>
<td>Character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
<tr>
<td>UTF-8 character string</td>
<td>char[n] where n is the number of bytes</td>
</tr>
</tbody>
</table>

If the data type is unspecified, `data-area` can refer to a scalar data type, array, or structure. The reference must be to contiguous storage.

• `cvda` is described in CICS-value data areas (CVDAs).

• `ptr-value` (which includes `ptr-ref` as a subset) can be replaced by any C expression that can be converted to an address.

• `ptr-ref` can be replaced by any C pointer type reference.

• `name` can be replaced by either of the following values:
  – A character string in double quotation marks (that is, a literal constant).
  – A C expression or reference whose value can be converted to a character array with a length equal to the maximum length allowed for the name. The value of the character array is the name to be used by the argument.

`filename`, as used in FILE(`filename`), specifies the name of the file. The name must have 1–8 characters from the range A–Z, 0–9, $, @, and #.

`systemname`, as used in SYSID(`systemname`), specifies the name of the system to which the request is directed. The name must have 1–4 characters from the range A–Z, 0–9, $, @, and #.

• `label` is not supported in the C language.

• `hhmmss` can be replaced by an integer constant; otherwise the application is responsible for ensuring that the value passed to CICS is in packed decimal format. The language does not provide a packed decimal type.

**HH**
- Represents hours from 00 through 99.

**MM**
- Represents minutes from 00 through 59.

**SS**
- Represents seconds from 00 through 59.

Many commands involve the transfer of data between the application program and CICS. In most cases, if SET is used, the LENGTH option must be specified; the syntax of each command and its associated options show whether this rule applies.

**PL/I argument values**

The argument values can be replaced as follows:

• `data-value` can be replaced by any PL/I expression that can be converted to the correct data type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>PL/I definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfword binary</td>
<td>FIXED BIN(15)</td>
</tr>
</tbody>
</table>
- **data-value** includes **data-area** as a subset.
- **data-area** can be replaced by any PL/I data reference that has the correct data type for the argument. The following table shows how to define the correct data type:

<table>
<thead>
<tr>
<th>Data type</th>
<th>PL/I definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fullword binary</td>
<td>FIXED BIN(31)</td>
</tr>
<tr>
<td>Doubleword binary</td>
<td>CHAR (8)</td>
</tr>
<tr>
<td>Character string</td>
<td>CHAR(n) where n is the number of bytes</td>
</tr>
<tr>
<td>UTF-8 character string</td>
<td>CHAR(n) where n is the number of bytes</td>
</tr>
</tbody>
</table>

If the data type is unspecified, **data-area** can refer to an element, array, or structure; for example, FROM(P->STRUCTURE) LENGTH(LNG). The reference must be to connected storage.

The data area must also have the correct PL/I alignment attribute: ALIGNED for binary items, and UNALIGNED for strings.

If you use a varying data string without an explicit length, the data passed begins with a two-byte length field, and its length is the maximum length declared for the string. If you explicitly specify a length in the command, the data passed has this length; that is, the two-byte length field followed by data up to the length you specified.

- **cvda** is described in CICS-value data areas (CVDAs).
- **ptr-value** (which includes **ptr-ref** as a subset) can be replaced by any PL/I expression that can be converted to POINTER.
- **ptr-ref** can be replaced by any PL/I reference of type POINTER ALIGNED.
- **name** can be replaced by either of the following values:
  - A character string in single quotation marks (that is, a literal constant).
  - A PL/I expression or reference whose value can be converted to a character string with a length equal to the maximum length allowed for the name. The value of the character string is the name to be used by the argument.

**filename**, as used in FILE(filename), specifies the name of the file. The name must have 1-8 characters from the range A–Z, 0–9, $, @, and #.

**systemname**, as used in SYSID(systemname), specifies the name of the system to which the request is directed. The name must have 1-4 characters from the range A–Z, 0–9, $, @, and #.

- **label** can be replaced by any PL/I expression whose value is a label.
- **hhmmss** can be replaced by a decimal constant or an expression that can be converted to a FIXED DECIMAL(7,0). The value must be of the form 0HHMMSS+ where:

  **HH**
  - Represents hours from 00 through 99.

  **MM**
  - Represents minutes from 00 through 59.
SS
Represents seconds from 00 through 59.

If the UNALIGNED attribute is added to the ENTRY declarations generated by the CICS translator by a
DEFAULT DESCRIPTORS statement, data-area or pointer-reference arguments to CICS commands must
also be UNALIGNED. Similarly for the ALIGNED attribute, data-area or pointer-reference arguments must
be ALIGNED.

Many commands involve the transfer of data between the application program and CICS. In most cases,
the length of the data to be transferred must be provided by the application program. However, if a data
area is specified as the source or target, it is not necessary to provide the length explicitly, because the
command-language translator generates a default length value of either STG(data-area) or CSTG(data-
area), as appropriate.

Assembler-language argument values for AMODE(24) and AMODE(31) programs

In general, an argument can be either the address of the data or the data itself (in assembler language
terms, either a relocatable expression or an absolute expression).

A relocatable expression must not contain unmatched brackets (outside quotation marks) or unmatched
quotation marks (apart from length-attribute references). If this rule is obeyed, any expression can be
used, including literal constants, such as =AL2(100), forms such as 20(0,R11), and forms that use the
macro-replacement facilities.

An absolute expression must be a single term that is either a length-attribute reference, or a self-defining
constant.

Use care with equated symbols, which should be used only when referring to registers (pointer
references). For example, if an equated symbol is used for a length, it is treated as the address of the
length and an unpredictable error occurs.

For AMODE(24) and AMODE(31) assembler language programs, the argument values can be replaced as
follows:

• data-value can be replaced by a relocatable expression that is an assembler-language reference to data
  of the correct type for the argument, or by a constant of the correct type for the argument.
• data-area can be replaced by a relocatable expression that is an assembler-language reference to data
  of the correct type for the argument.
• cvda is described in CICS-value data areas (CVDAs).
• ptr-value can be replaced by an absolute expression that is an assembler-language reference to a
  register.
• ptr-ref can be replaced by an absolute expression that is an assembler-language reference to a register.
• name can be replaced either by a character string in single quotation marks, or by an assembler-
  language language relocatable expression reference to a character string. The length is equal to the
  maximum length allowed for the name. The value of the character string is the name to be used by the
  argument.

filename, as used in FILE(filename), specifies the name of the file. The name must have 1–8 characters
from the range A–Z, 0–9, $, @, and #.

systemname, as used in SYSID(systemname), specifies the name of the system to which the request is
directed. The name must have 1–4 characters from the range A–Z, 0–9, $, @, and #.

• label refers to a destination address to which control is transferred. It can be replaced by the label of
  the destination instruction or by the label of an address constant for the destination. This constant must
  not specify a length.

You can also use the expression =A(dest) where dest is a relocatable expression denoting the
destination.
For example, the following commands are equivalent:

```
HANDLE CONDITION ERROR(DEST)
HANDLE CONDITION ERROR(ADCON)
HANDLE CONDITION ERROR(=A(DEST))
DEST  BR 14
ADCON  DC  A(DEST)
```

• **hhmmss** can be replaced by a self-defining decimal constant, or an assembler-language reference to a field defined as PL4. The value must be of the form $0HHMMSS+$ where:

  **HH**
  - Represents hours from 00 through 99
  
  **MM**
  - Represents minutes from 00 through 59

  **SS**
  - Represents seconds from 00 through 59

Many commands involve the transfer of data between the application program and CICS. In most cases, the application program must provide the length of the data to be transferred. However, if a data area is specified as the source or target, it is not necessary to provide the length explicitly, because the command-language translator generates a default length. For example:

```
xxx  DC  CL8
   .
EXEC  CICS  ...  LENGTH(L'xxx)
```

### Assembler-language argument values for AMODE(64) programs

In general, an argument can be either the address of the data or the data itself (in assembler language terms, either a relocatable expression or an absolute expression).

A relocatable expression must not contain unmatched brackets (outside quotation marks) or unmatched quotation marks (apart from length-attribute references). If this rule is obeyed, any expression can be used, including literal constants, such as $=AL2(100)$, forms such as $20(0,R11)$, and forms that use the macro-replacement facilities.

An absolute expression must be a single term that is either a length-attribute reference, or a self-defining constant.

Use care with equated symbols, which should be used only when referring to registers (pointer references). For example, if an equated symbol is used for a length, it is treated as the address of the length and an unpredictable error occurs.

For non-Language Environment® (LE) AMODE(64) assembler language programs, argument values can be replaced as follows:

• **data-value** can be replaced by a relocatable expression that is an assembler-language reference to data of the correct type for the argument, or by a constant of the correct type for the argument.

• **data-area** can be replaced by a relocatable expression that is an assembler-language reference to data of the correct type for the argument.

• **data-area64** can be replaced by a relocatable expression that is an assembler-language 64-bit reference to data of the correct type for the argument.

• **cvda** is described in CICS-value data areas (CVDAs).

• **ptr-value** can be replaced by an absolute expression that is an assembler-language reference to a register.
• \textit{ptr-value64} can be replaced by an absolute expression that is an assembler-language 64-bit reference to a register.

• \textit{ptr-ref} can be replaced by an absolute expression that is an assembler-language reference to a register.

• \textit{ptr-ref64} can be replaced by an absolute expression that is an assembler-language 64-bit reference to a register.

• \textit{name} can be replaced either by a character string in single quotation marks, or by an assembler-language language relocatable expression reference to a character string. The length is equal to the maximum length allowed for the name. The value of the character string is the name to be used by the argument.

  \textit{filename}, as used in \texttt{FILE(filename)}, specifies the name of the file. The name must have 1–8 characters from the range A–Z, 0–9, $, @, and #.

  \textit{systemname}, as used in \texttt{SYSID(systemname)}, specifies the name of the system to which the request is directed. The name must have 1–4 characters from the range A–Z, 0–9, $, @, and #.

• \textit{hhmmss} can be replaced by a self-defining decimal constant, or an assembler-language reference to a field defined as PL4. The value must be of the form 0HHMMSS+ where:

  \begin{align*}
  \text{HH} & \quad \text{Represents hours from 00 through 99} \\
  \text{MM} & \quad \text{Represents minutes from 00 through 59} \\
  \text{SS} & \quad \text{Represents seconds from 00 through 59}
  \end{align*}

\textit{label} is not supported for AMODE(64) programs.

Many commands involve the transfer of data between the application program and CICS. In most cases, the application program must provide the length of the data to be transferred. However, if a data area is specified as the source or target, it is not necessary to provide the length explicitly, because the command-language translator generates a default length. For example:

\begin{verbatim}
xxx DC CL8
.
EXEC CICS ... LENGTH(L'xxx)
\end{verbatim}

\section*{CICS command restrictions}

Some general restrictions apply to all CICS commands that access user data.

• The program must be in primary addressing mode when invoking any CICS service. The primary address space must be the home address space. All parameters passed to CICS must reside in the primary address space.

• If your program uses access registers, CICS preserves only access registers 2 through 13, because CICS code can use access registers 0, 1, 14 and 15 for z/OS macro calls.
LENGTH options in CICS commands

In COBOL, PL/I, and Assembler language, the translator defaults certain lengths, if the NOLENGTH translator option is not specified. This means they are optional in programs that specify data areas. In C, all LENGTH options must be specified.

When a CICS command offers the LENGTH option, it is expressed as a signed halfword binary value. This puts a theoretical upper limit of 32,763 bytes on LENGTH. In practice, depending on issues of recoverability, function shipping, and other factors, assume a 24 KB limit.

This advisory 24 KB limit does not apply to the FLENGTH option on CICS commands (except for terminal-related SEND and RECEIVE commands, because of architectural limitations). The FLENGTH option is used on commands that relate to containers and journals, among others.

For temporary storage, transient data, and file control commands, the data set definitions themselves might impose further restrictions.

NOHANDLE option

Use the NOHANDLE option with any command to specify that you want no action to be taken for any condition or AID resulting from the execution of that command.

For further information about the NOHANDLE option, see RESP and NOHANDLE options.

Using the C or C++ language implies NOHANDLE on all commands.

RESP and RESP2 options

You can use the RESP option with any command to test whether a condition was raised during its execution. With some commands, when a condition can be raised for more than one reason, if you have already specified RESP, you can use the RESP2 option to determine exactly why a condition occurred.

RESP(xxx)

xxx is a user-defined fullword binary data area. On return from the command, it contains a value that corresponds to the condition that might be raised, or to a normal return, that is, xxx=DFHRESP(NORMAL). You can test this value by means of DFHRESP, as follows:

```
EXEC CICS WRITEQ TS FROM(abc)
   QUEUE(qname)
   NOSUSPEND
   RESP(xxx)
   RESP2(yyy)
   .
   IF xxx=DFHRESP(NOSPACE) THEN ...
```

This form of DFHRESP applies to both COBOL and PL/I.

The following example is a similar test in C:

```
switch (xxx) {
   case DFHRESP(NORMAL) : break;
   case DFHRESP(INVREQ) : Inreq_Cond();
       break;
   default : Errors();
}
```

The following example is a similar test in assembler language:
The translator changes this code to:

```plaintext
CLC xxx,=F'18'
```

Because the use of RESP implies NOHANDLE, use care when you use RESP with the RECEIVE command. NOHANDLE overrides both the HANDLE AID and the HANDLE CONDITION command, with the result that PF key responses are ignored.

**RESP2(yyy)**

yyy is a user-defined fullword binary data area. On return from the command, it contains a value that further qualifies the response to certain commands. Unlike the RESP values, RESP2 values have no associated symbolic names and there is no translator built-in function that corresponds to DFHRESP, so you must test the fullword binary value itself.

### Translated code for CICS commands

Application programs can be written in COBOL, C, PL/I, or assembler language, and contain CICS commands. CICS translates these programs and creates an equivalent source program where each command is now translated into a call macro or statement in the language of the original source program.

#### COBOL translation output

EXEC CICS commands are converted to calls to the CICS interface DFHEI1.

The following example shows how the EXEC statement:

```plaintext
EXEC CICS RETURN TRANSID('fred')
     COMMAREA(mycommarea) END-EXEC.
```

is translated to:

```plaintext
Move length of mycommarea to dfhb0020
Call 'DFHEI1' using by content
    x'0e08e0000700001000f0f0f2f7404040'
    by content 'fred' by reference mycommarea
    by reference dfhb0020 end-call.
```

### Copybook DFHEIBLC

This new copybook is a lower case version of the existing DFHEIBLK copybook.

A difference is that in DFHEIBLK the top level name is

```plaintext
01 EIBLK.
```

whereas in DFHEIBLC the top level name is

```plaintext
01 dfheiblk.
```

This is consistent with the name generated by the translator today, and also conforms to the rule that CICS reserved words should start with DFH.
C translation output
For a C application program, each command is replaced by reassignment statements followed by a dfhexec statement that passes the parameters.

PL/I translation output
For a PL/I application program, each command is always replaced by a DO statement, a declaration of a generated entry name, a CALL statement, and an END statement. The ENTRY declaration ensures that the appropriate conversions for argument values take place.

If a PL/I on-unit consists of a single EXEC CICS command, the command should be inside a BEGIN block, for example:

```plaintext
ON ERROR BEGIN;
  EXEC CICS RETURN;
END;
```

In a similar way, if an EXEC CICS command is associated with a PL/I condition prefix, the command should be inside a BEGIN block, for example:

```plaintext
(NOZERODIVIDE): BEGIN;
  EXEC CICS GETMAIN
  SET(ptr-ref)
  LENGTH(data-value);
END;
```

If OPTIONS(MAIN) is specified, the translator modifies the parameter list by inserting the EIB structure pointer as the first parameter. If OPTIONS(MAIN) is not specified (that is, if the program is to be link-edited to the main module), the parameter list is not modified, and it is the application programmer’s responsibility to address the EIB structure in the link-edited program if access to it is required. In either case, where a program commences with a valid PL/I PROCEDURE statement, the translator inserts the declaration of the EIB structure.

Assembler translation output
The invocation of a CICS assembler language application program obeys system standards.

On entry to the application program, registers 1, 15, 14, and 13 contain the following addresses:

- Register 1 contains the address of the parameter list. This list has at least two entries:
  - Address of the EIB (EXEC interface block)
  - Address of the COMMAREA; if no COMMAREA, entry is X'00000000'
- Register 15 contains the address of the entry point.
- Register 14 contains the address of the return point.
- Register 13 contains the address of the save area.

All other registers are undefined.

DFHECALL macro
For an assembler language application program, when the CICS translator detects a CICS command, each command is replaced by an invocation of the DFHECALL macro. The DFHECALL macro sets up the command parameters and calls the initial CICS command processor to handle the command.

This macro expands to a system-standard call sequence that uses registers 15, 14, 0, and 1. The contents of these registers are as follows:

- Register 15 contains the address of the entry point in the EXEC interface program.
- Register 14 contains the address of the return point in your application program.
• Register 0 is undefined.
• Register 1 contains the address of the parameter list.

The entry point held in register 15 is resolved in the EXEC interface processor that must be link-edited with your application program. For AMODE(24) and AMODE(31) applications, this EXEC interface processor is DFHEAI; for AMODE(64) applications, it is DFHEAG.

You can specify the exit from the application program by an EXEC CICS RETURN command in your source program. Alternatively, you can use the DFHEIRET macro, which restores the registers and returns control to the address in register 14. The translator inserts the DFHEIRET macro, with no parameters specified, immediately before the END statement, unless you specify the NOEPILOG translator option. You can use this macro to return from a top-level program, but it is not advisable from a lower-level program.

During assembly, the DFHECALL macro builds an argument list in dynamic storage, so that the application program is reentrant. Then the macro invokes the EXEC interface program DFHEIP for AMODE(24) or AMODE(31) applications, or DFHEIG for AMODE(64) applications. These programs also obey system standards, as previously described.

For AMODE(64) applications, although the application and the initial command processor run in 64-bit addressing mode, the parameters that the DFHECALL macro sets up and passes to the initial command processor contain 31-bit addresses. Therefore, the storage in which the call parameters are built, the DFHEISTG storage, must be 31-bit storage (above 16 MB but below 2 GB).

In addition to the invocation of the DFHECALL macro, the translator also inserts the following macros into your source program:

**DFHEIGBL**

This macro sets globals if you are using EXEC DLI in either a batch or an online CICS application program. Within DFHEIGBL, if DFHEIDL is set to 1, this means that the program contains EXEC DLI commands. If DFHEIDB is set to 1, this means that the program is batch DL/I. If you are not using DL/I, it is commented and set to 0.

**DFHEIENT**

This macro is inserted after the first CSECT or START instruction. It performs prolog code to allocate working storage to hold any user variables and for CICS use:

• It saves registers
• It gets an initial allocation of the storage that is defined by DFHEISTG
• It sets up a base register (default register 3)
• It sets up a dynamic storage register (default register 13)
• It sets up a register to address the EIB (default register 11)

**DFHEIRET**

This macro performs epilog code to release the working storage of the application program:

• It restores registers.

    DFHEIRET RCREG=nn, where nn (any register number other than 13) contains the return code to be placed in register 15 after the registers are restored.

• It returns control to the address in register 14.

**DFHEISTG and DFHEIEND**

These macros define dynamic storage:

• They define the storage required for the parameter list
• They define a save area.

For further details about these macros with AMODE(64) applications, see Coding the EXEC CICS(r) assembler interface.

A copybook, DFHEIBLK, that contains a DSECT that describes the EIB, is also included automatically.
The program must have an END statement because the translator does not otherwise insert the default
macros. Also CSECT or START and END must be in uppercase for the translator to recognize them.

The example in Figure 1 on page 14 shows a simple assembler language application program that uses
the BMS command SEND MAP to send a map to a terminal, followed by the output after program
INSTRUCT is translated.

<table>
<thead>
<tr>
<th>Source program</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTRUCT CSECT</td>
</tr>
<tr>
<td>EXEC CICS SEND MAP('DFH$AGA') MAPONLY ERASE</td>
</tr>
<tr>
<td>END</td>
</tr>
</tbody>
</table>

This source program is translated to:

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DFHEIGBL, INSERTED BY TRANSLATOR</td>
</tr>
<tr>
<td>INSTRUCT CSECT</td>
</tr>
<tr>
<td>DFHEIENT INSERTED BY TRANSLATOR</td>
</tr>
<tr>
<td>* EXEC CICS SEND MAP('DFH$AGA') MAPONLY ERASE</td>
</tr>
<tr>
<td>DFHECALL =X'1804C00000000000004620400000020', (CHA7,=CL7'DFH$AGA*'),(______RF,DFHEIV00)</td>
</tr>
<tr>
<td>DFHEIRET INSERTED BY TRANSLATOR</td>
</tr>
<tr>
<td>DFHEISTG INSERTED BY TRANSLATOR</td>
</tr>
<tr>
<td>DFHEIEND INSERTED BY TRANSLATOR</td>
</tr>
<tr>
<td>END</td>
</tr>
</tbody>
</table>

Figure 1. Source program and translated code for a CICS command
Chapter 2. CICS command summary

The **EXEC CICS** commands categorized according to the function they perform.
For EIB response codes, see Response codes of EXEC CICS commands.
For EIB function codes, see Function codes of EXEC CICS commands.

**Abend support**

- ABEND
- HANDLE ABEND

**APPC basic conversation**

- GDS ALLOCATE
- GDS ASSIGN
- GDS CONNECT PROCESS
- GDS EXTRACT ATTRIBUTES
- GDS EXTRACT PROCESS
- GDS FREE
- GDS ISSUE ABEND
- GDS ISSUE CONFIRMATION
- GDS ISSUE ERROR
- GDS ISSUE PREPARE
- GDS ISSUE SIGNAL
- GDS RECEIVE
- GDS SEND
- GDS WAIT

**APPC mapped conversation**

- ALLOCATE (APPC)
- CONNECT PROCESS
- CONVERSE (APPC)
- EXTRACT ATTRIBUTES (APPC)
- EXTRACT PROCESS
- FREE (APPC)
- ISSUE ABEND
- ISSUE CONFIRMATION
- ISSUE ERROR
- ISSUE PREPARE
- ISSUE SIGNAL (APPC)
- RECEIVE (APPC)
• SEND (APPC)
• WAIT CONVID (APPC)

Asynchronous Services

• FETCH ANY
• FETCH CHILD
• FREE CHILD
• RUN TRANSID

Authentication

• CHANGE PASSWORD
• “CHANGE PHRASE” on page 66
• SIGNOFF
• SIGNON
• SIGNON TOKEN
• VERIFY PASSWORD
• VERIFY PHRASE
• VERIFY TOKEN

Batch data interchange

• ISSUE ABORT
• ISSUE ADD
• ISSUE END
• ISSUE ERASE
• ISSUE NOTE
• ISSUE QUERY
• ISSUE RECEIVE
• ISSUE REPLACE
• ISSUE SEND
• ISSUE WAIT

BMS

• PURGE MESSAGE
• RECEIVE MAP
• RECEIVE MAP MAPPINGDEV
• RECEIVE PARTN
• ROUTE
• SEND CONTROL
• SEND MAP
• SEND MAP MAPPINGDEV
Built-in functions

- BIF DEEDIT
- BIF DIGEST

CICS business transaction services (BTS)

- ACQUIRE
- ADD SUBEVENT
- CANCEL
- “CANCEL (BTS)” on page 64
- CHECK ACQPROCESS
- CHECK ACTIVITY
- CHECK TIMER
- DEFINE ACTIVITY
- DEFINE COMPOSITE EVENT
- DEFINE INPUT EVENT
- DEFINE PROCESS
- DEFINE TIMER
- DELETE ACTIVITY
- DELETE CONTAINER (BTS)
- DELETE EVENT
- DELETE TIMER
- ENDBROWSE ACTIVITY
- “ENDBROWSE CONTAINER (BTS)” on page 152
- ENDBROWSE EVENT
- ENDBROWSE PROCESS
- FORCE TIMER
- GET CONTAINER (BTS)
- GETNEXT ACTIVITY
- “GETNEXT CONTAINER (BTS)” on page 237
- GETNEXT EVENT
- GETNEXT PROCESS
- INQUIRE ACTIVITYID
- INQUIRE CONTAINER
- INQUIRE EVENT
- INQUIRE PROCESS
- INQUIRE TIMER
• LINK ACQPROCESS
• LINK ACTIVITY
• MOVE CONTAINER(BTS)
• PUT CONTAINER (BTS)
• REMOVE SUBEVENT
• RESET ACQPROCESS
• RESET ACTIVITY
• RESUME
• RETRIEVE REATTACH EVENT
• RETRIEVE SUBEVENT
• RUN
• STARTBROWSE ACTIVITY
• “STARTBROWSE CONTAINER (BTS)” on page 548
• STARTBROWSE EVENT
• STARTBROWSE PROCESS
• SUSPEND (BTS)
• TEST EVENT

Channel commands

• DELETE CHANNEL
• DELETE CONTAINER (CHANNEL)
• “ENDBROWSE CONTAINER (CHANNEL)” on page 152
• GET CONTAINER (CHANNEL)
• GET64 CONTAINER
• “GETNEXT CONTAINER (CHANNEL)” on page 238
• MOVE CONTAINER (CHANNEL)
• PUT CONTAINER (CHANNEL)
• PUT64 CONTAINER
• QUERY CHANNEL
• “STARTBROWSE CONTAINER (CHANNEL)” on page 549
• START CHANNEL

Console support

• WRITE OPERATOR

Diagnostic services

• DUMP TRANSACTION
• ENTER TRACENUM

Document services
• DOCUMENT CREATE
• DOCUMENT DELETE
• DOCUMENT INSERT
• DOCUMENT RETRIEVE
• DOCUMENT SET

Environment services

• ADDRESS
• ADDRESS SET
• ASSIGN

Event processing

• SIGNAL EVENT

Exception support

• HANDLE CONDITION
• IGNORE CONDITION
• POP HANDLE
• PUSH HANDLE

File control services

• DELETE
• ENDBR
• READ
• READNEXT
• READPREV
• RESETBR
• REWRITE
• STARTBR
• UNLOCK
• WRITE

Interval control services

• ASKTIME
• CANCEL
• DELAY
• FORMATTIME
• POST
• RETRIEVE
• START
• WAIT EVENT

**Journaling**

• WAIT JOURNALNAME
• WAIT JOURNALNUM
• WRITE JOURNALNAME
• WRITE JOURNALNUM

**Monitoring**

• MONITOR

**Named counter server**

• DEFINE COUNTER and DEFINE DCOUNTER
• DELETE COUNTER and DELETE DCOUNTER
• GET COUNTER and GET DCOUNTER
• QUERY COUNTER and QUERY DCOUNTER
• REWIND COUNTER and REWIND DCOUNTER
• UPDATE COUNTER and UPDATE DCOUNTER

**Program control**

• “INVOKE APPLICATION” on page 261
• LINK
• LOAD
• RELEASE
• RETURN
• XCTL

**Scheduling services**

• START ATTACH
• START BREXIT

**Security services**

• REQUEST PASSTICKET
• QUERY SECURITY

**Spool Interface (JES)**
• SPOOLCLOSE
• SPOOLOPEN INPUT
• SPOOLOPEN OUTPUT
• SPOOLREAD
• SPOOLWRITE

Storage control

• FREEMAIN
• FREEMAIN64
• GETMAIN
• GETMAIN64

Syncpoint

• SYNCPOINT
• SYNCPOINT ROLLBACK

Task control

• CHANGE TASK
• DEQ
• ENQ
• SUSPEND
• WAIT EXTERNAL
• WAITCICS

TCP/IP services

• EXTRACT CERTIFICATE
• EXTRACT TCPIP

Temporary storage control

• DELETEQ TS
• READQ TS
• WRITEQ TS

Terminal control

• ALLOCATE (LUTYPE6.1)
• ALLOCATE (MRO)
• BUILD ATTACH (LUTYPE6.1)
• BUILD ATTACH (MRO)
• CONVERSE (APPC)
• “CONVERSE (default)” on page 78
• CONVERSE (LUTYPE2/LUTYPE3)
• CONVERSE (LUTYPE4)
• CONVERSE (LUTYPE6.1)
• CONVERSE (MRO)
• “CONVERSE (non-z/OS Communications Server default)” on page 91
• “CONVERSE: non-z/OS Communications Server options” on page 93
• CONVERSE (SCS)
• “CONVERSE: z/OS Communications Server options” on page 87
• CONVERSE (2260)
• CONVERSE (3270 logical)
• CONVERSE (3600-3601)
• CONVERSE (3600-3614)
• CONVERSE (3650 interpreter)
• CONVERSE (3650-3270)
• CONVERSE (3650-3653)
• CONVERSE (3650-3680)
• CONVERSE (3767)
• CONVERSE (3770)
• CONVERSE (3790 full-function or inquiry)
• CONVERSE (3790 3270-display)
• EXTRACT ATTACH (LUTYPE6.1)
• EXTRACT ATTACH (MRO)
• EXTRACT ATTRIBUTES (MRO)
• EXTRACT LOGONMSG
• EXTRACT TCT
• FREE (LUTYPE6.1)
• FREE
• FREE (MRO)
• HANDLE AID
• ISSUE COPY (3270 logical)
• “ISSUE DISCONNECT (LUTYPE6.1)” on page 277
• ISSUE DISCONNECT
• ISSUE ENDFILE
• ISSUE ENDOUTPUT
• ISSUE EODS
• ISSUE ERASEAUP
• ISSUE LOAD
• ISSUE PASS
• ISSUE PRINT
• ISSUE RESET
• ISSUE SIGNAL (LUTYPE6.1)
• POINT
• RECEIVE (APPC)
• RECEIVE (LUTYPE2/LUTYPE3)
• RECEIVE (LUTYPE4)
• RECEIVE (LUTYPE6.1)
• RECEIVE (MRO)
• “RECEIVE (non-z/OS Communications Server default)” on page 393
• “RECEIVE: non-z/OS Communications Server options” on page 397
• “RECEIVE (z/OS Communications Server default)” on page 384
• “RECEIVE (z/OS Communications Server default)” on page 384
• RECEIVE (2260)
• RECEIVE (2980)
• RECEIVE (3270 logical)
• “RECEIVE (3600 pipeline)” on page 387
• RECEIVE (3600-3601)
• RECEIVE (3600-3614)
• RECEIVE (3650)
• RECEIVE (3767)
• RECEIVE (3770)
• RECEIVE (3790 full-function or inquiry)
• RECEIVE (3790 3270-display)
• SEND (APPC)
• SEND (LUTYPE2/LUTYPE3)
• SEND (LUTYPE4)
• SEND (LUTYPE6.1)
• SEND (MRO)
• “SEND (non-z/OS Communications Server default)” on page 460
• “SEND: non-z/OS Communications Server options” on page 461
• SEND (SCS)
• “SEND (z/OS Communications Server default)” on page 447
• “SEND: z/OS Communications Server options” on page 456
• SEND (2260)
• SEND (2980)
• SEND (3270 logical)
• SEND (3600 pipeline)
• SEND (3600-3601)
• SEND (3600-3614)
• SEND (3650 interpreter)
• SEND (3650-3270)
• SEND (3650-3653)
• SEND (3650-3680)
• SEND (3767)
• SEND (3770)
• SEND (3790 full-function or inquiry)
• SEND (3790 SCS)
• SEND (3790 3270-display)
• SEND (3790 3270-printer)
• WAIT SIGNAL
• WAIT TERMINAL

Transient data

• DELETEQ TD
• READQ TD
• WRITEQ TD

Web support

• CONVERTTIME
• EXTRACT WEB
• WEB CLOSE
• WEB CONVERSE
• WEB ENDBROWSE FORMFIELD
• WEB ENDBROWSE HTTPHEADER
• “WEB ENDBROWSE QUERYPARAM” on page 610
• WEB EXTRACT
• WEB OPEN
• WEB PARSE URL
• WEB READ FORMFIELD
• WEB READ HTTPHEADER
• “WEB READ QUERYPARAM” on page 627
• WEB READNEXT FORMFIELD
• WEB READNEXT HTTPHEADER
• “WEB READNEXT QUERYPARAM” on page 632
• WEB RECEIVE (Server)
• WEB RECEIVE (Client)
• WEB RETRIEVE
• WEB SEND (Server)
• WEB SEND (Client)
• WEB STARTBROWSE FORMFIELD
• WEB STARTBROWSE HTTPHEADER
• “WEB STARTBROWSE QUERYPARAM” on page 667
• WEB WRITE HTTPHEADER

Web services
ABEND

Terminate a task abnormally.

**ABEND**

```plaintext
ABEND

| ABCODE( name) | CANCEL | NODUMP |
```

This command is threadsafe.

**Description**

The **ABEND** command terminates a task abnormally.

CICS releases the main storage that is associated with the terminated task; optionally, you can obtain a transaction dump of this storage.

Invoking the **ABEND** command causes the current transaction to abend. The Language Environment is informed that an abend occurred and the following message is written out to CEEMSG followed by a dump report:

CEE3250C The system or user abend XXXX was issued

**XXXX** is the transaction dump code that is specified on the **ABCODE** option. The Language Environment attempts to access register addresses to dump out the referenced storage as part of the dump report that is written to CEEMSG. If the Language Environment does not have access to the storage addresses by these registers, an OC4 abend can occur. You can eliminate OC4 abends by setting the Language Environment runtime option **TERMTHDACT** to QUIET, MSG, or UAONLY. For more information, see **TERMTHDACT** in z/OS Language Environment Customization.

**Options**

**ABCODE(name)**

This option specifies that main storage that is related to the terminating task is dumped. The **ABCODE** is used as a transaction dump code to identify the dump. **ABCODE** follows the format rules for **DUMPCODE**. The "DUMP TRANSACTION" on page 145 command gives the format rules that apply to **DUMPCODE**, if these rules are not followed, **ABEND** does not produce a dump.

Do not start the name with the letter A because this is reserved for CICS itself.

**Note:** If **ABCODE** is not used, the effect is the same as **NODUMP**.
CANCEL
This option specifies that exits established by HANDLE ABEND commands are ignored. An ABEND CANCEL command cancels all exits at any level in the task and terminates the task abnormally. If the PL/I STAE execution-time option is specified, an abnormal termination exit is established by PL/I. This exit is revoked by the CANCEL option.

NODUMP
This option specifies that an abend occurs without causing a dump to be taken. For programs link-edited using the Language Environment SCEELKED library, when NODUMP is specified, a dump is never taken, regardless of any setting in the transaction dump table. For programs not link-edited with Language Environment, if the transaction dump table already has an entry for the abend code, or if the abend is in Language Environment run-unit initialization or termination, the NODUMP option is ignored.

Examples
The following example shows how to terminate a task abnormally:
EXEC CICS ABEND ABCODE('BCDE')

ACQUIRE
Acquire access to a BTS activity from outside the process that contains it.

ACQUIRE PROCESS
ACQUIRE PROCESS( data-value ) PROCESSTYPE( data-value ) ACTIVITYID( data-value )

Conditions: ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED, NOTAUTH, PROCESSBUSY, PROCESSERR

Description
ACQUIRE enables a program that is executing outside a particular BTS process to access an activity within the process. It allows the program to:
• Read and write to the activity’s data-containers.
• Issue various commands, such as RUN and LINK, against the activity.¹

An activity that a program gains access to by using an ACQUIRE command is known as an acquired activity. A program can acquire only one activity per unit of work. The activity remains acquired until the next syncpoint.

ACQUIRE ACTIVITYID acquires the specified descendant (non-root) activity.

ACQUIRE PROCESS acquires the root activity of the specified process.

Note: When a program defines a process, it is automatically given access to the process’s root activity. (This enables the defining program to access the process containers and root activity containers before running the process.) When a program gains access to a root activity by means of either a DEFINE PROCESS or an ACQUIRE PROCESS command, the process is known as the acquired process.

Rules
1. A program can acquire only one activity within the same unit of work. The activity remains acquired until the next syncpoint. This means, for example, that a program:

¹ If the acquired activity is a root activity, against the process.
• Cannot issue both a DEFINE PROCESS and an ACQUIRE PROCESS command within the same unit of work.

• Cannot issue both an ACQUIRE PROCESS and an ACQUIRE ACTIVITYID command within the same unit of work. That is, it can acquire either a descendant activity or a root activity, not one of each.

2. If a program is executing as an activation of an activity, it cannot:

• Acquire an activity in the same process as itself. It cannot, for example, issue ACQUIRE PROCESS for the current process.

• Use a LINK command to activate the activity that it acquired.

3. An acquired activity's process is accessible in the same way as the activity itself can access it. Thus, if the acquired activity is a descendant activity:

• Its process's containers can be read but not updated.

• The process cannot be the subject of any command—such as RUN, LINK, SUSPEND, RESUME, or RESET—that directly manipulates the process or its root activity.

Conversely, if the acquired activity is a root activity:

• Its process's containers can be both read and updated.

• The process can be the subject of commands such as RUN, LINK, SUSPEND, RESUME, or RESET. The ACQPROCESS keyword on the command identifies the subject process as the one the program that issues the command acquired in the current unit of work.

Options

ACTIVITYID(data-value)
This option specifies the identifier (1–52 characters) of the descendant activity to be acquired.

PROCESS(data-value)
This option specifies the name (1–36 characters) of the process whose root activity is to be acquired.

PROCESSTYPE(data-value)
This option specifies the process-type (1–8 characters) of the process whose root activity is to be acquired.

Conditions

107 ACTIVITYBUSY
RESP2 values:

19 The request timed out. It may be that another task using this activity-record has been prevented from ending.

109 ACTIVITYERR
RESP2 values:

8 The activity referred to by the ACTIVITYID option cannot be found.

16 INVREQ
RESP2 values:

22 The unit of work that issued the ACQUIRE command has already acquired an activity; a unit of work can acquire only one activity.

17 IOERR
RESP2 values:

29 The repository file is unavailable.
An input/output error occurred on the repository file.

100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

70 NOTAUTH
RESP2 values:
101 The user who is associated with the issuing task is not authorized to access the file that is associated with the BTS repository data set on which details of the process are stored.

106 PROCESSBUSY
RESP2 values:
13 The request timed out. It may be that another task using this process-record has been prevented from ending.

108 PROCESSERR
RESP2 values:
5 The process that is named in the PROCESS option cannot be found.
9 The process-type that is named in the PROCESSTYPE option cannot be found.

Usage examples
ACQUIRE ACTIVITYID can be used to implement user-related activities. For example, on its first activation an activity might:
1. Define an input event to represent a particular user-interaction.
2. Issue an ASSIGN command to obtain the identifier of its own activity-instance.
3. Save the input event and activity identifier on a database.
4. Return without completing.
Later, when a user is ready to process the work that is represented by the activity, the user starts a transaction. This transaction, which executes outside the BTS process:
1. Retrieves the input event and activity identifier from the database.
2. Uses the ACQUIRE ACTIVITYID command to acquire access to the activity.
3. Places the information that is required to complete the activity in an input data-container, and runs the activity. The INPUTEVENT option of the RUN command tells the activity why it is being activated.

ACQUIRE PROCESS can be used to implement client/server processing. For example, a client program might use the DEFINE PROCESS and RUN commands to create and run a server process, which carries out some work, defines one or more input events, and returns without completing. The client issues a syncpoint or returns. To run the same server process again, the client uses the ACQUIRE PROCESS and RUN commands.

ADD SUBEVENT
Add a subevent to a BTS composite event.
ADD SUBEVENT

\[ \text{ADD} \rightarrow \text{SUBEVENT( data-value )} \rightarrow \text{EVENT( data-value )} \rightarrow \]

**Conditions:** EVENTERR, INVREQ

**Description**
ADD SUBEVENT adds a subevent to a BTS composite event. The subevent:
- Must be an atomic (not a composite) event
- Cannot be a system event
- Must not currently be part of a composite event
- Cannot, if the predicate of the composite event uses the AND Boolean operator, be an input event.

Adding a subevent causes the composite’s predicate to be reevaluated.

**Options**

**EVENT(data-value)**
This option specifies the name (1–16 characters) of the composite event. This must previously be defined to the current activity, by using the DEFINE COMPOSITE EVENT command.

**SUBEVENT(data-value)**
This option specifies the name (1–16 characters) of the atomic event to be added to the composite event as a subevent. The subevent must previously be defined to the current activity, by using one of the following commands:
- DEFINE ACTIVITY
- DEFINE INPUT EVENT
- DEFINE TIMER

It:
- Must not currently be part of a composite event
- Cannot, if the predicate of the composite event uses the AND Boolean operator, be an input event.

**Conditions**

111 EVENTERR
RESP2 values:

4
The event that is specified on the EVENT option is not recognized by BTS.

5
The subevent that is specified on the SUBEVENT option is not recognized by BTS.

16 INVREQ
RESP2 values:

1
The command is issued outside the scope of an activity.

2
The event that is specified on the EVENT option is invalid—it is not a composite event.

3
The subevent that is specified on the SUBEVENT option is invalid. Specifying any of the following as a subevent produces this error:
- A composite event
- A system event
- A subevent of another composite event
• A subevent of this composite event—that is, an atomic event that is already added to this composite event
• An input event, if the composite uses the AND Boolean operator.

**ADDRESS**

Obtain access to CICS storage areas.

ADDRESS

ADDRESS

ACEE(ptr-ref) COMMAREA(ptr-ref) CWA(ptr-ref)

EIB(ptr-ref) TCTUA(ptr-ref) TWA(ptr-ref)

This command is threadsafe.

**Note for dynamic transaction routing**: Using ADDRESS with CWA might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

**Description**

ADDRESS accesses the following areas:

• The access control environment element (ACEE)
• The communication area available to the invoked program (COMMAREA)
• The common work area (CWA)
• The EXEC interface block (EIB)
• The terminal control table user area (TCTUA)
• The transaction work area (TWA)

In assembler language, no more than four options can be specified in one ADDRESS command.

**Options**

**ACEE(ptr-ref)**

This option returns a pointer to the access control environment element, the control block that is generated by an external security manager (ESM) when the user signs on. If the user is not signed on, the address of the CICS DFLTUSER’s ACEE is returned. If an ACEE does not exist, CICS sets the pointer reference to the null value, X’FF000000’.

For information on how to map the ACEE data area, see the mapping macro IHAACEE supplied in SYS1.MACLIB.

**Note**: Take care when addressing an ACEE in a server program invoked by a distributed program link. The ACEE address that is returned depends on the link security and cannot be the same as the address of the user signed on at the local system.

**COMMAREA(ptr-ref)**

This option returns a pointer reference, set to the address of the communication area (COMMAREA) available to the currently executing program. COMMAREA is used to pass information between application programs. If the COMMAREA does not exist, the pointer reference is set to the null value, X’FF000000’.

In C, you must use ADDRESS COMMAREA to get the address of the communication area because this is not passed as an argument to a C main function.
CWA(ptr-ref)
This option returns a pointer reference, set to the address of the common work area (CWA). This area makes information available to applications that are running in a single CICS system. If a CWA does not exist, CICS sets the pointer reference to the null value, X'FF000000'.

EIB(ptr-ref)
This option returns a pointer reference set to the address of the EXEC interface block (EIB). You must use this option to get addressability to the EIB in application routines other than the first invoked by CICS (where addressability to the EIB is provided automatically). If the application program is translated with SYSEIB in the XOPTS parameter list, this option returns the address of the system EIB.

If TASKDATALOC(ANY) is defined on the transaction definition, the address of the data can be above or below the 16MB line.

If TASKDATALOC(BELOW) is defined on the transaction definition, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

C functions must use ADDRESS EIB to get the address of the EXEC interface block, because this address is not passed as an argument to a C main function. You must code an ADDRESS EIB statement at the beginning of each application if you want access to the EIB, or if you are using a command that includes the RESP or RESP2 option.

TCTUA(ptr-ref)
This option returns a pointer reference, set to the address of the terminal control table user area (TCTUA) for the principal facility, not that for any alternate facility that might be allocated. This area is used for passing information between application programs, but only if the same terminal is associated with the application programs involved. If a TCTUA does not exist, the pointer reference is set to the null value, X'FF000000'.

TWA(ptr-ref)
This option returns a pointer reference, set to the address of the transaction work area (TWA). This area is used for passing information between application programs, but only if they are in the same task. If a TWA does not exist, the pointer reference is set to the null value, X'FF000000'.

If TASKDATALOC(ANY) is defined on the transaction definition, the address of the data can be above or below the 16MB line.

If TASKDATALOC(BELOW) is defined on the transaction definition, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

ADDRESS SET
Set the address of a structure or pointer.

ADDRESS SET

ADDRESS

SET(data-area) USING(ptr-ref)

SET(ptr-ref) USING(data-area)

Description
The value from the USING option is used to set the reference in the SET option.

Options

SET(data-area/ptr-ref)
This option sets a pointer reference.
USING(ptr-ref/data-area)
This option supplies a pointer value.

COBOL example of ADDRESS SET

To set the address of a structure to a known pointer value:

```cobol
EXEC CICS ADDRESS SET(address of struc)
USING(ptr)
```

To set a pointer variable to the address of a structure:

```cobol
EXEC CICS ADDRESS SET(ptr)
USING(address of struc01)
```

ALLOCATE (APPC)

Allocate a session to a remote APPC logical unit for use by an APPC mapped conversation.

**ALLOCATE (APPC)**

- **ALLOCATE**
- **SYSID**(systemname)
- **PROFILE**(name)
- **PARTNER**(name)
- **NOQUEUE**
- **STATE**(cvda)

**Conditions:** CBIDERR, INVREQ, NETNAMEIDERR, PARTNERIDERR, SYSBUSY, SYSIDERR

**Description**

ALLOCATE makes one of the sessions that are associated with the named system available to the application program, and optionally selects a set of session-processing options.

CICS returns, in EIBRSRCE in the EIB, the 4-byte CONVID (conversation identifier) that the application program uses in all subsequent commands that relate to the conversation.

If a session to the requested APPC LU is not available, the application is suspended until a session does become available. In such a case, the suspension of the application can be prevented by specifying either the NOQUEUE or the NOSUSPEND option. NOSUSPEND is still supported as an equivalent for NOQUEUE, but NOQUEUE is the preferred keyword.

A session is immediately available for allocation only if it is all of the following:

- A contention winner
- Already bound
- Not already allocated

CICS attempts to satisfy a request for a session by choosing among sessions in the following order of preference:

1. Contention winner that is bound and not already allocated (CICS allocates it). This is a session that is immediately available.
2. Contention winner that is unbound (CICS binds it and allocates it).
3. Contention loser that is bound and not already allocated (CICS bids for it).
4. Contention loser that is unbound (CICS binds it and bids for it).

The action that is taken by CICS if no session is immediately available depends on whether you specify NOQUEUE (or the equivalent NOSUSPEND option), and also on whether your application executes a HANDLE command for the SYSBUSY condition. In these situations, CICS does not bid for sessions or bind additional sessions. It looks for a session that is immediately available (that is, a contention winner that is bound and not already allocated), and if one is not available, the SYSBUSY condition is returned. The possible combinations are shown below:

**HANDLE for SYSBUSY condition issued**

The command is not queued and control is returned immediately to the label specified in the HANDLE command, whether or not you have specified NOQUEUE.

**No HANDLE issued for SYSBUSY condition**

If you specify NOQUEUE (or NOSUSPEND), the request is not queued and control is returned immediately to your application program. The SYSBUSY code (X ‘D3’) is set in the EIBRCODE field of the EXEC interface block. You should test this field immediately after you issue the ALLOCATE command.

Therefore, the HANDLE for SYSBUSY condition has the same effect as the NOQUEUE option, except for where control is returned in the application. If the HANDLE command is used, control is returned to the label, and if it is not used, control is returned to the instruction that follows the ALLOCATE command.

If you omit the NOQUEUE option, and you do not issue a HANDLE command for the SYSBUSY option, then if no session is immediately available, CICS queues the request (and your application waits) until a session is available. The request is allocated a session either when a winner session becomes available, or when CICS successfully bids for a loser session. Omit the NOQUEUE option when you want all winner or loser sessions to be considered for allocation to the request. You can use the QUEUETYPE and MAXQTIME attributes of the CONNECTION resource definitions to limit the length of the queue of requests, and the time that requests spend on the queue. Managing allocate queues has more information about allocate queues. The DTIMOUT value that is specified on the transaction definition can be used to limit the wait time for individual requests.

**Options**

**NOQUEUE**

This option overrides the default action when a SYSBUSY condition arises. This indicates that a session is not immediately available. The default action is to suspend application execution until a session is available. NOQUEUE inhibits this waiting; control returns immediately to the application program instruction that follows the command.

However, note that if a HANDLE CONDITION for SYSBUSY is active when the command is executed, this also overrides the default action, and control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOQUEUE option but is, negated by either NOHANDLE or RESP.

If an APPC ALLOCATE request is issued against a single session connection from the contention loser end, the NOQUEUE option always causes SYSBUSY to be returned rather than allowing the request to bid for the session. If the NOQUEUE option is absent, the request is able to bid for the session.

If an APPC ALLOCATE request is issued against a parallel session connection, and the NOQUEUE option is specified, only sessions that are immediately available (that is, a contention winner that is bound and not already allocated) can be allocated to the request. If no such session is available, then SYSBUSY is returned. If the NOQUEUE option is absent, the request is able to bid for a loser session, or bind unbound winner sessions.

**PARTNER(name)**

This option specifies the name (8 characters) of a set of definitions that include the names of a remote LU (NETNAME) and a communication profile to be used on the allocated session. You can use this option as an alternative to specifying SYSID and PROFILE explicitly.
PROFILE(name)
This option specifies the name (1-8 characters) of a set of session-processing options that are to be used during the execution of mapped commands for the session that is specified in the SYSID option. If you specify SYSID and omit PROFILE, a default profile (DFHCICSA) is selected.

STATE(cvda)
This option gets the state of the current conversation. The CVDA value returned by CICS is ALLOCATED.

SYSID(systemname)
This option specifies the name (1-4 characters) by which the remote APPC LU is known to this CICS. This option requests that one of the sessions to the named system is to be allocated.

Conditions

62 CBIDERR
This condition occurs if the requested PROFILE cannot be found.
Default action: terminate the task abnormally.

16 INVREQ
This condition occurs if the ALLOCATE command is not valid for the device to which it is directed.
Default action: terminate the task abnormally.

99 NETNAMEIDERR
This condition occurs if the name specified in the NETNAME parameter of the RDO definition for the PARTNER specified on the allocate command is invalid.
Default action: terminate the task abnormally.

97 PARTNERIDERR
This condition occurs if the name specified in the PARTNER option is not recognized by CICS.
Default action: terminate the task abnormally.

59 SYSBUSY
This condition occurs for one of the following reasons:
• The request for a session cannot be serviced immediately. This is only possible if the NOQUEUE option is set, or a HANDLE CONDITION for SYSBUSY is active.
• The ALLOCATE command is issued when persistent session recovery is still in process and the sessions that are needed to satisfy the command are not yet recovered.
Default action: ignore the condition.

53 SYSIDERR
This condition occurs if CICS is unable to provide the application program with a suitable session, for one of the following reasons:
• The name that is specified in the SYSID option is not recognized by CICS.
• The mode name that is derived from the PROFILE option is not one of the mode names that are defined for the APPC system entry.
• All the sessions in the group that is specified by SYSID and mode name are out of service, or all sessions are out of service.
• The AID (automatic initiate descriptor) representing your ALLOCATE is canceled.
• All the sessions are busy and the (queued) allocates are purged or rejected.
Default action: terminate the task abnormally.
ALLOCATE (LUTYPE6.1)

Acquire a session to a remote LUTYPE6.1 logical unit.

**Description**

ALLOCATE acquires an alternate facility and optionally selects a set of session-processing options. If SYSID is specified, CICS makes available to the application program one of the sessions that are associated with the named system. The name of this session can be obtained from EIBRSRCE in the EIB. If SESSION is specified, CICS makes the named session available.

If the session requested is not available, the application is suspended until the session does become available. In such a case, the suspension of the application can be prevented by specifying either the NOQUEUE or the NOSUSPEND option. NOSUSPEND is still supported as an equivalent for NOQUEUE, but NOQUEUE is the preferred keyword.

**Options**

**NOQUEUE**

This option overrides the default action when a SESSBUSY or SYSBUSY condition arises. These conditions indicate that the session that is requested is not immediately available. The default action is to suspend application execution until the session is available. NOQUEUE inhibits this waiting; control returns immediately to the application program instruction following the command.

However, if a HANDLE CONDITION for SESSBUSY or SYSBUSY is active when the command is executed, this also overrides the default action, and control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOQUEUE option but is negated by either NOHANDLE or RESP.

**PROFILE(name)**

This option specifies the name (1–8 characters) of a set of session-processing options that are to be used during execution of terminal control commands for the session that is specified in the SYSID or SESSION options. If the PROFILE option is omitted, a default profile (DFHCICSA) is selected.

**SESSION(name)**

This option specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

**SYSID(systemname)**

This option specifies the name (1–4 characters) of a system TCTSE. This option specifies that one of the sessions to the named system is to be allocated.

**Conditions**

62 CBIDERR

This condition occurs if the requested PROFILE cannot be found.

Default action: terminate the task abnormally.

06 EOC

This condition occurs when a request/response unit (RU) is received with the end-of-chain indicator set. Field EIBEOC also contains this indicator.
Default action: ignore the condition.

16 INVREQ
This condition occurs when the specified session is already allocated to this task, or the session is an APPC session.

Default action: terminate the task abnormally.

60 SESSBUSY
This condition occurs if the request for the specified session cannot be serviced immediately. This is only possible if the NOQUEUE option is set, or a HANDLE CONDITION for SESSBUSY is active.

Default action: ignore the condition.

58 SESSIONERR
This condition occurs if the name specified in the SESSION option is not that of an LUTYPE6.1 session TCTTE, or if the session cannot be allocated because it is out of service.

Default action: terminate the task abnormally.

59 SYSBUSY
This condition occurs for one of the following reasons:

• The request for a session cannot be serviced immediately. This is only possible if the NOQUEUE option is set, or a HANDLE CONDITION for SYSBUSY is active.

• The ALLOCATE command is issued when persistent session recovery is still in process and the sessions that are needed to satisfy the command are not yet recovered.

Default action: ignore the condition.

53 SYSIDERR
This condition occurs if CICS is unable to provide the application program with a suitable session, for one of the following reasons:

• The name specified in the SYSID option is not recognized by CICS.

• All sessions are out of service.

• The AID (automatic initiate descriptor) representing your ALLOCATE was canceled.

• All the sessions are busy and the (queued) allocates were purged or rejected.

Default action: terminate the task abnormally.

**ALLOCATE (MRO)**

Acquire an MRO session.

**ALLOCATE (MRO)**

ALLOCATE (MRO)

ALLOCATE — SYSID( systemname ) — PROFILE( name ) — NOQUEUE

STATE( cvda )

**Conditions:** INVREQ, SYSBUSY, SYSIDERR

**Description**

ALLOCATE acquires an alternate facility. CICS makes available to the application program one of the sessions that are associated with the system that is named in the SYSID option. The name of this session can be obtained from EIBRSRCE in the EIB.
If the session requested is not available, the application is suspended until the session does become available. In such a case, the suspension of the application can be prevented by specifying the NOQUEUE option.

**Options**

**NOQUEUE**

This option overrides the default action when a SYSBUSY condition arises. This condition indicates that the session that is requested is not immediately available. The default action is to suspend application execution until the session is available. NOQUEUE inhibits this waiting; control returns immediately to the application program instruction following the command.

However, if a HANDLE CONDITION for SYSBUSY is active when the command is executed, this also overrides the default action, and control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOQUEUE option but is negated by either NOHANDLE or RESP.

**PROFILE(name)**

This option specifies the name (1–8 characters) of a set of session-processing options that are to be used during execution of terminal control commands for the session that is specified in the SYSID option. If the PROFILE option is omitted, a default profile (DFHCICSA) is selected.

**STATE(cvda)**

This option gets the state of the current conversation. The CVDA value that is returned by CICS is ALLOCATED.

**SYSID(systemname)**

This option specifies the name (1–4 characters) of a system TCTSE. This option specifies that one of the sessions to the named system is to be allocated.

**Conditions**

**16 INVREQ**

This condition occurs if an incorrect command is issued for the LU or terminal in use.

Default action: terminate the task abnormally.

**59 SYSBUSY**

This condition occurs if the request for a session cannot be serviced immediately. This is only possible if the NOQUEUE option is set, or a HANDLE CONDITION for SYSBUSY is active.

Default action: ignore the condition.

**53 SYSIDERR**

This condition occurs if CICS is unable to provide the application program with a suitable session, for one of the following reasons:

- The name that is specified in the SYSID option is not recognized by CICS.
- All sessions are out of service.
- The AID (automatic initiate descriptor) representing your ALLOCATE was canceled.
- All the sessions are busy and the (queued) allocates was purged or rejected.

Default action: terminate the task abnormally.
**ASKTIME**

Request current date and time of day.

**Description**

ASKTIME updates the date (EIBDATE) and CICS time-of-day clock (EIBTIME) fields in the EIB. These two fields initially contain the date and time when the task started.

In response to an ASKTIME command, CICS issues an MVS™ STCK macro and modifies this by a local time difference. For example, if your MVS TOD (hardware) clock is set to GMT, and the local time is defined as British Summer Time (BST), it is BST that is stored in the EIBTIME field.

For more information on the EIB, see EIB fields.

**Options**

**ABSTIME**(data-area)

This option specifies the data area for the number of milliseconds since 00:00 on 1 January 1900, which is known as absolute time. The time is taken from the system time-of-day clock, which is adjusted for leap seconds and to apply the local timezone offset (including daylight saving time), truncated to the millisecond, and returned as a packed decimal of length 8 bytes.

You can use FORMATTIME to change the data into other familiar formats.

**Example**

For example, after the following command runs:

```
EXEC CICS ASKTIME ABSTIME(utime)
```

`utime` contains a value similar in format to 002837962864820.

The format of `data-area` is:

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COBOL:</td>
<td>PIC S9(15) COMP-3</td>
</tr>
<tr>
<td>C:</td>
<td>char data_area[8];</td>
</tr>
<tr>
<td>PL/I:</td>
<td>FIXED DEC(15)</td>
</tr>
<tr>
<td>ASM:</td>
<td>PL8</td>
</tr>
</tbody>
</table>
ASSIGN

Request values from outside the local environment of the application program.
**Condition:** INVREQ

This command is threadsafe.
Description

The ASSIGN command gets values from outside the local environment of the application program. The data that is obtained depends on the specified options. You can specify up to 16 options in one ASSIGN command. When you specify multiple options on the ASSIGN command, if any of the specified options fails with the exception condition INVREQ, the other specified options are still populated with the requested information.

For options that apply to terminals or terminal-related data, the reference is always to the principal facility.

If the principal facility is a remote terminal, the data that is returned is obtained from the local copy of the information. The request is not routed to the system to which the remote terminal is attached.

Transaction routing is, as far as possible, transparent to the ASSIGN command. In general, the values that are returned are the same whether the transaction is local or remote.

For more information about these options, see Developing in an intersystem environment.

Options

**ABCODE(data-area)**

This option returns a 4-character current abend code. Abend codes are documented in Transaction abend codes. If an abend does not occur, the variable is set to blanks.

**ABDUMP(data-area)**

This option returns a 1-byte value. X’FF’ indicates that an EXEC CICS ABEND ABCODE command was issued without the NODUMP option and that ABCODE contains an abend code. X’00’ indicates that either no memory dump was produced, or ABCODE contains blanks.

**ABOFFSET(data-area)**

This option returns a fullword binary offset in bytes of an abend when the latest abend with a code ASRA, ASRB, or ASRD occurred. If the abend is outside the current program, a value of X’FFFFFFFF’ is returned. The data area is set to binary zeros if no ASRA, ASRB, or ASRD abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

**ABPROGRAM(data-area)**

This option returns an 8-character name of the failing program for the latest abend.

If the abend originally occurred in a DPL server program that is running in a remote system, ABPROGRAM returns the DPL server program name.

This field is set to binary zeros if it is not possible to determine the failing program at the time of the abend.

When the latest abend is an APCT (resulting from an unsuccessful attempt to load a program, map set or partition set), the name is taken from the program, map set, or partition set that was not loaded.

**ACTIVITY(data-area)**

This option returns, if this program is running on behalf of a CICS business transaction services (BTS) activity, the 16-character name of the activity.

BTS is described in Overview of BTS.

**ACTIVITYID(data-area)**

This option returns, if this program is running on behalf of a BTS activity, the 52-character, CICS-assigned, identifier of the activity-instance.

If a program that is running outside the current process wants to acquire control of this activity-instance, it must specify this identifier on an ACQUIRE ACTIVITYID command.

BTS is described in Overview of BTS.

**ALTSCRNHT(data-area)**

This option returns the alternate screen height that is defined for the terminal as a halfword binary variable. If the task is not initiated from a terminal, INVREQ occurs.
ALTSCRNWD\((data-area)\)
This option returns the alternate screen width that is defined for the terminal as a halfword binary variable. If the task is not initiated from a terminal, INVREQ occurs.

APLKYBD\((data-area)\)
This option returns a 1-byte indicator that shows whether the terminal keyboard has the APL keyboard feature (X' FF') or not (X' 00'). If the task is not initiated from a terminal, INVREQ occurs.

APLTEXT\((data-area)\)
This option returns a 1-byte indicator that shows whether the terminal keyboard has the APL text feature (X' FF') or not (X' 00'). If the task is not initiated from a terminal, INVREQ occurs.

APPLICATION\((data-area)\)
This option returns the 64 character name of the current application that is associated with the task. It is part of the application context that is made up of the application name, the platform name, the operation name and the major, minor, and micro version number of the application. If no application context is associated with the task, then blanks are returned.

APPLID\((data-area)\)
This option returns an 8-character APPLID of the CICS system that owns the transaction.
If your system is using XRF, the value that is returned is the generic APPLID. An application program is unaffected by a takeover from the active to the alternate.

ASRAINTRPT\((data-area)\)
This option returns an 8-character data-area that contains the ILC (instruction length code) and the PIC (program interrupt code) at the point when the latest abend with a code of AICA, ASRA, ASRB, ASRD, or ASRE occurred. The field contains binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program. When valid, the contents of the 8 bytes returned are as follows:

- ILC (2 bytes binary)
- PIC (2 bytes binary)
- filler (4 bytes binary, always zero)

ASRAKEY\((cvda)\)
This option returns the execution key at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend, if any. CVDA values are as follows:

CICSEXECKEY
This value is returned if the task was running in CICS-key at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend. If CICS subsystem storage protection is not active, all programs run in CICS key.

USEREXECKEY
This value is returned if the task was running in user-key at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend.

NONCICS
This value is returned if the execution key at the time of the last abend was not one of the CICS keys; for example, not key 8 or key 9.

NOTAPPLIC
This value is returned if there was not an AEYD, AEYF, AICA, ASRA, or ASRB abend.

ASRAPSW\((data-area)\)
This option returns an 8-byte data area that contains the program status word (PSW) at the point when the latest abend with a code of AICA, ASRA, ASRB, ASRD, or ASRE occurred.
The field contains binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

ASRAPSW16\((data-area)\)
This option returns a 16-byte data area that contains the 128-bit program status word (PSW) at the point when the latest abend with a code of AICA, ASRA, ASRB, ASRD, or ASRE occurred.
The field contains binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

**ASRAREGS(data-area)**
This option returns the contents of general registers 0 - 15 at the point when the latest AICA, ASRA, ASRB, ASRD, or ASRE abend occurred.

The contents of the registers are returned in the data area (64 bytes long) in the order 0, 1, ..., 14, 15.

The data area is set to binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

**ASRAREGS64(data-area)**
This option returns the contents of the 64-bit general registers 0 - 15 at the point when the latest AICA, ASRA, ASRB, ASRD, or ASRE abend occurred.

The contents of the registers are returned in the data area (128 bytes long) in the order 0, 1, ..., 14, 15.

The data area is set to binary zeros if no AICA, ASRA, ASRB, ASRD, or ASRE abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

**ASRASPC(cvda)**
Returns the type of space in control at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend, if any. CVDA values are as follows:

- **SUBSPACE**
  This value is returned if the task was running in either its own subspace or the common subspace at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend.

- **BASESPACE**
  This value is returned if the task was running in the base space at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend. All tasks run in base space if transaction isolation is not active.

- **NOTAPPLIC**
  This value is returned if there was not an AEYD, AEYF, AICA, ASRA, or ASRB abend.

**ASRASTG(cvda)**
This option returns the type of storage that is being addressed at the time of the last AEYD, AEYF, AICA, ASRA, or ASRB abend, if any. The CVDA values are as follows:

- **CICS**
  This value is returned if the storage that is being addressed is CICS-key storage. This can be in one of the CICS dynamic storage areas (CDSA, ECDSA, ETDSA, or GCDSA). This can be in one of the read-only dynamic storage areas (RDSA or ERDSA) when CICS is running with the NOPROTECT option on the RENTPGM system initialization parameter, or when storage protection is not active.

- **USER**
  This value is returned if the storage that is being addressed is user-key storage in one of the user dynamic storage areas (UDSA, EUDSA, or GUDSA).

- **READONLY**
  This value is returned if the storage that is being addressed is read-only storage in one of the read-only dynamic storage areas (RDSA or ERDSA) when CICS is running with the PROTECT option on the RENTPGM system initialization parameter.

- **NOTAPPLIC**
  This value is returned in the following conditions:
  - No AEYD, AEYF, AICA, ASRA, or ASRB abend is found for this task.
  - The affected storage in an abend is not managed by CICS.
  - The ASRA abend is not caused by an OC4 abend.
BRIDGE(data-area)
This option returns the 4-character TRANSID of the bridge monitor transaction that issued a START BREXIT TRANSID command to start the user transaction that issued this command. Blanks are returned in the following situations:

- The user transaction was not started by a bridge monitor transaction.
- This command was issued by a program started by a distributed program link (DPL) request.

Note: If the START BREXIT command was issued from a bridge exit, the TRANSID returned is that of the bridge monitor that issued a START BREXIT naming the bridge exit.

BTRANS(data-area)
This option returns a 1-byte indicator that shows whether the terminal is defined as having the background transparency capability (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

CHANNEL(data-area)
This option returns the 16-character name of the current channel of the program, if one exists; otherwise, blanks.

CMDSEC(data-area)
This option returns a 1-byte indicator that shows whether command security checking is defined for the current task. (X for yes, blank for no.)

COLOR(data-area)
This option returns a 1-byte indicator that shows whether the terminal is defined as having the extended color capability (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

CWALENG(data-area)
This option returns a halfword binary field that indicates the length of the common work area (CWA). If no CWA exists, a zero length is returned.

DEFSCRNHT(data-area)
This option returns a halfword binary variable that contains the default screen height that is defined for the terminal. If the task is not initiated from a terminal, INVREQ occurs.

DEFSCRNWD(data-area)
This option returns a halfword binary variable that contains the default screen width that is defined for the terminal. If the task is not initiated from a terminal, INVREQ occurs.

DELMITER(data-area)
This option returns a 1 byte data-link control character for a 3600. Possible values are as follows:

- X'80'
  Input ended with end-of-text (ETX).
- X'40'
  Input ended with end-of-block (ETB).
- X'20'
  Input ended with inter-record separator (IRS).
- X'10'
  Input ended with start of header (SOH).
- X'08'
  Transparent input.

If the task is not initiated from a terminal, INVREQ occurs.

DESTCOUNT(data-area)
This option returns a halfword binary field. This option has the following uses:

- Following a BMS ROUTE command, it shows that the value that is required is the number of different terminal types in the route list, and hence the number of overflow control areas that might be required.
Within BMS overflow processing, it shows that the value that is required is the relative overflow control number of the destination that has encountered overflow. If this option is specified when overflow processing is not in effect, the value that is obtained is meaningless. If no BMS commands are issued, INVREQ occurs.

**DESTID(data-area)**
This option returns an 8-byte identifier of the outboard destination, padded with blanks on the right to 8 characters. If this option is specified before a batch data interchange command is issued in the task, INVREQ occurs.

**DESTIDLENG(data-area)**
This option returns a halfword binary length of the destination identifier that is obtained by DESTID. If this option is specified before a batch data interchange command is issued in the task, INVREQ occurs.

**DSSCS(data-area)**
This option returns a 1-byte indicator that shows whether the principal facility is a basic SCS data stream device (X'FF') or not (X'00').

If the task is not initiated from a terminal, INVREQ occurs.

**DS3270(data-area)**
This option returns a 1-byte indicator that shows whether the principal facility is a 3270 data stream device (X'FF') or not (X'00').

If the task is not initiated from a terminal, INVREQ occurs.

**ERRORMSG(data-area)**
This option returns the error message up to a maximum of 500 bytes that is referenced in the transaction abend control block for the CICS task. Following a failure of a DPL request, the message is that returned from the remote system. For messages shorter than 500 bytes, the message is padded with nulls.

If no message is present, the 500-byte area contains nulls.

**ERRORMSGLEN(data-area)**
This option returns a halfword binary value that represents the length of the message that is returned for ERRORMSG. If the message referenced in the transaction abend control block exceeds 500 bytes, the message is truncated and the length is set to 500.

If no message is present, the length that is returned is 0.

**EWASUPP(data-area)**
This option returns a 1-byte indicator that shows whether Erase Write Alternative is supported (X'FF') or not (X'00').

If the task is not initiated from a terminal, INVREQ occurs.

**EXTDS(data-area)**
This option returns a 1-byte indicator that shows whether the terminal accepts the 3270 extended data stream (X'FF'), or not (X'00'). Extended data stream capability is required for a terminal that supports the query feature, color, extended highlighting, programmed symbols or validation. A terminal that accepts the query structured field command also has this indicator set. If extended data stream is on, the device supports the write structured field COMMAND and Outbound Query Structured field.

For more information about query structured fields, see the IBM 3270 Data Stream Programmers Reference.

If the task is not initiated from a terminal, INVREQ occurs.

**FACILITY(data-area)**
This option returns a 4-byte identifier of the principal facility that initiated the transaction that is issuing this command. If this option is specified, and no facility is allocated, INVREQ occurs.
**Note:** You can use the QNAME option to get the name of the transient data intrapartition queue if the transaction was initiated by expiry of a transient data trigger level.

**FCI(data-area)**

This option returns a 1-byte facility control indicator. For more information, see Codes returned by ASSIGN. This indicates the type of facility that is associated with the transaction; for example, X’01’ indicates a terminal or logical unit. The obtained value is always returned.

**GCHARS(data-area)**

This option returns a halfword binary graphic character set global identifier (the GCSGID). The value is a number in the range 1 - 65534 representing the set of graphic characters that can be input or output at the terminal. If the task is not initiated from a terminal, INVREQ occurs.

**GCODES(data-area)**

This option returns a halfword binary code page global identifier (the CPGID). The value is a number in the range 1 - 65534 representing the EBCDIC or ASCII code page that defines the code points for the characters that can be input or output at the terminal. If the task is not initiated from a terminal, INVREQ occurs.

**GMMI(data-area)**

This option returns a 1-byte indicator that shows whether a “good morning” message applies to the terminal associated with the running transaction (X’FF’) or not (X’00’). If this option is specified and the current task is not associated with a terminal, the INVREQ condition occurs.

**HILIGHT(data-area)**

This option returns a 1-byte indicator that shows whether the terminal is defined as having the extended highlight capability (X’FF’) or not (X’00’). If the task is not initiated from a terminal, INVREQ occurs.

**INITPARM(data-area)**

This option returns the 60-character data-area that contains any initialization parameters that are specified for the program on the INITPARM system initialization parameter. The values are only returned if the name of the program that issues the command matches a program name that is specified on the INITPARM system initialization parameter. If there are no parameters for the program, the area is not updated and its contents are undefined. Use INITPARMLEN with INITPARM to determine whether a parameter was specified or not; the value that is returned by ASSIGN INITPARM alone cannot be used to indicate whether a system initialization parameter was specified.

**INITPARMLEN(data-area)**

This option returns a halfword binary length of the INITPARM. If there is no parameter for it, INITPARMLEN contains binary zeros.

**INPARTN(data-area)**

This option returns the 1- or 2-character name of the most recent input partition. If no map is yet positioned, or if BMS routing is in effect, or if the task is not initiated from a terminal, INVREQ occurs.

**INPUTMSGLEN(data-area)**

This option returns a halfword binary length of the terminal input string, in bytes. If there is no terminal input data, a length of zero is returned.

**INVOKINGPROG(data-area)**

This option returns the 8-character name of the application program that used the LINK or XCTL command to link or transfer control to the current program:

- If you issue the ASSIGN INVOKINGPROG command in a remote program that was invoked by a distributed program link (DPL) command, CICS returns the name of the program that issued the DPL command.
- If you issue the ASSIGN INVOKINGPROG command in an application program at the highest level, CICS returns eight blanks.
- If you issue the ASSIGN INVOKINGPROG command in a user-replaceable program, a Bridge Exit program or a program list table program, CICS returns eight blanks.
- If you issue the ASSIGN INVOKINGPROG command from a global user exit, task-related exit, or application program that is linked to from such an exit, CICS returns the name of the most recent invoking program that was not a global user exit or task-related user exit.
KATAKANA(data-area)
This option returns a 1-byte indicator that shows whether the principal facility supports Katakana (X’FF’) or not (X’00’). If the task is not initiated from a terminal, INVREQ occurs.

LANGINUSE(data-area)
This option returns a 3-byte mnemonic code that shows the language in use. The 3-byte mnemonic has a 1:1 correspondence with the 1 byte NATLANGINUSE option. See National language codes for possible values of the code.

LDCMNEM(data-area)
This option returns a 2-byte logical device code (LDC) mnemonic of the destination that encountered overflow. If this option is specified when overflow processing is not in effect, the value that is obtained is not significant. If no BMS commands are issued, INVREQ occurs.

LDCNUM(data-area)
This option returns a 1-byte LDC numeric value of the destination that encountered overflow. This indicates the type of the LDC, such as printer or console. If this option is specified when overflow processing is not in effect, the value that is obtained is not significant.

LINKLEVEL(data-area)
This option returns a halfword binary value that represents the program link level in the local system. The topmost link level is 1 and for each EXEC CICS LINK the link level is incremented by one. The link level is not incremented for a language CALL statement. If a program is the target of a DPL request, the link level that is returned is that within the CICS region it is executing and not the wider distributed transaction. If a program is DPLed to, then link level 1 is the CICS mirror program DFHMIRS.

LOCALCCSID(data-area)
This option returns the fullword binary Coded Character Set Identifier (CCSID) used for the CICS region. It is the value specified on the LOCALCCSID system initialization parameter.

MAJORVERSION(data-area)
This option returns the fullword binary value that represents the major version of the current application that is associated with the task, which is part of the application context. If no application context is associated with the task, then -1 is returned.

MAPCOLUMN(data-area)
This option returns a halfword binary number of the column on the display that contains the origin of the most recently positioned map. If no map is yet positioned, or if BMS routing is in effect, or if the task is not initiated from a terminal, INVREQ occurs.

MAPHEIGHT(data-area)
This option returns a halfword binary height of the most recently positioned map. If no map is yet positioned, or if BMS routing is in effect, or if the task is not initiated from a terminal, INVREQ occurs.

MAPLINE(data-area)
This option returns a halfword binary number of the line on the display that contains the origin of the most recently positioned map. If no map is yet positioned, or if BMS routing is in effect, or if the task is not initiated from a terminal, INVREQ occurs.

MAPWIDTH(data-area)
This option returns a halfword binary width of the most recently positioned map. If no map is yet positioned, or if BMS routing is in effect, or if the task is not initiated from a terminal, INVREQ occurs.

MICROVERSION(data-area)
This option returns the fullword binary value that represents the micro version of the current application that is associated with the task, which is part of the application context. If no application context is associated with the task, then -1 is returned.

MINORVERSION(data-area)
This option returns the fullword binary value that represents the minor version of the current application that is associated with the task, which is part of the application context. If no application context is associated with the task, then -1 is returned.

MSRCONTROL(data-area)
This option returns a 1-byte indicator that shows whether the terminal supports magnetic slot reader (MSR) control (X’FF’) or not (X’00’). If the task is not initiated from a terminal, INVREQ occurs.
**NATLANGINUSE**(data-area)
This option returns a 1-byte mnemonic code that shows the national language that is associated with the USERID for the current task (which could be the default USERID). Refer to the **SIGNON** command for an explanation of how this value is derived. (NATLANGINUSE does not show the system default language as specified on the **NATLANG** system initialization parameter).

See National language codes for possible values of the code.

**NETNAME**(data-area)
This option returns the 8-character name of the logical unit in the z/OS Communications Server network. If the task is not initiated from a terminal, INVREQ occurs. If the principal facility is not a local terminal, CICS no longer returns a null string but the netname of the remote terminal.

If this command was issued by a user transaction that was started by a 3270 bridge transaction, the value that is returned is the termid of the bridge facility.

If the CICS region supports z/OS Communications Server LU aliases, the NETNAME returned by CICS might be an LU alias, either dynamically allocated by z/OS Communications Server or predefined on the **LUALIAS** parameter of a CDRSC definition.

**NEXTTRANSID**(data-area)
This option returns the 4-character next transaction identifier as set by **SET NEXTTRANSID** or **RETURN TRANSID**. It returns blanks if there are no more transactions.

**NUMTAB**(data-area)
This option returns a 1-byte number of the tabs that are required to position the print element in the correct passbook area of the 2980. If the task is not initiated from a terminal, INVREQ occurs.

**OPCLASS**(data-area)
This option returns, in a 24-bit string, the operator class used by BMS for routing terminal messages, as defined in the CICS segment of the External Security Manager.

**OPERATION**(data-area)
This option returns the 64 character name of the current operation that is associated with the task, which is part of the application context. If there is no application context that is associated with the task, then blanks are returned.

**OPERKEYS**(data-area)
This option is accepted for compatibility with previous releases. If specified, a 64-bit null string is returned.

**OPID**(data-area)
This option returns the 3-character operator identification. This is used by BMS for routing terminal messages, as defined in the CICS segment of the External Security Manager.

If the task is initiated from a remote terminal, the OPID returned by this command is not necessarily that associated with the user that is signed on at the remote terminal. If you want to know the OPID of the signed on user, use the **INQUIRE TERMINAL** system programming command.

The OPID can also be different from the OPID of the user that is currently signed on, if it was changed with the **SET TERMINAL** command.

**OPSECURITY**(data-area)
This option is accepted for compatibility with previous releases. If specified, a 24-bit null string is returned.

**ORGABCODE**(data-area)
This option returns a 4-byte original abend code in cases of repeated abends.

**OUTLINE**(data-area)
This option returns a 1-byte indicator that shows whether the terminal is defined as having the field outlining capability (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

**PAGENUM**(data-area)
This option returns a halfword binary current page number for the destination that encountered an overflow. If this option is specified when overflow processing is not in effect, the value that is obtained is meaningless. If no BMS commands are issued, INVREQ occurs.
PARTNPAGE(data-area)
This option returns a 2-byte name of the partition that most recently caused page overflow. If no BMS commands are issued, INVREQ occurs.

PARTNS(data-area)
This option returns a 1-byte indicator that shows whether the terminal supports partitions (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

PARTNSET(data-area)
This option returns the name (1–6 characters) of the application partition set. A blank value is returned if there is no application partition set. If the task is not initiated from a terminal, INVREQ occurs.

PLATFORM(data-area)
This option returns the 64 character name of the platform associated with the task, which is part of the application context. If there is no application context associated with the task, then blanks are returned.

PRINSYSID(data-area)
This option returns the 4-character name by which the other system is known in the local system; that is, the CONNECTION definition that defines the other system. For a single-session APPC device defined by a terminal definition, the returned value is the terminal identifier.

This only applies when the principal facility is one of the following:

• An MRO session to another CICS system
• An LU6.1 session to another CICS or IMS system
• An APPC session to another CICS system, or to another APPC system or device

If the principal facility is not an MRO, LU6.1, or APPC session, or if the task has no principal facility, INVREQ occurs.

Note: Special considerations apply generally when transaction routing. In particular an ASSIGN PRINSYSID command cannot be used in a routed transaction to find the name of the terminal-owning region. For more information, see CICS transaction routing.

PROCESS(data-area)
This option returns, if this program is running on behalf of a CICS business transaction services (BTS) activity, the 36-character name of the BTS process that contains the activity.

BTS is described in Overview of BTS.

PROCESSTYPE(data-area)
This option returns, if this program is running on behalf of a BTS activity, the 8-character process type of the BTS process that contains the activity.

BTS is described in Overview of BTS.

PROGRAM(data-area)
This option returns an 8-character name of the currently running program.

PS(data-area)
This option returns a 1-byte indicator that shows whether the terminal is defined as having the programmed symbols capability (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

QNAME(data-area)
This option returns a 4-character name of the transient data intrapartition queue that caused this task to be initiated by reaching its trigger level. If the task is not initiated by automatic transaction initiation (ATI), INVREQ occurs.

RESSEC(data-area)
This option returns a 1-byte indicator that shows whether resource security checking is defined for the transaction that is running. (X for yes, blank for no.)
**RESTART(data-area)**
This option returns a 1-byte indicator that shows whether a restart of the task (X'FF'), or a normal start of the task (X'00'), has occurred.

**RETURNPROG(data-area)**
This option returns the 8-character name of the program to which control is to be returned when the current program has finished running. The values that are returned depend on how the current program was given control, as follows:

- If the current program was invoked by a **LINK** command, including a distributed program link, RETURNPROG returns the same name as **INVOKINGPROG**.
- If the current program was invoked by an **XCTL** command, RETURNPROG returns the name of the application program in the chain that last issued a **LINK** command.

If the program that invoked the current program with a **XCTL** command is at the highest level, CICS returns eight blanks.
- If the **ASSIGN RETURNPROG** command is issued in the program at the top level, CICS returns eight blanks.
- If the **ASSIGN RETURNPROG** command is issued in a user-replaceable module, or a program list table program, CICS returns eight blanks.
- If the **ASSIGN RETURNPROG** command is issued in a global user exit, task-related exit, or application program linked to from such an exit, CICS returns the name of the program that control is returned to when all intermediate global user exit and task-related user exit programs are completed.

**Example:**

```
Program A links to program B
Program B links to program C
Program C uses XCTL to transfer control to program D
Program D issues an ASSIGN RETURNPROG command, and CICS returns the name of Program B.
```

**SCRNHT(data-area)**
This option returns a halfword binary variable that contains the height of the 3270 screen defined for the current task. If the task is not initiated from a terminal, INVREQ occurs.

**SCRNWD(data-area)**
This option returns a halfword binary variable that contains the width of the 3270 screen defined for the current task. If the task is not initiated from a terminal, INVREQ occurs.

**SIGDATA(data-area)**
This option returns a 4-byte character string that contains the inbound signal data received from a logical unit. If the task is not initiated from a terminal, INVREQ occurs.

**SOSI(data-area)**
This option returns a 1-byte indicator that shows whether the terminal is defined as having the mixed EBCDIC/DBCS fields capability (X'FF') or not (X'00'). The DBCS subfields within an EBCDIC field are delimited by SO (shift-out) and SI (shift-in) characters. If the task is not initiated from a terminal, INVREQ occurs.

**STARTCODE(data-area)**
This option returns a 2-character value that indicates how the transaction that issued the request was started. Possible values are as follows:

**Code**

**Transaction started by**

D

A distributed program link (DPL) request that did not specify the **SYNCONRETURN** option. The task cannot issue I/O requests against its principal facility, or any sync point requests.
A distributed program link (DPL) request, as in code D, that did specify the SYNCONRETURN option. The task can issue sync point requests.

Transient data trigger level.

START command that did not pass data in the FROM option. It might or might not have passed a channel.

START command that passed data in the FROM option.

FEPI START command.

Terminal input or permanent transid.

User-attached task.

This option returns a 1-byte station identifier of a 2980. If the task is not initiated from a terminal, INVREQ occurs.

This option returns the 4-character name that is given to the local CICS system. This value can be specified in the SYSID option of a file control, interval control, temporary storage, or transient data command, in which case the resource to be accessed is assumed to be on the local system.

This option returns a halfword binary filed that indicates the current priority of the issuing task (0–255). When the task is first attached, this is the sum of the user, terminal, and transaction priorities. This value can be changed during execution by a CHANGE TASK command.

This option returns a halfword binary length of the terminal control table user area (TCTUA). If no TCTUA exists, a zero length is returned.

This option returns a 1-byte teller identifier of a 2980. If the task is not initiated from a terminal, INVREQ occurs.

This option returns a 2-byte code that gives the type and model number of the terminal that is associated with the task.

The first byte is a code that identifies the terminal type, which is derived from the TERMINAL resource. For a description of the resource attributes, see TERMINAL attributes. The second byte is a single-character model number as specified in the TERMMODEL attribute.

The meanings of the type codes are given in Codes returned by ASSIGN.

This option returns a halfword binary terminal priority (0–255).

This option returns a 1-byte indicator that shows whether the principal facility supports TEXTKYBD (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

This option returns a 1-byte indicator that shows whether the principal facility supports TEXTPRINT (X'FF') or not (X'00'). If the task is not initiated from a terminal, INVREQ occurs.

Returns, in a 39-character area, the IPv4 or IPv6 address of the TN3270 client. If TNIPFAMILY returns NOTAPPLIC, TNADDR returns blanks.
If the task is not initiated from a terminal, INVREQ occurs.

**TNIPFAMILY(cvda)**
Returns the address format of the TNADDR option. The CVDA values are as follows:

**NOTAPPLIC**
This value indicates one of the following conditions:
- The terminal is not a 3270 device.
- TNADDR is not used.
- The address cannot be resolved.

**IPV4**
The TNADDR option contains an IPv4 dotted decimal address.

**IPV6**
The TNADDR option contains an IPv6 colon hexadecimal address.

If the task is not initiated from a terminal, INVREQ occurs.

**TNPORT(data-area)**
Returns a fullword binary value containing the port number that is used for the TN3270 client connection. If the terminal is not a 3270 device, TNPORT returns zero.

If the task is not initiated from a terminal, INVREQ occurs.

**TRANPRIORITY(data-area)**
This option returns a halfword binary transaction priority (0–255).

**TWALENG(data-area)**
This option returns a halfword binary length of the transaction work area (TWA). If no TWA exists, a zero length is returned.

**UNATTEND(data-area)**
This option returns a 1-byte indicator that shows whether the mode of operation of the terminal is unattended, that is to say that no person is attending the terminal. These indicators are X'FF' for unattended and X'00' for attended. If the task is not initiated from a terminal, INVREQ occurs.

**USERID(data-area)**
This option returns an 8-byte user ID of the signed-on user. If no user is explicitly signed on, CICS returns the default user ID. Special considerations apply if you are using an intercommunication environment. For more information about the ASSIGN command for LTYPE6.1, APPC, and MRO, see the Getting started with intercommunication.

**USERNAME(data-area)**
This option returns a 20-character name of the user, that is obtained from the external security manager (ESM).

**USERPRIORITY(data-area)**
This option returns a halfword binary operator priority (0–255).

**VALIDATION(data-area)**
This option returns a 1-byte indicator that shows whether the terminal is defined as having the validation capability (X'FF') or not (X'00'). Validation capability consists of the mandatory fill, mandatory enter, and trigger attributes. If the task is not initiated from a terminal, INVREQ occurs.

**Conditions**
The ASSIGN command always returns the exception condition INVREQ under CECI or in a REXX program. Even though CECI or the REXX program might return the information that you requested correctly, it also attempts to get information from other options, some of which are invalid.

**16 INVREQ**
**RESP2 values:**

1. No BMS command has yet been issued, BMS routing is in effect, or no map has yet been positioned.
No batch data interchange (BDI) command has yet been issued.

The task is not initiated by automatic transaction initiation (ATI).

The task is not associated with a terminal; or the task has no principal facility; or the principal facility is not an MRO, LU6.1, or APPC session.

A CICS BTS request was issued from outside the CICS BTS environment. Therefore, the transaction is not running on behalf of a BTS activity.

Command syntax options are not allowed in a server program that is invoked by a distributed program link.

Default action: terminate the task abnormally.

**Codes returned by ASSIGN**

The **ASSIGN** command can return codes in the **TERM CODE** and FCI options. The format and meaning of the codes are described.

**ASSIGN TERM CODE**

The following list shows you the meanings of the terminal type codes in the first byte of the data area returned by the **TERM CODE** option of the **ASSIGN** command.

The codes are derived from the DEVICE attribute of the **TYPETERM** resource. The second byte of the data area contains a model number in character form, as set by the **TERM MODEL** attribute of the **TYPETERM** resource definition.

The codes are listed here as both bit patterns and hexadecimal values.

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>. . . . . . . . . . 1</td>
<td>X'01'</td>
</tr>
<tr>
<td>. . . . . . . . . 1.</td>
<td>X'02'</td>
</tr>
<tr>
<td>. . . . . . . 1...</td>
<td>X'08'</td>
</tr>
<tr>
<td>. . . . 1. . .</td>
<td>X'12'</td>
</tr>
<tr>
<td>. . . 1. 1. . .</td>
<td>X'14'</td>
</tr>
<tr>
<td>. . 1 1...</td>
<td>X'18'</td>
</tr>
<tr>
<td>. . 1 1. . .</td>
<td>X'19'</td>
</tr>
<tr>
<td>. . 1 11. . .</td>
<td>X'1A'</td>
</tr>
<tr>
<td>. 1. .....</td>
<td>X'20'</td>
</tr>
<tr>
<td>. 1. . . . . . 1</td>
<td>X'21'</td>
</tr>
<tr>
<td>. 1. . . . . . 1</td>
<td>X'22'</td>
</tr>
<tr>
<td>. 1. . . . . 1.</td>
<td>X'24'</td>
</tr>
<tr>
<td>. 1. . . . . 1.</td>
<td>X'28'</td>
</tr>
<tr>
<td>. 1. 1 1. . .</td>
<td>X'2A'</td>
</tr>
<tr>
<td>. 1. 1 1. 11</td>
<td>X'2B'</td>
</tr>
<tr>
<td>. 1. . . . . . .</td>
<td>X'40'</td>
</tr>
<tr>
<td>. 1. . . . . . 1</td>
<td>X'41'</td>
</tr>
<tr>
<td>Code</td>
<td>Meaning</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>.1.. 1... X'48'</td>
<td>2260 remote</td>
</tr>
<tr>
<td>.1.. 1.1. X'4A'</td>
<td>1053</td>
</tr>
<tr>
<td>.1.. 11.. X'4C'</td>
<td>2265</td>
</tr>
<tr>
<td>1... .1. X'80'</td>
<td>Bisynchronous</td>
</tr>
<tr>
<td>1... .1. X'82'</td>
<td>2770</td>
</tr>
<tr>
<td>1... .1. X'84'</td>
<td>2780</td>
</tr>
<tr>
<td>1... .1. X'85'</td>
<td>3780</td>
</tr>
<tr>
<td>1... .11. X'86'</td>
<td>2980</td>
</tr>
<tr>
<td>1... 1.. X'88'</td>
<td>3735</td>
</tr>
<tr>
<td>1... 1.1 X'89'</td>
<td>3740</td>
</tr>
<tr>
<td>1... 1.1. X'8A'</td>
<td>3600 bisynchronous</td>
</tr>
<tr>
<td>1..1 ...1 X'91'</td>
<td>3277 remote</td>
</tr>
<tr>
<td>1..1 ..1. X'92'</td>
<td>3275 remote</td>
</tr>
<tr>
<td>1..1 1..1 X'99'</td>
<td>3277 local</td>
</tr>
<tr>
<td>1.1 ... X'A0'</td>
<td>Bisynchronous - programmable</td>
</tr>
<tr>
<td>1.1. .1 X'A1'</td>
<td>System/3</td>
</tr>
<tr>
<td>1.1.. .1. X'A4'</td>
<td>z Systems®</td>
</tr>
<tr>
<td>1.1.. .11. X'A6'</td>
<td>System/7 with BSCA</td>
</tr>
<tr>
<td>1.11 ... X'B0'</td>
<td>SDLC device class</td>
</tr>
<tr>
<td>1.11 ...1 X'B1'</td>
<td>3601</td>
</tr>
<tr>
<td>1.11 ...1 X'B2'</td>
<td>3614</td>
</tr>
<tr>
<td>1.11 ..1. X'B4'</td>
<td>3790</td>
</tr>
<tr>
<td>1.11 ..1. X'B5'</td>
<td>3790 User program</td>
</tr>
<tr>
<td>1.11 1.. X'B6'</td>
<td>3790 SCS printer</td>
</tr>
<tr>
<td>1.11 1.. X'B8'</td>
<td>3650 Pipeline</td>
</tr>
<tr>
<td>1.11 1..1 X'B9'</td>
<td>3653 Host conversational</td>
</tr>
<tr>
<td>1.11 1..1 X'BA'</td>
<td>3650 Attached 3270 HC</td>
</tr>
<tr>
<td>1.11 1.11 X'BB'</td>
<td>3650 User program</td>
</tr>
<tr>
<td>1.11 11.1 X'BD'</td>
<td>Contention logical unit</td>
</tr>
<tr>
<td>1.11 111. X'BE'</td>
<td>Interactive logical unit</td>
</tr>
<tr>
<td>1.11 1111 X'BF'</td>
<td>Batch logical unit</td>
</tr>
<tr>
<td>11... .1 X'C0'</td>
<td>LUTYPE 6</td>
</tr>
</tbody>
</table>

**Note:** An ASSIGN TERMCODE for an ISC session returns X'C0' for LUTYPE 6. An INQUIRE CONNECTION then determines whether this ISC connection is using LUTYPE6.1 or APPC protocols.
ASSIGN FCI
The following list shows you the meanings of the facility control indicator codes in the data area returned by the FCI option of the ASSIGN command.

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1 ..11</td>
<td>X'D3'</td>
</tr>
<tr>
<td></td>
<td>LUC session</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>.... ....</td>
<td>X'00'</td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'01'</td>
</tr>
<tr>
<td></td>
<td>Terminal facility indicator</td>
</tr>
<tr>
<td></td>
<td>This code indicates that the principal facility for the task is a terminal.</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'02'</td>
</tr>
<tr>
<td></td>
<td>KCP macro file mask</td>
</tr>
<tr>
<td></td>
<td>This code is no longer in use.</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'04'</td>
</tr>
<tr>
<td></td>
<td>Interval control indicator</td>
</tr>
<tr>
<td></td>
<td>This code indicates that the principal facility for the task is an interval control element (ICE).</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'08'</td>
</tr>
<tr>
<td></td>
<td>Destination control indicator</td>
</tr>
<tr>
<td></td>
<td>This code indicates that the principal facility for the task is a transient data queue.</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'10'</td>
</tr>
<tr>
<td></td>
<td>AID facility mask</td>
</tr>
<tr>
<td></td>
<td>This code is no longer in use.</td>
</tr>
<tr>
<td>.... ....</td>
<td>X'E0'</td>
</tr>
<tr>
<td></td>
<td>Reserved</td>
</tr>
</tbody>
</table>

BIF DEEDIT
Provide the DEEDIT function that removes special characters from an EBCDIC data field.

BIF DEEDIT

```
BIF DEEDIT
FIELD(data-area)
LENGTH(data-value)
```

Condition: LENGERR
This command is threadsafe.

Description
BIF DEEDIT provides the built-in function DEEDIT. It specifies that alphabetic and special characters are removed from an EBCDIC data field, and the remaining digits right-aligned and padded to the left with zeros as necessary.

If the field ends with a minus sign or a carriage-return (CR), a negative zone (X'D') is placed in the rightmost (low-order) byte.
If the zone portion of the rightmost byte contains one of the characters X'A' through X'F', and the numeric portion contains one of the hexadecimal digits X'0' through X'9', the rightmost byte is returned unaltered (see the example). This permits the application program to operate on a zoned numeric field. The returned value is in the field that initially contained the unedited data.

A 1-byte field is returned unaltered, no matter what the field contains.

**Options**

**FIELD(data-area)**
This option specifies the field to be edited.

**LENGTH(data-value)**
This option specifies the field length in bytes.

**Conditions**

**22 LENGERR**
This condition occurs if the LENGTH value is less than 1.
Default action: terminate the task abnormally.

**Examples**

```c
EXEC CICS BIF DEEDIT
  FIELD(CONTG)
  LENGTH(9)
```

This removes all characters other than digits from CONTG, a 9 byte field, and returns the edited result in that field to the application program.

Two examples of the contents of CONTG before and after execution of the command are:

<table>
<thead>
<tr>
<th>Original value</th>
<th>Returned value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-6704/B</td>
<td>00146704B</td>
</tr>
<tr>
<td>$25.68</td>
<td>000000002568</td>
</tr>
</tbody>
</table>

A decimal point is an EBCDIC special character and as such is removed.

**BIF DIGEST**

Calculate the SHA-1 digest of a string of data.

**BIF DIGEST**

```
BIF — DIGEST — RECORD(data-value) — RECORDLEN(data-value) —
```

```
<table>
<thead>
<tr>
<th>HEX</th>
<th>RESULT(data-area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE64</td>
<td></td>
</tr>
<tr>
<td>DIGESTTYPE(cvda)</td>
<td></td>
</tr>
</tbody>
</table>
```

**Conditions:** INVREQ, LENGERR
This command is threadsafe.
Description

The **BIF DIGEST** command is a CICS built-in function that calculates the SHA-1 digest of a string of data. The result can be returned as binary (20 bytes long), hexadecimal (40 bytes long), or base64-encoded (28 bytes long). The SHA-1 digest is a cryptographically strong checksum of the string, so for practical purposes it is unique for each string.

This command uses z/Architecture® message security assist (MSA) functions that require z Systems cryptographic hardware with CP Assist for Cryptographic Functions (CPACF). For more information, see *z/OS Cryptographic Services ICSF Overview*.

Options

**RECORD(data-value)**
This option specifies the string of data for which the digest is to be calculated.

**RECORDLEN(data-value)**
This option specifies the length, as a fullword binary value, of the data string.

**DIGESTTYPE(cvda)**
This option specifies the format in which the digest is returned.

- **HEX**
  Hexadecimal, which produces a result 40 bytes long, encoded as hexadecimal characters (0 - 9, A - F).

- **BINARY**
  Binary, which produces a result 20 bytes long.

- **BASE64**
  Base64 encoding, which produces a result 28 bytes long, by using the characters A - Z, a - z, 0 - 9, +, /, =.

**RESULT(data-area)**
This option returns the SHA-1 digest of the data string in the format that is specified by the **DIGESTTYPE** option. The length of the result depends on the requested format.

Conditions

**16 INVREQ**
RESP2 values:

- **1**
  DIGESTTYPE has an invalid CVDA value.

- **3**
  z/Architecture message security assist (MSA) is not available.

**22 LENGERR**
RESP2 values:

- **2**
  The RECORDLEN value is less than 1.
BUILD ATTACH (LUTYPE6.1)

Specify values for an LUTYPE6.1 attach header.

**BUILD ATTACH (LUTYPE6.1)**

![Diagram of BUILD ATTACH (LUTYPE6.1)]

**Description**

BUILD ATTACH (LUTYPE6.1) specifies a set of values to be placed in the named attach header control block. This control block contains values that are to be sent in an LUTYPE6.1 attach FMH (Function Management Header) that is constructed by CICS, and is sent only when a SEND ATTACHID or CONVERSE ATTACHID command is executed. The specified values override existing values in the control block; unspecified values are set to default values.

**Options**

**ATTACHID(name)**

This option specifies that the set of values is to be placed in an attach header control block that is identified by the specified name (1–8 characters).

**DATASTR(data-value)**

This option corresponds to the data stream profile field, ATTDSP, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the data stream profile field in an attach FMH. For most CICS applications, the option can be omitted.

For more information on communication between a CICS system and any other subsystem, including details of structured fields and logical record management, see the documentation that is supplied by the subsystem about how to use the data stream profile field in an attach FMH.

The “data-value” is a halfword binary. Only the low-order byte is used. The SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–7</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>8-11</td>
<td>0000 - user-defined</td>
</tr>
<tr>
<td></td>
<td>1111 - SCS data stream</td>
</tr>
<tr>
<td></td>
<td>1110 - 3270 data stream</td>
</tr>
<tr>
<td></td>
<td>1101 - structured field</td>
</tr>
<tr>
<td></td>
<td>1100 - logical record management</td>
</tr>
<tr>
<td></td>
<td>defined by the user if bits 8-11 are set to 0000; otherwise reserved (must be set to zero)</td>
</tr>
</tbody>
</table>

A value of “structured field” indicates that chains begin with 4 bytes of data that are used to interpret the following data: overall length (2 bytes), class identifier (1 byte), and subclass identifier (1 byte). A value of “logical record management” indicates that chains can be split into separate fields by the data receiver.

If the option is omitted, a value of “user-defined” is assumed.

**IUTYPE(data-value)**

This option corresponds to the interchange unit field, ATTIU, in an LUTYPE6.1 attach FMH.

The “data-value” is a halfword binary. Only the low-order 7 bits are used. The SNA-defined meanings of the bits are as follows:
If the option is omitted, values of “not end of multichain interchange unit” and “multichain interchange unit” are assumed.

**PROCESS**(name)
This option corresponds to the process name, ATTDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, a transaction that is running in one system can acquire a session to the second system and can identify the transaction to be attached; in the second system, the identification is carried in the first chain of data that is sent across the session.

In general, the first 4 bytes of data identify the transaction to be attached. However, an attach FMH, identifying the transaction to be attached, can be built and sent; the PROCESS option is used to specify the transaction name. (The receiving CICS system uses just the first 4 bytes of the process name as a transaction name.)

No significance is attached by CICS to process names in attach FMHs sent in chains of data other than the first.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the process name field in an attach FMH.

**QUEUE**(name)
This option corresponds to the queue name, ATTDQN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the queue name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the queue name field in an attach FMH.

**RECFM**(data-value)
This option corresponds to the deblocking algorithm field, ATTDBA, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the deblocking algorithm field in an attach FMH. For most CICS applications, the option can be omitted.

The “data-value” is a halfword binary value. Only the low-order byte is used. The SNA-defined meanings of the bits are as follows:

If the option is omitted, a value of “chain of RUs” is assumed.

**RESOURCE**(name)
This option corresponds to the resource name, ATTPRN, in an LUTYPE6.1 attach FMH.
**BUILD ATTACH (MRO)**

Specify values for an MRO attach header.

### Options

**ATTACHID**(name)

This option specifies that the set of values is to be placed in an attach header control block that is identified by the specified name (1–8 characters).

**DATASTR**(data-value)

This option corresponds to the data stream profile field, ATTDSP, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the data stream profile field in an attach FMH. For most CICS applications, the option can be omitted.

The “data-value” is a binary halfword. Only the low-order byte is used. The SNA-defined meanings of the bits are as follows: 
A value of “structured field” indicates that chains begin with 4 bytes of data that are used to interpret the following data; overall length (2 bytes), class identifier (1 byte), and subclass identifier (1 byte). A value of “logical record management” indicates that chains can be split into separate fields by the data receiver.

If the option is omitted, a value of “user-defined” is assumed.

**IUTYPE(data-value)**

This option corresponds to the interchange unit field, ATTIU, in an LUTYPE6.1 attach FMH.

The “data-value” is a halfword binary. Only the low-order 7 bits are used. The SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bits</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>11</td>
<td>0 - not end of multichain interchange unit</td>
</tr>
<tr>
<td>1</td>
<td>1 - end of multichain interchange unit</td>
</tr>
<tr>
<td>12,13</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>14,15</td>
<td>00 - multichain interchange unit</td>
</tr>
<tr>
<td></td>
<td>01 - single chain interchange unit</td>
</tr>
<tr>
<td></td>
<td>10 - reserved</td>
</tr>
<tr>
<td></td>
<td>11 - reserved</td>
</tr>
</tbody>
</table>

If the option is omitted, values of “not end of multichain interchange unit” and “multichain interchange unit” are assumed.

**PROCESS(name)**

This option corresponds to the process name, ATTDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, a transaction that is running in one system can acquire a session to the second system and can identify the transaction to be attached; in the second system the identification is carried in the first chain of data that is sent across the session. In general, the first 4 bytes of data identify the transaction to be attached. However, an attach FMH, identifying the transaction to be attached, can be built and sent; the PROCESS option is used to specify the transaction name. (The receiving CICS system uses just the first 4 bytes of the process name as a transaction name.)

No significance is attached by CICS to process names in attach FMHs sent in chains of data other than the first.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the process name field in an attach FMH.

**QUEUE(name)**

This option corresponds to the queue name, ATTDQN, in an attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the queue name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the queue name field in an attach FMH.

**RECFM(data-value)**

This option corresponds to the deblocking algorithm field, ATTDBA, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the deblocking algorithm field in an attach FMH. For most CICS applications, the option can be omitted.

The “data-value” is a halfword binary value. Only the low-order 8 bits are used. The SNA-defined meanings of the bits are as follows:
0–7 reserved - must be set to zero
8–15 X’00’ - reserved
X’01’ - variable-length variable-blocked
X’02’ - reserved
X’03’ - reserved
X’04’ - chain of RUs
X’05’ to X’FF’ - reserved

If the option is omitted, a value of “chain of RUs” is assumed.

**RESOURCE(name)**
This option corresponds to the resource-name, ATTPRN, in an LUTYPE6.1 attach FMH.

**RPROCESS(name)**
This option corresponds to the return-process name, ATTRDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return-process name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return-process name field in an attach FMH.

**RRESOURCE(name)**
This option corresponds to the return-resource name, ATTRPRN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return-resource name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return-resource name field in an attach FMH.

**CANCEL**
Cancel interval control requests.

**CANCEL**

**Conditions:** ISCINVREQ, NOTAUTH, NOTFND, SYSIDERR

**Note for dynamic transaction routing:** Using CANCEL with REQID (of a POST, DELAY, or START) could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see Affinity

**Description**
CANCEL cancels a previously issued DELAY, POST, or START command. The CANCEL command cannot be used to remove a request that is queued locally. If you include the SYSID option, the command is shipped to a remote system. If you omit SYSID, the TRANSID option, if present, indicates where the command is to be executed. The effect of the cancellation varies depending on the type of command that is being canceled, as follows:

- A DELAY command can be canceled only before it expires, and only by a task other than the task that issued the DELAY command (which is suspended for the duration of the request). The REQID used by the suspended task must be specified. The effect of the cancellation is the same as an early expiration of the original DELAY. That is, the suspended task becomes dispatchable as though the original expiration time was reached.
• When a POST command that is issued by the same task is to be canceled, no REQID need be specified. Cancellation can be requested either before or after the original request has expired. The effect of the cancellation is as if the original request was never made.

• When a POST command that is issued by another task is to be canceled, the REQID of that command must be specified. The effect of the cancellation is the same as an early expiration of the original POST request. That is, the timer event control area for the other task is posted as though the original expiration time was reached.

• When a START command is to be canceled, the REQID associated with the original command must be specified. The effect of the cancellation is as if the original command was never issued. The cancellation is effective only before the original command is honored.

• When you use a START command with the PROTECT option, CANCEL cancels the START command only if the START command is committed.

Note: A NOTFND response to a CANCEL command of a START with REQID signifies that the start request is no longer outstanding. It does not imply that the task to be started has completed by this point in time; neither does it imply that the started task issued a RETRIEVE command to read the FROM data from the REQID queue. A subsequent START command that reuses the same REQID value can fail with an AEIQ abend (IOERR condition), if the REQID queue still exists at this time.

Options

REQID(name)
This option specifies a name (1–8 characters), which should be unique, to identify a command. This name is used as a temporary storage identifier. The temporary storage queue that is thus identified must be defined as a local queue on the CICS system where the CANCEL command is processed.

This option cannot be used to cancel a POST command that is issued by the same task (for which, the REQID option is ignored if it is specified).

SYSID(systemname)
(remote systems only) This option specifies the name (1–4 characters) of the system for the CANCEL command.

TRANSID(name)
This option specifies the symbolic identifier (1–4 characters) of a transaction to be used to determine where the CANCEL command is to be executed, if SYSID is not specified. If the TRANSID is defined as REMOTE, the CANCEL request is function-shipped to the remote system.

Conditions

54 ISCINVREQ
This condition occurs when the remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

70 NOTAUTH
This condition occurs when a resource security check fails on the specified TRANSID or on the TRANSID of the START command that corresponds to the request identification.

Default action: terminate the task abnormally.

13 NOTFND
This condition occurs if the request identifier specified fails to match an unexpired interval control command.

Default action: terminate the task abnormally.
SYSIDERR
This condition occurs when the SYSID option specifies a name that is not the local system or a remote system (made known to CICS by defining a CONNECTION). It also occurs when the link to the remote system is closed.

Default action: terminate the task abnormally.

CANCEL (BTS)

Cancel a BTS activity or process.

CANCEL (BTS)

Options

ACQACTIVITY
This option specifies that the activity to be canceled is the one that the current unit of work acquired by using an ACQUIRE ACTIVITYID command.

ACQPROCESS
This option specifies that the process that the current unit of work acquired is to be canceled.

ACTIVITY(data-value)
This option specifies the name (1–16 characters) of the child activity to be canceled.

Conditions

107 ACTIVITYBUSY
RESP2 values:

19
One or more of the descendant activities of the activity to be canceled are inaccessible or in CANCELLING mode.

109 ACTIVITYERR
RESP2 values:

8
The activity that is named on the ACTIVITY option could not be found.

14
The activity to be canceled is not in INITIAL or DORMANT mode.

16 INVREQ
RESP2 values:

4
The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.
The ACQPROCESS option was used, but the issuing task has not acquired a process.

The ACQACTIVITY option was used, but the issuing task has not acquired an activity.

**17 IOERR**
RESP2 values:

29  The repository file is unavailable.

30  An input/output error occurred on the repository file.

**100 LOCKED**
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

**70 NOTAUTH**
RESP2 values:

101  The user who is associated with the issuing task is not authorized to access the file that is associated with the BTS repository data set on which details of the process or activity are stored.

**106 PROCESSBUSY**
RESP2 values:

13  One or more of the activities that make up the process to be canceled are inaccessible or in CANCELLING mode.

**108 PROCESSERR**
RESP2 values:

9   The process—type could not be found.

14  The process to be canceled is not in INITIAL, DORMANT, or COMPLETE mode.

**Activities**
The only activities a program can cancel are as follows:

- If it is running as the activation of an activity, its own child activities. It can cancel several of its child activities within the same unit of work.
- The activity that it has acquired, by using an ACQUIRE ACTIVITYID command, in the current unit of work.

To be canceled successfully, an activity must be in INITIAL or DORMANT mode. CICS tries to cancel activities synchronously. However, if one or more descendant activities of the activity to be canceled are inaccessible (due, for example, to the failure of a communications link):

- The subtree of descendant activities is canceled asynchronously.
- The activity to be canceled is placed in CANCELLING mode.

The completion event that is associated with a canceled activity is not deleted from the parent's event pool. On normal completion of this command, the activity still exists, and can be reset and run again, if necessary.

When an acquired activity is canceled, its parent is reactivated because of the firing of the canceled activity's completion event.
Processes
The only process a program can cancel is the one it acquired in the current unit of work. If it does so, it cannot acquire another process within the current unit of work.

To be canceled successfully, a process must be in INITIAL, DORMANT, or COMPLETE mode.
CICS tries to cancel the process synchronously, in the way described for activities.

**CHANGE PHRASE**
Change the password or password phrase that is recorded by an external security manager (ESM) for a specified user ID.

```cics
CHANGE PHRASE( data-area) — PHRASELEN( data-value) — NEWPHRASE( data-area) —

   NEWPHRASELEN( data-value) — USERID( data-value) — ESMREASON( data-area) —

   ESMRESP( data-area)
```

**Conditions:** INVREQ, LENGERR, NOTAUTH, USERIDERR
This command is threadsafe.

**Description**
A user ID can have both a password and a password phrase. If PHRASELEN is between 1 and 8 characters, the phrase is treated as a password. If the length is between 9 and 100 characters, it is treated as a password phrase. You cannot use a 1- to 8-character password to change a password phrase. Similarly, you cannot use a 9- to 100-character password phrase to change a 1- to 8-character password.

Unlike the SIGNON command, CHANGE PHRASE does not depend upon the principal facility; therefore, it can be issued in non-terminal environments such as Web applications and APPC sessions.

**Attention:** To ensure that passwords are not revealed in system or transaction dumps, clear the password or password phrase fields on the EXEC CICS commands that have a password or password phrase option as soon as possible after use.

**Options**
Options ESMRESP and ESMREASON return the response and reason codes, if any, from the ESM.

**ESMREASON(data-area)**
Returns the reason code, in a fullword binary field, that CICS receives from the ESM.
If the ESM is RACF, this field is the RACF reason code.

**ESMRESP(data-area)**
Returns the response code, in a fullword binary field, that CICS receives from the ESM.
If the ESM is RACF, this field is the RACF return code.

**NEWPHRASE(data-area)**
Specifies an optional 1- to 8-character new password or a 9- to 100-character new password phrase required by the ESM. The password is changed only if the current password is correctly specified. The password phrase is changed only if the current password phrase is correctly specified.
If the ESM does not allow mixed case passwords, the 1- to 8-character password is converted to uppercase.
**NEWPHRASELEN**(data-area)
Specifies the length, as a fullword binary value, of the new password or password phrase.

**PHRASE**(data-area)
Specifies the current password or password phrase of the specified user ID.
If the ESM does not allow mixed case passwords, the 1- to 8-character password is converted to uppercase.

**PHRASELEN**(data-area)
Specifies the length, as a fullword binary value, of the current password or password phrase.

**USERID**(data-value)
Specifies the user ID of the user whose password or password phrase is being changed.
The user ID supplied is converted to uppercase.

**Conditions**

16 INVREQ
RESP2 values:

2
You cannot use a password to change a password phrase or a password phrase to change a password.

13
The ESM has issued an unknown return code in ESMRESP.

18
The CICS ESM interface is not initialized.

29
The ESM is not responding.
Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

1
PHRASELEN is out-of-range.

2
NEWPHRASELEN is out-of-range.

70 NOTAUTH
RESP2 values:

2
The supplied password or password phrase is wrong. If the ESM is RACF, the revoke count that is maintained by RACF is incremented.

4
The new password or password phrase is not acceptable.

19
The user ID is revoked.

20
The connection to the user's default group has been revoked.

22
The change password request failed during SECLABEL processing.

31
The user is revoked in the connection to the default group.
Default action: terminate the task abnormally.
**69 USERIDERR**

RESP2 values:

8  

The USERID is not known to the ESM.

Default action: terminate the task abnormally.

---

**CHANGE PASSWORD**

Change the password that is recorded by an external security manager (ESM) for a specified user ID.

**CHANGE PASSWORD**

\[
\text{CHANGE PASSWORD( } data-value ) \rightarrow \text{ NEWPASSWORD( } data-value ) \rightarrow \text{ USERID( } data-value ) \rightarrow
\]

<table>
<thead>
<tr>
<th>ESMREASON( data-area )</th>
<th>ESMRESP( data-area )</th>
</tr>
</thead>
</table>

**Conditions:** INVREQ, NOTAUTH, USERIDERR

This command is threadsafe.

**Description**

Unlike the **SIGNON** command, **CHANGE PASSWORD** does not depend upon the principal facility; therefore, it can be issued in non-terminal environments such as Web applications and APPC sessions.

**Attention:** You should clear the password fields on the EXEC CICS commands that have a password option as soon as possible after use. This is to ensure that passwords are not revealed in system or transaction dumps.

**Options**

Options ESMRESP and ESMREASON return the response and reason codes, if any, from the ESM.

- **ESMREASON(*data-area*)**
  
  Returns the reason code, in a fullword binary field, that CICS receives from the ESM.
  
  If the ESM is RACF, this field is the RACF reason code.

- **ESMRESP(*data-area*)**
  
  Returns the response code, in a fullword binary field, that CICS receives from the ESM.
  
  If the ESM is RACF, this field is the RACF return code.

- **NEWPASSWORD(*data-value*)**
  
  Specifies the new 8-character password for the specified user ID. The password is changed only if the current password is correctly specified.
  
  If the ESM does not allow mixed case passwords, the password is converted to uppercase.

- **PASSWORD(*data-value*)**
  
  Specifies the current 8-character password for the specified user ID.
  
  If the ESM does not allow mixed case passwords, the password is converted to uppercase.

- **USERID(*data-value*)**
  
  Specifies the 8-character user ID of the user whose password is being changed.
  
  The user ID supplied is converted to uppercase.
Conditions

16 INVREQ
RESP2 values:

13 There is an unknown return code in ESMRESP from the ESM.

18 The CICS ESM interface is not initialized.

29 The ESM is not responding.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

2 The supplied password is wrong. If the ESM is RACF, the revoke count maintained by RACF is incremented.

4 The new password is not acceptable.

19 The USERID is revoked.

22 The change password request failed during SECLABEL processing.

31 The user is revoked in the connection to the default group.

Default action: terminate the task abnormally.

69 USERIDERR
RESP2 values:

8 The USERID is not known to the ESM.

Default action: terminate the task abnormally.

CHANGE TASK

Change priority of a task.

CHANGE TASK

\[ \text{CHANGE TASK} \rightarrow \text{PRIORITY( data-value )} \rightarrow \]

Condition: INVREQ
This command is threadsafe.

Description

CHANGE TASK changes the priority of the issuing task. It has immediate effect (unlike SET TASK) because control is relinquished during execution of the command so that the current task has to be redispached. The redispach does not happen until tasks that are of higher or equal priority, and that are also ready to run, are dispached.

If you omit the PRIORITY option, the task does not lose control and the priority remains the same. This is effectively a no-op.
Options

**PRIORITY(data-value)**

This option specifies a fullword binary value in the range 0–255, defining the priority of the task. You can also have a value of -1 but this does not change the priority or cause a redispacht.

Conditions

**16 INVREQ**

RESP2 values:

1

Your PRIORITY value is outside the range -1–255.

---

**CHECK ACQPROCESS**

Check the completion status of a BTS process.

**CHECK ACQPROCESS**

\[ CHECK \rightarrow ACQPROCESS \rightarrow COMPSTATUS(cvda) \rightarrow ABCODE(data-area) \rightarrow ABPROGRAM(data-area) \rightarrow MODE(cvda) \rightarrow SUSPSTATUS(cvda) \]

**Conditions:** **INVREQ**

**Description**

CHECK ACQPROCESS returns the completion status of the currently-acquired BTS process. Typically, it is used to check the success of a previous RUN ACQPROCESS or LINK ACQPROCESS command. It allows the requester to discover whether the process completed successfully, or whether, for example, it needs to be reactivated to complete its processing.

The only process a program can check is the one that it acquires in the current unit of work - see Acquiring processes and activities.

The RESP and RESP2 options on this command reflect whether the command is understood by CICS - for example, PROCESSERR occurs if the process is not currently acquired by the requester.

The COMPSTATUS option returns a CVDA value that indicates the completion status of the process's root activity - for example, NORMAL is returned if the root activity successfully completes all its processing steps, while INCOMPLETE is returned if it returns from an activation but needs to be reattached to complete its processing.

**Options**

**ABCODE(data-area)**

This option returns, if the process's root activity terminates abnormally, the 4-character abend code.

**ABPROGRAM(data-area)**

This option returns, if the process's root activity terminates abnormally, the 8-character name of the program that was in control at the time of the abend.

**ACQPROCESS**

This option specifies that the process that is currently acquired by the requester is to be checked.

**COMPSTATUS(cvda)**

This option indicates the completion status of the process. CVDA values are:
**ABEND**
The program that implements the process's root activity abended. Any children of the root activity are canceled.

**FORCED**
The process was forced to complete—for example, it was canceled with a CANCEL ACQPROCESS command.

**INCOMPLETE**
The process is incomplete. This can mean:
- That it has not yet run
- That it has returned from one or more activations but needs to be reattached to complete all its processing steps
- That it is currently active.

**NORMAL**
The process completed successfully.

**MODE(cvda)**
This option indicates the processing state of the process. CVDA values are:

- **ACTIVE**
  An activation of the process is running.

- **CANCELLING**
  CICS is waiting to cancel the process. A CANCEL ACQPROCESS command is issued, but CICS cannot cancel the process immediately because one or more of the root activity’s children are inaccessible.

- **COMPLETE**
  The process is completed.

- **DORMANT**
  The process is waiting for an event to fire its next activation.

- **INITIAL**
  No RUN or LINK command has yet been issued against the process.

**SUSPSTATUS(cvda)**
This option indicates whether the process is currently suspended. CVDA values are:

- **SUSPENDED**
  The process is currently suspended. If a reattachment event occurs, it is not reactivated.

- **NOTSUSPENDED**
  The process is not currently suspended. If a reattachment event occurs, it reactivates.

**Conditions**

16 INVREQ
RESP2 values:

15
The unit of work that issues the request has not acquired a process.

---

**CHECK ACTIVITY**
Check the completion status of a BTS activity.
**CHECK ACTIVITY**

![Diagram of CHECK ACTIVITY structure]

**Conditions:** ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED

**Description**

CHECK ACTIVITY returns the completion status of a BTS activity. Typically, it is used to check the success of a previous RUN ACTIVITY or LINK ACTIVITY command. It allows the requester to discover whether an activity completed successfully, or whether, for example, it needs to be reactivated to complete its processing.

CHECK ACTIVITY can be issued:

1. By a parent activity, to check the completion status of one of its children.
2. By a program that has acquired an activity by using an ACQUIRE ACTIVITYID command.

It can be used to check descendant (not root) activities:

- That have completed.
- That have not completed.
- That were requested to run asynchronously.
- That were requested to run synchronously.

The RESP and RESP2 options on this command reflect whether the command is understood by CICS—for example, ACTIVITYERR occurs if the child named on the ACTIVITY option is not defined to the parent.

The COMPSTATUS option returns a CVDA value that indicates the completion status of the activity—for example, NORMAL is returned if the activity successfully completes all its processing steps, while INCOMPLETE is returned if it returns from an activation but needs to be reattached to complete its processing.

If this command is issued by a parent activity in respect of one of its children, and the child is completed, on return from the command CICS deletes the child's completion event from the parent's event pool.

For more information on the use of the CHECK ACTIVITY command, see Dealing with BTS errors and response codes.

**Options**

**ABCODE(data-area)**

This option returns, if the activity terminated abnormally, the 4-character abend code.

**ABPROGRAM(data-area)**

This option returns, if the activity terminated abnormally, the 8-character name of the program that was in control at the time of the abend.

**ACQACTIVITY**

This option specifies that the activity to be checked is the one that the current unit of work has acquired by means of an ACQUIRE ACTIVITYID command.

**ACTIVITY(data-value)**

This option specifies the name (1–16 characters) of the activity to be checked.

Use this option to check the state of a child of the current activity.

**COMPSTATUS(cvda)**

This option indicates the completion status of the activity. CVDA values are:
ABEND
The program that implements the activity abended. Any children of the activity have been canceled.
The activity's completion event is deleted from the parent's event pool.

FORCED
The activity was forced to complete—for example, it was canceled with a CANCEL ACTIVITY command.
The activity's completion event is deleted from the parent's event pool.

INCOMPLETE
The named activity is incomplete. This could mean:
- That it has not yet run
- That it has returned from one or more activations but needs to be reattached in order to complete all its processing steps
- That it is currently active.
The activity's completion event is not deleted from the parent's event pool.

NORMAL
The named activity completed successfully.
The activity's completion event is deleted from the parent's event pool.

MODE(cvda)
This option indicates the processing state of the activity. CVDA values are:

ACTIVE
An activation of the activity is running.

CANCELLING
CICS is waiting to cancel the activity. A CANCEL ACTIVITY command has been issued, but CICS cannot cancel the activity immediately because one or more of the activity's children are inaccessible.

COMPLETE
The activity has completed.

DORMANT
The activity is waiting for an event to fire its next activation.

INITIAL
No RUN or LINK command has yet been issued against the activity; or the activity has been reset by means of a RESET ACTIVITY command.

SUSPENDSTATUS(cvda)
This option indicates whether the activity is currently suspended. CVDA values are:

SUSPENDED
The activity is currently suspended. If a reattachment event occurs, it will not be reactivated.

NOTSUSPENDED
The activity is not currently suspended. If a reattachment event occurs, it will be reactivated.

Conditions

107 ACTIVITYBUSY
RESP2 values:

19
The request timed out. It may be that another task using this activity-record has been prevented from ending.

109 ACTIVITYERR
RESP2 values:
The activity named in the ACTIVITY option could not be found.

16 INVREQ
RESP2 values:
4 The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.
24 The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

17 IOERR
RESP2 values:
29 The repository file is unavailable.
30 An input/output error has occurred on the repository file.

100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

CHECK TIMER
Check the status of a BTS timer.

CHECK TIMER
CHECK TIMER(data-value) STATUS(cvda)

Conditions: INVREQ, IOERR, TIMERERR

Description
CHECK TIMER returns the status of a BTS timer. It allows the requester to discover whether a timer has expired and, if so, whether it expired normally or whether its expiry was forced by using a FORCE TIMER command.

On return from this command, if the timer has expired, its associated event is deleted from the current activity's event pool.

The only timers a program can check are those timers owned by the current activity.

Options
STATUS(cvda)
This option indicates the status of the timer. CVDA values are:

EXPIRED
The timer expired normally.
Its associated event is deleted from the current activity's event pool.

FORCED
The timer expired because a FORCE TIMER command was issued against it.
Its associated event is deleted from the current activity's event pool.

UNEXPIRED
The timer has not yet expired.
Its associated event is not deleted from the current activity's event pool.

**TIMER(data-value)**
This option specifies the name (1–16 characters) of the timer to be checked.

**Conditions**

**16 INVREQ**
RESP2 values:

1
The command was issued outside the scope of a currently active activity.

**17 IOERR**
An input/output error has occurred on the repository file.

**115 TIMERERR**
RESP2 values:

13
The timer that is specified on the TIMER option does not exist.

---

**CONNECT PROCESS**

Initiate an APPC mapped conversation.

**CONNECT PROCESS (APPC)**

```
CONNECT PROCESS  
  CONVID(name)  
  SESSION(name)  
  PROCNAME(data-area)  
  PROCLENGTH(data-value)  
  PARTNER(name)  
  PIPLIST(data-area)  
  PIPLENGTH(data-value)  
  SYNCLEVEL(data-value)  
  STATE(cvda)  
```

**Conditions:** INVREQ, LENGERR, NOTALLOC, PARTNERIDERR, TERMERR

**Description**
CONNECT PROCESS allows an application to specify a process name and synchronization level to be passed to CICS and used when the remote partner is attached.

**Options**

**CONVID(name)**
This option identifies the conversation to which the command relates. The 4-character name specifies the token that is returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB.

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.
**PARTNER**(name)
This option specifies the name (8 characters) of a set of definitions that includes the name (or extended name) of a remote partner transaction (TPNAME or XTPNAME). You can use this option as an alternative to PROCNAME and PROCLength.

**PIPLENGTH**(data-value)
This option specifies the total length (halfword binary value) of the specified process initialization parameter (PIP) list.

**PIPLIST**(data-area)
This option specifies the PIP data to be sent to the remote system. The PIP list consists of variable-length records, each containing a single PIP. A PIP starts with a 2-byte inclusive length field (LL), followed by a 2-byte reserved field, and then the parameter data.

**PROCLength**(data-value)
This option specifies the length (as a halfword binary value in the range 1–64) of the name that is specified by the PROCNAME option.

**PROCNAME**(data-area)
This option specifies the partner process (that is, the transaction) to be attached in the remote system.

1 byte is sufficient to identify a CICS transaction. The APPC architecture allows a range of 1–64 bytes but leaves each product free to set its own maximum. CICS complies by allowing a range of 1–64 bytes. If the remote system is CICS, this option can specify the 4-byte transaction identifier or the TPNAME value that is given in the relevant TRANSACTION definition. Alternatively, you can examine the full identifier by coding the user exit XZCATT.

No character checking is performed on the TPN by CICS.

For programming information about the user exit XZCATT, see CICS statistics record format.

**SESSION**(name)
This option specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

**STATE**(cvda)
This option gets the state of the current conversation. The CVDA values that are returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**SYNCLEVEL**(data-value)
This option specifies the synchronization level (halfword binary value) for the current conversation. The possible values are:

- 0 None
- 1 Confirm
- 2 Syncpoint
Conditions

16 INVREQ
RESP2 values:

200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Also occurs (RESP2 not set) in any of the following situations:
• A synchronization level other than 0, 1, or 2, is requested in the SYNCLEVEL option.
• The command is not valid for the terminal or LU in use.
• The command is on a conversation that is in use by CPI-Communications or that is an APPC basic conversation. In the latter case, GDS CONNECT PROCESS should be used.

Default action: terminate the task abnormally.

22 LENGERR
This condition occurs in any of the following situations:
• An out-of-range value is supplied in the PROCLENGTH option.
• The value that is specified in the PIPLength option is less than 0.
• The value that is specified in the PIPLength option exceeds the CICS implementation limit of 32 763.
• A PIPLIST length element (LL) has a value less than 4.
• The sum of the length elements (LLs) in the PIPLIST does not equal the value that is specified by PIPLength.

Default action: terminate the task abnormally.

61 NOTALLOC
This condition occurs if the specified CONVID value does not relate to a conversation owned by the application.

Default action: terminate the task abnormally.

97 PARTNERIDERR
This condition occurs if the name specified in the PARTNER option is not recognized by CICS.

Default action: terminate the task abnormally.

81 TERMERR
This condition occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) can cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.
CONVERSE (default)

Communicate on standard CICS terminal support.

**Conditions:** LENGERR

**Description**
This form of the CONVERSE command is used by all CICS-supported z/OS Communications Server terminals for which the other CONVERSE descriptions are not appropriate.

CONVERSE (APPC)

Communicate on an APPC mapped conversation

**Conditions:** EOC, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

**Description**
CONVERSE sends, then receives, data on an APPC mapped conversation.
CONVERSE (LUTYPE2/LUTYPE3)

Communicate on a 3270-display logical unit (LUTYPE2) or 3270-printer logical unit (LUTYPE3).

**CONVERSE (LUTYPE2/LUTYPE3)**

CONVERSE

FROM( data-area )

FROMLENGTH( data-value )

FROMFLENGTH( data-value )

INTO( data-area )

SET( ptr-ref )

ERASE

DEFAULT

ALTERNATE

CTLCHAR( data-value )

ST PfIELD

TOLENGTH( data-area )

TOFLENGTH( data-area )

MAXLENGTH( data-value )

MAXFLENGTH( data-value )

DEFRESP

 Conditions: EOC, LENGERR, TERMERR

**Description**

CONVERSE communicates on a 3270-display logical or 3270-printer logical unit.

CONVERSE (LUTYPE4)

Communicate on an LUTYPE4 logical unit.

**CONVERSE (LUTYPE4)**

CONVERSE

FROM( data-area )

FROMLENGTH( data-value )

FROMFLENGTH( data-value )

INTO( data-area )

SET( ptr-ref )

TOLENGTH( data-area )

TOFLENGTH( data-area )

MAXLENGTH( data-value )

MAXFLENGTH( data-value )

FMH

NOTRUNCATE

 Conditions: EOC, EODS, IGREQCD, INBFMH, LENGERR, SIGNAL, TERMERR

Chapter 2. CICS command summary 79
Description
CONVERSE communicates on an LUTYPE4 logical unit.

CONVERSE (LUTYPE6.1)
Communicate on an LUTYPE6.1 logical unit.

CONVERSE (LUTYPE6.1)

CONVERSE
FROM(data-area)
FROMLENGTH(data-value)
FROMFLENGTH(data-value)
FMH

CONVID(name)
SESSION(name)
ATTACHID(name)
SET(ptr-ref)

TOLENGTH(data-area)
TOFLENGTH(data-area)
MAXLENGTH(data-value)
MAXFLENGTH(data-value)

NOTRUNCATE
DEFRESP

Conditions: CBIDERR, EOC, INBFMH, LENGERR, NOTALLOC, SIGNAL, TERMERR

Description
CONVERSE communicates on an LUTYPE6.1 logical unit.

CONVERSE (SCS)
Communicate on a 3270 SCS printer logical unit.

CONVERSE (SCS)

CONVERSE
FROM(data-area)
FROMLENGTH(data-value)
FROMFLENGTH(data-value)

INTO(data-area)
TOLENGTH(data-area)
SET(ptr-ref)
TOFLENGTH(data-area)

MAXLENGTH(data-value)
MAXFLENGTH(data-value)
DEFRESP
STRFIELD

NOTRUNCATE

Conditions: LENGERR, TERMERR
Description
CONVERSE communicates on a 3270 SNA character string (SCS) printer logical unit. The SCS printer logical unit accepts a character string as defined by Systems Network Architecture (SNA). Some devices connected under SNA can send a signal that can be detected by the HANDLE CONDITION SIGNAL command, which in turn can invoke an appropriate handling routine. If necessary, a WAIT SIGNAL command can be used to make the application program wait for the signal. The PA keys on a 3287 can be used in this way, or with a RECEIVE command.

CONVERSE (3270 logical)
Communicate on a 3270 logical unit.

CONVERSE (3270 logical)

Conditions: INVREQ, LENGERR, TERMERR

Description
CONVERSE communicates on a 3270 logical unit.

CONVERSE (3600-3601)
Communicate on a 3600 (3601) logical unit.
**CONVERSE (3600-3601)**

- `CONVERSE` — `FROM(data-area)` — `FROMLENGTH(data-value)`
- `FROMLENGTH(data-value)`
- `INTO(data-area)` — `TOLENGTH(data-area)`
- `SET(ptr-ref)` — `TOFLENGTH(data-area)`
- `LDC(name)`
- `FMH`
- `DEFRESP` — `MAXLENGTH(data-value)`
- `MAXLENGTH(data-value)`
- `NOTRUNCATE`

**Conditions:** EOC, EODS, INBFMH, LENGERR, SIGNAL, TERMERR

**Description**

CONVERSE communicates on a 3600 logical unit. This form of the CONVERSE command also applies to the 4700 and the 3630 plant communication system.

A logical device code (LDC) is a code that can be included in an outbound Function Management Header (FMH) to specify the disposition of the data (for example, to which subsystem terminal it should be sent). Each code can be represented by a unique LDC mnemonic.

The installation can specify up to 256 2-character mnemonics for each TCTTE, and two or more TCTTEs can share a list of these mnemonics. A numeric value (0 through 255) corresponds to each LDC mnemonic for each TCTTE.

A 3600 device and a logical page size are also associated with an LDC. LDC or LDC value is used in this information to refer to the code specified by the user; LDC mnemonic refers to the 2-character symbol that represents the LDC numeric value.

When the LDC option is specified in the CONVERSE command, the numeric value associated with the mnemonic for the particular TCTTE is inserted in the FMH. This value is chosen by the installation, and is interpreted by the 3601 application program.

On output, the FMH can be built by the application program or by CICS. If your program supplies the FMH, you place it at the front of your output data and specify the FMH option on your CONVERSE command. If you omit the FMH option, CICS will provide an FMH but you must reserve the first three bytes of the message for CICS to complete.

**CONVERSE (3600-3614)**

Communicate on a 3600 (3614) logical unit.
**CONVERSE (3600-3614)**

`CONVERSE FROM(data-area) FROMLENGTH(data-value) INTO(data-area) TOLENGTH(data-area) SET(ptr-ref) TOFLENGTH(data-area) DEFRESP MAXLENGTH(data-value) MAXFLENGTH(data-value) NOTRUNCATE`

**Conditions:** LENGERR, TERMERR

**Description**

CONVERSE communicates on a 3600 logical unit.

The data stream and communication format used between a CICS application program and a 3614 is determined by the 3614. The application program is therefore device dependent when handling 3614 communication.

For further information about designing 3614 application programs for CICS, refer to the IBM 4700/3600/3630 Guide.

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**CONVERSE (3650 interpreter)**

Communicate on a 3650 interpreter logical unit.

`CONVERSE FROM(data-area) FROMLENGTH(data-value) INTO(data-area) TOLENGTH(data-area) SET(ptr-ref) TOFLENGTH(data-area) DEFRESP FMH MAXLENGTH(data-value) MAXFLENGTH(data-value) NOTRUNCATE`

**Conditions:** EOC, EODS, INBFMH, LENGERR, TERMERR

**Description**

CONVERSE communicates on a 3650 interpreter logical unit.
**CONVERSE (3650-3270)**

Communicate on a 3650 host conversational (3270) logical unit.

**Description**

CONVERSE communicates on a 3650 host conversational logical unit.

**Conditions:** LENGERR, TERMERR

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**CONVERSE (3650-3653)**

Communicate on a 3650 host conversational (3653) logical unit.

**Description**

CONVERSE communicates on a 3650 host conversational logical unit.

**Conditions:** EOC, LENGERR, TERMERR
CONVERSE (3650-3680)
Communicate on a 3650 host command processor (3680) logical unit.

CONVERSE (3650-3680)

CONVERSE
FROM(data-area)
FROMLENGTH(data-value)
FROMFLENGTH(data-value)
INTO(data-area)
TOLENGTH(data-area)
TOFLENGTH(data-area)
SET(ptr-ref)
DEFSRESP
MAXLENGTH(data-value)
MAXFLENGTH(data-value)
NOTRUNCATE
TOLENGTH(data-area)
TOFLENGTH(data-area)
FMH

Conditions: LENGERR, TERMERR

Description
CONVERSE communicates on a 3650 host command processor logical unit.

CONVERSE (3767)
Communicate on a 3767 interactive logical unit.

CONVERSE (3767)

CONVERSE
FROM(data-area)
FROMLENGTH(data-value)
FROMFLENGTH(data-value)
INTO(data-area)
TOLENGTH(data-area)
TOFLENGTH(data-area)
SET(ptr-ref)
DEFSRESP
MAXLENGTH(data-value)
MAXFLENGTH(data-value)
NOTRUNCATE

Conditions: EOC, LENGERR, SIGNAL, TERMERR

Description
CONVERSE communicates on a 3767 interactive logical unit. This command also applies to the 3770 interactive logical unit.
**CONVERSE (3770)**

Communicate on a 3770 batch logical unit.

**Description**

CONVERSE communicates on a 3770 batch logical unit.

**Conditions:** EOC, EODS, INBFMH, LENGERR, SIGNAL, TERMERR

**CONVERSE (3790 full-function or inquiry)**

Communicate on a 3790 full-function or inquiry logical unit.

**Description**

CONVERSE communicates on a 3790 full-function or inquiry logical unit.

**Conditions:** EOC, EODS, INBFMH, LENGERR, SIGNAL, TERMERR

**CONVERSE (3790 3270-display)**

Communicate on a 3790 (3270-display) logical unit.

**Description**

CONVERSE communicates on a 3790 (3270-display) logical unit.
**Description**

CONVERSE communicates on a 3790 logical unit.

**CONVERSE: z/OS Communications Server options**

Common options that are used on the CONVERSE command (z/OS Communications Server).

**Options**

**ALTERNATE**

This option sets the terminal to use the ALTERNATE screen size.

**ASIS**

This option indicates that output is to be sent in transparent mode (with no recognition of control characters and accepting any of the 256 possible combinations of eight bits as valid transmittable data).

*Note:* If you are using a Katakana terminal, you might see some messages that contain mixed English and Katakana characters. That is because Katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as Katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only. This note applies to any command that is used to receive Katakana characters, not just to CONVERSE commands.

**ATTACHID(name)**

This option specifies that an attach header (created by a BUILD ATTACH command) is to precede, and be concatenated with, the user data supplied in the FROM option. “name” (1 - 8 characters) identifies the attach header control block to be used in the local task.

**CONVID(name)**

This option identifies the conversation to which the command relates. The 4-character name identifies either the token that is returned by a previously executed ALLOCATE command in E1BRSRC in the EIB, or the token that represents the principal session (returned by a previously executed ASSIGN command).
For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs use CONVID.

If the option is omitted, the principal facility for the task is used by default.

**CTLCHAR**(data-value)

This option specifies a 1-byte write control character (WCC) that controls the CONVERSE command. A COBOL user must specify a data area containing this character.

If the option is omitted, all modified data tags are reset to zero, and the keyboard is restored.

**DEFAULT**

This option sets the terminal to use the DEFAULT screen size.

**DEFRESP**

This option indicates that a definite response is required when the output operation is completed.

**ERASE**

This option specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display).

The first output operation in any transaction, or in a series of pseudoconversational transactions, must always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

**FMH**

This option specifies that a function management header is included in the data to be written. If the ATTACHID option is specified as well, the concatenated FMH flag is set in the attach FMH.

The use of FMH is optional and is not supported for all terminal types. If not supplied, CICS takes no action, except for 3600/4700 terminals, where an FMH is mandatory. In this case, if FMH is not specified, CICS supplies one and places it in the first 3 bytes of the message, which you must reserve for this purpose.

**FROM**(data-area)

This option specifies the data to be written to the terminal or logical unit, or sent to the partner transaction. This option can, when relevant, be omitted if ATTACHID is specified.

**FROMLENGTH**(data-value)

This option is a fullword alternative to FROMLENGTH.

**FROMLENGTH**(data-value)

This option specifies the length, as a halfword binary value, of the data. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**INTO**(data-area)

This option specifies the receiving field for the data read from the terminal or logical unit, or the application target data area into which data is to be received from the application program that is connected to the other end of the current conversation.

**LDC**(name)

This option specifies the 2-character mnemonic that is used to determine the appropriate logical device code (LDC) numeric value. The mnemonic identifies an LDCentry that is defined by a DFHTCT TYPE=LDC macro.

**MAXFLENGTH**(data-value)

This option is a fullword alternative to MAXLENGTH.

**MAXLENGTH**(data-value)

This option specifies the maximum amount (halfword binary value) of data that CICS is to recover in response to a CONVERSE (default) command. If INTO is specified, MAXLENGTH overrides the use of TOLENGTH as an input to CICS. If SET is specified, MAXLENGTH provides a way for the program to limit the amount of data it receives at one time.

If the value specified is less than zero, zero is assumed.
If the length of data exceeds the value that is specified and the NOTRUNCATE option is not present, the data is truncated to that value and the LENGERR condition occurs. The data area that is specified in the TOLENGTH option is set to the original length of data.

If the length of data exceeds the value that is specified and the NOTRUNCATE option is present, CICS retains the remaining data and uses it to satisfy subsequent RECEIVE commands. The data area that is specified in the TOLENGTH option is set to the length of data returned.

If no argument is coded for MAXLENGTH, CICS defaults to TOLENGTH.

**NOTRUNCATE**
This option specifies that, when the data available exceeds the length that is requested, the remaining data is not to be discarded but is to be retained for retrieval by subsequent RECEIVE commands.

**SESSION**(name)
This option specifies the symbolic identifier (1 - 4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If both this option and CONVID are omitted, the principal facility for the task is used.

**SET**(ptr-ref)
This option specifies the pointer reference to be set to the address of the data read from the terminal. Pointer reference, unless changed by other commands or statements, is valid until the next CONVERSE (default) command or the end of task.

If DATALLOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16 MB line.

If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16 MB line, the data is copied below the 16 MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data that is returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data that is returned is in a CICS-key.

**STATE**(cvda)
This option gets the state of the current conversation. The CVDA values that are returned by CICS are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**STRFIELD**
This option specifies that the data area FROM option contains structured fields. If this option is specified, the contents of all structured fields must be handled by the application program. The CONVERSE command must be used if the data area that is specified contains a read partition structured field. (Structured fields are described in the IBM 3270 Data Stream Programmers Reference).

CTLCHAR and ERASE are mutually exclusive with STRFIELD, and their use with STRFIELD generates an error message.
**TOLENGTH(data-area)**
This option is a fullword alternative to TOLENGTH.

**TOLENGTH(data-area)**
This option specifies the length (halfword binary value) of the data to be received. If you specify INTO, but omit MAXLENGTH, “data-area” specifies the maximum length that the program accepts. If the value is less than zero, zero is assumed.

If the length of the data exceeds the value that is specified, but NOTRUNCATE is omitted, the data is truncated to that value, and the LENGERR condition occurs. When the data is received, the data area is set to the length of the data.

For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**Conditions**
Some of the following conditions can occur in combination with others. CICS checks for these conditions in the following order:

1. EODS
2. INBFMH
3. EOC

If more than one occurs, only the first is passed to the application program. However, EIBRCODE is set to indicate all the conditions that occurred.

**62 CBIDERR**
This condition occurs if the requested attach header control block that is named in ATTACHID cannot be found.
Default action: terminate the task abnormally.

**06 EOC**
This condition occurs when a request/response unit (RU) is received with the end-of-chain indicator set. Field EIBEOC also contains this indicator.
Default action: ignore the condition.

**05 EODS**
This condition occurs when an end-of-data-set indicator is received.
Default action: terminate the task abnormally.

**57 IGREQCD**
This condition occurs when an attempt is made to execute a CONVERSE command after a SIGNAL data flow control command with a request change direction (RCD) code is received from an LUTYPE4 logical unit.
Default action: terminate the task abnormally.

**07 INBFMH**
This condition occurs if a request/response unit (RU) contains a function management header (FMH). Field EIBFMH contains this indicator and it must be used in preference to INBFMH. The IGNORE CONDITION command can be used to ignore the condition.
Default action: terminate the task abnormally.

**16 INVREQ**
RESP2 values:

**200**
A distributed program link server application specified the function shipping session (its principal facility).
This condition also occurs (RESP2 not set) in any of the following situations:
• The command is used on a conversation that is in use by CPI Communications, or that is an APPC basic conversation. In the latter case, the application issues a GDS SEND INVITE followed by a GDS RECEIVE.

Default action: terminate the task abnormally.

22 LENGERR
This condition occurs in any of the following situations:
• Data that is received is discarded by CICS because its length exceeds the maximum that the program accepts (see TOLENGTH and MAXLENGTH options), and the NOTRUNCATE option is not specified.
• An out-of-range value is supplied in one of the options, FROMLENGTH, FROMFLENGTH, MAXLENGTH, MAXFLENGTH, TOLENGTH, or TOFLENGTH.

Default action: terminate the task abnormally.

61 NOTALLOC
This condition occurs if the facility specified in the command is not owned by the application, or does not relate to a conversation owned by the application.

Default action: terminate the task abnormally.

24 SIGNAL
This condition occurs when an inbound SIGNAL data flow control command is received from a logical unit or session, or the partner transaction. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

81 TERMERR
This condition occurs for a terminal or session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) can cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

CONVERSE (non-z/OS Communications Server default)

Communicate on standard CICS terminal support.

CONVERSE (default)

CONVERSE (default)
Description
This form of the CONVERSE command is used by all CICS-supported terminals for which the other
CONVERSE descriptions are not appropriate.

CONVERSE (MRO)

Communicate on an MRO session.

CONVERSE (MRO)

CONVERSE

CONVID(name)

SESSION(name)

ATTACHID(name)

FROM(data-area)

FROMLENGTH(data-value)

FROMFLENGTH(data-value)

FMH

INTO(data-area)

TOLENGTH(data-area)

TOFLENGTH(data-area)

SET(ptr-ref)

MAXLENGTH(data-value)

MAXFLENGTH(data-value)

NOTRUNCATE

DEFRESP

STATE(cvda)

Conditions: CBIDERR, EOC, INBFMH, LENGERR, NOTALLOC, TERMERR

Description
CONVERSE communicates on an MRO session. For more information about MRO and IRC, see
Introduction to CICS intercommunication.
CONVERSE (2260)

Communicate on a 2260 or 2265 display station.

CONVERSE (2260)

\[
\begin{align*}
&\textbf{CONVERSE} \\
&\quad \text{FROM}(\text{data-area}) \quad \text{FROMLENGTH}(\text{data-value}) \\
&\quad \quad \text{FROMLENGTH}(\text{data-value}) \\
&\text{INTO}(\text{data-area}) \\
&\quad \text{TOLENGTH}(\text{data-area}) \\
&\quad \text{TOLENGTH}(\text{data-area}) \\
&\quad \text{SET}(\text{ptr-ref}) \\
&\quad \text{MAXLENGTH}(\text{data-value}) \\
&\quad \text{MAXLENGTH}(\text{data-value}) \\
&\quad \text{NOTRUNCATE} \\
&\quad \text{CTLCHAR}(\text{data-value}) \\
&\quad \text{LINEADDR}(\text{data-value}) \\
&\quad \text{LEAVEKB}
\end{align*}
\]

Condition: LENGERR

Description

CONVERSE communicates on a 2260 or 2265 display station.

CONVERSE: non-z/OS Communications Server options

Common options that are used on the CONVERSE command (non-z/OS Communications Server).

Options

ALTERNATE

This option sets the terminal to use the alternative screen size.

ASIS

This option indicates that output is to be sent in transparent mode (with no recognition of control characters and accepting any of the 256 possible combinations of 8 bits as valid transmittable data).

Note: If you are using a Katakana terminal, you might see some messages that contain mixed English and Katakana characters. That is because Katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as Katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.

ATTACHID(name)

This option specifies that an attach header (created by a BUILD ATTACH command) is to precede, and be concatenated with, the user data supplied in the FROM option. “name” (1–8 characters) identifies the attach header control block to be used in the local task.

CONVID(name)

This option identifies the conversation to which the command relates. The 4-character name identifies either the token that is returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token that represents the principal session (returned by a previously executed ASSIGN command).
**CTLCHAR(data-value)**
This option specifies a 1 byte write control character (WCC) that controls the CONVERSE command. (The WCC is documented in IBM 3270 Data Stream Programmers Reference. A COBOL user must specify a data area that contains this character. If the option is omitted, all modified data tags are reset to zero and the keyboard is restored.

**DEFAULT**
This option sets the terminal to use the DEFAULT screen size.

**DEFRESP**
This option indicates that a definite response is required when the output operation is completed.

**ERASE**
This option specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display).

The first output operation in any transaction, or in a series of pseudoconversational transactions, must always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

**FMH**
This option specifies that a function management header is included in the data to be written. If the ATTACHID option is specified as well, the concatenated FMH flag is set in the attach FMH.

**FROM(data-area)**
This option specifies the data to be written to the terminal or logical unit, or sent to the partner transaction. This option can, when relevant, be omitted if ATTACHID is specified.

**FROMLENGTH(data-value)**
This option is a fullword alternative to FROMLENGTH.

**FROMLENGTH(data-value)**
This option specifies the length, as a halfword binary value, of the data to be written. If you use this option, you must also specify FROM. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**INTO(data-area)**
This option specifies the receiving field for the data read from the logical unit or terminal.

**LEAVEKB**
This option specifies that the keyboard is to remain locked at the completion of the data transfer.

**LINEADDR(data-value)**
This option specifies that the writing is to begin on a specific line of a 2260/2265 screen. The data value is a halfword binary value in the range 1 - 12 for a 2260, or 1 - 15 for a 2265.

**MAXLENGTH(data-value)**
This option is a fullword alternative to MAXLENGTH.

**MAXLENGTH(data-value)**
This option specifies the maximum amount (halfword binary value) of data that CICS is to recover in response to a CONVERSE command. If INTO is specified, MAXLENGTH overrides the use of TOLENGTH as an input to CICS. If SET is specified, MAXLENGTH provides a way for the program to limit the amount of data it receives at one time.

If the value specified is less than zero, zero is assumed.

If the length of data exceeds the value that is specified and the NOTRUNCATE option is not present, the data is truncated to that value and the LENGERR condition occurs. The data area that is specified in the TOLENGTH option is set to the original length of data.

If the length of data exceeds the value that is specified and the NOTRUNCATE option is present, CICS retains the remaining data and uses it to satisfy subsequent RECEIVE commands. The data area that is specified in the TOLENGTH option is set to the length of data returned.

If no argument is coded for MAXLENGTH, CICS defaults to TOLENGTH.
**NOTRUNCATE**
This option specifies that, when the data available exceeds the length that is requested, the remaining data is not to be discarded but retained for retrieval by subsequent RECEIVE commands.

**PSEUDOBIN**
This option specifies that the data that is being read and written is to be converted from System/7 pseudobinary representation to hexadecimal.

**SESSION(name)**
This option specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If both this option and CONVID are omitted, the principal facility for the task is used.

**SET(ptr-ref)**
This option specifies a pointer reference to be set to the address of data that is received from the conversation partner in an MRO conversation. The pointer reference, unless changed by other commands or statements, is valid until the next CONVERSE (MRO) command or the end of task.

If DATALOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16 MB line.

If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

**STATE(cvda)**
This option gets the state of the transaction program. The cvda values returned by CICS are:

- ALLOCATED
- FREE
- PENDFREE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**STRFIELD**
This option specifies that the data area specified in the FROM option contains structured fields. If this option is specified, the contents of all structured fields must be handled by the application program. The CONVERSE command, rather than a SEND command, must be used if the data area contains a read partition structured field. (Structured fields are described in the IBM 3270 Data Stream Programmers Reference.)

CTLCHAR and ERASE are mutually exclusive with STRFIELD, and their use with STRFIELD generates an error message.

**TOFLENGTH(data-area)**
This option is a fullword alternative to TOLENGTH.

**TOLENGTH(data-area)**
This option specifies the length, as a halfword binary value, of the data to be received. If you specify INTO, but omit MAXLENGTH, “data-area” specifies the maximum length that the program accepts. If the value is less than zero, zero is assumed.

If the length of the data exceeds the value specified, but NOTRUNCATE is omitted, the data is truncated to that value, and the LENGERR condition occurs. When the data is received, the data area is set to the length of the data.
For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

Conditions
Some of the following conditions can occur in combination with others. CICS checks for these conditions in the following order:

1. INBFMH
2. EOC

If more than one occurs, only the first is passed to the application program. However, eIBRCODE is set to indicate all the conditions that occurred.

62 CBIDERR
This condition occurs if the requested attach header control block that is named in ATTACHID cannot be found.
Default action: terminate the task abnormally.

06 EOC
This condition occurs when a request/response unit (RU) is received with the end-of-chain indicator set. Field EIBEOC also contains this indicator.
Default action: ignore the condition.

04 EOF
This condition occurs when an end-of-file indicator is received.
Default action: terminate the task abnormally.

07 INBFMH
This condition occurs if a request/response unit (RU) contains a function management header (FMH). Field EIBFMH contains this indicator and it should be used in preference to INBFMH. The IGNORE CONDITION command can be used to ignore the condition.
Default action: terminate the task abnormally.

22 LENGERR
This condition occurs in any of the following situations:
- Data is discarded by CICS because its length exceeds the maximum that the program accepts and the NOTRUNCATE option is not specified.
- An out-of-range value is supplied in the FROMLENGTH option.
Default action: terminate the task abnormally.

61 NOTALLOC
This condition occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

02 RDATT
This condition occurs if the “receive” part of the conversation is terminated by the attention (ATTN) key rather than the return key.
Default action: ignore the condition.

81 TERMERR
This condition occurs for a session-related error.
A CANCEL TASK request by a user node error program (NEP) can cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
Default action: terminate the task abnormally with abend code ATNI.
03 WRBRK
This condition occurs if the “send” part of the conversation is terminated by the attention (ATTN) key rather than the return key.
Default action: ignore the condition.

CONVERTTIME

Converts an architected date and time stamp string to the ABSTIME format.

CONVERTTIME
▷ CONVERTTIME — DATESTRING( data-area ) — ABSTIME( data-area ) ◁

Conditions: INVREQ
This command is threadsafe.

Description
CONVERTTIME analyzes four different date and time stamp formats that are commonly used on the internet, and converts them to the ABSTIME (absolute date and time) format, in local time.

ABSTIME format gives the time, in packed decimal, since 00:00 on 1 January 1900. The time is given in milliseconds, and it is always truncated, never rounded up. The FORMATTIME command can be used to change this data into other formats.

The following architected date and time stamp string formats are recognized by the CONVERTTIME command:

RFC 1123 format
The preferred standard format for date and time stamps for the HTTP protocol, as specified in RFC 1123. An example of a date and time stamp in this format is "Tue, 01 Apr 2003 10:01:02 +0000".

RFC 3339 format
The XML dateTime datatype, which is specified in RFC 3339, which is taken from the ISO 8601 standard. An example of a date and time stamp in this format is "2003-04-01T10:01:02.498Z". Date and time stamps in this format are in UTC (Coordinated Universal Time). The time zone offset (-12:00 to +12:00) is indicated at the end of the date and time stamp, or the letter Z for a zero offset (+00:00). The decimal fraction of a second that is shown in the example is optional.

RFC 850 format
An older date and time stamp format for the internet, which is specified in RFC 850. An example of a date and time stamp in this format is "Tuesday, 01-Apr-03 10:01:02 GMT".

Important: Because the year has only two digits in this format, CICS uses the assumption that the years are in the range 1970 to 2069. In the example above, CICS assumes that the date of the document is 1 April 2003. Given the date and time stamp "Thursday, 13-Feb-98 15:30:00 GMT", CICS assumes that the date of the document is 13 February 1998. Be aware of this behavior when you are coding your application, if you think that you might receive date and time stamps in this format.

ASCtime format
A date and time stamp format that is produced by the C ASCtime function. An example of a date and time stamp in this format is "Tue Apr 1 10:01:02 2003".

Options

DATESTRING(data-area)
This option specifies a 64-character data area to contain the architected date and time stamp string. You can supply a string in any of the formats that are recognized by the command. If the string is fewer than 64 characters long, pad it with blanks or nulls. You do not have to specify the format of the data in the DATESTRING option because CICS automatically reads the data to determine whether it is a supported format. The date and time are converted to local time for the ABSTIME that is returned.
**ABSTIME**(data-area)

This option specifies a data-area to receive the converted date and time stamp in ABSTIME format. If the date and time stamp is not in a recognized format, the ABSTIME is returned as zero.

**Conditions**

**16 INVREQ**

RESP2 values are:

1. The format of the date and time stamp string is not recognized as any of the formats that are supported by this command. This error can be caused by a date and time stamp string that is in a supported format but contains formatting errors. For example, a year value that has more or less than the correct number of digits for the format, or an item that should be numeric but is not numeric.

2. Invalid time.

3. Invalid month.

4. Invalid year (includes years before 1900).

5. Invalid day name.

6. Invalid day number for month and year specified.

7. GMT was not stated (required for RFC 850 formats).

8. Invalid fraction of a second.

9. Invalid time zone offset value.

**DEFINE ACTIVITY**

Define a CICS business transaction services activity.

**DEFINE ACTIVITY**

![Diagram of DEFINE ACTIVITY](image)

**Conditions:** ACTIVITYERR, EVENTERR, INVREQ, IOERR, NOTAUTH, TRANSIDERR

**Description**

DEFINE ACTIVITY defines an activity to CICS business transaction services. It is used to add a child activity to the current activity.
The name of the program used in the execution of the new activity is taken either from the PROGRAM option, or, if PROGRAM is not specified, from the transaction definition pointed to by the TRANSID option.

The transaction attributes specified on the TRANSID and USERID options take effect when the activity is activated by a RUN command, but not if it is activated by a LINK command—see “Context-switching” on page 442.

BTS does not commit the addition of the activity until the requesting transaction has taken a successful syncpoint.

**Options**

**ACTIVITY(data-value)**

specifies the name (1–16 characters) of the new activity. The name must not be the name of another child activity of the activity that issues the DEFINE command.

The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ¬ , ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

**ACTIVITYID(data-area)**

returns the 52-character identifier assigned by CICS to the newly-defined activity. This identifier is unique across the sysplex.

**EVENT(data-value)**

specifies the name (1–16 characters) of the completion event for the activity. The completion event is sent to the activity’s parent when the activity completes.

If EVENT is not specified, the completion event is given the same name as the activity itself.

The acceptable characters are A-Z a-z 0-9 $ @ # . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

**PROGRAM(data-value)**

specifies the name (1–8 characters) of the program for the activity being defined. If no program is specified, the name is taken from the TRANSID definition.

**TRANSID(data-value)**

specifies the name (1–4 characters) of the transaction under which the activity is to run, when it is activated by a RUN command.

**Note:** If the activity is activated by a LINK command, it is run under the TRANSID of the transaction that issues the LINK.

The transaction must be defined in the CICS region in which the process is running.

**USERID(data-value)**

specifies the userid (1–8 characters) under whose authority the activity is to run, when it is activated by a RUN command.

**Note:** If the activity is activated by a LINK command, it is run under the userid of the transaction that issues the LINK.

The value of this field is known as the defined userid.

If you omit USERID, the defined userid defaults to the userid under which the transaction that issues the DEFINE command is running—we can call this the command userid.

If USERID is specified, CICS performs (at define time) a surrogate security check to verify that the command userid is authorized to use the defined userid. Thus, if you specify USERID, you must authorize the command userid as a surrogate user of the defined userid.

**Conditions**

**109 ACTIVITYERR**

RESP2 values:
The name specified on the ACTIVITY option has already been used to name another child of the current activity.

**111 EVENTERR**
RESP2 values:

7
The completion event specified on the EVENT option has already been defined to the current activity's event pool.

**16 INVREQ**
RESP2 values:

4
The DEFINE ACTIVITY command was issued outside the scope of a currently-active activity.

17
The activity name specified on the ACTIVITY option, or the event name specified on the EVENT option, is invalid.

**17 IOERR**
RESP2 values:

29
The repository file is unavailable.

30
An input/output error has occurred on the repository file.

**70 NOTAUTH**
RESP2 values:

101
The user associated with the issuing task is not authorized to access the file associated with the BTS repository data set on which details of the activity are to be stored.

102
The user associated with the issuing task is not authorized as a surrogate of the defined userid specified on the USERID option.

**28 TRANSIDERR**
The transaction identifier specified on the TRANSID option is not defined to CICS.

**DEFINE COMPOSITE EVENT**

Define a BTS composite event.
DEFINE COMPOSITE EVENT

**Description**

DEFINE COMPOSITE EVENT defines a composite event to BTS. A composite event is formed from zero or more atomic events known as sub-events.

DEFINE COMPOSITE EVENT defines a *predicate*, which is a logical expression involving sub-events. At all times, the composite event's fire status (FIRED or NOTFIRED) reflects the value of the predicate. When the predicate becomes true, the composite event fires; when it becomes false, the composite's fire status reverts to NOTFIRED.

The logical operator that is applied to the sub-events in the composite event's predicate is one of the Boolean operators **AND** or **OR**. **AND and OR cannot both be used**.

You can specify up to 8 sub-events to be added to the composite event when the composite is created. If you do not specify any sub-events, the composite event is defined as "empty"—that is, as containing no sub-events.

To add sub-events to a composite event after the composite has been defined, use the ADD SUBEVENT command. There is no limit to the number of sub-events that you can add using ADD SUBEVENT.

**Note:** The following *cannot* be added as sub-events to a composite event:

- Composite events
- System events
- Sub-events of other composite events
- Input events, if the composite uses the AND operator.

To remove sub-events from a composite event, use the REMOVE SUBEVENT command.

**Options**

**AND**

specifies that the Boolean operator to be associated with this composite's predicate is AND. This means that the composite event will fire when *all* of its sub-events have fired.

**Note:** The fire status of an empty composite event that uses the AND operator is always FIRED (true).
**EVENT(data-value)**
specifies the name (1–16 characters) of the composite event being defined. The acceptable
characters are A-Z a-z 0-9 $ @ # . and _. Leading and embedded blank characters are not permitted.
If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

**OR**
specifies that the Boolean operator to be associated with this composite's predicate is OR. This
means that the composite event will fire when *any* of its sub-events fires.

**Note:** The fire status of an empty composite event that uses the OR operator is always NOTFIRED
(false).

**SUBEVENTn(data-value)**
specifies the name (1–16 characters) of a sub-event to be added to the composite event when the
composite is created. The acceptable characters are A-Z a-z 0-9 $ @ # . - and _. Leading and
embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is
padded with trailing blanks up to 16 characters.

You can specify this option up to 8 times; *n* must be in the range 1–8.

The sub-events that you specify must previously have been defined to the current activity by means of
DEFINE INPUT EVENT, DEFINE ACTIVITY, or DEFINE TIMER commands. They must not be sub-
events of existing composite events.

**Conditions**

**111 EVENTERR**
RESP2 values:

6  
The event name specified on the EVENT option is invalid.

7  
The event name specified on the EVENT option has already been defined to this activity.

21–28  
One or more of the sub-events named on the SUBEVENTn option does not exist. The RESP2 value
indicates the first sub-event that does not exist.

**16 INVREQ**
RESP2 values:

1  
The command was issued outside the scope of an activity.

31–38  
One or more of the sub-events names specified on the SUBEVENTn option is invalid. The RESP2
value indicates the first invalid sub-event name.
DEFINE COUNTER and DEFINE DCOUNTER

Create a named counter in a named counter pool in the coupling facility. Use COUNTER to create counters that are handled as fullword signed counters and DCOUNTER to create counters that are handled as doubleword unsigned counters.

**DEFINE COUNTER**

```
DEFINE COUNTER( name )
POOL( name )
VALUE( data-value )
MINIMUM( data-value )
MAXIMUM( data-value )
NOSUSPEND
```

**Conditions:** BUSY, INVREQ

This command is threadsafe.

**DEFINE DCOUNTER**

```
DEFINE DCOUNTER( name )
POOL( name )
VALUE( data-value )
MINIMUM( data-value )
MAXIMUM( data-area )
NOSUSPEND
```

**Conditions:** BUSY, INVREQ

This command is threadsafe.

**Description**

These counter commands create a new named counter in a named counter pool in the coupling facility. Although you can use the CICS API to operate with either fullword (signed) or doubleword (unsigned) binary values, the named counter server stores all values as doubleword unsigned values. Overflow conditions might occur if, for example, you define a counter with the DCOUNTER command and try to access it using the COUNTER command. Always access a named counter using commands from the same command set that you used to define the counter.

For information about specifying fullword and doubleword variables on these named counter commands, see “CICS command argument values” on page 3.

**Options**

**COUNTER(name)**

Specifies the 16-byte counter name field. The name should start with a letter and may contain letters, digits or underscore characters, padded to 16 bytes with trailing spaces. (Letters must be uppercase. The national use symbols "£", "#" and "@" are allowed wherever letters are allowed). It is recommended that the name should start with a systematic prefix unique to the application. Any counters used by CICS itself will use the prefix "DFH".
**DCOUNTER**(name)
 Specifies the 16-byte counter name field. The name should start with a letter and may contain letters, digits or underscore characters, padded to 16 bytes with trailing spaces. (Letters must be uppercase. The national use symbols "£", "#" and "@" are allowed wherever letters are allowed). It is recommended that the name should start with a systematic prefix unique to the application. Any counters used by CICS itself will use the prefix "DFH".

**MAXIMUM**(data-value)
 Specifies the maximum number for the named counter, using a fullword signed binary value for COUNTER and a doubleword unsigned value for DCOUNTER. This is the maximum number that can be assigned on a GET command, after which the counter must be reset by a REWIND command.

If you omit the MAXIMUM parameter, the named counter is defined with a default maximum of high values (X'7FFFFFFF' for the signed fullword case, or a doubleword filled with X'FF').

**MINIMUM**(data-value)
 Specifies the minimum number for the named counter, using a fullword signed binary value for COUNTER and a doubleword unsigned value for DCOUNTER. This is the value to which a named counter is reset as a result of a REWIND command.

If you specify the MINIMUM parameter, you must also specify a VALUE parameter.

If you omit the MINIMUM parameter, the named counter is defined with a default minimum of low-values (a fullword or doubleword filled with X'00').

**NOSUSPEND**
 Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

**POOL**(name)
 Specifies an 8-character string to use as a pool selection parameter to select the pool in which the named counter is to be created. The string can be a logical pool name, or the actual pool name.

Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.

This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNCO macro, see Named counter servers.

**VALUE**(data-value)
 Specifies the initial number at which the new named counter is to start, using a fullword signed binary value for COUNTER and a doubleword unsigned value for DCOUNTER.

You can specify a number that is equal to, or greater than, the minimum value, up to the maximum value plus 1. If you specify an initial number that is equal to the maximum value plus 1, the counter is created with the counter-at-limit condition set and it cannot be used until it is rewound.

If you omit both the VALUE and MINIMUM parameters, the named counter is created with an initial value of zero. If you omit VALUE but specify a MINIMUM, the translator issues an error; the VALUE parameter is required if you specify the MINIMUM parameter.

**Conditions**

**128 BUSY**
 RESP2 values:
500
The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.
Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

202
Duplicate counter name. A named counter of this name already exists.

301
The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

302
The server cannot create the new named counter because there is not enough space in the named counter pool.

303
An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

304
The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.

305
The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnnnn) in the application job log.

306
An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308
The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309
During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310
An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311
A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.

403
The POOL parameter contains invalid characters or embedded spaces.

404
The COUNTER parameter contains invalid characters or embedded spaces.

406
The VALUE parameter is invalid. You cannot set the current value to less than the minimum value, or greater than the maximum value plus 1.
The MINIMUM or MAXIMUM parameter is invalid. Either the MAXIMUM parameter specifies a value that is less than the minimum value, or (for COUNTER only) one of the parameters specifies a negative value.

Default action: terminate the task abnormally.

**DEFINE INPUT EVENT**

Define a BTS input event.

**DEFINE EVENT**

![DEFINE INPUT EVENT](image)

**Conditions:** EVENTERR, INVREQ

**Description**

DEFINE INPUT EVENT defines an input event to BTS. Typically, an input event is passed to an activity by its parent, causing the activity to be activated. (Sometimes, however, the input event originates from outside the process.)

Most events fire on the completion of something, such as an activity or a specified time interval. An input event is different in that it fires after a RUN command that names it is issued.

An activity defines an input event in order to receive notification (via the INPUTEVENT option of the RUN or LINK ACTIVITY commands) of why it has been activated.

**Note:** System events such as DFHINITIAL are a special type of input event. They are recognized by all activities and do not need to be defined.

**Options**

**EVENT**(data-value)

specifies the name (1–16 characters) of the input event being defined. The acceptable characters are A-Z a-z 0-9 $ @ # . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

**Conditions**

**111 EVENTERR**

RESP2 values:

6

The event name specified on the EVENT option is invalid.

7

The event name specified on the EVENT option has already been defined to this activity.

**16 INVREQ**

RESP2 values:

1

The command was issued outside the scope of an activity.

**DEFINE PROCESS**

Define a CICS business transaction services process.
DEFINE PROCESS

\[ \text{DEFINE} \quad \text{PROCESS}(\text{data-value}) \quad \text{PROCESSTYPE}(\text{data-value}) \quad \text{TRANSID}(\text{data-value}) \]

\[ \quad \text{PROGRAM}(\text{data-value}) \quad \text{USERID}(\text{data-value}) \quad \text{NOCHECK} \]

**Conditions:** INVREQ, IOERR, NOTAUTH, PROCESSERR, TRANSIDERR

**Description**

DEFINE PROCESS defines a BTS process. It:

- Adds a new process (for example, a new instance of a business transaction) to the CICS business transaction services system.
- Creates the process's root activity.

The name of the program used in the execution of the new process is taken either from the PROGRAM option, or, if PROGRAM is not specified, from the transaction definition pointed to by the TRANSID option.

The transaction attributes specified on the TRANSID and USERID options take effect when the process is activated by a RUN command, but not if it is activated by a LINK command—see “RUN” on page 441.

BTS does not commit the addition of the process until the requesting transaction has taken a successful syncpoint.

**Options**

**NOCHECK** specifies that no record is to be written to the repository data set to reserve the name of the process.

Note that the process name must be unique in the repository—see the PROCESS and PROCESSTYPE options—and that BTS does not commit the addition of the process until the requesting transaction has taken a successful syncpoint.

You can use this option to improve BTS performance by removing the write to the repository and its associated logging. However, if you do so be aware that the error of specifying a non-unique process name no longer causes a PROCESSERR condition to be returned on the DEFINE PROCESS command. The error may not be discovered until much later—when syncpoint occurs—making it much harder to debug.

**PROCESS(data-value)** specifies a name (1–36 characters) to identify the new process (business transaction instance). The name must be unique within the BTS repository data set on which details of the process are to be stored—see the PROCESSTYPE option. For example, it is valid to issue a DEFINE command on which the PROCESS option specifies a name that is currently in use by another process, provided that the PROCESSTYPE option maps to a different underlying repository data set from that on which the first process is defined.

The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | ” = ¬ , ; < > . - and _. Leading and embedded blank characters are also permitted.

If the name is specified as a literal string that is less than 36 characters long, it is padded with trailing blanks up to 36 characters. If the name is specified as a variable whose value is less than 36 characters long, no padding occurs.

**PROCESSTYPE(data-value)** specifies the type (1–8 characters) of the new process.

Each process-type maps to a VSAM data set (the repository), on which information about processes of the named type is stored. That is, information about the state of a process (and of its constituent activities) is stored on the repository associated with the process-type to which it belongs. Records for multiple process-types can be stored on the same repository data set.
You can categorize your processes by assigning them to different process-types.

**PROGRAM(data-value)**
specifies the name (1–8 characters) of the program for the process being added. If no program is specified, the name is taken from the TRANSID definition.

**TRANSID(data-value)**
specifies the name (1–4 characters) of the transaction under which the process is to run when it is activated by a RUN command.

**Note:** If the process is activated by a LINK command, it is run under the TRANSID of the transaction that issues the LINK.

The transaction must be defined in the CICS region in which the DEFINE PROCESS command is executed.

**USERID(data-value)**
specifies the userid (1–8 characters) under whose authority the process is to run when it is activated by a RUN command.

**Note:** If the process is activated by a LINK command, it is run under the userid of the transaction that issues the LINK.

The value of this field is known as the defined userid.

If you omit USERID, the defined userid defaults to the userid under which the transaction that issues the DEFINE command is running—we can call this the command userid.

If USERID is specified, CICS performs (at define time) a surrogate security check to verify that the command userid is authorized to use the defined userid. Thus, if you specify USERID, you must authorize the command userid as a surrogate user of the defined userid.

**Conditions**

**16 INVREQ**
RESP2 values:

12  The installed PROCESSTYPE is not enabled.

22  The unit of work that issued the DEFINE PROCESS command has already acquired an activity.

**17 IOERR**
RESP2 values:

29  The repository file is unavailable.

30  An input/output error has occurred on the repository file.

**70 NOTAUTH**
RESP2 values:

101  The user associated with the issuing task is not authorized to access the file associated with the BTS repository data set on which details of the process are to be stored.

102  The user associated with the issuing task is not authorized as a surrogate of the defined userid specified on the USERID option.

**108 PROCESSEERR**
RESP2 values:

2  The process name specified on the PROCESS option is already in use on the BTS repository data set associated with the PROCESSTYPE option.
The process-type specified on the PROCESSTYPE option could not be found.

The process name specified on the PROCESS option contains an invalid character or characters.

28 TRANSIDERR
The transaction identifier specified on the TRANSID option is not defined to CICS.

**DEFINE TIMER**

Define a BTS timer.

**DEFINE TIMER**

Define a BTS timer.

```
DEFINE TIMER(data-value)
```

**EVENT(data-value)**

**AFTER**

```
AFTER DAYS(data-value)
```

**HOURS(data-value)**

**MINUTES(data-value)**

**SECONDS(data-value)**

**AT**

```
AT HOURS(data-value)
```

**MONTH(data-value)**

**DAYOFMONTH(data-value)**

**DAYOFYEAR(data-value)**

**ON options**

```
ON YEAR(data-value)
```

```
MONTH(data-value)
```

```
DAYOFMONTH(data-value)
```

```
DAYOFYEAR(data-value)
```

**Conditions:** EVENTERR, INVREQ, TIMERERR

**Description**

**DEFINE TIMER** defines a BTS timer that will expire after a specified interval, or at a specified time and date. When a timer is defined, an associated event is also defined, in the event pool of the current activity. The name of the associated event defaults to the name of the timer. When the timer expires, its associated event fires.

**Note:**

1. All dates and times refer to the local time.
2. A timer that specifies a time and date that has already passed expires immediately. Similarly, if the requested interval is zero, the timer expires immediately.

**Options**

**AFTER**

Specifies the interval of time that is to elapse before the timer is to expire.

You must specify one or more of DAYS(0–999), HOURS(0–23), MINUTES(0–59), and SECONDS(0–59). For example, HOURS(1) SECONDS(3) means one hour and three seconds (the minutes default to zero).
AT
    Specifies the time at which the timer is to expire.
    You must specify one or more HOURS(0–23), MINUTES(0–59), and SECONDS(0–59). For example:
    • HOURS(1) means 1 a.m.
    • HOURS(15) MINUTES(15) means 3:15 p.m.
    • MINUTES(15) means 0:15 a.m.

DAYOFMONTH(data-value)
    Specifies, as a fullword binary value in the range 1–31, the day-of-the-month on which the timer is to expire.

DAYOFYEAR(data-value)
    Specifies, as a fullword binary value in the range 1–366, the day-of-the-year on which the timer is to expire. For example, DAYOFYEAR(1) specifies 1st January.

DAYS(data-value)
    Specifies a fullword binary value in the range 0–999. This is a suboption of the AFTER option. For its use and meaning, see AFTER.
    The default value is zero.

EVENT(data-value)
    Specifies the name (1–16 characters) of the event to be associated with the timer. The acceptable characters are A-Z a-z 0-9 $ @ # . - and _. Leading and embedded blank characters are not permitted.
    If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.
    The default event name is the name of the timer.

HOURS(data-value)
    Specifies a fullword binary value in the range 0–23. This is a suboption of the AFTER and AT options. For its use and meaning, see these options.
    The default value is zero.

MINUTES(data-value)
    Specifies a fullword binary value in the range 0–59. This is a suboption of the AFTER and AT options. For its use and meaning, see these options.
    The default value is zero.

MONTH(data-value)
    Specifies, as a fullword binary value in the range 1–12, the month in which the timer is to expire.

ON
    Specifies the date at which the timer is to expire, as a combination of the YEAR, MONTH, DAYOFMONTH, and DAYOFYEAR options.
    If the ON option is not specified, the default date is today.

SECONDS(data-value)
    Specifies a fullword binary value in the range 0–59. This is a suboption of the AFTER and AT options. For its use and meaning, see these options.
    The default value is zero.

TIMER(data-value)
    Specifies the name (1–16 characters) of the timer. The acceptable characters are A-Z a-z 0-9 $ @ # . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

YEAR(data-value)
    Specifies, as a fullword binary value in the range 0–2040, the year in which the timer is to expire.
Conditions

**111 EVENTERR**
RESP2 values:

6  The event name specified on the EVENT option is invalid.

7  The event name specified on the EVENT option (or the default event name taken from the timer name) has already been defined to this activity.

**16 INVREQ**
RESP2 values:

1  The command was issued outside the scope of a currently-active activity.

11  An invalid interval was specified.

12  An invalid date or time was specified.

**115 TIMERERR**
RESP2 values:

14  The timer name specified on the TIMER option is invalid.

15  The timer name specified on the TIMER option has already been defined to this activity.

Examples

```
DEFINE TIMER() AT HOURS(15)
```

defines a timer that will expire at 3 p.m. today (or immediately if the local time is already later than 3 p.m.).

```
DEFINE TIMER() AT HOURS(15) ON YEAR(2001) MONTH(11) DAYOFMONTH(3)
```

defines a timer that will expire at 3 p.m. on 3rd November 2001.

```
DEFINE TIMER() AT HOURS(15) ON YEAR(2001) DAYOFYEAR(32)
```

defines a timer that will expire at 3 p.m. on 1st February 2001.

```
DEFINE TIMER() AT HOURS(8) ON YEAR(1997) MONTH(1) DAYOFMONTH(1)
```

defines a timer that expires immediately.
Delay the processing of a task.

**DELAY**

```
DELAY

INTERVAL( 0 )

INTERVAL( hhmmss )

TIME( hhmmss )

FOR

HOURS( data-value )

MINUTES( data-value )

SECONDS( data-value )

MILLISECS( data-value )

UNTIL

HOURS( data-value )

MINUTES( data-value )

SECONDS( data-value )

REQID( name )
```

**Conditions:** EXPIRED, INVREQ, NORMAL

This command is threadsafe only when the interval is 0.

**Note for dynamic transaction routing:** Using DELAY with REQID if later CANCELeD could create inter-
transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more
information about transaction affinities.

**Description**

DELAY suspends the processing of the issuing task for a specified interval of time or until a specified time
of day. It supersedes any previously initiated POST command for the task.

It is possible to specify intervals in milliseconds (ms); however, CICS checks for delay expiry every 250
ms. Therefore, the actual interval might vary depending on where in the scan cycle your request is made.

The default is INTERVAL(0); but for C, the default is FOR HOURS(0) MINUTES(0) SECONDS(0).

**Options**

**FOR**

Specifies the duration of the delay.

**HOURS(data-value)**

Specifies a fullword binary value in the range 0–99.

**INTERVAL(hhmmss)**

Specifies, in packed decimal format, the interval of time that is to elapse from the time when the
DELAY command is issued. The mm and ss are in the range 0–59. The time specified is added to the
current clock time by CICS when the command is executed to calculate the expiration time.

When using the C language, you are recommended to use the FOR/UNTIL HOURS, MINUTES, and
SECONDS options as C does not provide a packed decimal data type. You may use INTERVAL, but if
the value specified is not an integer constant, the application is responsible for ensuring that the
value passed to CICS is in packed decimal format.
**MILLISECS** *(data-value)*

Specifies a fullword binary value in the range 0–999, when HOURS, MINUTES or SECONDS are also specified, or 0-359999999 when MILLISECS is the only option specified.

**MINUTES** *(data-value)*

Specifies a fullword binary value in the range 0–59, when HOURS, SECONDS or MILLISECS are also specified, or 0–59999 when MINUTES is the only option specified.

**REQID**(name)

Specifies a name (1–8 characters), which should be unique, to identify the DELAY request.

To enable another transaction to cancel the DELAY request, use this option to specify an application-defined name.

To enable other tasks to cancel unexpired DELAY requests, you must make the request identifier dynamically available. For example, storing it in a TS queue, whose name is known to other applications that may want to cancel the DELAY request, is one way you can pass a request identifier to other transactions.

If the task completed normally, to know whether the DELAY request expired normally or was cancelled by an **EXEC CICS CANCEL REQID** command, you must test EIBRESP2 for 23 when control returns to the application.

**SECONDS** *(data-value)*

Specifies a fullword binary value in the range 0–59, when HOURS, MINUTES or MILLISECS are also specified, or 0–359 999 when SECONDS is the only option specified.

**TIME**(hhmmss)

Specifies, in packed decimal format, the time when the task should resume processing.

When using the C language, you are recommended to use the FOR/UNTIL HOURS, MINUTES, and SECONDS options as C does not provide a packed decimal data type. You may use TIME, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format. See the section about expiration times in *Interval control*.

**UNTIL**

Specifies the time at the end of the delay and when the task should resume processing.

**Conditions**

**0 NORMAL**

RESP2 values:

- **23**
  
  Indicates that the DELAY request was cancelled by another task that issued a **CANCEL REQID** command specifying the unique identifier used by this task.

- **31 EXPIRED**
  
  Occurs if the time specified has already expired when the command is issued. If you specify very short intervals of less than 250 ms it is likely the time will have lapsed before the command is issued. You will need to use exception handling if short delay intervals are requested.

Default action: ignore the condition.

**16 INVREQ**

RESP2 values:

- **4**
  
  Hours are out of range.

- **5**
  
  Minutes are out of range.

- **6**
  
  Seconds are out of range.

- **22**
  
  Milliseconds are out of range.
Also occurs (RESP2 not set) if the DELAY command is not valid for processing by CICS. Default action: terminate the task abnormally.

Examples

The following example shows you how to suspend the processing of a task for five minutes:

```
EXEC CICS DELAY
   INTERVAL(500)
   REQID('GXLBZQMR')
EXEC CICS DELAY FOR MINUTES(5)
```

The following example shows you how, at 09:00, to suspend the processing of a task until 12:45:

```
EXEC CICS DELAY
   TIME(124500)
   REQID('UNIQCODE')
```

There are two ways to enter the time under UNTIL.

- A combination of at least two of HOURS(0–99), MINUTES(0–59) and SECONDS(0–59). HOURS(1) SECONDS(3) would mean one hour and three seconds (the minutes default to zero).
- Any one of HOURS(0–99), MINUTES(0–5999), or SECONDS(0–359 999). HOURS(1) means one hour. MINUTES(62) means one hour and two minutes. SECONDS(3723) means one hour, two minutes, and three seconds.

Under FOR you can enter the time in both ways that apply to UNTIL and additionally you can specify a delay to include milliseconds or specify the delay completely in milliseconds. To specify fractions of a second on a delay, code the MILLISECS parameter in the range 0-999 in addition to other time units. To specify the delay purely in milliseconds, code the MILLISECS parameter in the range 0-359999999. The following example shows you how to suspend the processing of a task for 15000 milliseconds:

```
EXEC CICS DELAY
   FOR MILLISECS(15000)
   REQID('UNIQCODE')
```
DELETE

Delete a record from a file - VSAM KSDS, VSAM RRDS, and data tables only.

**DELETE**

```
- DELETE FILE(filename) -
```

- TOKEN(data-area)
- RIDFLD(data-area)
- KEYLENGTH(data-value)
- GENERIC
- NUMREC(data-area)
- SYSID(systemname)
- NOSUSPEND
- RBA
- RRN

**Conditions:** CHANGED, DISABLED, DUPKEY, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LOADING, LOCKED, NOTAUTH, NOTFND, NOTOPEN, RECORDBUSY, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

The **DELETE** command deletes a record from a file on a KSDS, a path over a KSDS, a CICS or user-maintained data table, or an RRDS. You cannot delete from a VSAM ESDS or a BDAM file. **All references to KSDS apply equally to CICS maintained data tables and, except where stated otherwise, to paths over a KSDS.** The file can be on a local or a remote system. You identify, in the RIDFLD option, the specific record to be deleted.

You can delete a group of records with a single invocation of this command, identifying the group by the GENERIC option (not available for RRDS). The **DELETE** command with GENERIC option should be used with caution. If the generic key specified will match a very large number of records, then the CICS unit of work will be holding a very large number of record locks until syncpoint. This could cause storage issues within the CICS region, or if the file is an RLS file, it could cause excessive use of coupling facility resources and affect other systems. Instead, consider using a series of generic deletes (by using generic keys that will match less records) and syncpoint after each range of records has been deleted.

You can also use this command to delete a single record that has previously been retrieved for update (by a READ UPDATE command). In this case, you must not specify the RIDFLD option.

**Note:** If you are converting to RLS access mode and are using the system initialization parameter CILOCK=NO in CICS, see **VSAM RLS** for migration considerations and advice.

When this command is used to delete records from a CICS-maintained data table, the update is made to both the source VSAM KSDS data set and the in-memory data table.
When this command is used to delete records from a user-maintained data table, the update is made only to the in-memory data table.

When this command is used to delete records from a coupling facility data table, the update is made only to the data table in the coupling facility.

**Options**

**FILE(filename)**  
Specifies the name of the file to be accessed.

If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

**GENERIC (VSAM KSDS only)**  
Specifies that the search key is a generic key with a length specified in the KEYLENGTH option. The search for a record is satisfied when a record is found with a key that has the same starting characters (generic key) as those specified.

**KEYLENGTH(data-value)**  
Specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case it is not valid. This option must be specified if GENERIC is specified, and it can be specified whenever a key is specified. However, if the length specified is different from the length defined for the data set and the operation is not generic, the INVREQ condition occurs.

The INVREQ condition also occurs if you specify GENERIC, and the KEYLENGTH is not less than the length specified in the VSAM definition.

Do not specify a zero value for KEYLENGTH because the results are unpredictable.

For remote files, you can specify the KEYLENGTH in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

**NOSUSPEND (RLS only)**  
Specifies that the request is not to wait if VSAM is holding an active lock against the record, including records locked as the result of a DEADLOCK.

**Note:** Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the RECORDBUSY response.

**NUMREC(data-area) (VSAM KSDS only)**  
Specifies a halfword binary data area that CICS sets to the number of deleted records.

**RBA**  
(VSAM KSDS base data sets only, not paths) Specifies that the record identification field specified in the RIDFLD option contains a relative byte address. Use this option only when deleting records using relative byte addresses instead of keys to identify the records.

You cannot use RBA for:

- User-maintained data tables
- Coupling facility data tables
- Any files opened in RLS access mode
- KSDS files that can hold more than 4 GB of data

**RIDFLD(data-area)**  
Specifies the record identification field. The contents can be a key, a relative byte address (RBA), or a relative record number. For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD can be greater than or equal to zero. For a relative record number, the RIDFLD can be greater than or equal to 1.

The contents must be a key for user-maintained data tables or coupling facility data tables.
You must specify this option if you have also specified GENERIC.

**RRN (VSAM RRDS only)**
Specifies that the record identification field specified in the RIDFLD option contains a relative record number. Use this option only with files referencing relative record data sets.

**SYSID(systemname)**
Specifies the name (1-4 characters) of the system the request is directed to.

If you specify SYSID, and omit both RBA and RRN, you must also specify KEYLENGTH; it cannot be found in the resource definition.

**TOKEN(data-area)**
Specifies, as a fullword binary value, a unique identifier for this DELETE request. Use this identifier to associate the delete request with a record returned on a previous READ UPDATE or BROWSE for UPDATE request. The value to use is the value returned in the TOKEN held by the earlier READ UPDATE or BROWSE for UPDATE request.

TOKEN can be function shipped. However, if a request specifying TOKEN is function shipped to a member of the CICS Family of products that does not recognize this option, the request fails.

**Conditions**

**105 CHANGED**
RESP2 values:

109
A DELETE command (without RIDFLD) is issued for a file that is a defined as a coupling facility data table using the contention update model and the record has been changed since the application program read it for update. To perform the DELETE successfully, repeat the read for update to get the latest version of the record, and try the DELETE command again.

Default action: terminate the task abnormally.

**84 DISABLED**
RESP2 values:

50
A file is disabled. A file can be disabled because:
- It was initially defined as disabled and has not since been enabled.
- It has been disabled by a SET FILE or a CEMT SET FILE command.

This condition cannot occur when the DELETE command follows any read with the UPDATE option.

Default action: terminate the task abnormally.

**15 DUPKEY**
RESP2 values:

140
A record is accessed by way of an alternate index with the NONUNIQUEKEY attribute, and another alternate index record with the same key follows.

Default action: terminate the task abnormally.

**12 FILENOTFOUND**
RESP2 values:

1
The file name referred to in the FILE option cannot be found in the file resource definition.

Default action: terminate the task abnormally.

**21 ILLOGIC**
RESP2 values:
A VSAM error occurs that is not in one of the other CICS response categories.

See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

16 INVREQ

RESP2 values:

20 Delete operations are not allowed according to the resource definition.

21 A DELETE command is issued for a file referring to a VSAM ESDS.

22 A generic delete is issued for a file that is not a VSAM KSDS.

25 The KEYLENTH and GENERIC options are specified, and the length specified in the KEYLENTH option is greater than or equal to the length of a full key.

26 The KEYLENTH option is specified (but the GENERIC option is not specified), and the specified length does not equal the length defined for the data set to which this file refers.

27 A DELETE command is issued for a file referring to a BDAM data set.

31 A DELETE command without the RIDFLD option is issued for a file for which no previous READ UPDATE command has been issued.

42 The KEYLENTH and GENERIC options are specified, and the length specified in the KEYLENTH option is less than zero.

44 The DELETE command does not conform to the correct format for a user-maintained or coupling facility data table; for example if RBA was specified.

47 A DELETE instruction includes a token whose value cannot be matched against any token in use for an existing read for UPDATE request.

51 A DELETE command specifying the RBA or XRBA keyword is issued against a KSDS file that is being accessed in RLS mode. RLS does not support relative byte address (RBA) access to KSDS files.

55 NOSUSPEND is specified for a non-RLS file.

56 An attempt to update a recoverable coupling facility data table has failed because the current unit of work has already updated 1024 recoverable coupling facility data tables. You cannot update more than 1024 recoverable coupling facility data tables within a unit of work.

57 DELETE operations are not allowed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows such operations except those from replication programs.

59 XRBA was specified, but the data set is not an extended ESDS.

Default action: terminate the task abnormally.

17 IOERR

RESP2 values:
There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:
70
The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

94 LOADING
RESP2 values:
104
A delete request is issued for a user-maintained data table that is currently being loaded. A user-maintained data table cannot be modified during loading.

LOADING is also returned for a coupling facility data table if the delete request is for a key that is not yet loaded. A coupling facility data table can be modified during loading, but only if the requested key is within the range of those records already loaded.

The LOADING response can also be returned for a coupling facility data table that has failed during loading. For more information about what happens if the load for a coupling facility data table fails, see the description of the XDTLC global user exit in the Data tables management exits (XDTRD, XDTAD, and XDTLC).

If your application programs encounter the LOADING condition persistently or too frequently, check that this condition is not caused by conflicting file definitions that reference the same data set.

Default action: terminate the task abnormally.

100 LOCKED
RESP2 values:
106
An attempt is made to delete a record specifying the RIDFLD, but a retained lock exists against this key (see “Retained and active locks” on page 121). If the request specifies the GENERIC keyword, all possible records are deleted, but the locked records remain. The number of records deleted is returned by NUMREC.

The LOCKED condition can also occur for a DELETE request to a recoverable CFDT that uses the locking model, if the record being read is locked by a retained lock. See the Coupling facility data table retained locks for information about investigating retained locks on records in a coupling facility data table.

Default action: abend the task with code AEX8.

70 NOTAUTH
RESP2 values:
101
A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:
An attempt to delete a record based on the search argument provided is unsuccessful.

For user-maintained data and coupling facility data tables, this condition occurs if an attempt to delete a record is unsuccessful because there is no entry with the specified key in the data table. This can occur on an attempt to delete a record using a DELETE without RIDFLD, if the delete is associated with a READ UPDATE request for a record that this transaction has deleted (using DELETE with RIDFLD) after it was read for update.

This does not mean that there is no such record in the source data set (if the table was created from one); it might be that such a record is present but was either rejected during initial loading by the user exit XDTRD, or was later deleted from the data table.

For coupling facility data tables, this condition can also occur when a DELETE command (without a RIDFLD) is issued to a coupling facility data table using the contention model, and the record has been deleted since it was read for update.

Default action: terminate the task abnormally.

19 NOTOPEN
RESP2 values:

60

NOTOPEN (RESP2 60) is returned for one of the following reasons:

- The requested file is CLOSED and UNENABLED. The CLOSED, UNENABLED state is reached after a CLOSE request has been received against an OPEN ENABLED file and the file is no longer in use. You can also make CLOSED, UNENABLED the initial state, by specifying STATUS(UNENABLED) and OPENTIME(FIRSTREF) on the FILE resource definition.
- The requested file is OPEN and in use by other transactions, but a CLOSE request against the file has been received.
- A DELETE command is issued against a data set that is quiesced, or is being quiesced, as a result of a SET DSNAME QUIESCED or IMMQUIESCED command.
- The requested file is CLOSED and ENABLED, so CICS has tried to open the file as part of executing the request. This file open has failed for some reason. Examine the console for messages that explain why the file open has been unsuccessful.

This condition does not occur if the request is made to a CLOSED, DISABLED file. In this case, the DISABLED condition occurs.

This condition also cannot occur when deleting a record just read for update.

Default action: terminate the task abnormally.

101 RECORDBUSY
RESP2 values:

107

The NOSUSPEND keyword is specified for the deletion of a record that is locked by a VSAM active lock (see “Retained and active locks” on page 121).

If the request specifies the GENERIC keyword, all possible records are deleted except for the locked records which remain. The number of records deleted is returned by NUMREC.

Default action: abend the task with code AEX9.

53 SYSIDERR
RESP2 values:

130

The SYSID option specifies a name that is not the local system or a remote system (made known to CICS by defining a CONNECTION). SYSIDERR also occurs when the link to the remote system is closed.
For a coupling facility data table, the connection to the coupling facility data table server has failed. This failure could occur because the server itself has failed, or the server is available, but CICS has failed to connect to it.

The DELETE command is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails.

Default action: terminate the task abnormally.

Retained and active locks

RECORDBUSY refers to active locks and LOCKED refers to retained locks:

• DELETE requests for records that have retained locks are always rejected with a LOCKED response.
• DELETE requests for records that have active locks wait for the lock to be released, except when the NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

Examples

The following example shows you how to delete a group of records in a VSAM data set:

EXEC CICS DELETE
FILE('MASTVSAM')
RIDFLD(ACCTNO)
KEYLENGTH(len)
GENERIC
NUMREC(NUMDEL)

DELETE ACTIVITY

Delete a BTS child activity.

DELETE

► DELETE — ACTIVITY( data-value) ◄

Conditions: ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED

Description

DELETE ACTIVITY removes a child activity from the BTS repository data set on which it is defined. The child activity’s completion event is removed from the parent’s event pool. Any descendants of the child activity are also deleted.

The activity to be deleted must be a child of the activity that issues the DELETE command. To be eligible for deletion, the child activity must be in one of the following processing states (modes):

• COMPLETE—completed normally, abnormally, or previously canceled.
• INITIAL—not yet run, or reset by means of a RESET ACTIVITY command.

For a description of all possible processing states, see Processing modes.

Note: A child activity that is not deleted explicitly by means of a DELETE ACTIVITY command is deleted automatically by CICS when its parent completes.
Options

**ACTIVITY(data-value)**
specifies the name (1–16 characters) of the child activity to be deleted.

Conditions

**107 ACTIVITYBUSY**
RESP2 values:

19
The request timed out. It may be that another task using this activity-record has been prevented from ending.

**109 ACTIVITYERR**
RESP2 values:

8
The activity named on the ACTIVITY option could not be found.

14
The child activity named on the ACTIVITY option is not in COMPLETE or INITIAL mode, and is therefore ineligible for deletion.

**16 INVREQ**
RESP2 values:

4
The DELETE ACTIVITY command was issued outside the scope of a currently-active activity.

**17 IOERR**
RESP2 values:

29
The repository file is unavailable.

30
An input/output error has occurred on the repository file.

**100 LOCKED**
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

---

**DELETE CHANNEL**

Delete a named channel and all the containers that are in it.

**DELETE CHANNEL**

```
  ➩ DELETE CHANNEL(  data-value  ) ➩
```

**Conditions:** CHANNELERR
This command is threadsafe.

**Description**

**DELETE CHANNEL** deletes the specified channel and all the containers that are in it. When you delete a channel and its containers:

- Any data that is in the containers is discarded.
- All storage that relates to the channel and to its containers is released.

The application program that issues the **DELETE CHANNEL** command must be the program that owns the channel. The program that owns the channel is the program that created the channel by naming it on one of the following commands:
• LINK PROGRAM CHANNEL
• MOVE CONTAINER CHANNEL TOCHANNEL
• PUT CONTAINER CHANNEL
• PUT64 CONTAINER
• RETURN TRANSID CHANNEL
• START TRANSID CHANNEL
• XCTL PROGRAM CHANNEL
• WEB RECEIVE TOCHANNEL
• WEB CONVERSE TOCHANNEL

An application program cannot delete the following channels:

• The current channel for the application program, that is, the channel with which the program was invoked.
• Any channel that the application program did not create.
• Any channel that is read-only.
• The transaction channel DFHTRANSACTION.

Options

CHANNEL(data-value)
   Specifies the 1–16 character name of the channel that is to be deleted. Every container that is owned by the channel is deleted, and the channel itself is deleted.

Conditions

122 CHANNELERR
   RESP2 values:
   2   The channel specified on the CHANNEL option could not be found.
   3   The channel specified on the CHANNEL option is a read-only channel.
   4   The channel specified on the CHANNEL option is the current channel.
   5   The channel specified on the CHANNEL option is the transaction channel.
   6   The channel specified on the CHANNEL option is not owned by the calling program.

DELETE CONTAINER (BTS)

Delete a named BTS data-container.
DELETE CONTAINER (BTS)

**Description**

DELETE CONTAINER (BTS) deletes a BTS data-container and discards any data that it contains.

The container is identified by name and by the process or activity for which it is a container—the process or activity that “owns” it. The activity that owns the container can be identified:

- Explicitly, by specifying one of the PROCESS- or ACTIVITY-related options.
- Implicitly, by omitting the PROCESS- and ACTIVITY-related options. If these are omitted, the current activity is implied.

**Note:** Process containers can be deleted only by the root activity or by a program that has acquired the process.

**Options**

**ACQACTIVITY**

specifies either of the following:

- If the program that issues the command has acquired a process, that the container is owned by the root activity of that process.
- Otherwise, that the container is owned by the activity that the program has acquired by means of an ACQUIRE ACTIVITYID command.

**ACQPROCESS**

specifies that the container is owned by the process that the program that issues the command has acquired in the current unit of work.

**ACTIVITY(data-value)**

specifies the name (1–16 characters) of the activity that owns the container. This must be a child of the current activity.

**CONTAINER(data-value)**

specifies the name (1–16 characters) of the container to be deleted.

**PROCESS**

specifies that the container to be deleted is owned by the current process—that is, the process that the program that issues the command is executing on behalf of.

**Conditions**

**109 ACTIVITYERR**

RESP2 values:

8

The activity named on the ACTIVITY option could not be found.

**110 CONTAINERERR**

RESP2 values:

10

The container named on the CONTAINER option could not be found.
The process container named on the CONTAINER option is read-only. (Process containers can be deleted only by the root activity or by a program that has acquired the process.)

**16 INVREQ**
RESP2 values:

4  
The command was issued outside the scope of a currently-active activity.

15  
The ACQPROCESS option was used, but the unit of work that issued the request has not acquired a process.

24  
The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

25  
The PROCESS option was used, but the command was issued outside the scope of a currently-active process.

**17 IOERR**
RESP2 values:

30  
An input/output error has occurred on the repository file.

31  
The record on the repository file is in use.

**100 LOCKED**  
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

**106 PROCESSBUSY**
RESP2 values:

13  
The request could not be satisfied because the process record is locked by another task.

### DELETE CONTAINER (CHANNEL)

Delete a named channel container.

**DELETE CONTAINER (CHANNEL)**

```
DELETE CONTAINER(data-value) CHANNEL(data-value)
```

**Conditions:** CHANNELERR, CONTAINERERR, INVREQ

This command is threadsafe.

**Description**

DELETE CONTAINER (CHANNEL) deletes a container from a channel and discards any data that it contains.

The container is identified by name and by the channel for which it is a container - the channel that “owns” it.

The channel that owns the container can be identified explicitly, by specifying the CHANNEL option, or implicitly, by omitting the CHANNEL option. When this option is omitted, the current channel is implied. If there is no current channel, the command is assumed to be an EXEC CICS DELETE CONTAINER (BTS) command. For more information, see “DELETE CONTAINER (BTS)” on page 123.
Options

`CHANNEL(data-value)`
Specifies the name (1–16 characters) of the channel that owns the container. You can specify the channel name DFHTRANSACTION to use the transaction channel.

`CONTAINER(data-value)`
Specifies the name (1–16 characters) of the container to be deleted.

Conditions

**122 CHANNELERR**
RESP2 values:

2
The channel specified on the CHANNEL option could not be found.

3
Either the current channel or the channel specified on the CHANNEL option is read-only.

**110 CONTAINERERR**
RESP2 values:

10
The container named on the CONTAINER option could not be found.

**16 INVREQ**
RESP2 values:

4
The command was issued outside the scope of a currently-active channel.

30
You cannot delete a CICS-defined read-only container.

**DELETE COUNTER and DELETE DCOUNTER**

Delete the named counter from the specified pool. Use COUNTER for fullword signed counters and DCOUNTER for doubleword unsigned counters.

**DELETE COUNTER**

```
DELETE COUNTER( name )
```

**Conditions:** BUSY, INVREQ

This command is threadsafe.

**DELETE DCOUNTER**

```
DELETE DCOUNTER( name )
```

**Conditions:** BUSY, INVREQ

This command is threadsafe.

**Description**

These commands delete the named counter from the specified pool.
Options

**COUNTER(name)**

Specifies the name of the fullword counter to delete. The name can be up to 16 alphanumeric characters. If *name* is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**DCOUNTER(name)**

Specifies the name of the doubleword counter to delete. The name can be up to 16 alphanumeric characters. If *name* is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**NOSUSPEND**

Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

**POOL(poolname)**

Specifies an 8-character string to use as a pool selection parameter to select the pool in which the named counter resides. The string can be a logical pool name, or the actual pool name.

Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If *name* is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.

This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNC0 macro, see Named counter servers.

Conditions

**128 BUSY**

RESP2 values:

**500**

The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

**201**

Named counter not found.

**301**

The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

**303**

An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

**304**

The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.
305
The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnnnn) in the application job log.

306
An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308
The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309
During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310
An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311
A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.

403
The POOL parameter contains invalid characters or embedded spaces.

Default action: terminate the task abnormally.

DELETE EVENT

Delete a BTS event.

DELETE EVENT

DELETE EVENT

DELETE EVENT( data-value )

Conditions: EVENTERR, INVREQ

Description
DELETE EVENT deletes a BTS event that is no longer needed. The event is removed from the current activity's event pool. An event can be deleted whether it has fired or not.

DELETE EVENT can be used to delete only the following types of event:

• Input
• Composite.

DELETE EVENT cannot be used to delete:

• Activity completion events. These are implicitly deleted when a response from the completed activity is acknowledged by a CHECK ACTIVITY command issued by the activity's parent; or when a DELETE ACTIVITY command is issued.
• Timer events. These are implicitly deleted when the expiry of the associated timer is acknowledged by a CHECK TIMER command; or when a DELETE TIMER command is issued.
• System events.

Note:
1. If the event to be deleted is included in the predicate of a composite event, it is removed from the predicate’s Boolean expression. The fire status of the composite event (FIRED or NOTFIRED) is re-evaluated.

2. Deleting a composite event has no effect on its sub-events.

**Options**

**EVENT(data-value)**

specifies the name (1–16 characters) of the event to be deleted.

**Conditions**

**111 EVENTERR**

RESP2 values:

4  
The event specified on the EVENT option is not recognized by BTS.

**16 INVREQ**

RESP2 values:

1  
The command was issued outside the scope of an activity.

2  
The event specified on the EVENT option cannot be deleted because it is a system, timer, or activity completion event.

**DELETE TIMER**

Delete a BTS timer.

**DELETE TIMER**

.RequestMethod DELETE TIMER( data-value )

**Conditions:** INVREQ, TIMERERR

**Description**

DELETE TIMER deletes a BTS timer. If an event is associated with the timer, the event is also deleted and removed from the current activity's event pool. (There will be no event associated with the timer if the timer has expired and a CHECK TIMER command has been issued.)

The only timers a program can delete are those owned by the current activity. A timer can be deleted whether it has expired or not.

**Options**

**TIMER(data-value)**

specifies the name (1–16 characters) of the timer to be deleted.

**Conditions**

**16 INVREQ**

RESP2 values:

1  
The command was issued outside the scope of a currently-active activity.
115 TIMERERR
  RESP2 values:
  13
  The timer specified on the TIMER option does not exist.

DELETEQ TD

Delete all transient data.

```
DELETEQ TD
  QUEUE( name )
  SYSID( systemname )
```

Conditions: DISABLED, INVREQ, ISCINVREQ, LOCKED, NOTAUTH, QIDERR, SYSIDERR

This command is threadsafe when it is used with a queue in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is non-threadsafe when it is function shipped to a remote CICS region over another type of connection.

Description

DELETEQ TD deletes all the transient data associated with a particular intrapartition destination (queue). All storage associated with the destination is released (deallocated). Note that you cannot use this command to delete an extrapartition transient data queue. An attempt to do so results in an INVREQ condition.

Options

QUEUE(name)
  Specifies the symbolic name (1 - 4 alphanumeric characters) of the queue to be deleted. The named queue must be defined to CICS.
  If SYSID is specified, the queue is assumed to be on a remote system, irrespective of how it is defined. Otherwise the resource definition is used to find out whether the queue is on a local or a remote system.

SYSID(systemname)
  (remote systems only) Specifies the name (1 - 4 characters) of the system the request is directed.

Conditions

84 DISABLED
  Occurs when the queue has been disabled.
  Default action: terminate the task abnormally.

16 INVREQ
  Occurs if DELETEQ names an extrapartition queue.
  Default action: terminate the task abnormally.

54 ISCINVREQ
  Occurs when the remote system indicates a failure that does not correspond to a known condition.
  Default action: terminate the task abnormally.

100 LOCKED
  Occurs when the request cannot be performed because use of the queue has been restricted owing to a unit of work failing indoubt. This can happen on any request for a logically-recoverable queue defined with WAIT(YES) and WAITACTION(REJECT) in the TDQUEUE resource definition.
Specify WAIT(YES) and WAITACTION(QUEUE) in the TDQUEUE resource definition if you want the transaction to wait.

Default action: terminate the task abnormally.

70 NOTAUTH
Occurs when a resource security check has failed on QUEUE(name).
Default action: terminate the task abnormally.

44 QIDERR
Occurs if the symbolic destination to be used with DELETEQ TD cannot be found.
Default action: terminate the task abnormally.

53 SYSIDERR
Occurs when the SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION or an IPCONN). SYSIDERR also occurs when the link to the remote system is closed.
Default action: terminate the task abnormally.

---

**DELETEQ TS**

Delete a temporary storage queue.

**DELETEQ TS**

```
DELETEQ TS
  QUEUE( name )
  QNAME( name )
  SYSID( systemname )
```

**Conditions:** INVREQ, ISCINVREQ, LOCKED, NOTAUTH, QIDERR, SYSIDERR

This command is threadsafe when it is used with a queue in main storage or auxiliary storage, either in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is also threadsafe when it is used with a queue in a shared temporary storage pool in a z/OS coupling facility that is managed by a temporary storage data sharing server (TS server). The command is non-threadsafe when it is function shipped to a remote CICS region over another type of connection other than IPIC.

**Note for dynamic transaction routing:** Using this command might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see [Affinity](#).

**Description**

DELETEQ TS deletes all the temporary data associated with a temporary storage queue. All storage associated with the queue is freed.

You should delete temporary data as soon as possible to avoid using excessive amounts of storage.

When a recoverable temporary storage queue is deleted, you must issue a sync point before issuing a subsequent WRITEQ TS command for the same queue.

**Options**

**QNAME(name)**

An alternative to QUEUE, QNAME specifies the symbolic name (1 - 16 characters) of the queue to be deleted. The name must not consist solely of binary zeros and must be unique in the CICS system. If the name has less than 16 characters, you must still use a 16-character field, padded with blanks if necessary.
**QUEUE(name)**
Specifies the symbolic name (1 - 8 characters) of the queue to be deleted. The name cannot consist solely of binary zeros and must be unique within the CICS system. If the name has less than 8 characters, you must still use an 8-character field, padded with blanks if necessary.

**SYSID(systemname)**
(Remote and shared queues only) Specifies the system name (1 - 4 characters) identifying the remote system or shared queue pool to which the request is directed. Note that TSMODEL resource definitions do not support specifying a SYSID for a queue that resides in a temporary storage data sharing pool. Use the QUEUE or QNAME option instead. Using an explicit SYSID for a shared queue pool requires the support of a temporary storage table (TST).

**Conditions**

**16 INVREQ**
Occurs in either of the following situations:
- The queue was created by CICS internal code.
- The queue name specified consists solely of binary zeroes.
Default action: terminate the task abnormally.

**54 ISCINVREQ**
Occurs when the remote system indicates a failure that does not correspond to a known condition.
Default action: terminate the task abnormally.

**100 LOCKED**
Occurs when the request cannot be performed because use of the queue has been restricted owing to a unit of work failing indoubt.
Default action: terminate the task abnormally.

**70 NOTAUTH**
Occurs when a resource security check has failed on QUEUE(name).
Default action: terminate the task abnormally.

**44 QIDERR**
Occurs when the specified queue cannot be found in either main or auxiliary storage.
Default action: terminate the task abnormally.

**53 SYSIDERR**
Occurs in any of the following situations:
- The SYSID option specifies a name that is not the local system or a remote system (made known to CICS by defining a CONNECTION or an IPCONN).
- When IPIC connectivity is used, the local system, the remote system, or both, are not CICS TS 4.2 or later regions.
- The link to the remote system is closed.
- The CICS region in which the temporary storage command is executed fails to connect to the TS server managing the TS pool that supports the referenced temporary storage queue. For example, this situation can occur if the CICS region is not authorized to access the temporary storage server.

This condition can also occur if the temporary storage server is not started, or because the server has failed (or been stopped) while CICS continues to run.
Default action: terminate the task abnormally.
DEQ

Schedule use of a resource by a task (dequeue).

DEQ

![Diagram of DEQ command]

**Conditions:** INVREQ, LENGERR

This command is threadsafe if it is defined as LOCAL. It is non-threadsafe if it is defined as GLOBAL.

**Note for dynamic transaction routing:** Using this command could create inter-transaction affinities that adversely affect the use of dynamic transaction routing, unless the name specified in RESOURCE matches the name specified in an installed ENQMODEL resource definition, that has sysplex-wide scope. See Affinity for more information about transaction affinities.

**Description**

DEQ causes a resource currently enqueued on by the task to be released for use by other tasks.

If a task enqueues on, but does not dequeue from, a resource, CICS automatically releases the resource during syncpoint processing or when the task is terminated. A resource in the context of this command is any string of 1–255 bytes, established by in-house standards, to protect against conflicting actions between tasks, or to cause single-threading within a program.

When issuing the DEQ command, the resource to be dequeued from must be identified by the method used when enqueuing on the resource. If no enqueue has been issued for the resource, the dequeue is ignored.

If more than one ENQ command is issued for a resource by a task, that resource remains owned by the task until the task issues a matching number of DEQ commands.

When an EXEC CICS DEQ (or ENQ) command is issued for a resource whose name matches that of an installed ENQMODEL resource definition, CICS checks the value of the ENQSCOPE attribute to determine whether the scope is local or sysplex-wide. If the ENQSCOPE is non-blank, CICS treats the ENQ or DEQ as sysplex-wide, and passes a queue name and the resource name to z/OS global resource serialization to manage the enqueue. If the ENQSCOPE attribute is left blank (the default value), CICS treats the DEQ as local to the issuing CICS region. If no ENQMODEL matches the resource name, the scope of the DEQ command is local. For more information on ENQMODEL resources, see ENQMODEL resources.

**Options**

**LENGTH(data-value)**

specifies that the resource to be dequeued from has a length given by the data value. The data value is a halfword binary value in the range 1 through 255. If the value you specify is outside this range, a LENGERR condition occurs. If the LENGTH option is specified in an ENQ command, it must also be specified in the DEQ command for that resource, and the values of these options must be the same.

**MAXLIFETIME(cvda)**

specifies the duration of the ENQ being released. CVDA values are:

**UOW**

The enqueue was acquired with a duration of a unit of work. This is the default value.

**Note:** For compatibility with previous releases of CICS, a CVDA value of LUW is also supported.

**TASK**

ENQ was acquired with a duration of a task.
RESOURCE(data-area)
  specifies either an area whose address represents the resource to be dequeued from, or a variable that contains the resource (an employee name, for example). In the latter case, you must use the LENGTH option.

Conditions

16 INVREQ
  RESP2 values:

  2
  The MAXLIFETIME option is set with an incorrect CVDA.
  Default action: terminate the task abnormally.

22 LENGERR
  RESP2 values:

  1
  The value you specified for the LENGTH option is outside the range 1 through 255.
  Default action: terminate the task abnormally.

Examples

The following examples show how to dequeue from a resource:

EXEC CICS DEQ
  RESOURCE(RESNAME)

EXEC CICS DEQ
  RESOURCE(SOCSECNO)
  LENGTH(9)

DOCUMENT CREATE

Create a document.

DOCSIZE(data-area)
HOSTCODEPAGE(name)

Conditions: INVREQ, LENGERR, NOTAUTH, NOTFND, SYMBOLERR, TEMPLATERR

This command is threadsafe.
Description

DOCUMENT CREATE signals the start of the document creation process. The document being created can be an empty document, or it can be based on an existing document, a template, or data contained in an application buffer.

Options

**BINARY(data-area)**

specifies a buffer of data which is to be used as the contents of the new document being created. The data is copied unchanged to the document content and no attempt is made to parse the data for symbol substitution. The purpose of the BINARY option is to allow the application to insert blocks of data that must not undergo conversion to a client code page when the data is sent. Use the LENGTH option to specify the length of this buffer.

**DELMITER(data-value)**

specifies an optional 1-byte value used to delimit symbol name-value pairs in the SYMBOLLIST buffer. If this option is not specified, the value defaults to an ampersand. Certain delimiter values (such as the space character) are disallowed, and all of these cause an INVREQ condition on the command if used. The rules are listed in Rules for specifying symbols and symbol lists.

If this option is used, the application must ensure that the DELIMITER does not appear in any symbol value in the SYMBOLLIST buffer. For this reason, the application should not use alphanumeric and other printable characters as the DELIMITER value.

**DOCSIZE(data-area)**

specifies a binary fullword area that will be updated with the current size of the document in bytes. This is the maximum size of the buffer needed to contain a copy of the document when a RETRIEVE command is issued.

**DOCTOKEN(data-area)**

specifies a data area to contain the binary token of the document. The area must be 16 bytes in length and will be set to a CICS-generated name by which the document can be referred to in later commands.

**FROM(data-area)**

specifies that data supplied by the application is to be used to create the contents of the new document. The data content could be a template or a document which was created and retrieved. If the data is a template, symbol substitution will take place where the symbols exist in the symbol table. If the data is a previously retrieved document, the conversion and bookmark tags which were inserted during retrieval will be removed from the content and stored in the internal format required by the API commands. Note that symbol substitution will not be attempted on any unresolved symbols contained in a retrieved document. Use the LENGTH option to specify the length of this buffer.

**FROMDOC(data-area)**

specifies the binary token (see the DOCTOKEN option) of a document whose contents are to be copied to the new document being created. All bookmark and conversion tags are copied to the new document. The symbol table will not be copied.

**HOSTCODEPAGE(name)**

specifies the name of the host code page that the data being added is encoded in. This option applies to the TEXT, SYMBOL and TEMPLATE options only. The name must be eight characters long; if it is shorter than eight characters it must be padded on the right with blanks.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.
Note that the HOSTCODEPAGE parameter must specify an EBCDIC-based code page if any symbol processing will be required, as the delimiters used for symbol and symbol list processing are assumed to be in EBCDIC.

**LENGTH(data-value)**

specifies the length, as a fullword binary value, of the buffer containing the TEXT, BINARY or FROM data.

**LISTLENGTH(data-value)**

specifies the length, as a fullword binary value, of the symbol list.

**SYMBOLLIST(data-area)**

specifies a buffer which contains a symbol list. Use the LISTLENGTH option to specify the length of this buffer. A symbol list is a character string consisting of one or more symbol definitions separated by ampersands. Each symbol definition consists of a name, an equals sign, and a value. Here is an example of a symbol list:

```
applid=IYCQ&jobname=test
```

By default, symbols in the symbol list are separated by the & character, but you can override this by using the DELIMITER keyword to specify a different symbol separator. Rules for specifying symbols and symbol lists lists the rules which apply when setting symbols using a SYMBOLLIST.

**TEMPLATE(name)**

specifies the 48-byte name of a template. The template must be defined to CICS using RDO. If the name is shorter than 48 bytes, it must be padded on the right with blanks.

**Note:** If you insert a template before the symbols contained in it are set, the symbols will never be substituted. This can occur if you create a document from a template without specifying a symbol list.

**TEXT(data-area)**

specifies a buffer of data which is to be used as the contents of the new document being created. The data is copied unchanged to the document content and no attempt is made to parse the data for symbol substitution. The data will be marked as requiring conversion to the client code page when the document is sent. Use the LENGTH option to specify the length of this buffer.

**UNESCAPED**

prevents CICS from unescaping symbol values contained in the SYMBOLLIST buffer. If this option is used, plus signs are not converted to spaces, and sequences such %2B are not converted to single byte values.

The UNESCAPED option does not allow you to include the character that you have used as the symbol separator within a symbol value in a symbol list. If you want to use the UNESCAPED option, choose a symbol separator that will never be used within a symbol value.

**Conditions**

**INVREQ**

RESP2 value:

1

The retrieved document specified on the FROM option is not in a valid RETRIEVE format.

**LENGERR**

RESP2 value:

1

The value specified for LENGTH is invalid. The value is negative.

9

The value specified for LISTLENGTH is invalid. Value must be between 1 and (16M - 1).

**70 NOTAUTH**

The command has failed a resource security check. (If the NOTAUTH condition is not handled, applications that receive it may abend with code AEY7.)
Note that the **EXEC CICS DOCUMENT** commands reference document templates using the 48-character name of the template (as specified in the TEMPLATENAME attribute of the DOCTEMPLATE resource). However, security checking for the commands uses the name of the DOCTEMPLATE resource definition that corresponds to the TEMPLATENAME attribute. If resource security checking is in place, the user ID for the transaction must have READ access to this DOCTEMPLATE resource definition.

RESP2 value:

**101**

The user ID for the transaction does not have READ access to the DOCTEMPLATE resource definition for the document template named by the TEMPLATE option.

**13 NOTFND**

RESP2 values:

**2**

The document specified on the FROMDOC option could not be found or was named incorrectly.

**3**

The template specified on the TEMPLATE option could not be found or was named incorrectly.

**7**

The host code page specified on the HOSTCODEPAGE option could not be found or was named incorrectly.

**8**

The value specified for DELIMITER is not valid.

**116 SYMBOLERR**

A symbol specified in the symbol list does not conform to the naming rules for symbols. RESP2 contains the offset of the symbol in the list.

**117 TEMPLATERR**

The template specified on the DOCTEMPLATE resource does not exist or an invalid #set, #include or #echo command was encountered while processing the supplied template data. RESP2 contains the offset of the invalid command.

**DOCUMENT DELETE**

Delete a document.

**DOCUMENT DELETE**

```plaintext
 DOCUMENT DELETE DOCTOKEN(data-area)
```

**Conditions:** NOTFND

This command is threadsafe.

**Description**

The **DOCUMENT DELETE** command enables you to delete documents that are no longer required during a transaction. The command allows the application to request deletion of a document and all storage related to the document. On execution of this command, the storage allocated to the document is released immediately. If the **DOCUMENT DELETE** command is not invoked, the document exists until the application ends.

**Options**

**DOCTOKEN(data-area)**

specifies the 16-byte binary token of the document to be deleted.
Conditions

13 NOTFND
RESP2 values:

1
  The document has not been created, or the name is incorrectly specified.

**DOCUMENT INSERT**

Insert document objects.

**DOCUMENT INSERT**

```plaintext
DOCUMENT — INSERT — DOCTOKEN(data-area)

<table>
<thead>
<tr>
<th>TEXT(data-area)</th>
<th>LENGTH(data-value)</th>
<th>DOCSIZE(data-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BINARY(data-area)</td>
<td>FROM(data-area)</td>
<td></td>
</tr>
<tr>
<td>SYMBOL(name)</td>
<td>TEMPLATE(name)</td>
<td></td>
</tr>
<tr>
<td>FROMDOC(data-area)</td>
<td>BOOKMARK(name)</td>
<td></td>
</tr>
<tr>
<td>HOSTCODEPAGE(name)</td>
<td>AT(name)</td>
<td>TO(name)</td>
</tr>
</tbody>
</table>
```

**Conditions:** DUPREC, INVRGQ, LENGERR, NOTAUTH, NOTFND, TEMPLATERR

This command is threadsafe.

**Description**

DOCUMENT INSERT allows the application to insert document objects at insertion points in the document. The insertion points (bookmarks) define relative positions in the document. Bookmarks must be defined before being referenced. Data is always inserted after the position identified by the bookmark.

**Options**

**AT(name)**

specifies the 16-byte symbolic name of a bookmark which identifies the position of the insertion point in the document. Data is inserted after the bookmark, and any data following the bookmark is shifted down. The application can use a combination of the AT and TO options to perform an overlay operation. If the AT operand is not specified, the data is inserted at the end of the document. A predefined bookmark of TOP is provided to allow the application to insert data at the beginning of the document.

**BINARY(data-area)**

specifies a buffer of data to be inserted into the document. The data is copied unchanged to the insertion point in the document, and no attempt is made to parse the data for symbol substitution. The BINARY option allows the application to insert blocks of data that must not undergo conversion to a client code page when the data is sent. Use the LENGTH option to specify the length of this buffer.
**BOOKMARK(name)**
specifies a bookmark to be inserted into the document. A bookmark is a symbolic name which identifies an insertion point in the document. The name can be up to 16 characters in length, and must not contain any imbedded spaces.

**DOCSIZE(data-value)**
specifies a binary fullword area to be updated with the current size of the document in bytes. This is the maximum size of the buffer needed to contain a copy of the document when a RETRIEVE command is issued.

**DOCTOKEN(data-area)**
specifies the 16-byte binary token of the document into which data is to be inserted.

**FROM(data-area)**
specifies that a buffer of data supplied by the application is to be inserted into the document. The data content can be a template or a document that was previously created and retrieved. If the data is a template, symbol substitution takes place where the symbols exist in the symbol table. If the data is a previously retrieved document, the conversion and bookmark tags which were inserted during the retrieval will be removed from the content and stored in the internal form required by the API commands. Note that symbol substitution will not be attempted on any unresolved symbols contained in a retrieved document. Use the LENGTH option to specify the length of this buffer.

**FROMDOC(data-area)**
specifies the binary token of a document (see the DOCTOKEN option) whose contents are copied to the insertion point of the target document. All bookmarks and conversion tags are copied to the target document. The symbol table is not copied.

**HOSTCODEPAGE(name)**
specifies the symbolic name (see the DOCTOKEN option) of the host code page that the data being added is encoded in. This option applies to the TEXT, SYMBOL and TEMPLATE options only. The name must be eight characters long; if it is shorter than eight characters, it must be padded on the right with blanks.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

Note that the HOSTCODEPAGE parameter must specify an EBCDIC-based code page if any symbol processing will be required, as the delimiters used for symbol and symbol list processing are assumed to be in EBCDIC.

**LENGTH(data-value)**
specifies the length, as a fullword binary value, of the buffer containing the TEXT, BINARY or FROM data.

When the DOCUMENT INSERT command follows a DOCUMENT RETRIEVE command, without the use of the DATAONLY option, and the retrieved document is being inserted using the FROM option, the LENGTH specified must be equal to the length of the retrieved document.

**SYMBOL(name)**
specifies the 32-byte name of a symbol in the symbol table. The data associated with the symbol in the symbol table is inserted, but not the symbol itself. Note that when data associated with a symbol has been inserted into a document, you cannot change that data in the document that is being composed. If you set a different value for the symbol, the new value will be used the next time that symbol is inserted into a document. Your change will not affect the value that has already been inserted into the document.

**TEMPLATE(name)**
specifies the 48-byte name of a template. The template must be defined to CICS using RDO. If the name is less than 48 bytes, it must be padded on the right with blanks. The current values of any symbols are substituted into the template.
**Note:** When a template containing symbols has been inserted into a document, you cannot change the substituted values of those symbols in the document that is being composed. If you set different values for the symbols, the new values will be used the next time that the template is inserted into a document. Your changes will not affect the values that have already been inserted into the document.

**TEXT(data-area)**

specifies a buffer of data to be inserted into the document. The data is copied unchanged to the insertion point in the document, and no attempt is made to parse the data for symbol substitution. When the document is sent, it is marked as requiring conversion to the client code page. Use the LENGTH option to specify the length of this buffer.

**TO(name)**

specifies the symbolic name of a bookmark identifying the end position of an overlay operation. Data between the bookmarks identified by the AT and TO operands is deleted, and new data is inserted in its place. It is possible to delete data between two bookmarks by specifying a null string on the TEXT or BINARY option with a LENGTH of zero.

**Conditions**

**14 DUPREC**

The bookmark has already been defined.

**16 INVREQ**

RESP2 values are:

0  The bookmark specified on the TO option appears before the bookmark specified on the AT bookmark.

1  The retrieved document specified on the FROM option is not in a valid RETRIEVE format.

2  The bookmark name on the BOOKMARK option is invalid.

**LENERR**

RESP2 value:

1  The value specified for LENGTH is invalid. The value is negative.

**70 NOTAUTH**

The command has failed a resource security check. (If the NOTAUTH condition is not handled, applications that receive it may abend with code AEY7.)

Note that the EXEC CICS DOCUMENT commands reference document templates using the 48-character name of the template (as specified in the TEMPLATENAME attribute of the DOCTEMPLATE resource definition). However, security checking for the commands uses the name of the DOCTEMPLATE resource definition that corresponds to the TEMPLATENAME attribute. If resource security checking is in place, the user ID for the transaction must have READ access to this DOCTEMPLATE resource definition.

RESP2 value:

101  The user ID for the transaction does not have READ access to the DOCTEMPLATE resource definition for the document template named by the TEMPLATE option.

**13 NOTFND**

One of the following documents or templates could not be found, or its name was incorrect.

RESP2 values:

1  The document specified on the DOCUMENT option.
The document specified on the FROMDOC option.

The template specified on the TEMPLATE option.

The document specified on the SYMBOL option.

The document specified on the AT option.

The document specified on the TO option.

The document specified on the HOSTCODEPAGE option.

**117 Templaterr**

An invalid #set, #include or #echo command has been encountered while processing the supplied template data, or the CICS region does not have the correct level of authority to access the zFS file of this template. RESP2 contains either a zero (if the maximum of 32 levels of embedded templates is exceeded), or the offset of the invalid command.

### DOCUMENT RETRIEVE

Copy a document into the application's own buffer.

**DOCUMENT RETRIEVE**

```c
DOCUMENT  -- RETRIEVE  -- DOCTOKEN( data-area )  -- INTO( data-area )  -- LENGTH( data-value )
```

```c
MAXLENGTH( data-value )  CHARACTERSET( name )  DATAONLY
```

**Conditions:** INVREQ, LENGERR, NOTFND

This command is threadsafe.

**Description**

**DOCUMENT RETRIEVE** allows the application to obtain a copy of the document in its own buffer, which it can then manipulate directly. The document is managed by CICS, and the application does not have direct access to the buffer containing the contents of the document. The document exists only for the duration of the current transaction, so the application must retrieve the document and store it if the document is to exist over transaction boundaries. The retrieved document can be used as a basis for a new document by using the FROM option of the **DOCUMENT CREATE** command.

When the document is retrieved, CICS inserts tags into the document contents to identify the bookmarks and to delimit the blocks that do not require code page conversion. To request a copy without tags, specify DATAONLY. The extracted document can also be converted into a single client code page by using the CHARACTERSET option.

The **DOCUMENT CREATE** and **DOCUMENT INSERT** commands return a DOCSIZE value. This value is the maximum size of the buffer needed to contain a copy of the document in its original code page (including control information), when the RETRIEVE command is issued. However, when the CHARACTERSET option specifies an encoding that requires more bytes than the original EBCDIC data (for example, UTF-8), the maximum size might not be large enough to store the converted document. If the DOCSIZE value is used for the buffer size in this case, the program should be prepared to handle a LENGERR condition and acquire a new buffer using the size returned in the LENGTH parameter. Alternatively, you can determine the actual document length before allocating the buffer by issuing a **DOCUMENT RETRIEVE** with a dummy buffer and a MAXLENGTH of zero, then handling the LENGERR condition and using the returned LENGTH value.
Options

**CHARACTERSET(name)**

specifies the name of the client character set to which the data should be converted. The name can be up to 40 characters in length (if it is shorter than 40 characters, it must be padded on the right with blanks).

This parameter replaces the CLNTCODEPAGE parameter, which is supported for upgrade purposes only.

**CLNTCODEPAGE(name)**

This option is supported for upgrade purposes only. CHARACTERSET replaces it. The action taken by CICS is the same for both keywords.

**DATAONLY**

specifies that the data should be retrieved without any imbedded tags.

**DOCTOKEN(data-area)**

specifies the 16-byte binary token of the document to be retrieved.

**INTO(data-area)**

specifies the buffer that is to contain the copy of the document content.

**LENGTH(data-value)**

specifies the length, as a fullword binary value, of the amount of data being returned to the application. If the document is truncated, this is the exact length required to return the whole document.

**MAXLENGTH(data-value)**

specifies the length, as a fullword binary value, of the maximum amount of data the buffer can receive.

Conditions

**16 INVREQ**

RESP2 values:

11

An invalid or unsupported combination of code pages was specified.

12

An error occurred during CCSID conversion and the conversion could not be completed. For example, a piece of text or a symbol value ended part of the way through a multi-byte character.

**22 LENGERR**

RESP2 values:

1

MAXLENGTH is less than zero. The document size is not returned in the LENGTH field.

2

The length of the receiving buffer is zero, or is too short to contain the document contents. The document is truncated and the exact length required is returned in the LENGTH field.

**13 NOTFND**

RESP2 values:

1

The document has not been created, or the name is incorrectly specified.

7

The specified character set cannot be found.
**DOCUMENT SET**

Add symbols and values to symbol table.

**Description**

**DOCUMENT SET** allows the application to add symbols and their associated values to the symbol table. If the symbol being added already exists in the table, it is replaced by the new definition.

**Note:**

1. When a template containing symbols has been inserted into a document, you cannot change the substituted values of those symbols in the document that is being composed. If you set different values for the symbols, the new values will be used the next time that the template is inserted into a document. Your changes will not affect the values that have already been inserted into the document.

2. If you insert a template before the symbols contained in it are set, the symbols will never be substituted. This can occur if you create a document from a template without specifying a symbol list.

**Options**

**DELIMITER(data-value)**

specifies an optional 1-byte value used to delimit symbol name-value pairs in the SYMBOLLIST buffer. If this option is not specified, the value defaults to an ampersand. Certain delimiter values (such as the space character) are disallowed, and all of these cause an INVREQ condition on the command if used. They are listed in Rules for specifying symbols and symbol lists.

If this option is used, the application must ensure that the DELIMITER does not appear in any symbol value in the SYMBOLLIST buffer. For this reason, the application should not use alphanumeric and other printable characters as the DELIMITER value.

**DOCTOKEN(data-area)**

specifies the 16-byte binary token of the document that owns the symbol table.

**LENGTH(data-value)**

specifies the length, as a fullword binary value, of the buffer containing the data value associated with the symbol, or the length of the buffer containing the symbol list when the SYMBOLLIST option is used.

**SYMBOL(name)**

specifies the name of the symbol that is to be added to the table. The name can be 1 to 32 characters in length with no embedded spaces. **Rules for specifying symbols and symbol lists** lists the rules which apply when specifying the name of a symbol. If you want to define more than one symbol in the same command, use the SYMBOLLIST option instead.

**Conditions:** INVREQ, LENGERR, NOTFND, SYMBOLERR

This command is threadsafe.
SYMBOLLIST(*data-area*)
specifies a buffer which contains a symbol list. Use the LENGTH option to specify the length of this buffer. A symbol list is a character string consisting of one or more symbol definitions separated by ampersands. Each symbol definition consists of a name, an equals sign, and a value. Here is an example of a symbol list:

```
applid=ICYQ&jobname=test
```

By default, symbols in the symbol list are separated by the & character, but you can override this by using the DELIMITER keyword to specify a different symbol separator. Rules for specifying symbols and symbol lists lists the rules which apply when setting symbols using a SYMBOLLIST.

UNESCAPED
prevents CICS from unescaping symbol values contained in the SYMBOLLIST buffer. If this option is used, plus signs are not converted to spaces, and sequences such %2B are not converted to single byte values.

The UNESCAPED option does not allow you to include the character that you have used as the symbol separator within a symbol value in a symbol list. If you want to use the UNESCAPED option, choose a symbol separator that will never be used within a symbol value. Alternatively, you can use the SYMBOL and VALUE options to specify symbol values that contain the character you have used as the symbol separator, because the symbol separator has no special meaning when used in the VALUE option.

VALUE(*data-area*)
specifies an area containing the value to be associated with the SYMBOL. Rules for specifying symbols and symbol lists lists the rules which apply when specifying the value of a symbol.

Conditions
16 INVREQ
RESP2 values:
8
  The value specified for DELIMITER is not valid.

LENGERR
RESP2 value:
9
  The value specified for symbol list LENGTH is invalid. Value must be between 1 and (16M - 1).
10
  The value specified for symbol value LENGTH is invalid. Value must be between 1 and (16M - 1).

13 NOTFND
RESP2 values:
1
  The document has not been created or the name is incorrectly specified.

116 SYMBOLERR
  A symbol name is invalid. RESP2 values:
0
  SYMBOLLIST was not used.
offset
  RESP2 contains the offset of the invalid symbol in the list.
**DUMP TRANSACTION**

Request a transaction dump.

**DUMP TRANSACTION**

```
DUMP TRANSACTION  DUMPCODE( name )
FROM( data-area )  LENGTH( data-value ) COMPLETE
FLENGTH( data-value )
TRT
SEGMENTLIST( data-area ) LENGTHLIST( data-area ) NUMSEGMENTS( data-area )
TASK STORAGE PROGRAM TERMINAL
TABLES FCT PCT PPT SIT
DUMPID( data-area )
```

**Conditions:** INVREQ, IOERR, NOSPACE, NOSTG, NOTOPEN, OPENERR, SUPPRESSED

**Description**

DUMP TRANSACTION dumps all, a series, or any single main storage area related to a task, any or all of the CICS tables, or all of these together.

Note that if you issue a DUMP TRANSACTION for a DUMPCODE that is defined in the transaction dump table with SYSDUMP, you also get a system dump.

If there is no entry in the system dump table for the specified DUMPCODE, a temporary entry is made. This entry is lost on the next CICS start. The system dump table is described in The dump code options you can specify.

**Options**

**COMPLETE**

dumps all main storage areas related to a task, all the CICS tables, and the DL/I control blocks.

**DUMPCODE(name)**

specifies a name (1–4 characters) that identifies the dump. If the name contains any leading or imbedded blanks, the dump is produced but INVREQ is raised. No entry is added to the system dump table.

If you omit all the options except DUMPCODE, you get the same dump as if you specified TASK, but without the DL/I control blocks.

**DUMPID(data-area)**

returns a 6- to 9-character dump identifier generated for this particular dump. The format of the identifier is xxxx/yyyy, where xxxx represents the dump run number, yyyy is the dump count, and the slash (/) symbol is a separator character. The dump identifier is generated as follows:
Dump run number
A number in the range 1 to 9999. (Leading zeros are not used for this number, which is why the
dump id can vary from 6 to 9 characters.) The dump run number begins at 1 when you first start
CICS with a newly-initialized local catalog, and is incremented by 1 each time you restart CICS.
The dump run number is saved in the local catalog when you perform a normal shutdown, but is
reset if you start CICS with a START=INITIAL or START=COLD system initialization parameter.

Dump count
A number in the range 0001 through 9999. (Leading zeros are required in the dump id.) This is the
number assigned to the dump in this run of CICS, starting at 0001 for the first dump, and
incremented by 1 with each dump taken.

FCT
  dumps the file control table, which contains FILE resource definitions.

FLENGTH(data-value)
specifies the length (fullword binary value) of the storage area (specified in the FROM option) that is to
be dumped. The maximum length that you can specify is 16,777,215 bytes.

LENGTH and FLENGTH are mutually exclusive.

FROM(data-area)
dumps the specified data area, which must be a valid area; that is, storage allocated by the operating
system within the CICS region. In addition, the following areas are dumped:

  • Task control area (TCA) and, if applicable, the transaction work area (TWA).
  • Common system area (CSA), including the user's portion of the CSA (CWA).
  • If TRAN is specified for the TRTRANTY SIT parameter, only the trace entries associated with the
current task are formatted. If TRTRANTY=ALL is specified, the entire internal trace table is
formatted. This applies only when the CICS trace facility is active.
  • Either the terminal control table terminal entry (TCTTE) or the transient data queue definition
    associated with the requesting task.

Whenever the TCTTE is dumped, the terminal control table user area (if any) and the message control
blocks (if any) associated with the TCTTE are dumped. The latter are used by basic mapping support.

LENGTH(data-value)
specifies the length (halfword binary) of the data area specified in the FROM option. For a description
of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

LENGTH and FLENGTH are mutually exclusive.

LENGTHLIST(data-area)
specifies a list of 32-bit binary values showing the lengths of the storage areas to be dumped. This
 corresponds to the list of segments specified in the SEGMENTLIST option. You must use both the
SEGMENTLIST and NUMSEGMENTS options when you use the LENGTHLIST option.

NUMSEGMENTS(data-area)
specifies the number (fullword binary) of areas to be dumped. You must use both the SEGMENTLIST
and LENGTHLIST options when you use the NUMSEGMENTS option.

PCT
  formats a summary of each installed transaction resource definition.

PPT
  formats a summary of each installed program resource definition.

PROGRAM
  specifies that program storage areas associated with this task are to be dumped, as follows:
  • Task control area (TCA) and, if applicable, the transaction work area (TWA)
  • Common system area (CSA), including the user's portion of the CSA (CWA)
  • Trace entries relating to the task written to the internal trace table (only when the CICS trace facility
    is active)
• All program storage areas containing user-written application programs active on behalf of the requesting task
• Register save areas (RSAs) indicated by the RSA chain off the TCA
• Either the terminal control table terminal entry (TCTTE) or the transient data queue definition associated with the requesting task.

Whenever the TCTTE is dumped, the terminal control table user area (if any) and the message control blocks (if any) associated with the TCTTE are dumped.

**SEGMENTLIST**(data-area)
specifies a list of addresses, which are the starting points of the segments to be dumped. Each segment is a task-related storage area. You must use both the NUMSEGMENTS and LENGTHLIST options when you use the SEGMENTLIST option.

**SIT**
dumps the system initialization table.

**STORAGE**
specifies that storage areas associated with this task are to be dumped, as follows:
• Task control area (TCA) and, if applicable, the transaction work area (TWA)
• Common system area (CSA), including the user's portion of the CSA (CWA)
• Trace entries relating to the task written to the internal trace table (only when the CICS trace facility is active)
• All transaction storage areas
• Either the terminal control table terminal entry (TCTTE) or the transient data queue definition associated with the requesting task

Whenever the TCTTE is dumped, the terminal control table user area (if any) and the message control blocks (if any) associated with the TCTTE are dumped.

**TABLES**
dumps the FCT (file control table, containing FILE resource definitions), PCT (program control table, containing TRANSACTION resource definitions), PPT (processing program table, containing PROGRAM resource definitions), SIT (system initialization table, containing CICS system initialization parameters), and the TCT (terminal control table, containing TERMINAL resource definitions).

**TASK**
specifies that storage areas associated with this task are to be dumped, as follows:
• A summary of the transaction environment associated with this task
• Common system area (CSA), including the user's portion of the CSA (CWA)
• Trace entries relating to the task written to the internal trace table (only when the CICS trace facility is active)
• All program storage areas containing user-written application programs active on behalf of the requesting task
• All transaction storage areas
• Either the terminal control table terminal entry (TCTTE) or the transient data queue definition associated with the requesting task
• Register save areas (RSAs) indicated by the RSA chain off the TCA
• All terminal input/output areas (TIOAs) chained off the terminal control table terminal entry (TCTTE) for the terminal associated with the requesting task
• DL/I control blocks

Whenever the TCTTE is dumped, the terminal control table user area (if any) and the message control blocks (if any) associated with the TCTTE are dumped.

**TCT**
dumps the terminal control table.
TERMINAL specifies that storage areas associated with the terminal are to be dumped, as follows:

- Task control area (TCA) and, if applicable, the transaction work area (TWA)
- Common system area (CSA), including the user’s portion of the CSA (CWA)
- Trace entries relating to the task written to the internal trace table (only when the CICS trace facility is active)
- All terminal input/output areas (TIOAs) chained off the terminal control table terminal entry (TCTTE) for the terminal associated with the requesting task as long as the request is not a write, or storage freezing is on for the task or the terminal
- Either the terminal control table terminal entry (TCTTE) or the transient data queue definition associated with the requesting task.

Whenever the TCTTE is dumped, the terminal control table user area (if any) and the message control blocks (if any) associated with the TCTTE are dumped. The latter are used by basic mapping support.

TRT dumps the trace entries relating to the task written to the internal trace table.

Conditions

16 INVREQ
RESP2 values:

13 An incorrect DUMPCODE is specified. DUMPCODE contains unprintable characters, or leading or imbedded blanks.

The dump is produced but no entry is added to the system dump table.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:

9 The SDUMP process is not authorized.

10 An error occurred during system dumping.

13 The CICS routine issuing the SDUMP is unable to establish a recovery routine (FESTAE).

Default action: terminate the task abnormally.

18 NOSPACE
RESP2 values:

4 The transaction dump is incomplete due to lack of space.

Default action: terminate the task abnormally.

42 NOSTG
RESP2 values:

5 CICS has run out of working storage.

Default action: terminate the task abnormally.

19 NOTOPEN
RESP2 values:
The current CICS dump data set is not open.

Default action: terminate the task abnormally.

87 OPENERR
RESP2 values:

7
There is an error on opening, closing, or writing to the current CICS dump routine.

Default action: terminate the task abnormally.

72 SUPPRESSED
RESP2 values:

1
The transaction dump is suppressed by MAXIMUM in table.

2
The transaction dump is suppressed by NOTRANDUMP in table.

3
The transaction dump is suppressed by a user exit program.

Default action: terminate the task abnormally.

Examples
The following example shows how to request a dump of all the task-related storage areas, the terminal control table, and a specified data area:

EXEC CICS DUMP TRANSACTION
  DUMPCODE('name')
  FROM(data-area)
  LENGTH(data-value)

This second example (written in PL/I) shows you a case in which five task-related storage areas are dumped:

DCL storage_address(5) POINTER,
  storage_length(5) FIXED BIN(31),
  nsegs FIXED BIN(31);
storage_address(1) = ADDR(areal);
storage_length(1) = CSTG(areal);
⋮
nsegs = 5;
EXEC CICS DUMP TRANSACTION
  DUMPCODE('name')
  SEGMENTLIST(storage_address)
  LENGTHLIST(storage_length)
  NUMSEGMENTS(nsegs);

ENDBR
End the browse of a file.

End the browse of a file.

FILE(filename)
  REQID(data-value)
  SYSID(systemname)

Conditions: FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, SYSIDERR

This command is threadsafe if the file to which it refers is:
• Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
• Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:
• Defined as remote and the command is function shipped over a non-IPIC connection.
• Defined as a shared data table or BDAM file.

Description
ENDBR ends a browse on a file or data table on a local or a remote CICS region.

The UPDATE option is available within browse so we recommend that you use this because otherwise you would need to issue an ENDBR command before using READ UPDATE to avoid self deadlock abends. We recommend issuing an ENDBR before syncpoint for similar reasons.

If STARTBR was not successful, you do not need to issue ENDBR.

Options
FILE(filename)
   Specifies the name of the file being browsed.
   If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition for the file is used to find out whether the data set is on a local or a remote system.

REQID(data-value)
   Specifies a unique (halfword binary value) request identifier for a browse, used to control multiple browse operations on a data set. If this option is not specified, a default value of zero is assumed.

SYSID(systemname)
   Specifies the name (1–4 characters) of the system the request is directed to.

Conditions
12 FILENOTFOUND
   RESP2 values:
    1
       The name referred to in the FILE option is not defined to CICS.
       Default action: terminate the task abnormally.

21 ILLOGIC (VSAM)
   RESP2 values:
    110
       A VSAM error occurs that is not in one of the other CICS response categories.
       See EIBRCODE in the EXEC interface block; for details, see EIB fields.
       Default action: terminate the task abnormally.

16 INVREQ
   RESP2 values:
    35
       The REQID, SYSID, or file name does not match that of any successful STARTBR command.
       Default action: terminate the task abnormally.

17 IOERR
   RESP2 values:
There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:

70
The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101
A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

53 SYSIDERR
RESP2 values:

130
The SYSID option specifies a name that is neither the local system nor a remote system that is defined by a CONNECTION or IPCONN definition. SYSIDERR also occurs when the link to the remote system is known but unavailable. In the case of an IPCONN, SYSIDERR occurs if the link is known but either the local or remote systems do not support file control commands that are function shipped using IP interconnectivity.

Default action: terminate the task abnormally.

ENDBROWSE ACTIVITY

End a browse of the child activities of a BTS activity, or of the descendant activities of a BTS process.

ENDBROWSE ACTIVITY

ENDBROWSE ACTIVITY

ENDBROWSE ACTIVITY

BROWSETOKEN(data-value)

Conditions: ILLOGIC, TOKENERR

Description

ENDBROWSE ACTIVITY ends a browse of the child activities of a BTS activity (or of the descendant activities of a BTS process), and invalidates the browse token.

Options

BROWSETOKEN(data-value)

specifies, as a fullword binary value, the browse token to be deleted.

Conditions

21 ILLOGIC

RESP2 values:
The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for an activity browse.

**112 TOKENERR**

RESP2 values:

1. The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of containers.

3. The browse token is not valid.

---

**ENDBROWSE CONTAINER (BTS)**

End a browse of the containers associated with a BTS activity or process.

**ENDBROWSE CONTAINER**

```
ENDBROWSE CONTAINER BROWSETOKEN(data-value)
```

**Conditions:** ILLOGIC, TOKENERR

**Description**

ENDBROWSE CONTAINER ends a browse of the containers associated with a BTS activity or process, and invalidates the browse token.

**Options**

**BROWSETOKEN(data-value)**

specifies, as a fullword binary value, the browse token to be deleted.

**Conditions**

**21 ILLOGIC**

RESP2 values:

1. The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of containers.

**112 TOKENERR**

RESP2 values:

3. The browse token is not valid.

---

**ENDBROWSE CONTAINER (CHANNEL)**

End a browse of the containers associated with a channel.

**ENDBROWSE CONTAINER**

```
ENDBROWSE CONTAINER BROWSETOKEN(data-value)
```

**Conditions:** ILLOGIC, TOKENERR
Description
ENDBROWSE CONTAINER (CHANNEL) ends a browse of the containers associated with a channel, and invalidates the browse token.

Options
BROWSETOKEN(data-value)
specifies, as a fullword binary value, the browse token to be deleted.

Conditions
21 ILLOGIC
RESP2 values:
1
The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of containers.

112 TOKENERR
RESP2 values:
3
The browse token is not valid.

ENDBROWSE EVENT
End a browse of the events known to a BTS activity.

Options
BROWSETOKEN(data-value)
specifies, as a fullword binary value, the browse token to be deleted.

Conditions
112 TOKENERR
RESP2 values:
3
The browse token is not valid.

ENDBROWSE PROCESS
End a browse of processes of a specified type within the CICS business transaction services system.
ENDBROWSE PROCESS

**ENDBROWSE** — PROCESS — **BROWSETOKEN**(*data-value*)

**Conditions:** ILLOGIC, TOKENERR

**Description**

ENDBROWSE PROCESS ends a browse of the processes of a specified type within the CICS business transaction services system, and invalidates the browse token.

**Options**

**BROWSETOKEN**(data-value)

specifies, as a fullword binary value, the browse token to be deleted.

**Conditions**

**21 ILLOGIC**

RESP2 values:

1

The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a process browse.

**112 TOKENERR**

RESP2 values:

3

The browse token is not valid.

ENDBROWSE TIMER

End a browse of a BTS timer.

**ENDBROWSE TIMER**

**ENDBROWSE** — **TIMER** — **BROWSETOKEN**(*data-value*)

**Conditions:** ILLOGIC, INVREQ, TOKENERR

**Description**

ENDBROWSE TIMER ends a browse of a BTS timer.

**Options**

**BROWSETOKEN**(data-value)

specifies, as a fullword binary value, the browse token to be deleted.

**Conditions**

**21 ILLOGIC**

RESP2 values:

1

The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of a timer.

**16 INVREQ**

RESP2 values:
The command was issued outside the scope of a currently—active activity.

112 TOKENERR
RESP2 values:

3
The browse token is not valid.

ENQ
Schedule use of a resource by a task (enqueue).

**ENQ**

![ENQ Diagram]

**Conditions:** ENQBUSY, INVREQ, LENGERR
This command is threadsafe if it is defined as LOCAL. It is non-threadsafe if it is defined as GLOBAL.

**Description**
ENQ causes further execution of the task issuing the ENQ command to be synchronized with the availability of the specified resource; control is returned to the task when the resource is available.

A resource in the context of this command is any string of 1–255 bytes, established by in-house standards, to protect against conflicting actions between tasks, or to cause single threading within a program.

If a task enqueues on a resource but does not dequeue from it, CICS automatically releases the resource during syncpoint processing (including DL/I, PCB, and TERM calls), or when the task is terminated. Option UOW forces the dequeue at the end of a unit of work (UOW). Option TASK forces the dequeue at the end of a task. If there are several units of work in a task, the enqueue carries over the UOWs.

If more than one ENQ command is issued for the same resource by a given task, the resource remains owned by that task until the task issues a matching number of DEQ commands.

The resource to be enqueued on must be identified by one of the following methods:

- Specifying a data area that is the resource. It is the location (address) of the data area in storage that matters, not its contents.
- Specifying a data area that contains a unique argument (for example, an employee name) that represents the resource. It is the contents of the data value that matters, not its location. LENGTH is required; the presence of the LENGTH option tells CICS to enqueue on the contents of the data value.

When an EXEC CICS ENQ (or DEQ) command is issued for a resource whose name matches that of an installed ENQMODEL resource definition, CICS checks the value of the ENQSCOPE attribute to determine whether the scope is local or sysplex-wide. If the ENQSCOPE attribute is non-blank, CICS treats the ENQ or DEQ as sysplex-wide, and passes a queue name and the resource name to z/OS global resource serialization to manage the enqueue. If the ENQSCOPE attribute is left blank (the default value), CICS treats the ENQ as local to the issuing CICS region. If no ENQMODEL matches the resource name, the scope of the ENQ command is local. For more information on ENQMODEL resources, see ENQMODEL resources.
Resource unavailability

If a resource is not available when ENQ is issued, the application program is suspended until it becomes available. However, if the NOSUSPEND option has been specified and the resource is unavailable, the ENQBUSY condition is raised, as it is also raised if you have an active HANDLE condition. This allows the application program to handle the case of resource unavailability (by HANDLE CONDITION ENQBUSY) without waiting for the resource to become available.

Options

**LENGTH**(data-value)

specifies as a halfword binary value the length of the resource to be enqueued on. The value must be in the range 1 through 255; otherwise, the LENGERR condition occurs. If the LENGTH option is specified in an ENQ command, it must also be specified in the DEQ command for that resource, and the values of these options must be the same. You must specify LENGTH when using the method that specifies a data value containing a unique argument, but not for the method that specifies a data area as the resource. It is the presence or absence of LENGTH that tells CICS which method you are using.

**MAXLIFETIME**(cvda)

specifies the duration of the ENQ to be automatically released by CICS. CVDA values are:

**UOW**

The duration of the ENQ is a unit of work. Examples are a syncpoint rollback or syncpoint, if the application does not issue a DEQ before the unit of work ends. This is the default value.

*Note:* For compatibility, a CVDA value of LUW is also supported.

**TASK**

The duration of the ENQ is a task. The enqueue carries over the units of work within the task. Use MAXLIFETIME(TASK) with great care because other tasks issuing ENQ commands on the same resource could be suspended until the end of this task.

There are two ways to code this option.

1. You can assign a CVDA value with the translator routine DFHVALUE. This allows you to change a CVDA value in the program. For example:

```
MOVE DFHVALUE(UOW) TO AREA-A
EXEC CICS ENQ RESOURCE(RESNAME) MAXLIFETIME(AREA-A)
```

2. If the required action is always the same, you can declare the value directly. For example:

```
EXEC CICS ENQ RESOURCE(RESNAME) UOW
```

or

```
EXEC CICS ENQ RESOURCE(RESNAME) TASK
```

**NOSUSPEND**

specifies that the application program is not to be suspended if the resource on the ENQ command is unavailable, but the ENQBUSY condition occurs.

Note, however, that if a HANDLE CONDITION for ENQBUSY is active when the command is executed, action, control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOSUSPEND option but is, of course, negated by either NOHANDLE or RESP.

**RESOURCE**(data-area)

identifies the resource to be enqueued on by:

- Specifying an area whose address represents the resource.
- Specifying a variable that contains the resource (an employee name, for example). In this case, you must use the LENGTH option.
Conditions

55 ENQBUSY
occurs when an ENQ command specifies a resource that is unavailable and the NOSUSPEND option is specified, or there is an active HANDLE CONDITION ENQBUSY.

If the NOSUSPEND option is not specified, and the ENQ command specifies a resource that is unavailable, the application program is suspended and the ENQBUSY condition is not raised.

Default action: ignore the condition.

16 INVREQ
RESP2 values: CVDA values are:

2
The MAXLIFETIME option is set with an incorrect CVDA.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

1
The value specified for the LENGTH option is outside the range 1 through 255.

Default action: terminate the task abnormally.

Examples

Two tasks, enqueuing on the same resource and specifying a data area that is the resource, must refer to the same location in storage. They could both, for example, refer to the same location in the CWA.

EXEC CICS ENQ
RESOURCE(RESNAME)

Two tasks, enqueuing on the same resource and specifying a data area that contains a unique argument, can refer to the same location or to different locations, but the contents of the locations must be the same. The length must be supplied in the LENGTH option.

EXEC CICS ENQ
RESOURCE(SOCSECNO)
LENGTH(9)

The two methods cannot be combined. If one task uses the LENGTH option, and the other task does not, CICS regards the enqueues with and without the LENGTH option as different types of enqueues, and the tasks are not serialized.

ENTER TRACENUM

Write a trace entry.

ENTER TRACENUM

Conditions: INVREQ, LENGERR

This command is threadsafe.
Description
The ENTER TRACENUM command makes a trace entry in the currently active trace destinations. CICS writes the trace entry only if the master and user trace flags are on, unless you specify the EXCEPTION option, in which case a user trace entry is always written, even if the master and user trace flags are off. Exception trace entries are always written to the internal trace table (even if internal tracing is set off), but they are written to other destinations only if they are active.

You can use the exception trace option in an application program to write a trace entry when the program detects an exception or abnormal condition. To do this, include an ENTER TRACENUM(data-value) EXCEPTION command in your program's exception or abnormal condition error-handling routine.

To write an exception trace entry in an error situation when an application program has given up control, you can issue an ENTER TRACENUM(data-value) EXCEPTION command from a user-written program error program (PEP). See Writing a program error program for programming information about modifying the DFHPEP program.

Note: ENTER TRACENUM replaces the earlier ENTER TRACEID command, which is still supported for compatibility with releases of CICS earlier than Version 3. You should use ENTER TRACENUM for all new programs, and whenever you apply maintenance to old programs.

For information about the trace entry format, see Using CICS trace.

Options
EXCEPTION specifies that CICS is to write a user exception trace entry. The EXCEPTION option overrides the master user trace flag, and CICS writes the trace entry even if the user trace flag is off. Exception trace entries are identified by the characters *EXCU when the trace entries are formatted by the trace utility program. See CICS exception tracing for more information about user exception trace entries.

FROM(data-area) specifies a data area whose contents are to be entered into the data field of the trace table entry. If you omit the FROM option, two fullwords of binary zeros are passed.

FROMLENGTH(data-area) specifies a halfword binary data area containing the length of the trace data, in the range 0 - 4000 bytes. If FROMLENGTH is not specified, a length of 8 bytes is assumed.

RESOURCE(name) specifies an 8-character name to be entered into the resource field of the trace table entry. Use a name that identifies the user trace, for example, the name of the calling program.

TRACENUM(data-value) specifies the trace identifier for a user trace table entry as a halfword binary value in the range 0 through 199. Trace identifiers can be used to filter a dump, so you might want to specify a value that enables convenient filtering. See Using dumps in problem determination.

It is advisable to specify a number that is not already in use. For example, numbers 1 through 20 might be in use if CICSPlex SM is installed. The following numbers might be in use if various CICS sample programs are installed: 4-8, 11-13, 15-20, 27, 33, 35-37, 50-52, 77, 101-102, 190. Also, check your own system for user trace numbers already in use.

Conditions
16 INVREQ
RESP2 values:

1
  TRACENUM is outside the range 0 through 199.

2
  There is no valid trace destination.
The user trace flag is set OFF and EXCEPTION has not been specified.
Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:
4
FROMLENGTH is outside the range 0 through 4000.
Default action: terminate the task abnormally.

Examples

The following COBOL example shows how to write a user trace entry with a trace identifier of 123, with trace data from a data area called USER-TRACE-ENTRY:

```
EXEC CICS ENTER TRACENUM(123)
   FROM(USER-TRACE-ENTRY)
END-EXEC.
```

**EXTRACT ATTACH (LUTYPE6.1)**

Retrieve values from an LUTYPE6.1 attach header.

**EXTRACT ATTACH (LUTYPE6.1)**

```
- ATTACHATTACH
  - ATTACHID( name)
  - CONVID( name)
  - SESSION( name)
  - PROCESS( data-area)
  - RESOURCE( data-area)
  - RPROCESS( data-area)
  - RRESOURCE( data-area)
  - QUEUE( data-area)
  - IUTYPE( data-area)
  - DATASTR( data-area)
  - RECFM( data-area)

Conditions: CBIDERR, INVREQ, NOTALLOC
```

**Description**

EXTRACT ATTACH retrieves a set of values that are held in an attach header control block, or that have been built previously. For the command to retrieve information from a received attach Function Management Header (FMH), EIBATT must have been set during a RECEIVE or CONVERSE command.

**Options**
ATTACHID(name)
specifies that values are to be retrieved from an attach header control block. The name (1–8 characters) identifies this control block to the local task.

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRC in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

DATASTR(data-area)
corresponds to the data stream profile field, ATTDSP, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is given by CICS to the data stream profile field in an attach FMH. For most CICS applications, the option can be omitted.

The value returned in the data area is a halfword binary value. Only the low-order byte is used; the SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bit 0-7</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>8-11</td>
<td>0000 - user-defined</td>
</tr>
<tr>
<td></td>
<td>1111 - SCS data stream</td>
</tr>
<tr>
<td></td>
<td>1110 - 3270 data stream</td>
</tr>
<tr>
<td></td>
<td>1101 - structured field</td>
</tr>
<tr>
<td></td>
<td>1100 - logical record management</td>
</tr>
<tr>
<td>12-15</td>
<td>defined by the user if bits 8-11 are set to 0000; otherwise reserved (must be set to zero)</td>
</tr>
</tbody>
</table>

IUTYPE(data-area)
corresponds to the interchange unit field, ATTIU, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the interchange unit field in an attach FMH. For most CICS applications the option can be omitted.

The value returned in the data area is a halfword binary value. Only the low-order 7 bits are used; the SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bit 0-10</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>11</td>
<td>0 - not end of multichain interchange unit</td>
</tr>
<tr>
<td></td>
<td>1 - end of multichain interchange unit</td>
</tr>
<tr>
<td>12,13</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>14,15</td>
<td>00 - multichain interchange unit</td>
</tr>
<tr>
<td>01</td>
<td>single-chain interchange unit</td>
</tr>
<tr>
<td>10</td>
<td>reserved</td>
</tr>
<tr>
<td>11</td>
<td>reserved</td>
</tr>
</tbody>
</table>

PROCESS(data-area)
corresponds to the process name, ATTDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, a transaction running in one system can acquire a session to the second system and can identify the transaction to be attached; in the second system the identification is carried in the first chain of data sent across the session.

In general, the first four bytes of data identify the transaction to be attached. However an attach FMH, identifying the transaction to be attached, can be built and sent. The receiving CICS system uses just the first four bytes of the process name as a transaction name.

No significance is attached by CICS to process names in attach FMHs sent in chains of data other than the first.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the process name field in an attach FMH.

QUEUE(data-area)
corresponds to the queue name, ATTDQN, in an attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the queue name in an attach FMH.
For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the queue name field in an attach FMH.

**RECFM**(data-area)
corresponds to the deblocking algorithm field, ATTDBA, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the deblocking algorithm field in an attach FMH. For most CICS applications, the option can be omitted.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the interchange unit field in an attach FMH.

The value returned in the data area is a halfword binary value. Only the low-order byte is used; the SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>8-15</td>
<td>X'00' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'01' - variable-length</td>
</tr>
<tr>
<td></td>
<td>variable-blocked</td>
</tr>
<tr>
<td></td>
<td>X'02' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'03' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'04' - chain of RUs</td>
</tr>
<tr>
<td></td>
<td>X'05' through X'FF' - reserved</td>
</tr>
</tbody>
</table>

**RESOURCE**(data-area)
corresponds to the resource name, ATTPRN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the resource name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the resource name field in an attach FMH.

**RPROCESS**(data-area)
corresponds to the return process name, ATTRDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return process name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return process name field in an attach FMH.

**RRESOURCE**(data-area)
corresponds to the return resource name, ATTRPRN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return resource name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return resource name field in an attach FMH.

**SESSION**(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

**Conditions**

**62 CBIDERR**
occurs if the requested attach header control block cannot be found.

Default action: terminate the task abnormally.

**16 INVREQ**
occurs if incorrect data is found.

Default action: terminate the task abnormally.
61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

**EXTRACT ATTACH (MRO)**

Retrieve values from an MRO attach header.

**EXTRACT ATTACH (MRO)**

- **ATTACHID(name)**
- **CONVID(name)**
- **SESSION(name)**
- **PROCESS(data-area)**
- **RESOURCE(data-area)**
- **RPROCESS(data-area)**
- **RRESOURCE(data-area)**
- **QUEUE(data-area)**
- **IUTYPE(data-area)**
- **DATASTR(data-area)**
- **RECFM(data-area)**

**Conditions:** CBIDERR, INVREQ, NOTALLOC

**Description**

EXTRACT ATTACH retrieves a set of values that are held in an attach header control block, or that have been built previously. For the command to retrieve information from a received attach Function Management Header (FMH), EIBATT must have been set during a RECEIVE or CONVERSE command.

For more information about MRO and IRC, see *Introduction to CICS intercommunication*.

**Options**

**ATTACHID(name)**

specifies that values are to be retrieved from an attach header control block. The name (1–8 characters) identifies this control block to the local task.

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

**DATASTR(data-area)**

corresponds to the data stream profile field, ATTDSP, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is given by CICS to the data stream profile field in an attach FMH. For most CICS applications, the option can be omitted.

The value returned in the data area is a halfword binary value. Only the low-order byte is used; the SNA-defined meanings of the bits are as follows:
IUTYPE(data-area)
corresponds to the interchange unit field, ATTIU, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the interchange unit field in an attach FMH. For most CICS applications the option can be omitted. The value returned in the data area is a halfword binary value. Only the low-order 7 bits are used; the SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>8</td>
<td>0000 - user-defined</td>
</tr>
<tr>
<td>9-11</td>
<td>1111 - SCS data stream</td>
</tr>
<tr>
<td></td>
<td>1110 - 3270 data stream</td>
</tr>
<tr>
<td></td>
<td>1101 - structured field</td>
</tr>
<tr>
<td></td>
<td>1100 - logical record management</td>
</tr>
<tr>
<td>12-15</td>
<td>defined by the user if bits 8-11 are set to 0000; otherwise reserved (must be set to zero)</td>
</tr>
</tbody>
</table>

PROCESS(data-area)
corresponds to the process name, ATTDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, a transaction running in one system can acquire a session to the second system and can identify the transaction to be attached; in the second system the identification is carried in the first chain of data sent across the session.

In general, the first four bytes of data identify the transaction to be attached. However an attach FMH, identifying the transaction to be attached, can be built and sent. The receiving CICS system uses just the first four bytes of the process name as a transaction name. No significance is attached by CICS to process names in attach FMHs sent in chains of data other than the first.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the process name field in an attach FMH.

QUEUE(data-area)
corresponds to the queue name, ATTDQN, in an attach FMH. For communication between two CICS systems, no significance is attached by CICS to the queue name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the queue name field in an attach FMH.

RECFM(data-area)
corresponds to the deblocking algorithm field, ATTDBA, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no particular significance is attached by CICS to the deblocking algorithm field in an attach FMH. For most CICS applications, the option can be omitted.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the interchange unit field in an attach FMH.

The value returned in the data area is a halfword binary value. Only the low-order byte is used; the SNA-defined meanings of the bits are as follows:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>reserved - must be set to zero</td>
</tr>
<tr>
<td>8-15</td>
<td>X'00' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'01' - variable-length</td>
</tr>
<tr>
<td></td>
<td>variable-blocked</td>
</tr>
<tr>
<td></td>
<td>X'02' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'03' - reserved</td>
</tr>
<tr>
<td></td>
<td>X'04' - chain of RUs</td>
</tr>
<tr>
<td></td>
<td>X'05' through X'FF' - reserved</td>
</tr>
</tbody>
</table>
RESOURCE(data-area)
corresponds to the resource name, ATTPRN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the resource name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the resource name field in an attach FMH.

RPROCESS(data-area)
corresponds to the return process name, ATTRDPN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return process name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return process name field in an attach FMH.

RRESOURCE(data-area)
corresponds to the return resource name, ATTRPRN, in an LUTYPE6.1 attach FMH.

For communication between two CICS systems, no significance is attached by CICS to the return resource name in an attach FMH.

For communication between a CICS system and another subsystem, refer to documentation supplied by the subsystem about how to use the return resource name field in an attach FMH.

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

Conditions

62 CBIDERR
occurs if the requested attach header control block cannot be found.
Default action: terminate the task abnormally.

16 INVREQ
occurs if incorrect data is found.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

EXTRACT ATTRIBUTES (APPC)
Obtain the state of the APPC conversation.

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

EXTRACT ATTRIBUTES (APPC)

Description

EXTRACT ATTRIBUTES extracts conversation state information for APPC mapped conversations.
Options

**CONVID(name)**

Identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

By default, the principal facility is assumed.

**STATE(cvda)**

Gets the state of the transaction program. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSNED
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Conditions

**16 INVREQ**

RESP2 values:

**200**

A distributed program link server application explicitly, or implicitly by default, specified the function-shipping session (its principal facility) on the CONVID option.

Also occurs (RESP2 not set) in any of the following situations:

- The command is issued against a CPI-Communications conversation.
- The command is issued against an APPC basic conversation. (A GDS EXTRACT ATTRIBUTES should have been used instead.)

Default action: terminate the task abnormally.

**61 NOTALLOC**

Occurs if the specified CONVID value does not relate to a conversation owned by the application.

Default action: terminate the task abnormally.

**EXTRACT ATTRIBUTES (MRO)**

Extract attributes from an MRO conversation.
EXTRACT ATTRIBUTES (MRO)

EXTRACT ATTRIBUTES (MRO) extracts conversation state information for MRO conversations.

Options

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSCRE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

If both this option and CONVID are omitted, the principal facility for the task is used.

STATE(cvda)
gets the state of the transaction program. The cvda values returned by CICS are:
- ALLOCATED
- FREE
- PENDFREE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Conditions

16 INVREQ
RESP2 values:
200
A distributed program link server application explicitly, or implicitly by default, specified the function-shipping session (its principal facility) on the CONVID option.

also occurs (RESP2 not set) in any of the following situations:
- An incorrect command has been issued for the terminal or LU in use.

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.
EXTRACT CERTIFICATE

Obtain information from the client certificate received over a TCP/IP service that specified client authentication.

EXTRACT CERTIFICATE

EXTRACT CERTIFICATE(ptr-ref)←
LENGTH(data-area)←
SERIALNUM(ptr-ref)←

OWNER←

SERIALNUMLEN(data-area)←
USERID(data-area)←

ISSUER←

COMMONNAME(ptr-ref)←
COMMONNAMLEN(data-area)←

COUNTRY(ptr-ref)←
COUNTRYLEN(data-area)←

STATE(ptr-ref)←
STATELEN(data-area)←

LOCALITY(ptr-ref)←
LOCALITYLEN(data-area)←

ORGANIZATION(ptr-ref)←
ORGANIZATLEN(data-area)←

ORGUNIT(ptr-ref)←
ORGUNITLEN(data-area)←

Conditions: INVREQ
This command is threadsafe.

Description
EXTRACT CERTIFICATE allows the application to obtain information from the X.509 certificate that was received from a client during a Secure Sockets Layer (SSL) handshake over a TCP/IP service that specified SSL(CLIENTAUTH). The certificate contains fields that identify the owner (or subject) of the certificate, and fields that identify the certificate authority that issued the certificate. You can select the fields that you require by specifying the OWNER or ISSUER option. You cannot retrieve both OWNER and ISSUER fields with one command.

If you attempt to extract a certificate and there is no certificate to extract, low or zero values are returned for the pointers.

Options
CERTIFICATE(ptr-ref)
Specifies a pointer reference to be set to the address of the full binary certificate received from the client. The pointer reference is valid until the next CICS command or the end of task.
COMMONNAME(ptr-ref)
Specifies a pointer reference to be set to the common name from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

COMMONNAMLEN(data-area)
Specifies a fullword binary data area to be set to the length of the common name from the client certificate.

COUNTRY(ptr-ref)
Specifies a pointer reference to be set to the address of the country from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

COUNTRYLEN(data-area)
Specifies a fullword binary data area to be set to the length of the country from the client certificate.

ISSUER
Indicates that the values returned by this command refer to the certificate authority that issued this certificate.

LENGTH(data-area)
Specifies a fullword binary data area to be set to the length of the body of the client certificate.

LOCALITY(ptr-ref)
Specifies a pointer reference to be set to the address of the locality from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

LOCALITYLEN(data-area)
Specifies a fullword binary data area to be set to the length of the locality from the client certificate.

ORGANIZATION(ptr-ref)
Specifies a pointer reference to be set to the address of the organization from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

ORGANIZATIONLEN(data-area)
Specifies a fullword binary data area to be set to the length of the organization from the client certificate.

ORGUNIT(ptr-ref)
Specifies a pointer reference to be set to the address of the organization unit from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

ORGUNITLEN(data-area)
Specifies a fullword binary data area to be set to the length of the organization unit from the client certificate.

OWNER
Indicates that the values returned by this command refer to the owner of the certificate.

SERIALNUM(ptr-ref)
Specifies a pointer reference to be set to the address of the serial number of the certificate assigned by the certificate issuer. The pointer reference is valid until the next CICS command or the end of task.

SERIALNUMLEN(data-area)
Specifies a fullword binary data area to be set to the length of the serial number.

STATE(ptr-ref)
Specifies a pointer reference to be set to the address of the state or province from the client certificate. The pointer reference is valid until the next CICS command or the end of task.

STATELEN(data-area)
Specifies a fullword binary data area to be set to the length of the state or province from the client certificate.

USERID(data-area)
Specifies an 8-byte field to be set to the user ID connected with the client certificate.
Conditions

16 INVREQ

RESP2 values:

5

The command was issued from a non-TCPIP application.

EXTRACT LOGONMSG

Access z/OS Communications Server logon data.

EXTRACT LOGONMSG

\[
\text{EXTRACT LOGONMSG} \quad \text{INTO} \left( data-area \right) \quad \text{LENGTH} \left( data-area \right) \quad \text{SET} \left( ptr-ref \right)
\]

Condition: NOTALLOC

Description

EXTRACT LOGONMSG accesses z/OS Communications Server logon data. This data may have been specified by the terminal operator at logon or in the ISSUE PASS command, for example. This data is only available if the system initialization parameter LGNMSG=YES is specified. The data can only be extracted once. It is possible to force the first transaction that runs on the terminal to be that which issues EXTRACT LOGONMSG by using the the system initialization parameter GMTRAN.

All the logon data is extracted and its length placed in the field specified by the LENGTH option. Because the LENGTH option cannot be used to limit the amount of data extracted, it is recommended that a field of 256 bytes is always used for this option.

If you use the SET option, the z/OS Communications Server logon data is not freed until the session terminates (CLSDST). If you use the INTO option, the z/OS Communications Server logon data is copied into user storage and then freed.

Options

\text{INTO}(\text{data-area})

specifies the receiving field for the data extracted.

\text{LENGTH}(\text{data-area})

specifies the length, as a halfword binary value, of the data extracted. If no data is available, LENGTH is set to zero.

\text{SET}(\text{ptr-ref})

specifies the pointer reference that is to be set to the address of the data extracted. The pointer reference, unless changed by other commands or statements, is valid until the next EXTRACT LOGONMSG command or the end of task.

If DATALOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16MB line.

If DATALOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.
Conditions

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

EXTRACT PROCESS

Retrieve values from APPC conversation attach header.

EXTRACT PROCESS (APPC)

EXTRACT PROCESS

PROCNAME(  data-area  ) — PROCLENGTH(  data-area  )

MAXPROCLEN(  data-value  )

CONVID(  name  ) — SYNCLEVEL(  data-area  )

PIPLIST(  ptr-ref  ) — PIPLENGTH(  data-area  )

Conditions: INVREQ, LENGERR, NOTALLOC

Description

EXTRACT PROCESS lets an application program access conversation-related data, specified to CICS when the program is attached. The attach receiver does not have to execute an EXTRACT PROCESS command unless it requires this information.

The EXTRACT PROCESS command is valid only on an APPC conversation that is the principal facility for the task.

Options

CONVID(  name  )
Identifies the conversation to which the command relates. The 4-character name identifies the token representing the principal session (EIBTRMID).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If CONVID and SESSION are both omitted, the principal facility for the task is used by default.

MAXPROCLEN(  data-value  )
Specifies the buffer length of PROCNAME. If MAXPROCLEN is not specified, the buffer is assumed to have 32 bytes.

PIPLENGTH(  data-area  )
Specifies a halfword binary data area in which the total length of the process initialization parameter (PIP) list is returned.
PIPLIST(ptr-ref)
    Specifies a pointer reference that is set to the address of a CICS-provided data area containing a PIP list. This list contains variable-length records in the same format as the list in the CONNECT PROCESS command. A returned value of zero means that no PIP data has been received by CICS.

PROCLENGTH(data-area)
    Specifies a halfword data area that is set by CICS to the length of the process name. If PROCNAME is specified, this option must be specified.

PROCNAME(data-area)
    Specifies the data area to receive the process name specified by the remote system that caused the task to start. The data area can be 1–64 bytes long. The process name is padded on the right with blanks if it is too short. The PROCNAME data area should not be shorter than the MAXPROCLEN value.

SYNCELEVEL(data-area)
    Specifies a halfword data area that is set by CICS to the SYNCELEVEL value. For further information about synchronization levels, see Synchronization.

Conditions

16 INVREQ
    RESP2 values:
    200
        A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.
    Also occurs (RESP2 not set) in any of the following situations:
    • EXTRACT PROCESS has been used on a conversation other than APPC mapped (for example, LUTYPE6.1, APPC basic, or CPI Communications).
    • EXTRACT PROCESS has been used on a conversation that was not started by input from the network, and whose session is not a principal facility.
    • The command is issued against a CPI-Communications conversation.
    Default action: terminate the task abnormally.

22 LENGERR
    Occurs if the actual length of PROCNAME is greater than MAXPROCLEN, or greater than 32 bytes if MAXPROCLEN is not specified.
    Default action: terminate the task abnormally.

61 NOTALLOC
    Occurs if the specified CONVID value specified does not relate to a conversation owned by the application.
    Default action: terminate the task abnormally.
EXTRACT TCPIP

Obtain information about TCP/IP characteristics of the current transaction.

EXTRACT TCPIP

AUTHENTICATE(cvda)

CLIENTNAME(data-area) — CNAMELENGTH(data-area)

SERVERNAME(data-area) — SNAMELENGTH(data-area)

CLIENTADDR(data-area) — CADDRLENGTH(data-area)

CLNTIPFAMILY(cvda) — CLIENTADDRNU(data-area)

CLNTADDR6NU(data-area)

SERVERADDR(data-area) — SADDRLENGTH(data-area)

SRVRIPFAMILY(cvda) — SERVERADDRNU(data-area)

SRVRADDR6NU(data-area) — SSLTYPE(cvda)

TCPIPSERVICE(data-area) — PORTNUMBER(data-area)

PORTNUMNU(data-area) — PRIVACY(cvda)

MAXDATALEN(data-area)

Conditions: INVREQ, LENGERR

This command is threadsafe.

Description

EXTRACT TCPIP provides information about the TCP/IP connection, and about security options specified in the TCPIPSERVICE definition.

Options

AUTHENTICATE(cvda)

Returns a CVDA indicating the authentication requested for the client using this transaction. Here are the values:

ASSERTED
AUTOAUTH
AUTOREGISTER
BASICAUTH
CERTIFICAUTH
NOAUTHENTIC

CADDRLENGTH(data-area)
Returns the length of the buffer supplied on the CLIENTADDR option, and is set to the length of the
data returned to the application. If the CLIENTADDR is an IPv6 address, you must set the buffer
length of CADDRLENGTH to at least 39 characters. If the data exceeds the buffer length, a LENGERR
condition is raised and the data is truncated.

CLIENTADDR(data-area)
Returns a buffer containing the IP address of the client. The IP address can be in IPv4 or IPv6 format.
IPv4 addresses are returned as native IPv4 dotted decimal addresses; for example, 1.2.3.4 IPv6
addresses are returned as native IPv6 colon hexadecimal addresses; for example, ::a:b:c:d

For information about IP addresses, see IP addresses.

CLIENTADDRNU(data-area)
Returns a fullword binary field containing the IPv4 address of the client in binary form. If the address
is in IPv6 format, it is returned in the CLNTADDR6NU option and 0 is returned in CLIENTADDRNU.

CLIENTNAME(data-area)
Specifies a buffer to contain the name of the client as known by the Domain Name Server.

CLNTADDR6NU(data-area)
Returns a 16-byte field containing the IPv6 address of the client in binary form. This option is returned
only if the option CLNTIPFAMILY has a value of IPV6. If the address is in IPv4 format, the address is
returned in the CLNTADDR6NU option and zeros are returned to CLNTADDR6NU.

CLNTIPFAMILY(cvda)
Returns the format of the IP address of the client. CVDA values are as follows:

IPV4
CLIENTADDR returns a dotted decimal IPv4 address and CLIENTADDRNU returns the IPv4
address in binary form.

IPV6
CLIENTADDR returns a colon hexadecimal IPv6 address and CLIENTADDR6NU returns the IPv6
address in binary form.

NOTAPPLIC
The source of the input has not been determined. 0.0.0.0 is returned.

CNAMELENGTH(data-area)
Specifies the length of the buffer supplied on the CLIENTNAME option, and is set to the actual length
of the data returned to the application, or zero if the name of the client is not known to the domain
name server. If the data exceeds the buffer length, a LENGERR condition is raised and the data is
truncated.

MAXDATALEN(data-area)
Specifies a fullword binary field to contain the setting for the maximum length of data that can be
received by CICS as an HTTP server.

PRIVACY(cvda)
Returns a CVDA indicating the level of SSL encryption used between the transaction and its client for
an inbound request. CVDA values are as follows:

NOTSUPPORTED
REQUIRED
SUPPORTED
PORTNUMBER(data-area)
   Specifies a 5-character field to contain the port number associated with this transaction in character form. This port received the incoming data that initiated this transaction.

PORTNUMNU(data-area)
   Fullword field to contain the port number associated with this transaction in binary form. This port received the incoming data that initiated this transaction.

SADDRLength(data-area)
   Returns the length of the buffer supplied on the SERVERADDR option, and is set to the length of the data returned to the application. If SERVERADDR is an IPv6 address, you must set the buffer length of SADDRLength to at least 39 characters. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

SERVERADDR(data-area)
   Returns a buffer containing the IP address of the server. The IP address can be in IPv4 or IPv6 format. IPv4 addresses are returned as native IPv4 dotted decimal addresses, for example; 1.2.3.4. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, ::a:b:c:d. If an error occurs, 0.0.0.0 is returned and the data is truncated.

SERVERADDRNU(data-area)
   Returns a fullword binary field containing the IPv4 address of the server in binary form. If the address is IPv6 format, it is returned in the SRVRADDR6NU option and 0 is returned to SERVERADDRNU.

SERVERNAME(data-area)
   Specifies a buffer to contain the name of the server as known by the Domain Name Server.

SNAMELENGTH(data-area)
   Specifies the length of the buffer supplied on the SERVERNAME option, and is set to the length of the data returned to the application. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

SRVRADDR6NU(data-area)
   Returns a 16-byte field containing the IPv6 address of the server in binary form. This option is returned only if the option SRVIPFAMILY has a value of IPV6. If the address is in IPv4 format, the address is returned in the SERVERADDRNU option and zeros are returned in SRVRADDR6NU.

SRVIPFAMILY(cvda)
   Returns the format of the IP address of the server. CVDA values are as follows:
   
   IPV4
   SERVERADDR returns a dotted decimal IPv4 address and SERVERADDRNU returns the IPv4 address in binary form.
   
   IPV6
   SERVERADDR returns a colon hexadecimal IPv6 address and SERVERADDR6NU returns the IPv6 address in binary form.

   NOTAPPLIC
   The source of the input has not been determined. 0.0.0.0 is returned.

SSLTYPE(cvda)
   Returns a CVDA indicating whether the Secure Sockets Layer (SSL) is being used to secure communications for this transaction. Here are the values:
   
   SSL
   
   NOSSL
   
   CLIENTAUTH
   
   ATTLSAWARE
   
TCPIPSERVICE(data-area)
   An 8-byte field to contain the name of the TCPIPSERVICE associated with this transaction.
Conditions

16 INVREQ
   RESP2 values:
   2
      An incorrect socket response was received.
   5
      The command was issued from a non-TCPIP application.

22 LENGERR
   RESP2 values:
   1
      CLIENTADDR, SERVERADDR, CLIENTNAME, or SERVERNAME is specified, but the relevant length field is either not specified, or it is less than or equal to zero.
   3
      CLIENTADDR is too small to contain the string extracted.
   4
      SERVERADDR is too small to contain the string extracted.
   6
      CLIENTNAME is too small to contain the string extracted.
   7
      SERVERNAME is too small to contain the string extracted.

EXTRACT TCT

Convert an 8-character name to a 4-character name on an LUTYPE6.1 logical unit.

EXTRACT TCT

\[ \text{EXTRACT TCT NETNAME( name)} \]
\[ \text{SYSID( systemname)} \]
\[ \text{TERMID( data-area)} \]

Condition: INVREQ, NOTALLOC

Description
EXTRACT TCT converts the 8-character SNA network name for a logical unit into the corresponding 4-character name it is known by in the local CICS system.

Options

\text{NETNAME(name)}
   specifies the 8-character name of the logical unit in the SNA network.

\text{SYSID(systemname)}
   specifies the variable to be set to the equivalent local name of the system.

\text{TERMID(data-area)}
   specifies the variable to be set to the equivalent local name of the terminal.

Conditions
16 INVREQ
occurs if NETNAME is not valid.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

EXTRACT WEB
Obtain information about an HTTP request that has been made to CICS as an HTTP server or about a connection between an Internet server and CICS as an HTTP client. This command is a synonym of WEB EXTRACT.

EXTRACT WEB (CICS as an HTTP server)

Conditions: INVREQ, LENGERR, NOTOPEN
This command is threadsafe.
**EXTRACT WEB (CICS as an HTTP client)**

- **EXTRACT** → **WEB** → **SESTOKEN**(*data-area*)
  - **SCHEME**(*cvda*)
  - **HOST**(*data-area*) → **HOSTLENGTH**(*data-value*)
  - **HOSTTYPE**(*cvda*)
  - **HTTPVERSION**(*data-area*) → **VERSIONLEN**(*data-area*)
  - **PATH**(*data-area*) → **PATHLENGTH**(*data-area*) → **PORTNUMBER**(*data-area*)
  - **URIMAP**(*data-area*) → **REALM**(*data-area*) → **REALMLEN**(*data-area*)

**Conditions:** INVREQ, IOERR, LENGERR, NOTFND, NOTOPEN, TIMEDOUT

This command is threadsafe.

**Description**

For CICS as an HTTP server, WEB EXTRACT enables an application to obtain information about the most recent HTTP request that has been made to CICS by a Web client and assigned to the application for handling.

For CICS as an HTTP client, when the SESSTOKEN option is specified, the command enables an application to obtain information about a connection that it has opened with a server. The information returned to the application comprises global information about the connection, such as the host name of the server and its HTTP version. Information about specific requests made by the application, and responses made by the server, is not available using this command. The WEB RECEIVE command is used to receive information from a server response.

**Options**

**HOST**(data-area)

For CICS as an HTTP server, HOST specifies a buffer to contain the host component of the URL, as specified either in the Host header field for the request or in the request line (if an absolute URI was used for the request). The port number is presented separately using the PORTNUMBER option.

For CICS as an HTTP client, with the SESSTOKEN option, HOST specifies a buffer to contain the host name of the server in the connection identified by the SESSTOKEN option. The port number is presented separately using the PORTNUMBER option.

An IPv4 or IPv6 address can represent the host name. IPv4 addresses are returned as native IPv4 dotted decimal addresses; for example, 1.2.3.4. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, ::a:b:c:d

For information on IP addresses, see IP addresses.

**HOSTLENGTH**(data-area)

Specifies the length of the buffer supplied on the HOST option, as a fullword binary variable, and is set to the length of the data returned to the application. 116 characters is an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**HOSTTYPE**(cvda)

Returns the address format of the HOST option. CVDA values are as follows:
**HOSTNAME**
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

**IPV4**
The address is a dotted decimal IPv4 address.

**IPV6**
The address is a colon hexadecimal IPv6 address.

**NOTAPPLIC**
An incorrect host address was returned (HOST=0.0.0.0).

**HTTPMETHOD**(data-area)
For CICS as an HTTP server, this option specifies a buffer to contain the HTTP method string on the request line of the message.

This option is not relevant for CICS as an HTTP client.

**HTTPVERSION**(data-area)
For CICS as an HTTP server, this option specifies a buffer to contain the HTTP version for the Web client, as stated on its request.

For CICS as an HTTP client (with the SESSTOKEN option), this option specifies a buffer to contain the HTTP version of the server in the connection identified by the SESSTOKEN option. If CICS does not already know the HTTP version of the server, CICS makes a request to the server with the OPTIONS method to find out this information.

1.1 indicates HTTP/1.1, and 1.0 indicates HTTP/1.0 or lower.

**METHODLENGTH**(data-area)
Specifies the length of the buffer supplied on the HTTPMETHOD option, as a fullword binary variable, and is set to the actual length of the data returned to the application. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**PATH**(data-area)
For CICS as an HTTP server, this option specifies a buffer to contain the path specified in the request line of the message.

For CICS as an HTTP client (with the SESSTOKEN option), this option specifies a buffer to contain the default path that applies to requests made using the connection. If a URIMAP definition was specified on the WEB OPEN command for the connection, the default path is the path specified in the URIMAP definition. Otherwise, the default path is a single forward slash.

**PATHLENGTH**(data-area)
Specifies the length of the buffer supplied on the PATH option, as a fullword binary variable, and is set to the length of the data returned to the application. 256 characters is an appropriate size to specify for this data-area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**PORTNUMBER**(data-area)
For CICS as an HTTP server, this option returns a data area containing the port number specified in the request line of the message.

For CICS as an HTTP client (with the SESSTOKEN option), this option returns a data containing the port number used to access the server in the connection specified by the SESSTOKEN option.

The value returned in the data area is a fullword binary value.

Well-known port numbers for a service are normally omitted from the URL. If the port number is not present in the URL, the command identifies and returns it based on the scheme. For HTTP, the well-known port number is 80, and, for HTTPS, the well-known port number is 443. If a port number is returned that is not the default for the scheme, you must specify the port number explicitly to gain access to the URL; for example, if you are using this information in a WEB OPEN command.
For CICS as an HTTP server, this option specifies a buffer to contain the query string on the request line of the message. The query string is the value or values encoded after the question mark (?) delimiting the end of the path. The query string is returned in its escaped form.

This option is not relevant for CICS as an HTTP client.

Specifies the length of the buffer supplied on the QUERY option, as a fullword binary variable, and is set to the length of the data returned to the application (the query string). 256 characters is an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

Specifies, for CICS as an HTTP client, the realm or security environment that contains the data that you are requesting. If you are issuing a command in response to an HTTP 401 message, REALM is the realm value in the most recently received WWW-Authenticate header.

Specifies, for CICS as an HTTP client, the buffer length supplied for the REALM option, as a fullword binary variable. If you are issuing a command in response to an HTTP 401 message, REALMLEN is the length of the realm name in the most recently received WWW-Authenticate header.

For CICS as an HTTP server, this option specifies the type of request received. This option is not relevant for CICS as an HTTP client. CVDA values are as follows:

HTTPYES
Indicates an HTTP request.

HTTPNO
Indicates a non-HTTP request.

For both CICS as an HTTP server, and CICS as an HTTP client (with the SESSTOKEN option), this option returns the scheme used for the connection between CICS and the Web client or server. CVDA values are as follows:

HTTP
Is the HTTP protocol, without SSL.

HTTPS
Is the HTTPS protocol, which is HTTP with SSL.

For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token. For the command, information is returned about the specified connection.

This option is not relevant for CICS as an HTTP server.

For CICS as an HTTP client (with the SESSTOKEN option), this option returns the 8-character name (in mixed case) of any URIMAP definition that was specified on the WEB OPEN command to open the connection specified by the SESSTOKEN option. The INQUIRE URIMAP command can be used to find information about the attributes of this URIMAP definition.

This option is not relevant for CICS as an HTTP server.

Specifies the length of the buffer supplied on the HTTPVERSION option, as a fullword binary variable, and is set to the length of the data returned to the application.
Conditions

16 INVREQ
RESP2 values:

1 The command is being issued in a non-CICS Web support application.

3 The command is being issued for a non-HTTP request. This command is set only if one or more of HTTPMETHOD, HTTPVERSION, or PATH is specified and the request is a non-HTTP request.

41 The connection has closed. This is a WEB EXTRACT (Client) error only. The server may have timed out due to inactivity on this connection.

67 The content of the response does not conform to HTTP format. The error is generated because there is a syntax problem. This error is for WEB EXTRACT (Client) only.

71 A chunked transfer-coding error has occurred. This error is for WEB EXTRACT (Client) only.

144 One or more of the Web command parameters is invalid. This error is for WEB EXTRACT (Client) only.

17 IOERR
RESP2 values:

42 Socket error.

22 LENGERR
RESP2 values:

4 The method exceeds the length specified (METHODLENGTH option).

5 The PATHLENGTH option value was not greater than zero.

6 The HTTP version exceeds the length specified (VERSIONLEN option).

7 The VERSIONLEN option value was not greater than zero.

8 The query string exceeds the length specified (QUERYSTRLEN option).

21 The HOSTLENGTH option value was not greater than zero.

29 The host name exceeds the length specified (HOSTLENGTH option).

30 The path exceeds the length specified (PATHLENGTH option).

141 REALMLEN is not positive, or is not large enough to contain the realm value returned in the HTTP 401 response.

13 NOTFND
RESP2 values:

155 Request line information not found.
**FETCH ANY**

The **EXEC CICS FETCH ANY** command is used by a parent task to inquire on the status of any child task, and returns the status of any completed child task which has not yet been fetched.

**FETCH ANY**

\[
\text{FETCH ANY(} \text{data-area} \text{)} \quad \text{COMPSTATUS(} \text{cvda} \text{)} \quad \text{CHANNEL(} \text{data-area} \text{)}
\]

\[
\text{ABCODE(} \text{data-area} \text{)} \quad \text{TIMEOUT(} \text{data-value} \text{)} \quad \text{NOSUSPEND}
\]

**Conditions:** INVREQ, NOTFND, NOTFINISHED

This command is threadsafe.

**Description**

**EXEC CICS FETCH ANY** is used by a parent task to inquire on the status of any child task. **FETCH ANY** will return when any eligible child task has completed, or when there are no unfetched children remaining.

**Options**

- **ABCODE(data-area)**
  - Returns, if the child task terminated abnormally, the 4-character abend code. If an abend has not occurred, the variable is set to blanks.

- **ANY(data-area)**
  - Specifies a 16-character binary data area, into which CICS® will place the fetched child token. This will match the token returned by the **EXEC CICS RUN TRANSID** command.
  - CICS® will only return the token of a child task which has not yet been fetched.

- **CHANNEL(data-area)**
  - Returns the 16-character name of the reply channel of the child task identified by CHILD. The name is generated by CICS and is unique within the scope of the current link level. If the child task does not have a channel to return the response, then this field will contain blanks.
  - A child channel can only be fetched once, and the fetched channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

- **COMPSTATUS(cvda)**
  - Returns a CVDA value indicating the completion status of the child task. CVDA values are:
    - **ABEND**
      - The child task abended.
NORMAL
The child task completed normally.

SECERROR
The child task failed to attach due to a security error. ABCODE is blank.

NOSUSPEND
Specifies that the command will return immediately without waiting for any remaining child tasks to complete. If at least one of the unfetched children is completed, the command will return with a normal response.

TIMEOUT(data-value)
Specifies a fullword binary data-value which is the maximum time in milliseconds that the command will wait for any remaining child tasks to complete before the command returns. The maximum value is 40800000 milliseconds. If TIMEOUT is not specified, or the specified value is zero, the command is not timed out.

Conditions
113 NOTFINISHED
RESP2 values:
52  NOSUSPEND was specified, but there were no completed children to fetch when the command was run.
53  No children have completed within the interval specified by the TIMEOUT option.

13 NOTFND
RESP2 values:
1  No unfetched children were found.

16 INVREQ
RESP2 values:
52  The parent has no children.
241  TIMEOUT value is not valid.

FETCH CHILD
The EXEC CICS FETCH CHILD command is used by a parent task to inquire on the status of a specific child task, and returns the status of the specified child task.

FETCH CHILD

Conditions: INVREQ, NOTFINISHED
This command is threadsafe.
**Description**

`EXEC CICS FETCH CHILD` is used by a parent task to inquire on the status of a specific child task, which is identified by the child token. `FETCH CHILD` will return when the child task is completed.

**Options**

- **ABCODE(data-area)**
  Returns, if the child task terminated abnormally, the 4-character abend code. If an abend has not occurred, the variable is set to blanks.

- **CHANNEL(data-area)**
  Returns the 16-character name of the reply channel of the child task identified by CHILD. The name is generated by CICS and is unique within the scope of the current link level. If the child task does not have a channel to return the response, then this field will contain blanks.

  A child channel can only be fetched once, and the fetched channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

- **CHILD(data-value)**
  Specifies the child token to fetch the response from. The child token will have been returned from the RUN TRANSID command.

- **COMPSTATUS(cvda)**
  Returns a CVDA value indicating the completion status of the child task. CVDA values are:

  - **ABEND**
    The child task abended.

  - **NORMAL**
    The child task did not abend.

  - **SECERROR**
    The child task failed to attach due to a security error. `ABCODE` is blank.

- **NOSUSPEND**
  Specifies that the command will return immediately without waiting for the child task to complete. If the child task is already completed when this command is issued, the command will return with a normal response.

- **TIMEOUT(data-value)**
  Specifies a fullword binary data-value which is the maximum time in milliseconds that the command will wait for the requested child to complete before the command returns. The maximum value is 4080000 milliseconds. If `TIMEOUT` is not specified, or the specified value is zero, the command is not timed out.

**Conditions**

- **113 NOTFINISHED**
  RESP2 values:
  - **52**
    NOSUSPEND was specified, but the child is not yet complete.
  - **53**
    The child has not completed within the interval specified by the `TIMEOUT` option.

- **16 INVREQ**
  RESP2 values:
  - **50**
    The data that is specified in CHILD is not a valid child token, or the child task has already been freed by a **FREE CHILD** command.
  - **51**
    The channel of the child has already been fetched.
FORCE TIMER

Force the early expiry of a BTS timer.

FORCE TIMER

FORCE TIMER

FORCE TIMER

ACQPROCESS

ACQACTIVITY

Conditions: INVREQ, TIMERERR

Description

FORCE TIMER forces a BTS timer that has not yet expired to expire immediately. This causes the event associated with the timer to fire.

If the timer has already expired, the command has no effect.

The activity that owns the timer can be identified:

- Explicitly, by specifying either the ACQPROCESS or ACQACTIVITY option.
- Implicitly, by omitting the ACQPROCESS and ACQACTIVITY options. If these are omitted, the current activity is implied.

Options

ACQACTIVITY

specifies either of the following:

- If the program that issues the command has acquired a process, that the timer is owned by the root activity of that process.
- Otherwise, that the timer is owned by the activity that the program has acquired by means of an ACQUIRE ACTIVITYID command.

ACQPROCESS

specifies that the timer is owned by the process that the program that issues the command has acquired in the current unit of work.

TIMER(data-value)

specifies the name (1–16 characters) of the timer to be forced.

Conditions

16 INVREQ

RESP2 values:

1

The command was issued outside the scope of a currently-active activity.

16

The ACQPROCESS option was specified, but there is no acquired process.

17

The ACQACTIVITY option was specified, but there is no acquired activity.

115 TIMERERR

RESP2 values:
The timer named on the TIMER option does not exist.

**FORMATTIME**

Transform absolute date and time into a specified format.

**Condition:** INVREQ

This command is threadsafe.
Description

FORMATTIME transforms the absolute date and time into any of a variety of formats. Normally, the
ABSTIME argument is the value returned by an ASKTIME ABSTIME command.

To obtain an elapsed time in a particular format, the ABSTIME data value can be the difference between
two values returned by ASKTIME, and options such as DAYCOUNT(d) and TIME(t) can be specified.

When you use the DATESTRING option to request an architected date and time stamp string that requires
the clock time to be at UTC, CICS calculates the required timezone offset from your supplied ABSTIME
value, which is in local time, and produces the date and time stamp string in UTC. All other values
returned by the FORMATTIME command, such as the TIME value, are returned in local time. It is
therefore normal for the FORMATTIME command to produce an architected date and time stamp string
showing one date and time, and return other values showing another date and time, for the same supplied
ABSTIME value.

Options

ABSTIME(data-area)
Specifies the data area for the number of milliseconds since 00:00 on 1 January 1900, which is
known as absolute time. The time is taken from the system time-of-day clock, adjusted for leap
seconds and to apply the local timezone offset (including daylight saving time), truncated to the
millisecond, and returned as a packed decimal of length 8 bytes. You can use FORMATTIME to change
the data into other familiar formats.

The format of the parameter is:

| COBOL: | PIC S9(15) COMP-3 |
|        |                   |
| C:     | char data_ref[8]; |
| PL/I:  | FIXED DEC(15);   |
| ASM:   | PL8              |

DATE(data-area)
Specifies the variable that is to receive the date in the format specified in the DATFORM system
initialization parameter. A separator is present if requested by the DATESEP option. If no separator is
requested, the returned value is left-justified in the 8-character user field. You normally use this
option only when a date is needed for output purposes. Where a date is needed for analysis, request
the date in explicit form; for example, using the MMDDYY option.

DATEFORM(data-area)
Specifies the format of the installation-defined date. CICS returns YYMMDD, DDMMYY, or MMDDYY
(six characters) according to the DATFORM system initialization parameter.

DATESEP(data-value)
Specifies the character to be inserted as the separator between the year and the month and between
the day and the month; or between the year and the day, if form YYDDD is specified.

If you omit this option, no separator is supplied. If you omit data-value, a slash (/) is assumed as the
separator.

DATESTRING(data-area)
Specifies the 64-character user field where CICS returns the architected date and time stamp string in
the format specified by the STRINGFORMAT option. If STRINGFORMAT is not specified, the default
format provided is the RFC 1123 format (RFC1123). If you are using the DATESTRING option, first run
the ASKTIME ABSTIME command to obtain a value for the ABSTIME option. If the value for the
ABSTIME option is from any other source, the architected date and time stamp string that is returned
by the FORMATTIME command might be incorrect.
DAYCOUNT(data-area)
Returns the number of days since 1 January 1900 (day 1), as a fullword binary number. This function is useful if you need to compare the current date with a previous date that has, for example, been stored in a data set.

DAYOFMONTH(data-area)
Returns the number of the day in the month as a fullword binary number.

DAYOFWEEK(data-area)
Returns the relative day number of the week as a fullword binary number: Sunday=0, Saturday=6. This number can be converted to a textual form of day in any language.

DDMMYY(data-area)
Specifies the 8-character user field where CICS returns the date, in day/month/year format; for example, 21/10/98. A separator is present if requested by the DATESEP option. If no separator is requested, the returned value is left-justified in the 8-character user field.

DDMMYYYY(data-area)
Specifies the 10-character user field where CICS returns the date, in day/month/year format; for example 17/06/1995. A separator is present if requested by the DATESEP option. If no separator is requested, the returned value is left-justified in the 10-character user field.

FULLDATE(data-area)
Specifies the 10-character user field where CICS returns the date, in the format specified in the DATFORM system initialization parameter, with the year expanded to four digits. A separator is present if requested by the DATESEP option. If no separator is requested, the returned value is left-justified in the 10-character user field. You normally use this option only when a date is needed for output purposes. Where a date is needed for analysis, request the date in explicit form, for example, using the MMDDYYYY option.

MILLISECONDS(data-area)
Returns the number of milliseconds in the current second specified by ABSTIME, as a binary integer in the range 0 - 999.

MMDDYY(data-area)
Specifies the 8-character user field in which CICS returns the date, in month/day/year format; for example, 10/21/95. A separator is present if requested by the DATESEP option. If no separator is requested, the returned value is left-justified in the 8-character user field.

MMDDYYYY(data-area)
Specifies the 10-character user field where CICS returns the date, in month/day/year format; for example 11/21/1995. A separator is present if requested by the DATESEP option. If no separator is requested, the returned value is left-justified in the 10-character user field.

MONTHOFYEAR(data-area)
data-area is set to the relative month number of the year as a fullword binary number (January=1, December=12). You can convert this number, in your application program, to the name of the month in any language.

STRINGFORMAT(cvda)
Specifies the format for the architected date and time stamp string returned in DATESTRING. The CVDA values are:

RFC1123
Specifies the RFC 1123 format, which is suitable for use in HTTP messages. This date and time stamp string contains the day, date, and 24-hour clock time, for example "Tue, 01 Apr 2003 10:01:02 +0000". This format does not include milliseconds, and the number of seconds is truncated.

RFC3339
Specifies the RFC 3339 format, also known as the XML dateTime data type. This format is an implementation of a subset of the ISO 8601 standard. An example of a date and time stamp in this format is 2003-04-24T10:01:02+00:00. Date and time stamps in this format are in UTC (Coordinated Universal Time). This date and time stamp string contains the date and the 24-hour...
clock time. The time zone offset (-12:00 to +12:00) is indicated at the end of the date and time
stamp.

The RFC 3339 specification allows the letter Z to be used for a zero offset (+00:00). A decimal
fraction of a second in the 24-hour clock time is optional in the specification, and the
FORMATTIME command does not include it. An example of a timestamp showing the decimal
fraction of a second and the letter Z for a zero offset is 2003-04-01T10:01:02.498Z. If you want
to add the decimal fraction of a second using your application, you can use the MILLISECONDS
option to return the number of milliseconds that have also elapsed.

STRINGZONE(cvda)
Specifies the timezone in which the time stamp returned in DATESTRING is to be returned. The CVDA
values are:

UTC
DATESTRING is to be returned in UTC. This is the default setting.

LOCAL
DATESTRING is to be returned in LOCAL timezone.

TIME(data-area)

data-area is set as an 8-character field to the current 24-hour clock time in the form hh:mm:ss, where
the separator is specified by the TIMESEP option. The number of seconds is truncated. Use the
MILLISECONDS option to return the number of milliseconds that have also elapsed.

TIMESEP(data-value)

Specifies the character to be used as the separator in the returned time. If you omit this option, no
separator is assumed and 6 bytes are returned in an 8-character field. If you omit data-value, a colon
(;) is used as a separator.

YEAR(data-area)

Specifies the full 4-figure number of the year as a fullword binary number; for example, 1995, 2001.

YYDDD(data-area)

Specifies the 6-character user field where CICS returns the date, in year/day format; for example,
95/301. A separator is present if requested by the DATESEP option. If no separator is requested, the
returned value is left-justified in the 6-character user field.

YYDDMM(data-area)

Specifies the 8-character user field where CICS returns the date, in year/day/month format; for
example, 95/30/10. A separator is present if requested by the DATESEP option. If no separator is
requested, the returned value is left-justified in the 8-character user field.

YYYYDDD(data-area)

Specifies the 8-character user field where CICS returns the date, in year/day format; for example
1995/200. A separator is present if requested by the DATESEP option. If no separator is
requested, the returned value is left-justified in the 8-character user field.

YYYYMMDD(data-area)

Specifies the 10-character user field where CICS returns the date, in year/month/day format; for
example 1995/21/06. A separator is present if requested by the DATESEP option. If no separator is
requested, the returned value is left-justified in the 10-character user field.

YYYYYMMDD(data-area)

Specifies the 10-character user field where CICS returns the date, in year/month/day format; for
example 1995/06/21. A separator is present if requested by the DATESEP option. If no separator is
requested, the returned value is left-justified in the 10-character user field.
Conditions

16 INVREQ
RESP2 values:

1
   The ABSTIME value is less than zero or not in packed-decimal format.

2
   Invalid CVDA value for the STRINGFORMAT option.
   Default action: terminate the task abnormally.

Examples

The following example shows the effect of some of the options of the command. Let utime contain the value 003578979940458 in milliseconds.

```cics
EXEC CICS ASKTIME ABSTIME(utime)
EXEC CICS FORMATTIME ABSTIME(utime)
   DATESEP('-') DDMYYP(date)
   TIME(time) TIMESEP(':')
```

This gives the values 05-31-13 for date and 08:05:40 for time.

**FREE**

Return a terminal or logical unit.

FREE

Condition: NOTALLOC

Description

FREE returns a terminal or logical unit when the transaction owning it no longer requires it. The principal facility is freed.

If you are running EDF, and the transaction frees the principal facility, EDF is terminated.

Conditions

61 NOTALLOC
   occurs if the task is not associated with the terminal.
   Default action: terminate the task abnormally.

**FREE (APPC)**

Return an APPC mapped session to CICS.
FREE (APPC)

FREE
  \[ CONVID( name) \]  \[ STATE( cvda) \]

Conditions: INVREQ, NOTALLOC

Description
FREE returns an APPC session to CICS when a transaction owning it no longer requires it. The session can then be allocated for use by other transactions.

If you omit CONVID, the principal facility is freed. Facilities not freed explicitly are freed by CICS when the task terminates.

If you are running EDF, and the transaction frees the principal facility, EDF is terminated.

Options
CONVID(name)
identifies the APPC mapped session to be freed. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

If this option is omitted, the principal facility is assumed.

STATE(cvda)
gets the state of the current conversation. The STATE option on a FREE command returns a cvda code of 00 if there is no longer an active conversation. The other output cvda values are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Conditions
16 INVREQ
RESP2 values:
200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.
also occurs (RESP2 not set) in any of the following situations:
- The CONVID value specified in the command relates to a basic (unmapped) APPC conversation.
• The CONVID value specified in the command relates to a CPI-Communications conversation.
  Default action: terminate the task abnormally.

61 NOTALLOC
  occurs if the specified CONVID value does not relate to a conversation owned by the application.
  Default action: terminate the task abnormally.

FREE (LUTYPE6.1)

Return LUTYPE6.1 sessions to CICS.

FREE (LUTYPE6.1)

\[
\text{FREE} \quad \text{CONVID}(\text{name}) \quad \text{SESSION}(\text{name})
\]

Conditions: INVREQ, NOTALLOC

Description
FREE returns an LUTYPE6.1 session to CICS when a transaction that owns it no longer requires it. The session can then be allocated for use by other transactions.

If you omit both CONVID and SESSION, the principal facility is freed. Facilities not freed explicitly are freed by CICS when the task terminates.

If you are running EDF, and the transaction frees the principal facility, EDF is terminated.

Options
CONVID(name)
  Identifies the LUTYPE6.1 session to be freed. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

SESSION(name)
  Specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

Conditions
16 INVREQ
  Occurs if the session specified in the command was allocated for a basic (unmapped) APPC conversation.
  See also EIBRCODE in EIB fields.
  Default action: terminate the task abnormally.

61 NOTALLOC
  Occurs if the session specified in the command is not owned by the application.
  Default action: terminate the task abnormally.

FREE (MRO)

Return MRO sessions to CICS.
**FREE (MRO)**

- **FREE**
  - **CONVID**(name)
  - **SESSION**(name)
  - **STATE**(cvda)

**Conditions:** INVREQ, NOTALLOC

**Description**

FREE returns an MRO session to CICS when a transaction that owns it no longer requires it. The session can then be allocated for use by other transactions.

If you omit both CONVID and SESSION, the principal facility is freed. Facilities not freed explicitly are freed by CICS when the task terminates.

If you are running EDF, and the transaction frees the principal facility, EDF is terminated.

**Options**

**CONVID**(name)

Identifies the MRO session to be freed. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

**SESSION**(name)

Specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

**STATE**(cvda)

Gets the state of the current conversation. The STATE on a FREE command returns a cvda code of 00 if there is no longer an active conversation. The other output cvda values are:

- ALLOCATED
- FREE
- PENDFREE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**Conditions**

**16 INVREQ**

Occurs in any one of the following situations:

- The session specified in the command was allocated for a basic (unmapped) APPC conversation
- The session is in the wrong state to be freed.

See also EIBRCODE in EIB fields.

Default action: terminate the task abnormally.

**61 NOTALLOC**

occurs if the session specified in the command is not owned by the application.

Default action: terminate the task abnormally.
FREE CHILD

The EXEC CICS FREE CHILD command frees a specified child token which has been previously allocated by an EXEC CICS RUN TRANSID command. If a parent task no longer requires the response of a child task, then using the FREE CHILD command will free the resources associated with that child task when it completes, rather than waiting for them to be fetched.

FREE CHILD

FREE CHILD( data-value )

Conditions: INVREQ

This command is threadsafe.

Description

FREE CHILD is used by a parent task to free a child token allocated by a previous RUN TRANSID command. If the associated child task has already completed, then the memory object associated with the token is freed immediately, and CICS will also free any child channel (providing it has not been fetched using an EXEC CICS FETCH command).

If the child task has not completed, the memory object will be freed when the child completes, along with any child channel. After this command is issued, any subsequent attempt to reference the token with the FETCH CHILD command will fail with INVREQ, nor will the token be returned by any subsequent FETCH ANY commands.

CICS implicitly frees all child tokens created by RUN TRANSID when the parent task terminates.

Options

CHILD( data-value )

Specifies the child token to be freed. The child token will have been returned from the RUN TRANSID command.

Conditions

16 INVREQ

RESP2 values:

50

The data that is specified in CHILD is not a valid child token, or the child task has already been freed by a FREE CHILD command.

FREEMAIN

Release main storage that was acquired by using a GETMAIN request.

FREEMAIN

FREEMAIN( data-area )

DATAPointer( ptr-value )

Condition:

This command is threadsafe.

Description

FREEMAIN releases the following storage:
Main storage that was acquired by a GETMAIN command issued by the application.

Main storage that was acquired by a LOAD command for a program, map, or table that is defined with RELOAD=YES.

If the task that acquired the storage or loaded the program does not release it, CICS releases the storage at task end, except for in the following situations:

- The GETMAIN command is specified the SHARED option. The storage remains allocated until another task issues a FREEMAIN or FREEMAIN64 request to release it.
- The program is defined with RELOAD=YES. The storage remains allocated until another task issues a FREEMAIN or FREEMAIN64 request to release it.
- The program is defined with RELOAD=NO but was loaded with the HOLD option. The program remains available until it is released by another task.

**Note:** In the first two situations listed, using FREEMAIN might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see Affinity.

You can release CICS-key storage from a program only if it is being executed in CICS key. If the previously-acquired storage was obtained from CICS-key storage, and the program that issues the FREEMAIN request is in user-key, an INVREQ condition occurs with a RESP2 value of 2.

To release main storage that was acquired by using a GETMAIN64 request, use the FREEMAIN64 command. See FREEMAIN64.

**Options**

**DATA(data-area)**

Specifies the data area of main storage to be released.

In assembler language, *data-area* must be a relocatable expression that is a data reference; in COBOL or C, it must be a data name; and in PL/I, it must be a data reference.

The length of storage released is the length that was obtained by the GETMAIN request and not necessarily the length of the data area.

**DATAPointer(ptr-value)**

Specifies the address of the main storage to be released, as a pointer reference. This option is an alternative to the DATA option, and specifies the pointer reference that was returned by a GETMAIN command using the SET option.

The length of storage released is the length obtained by the GETMAIN request.

**Conditions**

**16 INVREQ**

RESP2 values:

- **1** The storage specified by the DATA or DATAPointer parameter is not storage acquired by a GETMAIN command.

- **2** The storage area specified by the DATA or DATAPointer parameter is in CICS-key storage, and the program issuing the FREEMAIN command is in user-key.

- **3** The storage area specified by the DATA or DATAPointer parameter is maintained by CICS, and any FREEMAIN request that attempts to release CICS-maintained storage areas is rejected.

Default action: terminate the task abnormally.
Example: COBOL

DATA DIVISION.
  WORKING-STORAGE SECTION.
  77 AREA-POINTER USAGE IS POINTER.
  LINKAGE SECTION.
  01 WORKAREA PIC X(100).
  PROCEDURE DIVISION.
    EXEC CICS GETMAIN SET(AREA-POINTER)
    LENGTH(100)
    END-EXEC.

    SET ADDRESS OF WORKAREA TO AREA-POINTER.
    .
    EXEC CICS FREEMAIN DATA(WORKAREA)
    END-EXEC.
    EXEC CICS RETURN
    END-EXEC.

Alternatively, the previous COBOL example could free the storage by using the following command:

EXEC CICS FREEMAIN DATAPointer(AREA-POINTER)
END-EXEC.

Example: C

#define MAINSIZE 100;
main()
{
  char        *buffer;
  struct eib_record dfheiptr;
  EXEC CICS ADDRESS EIB(dfheiptr);
  EXEC CICS GETMAIN SET(buffer)
    LENGTH(MAINSIZE);
  buffer[2] = 'a';
  .
  EXEC CICS FREEMAIN DATA(buffer);
  EXEC CICS RETURN;
}

Example: PL/I

DCL AREA_PTR POINTER,
                WORKAREA CHAR(100) BASED(AREA_PTR);
                .
  EXEC CICS GETMAIN SET(AREA_PTR) LENGTH(100);
  EXEC CICS FREEMAIN DATA(WORKAREA);

Example: Assembler

WORKAREA DS CL100
.
.
  EXEC CICS GETMAIN SET(9) LENGTH(100)
  USING WORKAREA,9
  EXEC CICS FREEMAIN DATA(WORKAREA)

Alternatively, you can free storage using the DATAPointer option as shown in the following example:
FREEMAIN64

Release storage that was acquired by using a GETMAIN or GETMAIN64 request. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs.

See Assembler language programming restrictions and requirements.

FREEMAIN64

- FREEMAIN64
  - DATA(data-area64)
  - DATAPointer(ptr-value64)

Condition: INVREQ

This command is threadsafe.

Description

FREEMAIN64 releases the following storage:

- Main storage that was acquired by a GETMAIN or GETMAIN64 command issued by the application.
- Main storage that was acquired by a LOAD command for a program, map, or table that is defined with RELOAD=YES.

If the task that acquired the storage or loaded the program does not release it, CICS releases the storage at task end, except for in the following situations:

- The GETMAIN or GETMAIN64 command is specified the SHARED option. The storage remains allocated until another task issues a FREEMAIN or FREEMAIN64 request to release it.
- The program is defined with RELOAD=YES. The storage remains allocated until another task issues a FREEMAIN or FREEMAIN64 request to release it.
- The program is defined with RELOAD=NO but was loaded with the HOLD option. The program remains available until it is released by another task.

Note: In the first two situations listed, using FREEMAIN64 might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see Affinity.

You can release CICS-key storage from a program only if it is being executed in CICS key. If the storage was obtained from CICS-key storage, and the program that issues the FREEMAIN64 request is in user-key, an INVREQ condition occurs with a RESP2 value of 2.

Options

DATA(data-area64)

- Specifies the data area of main storage to be released.

  In assembler language, data-area64 must be a relocatable expression that is a data reference.

  The length of storage released is the length that was obtained by the original request and not necessarily the length of the data area.
**DATAPORTER(ptr-value64)**

Specifies the address of the main storage to be released, as a 64-bit pointer reference. This storage can be storage that was acquired by a previous GETMAIN or GETMAIN64 request. For example, a 64-bit pointer reference to an area of 31-bit storage can be specified.

The length of storage released is the length that was obtained by the original request.

**Conditions**

16 INVREQ

RESP2 values:

1  
The storage specified by the DATA or DATAPORTER parameter is not storage acquired by a GETMAIN or GETMAIN64 command.

2  
The storage area specified by the DATA or DATAPORTER parameter is in CICS-key storage, and the program issuing the FREEMAIN64 command is in user-key.

3  
The storage area specified by the DATA or DATAPORTER parameter is maintained by CICS, and any FREEMAIN request that attempts to release CICS-maintained storage areas is rejected.

**Examples: Assembler**

The following example releases storage by using the DATA option.

```
WORKAREA DS CL100

EXEC CICS GETMAIN64 SET(9) FLENGTH(1048576)
USING WORKAREA,9
EXEC CICS FREEMAIN64 DATA(WORKAREA)
```

The following example releases storage by using the DATAPORTER option.

```
WORKAREA DS CL100

EXEC CICS GETMAIN SET(9) LENGTH(100)
USING WORKAREA,9

DROP 9

EXEC CICS FREEMAIN64 DATAPORTER(9)
```

**GDS ALLOCATE**

Acquire a session to a remote system for use by APPC basic conversation (assembler-language and C programs only).

**GDS ALLOCATE (APPC basic)**

```
GDS ALLOCATE SYSID( systemname )
MODENAME( name )
PARTNER( name )

CONVID( data-area )
RETCODE( data-area )

NOQUEUE STATE( cvda )
```
Description

GDS ALLOCATE acquires a session to a remote system.

The return code is given in RETCODE (see Table 1 on page 199). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONVID(data-area)

specifies the 4-character application data area that is to contain the token returned by an ALLOCATE command to identify the allocated conversation. This token is required in subsequent GDS commands issued on the conversation.

MODENAME(name)

specifies the name of the mode group from which the session is to be acquired. If you specify SYSID and omit MODENAME, CICS selects a modename from those defined for the system.

NOQUEUE

specifies that the request to allocate a session is not to be queued when a suitable APPC session cannot be acquired immediately. A session is acquired immediately only if it is a bound contention winner that is not already allocated to another conversation.

The return code in RETCODE indicates whether or not a session has been acquired.

If the NOQUEUE option is not used, a delay may occur before control is passed back to the application program. A delay can occur for any of the following reasons:

• All sessions for the specified SYSID and MODENAME are in use.
• The CICS allocation algorithm has selected a session that is not currently bound (in which case, CICS has to bind).
• The CICS allocation algorithm has selected a contention loser (in which case, CICS has to bid).

If there is a delay, the program waits until the session has been acquired.

PARTNER(name)

specifies the name (eight characters) of a set of definitions that include the names of a remote LU (NETNAME) and a communication profile to be used on the allocated session. For APPC basic conversations, the only relevant attribute set by the profile is MODENAME.

If you use this option as an alternative to SYSID and MODENAME, CICS uses the NETNAME and MODENAME from the PARTNER definition.

RETCODE(data-area)

specifies the 6-byte application data area into which return code information (shown in Table 1 on page 199) is to be moved.

STATE(cvda)

gets the state of the current conversation. The cvda values returned by CICS are:

• ALLOCATED
• CONFFREE
• CONFRECEIVE
• CONFSEND
• FREE
• PENDFREE
• PENDRECEIVE
• RECEIVE
• ROLLBACK
• SEND
- SYNFREE
- SYNCRECEIVE
- SYNCSEND

**SYSID(systemname)**

specifies the remote system to which an APPC session is to be allocated. The name, which is 1–4 characters, identifies an entry (defined as an APPC connection) in the CICS terminal control table.

### Table 1. GDS ALLOCATE return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 0C 00</td>
<td>SYSID is unrecognized.</td>
</tr>
<tr>
<td>01 0C 04</td>
<td>SYSID is not an LUTYPE6.2 connection name.</td>
</tr>
<tr>
<td>01 04 04</td>
<td>NOQUEUE is specified but no bound connection-winner sessions are available.</td>
</tr>
<tr>
<td>01 04 08</td>
<td>MODENAME is not known.</td>
</tr>
<tr>
<td>01 04 0C</td>
<td>The MODENAME value is SNASVCMG which is restricted to use by CICS.</td>
</tr>
<tr>
<td>01 04 0C</td>
<td>z/OS Communications Server has no class of service (COS) table for the MODENAME value.</td>
</tr>
<tr>
<td>01 04 10</td>
<td>The task was canceled during queuing of the command.</td>
</tr>
<tr>
<td>01 04 14</td>
<td>All modegroups are closed.</td>
</tr>
<tr>
<td>01 04 14</td>
<td>The requested modegroup is closed.</td>
</tr>
<tr>
<td>01 04 18</td>
<td>The requested modegroup is draining (closing down).</td>
</tr>
<tr>
<td>01 08 00</td>
<td>All sessions in the requested modegroup are unusable.</td>
</tr>
<tr>
<td>01 08 00</td>
<td>The connection is in quiesce state.</td>
</tr>
<tr>
<td>01 08 00</td>
<td>The connection is out of service.</td>
</tr>
<tr>
<td>01 08 00</td>
<td>The connection is not acquired.</td>
</tr>
<tr>
<td>01 08 00</td>
<td>The requested modegroup's local max (maximum permitted number of sessions) is 0.</td>
</tr>
<tr>
<td>01 08 00</td>
<td>The VTAM® ACB is closed.</td>
</tr>
<tr>
<td>01 0C 14</td>
<td>The NETNAME specified in the PARTNER definition is not known.</td>
</tr>
<tr>
<td>02 0C 00</td>
<td>PARTNER is not known.</td>
</tr>
<tr>
<td>06 00 00</td>
<td>The PROFILE specified in the PARTNER definition is not known.</td>
</tr>
</tbody>
</table>

**Note:** VTAM is now the z/OS Communications Server.
GDS ASSIGN

Get the identifier of the principal facility in use by APPC basic conversation (assembler-language and C programs only).

GDS ASSIGN (APPC basic)

GDS ASSIGN

PRINCONVID( data-area )

PRINSYSID( data-area )

RETCODE( data-area )

Description

GDS ASSIGN gets the identifier of the principal facility.

The return code is given in RETCODE (see Table 2 on page 200). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

PRINCONVID(data-area)

specifies a 4-byte data area in which the conversation token (CONVID) of the principal facility is to be returned.

PRINSYSID(data-area)

specifies a 4-byte data area in which the SYSID of the principal facility is to be returned.

RETCODE(data-area)

specifies the 6-byte application data area into which return code information (shown in Table 2 on page 200) is to be moved.

Table 2. GDS ASSIGN return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>Principal facility is not APPC.</td>
</tr>
<tr>
<td>03 04</td>
<td>Principal facility is not basic.</td>
</tr>
<tr>
<td>04</td>
<td>No terminal principal facility exists.</td>
</tr>
</tbody>
</table>
GDS CONNECT PROCESS

Initiate an APPC basic conversation (assembler-language and C programs only).

**GDS CONNECT PROCESS (APPC basic)**

- **CONVID(name)**
  - Identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

- **PROCNAME(name)**
  - Specifies the name (8 characters) of a set of definitions that includes the name (or extended name) of a remote partner transaction (TPNAME or XTPNAME). You can use this option as an alternative to PROCNAME and PROCLENGTH.

- **PARTNER(name)**
  - Specifies the name (8 characters) of a set of definitions that includes the name (or extended name) of a remote partner transaction (TPNAME or XTPNAME). You can use this option as an alternative to PROCNAME and PROCLENGTH.

- **PROCLENGTH(data-value)**
  - Specifies the length (as a halfword binary value in the range 1–64) of the target process name.

- **PROCNAME(name)**
  - Specifies the name of the remote application. The APPC architecture allows names of lengths (1–64 bytes), but leaves each product free to set its own maximum. If the remote system is CICS, you can

**Description**

EXEC CICS conditions are never raised on GDS commands.

The return code is given in RETCODE (see Table 3 on page 202). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands. GDS CONNECT PROCESS allows the application program to specify a partner application that is to run in the remote system.

**Options**

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

- **CONVDATA(data-area)**
  - Specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

- **CONVID(name)**
  - Identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

- **PROCNAME(name)**
  - Specifies the name of the remote application. The APPC architecture allows names of lengths (1–64 bytes), but leaves each product free to set its own maximum. If the remote system is CICS, you can
use the standard 4-character transaction ID. You can also use the TPNAME value in the transaction definition.

RETCODE(data-area)
specifies the 6-byte application data area into which return code information (shown in Table 3 on page 202) is to be moved.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

SYNCELEVEL(data-value)
specifies the synchronization level (halfword binary value) intended for the current conversation. The possible values are:

- 0 None
- 1 Confirm
- 2 Syncpoint

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 0C 00</td>
<td>PARTNER is not known.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 0C</td>
<td>The SYNCELEVEL option specifies a value other than 0, 1, or 2.</td>
</tr>
<tr>
<td>03 0C</td>
<td>The SYNCELEVEL option requested either 1 or 2, but it was unavailable.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
<tr>
<td>05 00 00 00 00 20</td>
<td>PROLENGTH is outside the range 1–64.</td>
</tr>
<tr>
<td>05 00 00 00 7F FF</td>
<td>The PIPLENGTH value is outside the range 4–763.</td>
</tr>
<tr>
<td>05 00 00 00 7F FF</td>
<td>The 2-byte length field (LL) for one of the PIPs is less than 4.</td>
</tr>
<tr>
<td>05 00 00 00 7F FF</td>
<td>The total of the LLs in PIP data is greater than the PIPLENGTH value.</td>
</tr>
</tbody>
</table>
GDS EXTRACT ATTRIBUTES

Access state information on an APPC basic conversation (assembler-language and C programs only).

GDS EXTRACT ATTRIBUTES (APPC basic)

CONVID(name)

STATE(cvda)

CONVDATA(data-area)

RETCODE(data-area)

Description

GDS EXTRACT ATTRIBUTES accesses state information about an APPC basic conversation.

The return code is given in RETCODE (see Table 4 on page 204). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONVID(name)

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

CONVDATA(data-area)

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

RETCODE(data-area)

specifies the 6-byte application data area into which return code information (shown in Table 4 on page 204) is to be moved.

STATE(cvda)

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND
Table 4. GDS EXTRACT ATTRIBUTES return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 01</td>
<td>INVREQ for a DPL server program.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
</tbody>
</table>

GDS EXTRACT PROCESS

Retrieve values from an APPC basic conversation (assembler-language and C programs only).

GDS EXTRACT PROCESS (APPC basic)

GDS EXTRACT PROCESS — CONVID( name)

PROCNAM( data-area) — PROCLENGTH( data-area) — MAXPROCLEN( data-value)

SYNCLEVEL( data-area) — PIPLIST( pointer-ref) — PIPLENGTH( data-area)

RETCODE( data-area)

Description

GDS EXTRACT PROCESS retrieves values from an APPC basic conversation. The data retrieved is valid only when the command is issued against an APPC basic principal facility.

The return code is given in RETCODE (see Table 5 on page 205). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONVID( name)

identifies the conversation the command relates to. The 4-character name identifies the token representing the principal session (returned by a previously executed GDS ASSIGN command).

MAXPROCLEN( data-value)

specifies the length (1–64 characters) of the PROCNAME data area. If MAXPROCLEN is not specified, the buffer is assumed to have 32 bytes.

PIPLENGTH( data-area)

specifies a halfword binary data area that is to receive the length of the PIPLIST received by a GDS EXTRACT PROCESS command.

PIPLIST( pointer-ref)

specifies the pointer reference that is to be set to the address of the PIPLIST received by a GDS EXTRACT PROCESS command. A zero setting indicates that no PIPLIST was received.
**PROCLEN**(*data-area*)

specifies a halfword binary data area that is set to the actual length of the process name.

**PROCNAME**(*data-area*)

specifies the application target data area (1–64 bytes) into which the process name, specified in the APPC attach function management header, is to be moved. The area is padded with blanks, if necessary.

**RETCODE**(*data-area*)

specifies the 6-byte application data area into which return code information (shown in Table 5 on page 205) is to be moved.

**SYNCLEVEL**(*data-area*)

specifies a halfword binary data area that is set to indicate the synchronization level in effect for the current conversation. The possible values are:

- 0 None
- 1 Confirm
- 2 Syncpoint

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not the principal facility.</td>
</tr>
<tr>
<td>03 00</td>
<td>Principal facility was not started by terminal data.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
<tr>
<td>05 00 00 00 00 20</td>
<td>PROCLEN value returned is greater than MAXPROCLEN value.</td>
</tr>
</tbody>
</table>

**GDS FREE**

Return an APPC session to CICS (assembler-language and C programs only).

**GDS FREE (APPC basic)**

```plaintext
GDS FREE  CONVID(name)  CONVDATA(data-area)  RETCODE(data-area)
```

**Description**

GDS FREE returns the session to CICS. The issue of this command is valid only when the conversation is finished, that is, the conversation state is FREE.

The return code is given in RETCODE (see Table 6 on page 206). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

**Options**

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.
**CONVDATA(data-area)**
specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

**CONVID(name)**
identifies the conversation to be freed. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

**RETCODE(data-area)**
specifies the 6-byte application data area into which return code information (shown in Table 6 on page 206) is to be moved.

**STATE(cvda)**
gets the state of the current conversation. The STATE on a FREE command returns a cvda code of 00 if there is no longer an active conversation. The other output cvda values are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
</tbody>
</table>

**GDS ISSUE ABEND**
Terminate APPC basic conversation abnormally (assembler-language and C programs only).

**GDS ISSUE ABEND (APPC basic)**

```c
GDS ISSUE ABEND  — CONVID(name)  — CONVDATA(data-area)  — RETCODE(data-area)  —

STATE(cvda)
```
Description
GDS ISSUE ABEND causes an APPC basic conversation to end immediately, regardless of the conversation state. The partner transaction is informed.

The return code is given in RETCODE (see Table 7 on page 207). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options
In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONVDATA(data-area)
specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

RETCODE(data-area)
specifies the 6-byte application data area into which return code information (shown in Table 7 on page 207) is to be moved.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Table 7. GDS ISSUE ABEND return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
</tbody>
</table>
GDS ISSUE CONFIRMATION

Issue a synchronization request on an APPC basic conversation (assembler-language and C programs only).

GDS ISSUE CONFIRMATION (APPC basic)

GDS ISSUE CONFIRMATION — CONVID( name ) — CONVDATA( data-area ) — RETCODE( data-area ) — STATE( cvda )

Description

GDS ISSUE CONFIRMATION issues a synchronization request in response to a GDS SEND CONFIRM issued by a partner transaction.

The return code is given in RETCODE (see Table 8 on page 209). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONVDATA(data-area)

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

CONVID(name)

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

RETCODE(data-area)

specifies the 6-byte application data area into which return code information (shown in Table 8 on page 209) is to be moved.

STATE(cvda)

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND
Table 8. GDS ISSUE CONFIRMATION return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>03 14</td>
<td>The command was issued for a sync level 0 conversation.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
</tbody>
</table>

GDS ISSUE ERROR

Inform an APPC basic conversation partner of an error (assembler-language and C programs only).

**GDS ISSUE ERROR (APPC basic)**

```plaintext
| GDS ISSUE ERROR | CONVID( name ) | CONVDATA( data-area ) | RETCODE( data-area ) |
```

**Description**

GDS ISSUE ERROR informs the conversation partner that there is an error.

The return code is given in RETCODE, see below. For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

**Options**

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

**CONVDATA(data-area)**

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

**RETCODE(data-area)**

specifies the 6-byte application data area into which return code information (shown in Table 9 on page 210) is to be moved.

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
• PENDRECEIVE
• RECEIVE
• ROLLBACK
• SEND
• SYNCFREE
• SYNC RECEIVE
• SYNCSEND

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to task, or that is a relay link.</td>
</tr>
</tbody>
</table>

**GDS ISSUE PREPARE**

Issue the first flow of a syncpoint request on an APPC basic conversation (assembler-language and C programs only).

**GDS ISSUE PREPARE (APPC basic)**

```
GDS ISSUE PREPARE CONVID(name) CONVDATA(data-area) RETCODE(data-area)

STATE(cvda)
```

**Description**

GDS ISSUE PREPARE issues the first flow of a syncpoint request.

The return code is given in RETCODE (see Table 10 on page 211). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

**Options**

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

**CONVDATA(data-area)**

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

**RETCODE(data-area)**

specifies the 6-byte application data area into which return code information (shown in Table 10 on page 211) is to be moved.
STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFORECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Table 10. GDS ISSUE PREPARE return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 0C</td>
<td>The command was issued on a conversation that is not sync-level 2.</td>
</tr>
<tr>
<td>03 24</td>
<td>A state error occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to task, or that is a relay link.</td>
</tr>
</tbody>
</table>

GDS ISSUE SIGNAL

Request a change of direction from the sending transaction APPC basic conversation (assembler-language and C programs only).

GDS ISSUE SIGNAL (APPC basic)

 grote_left arrow GDS ISSUE SIGNAL grote_left arrow CONVID(name) grote_left arrow CONVDATA(data-area) grote_left arrow RETCODE(data-area) grote_right arrow

STATE(cvda)

Description

GDS ISSUE SIGNAL requests a change of direction.

The return code is given in RETCODE (see Table 11 on page 212). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.
**CONVDATA(data-area)**
specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

**CONVID(name)**
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

**RETCODE(data-area)**
specifies the 6-byte application data area into which return code information (shown in Table 11 on page 212) is to be moved.

**STATE(cvda)**
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDINGRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to task, or that is a relay link.</td>
</tr>
</tbody>
</table>
GDS RECEIVE

Receive data on an APPC basic conversation (assembler-language and C programs only).

GDS RECEIVE (APPC basic)

```
GDS RECEIVE — CONVID( name) INTO(data-area) FLENGTH( data-area) —
                  SET( pointer-ref) —
                  MAXFLENGTH( data-value) BUFFER LLID CONVDATA( data-area) —
                  RETCODE( data-area) STATE( cvda) —
```

Description

GDS RECEIVE receives data and indicators from a partner transaction.

The return code is given in RETCODE (see Table 12 on page 214). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

BUFFER
specifies that the length of the data passed to the application program in response to the RECEIVE command is to be restricted only by the length specified in the MAXFLENGTH option, and is not to be affected by GDS structured field boundaries. Control is returned to the application program when this length has been received, or when a synchronization request, change-direction, or end-bracket is received.

CONVDATA(data-area)
specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

FLENGTH(data-area)
specifies a fullword binary data area that is set to the length of the data made available to the application program.

INTO(data-area)
specifies the application target data area into which data is to be received from the application program connected to the other end of the current conversation. The length of this area must not be less than the value specified in the MAXFLENGTH option.

LLID
specifies that the delimiter to be used by CICS to terminate the passing of data to the application program is the end of a GDS structured field, if this occurs before the MAXFLENGTH limit is reached.

MAXFLENGTH(data-value)
specifies, as a fullword binary value, either the length of the target data area specified in the INTO option, or the maximum length of data to be addressed by the pointer reference specified in the SET option. The length must not exceed 32 767 bytes. CICS does not receive more data than the MAXFLENGTH value allows.
RETCODE(*data-area*)
specifies the 6-byte application data area into which return code information (shown in Table 12 on page 214) is to be moved.

SET(*pointer-ref*)
specifies the pointer reference to be set to the address of data received from the application program connected to the other end of the current conversation. The pointer reference, unless changed by other commands or statements, is valid until the next RECEIVE (GDS or APPC) command, or the end of the task.

If DATALLOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16MB line.

If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

STATE(*cvda*)
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
<tr>
<td>05 00 00 00 7F FF</td>
<td>MAXFLENGTH is outside the range 0 through 32 767.</td>
</tr>
</tbody>
</table>
GDS SEND

Send data on an APPC basic conversation (assembler-language and C programs only).

GDS SEND (APPC basic)

GDS SEND — CONVID( name) — FROM( data-area) — FLENGTH( data-value) — CONVDATA( data-area) — RETCODE( data-area) — INVITE — CONFIRM — LAST — WAIT — STATE( cvda)

Description

GDS SEND sends data.

The return code is given in RETCODE (see Table 13 on page 216). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

Options

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

CONFIRM

allows an application working at synchronization level 1 or 2 to synchronize its processing with that of a process in a remote system. The actions taken to synchronize processing are defined by the application programs involved. The CONFIRM option causes RQD2 to be added to the data already sent, and forces a WAIT. On receipt of the indicator, the remote process takes the agreed actions and then sends a response. When the WAIT completes, CDBERR is set to X’00’ if the appropriate response has been received.

CONVDATA(data-area)

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

CONVID(name)

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

FLENGTH(data-value)

specifies the length (as a fullword binary value in the range 1–32 767) of the data specified in the FROM option.

FROM(data-area)

specifies the data that is to be sent.

INVITE

allows an application program to add a change-direction indicator to data already sent to a process in a connected APPC system. Control data is not transmitted by CICS until the subsequent execution of a WAIT or a SYNCPOINT command, unless CONFIRM or WAIT is also coded on the GDS SEND INVITE command.
LAST
allows an application program to add CEB to data already sent to a process in a connected APPC system. CEB is not transmitted by CICS until the subsequent execution of a WAIT or a SYNCPOINT command, unless CONFIRM or WAIT is also coded on the GDS SEND LAST command. Note that if one of these commands fails because of a conversation-related error, the conversation remains in brackets. In such a case, the application program should execute a GDS RECEIVE command. However, GDS SEND LAST WAIT (with no data) always causes the conversation to be deallocated.

RETCODE(data-area)
specifies the 6-byte application data area into which return code information (shown in Table 13 on page 216) is to be moved.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNSSEND

WAIT
ensures that all data and indicators so far sent on a conversation are erased from the partner transaction.

If the WAIT option is not used, data from successive SEND commands is accumulated by CICS, together with any indicators, in an internal buffer. If the buffer becomes full, most of the accumulated data is transmitted to the remote system, but the accumulated indicators are not. Transmission of the accumulated data plus the indicators is forced by the WAIT or CONFIRM options of the GDS SEND command, or by a GDS WAIT command.

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>03 14</td>
<td>The CONFIRM option has been used on a sync level 0 conversation.</td>
</tr>
<tr>
<td>03 10</td>
<td>LL error (incorrect or incomplete).</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to the task, or that is a relay link.</td>
</tr>
<tr>
<td>05 00 00 00 7F FF</td>
<td>The FLENGTH value is outside the range 0 through 32 767.</td>
</tr>
</tbody>
</table>
GDS WAIT

Ensure accumulated data transmitted on an APPC conversation (assembler-language and C programs only).

**GDS WAIT (APPC basic)**

```
GDS WAIT CONVID(name) CONVDATA(data-area) RETCODE(data-area)
STATE(cvda)
```

**Description**

GDS WAIT ensures that the accumulated data has been sent.

The return code is given in RETCODE (see Table 14 on page 218). For a list of return code values, see the Return codes for APPC basic conversations. EXEC CICS conditions are never raised on GDS commands.

**Options**

In general, the arguments can be replaced by absolute or relocatable assembler-language expressions.

**CONVDATA(data-area)**

specifies the 24-byte application data area into which conversation-related information is to be moved. A description of the format of the data area is given in the discussion of CONVDATA fields in the Testing indicators.

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed GDS ALLOCATE command, or the token representing the principal session (returned by a previously executed GDS ASSIGN command).

**RETCODE(data-area)**

specifies the 6-byte application data area into which return code information (shown in Table 14 on page 218) is to be moved.

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSIZEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNSSEND
Table 14. GDS WAIT return codes

<table>
<thead>
<tr>
<th>RETCODE (hexadecimal)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is not APPC.</td>
</tr>
<tr>
<td>03 00</td>
<td>CONVID is for a session that is in use by CPI Communications.</td>
</tr>
<tr>
<td>03 04</td>
<td>CONVID is for a conversation that is not basic.</td>
</tr>
<tr>
<td>03 08</td>
<td>A state check has occurred.</td>
</tr>
<tr>
<td>04</td>
<td>CONVID is for a session that is not allocated to task, or that is a relay link.</td>
</tr>
</tbody>
</table>

GET CONTAINER (BTS)

Retrieve data from a named BTS data-container.

**GET CONTAINER**

```
GET CONTAINER(data-value)
```

**Conditions:** ACTIVITYERR, CONTAINERERR, INVREQ, IOERR, LENGERR, LOCKED, PROCESSBUSY

**Description**

GET CONTAINER reads the data associated with a specified BTS activity or process into working storage. The container which holds the data is identified by name and by the process or activity for which it is a container - the process or activity that owns it. The activity that owns the container can be identified:

- Explicitly, by specifying one of the PROCESS- or ACTIVITY-related options.
- Implicitly, by omitting the PROCESS- and ACTIVITY-related options. If these are omitted, the current activity is implied.

See also PUT CONTAINER (BTS) and MOVE CONTAINER (BTS).

**Options**

**ACQACTIVITY**

specifies either of the following:

- If the program that issues the command has acquired a process, that the container is owned by the root activity of that process.
- Otherwise, that the container is owned by the activity that the program has acquired by means of an ACQUIRE ACTIVITYID command.

**ACQPROCESS**

specifies that the container is owned by the process that the program that issues the command has acquired in the current unit of work.
**ACTIVITY(data-value)**
specifies the name (1 - 16 characters) of the activity that owns the container. This must be a child of the current activity.

**CONTAINER(data-value)**
specifies the name (1 - 16 characters) of the container that holds the data to be retrieved.

**FLENGTH(data-area)**
As an input field, FLENGTH specifies, as a fullword binary value, the length of the data to be read. As an output field, FLENGTH returns the length of the data in the container. Whether FLENGTH is an input or an output field depends on which of the INTO, SET, or NODATA options you specify.

**INTO option specified**
FLENGTH is both an input and an output field.

- **On input**, FLENGTH specifies the maximum length of the data that the program accepts. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs. If the length of the data is less than the value specified, the data is copied with no padding and the LENGERR condition occurs.

- FLENGTH need not be specified if the length can be generated by the compiler from the INTO variable. If you specify both INTO and FLENGTH, FLENGTH specifies the maximum length of the data that the program accepts.

- **On output** (that is, on completion of the retrieval operation) CICS sets the data area, if specified, to the actual length of the data in the container.

**SET or NODATA option specified**
FLENGTH is an output-only field. It must be specified and specified as a data-area.

- On completion of the retrieval operation, the data area is set to the actual length of the data in the container.

**INTO(data-area)**
specifies an area of working storage into which the retrieved data is to be placed.

**NODATA**
specifies that no data is to be retrieved. Use this option to discover the length of the data in the container (returned in FLENGTH).

**PROCESS**
specifies that the container to be retrieved is owned by the current process - that is, the process that the program that issues the command is executing on behalf of.

**SET(ptr-ref)**
specifies a data area in which the address of the retrieved data is returned. The data area is maintained by CICS until a subsequent GET CONTAINER command with the SET option is issued by the task, or until the task ends.

- If your application needs to keep the data it should move it into its own storage.

**Conditions**

**109 ACTIVITYERR**
RESP2 values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>The activity named on the ACTIVITY option could not be found.</td>
</tr>
</tbody>
</table>

**110 CONTAINERERR**
RESP2 values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>The container named on the CONTAINER option could not be found.</td>
</tr>
</tbody>
</table>

**16 INVREQ**
RESP2 values:
The INTOCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) INTOCCSID is valid only on GET CONTAINER commands that specify (explicitly or implicitly) a channel. It is not valid on GET CONTAINER (BTS) commands.

The command was issued outside the scope of a currently-active activity.

The ACQPROCESS option was used, but the unit of work that issued the request has not acquired a process.

The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

The PROCESS option was used, but the command was issued outside the scope of a currently-active process.

17 IOERR
RESP2 values:

30 An input/output error has occurred on the repository file.

31 The record on the repository file is in use.

22 LENGERR
RESP2 values:

11 The length of the program area is not the same as the length of the data in the container. If the area is smaller, the data is truncated to fit into it. If the area is larger, the data is copied to the program area but no padding is added.

100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

106 PROCESSBUSY
RESP2 values:

13 The request could not be satisfied because the process record is locked by another task.
GET CONTAINER (CHANNEL)

Retrieve data from a named channel container.

```
GET CONTAINER( data-value )
CHANNEL( data-value )
INTO( data-area )
FLENGTH( data-area )
BYTEOFFSET( data-area )
SET( ptr-ref ) FLENGTH( data-area )
BYTEOFFSET( data-value )
NODATA FLENGTH( data-value )
INTOCCSID( data-value )
INTOCODEPAGE( data-value )
CONVERTST( cvda )
CCSID( data-area )
```

**Conditions:** CCSIDERR, CHANNELERR, CODEPAGEERR, CONTAINERERR, INVREQ, LENGERR

This command is thread-safe.

**Description**

GET CONTAINER (CHANNEL) reads the data associated with a specified channel container.

The container that holds the data is identified by name and by the channel for which it is a container; the channel that “owns” it.

The channel that owns the container can be identified explicitly, by specifying the CHANNEL option, or implicitly, by omitting the CHANNEL option. When this option is omitted, the current channel is implied. If there is no current channel, the command is assumed to be an EXEC CICS GET CONTAINER (BTS) command. For more information, see “GET CONTAINER (BTS)” on page 218.

**Options**

**BYTEOFFSET(data-value)**

Specifies the offset in bytes where the data returned starts. For CHAR containers, the BYTEOFFSET value is used as an offset into the data in the requested code page. If you use a code page with multibyte characters, depending on the BYTEOFFSET value you specify, the data returned might have partial characters at the beginning, end, or both. In this situation, your application program must be able to handle and interpret the data returned. If the value specified is less than zero, zero is assumed.

**CCSID(data-area)**

Returns a fullword that contains the Coded Character Set Identifier (CCSID) of the data returned by the CONVERTST(NOCONVERT) option. You can use this option to retrieve containers with a DATATYPE of CHAR, without converting the data. If a DATATYPE of BIT is specified for the container, this value is zero.

**CHANNEL(data-value)**

Specifies the name (1 - 16 characters) of the channel that owns the container. You can specify the channel name DFHTRANSACTION to use the transaction channel.
CONTAINER(data-value)
Specifies the name (1 - 16 characters) of the container that holds the data to be retrieved.

CONVERTST(cvda)
Specifies the required data conversion status.

NOCONVERT
The container data is retrieved without being converted. If you used the WEB RECEIVE to store
the HTTP body in a container, and you need to retrieve the body unconverted from that container,
you must use the NOCONVERT option.

FLENGTH(data-area)
As an input field, FLENGTH specifies, as a fullword binary value, the length of the data to be read. As
an output field, FLENGTH returns the length of the data in the container. FLENGTH is an input or an
output field depending on which of the BYTEOFFSET, INTO, SET, or NODATA options you specify.

BYTEOFFSET option specified
FLENGTH is both an input and an output field.
On input, FLENGTH specifies the maximum length of the data that the program accepts. The data
returned begins at the offset specified by the BYTEOFFSET value. If the value specified is less
than zero, zero is assumed.

On output (that is, on completion of the retrieval operation) CICS sets the data area to the length
of the data returned. The maximum length returned is equal to the length of the data in the
container minus the BYTEOFFSET value.

INTO option specified
FLENGTH is both an input and an output field.
On input, FLENGTH specifies the maximum length of the data that the program accepts. If the
value specified is less than zero, zero is assumed. If the length of the data exceeds the value
specified, the data is truncated to that value and the LENGERR condition occurs. If the length of
the data is less than the specified value, the data is copied but no padding is performed.

You do not need to specify FLENGTH if the length can be generated by the compiler from the INTO
variable. If you specify both INTO and FLENGTH, FLENGTH
specifies the maximum length of the
data that the program accepts.

On output (that is, on completion of the retrieval operation) CICS sets the data area, if specified,
to the actual length of the data in the container. If the container holds character data that has
been converted from one CCSID to another, this is the length of the data after conversion.

SET or NODATA option specified
FLENGTH is an output-only field. It must be present and must be specified as a data-area.

On completion of the retrieval operation, the data area is set to the actual length of the data in the
container. If the container holds character data that has been converted from one CCSID to
another, this is the length of the data after conversion.

INTO(data-area)
Specifies the data area into which the retrieved data is placed.

INTOCCSID(data-value)
Specifies the Coded Character Set Identifier (CCSID) into which the character data in the container is
converted, as a fullword binary number. If you prefer to specify an IANA name for the code page, or if
you prefer to specify the CCSID as alphanumeric characters, use the INTOCODEPAGE option instead.

For CICS Transaction Server for z/OS applications, the CCSID is typically an EBCDIC CCSID. However,
it is possible to specify an ASCII CCSID if, for example, you want to retrieve ASCII data without it
being automatically converted to EBCDIC.

If INTOCCSID and INTOCODEPAGE are not specified, the value for conversion defaults to the CCSID
of the region. The default CCSID of the region is specified on the LOCALCCSID system initialization
parameter.
Only character data can be converted, and only then if a DATATYPE of CHAR was specified on the PUT CONTAINER or PUT64 CONTAINER command used to place the data in the container. A DATATYPE of CHAR is implied if FROMCCSID or FROMCODEPAGE is specified on the PUT CONTAINER or PUT64 CONTAINER command.

For more information about data conversion with channels, see Data conversion with channels.

For an explanation of CCSIDs, see Preparing for code page conversion with channels.

 INTOCODEPAGE(data-value)
 Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the code page into which the character data in the container is to be converted, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID. For more information, see Preparing for code page conversion with channels.

 NODATA
 Specifies that no data is retrieved. Use this option to discover the length of the data in the container (returned in FLENGTH).

The length of character data may change if data conversion takes place. Therefore, if character data is to be converted into any CCSID other than that of this region, when you specify NODATA you should also specify INTOCCSID. This ensures that the correct length of the converted data is returned in FLENGTH.

 SET(ptr-ref)
 Specifies a data area in which the address of the retrieved data is returned.

If the application program that issues the GET CONTAINER command is defined with DATALLOCATION(ANY), the address of the data can be above or below the 16 MB line. If the application program is defined with DATALLOCATION(BELOW), the address of the data is below the 16 MB line. If TASKDATAKEY(USER) is specified for the executing transaction, the data returned is in user key; otherwise it is in CICS key.

CICS maintains the data area until any of the following occurs:

• A subsequent GET CONTAINER or GET64 CONTAINER command with the SET option, for the same container in the same channel, is issued by any program that can access this storage.
• The container is deleted by a DELETE CONTAINER command.
• The container is moved by a MOVE CONTAINER command.
• The channel goes out of program scope.
• The channel, and the containers that are in it, are deleted by a DELETE CHANNEL command.

Beware of linking to other programs that might issue one of these commands.

Do not issue a FREEMAIN command to release this storage.

If your application needs to keep the data, it should move it into its own storage.

Conditions

123 CCSIDERR
 RESP2 values:

 1
  The CCSID specified on the INTOCCSID option is outside the range of valid CCSID values.
2 The CCSID specified on the INTOCCSID option and the CCSID of the container are an unsupported combination. (The CCSID of the container is the value that was specified using either FROMCODEPAGE or FROMCCSID, or defaulted, when the container was built.)

3 The data was created with a data type of BIT. Code page conversion is not possible. The data was returned without any code page conversion.

4 One or more characters could not be converted. The character has been replaced by a blank in the converted data.

5 There was an internal error in the code page conversion of a container.

122 CHANNELERR
RESP2 values:

2 The channel specified on the CHANNEL option could not be found.

125 CODEPAGEERR
RESP2 values:

1 The code page specified on the INTOCODEPAGE option is not supported.

2 The code page specified on the INTOCODEPAGE option and the code page of the channel are an unsupported combination.

3 The data was created with a data type of BIT. Code page conversion is not possible. The data was returned without any code page conversion.

4 One or more characters could not be converted. The character has been replaced by a blank in the converted data.

5 There was an internal error in the code page conversion of a container.

110 CONTAINERERR
RESP2 values:

10 The container named on the CONTAINER option could not be found.

16 INVREQ
RESP2 values:

2 The INTOCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) INTOCCSID is valid only on GET CONTAINER commands that specify (explicitly or implicitly) a channel.

4 The CHANNEL option was not specified, there is no current channel (because the program that issued the command was not passed one), and the command was issued outside the scope of a currently-active BTS activity.

5 The CONVERTST cvda value is invalid.

22 LENGERR
RESP2 values:
The length of the program area is shorter than the length of the data in the container. When the area is smaller, the data is truncated to fit into it.

The offset is greater than, or equal to, the length of the container.

**GET COUNTER and GET DCOUNTER**

Get the next number from the named counter in the specified pool. Use COUNTER for fullword signed counters and DCOUNTER for doubleword unsigned counters.

**GET COUNTER**

```
GET COUNTER( name )
POOL( name )
VALUE( data-area )
INCREMENT( data-value )
REDUCE
WRAP
COMPAREMIN( data-value )
COMPAREMAX( data-value )
NOSUSPEND
```

**Conditions:** BUSY, INVREQ, LENGERR, SUPPRESSED

This command is threadsafe.

**GET DCOUNTER**

```
GET DCOUNTER( name )
POOL( name )
VALUE( data-area )
INCREMENT( data-area )
REDUCE
WRAP
COMPAREMIN( data-area )
COMPAREMAX( data-area )
NOSUSPEND
```

**Conditions:** BUSY, INVREQ, LENGERR, SUPPRESSED

This command is threadsafe.

**Description**

These counter commands obtain, from the named counter server, the current number from the named counter in the specified pool, and updates the current number by the default, or by a specified, increment. The default increment is 1.

You can use the COMPAREMAX and COMPAREMIN options to obtain a number only if it falls within a specified range, or is above or below a specified value.
For information about specifying fullword and doubleword variables on these named counter commands, see “CICS command argument values” on page 3.

Options

**COMPAREMAX**(data-value)
- Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), a value to compare with the current value of the named counter, and makes the result of the GET command conditional on the comparison:
  - If the current value to assign is less than, or equal to, the value specified on the COMPAREMAX parameter, the current value is returned, and the response is normal.
  - If the current value is greater than the specified value, CICS returns an exception condition.

Normally, the COMPAREMAX value is greater than the COMPAREMIN value and the current value must satisfy both comparisons (that is, it must be between the two values or equal to one of them).

You can specify a COMPAREMAX value that is less than the COMPAREMIN value. In this situation, the current value is considered to be in range if it satisfies either the COMPAREMIN or the COMPAREMAX comparison.

**COMPAREMIN**(data-value)
- Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), a value to compare with the current value of the named counter, and makes the result of the GET command conditional on the comparison:
  - If the current value to assign is equal to, or greater than, the value specified on the COMPAREMIN parameter, the current value is returned, and the response is normal.
  - If the current value is less than the specified value, CICS returns an exception condition.

Note: You can specify a COMPAREMIN value that is greater than the COMPAREMAX value. See the COMPAREMAX parameter for the effect of this.

**COUNTER**(name)
- Specifies the name of the fullword counter from which the current number is to be assigned to the application program. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**DCOUNTER**(name)
- Specifies the name of the doubleword counter from which the current number is to be assigned to the application program. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**INCREMENT**(data-value)
- Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), an increment by which the named counter is to be updated, instead of the default value of 1. The counter is incremented after the current number has been assigned.

Specifying an increment to override the default increment of 1 enables the application program to obtain exclusive use of more than one number for each call. For example, to obtain exclusive use of a block of 20 numbers, specify INCREMENT(20).

See the description of the REDUCE and WRAP options for the effect of specifying an increment when the counter is at, or near, the maximum value.

**NOSUSPEND**
- Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

**POOL**(poolname)
- Specifies an 8-character string to use as a pool selection parameter to select the pool in which the named counter resides. The string can be a logical pool name, or the actual pool name.
Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.

This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNCO macro, see Named counter servers.

**REDUCE**

Specifies that you want the named counter server to reduce the specified increment if the range of numbers remaining to be assigned is too small.

The range of numbers is too small if the difference between the current value and the maximum value plus 1 is less then the specified increment, in which case:

- If you specify REDUCE, the INCREMENT parameter value is reduced and the GET request succeeds. In this case, the GET command has reserved a range of numbers less than that specified by the INCREMENT parameter, and the current value is updated to the maximum value plus 1.
- If you do not specify the REDUCE option, the result depends on whether you specify the WRAP option. If the REDUCE and WRAP options are both omitted, the request fails with the counter-at-limit error (SUPPRESSED, RESP2=101), but the current number is not changed. For example, if a request specifies an INCREMENT parameter value of 15 when the current number is 199 990 and the counter maximum number is defined as 199 999, the GET command fails because updating the counter by the specified increment would cause the current number to exceed 200 000.

**VALUE(data-area)**

Specifies the data area (fullword signed data-area for COUNTER, and doubleword unsigned data-area for DCOUNTER) into which CICS returns the current number, obtained from the named counter server for the specified pool.

**WRAP**

Specifies that you want the named counter server to rewind the named counter automatically if it is in a counter-at-limit condition, thus avoiding the error condition that would otherwise result.

If the named counter is in the counter-at-limit condition, or the increment specified without the REDUCE option would cause the counter-at-limit condition, the counter server acts as follows:

- It resets the current value of the named counter equal to the minimum value defined for the counter.
- It returns the new current value to the application program, with DFHRESP(NORMAL).
- It updates the current value by the required increment ready for the next request.

If you omit the WRAP option, and the counter-at-limit condition is reached, CICS returns SUPPRESSED, RESP2=101.

**Conditions**

**128 BUSY**

RESP2 values:

- **500**
  
  The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.

  Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:
201
Named counter not found.

301
The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

303
An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

304
The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.

305
The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnnnn) in the application job log.

306
An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308
The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309
During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310
An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311
A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.

403
The POOL parameter contains invalid characters or embedded spaces.

404
The COUNTER parameter contains invalid characters or embedded spaces.

406
The INCREMENT value is invalid. The value specified cannot be greater than the total range of the counter ((maximum value - minimum value) + 1).

Default action: terminate the task abnormally.

22 LENGERR
LENGERR occurs for COUNTER commands only and does not apply to DCOUNTER requests. It occurs when a counter that was defined by a DCOUNTER command or by the CALL interface has a value that is too large to be correctly represented as a fullword signed binary value (that is, the counter uses more than 31 bits).

In each of the three cases of overflow, the named counter server completes the operation, and returns a warning response to CICS, which CICS returns to your application program as the RESP2 value. The data area contains the low-order 32 bits returned from the named counter server, which could be a negative number.

RESP2 values:
The current value that the server has attempted to return in the VALUE data area has overflowed into the high-order (sign) bit (that is, the value returned is negative).

The current value is too large for a fullword data area by only 1 bit. In this case, the overflow value is exactly 1.

The current value is too large for a fullword data area by a value greater than 1.

Default action: terminate the task abnormally.

**72 SUPPRESSED**

RESP2 values:

**101**
The maximum value for the named counter has already been assigned and the counter is in the 'counter-at-limit' condition. No more counter numbers can be assigned until the named counter has been reset, either by a REWIND command, or by specifying the WRAP option on the GET command.

**103**
One of the following:

- The current value of the named counter is not within the range specified by the **COMPAREMAX** and **COMPAREMIN** parameters, when both are specified
- The current value of the named counter is greater than the **COMPAREMAX** parameter or less than the **COMPAREMIN** parameter, when only one option is specified.

Default action: terminate the task abnormally.

**GETMAIN**

Get main 24-bit or 31-bit storage.

**GETMAIN**

```
GETMAIN — SET(ptr-ref) — FLENGTH(data-value) — BELOW — LENGTH(data-value)
| INITIMG(data-value) — SHARED — NOSUSPEND |
| USERDATAKEY | CICSDATAKEY |
```

**Conditions:** LENGERR, NOSTG

This command is threadsafe.

**Description**

**GETMAIN** gets a main storage area of the size indicated by the FLENGTH option. The address of the area is returned in the pointer reference supplied in the SET option.

This command includes the LENGTH option for compatibility purposes only; for programs that run with current versions of CICS, use FLENGTH.
CICS always allocates on 16-byte boundaries and rounds the requested length up to the nearest 16-byte multiple. There is no default initialization, so if you require the storage to be initialized to a specific bit configuration, you must use the INITIMG option.

CICS allocates storage from one of the following dynamic storage areas (DSAs):

- **DSAs in 24-bit storage:**
  - The CICS dynamic storage area (CDSA), below 16 MB (below the line)
  - The user dynamic storage area (UDSA), below 16 MB
  - The shared dynamic storage area (SDSA), below 16 MB
- **DSAs in 31-bit storage; the extended dynamic storage area (EDSA):**
  - The extended CICS dynamic storage area (ECDSA), above 16 MB but below 2 GB (above the line)
  - The extended user dynamic storage area (EUDSA), above 16 MB but below 2 GB
  - The extended shared dynamic storage area (ESDSA), above 16 MB but below 2 GB

For more information about these DSAs, see CICS dynamic storage areas.

**Note:** You cannot use **GETMAIN** to get storage from the following DSAs:

- The read-only DSA (RDSA).
- The extended read-only DSA (ERDSA).
- The extended trusted DSA (ETDSA).
- DSAs in the above-the-bar dynamic storage area (GDSA). To obtain storage from these DSAs, use the **GETMAIN64** command.

CICS allocates storage from 24-bit or 31-bit storage, depending on the following options:

- The **FLENGTH** option with **BELOW** also specified. CICS obtains the storage from a DSA in 24-bit storage.
- The **FLENGTH** option, **BELOW** not specified. The AMODE of the requesting program determines the location of the obtained storage. For example, for an AMODE(31) program, CICS obtains the storage from the EDSA.
- The **LENGTH** option. CICS obtains the storage from a DSA in 24-bit storage.

CICS allocates storage from a CICS-key, user-key, or shared DSA, depending on the following options:

- **USERDATAKEY**
- **CICSDATAKEY**
- **SHARED**

- If no data-key option is specified on the **GETMAIN** command, the **TASKDATAKEY** option on the TRANSACTION resource definition under which the requesting program is running

  See TRANSACTION attributes.

The effect of the data-key options is summarized in the following table:

<table>
<thead>
<tr>
<th><strong>Table 15. Data-key options on GETMAIN command</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No data-key option</strong></td>
</tr>
<tr>
<td>Storage key is determined by TASKDATAKEY on transaction definition</td>
</tr>
</tbody>
</table>

The data-key option on the **GETMAIN** command overrides the **TASKDATAKEY** option on the TRANSACTION resource definition. For example, you can specify **CICSDATAKEY** to ensure that the requesting program obtains CICS-key storage from a CICS DSA, even if **TASKDATAKEY(USER)** is specified on the TRANSACTION resource definition.
The storage that a task gets is available until it is released with a FREEMAIN or FREEMAIN64 command. For an area that is obtained without the SHARED option, only the task that acquired the storage can release it, and at task end CICS automatically releases such storage not already released.

Any storage acquired with the SHARED option is accessible by all tasks, including those that are running with transaction isolation. However, a SHARED area is not released at task end and remains until explicitly freed; any task can issue the FREEMAIN or FREEMAIN64 request. This means that you can use SHARED storage in task-to-task communication.

**Note:** Using the GETMAIN command with the SHARED option could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see **Affinity**.

**Options**

**BELOW**

Specifies that 24-bit (below 16 MB) storage is obtained; that is, from the CDSA, UDSA, or SDSA.

**CICSDATAKEY**

Specifies that CICS allocates storage from a CICS-key DSA (CDSA or ECDSA), overriding the TASKDATAKEY option specified on the transaction resource definition. If you do not specify a data-key option, the storage key (CICS-key or user-key) depends on the TASKDATAKEY option on the transaction resource definition.

**Note:** If the program is running under a task defined with TASKDATAKEY(USER) on the transaction resource definition, do not explicitly use FREEMAIN or FREEMAIN64, but allow the storage to be freed as part of the task termination.

**FLENGTH(data-value)**

Specifies the number of bytes of storage required, in fullword binary format.

The maximum length that you can specify is the value of the limit for the corresponding DSA; that is, DSALIMIT or EDSALIMIT. These are the system initialization parameters that define the overall storage limit within which CICS can allocate and manage the individual DSAs in 24-bit and 31-bit storage, respectively.

If the length requested is greater than the corresponding DSALIMIT or EDSALIMIT value, the LENGERR condition occurs. If the length requested is less than the corresponding limit, but is greater than the available storage, a NOSTG condition occurs.

**INITIMG(data-value)**

Specifies an optional 1-byte initialization value. If you specify INITIMG, CICS sets every byte of the acquired storage to the bit string you provide. Otherwise, CICS does not initialize the storage. In COBOL programs only, you must use a data area rather than a data value to define the initialization bit string.

**LENGTH(data-value)**

This option is supported only for compatibility with programs that are written to run under earlier releases of CICS. It is advisable to use FLENGTH.

LENGTH specifies the number of bytes (unsigned halfword binary value) of storage required. This option implies storage from below the 16 MB line and has an upper limit of 65520 bytes. For a larger area or storage above 16 MB, use FLENGTH.

If the value of LENGTH is zero, a LENGERR condition occurs. If the length requested is greater than the available storage, a NOSTG condition occurs.

**NOSUSPEND**

Specifies that if no storage is available, CICS does not suspend the task, but issues the NOSTG condition.

If a HANDLE CONDITION for NOSTG is active when the command is executed, control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOSUSPEND option, but is deactivated by NOHANDLE or RESP.
**SET(ptr-ref)**

Sets the pointer reference to the address of the acquired main storage. The pointer is set to the first byte of the storage area.

A LENGERR condition that results from a zero or negative value being specified for FLENGTH or LENGTH will set ptr-ref to zero.

**SHARED**

Prevents the automatic release of storage obtained by a GETMAIN command at the end of the task that requested it. This enables task-to-task communication. An area obtained with SHARED is not released until a corresponding FREEMAIN is issued, whether by the requesting task or some other task.

Be aware that if a task abends, any shared storage acquired is not automatically released.

**USERDATAKEY**

Specifies that CICS allocates storage from a user-key DSA (the UDSA, SDSA, EUDSA, or ESDSA), overriding the TASKDATAKEY option specified on the transaction resource definition. If you do not specify a data-key option, the storage key (CICS-key or user-key) depends on the TASKDATAKEY option on the transaction resource definition.

**Conditions**

22 LENGERR

RESP2 values:

1

The FLENGTH value is less than 1 or greater than the length of the target dynamic storage area from which the request is to be satisfied. See the information about DSAs in CICS dynamic storage areas.

Also occurs if the LENGTH value is zero.

Default action: terminate the task abnormally.

42 NOSTG

RESP2 values:

2

The storage requested is more than is currently available in the target DSA. See the information about DSAs in CICS dynamic storage areas.

Default action: ignore the condition. An active HANDLE CONDITION NOSTG also raises this condition.

**Examples**

The following example shows how to get a 1024-byte area from user-key storage below 16 MB (assuming that TASKDATAKEY(USER) is specified on the TRANSACTION resource definition), and initialize it to spaces:

```cics
EXEC CICS GETMAIN SET(PTR)
   FLENGTH(1024)
   BELOW
   INITIMG(BLANK)
```

You must define BLANK in your program as the character representing a space.

The following example shows how to get a 2048-byte area from CICS-key storage above 16 MB but below 2 GB (regardless of the TASKDATAKEY option specified on the transaction resource definition), and initialize it to spaces:

```cics
EXEC CICS GETMAIN SET(PTR)
   FLENGTH(2048)
```
GETMAIN64

Get 24-bit, 31-bit, or 64-bit storage. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs.

See Assembler language programming restrictions and requirements.

GETMAIN64

GETMAIN64

\[\text{GETMAIN64} \quad \text{SET} \left( \text{ptr-ref64} \right) \quad \text{FLENGTH} \left( \text{data-value} \right) \quad \text{LOCATION} \left( \text{cvda} \right)\]

\[\text{SHARED} \quad \text{NOSUSPEND} \quad \text{USERDATAKEY} \quad \text{CICSDATAKEY}\]

Conditions: INVREQ, LENGERR, NOSTG

This command is threadsafe.

Description

GETMAIN64 gets a main storage area of the size indicated by the FLENGTH option. The address of the area is returned in the 64-bit pointer reference supplied in the SET option. By default, the addressing mode (AMODE) of the requesting program determines the location of the obtained storage. Therefore, for an AMODE(64) program, GETMAIN64 obtains 64-bit storage.

You can also use the LOCATION parameter to specify that 24-bit or 31-bit storage is obtained, regardless of the AMODE of the calling program. For example, if you specify LOCATION(LOC31), a 64-bit address for an area of 31-bit storage is returned.

CICS always allocates on 16-byte boundaries and rounds the requested length up to the nearest 16-byte multiple.

CICS allocates storage from one of the following dynamic storage areas (DSAs):

- DSAs in 24-bit storage:
  - The CICS dynamic storage area (CDSA), below 16 MB (below the line)
  - The user dynamic storage area (UDSA), below 16 MB
  - The shared dynamic storage area (SDSA), below 16 MB

- DSAs in 31-bit storage; the extended dynamic storage area (EDSA):
  - The extended CICS dynamic storage area (ECDSA), above 16 MB but below 2 GB (above the line)
  - The extended user dynamic storage area (EUDSA), above 16 MB but below 2 GB
  - The extended shared dynamic storage area (ESDSA), above 16 MB but below 2 GB

- DSAs in 64-bit storage: the above-the-bar dynamic storage area (GDSA):
  - The above-the-bar CICS DSA (GCDSA)
  - The above-the-bar user DSA (GUDSA)
  - The above-the-bar shared DSA (GSDSA)

For more information about these DSAs, see CICS dynamic storage areas.

Note: You cannot use GETMAIN64 to obtain storage from the following DSAs:

- The read-only DSA (RDSA)
• The extended read-only DSA (ERDSA)
• The extended trusted DSA (ETDSA)

CICS allocates storage from a CICS-key, user-key, or shared DSA, depending on the following options:

• USERDATAKEY
• CICSDATAKEY
• SHARED

• If no data-key option is specified on the GETMAIN64 command, the TASKDATAKEY option on the RDO TRANSACTION resource definition under which the requesting program is running. See TRANSACTION attributes.

The following table summarizes the effect of the data-key options.

<table>
<thead>
<tr>
<th>No data-key option</th>
<th>USERDATAKEY specified</th>
<th>CICSDATAKEY specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage key is determined by TASKDATAKEY on the transaction definition</td>
<td>User-key storage. If the SHARED option is not specified, storage is obtained from the UDSA, EUDSA, or GUDSA. If the SHARED option is specified, storage is obtained from the SDSA, ESDSA, or GSDSA.</td>
<td>CICS-key storage. Storage is obtained from the CDSA, ECDSA, or GCDSA.</td>
</tr>
</tbody>
</table>

The data-key option on the GETMAIN64 command overrides the TASKDATAKEY option on the RDO TRANSACTION resource definition. For example, you can specify CICSDATAKEY to ensure that the requesting program obtains CICS-key storage from a CICS DSA, even if TASKDATAKEY(USER) is specified on the RDO TRANSACTION resource definition.

The storage that a task obtains is available until it is released with a FREEMAIN or FREEMAIN64 command. For storage that is obtained without the SHARED option, only the task that acquired the storage can release it. At task end, CICS automatically releases such storage not already released.

Any storage obtained with the SHARED option is accessible by all tasks, including those that are running with transaction isolation. However, a shared area is not released at task end and remains until explicitly freed; any task can issue the FREEMAIN or FREEMAIN64 request. This means that you can use shared storage in task-to-task communication.

**Note:** Using the GETMAIN64 command with the SHARED option could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see Affinity.

**Options**

**CICSDATAKEY**

Specifies that CICS allocates storage from a CICS-key DSA (CDSA, ECDSA, or GCDSA), overriding the TASKDATAKEY option specified on the transaction resource definition. If you do not specify a data-key option, the storage key (CICS-key or user-key) depends on the TASKDATAKEY option on the transaction resource definition.

**Note:** If the program is running under a task defined with TASKDATAKEY(USER) on the transaction resource definition, do not explicitly use a FREEMAIN or FREEMAIN64 request, but allow the storage to be freed as part of the task termination.

**FLENGTH(data-value)**

Specifies the number of bytes of storage required, in fullword binary format.

For 64-bit storage, the maximum length that you can specify is 2146435056 (2 GB - (1 MB + 16 bytes)). If the length requested is greater than the available storage, a NOSTG condition occurs.

For 24-bit or 31-bit storage, the maximum length that you can specify is the value of the limit for the corresponding DSA, that is, DSALIMIT or EDSALIMIT. DSALIMIT and EDSALIMIT are system
initialization parameters that define the overall storage limits within which CICS can allocate and manage the individual DSAs in 24-bit and 31-bit storage, respectively. If the length requested is bigger than the corresponding DSALIMIT or EDSALIMIT value, the LENGERR condition occurs. If the length requested is less than the corresponding limit, but is greater than the available storage, a NOSTG condition occurs.

**LOCATION(cvda)**

Specifies that CICS allocates storage from 24-bit or 31-bit storage, regardless of the AMODE of the calling program. CVDA values are as follows:

- **LOC24**
  - 24-bit storage (below 16 MB) is obtained; that is, from the CDSA, UDSA, or SDSA.

- **LOC31**
  - 31-bit storage (above 16 MB but below 2 GB) is obtained; that is, from the ECDSA, EUDSA, or ESDSA.

**NOSUSPEND**

Specifies that if no storage is available, CICS does not suspend the task, but issues the NOSTG condition.

**SET(ptr-ref64)**

Sets the 64-bit pointer reference to the address of the acquired main storage. The pointer is set to the first byte of the storage area.

The pointer reference returns a 64-bit address for an area of 64-bit, 31-bit, or 24-bit storage. The location of the obtained storage depends on the AMODE of the caller, unless a LOCATION option is specified.

**SHARED**

Prevents the automatic release of storage obtained by a GETMAIN64 command at the end of the task that requested it. This enables task-to-task communication. An area obtained with SHARED is not released until a corresponding FREEMAN or FREEMAIN64 request is issued, whether by the requesting task or another task.

Be aware that if a task abends, any shared storage acquired is not automatically released.

**USERDATAKEY**

Specifies that CICS allocates storage from a user-key DSA (UDSA, SDSA, EUDSA, ESDSA, GUDSA, or GSDSA), overriding the TASKDATAKEY option specified on the transaction resource definition. If you do not specify a data-key option, the storage key (CICS-key or user-key) depends on the TASKDATAKEY option on the transaction resource definition.

**Conditions**

**16 INVREQ**

RESP2 values:

- **3**
  - The LOCATION option is not valid.

**22 LENGERR**

RESP2 values:

- **1**
  - The FLENGTH value is less than 1, or greater than the length of the target dynamic storage area from which the request is to be satisfied. See the discussion about DSAs in CICS dynamic storage areas.

**42 NOSTG**

RESP2 values:

- **2**
  - The storage requested is more than is currently available in the target DSA. See the discussion about DSAs in CICS dynamic storage areas.
Example

The following example shows how to get a 1048576 byte area from CICS-key storage above the bar (regardless of the TASKDATAKEY option specified on the transaction resource definition):

```
EXEC CICS GETMAIN64 SET(5)
  FLENGTH(1048576)
  CICSDATAKEY
```

**GETNEXT ACTIVITY**

Browse the child activities of a BTS activity, or the descendant activities of a BTS process.

```
GETNEXT ACTIVITY

➤ GETNEXT — ACTIVITY( data-area ) — BROWSETOKEN( data-value ) ➤

ACTIVITYID( data-area )

LEVEL( data-area )

Conditions: ACTIVITYERR, END, ILLOGIC, IOERR, TOKENERR
```

**Description**

GETNEXT ACTIVITY returns either:

- The name and identifier of the next child activity of a BTS activity (if the PROCESS and PROCESSTYPE options were omitted from the STARTBROWSE ACTIVITY command)
- The name and identifier of the next descendant activity of a BTS process (if the PROCESS and PROCESSTYPE options were specified on the STARTBROWSE ACTIVITY command).

You can use the INQUIRE ACTIVITYID command to query the identified activity.

**Options**

**ACTIVITYID(data-area)**

returns the 52-character identifier of the next activity.

**ACTIVITY(data-area)**

returns the 16-character name of the next activity.

**BROWSETOKEN(data-value)**

specifies, as a fullword binary value, a browse token returned on a previous STARTBROWSE ACTIVITY command.

**LEVEL(data-area)**

returns a fullword value indicating the depth in the activity-tree at which the next activity lies.

On a browse of the descendant activities of a process, a value of '0' indicates the root activity, '1' a child of the root activity, '2' a grandchild of the root activity, and so on.

On a browse of the child activities of an activity, the value returned is always 0.

**Conditions**

**109 ACTIVITYERR**

RESP2 values:
The request timed out. It may be that another task using this activity-record has been prevented from ending.

RESP2 values:
2
There are no more resource definitions of this type.

RESP2 values:
1
The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for an activity browse.

RESP2 values:
1
The repository file is unavailable.

29
An input/output error has occurred on the repository file.

RESP2 values:
3
The browse token is not valid.

GETNEXT CONTAINER (BTS)

Browse the containers associated with a BTS activity or process.

GETNEXT CONTAINER

\[ \text{GETNEXT} \rightarrow \text{CONTAINER( data-area) } \rightarrow \text{BROWSETOKEN( data-value) } \rightarrow \]

Conditions: END, ILLOGIC, TOKENERR

Description

GETNEXT CONTAINER returns the name of the next container associated with a BTS activity or process. You can use the INQUIRE CONTAINER command to query the returned container.

Note:

1. You can use successive GETNEXT CONTAINER commands to retrieve the names of all the process's or activity's containers that existed at the time the STARTBROWSE CONTAINER command was executed. However, the names of any containers that are deleted after the STARTBROWSE and before they have been returned by a GETNEXT are not returned.

2. The names of any containers that are created on (or moved to) this process or activity after the STARTBROWSE command is executed may or may not be returned.

3. The order in which containers are returned is undefined.

Options

BROWSETOKEN(data-value)

specifies, as a fullword binary value, a browse token returned on a previous STARTBROWSE CONTAINER command.
CONTAINER(data-area)
returns the 16-character name of the next data-container.

Conditions
83 END
RES2 values:
  2
  The are no more containers for this process or activity.
21 ILLOGIC
RES2 values:
  1
  The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of containers.
112 TOKENERR
RES2 values:
  3
  The browse token is not valid.

GETNEXT CONTAINER (CHANNEL)
Browse the containers associated with a channel.

GETNEXT CONTAINER

\[ \text{GETNEXT} \quad \text{CONTAINER( data-area )} \quad \text{BROWSETOKEN( data-value )} \]

Conditions: END, ILLOGIC, TOKENERR

Description
GETNEXT CONTAINER (CHANNEL) returns the name of the next container associated with a channel.

Note:
1. You can use successive GETNEXT CONTAINER (CHANNEL) commands to retrieve the names of all the channel's containers that existed at the time the STARTBROWSE CONTAINER (CHANNEL) command was executed. However, the names of any containers that are deleted after the STARTBROWSE and before they have been returned by a GETNEXT are not returned.
2. The names of any containers that are created on (or moved to) this channel or activity after the STARTBROWSE command is executed might or might not be returned.
3. The order in which containers are returned is undefined and might change. As best practice, applications should not rely on the order of returned containers. If you have existing applications that are written as such, see Upgrading applications for advice. For more best practices on using a channel in applications, see Designing a channel: Best practices.

Options

BROWSETOKEN(data-value)
  Specifies, as a fullword binary value, a browse token returned on a previous STARTBROWSE CONTAINER (CHANNEL) command.

CONTAINER(data-area)
  Returns the 16-character name of the next data-container.
Conditions

83 END

RESP2 values:

2

There are no more containers.

21 ILLOGIC

RESP2 values:

1

The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a browse of containers.

112 TOKENERR

RESP2 values:

3

The browse token is not valid.

GETNEXT EVENT

Browse the events known to a BTS activity.

GETNEXT EVENT

<table>
<thead>
<tr>
<th>GETNEXT</th>
<th>EVENT(data-area)</th>
<th>BROWSETOKEN(data-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COMPOSITE(data-area)</td>
<td>EVENTTYPE(cvda)</td>
</tr>
<tr>
<td></td>
<td>PREDICATE(cvda)</td>
<td>FIRESTATUS(cvda)</td>
</tr>
<tr>
<td></td>
<td>TIMER(data-area)</td>
<td></td>
</tr>
</tbody>
</table>

Conditions: END, TOKENERR

Description

GETNEXT EVENT returns the attributes of the next event, or sub-event, that is within the scope of a BTS activity.

Options

BROWSETOKEN(data-value)

specifies, as a fullword binary value, a browse token returned on a previous STARTBROWSE EVENT command.

COMPOSITE(data-area)

returns, if the named event is a sub-event, the 16-character name of the composite event that it is part of.

EVENT(data-area)

returns the 16-character name of the next event. This may be:

- An atomic event. An atomic event returned on this command may or may not be a sub-event.
- A composite event.
- A system event.

EVENTTYPE(cvda)

indicates the type of the named event. CVDA values are:
ACTIVITY
   Activity completion

COMPOSITE
   Composite

INPUT
   Input

SYSTEM
   System

TIMER
   Timer.

FIRESTATUS(cvda)
   indicates the state of the named event. CVDA values are:
   FIRED
      The event has fired normally.
   NOTFIRED
      The event has not fired.

PREDICATE(cvda)
   indicates, if the named event is composite, the Boolean operator applied to its predicate. CVDA values are:
   AND
      The Boolean operator applied to the predicate is AND.
   OR
      The Boolean operator applied to the predicate is OR.

TIMER(data-area)
   returns, if the named event is a timer event, the 16-character name of its associated timer.

Conditions
83 END
   RESP2 values:
   2
      There are no more resource definitions of this type.
112 TOKENERR
   RESP2 values:
   3
      The browse token is not valid.

GETNEXT PROCESS
   Browse all processes of a specified type within the CICS business transaction services system.

GETNEXT PROCESS
   ➡  GETNEXT( data-area ) ➡  BROWSETOKEN( data-value ) ➡
      ➡  ACTIVITYID( data-area ) ➡

Conditions: END, ILLOGIC, IOERR, PROCESSERR, TOKENERR
Description
GETNEXT PROCESS returns the name of the next process of a specified type within the CICS business transaction services system.

Options
ACTIVITYID(data-area)
returns the 52-character identifier of the next process's root activity.

BROWSETOKEN(data-value)
specifies, as a fullword binary value, a browse token returned on a previous STARTBROWSE PROCESS command.

PROCESS(data-area)
returns the 36-character name of the next process.

Conditions
83 END
RESP2 values:
2
There are no more resource definitions of this type.

21 ILLOGIC
RESP2 values:
1
The value specified in the BROWSETOKEN option matches a current browse token, but not one that is being used for a process browse.

17 IOERR
RESP2 values:
30
An input/output error has occurred on the repository file.

108 PROCESSERR
RESP2 values:
13
The request timed out. It may be that another task using this process-record has been prevented from ending.

112 TOKENERR
RESP2 values:
3
The browse token is not valid.

GETNEXT TIMER
Browse the BTS timers associated with a BTS activity.

GETNEXT TIMER

Conditions: ACTIVITYERR, INVREQ, IOERR, NOTAUTH, TIMERERR
Description

**GETNEXT TIMER** returns the name of the next BTS timer associated with a BTS activity.

Options

**ABSTIME(data-area)**
Returns, in packed decimal format, the time at which the timer will expire, expressed in milliseconds since 00:00 on 1 January 1900 (rounded to the nearest hundredth of a second).

You can use **FORMATTIME** to change the data into other familiar formats.

**ACTIVITYID(data-value)**
Specifies the identifier (1–52 characters) of the activity with which the timer is associated.

If this option is omitted, the current activity is assumed.

**BROWSETOKEN(data-area)**
Specifies a fullword binary data area, into which CICS will place the browse token.

**EVENT(data-area)**
Returns the 16-character name of the event (if any) associated with the timer.

**STATUS(cvda)**
Indicates the state of the timer. CVDA values are:

- **EXPIRED**
  The timer expired normally.

- **FORCED**
  Expiry of the timer was forced by means of a **FORCE TIMER** command.

- **UNEXPIRED**
  The timer has not yet expired.

**TIMER(data-value)**
Specifies the name (1–16 characters) of the BTS timer.

Conditions

109 **ACTIVITYERR**
RESP2 values:

- **3**
  The activity indicated by the ACTIVITYID option could not be found.

- **29**
  The repository file is unavailable.

- **30**
  An input/output error has occurred on the repository file.

16 **INVREQ**
RESP2 values:

- **1**
  The command was issued outside the scope of a currently—active activity.

17 **IOERR**
RESP2 values:

- **30**
  An input/output error has occurred on the repository file.

70 **NOTAUTH**
RESP2 values:

- **101**
  The user associated with the issuing task is not authorized to access this resource in the way requested.
**GET64 CONTAINER**

Retrieve data from a named channel container into 64-bit storage. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs. CICS business transaction services (BTS) containers are not supported.

See Assembler language programming restrictions and requirements.

```
GET64 CONTAINER

GET64 CONTAINER( data-value )

CHANNEL( data-value )

INTO( data-area64 )

FLENGTH( data-area )

BYTEOFFSET( data-area )

SET( ptr-ref64 ) FLENGTH( data-area )

NODATA FLENGTH( data-value )

INTOCCSID( data-value )

INTOCODEPAGE( data-value )

CONVERTST( cvda )

CCSID( data-area )
```

**Conditions:** CCSIDERR, CHANNELERR, CODEPAGEERR, CONTAINERERR, INVREQ, LENGERR

This command is threadsafe.

**Description**

GET64 CONTAINER reads the data associated with a specified channel container into 64-bit storage.

The container that holds the data is identified by name and by the channel for which it is a container: the channel that "owns" it. The channel that owns the container can be identified explicitly, by specifying the CHANNEL option, or implicitly, by omitting the CHANNEL option. When this option is omitted, the current channel is implied.

**Options**

**BYTEOFFSET(data-value)**

Specifies the offset in bytes where the data returned starts. For CHAR containers, the BYTEOFFSET value is used as an offset into the data in the requested code page. If you use a code page with multibyte characters, depending on the BYTEOFFSET value you specify, the data returned might have partial characters at the beginning, end, or both. In this situation, your application program must be able to handle and interpret the data returned. If the value specified is less than zero, zero is assumed.
CCSID(data-area)
Returns a fullword that contains the Coded Character Set Identifier (CCSID) of the data returned by the CONVERTST(NOCONVERT) option. You can use this option to retrieve containers with a DATATYPE of CHAR, without converting the data. If a DATATYPE of BIT is specified for the container, this value is zero.

CHANNEL(data-value)
Specifies the name (1 - 16 characters) of the channel that owns the container. You can specify the channel name DFHTRANSACTION to use the transaction channel.

CONTAINER(data-value)
Specifies the name (1 - 16 characters) of the container that holds the data to retrieve.

CONVERTST(cvda)
Specifies the required data conversion status.

NOCONVERT
The container data is retrieved without being converted. If you used the WEB RECEIVE command to store the HTTP body in a container, and you need to retrieve the body unconverted from that container, you must use the NOCONVERT option.

FLENGTH(data-area)
As an input field, FLENGTH specifies, as a fullword binary value, the length of the data to be read. As an output field, FLENGTH returns the length of the data in the container. FLENGTH is an input or an output field depending on which of the BYTEOFFSET, INTO, SET, or NODATA options you specify.

BYTEOFFSET option specified
FLENGTH is both an input and an output field.

On input, FLENGTH specifies the maximum length of the data that the program accepts. The data returned begins at the offset specified by the BYTEOFFSET value. If the value specified is less than zero, zero is assumed.

On output (that is, on completion of the retrieval operation) CICS sets the data area to the length of the data returned. The maximum length returned is equal to the length of the data in the container minus the BYTEOFFSET value.

INTO option specified
FLENGTH is both an input and an output field.

On input, FLENGTH specifies the maximum length of the data that the program accepts. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs. If the length of the data is less than the specified value, the data is copied but no padding is performed.

You do not need to specify FLENGTH if the length can be generated by the compiler from the INTO variable. If you specify both INTO and FLENGTH, FLENGTH specifies the maximum length of the data that the program accepts.

On output (that is, on completion of the retrieval operation) CICS sets the data area, if specified, to the actual length of the data in the container. If the container holds character data that has been converted from one CCSID to another, this is the length of the data after conversion.

SET or NODATA option specified
FLENGTH is an output field only. It must be present and must be specified as a data-area.

On completion of the retrieval operation, the data area is set to the actual length of the data in the container. If the container holds character data that has been converted from one CCSID to another, this is the length of the data after conversion.

INTO(data-area64)
Specifies the 64-bit data area into which the retrieved data is placed. data-area64 refers to an area that is referenced by a 64-bit pointer and that can be in 64-bit (above-the-bar) storage.
INTOCOCSID(data-value)
Specifies the Coded Character Set Identifier (CCSID) into which the character data in the container is converted, as a fullword binary number. If you prefer to specify an IANA name for the code page, or if you prefer to specify the CCSID as alphanumeric characters, use the INTOCODEPAGE option instead.

For CICS Transaction Server for z/OS applications, the CCSID is typically an EBCDIC CCSID. However, it is possible to specify an ASCII CCSID if, for example, you want to retrieve ASCII data without it being automatically converted to EBCDIC.

If INTOCCSID and INTOCODEPAGE are not specified, the value for conversion defaults to the CCSID of the region. The default CCSID of the region is specified on the LOCALCCSID system initialization parameter.

Only character data can be converted, and only then if a DATATYPE of CHAR was specified on the PUT CONTAINER or PUT64 CONTAINER command used to place the data in the container. A DATATYPE of CHAR is implied if FROMCCSID or FROMCODEPAGE is specified on the PUT CONTAINER or PUT64 CONTAINER command.

For more information about data conversion with channels, see Data conversion with channels.
For an explanation of CCSIDs, see Preparing for code page conversion with channels.

INTOCODEPAGE(data-value)
Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the code page into which the character data in the container is converted, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID. For more information, see Preparing for code page conversion with channels.

NODATA
Specifies that no data is retrieved. Use this option to discover the length of the data in the container (returned in FLENGTH).

The length of character data might change if data conversion takes place. Therefore, if character data is to be converted into any CCSID other than that of this region, when you specify NODATA you should also specify INTOCCSID. This ensures that the correct length of the converted data is returned in FLENGTH.

SET(ptr-ref64)
Specifies a 64-bit pointer reference in which the 64-bit address of the retrieved data is returned. This pointer reference is always to 64-bit (above-the-bar) storage.

CICS maintains the data area until any of the following occurs:
• A subsequent GET CONTAINER or GET64 CONTAINER command with the SET option, for the same container in the same channel, is issued by any program that can access this storage.
• The container is deleted by a DELETE CONTAINER command.
• The container is moved by a MOVE CONTAINER command.
• The channel goes out of program scope.
• The channel, and the containers that are in it, are deleted by a DELETE CHANNEL command.

Beware of linking to other programs that might issue one of these commands.
Do not issue a FREEMAIN64 command to release this storage.
If your application needs to keep the data, it should move it into its own storage.
Conditions

**123 CCSIDERR**
RESP2 values:

1. The CCSID specified on the INTOCCSID option is outside the range of valid CCSID values.

2. The CCSID specified on the INTOCCSID option and the CCSID of the container are an unsupported combination. (The CCSID of the container is the value that was specified using either FROMCODEPAGE or FROMCCSID, or defaulted, when the container was built.)

3. The data was created with a data type of BIT. Code page conversion is not possible. The data was returned without any code page conversion.

4. One or more characters could not be converted. The character has been replaced by a blank in the converted data.

5. There was an internal error in the code page conversion of a container.

**122 CHANNELERR**
RESP2 values:

2. The channel specified on the CHANNEL option could not be found.

**125 CODEPAGEERR**
RESP2 values:

1. The code page specified on the INTOCODEPAGE option is not supported.

2. The code page specified on the INTOCODEPAGE option and the code page of the channel are an unsupported combination.

3. The data was created with a data-type of BIT. Code page conversion is not possible. The data was returned without any code page conversion.

4. One or more characters could not be converted. The character has been replaced by a blank in the converted data.

5. There was an internal error in the code page conversion of a container.

**110 CONTAINERERR**
RESP2 values:

10. The container named on the CONTAINER option could not be found.

**16 INVREQ**
RESP2 values:

2. The INTOCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) INTOCCSID is valid only on GET64 CONTAINER commands that specify (explicitly or implicitly) a channel.

4. The CHANNEL option was not specified and there is no current channel (because the program that issued the command was not passed one).
An abnormal termination exit.

**HANDLE ABEND**

Handle an abnormal termination exit.

**Conditions:** NOTAUTH, PGMIDERR (PROGRAM only)

This command is threadsafe.

**Description**

Use the **HANDLE ABEND** command to activate, cancel, or reactivate an exit for abnormal termination processing. You can suspend the command by using the **PUSH HANDLE** and **POP HANDLE** commands. See [Using PUSH HANDLE and POP HANDLE commands](#).

When a task terminates abnormally, CICS searches for an active abend exit, starting at the logical level of the application program in which the abend occurred, and proceeding to successively higher levels. The first active abend exit found, if any, is given control.

The **HANDLE ABEND** command cannot intercept abends that are issued with the CANCEL option. Some internal abends generated by CICS are issued with the CANCEL option, for example the ASPx or APSJ abend codes.

When the label specified in a **HANDLE ABEND LABEL** command receives control, the registers are set as follows:

**COBOL**

Control returns to the **HANDLE ABEND** command with the registers restored. COBOL GO TO statement is then executed.

**Assembler**

R15: Abend label. R0-14: Contents at the point when the last EXEC CICS command was issued at the same program level as the **HANDLE ABEND** command was issued.

If LABEL is specified, the addressing mode and execution key used are those of the program that issued the HANDLE ABEND command.

If PROGRAM is specified, the addressing mode is defined by the way the program is link-edited and the execution key is specified by the EXECKEY option on the resource definition of the program.

If a COMMAREA has been established, it will be passed to the specified PROGRAM. Where more than one application program was involved in the task, the COMMAREA that is passed to the abend exit is the
COMMAREA of the program that issued the HANDLE ABEND command. This might not be the COMMAREA of the program in which the abend occurred.

If a current channel exists, it will be accessible from the specified PROGRAM.

**Options**

**CANCEL**

Specifies that a previously established exit at the logical level of the application program in control is canceled. This option is the default.

**LABEL**(label)

Specifies the program label to which control branches if abnormal termination occurs.

You cannot use this option for AMODE(64) assembler language, C, C++, or PL/I application programs.

**PROGRAM**(name)

Specifies the name of the program that control is passed to if the task is terminated abnormally. If the abend condition is raised and the specified program is not already defined, this program is autoinstalled.

The program named in this option should always terminate with an abend, except when handling abends generated as a result of application program logic.

**RESET**

Specifies that an exit canceled by a HANDLE ABEND CANCEL command, or by CICS, is reactivated.

This option is usually issued by an abnormal termination exit routine.

**Conditions**

**70 NOTAUTH**

Occurs when a resource security check has failed on PROGRAM(name).

Default action: terminate the task abnormally.

**27 PGMIDERR**

RESP2 values:

1

The program has no installed resource definition and autoinstall for programs is not active.

2

The program is disabled.

9

The installed program resource definition is for a remote program.

Default action: terminate the task abnormally.

**Examples**

The following example shows how to establish a program as an exit:

```
EXEC CICS HANDLE ABEND
     PROGRAM('EXITPGM')
```
HANDLE AID

Handle attention identifiers (AIDs).

**Condition**: INVREQ

This command is threadsafe.

**Description**

You can use the HANDLE AID command to specify the label to which control is to be passed when an AID is received from a display device. Control is passed after the input command is completed; that is, after any data received in addition to the AID has been passed to the application program.

**Restriction**: This command is supported only in COBOL, PL/I, and assembler language applications (but not AMODE(64) assembler language applications). It is not supported in all other supported high level languages.

To ignore an AID, issue a HANDLE AID command that specifies the associated option without a label. This deactivates the effect of that option in any previously-issued HANDLE AID command.

If no HANDLE AID commands are in effect, that is, none have been issued or all have been canceled, control returns to the application program at the instruction immediately following the input command. Look in EIBAID to determine which key was pressed.

You can specify the following options:

- ANYKEY (any PA key, any PF key, or the CLEAR key, but not ENTER)
- CLEAR (for the key of that name)
- CLRPARTN (for the key of that name)
• ENTER (for the key of that name)
• LIGHTPEN (for a light-pen attention)
• OPERID (for the operator identification card reader, the magnetic slot reader (MSR), or the extended MSR (MSRE))
• PA1, PA2, or PA3 (any of the program access keys)
• PF1 through PF24 (any of the function keys)
• TRIGGER (for a trigger field attention)

You cannot include more than 16 options in the same command.

If a task is initiated from a terminal by means of an AID, the first RECEIVE command in the task does not read from the terminal but copies only the input buffer (even if the length of the data is zero) so that control can be passed by means of a HANDLE AID command for that AID.

For the standard attention identifier list (DFHAID), and the standard attribute and printer control character list (DFHBMSCA), see Chapter 8, “BMS-related constants,” on page 781.

The label receives control in the same execution key as the execution key that the program was running in when the HANDLE AID command was issued.

A print key specified by the system PRINT initialization parameter takes precedence over a HANDLE AID command.

**Conditions**

**16 INVREQ**

RESP2 values:

200

The command was issued by a distributed program link server application.

Default action: terminate the task abnormally.

**Example**

The following example shows a HANDLE AID command that specifies one label for the PA1 key, and a second label for CLEAR, PA2, PA3, and all the function keys except PF10. If a PF10 AID is received, or ENTER is pressed, control returns to the application program at the instruction immediately following the input command.

```
EXEC CICS HANDLE AID PA1(LAB1) ANYKEY(LAB2) PF10
```

**HANDLE CONDITION**

Handle conditions.

This command is threadsafe.
Description

Use the `HANDLE CONDITION` command to specify the label to which control is to be passed if a condition occurs. You must include the name of the condition and, optionally, a label to which control is to be passed if the condition occurs.

Restriction: This command is supported only in COBOL, PL/I, and assembler language applications (but not AMODE(64) assembler language applications). It is not supported in all other supported high level languages.

If you omit the label parameter, any `HANDLE CONDITION` command for the condition is deactivated, and the default action is taken if the condition occurs. This is independent of the setting of the generalized ERROR condition.

You must ensure that the `HANDLE CONDITION` command is executed before the command that might result in the associated condition.

You cannot include more than 16 conditions in the same command. The conditions must be separated by at least one space. You must specify any additional conditions in further `HANDLE CONDITION` commands.

If a condition occurs that is not specified in a `HANDLE CONDITION` or `IGNORE CONDITION` command, the default action is taken. However, if the default action for such a condition terminates the task abnormally, and the condition ERROR has been specified, the action for ERROR is taken.

The label receives control in the same execution key as the execution key that the program was running in when the `HANDLE CONDITION` command was issued.

When CICS handles a condition, the application's program mask is restored to the value that it had when the EXEC CICS `HANDLE CONDITION` command was issued.

Scope

The `HANDLE CONDITION` command for a given condition applies only to the program in which it is specified. The `HANDLE CONDITION` command remains active while the program is being executed, or until one of the following situations occurs:

- An `IGNORE CONDITION` command for the same condition is encountered. The `HANDLE CONDITION` command is overridden.
- Another `HANDLE CONDITION` command for the same condition is encountered. The new command overrides the previous one.
- A `LINK` command is executed to call another CICS program. The `HANDLE CONDITION` options are not inherited by the linked-to program.

The `HANDLE CONDITION` command is temporarily deactivated by the NOHANDLE or RESP option on a command.

Language considerations

In an assembler language application program, when a branch to a label is caused by a condition, the registers in the application program are restored to their values in the program at the point where the command that caused the condition is issued.

In a PL/I application program, a branch to a label in an inactive procedure or in an inactive begin block, caused by a condition, produces unpredictable results.

Options

`condition(label)`

- Specifies the name of the condition. `label` specifies the location in the program to be branched to if the condition occurs.

For more information about the conditions, see `EIB fields`. 
Examples
The following example shows how to handle conditions such as DUPREC and LENGERR that can occur when you use a WRITE command to add a record to a data set. DUPREC is handled as a special case. Default action is taken for LENGERR (that is, the task is terminated abnormally). All other conditions are handled by the error routine ERRHANDL.

```cics
EXEC CICS HANDLE CONDITION
   ERROR(ERRHANDL)
   DUPREC(DUPRTN) LENGERR
```

**IGNORE CONDITION**

Ignore conditions.

** IGNORE CONDITION**

This command is threadsafe.

**Description**

Use the **IGNORE CONDITION** command to specify that no action is taken if a condition occurs (that is, control returns to the instruction following the command that failed to execute, and the EIB is set). Execution of a command might result in several conditions being raised. CICS checks these conditions in a predetermined order. Only the first one that is not ignored (by your **IGNORE CONDITION** command) is passed to your application program.

**Restriction:** This command is supported only in COBOL, PL/I, and assembler language applications (but not AMODE(64) assembler language applications). It is not supported in all other supported high level languages.

For information about the conditions, see **EIB fields**.

The **IGNORE CONDITION** command for a given condition applies only to the program in which it is specified, and it remains active while the program is being executed, or until a **HANDLE CONDITION** command for the same condition is encountered, in which case the **IGNORE CONDITION** command is overridden.

You cannot include more than sixteen conditions in the same command. The conditions must be separated by at least one space. You can specify additional conditions in further **IGNORE CONDITION** commands.

**Options**

**condition**

Specifies the name of the condition to be ignored.

**INQUIRE ACTIVITYID**

Retrieve the attributes of a BTS activity.
INQUIRE ACTIVITYID

Description
INQUIRE ACTIVITYID returns the attributes of a specified BTS activity.
You can use this command to get details of an activity whose identifier has been retrieved during a browse operation.

Options
ABCODE(data-area)
returns, if the activity terminated abnormally, the 4-character abend code.

ABPROGRAM(data-area)
returns, if the activity terminated abnormally, the 8-character name of the program that was in control at the time of the abend.

ACTIVITY(data-area)
returns the 16-character name of the activity being queried.

ACTIVITYID(data-value)
specifies the identifier (1–52 characters) of the activity to be queried. (Typically, the activity identifier will have been retrieved by a GETNEXT ACTIVITY command, during an activity browse.)

COMPSTATUS(cvda)
indicates the completion status of the activity. CVDA values are:

ABEND
The program that implements the activity abended. Any children of the activity have been canceled.

FORCED
The activity was forced to complete—for example, it was canceled with a CANCEL ACTIVITY command.

INCOMPLETE
The named activity is incomplete. This could mean:
- That it has not yet been run
- That it has returned from one or more activations but needs to be reattached in order to complete all its processing steps
- That it is currently active.

**NORMAL**

The named activity completed successfully.

**EVENT(data-area)**

returns the 16-character name of the completion event that is sent to the requestor of this activity when the activity completes asynchronously with the requestor.

**MODE(cvda)**

indicates the current state (mode) of the activity. CVDA values are:

- **ACTIVE**
  An activation of the activity is running.

- **CANCELLING**
  CICS is waiting to cancel the activity. A CANCEL ACTIVITY command has been issued, but CICS cannot cancel the activity immediately because one or more of the activity's children are inaccessible.
  
  No further operations on the activity are permitted until it has been canceled.

- **COMPLETE**
  The activity has completed, either successfully or unsuccessfully. The value returned on the COMPSTATUS option tells you how it completed.

- **DORMANT**
  The activity is waiting for an event to fire its next activation.

- **INITIAL**
  No RUN or LINK command has yet been issued against the activity; or the activity has been reset by means of a RESET ACTIVITY command.

**PROCESS(data-area)**

returns the 36-character name of the process to which this activity belongs.

**PROCESSTYPE(data-area)**

returns the 8-character name of the process-type to which the process that contains this activity belongs.

**PROGRAM(data-area)**

returns the 8-character name of the program that executes when this activity is run.

**SUSPSTATUS(cvda)**

indicates whether the activity is currently suspended. CVDA values are:

- **SUSPENDED**
  The activity is currently suspended. If a reattachment event occurs, it will not be reactivated.

- **NOTSUSPENDED**
  The activity is not currently suspended. If a reattachment event occurs, it will be reactivated.

**TRANSID(data-area)**

returns the 4-character transaction identifier under which this activity runs.

**USERID(data-area)**

returns the 8-character identifier of the user under whose authority this activity runs.

**Conditions**

**109 ACTIVITYERR**

RESP2 values:

- **1**
  The activity identifier specified on the ACTIVITYID option does not relate to any activity that is within the scope of this task.

- **19**
  The request timed out. It may be that another task using this activity-record has been prevented from ending.
The repository file is unavailable.

An input/output error has occurred on the repository file.

**70 NOTAUTH**

RESP2 values:

**101**

The user associated with the issuing task is not authorized to access this resource in the way requested.

---

**INQUIRE CONTAINER**

Retrieve the attributes of a BTS data-container.

**INQUIRE CONTAINER**

```plaintext
INQUIRE CONTAINER( data-value )
```

**Conditions:** ACTIVITYERR, CONTAINERERR, IOERR, NOTAUTH, PROCESSERR

**Description**

INQUIRE CONTAINER returns a pointer to the contents of a named BTS data-container, plus the length of the data.

To inquire upon a container associated with the current activity, omit the ACTIVITYID and PROCESS options.

To inquire upon a container associated with another activity, specify the ACTIVITYID option. (The activity identifier specified on the ACTIVITYID option may, for example, have been returned on a GETNEXT ACTIVITY command during a browse operation.)

To inquire upon a process container (including one associated with the current process), specify the PROCESS and PROCESSTYPE options.

**Note:**

1. Inquiring on a container of the current activity returns details of the in-storage version, rather than the committed version on the repository. This means that it’s possible to see:
   - Containers that are not yet on the repository
   - Container contents that differ from those on the repository.

2. Inquiring on a container not owned by the current activity returns details of the committed version on the repository. However, the read of the repository record is “dirty”—the record is not locked. So, if the record is being updated by another task, it’s possible for the returned data to be unreliable.

**Options**

**ACTIVITYID(data-value)**

specifies the identifier (1–52 characters) of the activity which the data-container is associated with.
If both this and the process options are omitted, the current activity is assumed.

**CONTAINER(data-value)**
specifies the name (1–16 characters) of the data-container being inquired upon.

**DATALENGTH(data-area)**
returns the fullword length of the data contained in the named data-container.

**PROCESS(data-value)**
specifies the name (1–36 characters) of the process which the data-container is associated with.

If both this and the ACTIVITYID option are omitted, the current activity is assumed.

**PROCESSTYPE(data-value)**
specifies the process-type (1–8 characters) of the process named in the PROCESS option.

**SET(data-area)**
returns a pointer to the contents of the data-container.

**Conditions**

**109 ACTIVITYERR**
RESP2 values:

- **2** The activity indicated by the ACTIVITYID option could not be found.
- **3** Because neither the ACTIVITYID nor the PROCESS options were specified, an inquiry on the current activity was implied—but there is no current activity associated with the request.
- **29** The repository file is unavailable.
- **30** An input/output error has occurred on the repository file.

**110 CONTAINERERR**
RESP2 values:

- **1** The container specified on the CONTAINER option could not be found.

**17 IOERR**
RESP2 values:

- **30** An input/output error has occurred on the repository file.

**70 NOTAUTH**
RESP2 values:

- **101** The user associated with the issuing task is not authorized to access this resource in the way requested.

**108 PROCESSERR**
RESP2 values:

- **2** The process-type specified on the PROCESSTYPE option could not be found.
- **4** The process specified on the PROCESS option could not be found.
- **13** The request timed out. It may be that another task using this process-record has been prevented from ending.
- **33** The process specified on the PROCESS option has not yet been committed.
INQUIRE EVENT

Retrieve the attributes of a BTS event.

**INQUIRE EVENT**

\[\text{INQUIRE} \quad \text{EVENT}(\text{data-value}) \quad \text{ACTIVITYID}(\text{data-value}) \quad \text{EVENTTYPE}(\text{cvda})\]

\[\text{FIRESTATUS}(\text{cvda}) \quad \text{COMPOSITE}(\text{data-area}) \quad \text{PREDICATE}(\text{cvda})\]

\[\text{TIMER}(\text{data-area})\]

**Conditions:** ACTIVITYERR, EVENTERR, INVREQ, IOERR, NOTAUTH

**Description**

INQUIRE EVENT returns the attributes of a named BTS event.

To inquire upon an event associated with the current activity, omit the ACTIVITYID option. To inquire upon an event associated with another activity, specify the ACTIVITYID option. (The activity identifier specified on the ACTIVITYID option may, for example, have been returned on a GETNEXT ACTIVITY command during a browse operation.)

**Options**

**ACTIVITYID(data-value)**

specifies the identifier (1–52 characters) of the activity which the event is associated with.

If this option is omitted, the current activity is assumed.

**COMPOSITE(data-area)**

returns, if the named event is a sub-event, the 16-character name of the composite event that it is part of.

**EVENT(data-value)**

specifies the name (1–16 characters) of the event being inquired upon.

**EVENTTYPE(cvda)**

indicates the type of the named event. CVDA values are:

- **ACTIVITY**
  Activity completion

- **COMPOSITE**
  Composite

- **INPUT**
  Input

- **SYSTEM**
  System

- **TIMER**
  Timer.

**FIRESTATUS(cvda)**

indicates the state of the named event. CVDA values are:

- **FIRED**
  The event has fired normally.
NOTFIRED
The event has not fired.

PREDICATE(cvda)
indicates, if the named event is composite, the Boolean operator applied to its predicate. CVDA values are:

AND
The Boolean operator applied to the predicate is AND.

OR
The Boolean operator applied to the predicate is OR.

TIMER(data-area)
returns, if the named event is a timer event, the 16-character name of the timer.

Conditions

109 ACTIVITYERR
RESP2 values:

3
   The activity indicated by the ACTIVITYID option could not be found.

29
   The repository file is unavailable.

30
   An input/output error has occurred on the repository file.

111 EVENTERR
RESP2 values:

1
   The event specified on the EVENT option could not be found.

16 INVREQ
RESP2 values:

1
   There is no current activity within the scope of this task.

17 IOERR
RESP2 values:

30
   An input/output error has occurred on the repository file.

70 NOTAUTH
RESP2 values:

101
   The user associated with the issuing task is not authorized to access this resource in the way requested.

INQUIRE PROCESS
Retrieve the attributes of a BTS process.
**INQUIRE PROCESS**

```plaintext
INQUIRE — PROCESS( data-value ) — PROCESSTYPE( data-value )
```

**Conditions:** ILLOGIC, NOTAUTH, PROCESSERR

**Description**

INQUIRE PROCESS returns the attributes of a named BTS process. It can be used, for example, to obtain the identifier of the root activity of a process, in order to start a browse of the root activity’s child activities, containers, or events.

**Options**

- **ACTIVITYID(data-area)**
  returns the 52-character identifier of the root activity of the process that is being queried.

- **PROCESS(data-value)**
  specifies the name (1–36 characters) of the process to be queried.

- **PROCESSTYPE(data-value)**
  specifies the process-type (1–8 characters) of the process to be queried.

**Conditions**

21 ILLOGIC

RESP2 values:

- 1
  A browse of this resource type is already in progress.

70 NOTAUTH

RESP2 values:

- 101
  The user associated with the issuing task is not authorized to access this resource in the way requested.

108 PROCESSERR

RESP2 values:

- 1
  The process specified on the PROCESS option could not be found.

- 4
  The process-type specified on the PROCESSTYPE option could not be found.

**INQUIRE TIMER**

Retrieve the attributes of a BTS timer.

```plaintext
INQUIRE — TIMER( data-value )
```

**Conditions:** ACTIVITYERR, INVREQ, IOERR, NOTAUTH, TIMERERR

Chapter 2. CICS command summary 259
Description

INQUIRE_TIMER returns the attributes of a named BTS timer.

To inquire upon a timer associated with the current activity, omit the ACTIVITYID option. To inquire upon a timer associated with another activity, specify the ACTIVITYID option. (The activity identifier specified on the ACTIVITYID option may, for example, have been returned on a GETNEXT_ACTIVITY command during a browse operation.)

Options

ABSTIME(data-area)
Returns, in packed decimal format, the time at which the timer will expire, expressed in milliseconds since 00:00 on 1 January 1900 (rounded to the nearest hundredth of a second).
You can use FORMATTIME to change the data into other familiar formats.

ACTIVITYID(data-value)
Specifies the identifier (1–52 characters) of the activity with which the timer is associated.
If this option is omitted, the current activity is assumed.

EVENT(data-area)
Returns the 16-character name of the event (if any) associated with the timer.

STATUS(cvda)
Indicates the state of the timer. CVDA values are:

EXPRIRED
The timer expired normally.

FORCED
Expiry of the timer was forced by means of a FORCE TIMER command.

UNEXPIRED
The timer has not yet expired.

TIMER(data-value)
specifies the name (1–16 characters) of the timer.

Conditions

109 ACTIVITYERR
RESP2 values:
3
The activity indicated by the ACTIVITYID option could not be found.
29
The repository file is unavailable.
30
An input/output error has occurred on the repository file.

16 INVREQ
RESP2 values:
1
The command was issued outside the scope of a currently—active activity.

17 IOERR
RESP2 values:
30
An input/output error has occurred on the repository file.

70 NOTAUTH
RESP2 values:
The user associated with the issuing task is not authorized to access this resource in the way requested.

115 TIMERERR
RESP2 values:

1
The timer specified on the TIMER option could not be found.

**INVOCATE APPLICATION**

Invoke an application entry point program. **EXEC CICS INVOCATE APPLICATION** allows invocation of an application by naming an operation that corresponds to one of its program entry points, without having to know the name of the application entry point program and regardless of whether the program is public or private.

The application must be in an AVAILABLE state. If multiple versions of the application are in an AVAILABLE state, the entry point programs of the highest version of the application are the ones that are public, and so can be linked to by using an **EXEC CICS LINK** command. The **INVOCATE APPLICATION** command allows lower versions of the application to be invoked, by specifying a version as well as an operation, and this corresponds to a private entry point program.

**INVOCATE APPLICATION**

```
INVOCATE APPLICATION(name) — OPERATION(name) 
```

**Options**

**APPLICATION(name)**

Specifies the name (1 - 64 characters) of the application. The acceptable characters are: a-z A-Z 0-9 _ # @ -

**Conditions:** APPNOTFOUND, CHANNELERR, INVREQ, LENGERR, NOTAUTH, PGMIDERR

This command is threadsafe.

**Description**

The **INVOCATE APPLICATION** command links to a local program, which is the entry point to the specified application for the specified operation. It passes control from an application program at one logical level to an application program at the next lower logical level.

This command operates in the current platform context. If the command does not specify a platform name, the current platform name is used. If there is no current platform, then the command fails with a response of APPNOTFOUND.

For more information, and examples of how you can use the **EXEC CICS INVOCATE APPLICATION** command, see Invoking a multi-versioned application.
CHANNEL (name)
Specifies the name (1 - 16 characters) of a channel that is to be made available to the called program. The acceptable characters are: A-Z a-z 0-9 $ @ / % & ? ! : | " = . ; < > . - _. Leading and embedded blank characters are not permitted. If the name supplied is fewer than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be transferred between regions, it is advisable to restrict the characters that are used to name them to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

The program that issues the INVOKE command can do one of the following:
• Have already created the channel by using one or more PUT CONTAINER CHANNEL or PUT64 CONTAINER commands.
• Specify its current channel, by name.
• Name a channel that does not currently exist. A new empty channel is created.

COMMAREA (data-area)
Specifies a communication area that is to be made available to the called program. In this option, the data area is passed, and you must give it the name DFHCOMMAREA in the receiving program. See Passing data to other programs.

EXACTMATCH
Specifies that an exact match on the application major version number and minor version number is required. If not found then an APPNOTFOUND condition is returned.

Note: There is no match criteria for micro version. The highest micro version is always used.

LENGTH (data-value)
Specifies a halfword binary value that is the length in bytes of the COMMAREA (communication area). This value must not exceed 24 KB if the COMMAREA is to be passed between any two CICS servers (for any combination of product, version, and release). This limit allows for the COMMAREA and space for headers.

Ensure that the value you specify matches the length of the data that is being passed in the COMMAREA. Do not specify 0 (zero) for LENGTH because the resulting behavior is unpredictable and the EXEC CICS LINK command might fail.

When you use a COMMAREA to pass data, the program that is linked to must verify that the EIBCALEN field in the EIB of the task matches what the program expects. Discrepancies might result in storage violations or system failures. For more information, see COMMAREA.

MAJORVERSION (data-value)
Specifies the major version number of the application as a fullword binary value.

If MAJORVERSION is specified, then MINORVERSION must also be specified. If no version is specified, then the highest major and minor version of the application is invoked.

MINIMUM
Specifies that the specified minor version number is the minimum that is required, but use a higher version if it is available. If multiple higher minor versions are available the highest is used. This applies to minor version numbers only. The major version number cannot be exceeded and must match exactly. If no higher minor version exists nor the minimum required minor version, then an APPNOTFOUND condition is returned.

Note: There is no match criteria for micro version. The highest micro version is always used.
MINORVERSION\((data-value)\)
   Specifies the minor version number of the application as a fullword binary value.

   If MINORVERSION is specified, then MAJORVERSION must also be specified. If no version is specified, then the highest major and minor version of the application is invoked.

   The EXACTMATCH or MINIMUM keywords specify the matching criteria for the major and minor versions.

OPERATION\((name)\)
   Specifies the name (1 - 64 characters) of the application operation which the application entry point program implements. The acceptable characters are: a-z A-Z 0-9 . _ # @ -

PLATFORM\((name)\)
   Specifies the name (1 - 64 characters) of the platform on which the application is installed. The acceptable characters are: a-z A-Z 0-9 . _ # @ -

   If no platform name is specified, the current platform name is used. If there is no current platform, then the command fails with a response of APPNOTFOUND.

Conditions

127 APPNOTFOUND
   RESP2 values:
   1   The EXACTMATCH keyword is specified and the required version of the application cannot be found.
   2   The MINIMUM keyword is specified and no minimum level or higher microversion of the application can be found.
   3   No version was specified. No application can be found.

   Default action: end the task abnormally.

   An application might not be found for a number of reasons:
   • The application is not in an AVAILABLE state.
   • The named operation does not correspond to an entry point program for the application.
   • The application is not installed on this platform.
   • The CICS region is not part of the platform name specified.

122 CHANNELERR
   RESP2 values:
   1   The name that is specified on the CHANNEL option contains an invalid character or combination of characters.

   Default action: end the task abnormally.

16 INVREQ
   RESP2 values:
   1   No Platform name is specified and there is no current platform.
   2   The application entry point program is a Java™ program but the user class cannot be found.
   3   The application entry point program is a Java program but the JVMSERVER cannot be found.
4  The application entry point program is a Java program but the JVMSERVER resource is not enabled.
   Default action: end the task abnormally.

22 LENGERR
   RESP 2 values:
   11  The COMMAREA length is less than 0 or greater than the permitted length.
   26  The COMMAREA address is zero, but the COMMAREA length is nonzero.
   Default action: end the task abnormally.

70 NOTAUTH
   RESP2 values:
   101  A resource security check has failed on the name of the application entry point program that implements the operation for the specified application.
   Default action: end the task abnormally.

27 PGMIDERR
   RESP2 values:
   1  The application entry point program is disabled.
   2  The application entry point program could not be loaded
   Default action: end the task abnormally.

INVOKE SERVICE
Call a service from a CICS application. The command specifies the name of a service or the CICS resource, such as a WEBSERVICE resource, that contains information about the service to be called.

INVOKE SERVICE

   INVOKE SERVICE( data-value ) — CHANNEL( data-value ) — OPERATION( data-value )

   URI( data-value )
   URIMAP( data-value )
   SCOPE( data-value )
   SCOPELEN( data-value )

Conditions: INVREQ, LENGERR, NOTFND, TIMEDOUT
This command is threadsafe.

Description
Use the INVOKE SERVICE command in CICS applications to call a service; for example, the application can act as a web service requester and call an XML-based service, or the application can call another
CICS application that is acting as a channel-based service. For more information about these two types of services, see Creating business services from CICS applications.

Use this command for all new web service applications, rather than the **INVOKE WEBSERVICE** command, which is a synonym. If you use this command for web services, you must supply specific containers to CICS as input. For more information on writing a web service application, see Creating a SOAP web service.

When you invoke the service, you can specify a URIMAP resource that contains the information about the URI of the service. You can specify this information directly on the **INVOKE SERVICE** command instead of using a URIMAP resource. However, using a URIMAP resource has the following advantages:

- System administrators can manage any changes to the endpoint of the connection, so you do not need to recompile your applications if the URI of a service provider changes.
- You can choose to make CICS keep the connections that were opened with the URIMAP resource open after use, and place them in a pool for reuse by the application for subsequent requests, or by another application that calls the same service. Connection pooling is only available when you specify a URIMAP resource that has the SOCKETCLOSE attribute set. For more information about the performance benefits of connection pooling, see Connection pooling for HTTP client performance.

The **INVOKE SERVICE** command drives the XWBOPEN user exit, which can make the connection to the server go through a proxy server, if required.

**Options**

**CHANNEL**(data-value)
- Specifies the name of the channel used to pass the containers that hold the data mapped by the application data structure. On return, the same channel holds the response from the web service, again mapped by the application data structure. The name of the channel can be up to 16 characters. If name is a variable, and it contains a name that is less than 16 characters, then the variable must be padded with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

**OPERATION**(data-value)
- Specifies a data area containing the name of the operation that is to be invoked. The name of the operation is contained in the WSDL for the target web service. The data area must be 255 characters long; if the operation name is less than 255 characters, then the data area must be padded with trailing blanks.

**SERVICE**(data-value)
- Specifies the name of the service:
  - If you want to invoke a web service, specify the name of the WEBSERVICE resource that defines the web service. The WEBSERVICE resource specifies the location of the web service description and the web service binding file that CICS uses when it communicates with the web service. The name of the WEBSERVICE resource can be up to 32 characters. The value must be padded with trailing blanks if there are less than 32 characters.
  - If you want to invoke a channel-based service, specify the name of the service. The format of the service is a URI. The name can be up to 32 characters. The value must be padded with trailing blanks if there are less than 32 characters.

**SCOPE**(data-value)
- Acts as a qualifying prefix for the service name. Use SCOPE if you are using the Service Component Architecture (SCA) channel-based services and require an additional prefix to identify the service.

  **Note:** SCOPE only applies to channel-based services.

  If you are writing a COBOL program that is translated with the COBOL3 translator option, the length of the data value cannot exceed 160 bytes. If you are using the COBOL2 translator option, you must use a data area instead of a data value.

**SCOPELEN**(data-value)
- A fullword binary value that specifies the length of the scope that prefixes the service name.
URI (data-value)
Specifies a data area containing the URI of the service to be invoked. If specified, this option supersedes any URI specified in the WEBSERVICE resource definition. If you omit both this option and the URIMAP option, the WEBSERVICE binding file associated with the resource definition must include either a provider URI or a provider application name. The data area must be 255 characters long; if the URI is less than 255 characters, the data area must be padded with trailing blanks. For information about the format of URIs, see The components of a URL.
Do not specify this option for web services that use WS-Addressing.
Do not specify this option if you use connection pooling; use the URIMAP option instead to specify an appropriate URIMAP resource to enable connection pooling.

URIMAP (data-value)
Specifies the name of a URIMAP resource that CICS uses to derive the URI value. Use a URIMAP resource if you want to enable connection pooling, where CICS keeps the client HTTP connection open for this application or another application to reuse. If specified, this option supersedes any URI specified in the WEBSERVICE resource definition. If you omit both this option and the URI option, the WEBSERVICE binding file associated with the resource definition must include either a provider URI or a provider application name.
You must create the URIMAP resource for an HTTP client request with the attribute USAGE(CLIENT). For connection pooling, you must also set the SOCKETCLOSE attribute. The CICS web services assistant does not create the URIMAP resource, so you must define it yourself. For information about creating a URIMAP resource for a client request, see Creating a URIMAP resource for CICS as a HTTP client.
Do not specify this option for web services that use WS-Addressing.

Conditions
16 INVREQ
RESP2 values:

1  The name specified for the CHANNEL option contains an illegal character or combination of characters.

2  The name specified for the OPERATION option contains an illegal character or combination of characters.

3  The web service binding file associated with the WEBSERVICE is invalid.

4  The value specified for the URI contained an illegal character or combination of characters, or the specified host name could not be resolved.

5  The PIPELINE used by the WEBSERVICE is defined as a service requester pipeline but is invoked in a service provider or vice versa.

6  The invoked WEBSERVICE returned a SOAP fault. The description of the fault is available in its XML format in the container DFHWS-BODY.
    Note: This condition is not raised for XML-ONLY web service invocations.

7  The URI option was not specified on the command, and the WEBSERVICE definition does not specify a URI or a program name.

8  The WEBSERVICE is not in service
A container does not have the correct DATATYPE. This may be the **DFHWS-DATA** container, or another container referenced in the application data. The **DFHWS-DATA** container and most other application data containers must be populated in BIT mode. Any containers that hold XML markup must be populated in CHAR mode.

The PIPELINE used by the WEBSERVICE is not enabled.

CICS could not link to the program specified in the WEBSERVICE definition.

The containers that the command expects were not on the correct channel.

An input error was detected either generating a SOAP request message or processing a SOAP response message. A DFHPIxxxx message is written to MSGUSR to document the problem in more detail. It is likely that the application data structure contains invalid data that cannot be converted to a SOAP request message. For more information, see the error message in the DFH-XML-ERRORMSG container.

A conversion error occurred when CICS attempted to convert between the application data structure and the SOAP message. Either the application data structure contains invalid data that cannot be converted to a SOAP request, or data in the SOAP response message cannot be converted into the application's data structure. Some possible causes of this condition are:

- A value in the SOAP response message is larger than the corresponding field in the application's data structure.
- When building the SOAP request, the web services binding file indicates that a data field contains packed decimal or zoned decimal data, and the contents of the field are invalid for this data type.

A DFHPIxxxx message is written to MSGUSR to document the problem in more detail. For more information, see the error message in the DFH-XML-ERRORMSG container.

An unhandled error has occurred in the pipeline. Information about the error is in container DFHERROR.

A locally optimized web service has abended. The underlying unit of work has been backed out.

A remote web service request did not return a response message.

The container **DFHWS-BODY** has not been populated by an application for an XML-ONLY WEBSERVICE.

A URI or a URIMAP has been specified, but this option is not allowed when the WEBSERVICE resource has a default WS-Addressing endpoint reference or the WS-Addressing context has been built using the **WSACONTTEXT BUILD** API command.

The specified URIMAP does not have a valid scheme.

The specified URIMAP is not client mode.

The specified URIMAP is not enabled.
An unspecified transport or link failure occurred when attempting to use the pipeline. CICS issues a message to document the specific problem.

z/OS Connect pipeline was used.

The connection has been closed.

The container DFHWS-BODY does not have the correct DATATYPE. For this container, a DATATYPE of CHAR must be specified.

The container DFHWS-BODY contains no data.

Either the container DFHREQUEST or the container DFHWS-BODY is missing.

A fault was built within the service requester PIPELINE used by the WEBSERVICE, either while the request was being sent, or while the response was being processed. This condition could indicate that a header processing program has issued a fault.

Either the generated SOAP request message was not well formed, or the SOAP response message was not well formed. This condition could indicate that the XML parser returned a fatal error code.

Either the generated SOAP request message was not a valid SOAP message, or the SOAP response message was not a valid SOAP message.

An HTTP error has occurred. Use the HTTP status code available in the DFHRESPONSE container to diagnose the cause of the HTTP error.

109 HTTP redirect (301, 302, 303, or 307) response was returned. The Location header is available in the DFHWS-LOCATION container.

22 LENGERR
RESP 2 values:

1
Either the SCOPELEN option was not specified or it was not a valid value.

13 NOTFND
RESP2 values:

1
The web service binding file associated with the WEBSERVICE specifies the name of a SOAP message parsing program supplied by another product, but the parsing program could not be found.

2
The specified CHANNEL could not be located.

3
The specified OPERATION was not in the web service binding file.

4
The specified WEBSERVICE could not be located.

5
A CONTAINER specified in the web service binding file could not be located.

6
The specified URIMAP could not be located.
124 TIMEDOUT
RESP2 values:

1  An expected timeout has occurred. When the message exchange pattern specifies an optional error response, and an error response is not returned from the remote web service, the timeout is acceptable.

2  An unexpected timeout has occurred. A response was expected from the remote web service, but none was received.

62  An unexpected timeout has occurred on socket receive.

INVOKE WEBSERVICE
Call a service from a CICS application. This command is a synonym of the INVOKE SERVICE command and is provided for compatibility with existing web service requester applications. Use INVOKE SERVICE for any new web service applications.

Description
For details of the INVOKE SERVICE command, see “INVOKE SERVICE” on page 264.

ISSUE ABEND
Abend the mapped conversation with an APPC partner.

ISSUE ABEND (APPC)

ISSUE ABEND

CONVID( name)  STATE( cvda)

Conditions: INVREQ, NOTALLOC, TERMERR

Description
ISSUE ABEND abnormally ends the conversation. The partner transaction sees the TERMERR condition.

Options

CONVID(name)
identifies the conversation to be abended. The 4-character name identifies either the symbolic identifier returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the symbolic identifier representing the principal facility (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If both CONVID and SESSION are omitted, the principal facility is assumed.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:

• ALLOCATED
• CONFFREE
• CONFRECEIVE
• CONFS SEND
• FREE
• PENDFREE
• PENDRECEIVE
• RECEIVE
• ROLLBACK
• SEND
• SYNCFREE
• SYNC RECEIVE
• SYNCSEND

Conditions

16 INVREQ
RESP2 values:

200
  A distributed program link server application specified the function-shipping session (its principal
  facility) on the CONVID option.

also occurs (RESP2 not set) in any of the following situations:

• ISSUE ABEND is used on any conversation other than an EXEC CICS APPC mapped conversation.

Default action: terminate the task abnormally.

61 NOTALLOC
  occurs if the specified CONVID value relates to a conversation that is not owned by the application.

Default action: terminate the task abnormally.

81 TERMERR
  occurs for a session-related error. Any action on that conversation other than a FREE command
  causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has
an outstanding terminal control request active when the node abnormal condition program handles
the session error.

Default action: terminate the task abnormally with abend code ATNI.

**ISSUE ABORT**

End processing of a data set abnormally.
ISSUE ABORT

ISSUE ABORT

DESTID( data-value )

DESTIDLENG( data-value )

SUBADDR( data-value )

CONSOLE

PRINT

CARD

WPMEDIA1

WPMEDIA2

WPMEDIA3

WPMEDIA4

VOLUME( data-value )

VOLUMELENG( data-value )

Conditions: FUNCERR, INVREQ, SELNERR, UNEXPIN

Description

ISSUE ABORT ends communication with a data set in an outboard controller, or the selected medium, abnormally. The data set specified in the DESTID option is deselected abnormally. The options CONSOLE, PRINT, CARD, and WPMEDIA1–4 are alternatives to DESTID and DESTIDLENG.

Options

CARD

specifies that the output medium is a card reader or card punch device. This option is not valid with DESTID and DESTIDLENG.

CONSOLE

specifies that the output medium is that provided for messages to the operator. This option is not valid with DESTID and DESTIDLENG. This refers to a programmable subsystem such as the IBM 3790 data communication system. It does not refer to a CICS or system console.

DESTID(data-value)

specifies the name (1–8 characters) of the data set in the outboard destination.

DESTIDLENG(data-value)

specifies the length (halfword binary value) of the name specified in the DESTID option.

PRINT

specifies that the output medium is a printer.

SUBADDR(data-value)

specifies the medium subaddress as a halfword binary value (in the range 0 through 15) which allows media of the same type, for example, “printer 1” or “printer 2”, to be defined. Value 15 means a medium of any type. The default is zero.

VOLUME(data-value)

specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

VOLUMELENG(data-value)

specifies the length (halfword binary value) of the name specified in the VOLUME option.
WPMEDIA1 through WPMEDIA4 specify that, for each specific LUTYPE4 device, a word-processing medium is defined to relate to a specific input/output device.

Conditions

48 FUNCERR occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

16 INVREQ

RESP2 values:

200 A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

47 SELNERR occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.

49 UNEXPIN occurs when some unexpected or unrecognized information is received from the outboard controller.

Default action: terminate the task abnormally.

ISSUE ADD

Add a record to a data set.

ISSUE ADD

DESTID( data-value )

DESTIDLENG( data-value )

VOLUME( data-value )

VOLUMELENG( data-value )

FROM( data-area )

LENGTH( data-value )

NUMREC( data-value )

DEFRESP

NOWAIT

RIDFLD( data-area )

RRN

Conditions: FUNCERR, INVREQ, SELNERR, UNEXPIN

Description

ISSUE ADD adds records to a sequential or keyed direct data set in an outboard controller. The FROM option is used to specify the data to be written, and the LENGTH option specifies its length.
The RIDFLD option is only needed with this command when it applies to a DPCX/DXAM data set. In this case, it specifies the relative record number of the record to be added. When RIDFLD is used, NUMREC must be 1 (the default).

Options

**DEFRESP**
- specifies that all terminal control commands issued as a result of the ISSUE ADD command are to request a definite response from the outboard batch program, irrespective of the specification of message integrity for the CICS task (by the system programmer).

**DESTID(data-value)**
- specifies the name (1–8 characters) of the data set in the outboard destination.

**DESTIDLENG(data-value)**
- specifies the length (halfword binary value) of the name specified in the DESTID option.

**FROM(data-area)**
- specifies the data to be written to the data set.

**LENGTH(data-value)**
- specifies the length (halfword binary value) of the data to be written. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**NOWAIT**
- specifies that the CICS task continues processing without waiting for the ISSUE ADD command to complete. If this option is not specified, the task activity is suspended until the command is completed.

**NUMREC(data-value)**
- for a relative record data set, specifies as a halfword binary value the number of logical records to be added. Records are replaced sequentially starting with the one identified by the RIDFLD option.

For an indexed data set, NUMREC cannot be specified because only one record can be added.

**RIDFLD(data-area)**
- specifies, for a relative record data set, a 4-character field as the relative record number (starting from zero) of the record. The RRN option is also required.

For a keyed direct data set, RIDFLD should specify a key.

**RRN**
- specifies that the record identification field specified in the RIDFLD option contains a relative record number. This option is required for a relative record data set.

**VOLUME(data-value)**
- specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

**VOLUMELENG(data-value)**
- specifies the length (halfword binary value) of the name specified in the VOLUME option.

Conditions

48 **FUNCERR**
- occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

16 **INVREQ**
- RESP2 values:
  - 200
    - A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.
47 SELNERR
occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.
Default action: terminate the task abnormally.

49 UNEXPIN
occurs when some unexpected or unrecognized information is received from the outboard controller.
Default action: terminate the task abnormally.

ISSUE CONFIRMATION

Issue a positive response to a SEND CONFIRM on an APPC mapped conversation.

ISSUE CONFIRMATION (APPC)

\[\text{ISSUE CONFIRMATION \hspace{1cm} CONVID(name) \hspace{1cm} STATE(cvda)}\]

Conditions: INVREQ, NOTALLOC, SIGNAL, TERMERR

Description

ISSUE CONFIRMATION allows an application program to respond positively when the CONFIRM option has been specified on a SEND command executed by a partner transaction.

Options

CONVID(name)
identifies the conversation in which to send the response. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal facility (returned by a previously executed ASSIGN command).
For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.
If both CONVID and SESSION are omitted, the principal facility is assumed.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
• SYNCSEND

Conditions

16 INVREQ
RESP2 values:

200
A distributed program link server application specified the function-shipping session on the CONVID option.

also occurs (RESP2 not set) in any of the following situations:

• ISSUE CONFIRMATION is used on a conversation that is either of the following:
  – Sync level 0
  – Not APPC mapped

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the specified CONVID value relates to a conversation that is not owned by the application.

Default action: terminate the task abnormally.

24 SIGNAL
occurs when an inbound SIGNAL data-flow control command is received from a partner transaction. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

81 TERMERR
occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

ISSUE COPY (3270 logical)

Copy data from 3270 logical unit.

ISSUE COPY (3270 logical)

ISSUE COPY — TERMD( name )

CTLCHAR( data-value )

WAIT

Conditions: LENGERR, NOTALLOC, TERMERR

Description

ISSUE COPY copies the format and data contained in the buffer of a specified terminal into the buffer of the terminal that started the transaction. Both terminals must be attached to the same remote control unit.

Options
CTLCHAR(data-value)
specifies a 1-byte copy control character (CCC) that defines the copy function. A COBOL user must specify a data area containing this character. If the option is omitted, the contents of the entire buffer (including nulls) are copied.

TERMDI(name)
specifies the name (1–4 characters) of the terminal whose buffer is to be copied. The terminal must have been defined in the TCT.

WAIT
specifies that processing of the command must be completed before any subsequent processing is attempted.
If the WAIT option is not specified, control is returned to the application program once processing of the command has started. A subsequent input or output request (terminal control, BMS, or batch data interchange) to the terminal associated with the task causes the application program to wait until the previous request has been completed.

Conditions

22 LENGERR
occurs if an out-of-range value is supplied.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

81 TERMERR
occurs for a terminal-related error.
A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
Default action: terminate the task abnormally with abend code ATNI.

ISSUE DISCONNECT (default)
Terminate a session between CICS and a logical unit or terminal.

ISSUE DISCONNECT (default)

Conditions: SIGNAL, TERMERR

Description
ISSUE DISCONNECT terminates sessions between CICS and the following terminals or logical units:
• 3270-display logical unit (LUTYPE2)
• 3270-printer logical unit (LUTYPE3)
• LUTYPE4 logical unit
• 3270 SCS printer logical unit
• 2260 or 2265 display station
• 3270 logical unit
• 3600 pipeline logical unit
• 3600(3601) logical unit
• 3600(3614) logical unit
• 3630 plant communication system
• 3650 interpreter logical unit
• 3650 host conversational (3270) logical unit
• 3650 host conversational (3653) logical unit
• 3650(3680) host command processor logical unit
• 3767/3770 interactive logical unit
• 3770 batch logical unit
• 3790 logical units

**Conditions**

For most terminal and logical unit types, ISSUE DISCONNECT raises no conditions. Exceptions are:

**24 SIGNAL**

occurs only for an ISSUE DISCONNECT for LUTYPE4, 3600(3601), 3767 interactive, 3770 batch, and 3790 full-function logical units.

It occurs when an inbound SIGNAL data-flow control command is received from a logical unit or session. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

**81 TERMERR**

occurs only for an ISSUE DISCONNECT for LUTYPE4 logical units.

It occurs for a terminal-related error, such as a session failure. This condition applies to SNA-connected LUs only. Because of the asynchronous nature of this condition, the application program should check, using SEND CONFIRM or SYNCPOINT, to make sure any errors still outstanding have been resolved before it relinquishes control. If you want to handle this condition, you must first issue a FREE command to free the session. If you do not do this, an INVREQ condition occurs, plus an ATCV abend if you do not handle this condition.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

**ISSUE DISCONNECT (LUTYPE6.1)**

Disconnect an LUTYPE6.1 logical unit.

**ISSUE DISCONNECT (LUTYPE6.1)**

ISSUE DISCONNECT SESSION(name)

**Conditions:** NOTALLOC, TERMERR
Description
ISSUE DISCONNECT disconnects the unit, if DISREQ=YES is set in the TYPETERM resource definition.

Options
SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be disconnected. If this option is omitted, the principal facility for the task is disconnected.

Conditions
61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

81 TERMERR
occurs for a terminal-related error, such as a session failure.
A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
Default action: terminate the task abnormally with abend code ATNI.

ISSUE END
End processing of a data set.

ISSUE END

Conditions: FUNCERR, INVREQ, SELNERR, UNEXPIN
Description

ISSUE END ends communication with a data set in an outboard controller or with the selected medium. The data set specified in the DESTID option, or the selected medium, is deselected normally. The options CONSOLE, PRINT, CARD, and WPMEDIA1–4 are alternatives to DESTID and DESTIDLENG.

Options

CARD
specifies that the output medium is a card reader or card punch device. This option is not valid with DESTID and DESTIDLENG.

CONSOLE
specifies that the output medium is that provided for messages to the operator. This option is not valid with DESTID and DESTIDLENG. This refers to a programmable subsystem such as the IBM 3790 data communication system. It does not refer to a CICS or system console.

DESTID(data-value)
specifies the name (1–8 characters) of the data set in the outboard destination.

DESTIDLENG(data-value)
specifies the length (halfword binary value) of the name specified in the DESTID option.

PRINT
specifies that the output medium is a printer.

SUBADDR(data-value)
specifies the medium subaddress as a halfword binary value (in the range 0–15) that allows media of the same type, for example, “printer 1” or “printer 2”, to be defined. Value 15 means a medium of any type. The default is zero.

VOLUME(data-value)
specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

VOLUMELENG(data-value)
specifies the length (halfword binary value) of the name specified in the VOLUME option.

WPMEDIA1 through WPMEDIA4
specifies that, for each specific LUTYPE4 device, a word-processing medium is defined to relate to a specific input/output device.

Conditions

48 FUNCERR
occurs if there is an error during the execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

47 SELNERR
occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.
**49 UNEXPIN**
occurs when some unexpected or unrecognized information is received from the outboard controller.
Default action: terminate the task abnormally.

**ISSUE ENDFILE**
Indicate the end-of-file condition to the 3740 data entry system.

**Condition:** INVREQ, NOTALLOC

**Description**
ISSUE ENDFILE indicates the end-of-file condition to the 3740.

**Options**

83 ENDOUTPUT
indicates the end-of-output condition as well as end of file.

**Conditions**

16 INVREQ
RESP2 values:

200
A distributed program link server application attempted to send on its function shipping session, its principal facility.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

**ISSUE ENDOUTPUT**
Indicate the end-of-output condition to the 3740 data entry system.

**Condition:** INVREQ, NOTALLOC

**Description**
ISSUE ENDOUTPUT indicates the end-of-output condition to the 3740.
Options

20 ENDFILE
indicates the end-of-file condition as well as end of output.

Conditions

16 INVREQ
RESP2 values:

200
A distributed program link server application attempted to send on its function shipping session, its principal facility.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

ISSUE EODS
Send end-of-data-set function management header to the 3650 interpreter logical unit.

Conditions: INVREQ, NOTALLOC, TERMERR

Description
ISSUE EODS issues the end-of-data-set management header.

Conditions

16 INVREQ
RESP2 values:

200
A distributed program link server application attempted to send on its function shipping session, its principal facility.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

81 TERMERR
occurs for a terminal-related error, such as a session failure.
A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
**ISSUE ERASE**

Delete a record from a data set.

**Syntax**

```
ISSUE ERASE
  DESTID( data-value )
  DESTIDLENG( data-value )
  VOLUME( data-value )
  VOLUMELENG( data-value )
  RIDFLD( data-area )
  KEYLENGTH( data-value )
  KEYNUMBER( data-value )
  RRN
  NUMREC( data-value )
  DEFRESP
  NOWAIT
```

**Conditions:** FUNCERR, INVREQ, SELNERR, UNEXPIN

**Description**

ISSUE ERASE deletes a record from a keyed direct data set in an outboard controller, or erases a record from a DPCX or DXAM relative record data set.

**Options**

**DEFRESP**

specifies that all terminal control commands issued as a result of the ISSUE ERASE command are to request a definite response from the outboard batch program, irrespective of the specification of message integrity for the CICS task (by the system programmer).

**DESTID(data-value)**

specifies the name (1–8 characters) of the data set in the outboard destination.

**DESTIDLENG(data-value)**

specifies the length (halfword binary value) of the name specified in the DESTID option.

**KEYLENGTH(data-value)**

specifies the length of the key specified in the RIDFLD option, as a halfword binary value.

**KEYNUMBER(data-value)**

specifies the number, as a halfword binary value, of the index to be used to locate the record. There can be eight indexes (1–8). The default is 1. This option applies only to DPCX or DXAM and is mutually exclusive with RRN.

**NOWAIT**

specifies that the CICS task continues processing without waiting for the ISSUE ERASE command to complete. If this option is not specified, the task activity is suspended until the command is completed.

**NUMREC(data-value)**

for a relative record data set, specifies as a halfword binary value the number of logical records to be deleted. Records are replaced sequentially starting with the one identified by the RIDFLD option.
For an indexed data set, NUMREC cannot be specified, because only one record is deleted.

**RIDFLD(data-area)**

specifies the record identification field.

For a relative record data set, the RIDFLD option specifies a fullword binary integer (the relative record number of the record starting from zero); and the RRN option is used.

For an indexed data set, the RIDFLD option specifies the key that is embedded in the data. The KEYLENGTH option is also required.

**RRN**

specifies that the record identification field specified in the RIDFLD option contains a relative record number. If the option is not specified, RIDFLD is assumed to specify a key.

**VOLUME(data-value)**

specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

**VOLUMELENG(data-value)**

specifies the length (halfword binary value) of the name specified in the VOLUME option.

**Conditions**

**48 FUNCERR**

occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

- **200**

  A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

  Default action: terminate the task abnormally.

**47 SELNERR**

occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.

**49 UNEXPIN**

occurs when some unexpected or unrecognized information is received from the outboard controller.

Default action: terminate the task abnormally.

---

**ISSUE ERASEAUP**

Erase all unprotected fields of a 3270 buffer.

---

**ISSUE ERASEAUP**

**Conditions:** INVREQ, NOTALLOC, TERMERR
Description

ISSUE ERASEAUP erases unprotected fields by:
1. Clearing all unprotected fields to nulls (X'00')
2. Resetting modified data tags in each unprotected field to zero
3. Positioning the cursor to the first unprotected field
4. Restoring the keyboard

You can use the ISSUE ERASEAUP command for the following types of 3270 logical units:

- 3270-display logical unit (LUTYPE2)
- 3270-printer logical unit (LUTYPE3)
- 3270 logical unit
- 3650 host conversational (3270) logical unit
- 3790 (3270-display) logical unit
- 3790 (3270-printer) logical unit

Options

WAIT
ensures that the erase is completed before control returns to the application program. If you omit WAIT, control returns to the application program as soon as ISSUE ERASEAUP starts processing.

Conditions

16 INVREQ
RESP2 values:
200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

81 TERMERR
occurs if there is a terminal-related error.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

ISSUE ERROR

Inform APPC mapped conversation partner of error.
ISSUE ERROR (APPC)

ISSUE ERROR CONVID(name) STATE(cvda)

Conditions: INVRQ, NOTALLOC, SIGNAL, TERMERR

Description

ISSUE ERROR allows an application program to inform a process in a connected APPC system that some program-detected error has occurred. For example, a remote CICS application is notified by having EIBERR set, with EIBERRCD=X'0889'. The actions required to recover from the error are the responsibility of logic contained in both application programs. The application program can use this command to respond negatively when the CONFIRM option has been specified on a SEND command executed by a process in a connected APPC system.

Options

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal facility (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If both CONVID and SESSION are omitted, the principal facility is assumed.

STATE(cvda)
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

Conditions

16 INVREQ

RESP2 values:

200
A distributed program link server application specified the function-shipping session on the CONVID option.
also occurs (RESP2 not set) in any of the following situations:

- The command is not valid for the APPC conversation type in use.
- The command is issued against a CPI-Communications conversation.

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the specified CONVID value does not relate to a conversation owned by the application.
Default action: terminate the task abnormally.

24 SIGNAL
occurs when an inbound SIGNAL data-flow control command is received from a partner transaction.
EIBSIG is always set when an inbound signal is received.
Default action: ignore the condition.

81 TERMERR
occurs for a session-related error. Any action on that conversation other than a FREE command causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
Default action: terminate the task abnormally with abend code ATNI.

ISSUE LOAD

Specify the name of a program on 3650 interpreter logical unit.

**ISSUE LOAD**

```plaintext
ISSUE LOAD — PROGRAM( name) — CONVERSE
```

**Conditions:** NONVAL, NOTALLOC, NOSTART, TERMERR

**Description**

ISSUE LOAD specifies the name of the 3650 application program that is to be loaded.

**Options**

**CONVERSE**
specifies that the 3650 application program is able to communicate with the host processor. If this option is not specified, the 3650 application program cannot communicate with the host processor.

**PROGRAM(name)**
specifies the name (1–8 characters) of the 3650 application program that is to be loaded.

**Conditions**

**09 NONVAL**
occurs if the 3650 application program name is not valid.
Default action: terminate the task abnormally.
10 NOSTART
occurs if the 3651 is unable to initiate the requested 3650 application program.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

81 TERMERR
occurs for a terminal-related error.
A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.
Default action: terminate the task abnormally with abend code ATNI.

**ISSUE NOTE**
Request next record number.

**ISSUE NOTE**

```
   ISSUE NOTE — DESTID( data-value ) — DESTIDLENG( data-value ) — VOLUME( data-value ) —

   — VOLUMELENG( data-value ) — RIDFLD( data-area ) — RRN —
```

**Conditions:** FUNCERR, INVREQ, SELNERR, UNEXPIN

**Description**
ISSUE NOTE requests the number of the next record. It finds the relative record number of the next record in an addressed direct data set. The number is returned in the data area specified in the RIDFLD option. The RRN option must be specified, because a relative record number is involved.

**Options**

**DESTID(data-value)**
specifies the name (1–8 characters) of the data set in the outboard destination.

**DESTIDLENG(data-value)**
specifies the length (halfword binary value) of the name specified in the DESTID option.

**RIDFLD(data-area)**
specifies as a 4-character field a data area the relative record number of the next record is returned in.

**RRN**
specifies that the record identification field specified in the RIDFLD option contains a relative record number.

**VOLUME(data-value)**
specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.
**VOLUMELENG**(data-value)

specifies the length (halfword binary value) of the name specified in the VOLUME option.

**Conditions**

**48 FUNCERR**  
occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

**16 INVREQ**  
RESP2 values:

200  
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

**47 SELNERR**  
occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.

**49 UNEXPIN**  
occurs when some unexpected or unrecognized information is received from the outboard controller.

Default action: terminate the task abnormally.

**ISSUE PASS**

z/OS Communications Server application routing.

**ISSUE PASS**

ISSUE PASS  
LUNAME( name)  
FROM( data-area)  
LENGTH( data-value)  
LOGMODE( data-value)  
LOGONLOGMODE  
NOQUIESCE

**Conditions:** INVREQ, LENGERR, NOTALLOC

**Description**

ISSUE PASS disconnects the terminal from CICS after the task has terminated, and transfers it to the z/OS Communications Server application defined in the LUNAME option.

This command requires that AUTH=PASS is coded on the z/OS Communications Server APPL macro for the CICS terminal-owning system that issues it, with DISCREQ=YES or RELREQ=YES in the RDO TYPETERM resource definition for any terminal where this function might be used.

If the LUNAME specified is the name of another CICS system, you can use the EXTRACT LOGONMSG command to access the data referred to by this command.

Because of a z/OS Communications Server limitation, the maximum length of the user data is restricted to 255 bytes.
Note: The system initialization parameter CLSDSTP=NOTIFY|NONOTIFY allows you to have the node error program (NEP) and the console notified of whether the PASS was successful or not. The NEP can be coded to reestablish a session ended by an unsuccessful PASS. For programming information about how to do this, see the section about NEP in Writing a node error program.

Options

**FROM**(data-area)
- specifies the data area containing the logon user data that is to be passed to the application named in the LUNAME option. This option may be omitted if ATTACHID is specified on an LUTYPE6.1 command.

**LENGTH**(data-value)
- specifies the length, as a halfword binary value, of the data issued.

**LOGMODE**(data-value)
- specifies the name (1–8 characters) of the z/OS Communications Server logon mode table entry used by z/OS Communications Server to establish the new session.

**LOGONLOGMODE**
- specifies that the new session is to be established with the z/OS Communications Server logon mode table entry in use when the session logged on.

Note: The logmode name saved is taken from the X'0D' control vector in the z/OS Communications Server CINIT. This is the logmode name known in this system.

If persistent sessions (PSDINT=nnn in the SIT) is in use, then the TYPETERM definition for any terminal to be ISSUE PASSed should use RECOVOPTION(NONE), because the logon LOGMODE name is not recovered across a persistent sessions restart.

If neither LOGMODE nor LOGONLOGMODE is supplied, the new session will be established with the default LOGMODE.

**LUNAME**(name)
- specifies the name (1–8 characters) of the z/OS Communications Server application to which the terminal is to be passed.

**NOQUIESCE**
- specifies that the user can choose to recover from certain pass failures.

Conditions

**16 INVREQ**
- occurs if the command is not valid for the logical unit in use.
  Default action: terminate the task abnormally.

**22 LENGERR**
- occurs if an out-of-range value is supplied in the LENGTH option.
  Default action: terminate the task abnormally.

**61 NOTALLOC**
- occurs if the facility specified in the command is not owned by the application.
  Default action: terminate the task abnormally.
ISSUE PREPARE

Issue the first flow of a syncpoint request on an APPC mapped conversation.

**ISSUE PREPARE (APPC)**

 ISSUE PREPARE  \[ CONVID( name) \]  \[ STATE( cvda) \]

**Conditions:** INVREQ, NOTALLOC, TERMERR

**Description**

ISSUE PREPARE applies only to distributed transaction processing over APPC links. It enables a syncpoint initiator to prepare a syncpoint slave for syncpointing by sending only the first flow (prepare-to-commit) of the syncpoint exchange. Depending on the reply from the syncpoint slave, the initiator can proceed with the syncpoint by issuing a SYNCPOINT command, or initiate back-out by issuing a SYNCPOINT ROLLBACK command.

**Options**

**CONVID(name)**
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal facility (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If both CONVID and SESSION are omitted, the principal facility is assumed.

**STATE(cvda)**
gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**Conditions**

**16 INVREQ**
RESP2 values:
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

also occurs (RESP2 not set) in any of the following situations:

- The conversation is not an APPC mapped conversation.
- The conversation state is not valid for the request.
- The sync level of the conversation is not 2.

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the CONVID value in the command does not relate to a conversation that is owned by the application.

Default action: terminate the task abnormally.

81 TERMERR
occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

**ISSUE PRINT**
Print displayed data on first available printer.

**ISSUE PRINT**

Conditions: INVREQ, NOTALLOC, TERMERR

Description
ISSUE PRINT prints displayed data on the first available printer that can respond to a print request.

ISSUE PRINT can be used on a number of logical units, using the printers defined below:

- For a 3270 logical unit or a 3650 host conversational (3270) logical unit, the printer must be defined by the PRINTER or ALTPRINTER options on the RDO TERMINAL resource definition, or by a printer supplied by the autoinstall user program.
- For a 3270-display logical unit with the PTRADAPT feature, used with a 3274 or 3276, the printer is allocated by the printer authorization matrix. The PTRADAPT feature is enabled by specifying DEVICE=LUTYPE2 and PRINTADAPTER=YES on the RDO TYPETERM resource definition.
- For a 3790 (3270-display) logical unit, the printer is allocated by the 3790.

The printer must be in service, not currently attached to a task, and owned by the same CICS system that owns the terminal running the transaction.

Conditions

16 INVREQ
RESP2 values:
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

**61 NOTALLOC**
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

**81 TERMERR**
occurs for a terminal-related error.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

---

**ISSUE QUERY**

Interrogate a data set.

**ISSUE QUERY**

ISSUE QUERY DESTID(data-value) DESTIDLENG(data-value) VOLUME(data-value) VOLUMELENG(data-value)

**Conditions:** FUNCERR, INVREQ, SELNERR, UNEXPIN

**Description**

ISSUE QUERY interrogates a data set. It is used to request that a sequential data set in an outboard controller be transmitted to the host system. The application program should either follow this command with ISSUE RECEIVE commands to get the resulting inbound data, or terminate the transaction to allow CICS to start a new transaction to process the data.

**Options**

**DESTID(data-value)**
specifies the name (1–8 characters) of the data set in the outboard destination.

**DESTIDLENG(data-value)**
specifies the length (halfword binary value) of the name specified in the DESTID option.

**VOLUME(data-value)**
specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

**VOLUMELENG(data-value)**
specifies the length (halfword binary value) of the name specified in the VOLUME option.

**Conditions**
48 **FUNCERR**
occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

16 **INVREQ**
RESP2 values:

200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

47 **SELNERR**
occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.

49 **UNEXPIN**
occurs when some unexpected or unrecognized information is received from the outboard controller.

Default action: terminate the task abnormally.

### ISSUE RECEIVE

Read a record from a data set.

**ISSUE RECEIVE**

![Diagram of ISSUE RECEIVE command]

**Conditions:** DSSTAT, EOC, EODS, INVREQ, LENGERR, UNEXPIN

**Description**

ISSUE RECEIVE reads a sequential data set in an outboard controller.

The INTO option specifies the area into which the data is to be placed. The LENGTH option must specify a data area that contains the maximum length of record that the program accepts. If the record length exceeds the specified maximum length, the record is truncated and the LENGERR condition occurs. After the retrieval operation, the data area specified in the LENGTH option is set to the record length (before any truncation occurred).

Alternatively, a pointer reference can be specified in the SET option. CICS then acquires an area of sufficient size to hold the record, and sets the pointer reference to the address of that area. After the retrieval operation, the data area specified in the LENGTH option is set to the record length.

The outboard controller might not send the data from the data set specified in the ISSUE QUERY command. The ASSIGN command must be used to get the value of DESTID (which identifies the data set that has been transmitted) and the value of DESTIDLENG (which is the length of the identifier in DESTID).

**Options**

**INTO**(data-area)
specifies the receiving field for the data read from the data set.
If you specify the ISSUE RECEIVE command with the INTO option, the parameter must be a data area that specifies the maximum length of data that the program is prepared to handle. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs. On completion of the retrieval operation, the data area is set to the original length of the data.

**LENGTH(data-area)**

specifies the length (halfword binary value) of the data received.

If you have specified SET, you must also specify LENGTH.

**SET(ptr-ref)**

specifies the pointer reference that is to be set to the address location of the data read from the data set.

If you specify the SET option, the parameter must be a data area. On completion of the retrieval operation, the data area is set to the length of the data.

If DATALOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16MB line.

If DATALOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

If you have specified SET, you must also specify LENGTH.

**Conditions**

**46 DSSTAT**

occurs when the destination status changes in one of the following ways:

- The data stream is abended.
- The data stream is suspended.

Default action: terminate the task abnormally.

**06 EOC**

occurs if the request/response unit (RU) is received with the end-of-chain (EOC) indicator set. Field EIBEEOC also contains this indicator.

Default action: ignore the condition.

**05 EODS**

occurs when the end of the data set is encountered.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

**200**

A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

**22 LENGERR**

occurs if the length of the retrieved data is greater than the value specified by the LENGTH option.

Default action: terminate the task abnormally.

**49 UNEXPIN**

occurs when some unexpected or unrecognized information is received from the outboard controller.
Default action: terminate the task abnormally.

**ISSUE REPLACE**

Update a record in a data set.

**ISSUE REPLACE**

```
 ISSUE REPLACE  DESTID(data-value)  DESTIDLENG(data-value)
                FROM(data-area)            VOLUME(data-value)  VOLUMELENG(data-value)
                RIDFLD(data-area)           LENGTH(data-value)  NUMREC(data-value)
                KEYLENGTH(data-value)      KEYNUMBER(data-value)  DEFRESP
                NOWAIT
```

**Conditions:** FUNCERR, INVREQ, SELNERR, UNEXPIN

**Description**

ISSUE REPLACE updates (replaces) a record in either a relative (addressed direct) or an indexed (keyed direct) data set in an outboard controller.

**Options**

**DEFRESP**

specifies that all terminal control commands issued as a result of the ISSUE REPLACE command request a definite response from the outboard batch program, irrespective of the specification of message integrity for the CICS task (by the system programmer).

**DESTID(data-value)**

specifies the name (1–8 characters) of the data set in the outboard destination.

**DESTIDLENG(data-value)**

specifies the length (halfword binary value) of the name specified in the DESTID option.

**FROM(data-area)**

specifies the data that is to be written to the data set.

**KEYLENGTH(data-value)**

specifies the length (halfword binary value) of the key specified in the RIDFLD option.

**KEYNUMBER(data-value)**

specifies the number, as a halfword binary value, of the index to be used to locate the record. There can be eight indexes (1 through 8). The default is 1. This option applies only to DPCX/DXAM and is mutually exclusive with RRN.
LENGTH(data-value)
   specifies the length (halfword binary value) of the data to be written.

NOWAIT
   specifies that the CICS task continues processing without waiting for the ISSUE REPLACE command to complete. If this option is not specified, the task activity is suspended until the command is completed.

NUMREC(data-value)
   for a relative data set, specifies as a halfword binary value the number of logical records to be replaced. Records are replaced sequentially starting with the one identified by the RIDFLD option.

   For an indexed data set, NUMREC cannot be specified because only one record is replaced.

RIDFLD(data-area)
   specifies the record identification field.

   For a relative record data set, the RIDFLD option specifies a fullword binary integer (the relative record number of the record starting from zero); and the RRN option is used.

   For an indexed data set, the RIDFLD option specifies the key that is embedded in the data specified by the FROM option. The KEYLENGTH option is also required.

RRN
   specifies that the record identification field specified in the RIDFLD option contains a relative record number. This option is required for a relative record data set.

   If the option is not specified, RIDFLD is assumed to specify a key.

VOLUME(data-value)
   specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

VOLUMELENG(data-value)
   specifies the length (halfword binary value) of the name specified in the VOLUME option.

Conditions

48 FUNCERR
   occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

   Default action: terminate the task abnormally.

16 INVREQ
   RESP2 values:

   200
      A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

   Default action: terminate the task abnormally.

47 SELNERR
   occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

   Default action: terminate the task abnormally.

49 UNEXPIN
   occurs when some unexpected or unrecognized information is received from the outboard controller.

   Default action: terminate the task abnormally.
**ISSUE RESET**

Relinquish use of a telecommunication line.

This command is supported for compatibility with earlier releases of CICS. It is superseded by the ISSUE DISCONNECT command, which you are recommended to use instead.

**ISSUE SEND**

Send data to a named data set or to a selected medium.

**Conditions:** FUNCERR, IGREQCD, INVREQ, SELNERR, UNEXPIN

**Description**

ISSUE SEND sends data to a named data set in an outboard controller, or to a selected medium in a batch logical unit or an LUTYPE4 logical unit. The options CONSOLE, PRINT, CARD, and WPMEDIA1–4 are alternatives to DESTID and DESTIDLENG.

**Options**

**CARD**

specifies that the output medium is a card reader or card punch device. This option is not valid with DESTID and DESTIDLENG.

**CONSOLE**

specifies that the output medium is that provided for messages to the operator. This option is not valid with DESTID and DESTIDLENG. This refers to a programmable subsystem such as the IBM 3790 data communication system. It does not refer to a CICS or system console.
DEFRESP specifies that all terminal control commands issued as a result of the ISSUE SEND command request a definite response from the outboard batch program, irrespective of the specification of message integrity for the CICS task (by the system programmer).

DESTID(data-value) specifies the name (1–8 characters) of the data set in the outboard destination.

DESTIDLENG(data-value) specifies the length (halfword binary value) of the name specified in the DESTID option.

FROM(data-area) specifies the data to be written to the data set.

LENGTH(data-value) specifies a halfword binary value that is the length of the data to be written.

NOWAIT specifies that the CICS task continues processing without waiting for the ISSUE SEND command to complete. If this option is not specified, the task activity is suspended until the command is completed.

PRINT specifies that the output is to the print medium.

SUBADDR(data-value) specifies the medium subaddress as a halfword binary value (in the range 0–15) that allows media of the same type, for example, “printer 1” or “printer 2”, to be defined. Value 15 means a medium of any type. The default is zero.

VOLUME(data-value) specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

VOLUMELENG(data-value) specifies the length of the name specified in the VOLUME option as a halfword binary value.

WPMEDIA1 through WPMEDIA4 specifies that for each specific LTYPE4 device, a word processing medium is defined to relate to a specific input/output device.

Conditions

48 FUNCERR occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

57 IGREQCD occurs when an attempt is made to execute an ISSUE SEND command after a SIGNAL RCD data-flow control code has been received from an LTYPE4 logical unit.

Default action: terminate the task abnormally.

16 INVREQ RESP2 values:

200 A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

47 SELNERR occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.
Default action: terminate the task abnormally.

49 UNEXPIN
occurs when some unexpected or unrecognized information is received from the outboard controller.
Default action: terminate the task abnormally.

**ISSUE SIGNAL (APPC)**

Request change of direction from sending transaction on an APPC mapped conversation.

**ISSUE SIGNAL (APPC)**

\[
\text{ISSUE SIGNAL} \quad \text{CONVID( name)} \quad \text{STATE( cvda)}
\]

**Conditions:** INVREQ, NOTALLOC, TERMERR

**Description**

ISSUE SIGNAL, in a transaction in receive mode, signals to the sending transaction that a mode change is needed. It raises the SIGNAL condition on the next SEND, RECEIVE, or CONVERSE command executed in the sending transaction, and a previously executed HANDLE CONDITION command for this condition can be used either to take some action, or to ignore the request.

**Options**

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal facility (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If both CONVID and SESSION are omitted, the principal facility is assumed.

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND
### Conditions

**16 INVREQ**

RESP2 values:

- **200**
  
  A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

  also occurs (RESP2 not set) in any of the following situations:
  
  - The command has been used on an APPC conversation that is not using the EXEC CICS interface, or is not a mapped conversation.

  Default action: terminate the task abnormally.

**61 NOTALLOC**

occurs if the specified CONVID value does not relate to a conversation that is owned by the application.

Default action: terminate the task abnormally.

**81 TERMERR**

occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause TERMERR if the task has an outstanding terminal control request when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

### ISSUE SIGNAL (LUTYPE6.1)

Request change of direction from sending transaction on LUTYPE6.1 conversation.

#### Options

- **CONVID**(name)
  
  identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal facility (returned by a previously executed ASSIGN command).
SESSION(name)  
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used.

Conditions  

61 NOTALLOC  
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

81 TERMERR  
occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause TERMERR if the task has an outstanding terminal control request when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

**ISSUE WAIT**  
Wait for an operation to be completed.

**ISSUE WAIT**  

```
ISSUE WAIT

DESTID(data-value)

DESTIDLENG(data-value)

SUBADDR(data-value)

CONSOLE

PRINT

CARD

WPMEDIA1

WPMEDIA2

WPMEDIA3

WPMEDIA4

VOLUME(data-value)

VOLUMELENG(data-value)
```

**Conditions:** FUNCERR, INVREQ, SELNERR, UNEXPIN

**Description**  
ISSUE WAIT suspends task activity until the previous batch data interchange command is completed. This command is meaningful only when it follows an ISSUE ADD, ISSUE ERASE, ISSUE REPLACE, or ISSUE SEND command. The options CONSOLE, PRINT, CARD, and WPMEDIA1–4 are alternatives to DESTID and DESTIDLENG.
Options

CARD
specifies that the output medium is a card reader or card punch device. This option is not valid with DESTID and DESTIDLENG.

CONSOLE
specifies that the output medium is that provided for messages to the operator. This option is not valid with DESTID and DESTIDLENG.

This refers to a programmable subsystem such as the IBM 3790 data communication system. It does not refer to a CICS or system console.

DESTID(data-value)
specifies the name (1–8 characters) of the data set in the outboard destination.

DESTIDLENG(data-value)
specifies the length (halfword binary value) of the name specified in the DESTID option.

PRINT
specifies that the output is to the print medium.

SUBADDR(data-value)
specifies the medium subaddress as a halfword binary value (in the range 0–through 15) that allows media of the same type, for example, “printer 1” or “printer 2”, to be defined. Value 15 means a medium of any type. The default is zero.

VOLUME(data-value)
specifies the name (1–6 characters) of a diskette in an outboard destination that contains the data set specified in the DESTID option.

VOLUMELENG(data-value)
specifies the length of the name specified in the VOLUME option as a halfword binary value.

WPMEDIA1 through WPMEDIA4
specifies that, for each specific LUTYPE4 device, a word-processing medium is defined to relate to a specific input/output device.

Conditions

48 FUNCERR
occurs if there is an error during execution of the command. Destination selection is unaffected and other commands for the same destination may be successful.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

47 SELNERR
occurs if there is an error during destination selection. The destination is not selected and other commands for the same destination are unlikely to be successful.

Default action: terminate the task abnormally.

49 UNEXPIN
occurs when some unexpected or unrecognized information is received from the outboard controller.

Default action: terminate the task abnormally.
**JOURNAL**

Create a journal record.

This command is supported for compatibility with earlier releases of CICS. It is superseded by the `WRITE JOURNALNAME` command, which you are recommended to use instead.

**LINK**

Link to another program expecting return.

```
LINK
```

```
LINK PROGRAM( name )
```

- `COMMAREA(data-area)`
- `LENGTH(data-value)`
- `DATALENGTH(data-value)`
- `CHANNEL(name)`
- `INPUTMSG(data-area)`
- `INPUTMSGLEN(data-value)`
- `SYSID(systemname)`
- `SYNCONRETURN`
- `TRANSID(name)`

**Conditions:** CHANNELERR, INVREQ, LENGERR, NOTAUTH, PGMDERR, RESUNAVAIL, ROLLEDBACK, SYSIDERR, TERMERR

This command is threadsafe when it is used to link to a program in a local CICS region, or in a remote CICS region over an IPIC connection. It is non-threadsafe when it is used to link to a program in a remote CICS region over another type of connection.

**Description**

LINK passes control from an application program at one logical level to an application program at the next lower logical level.

If the requested program is not defined to CICS, and AUTOINSTALL is active, CICS supplies a definition for the program. If this definition is local, and the linked-to program is not already in main storage, CICS loads it.

In some circumstances, the linked-to program might reside on another CICS region; see “Distributed program link” on page 304.

This command operates in the current application context. If the command is issued by a program that is running under a task for an application deployed on a platform, CICS searches first for the named program in the private program directory for the application. If the named program is not found there, CICS then searches the public program directory.

When this command is used to link to a program that is declared as an application entry point for an application deployed on a platform, the CICS bundle where the application entry point is declared must have a status of AVAILABLE. The link is made to the highest numbered version of the application that is installed, enabled, and available. To link to a specified version of an application deployed on a platform, use the `INVOKE APPLICATION` command instead of the `LINK` command.

When the RETURN command runs in the linked-to program, control is returned to the program initiating the link at the next sequential executable instruction.
The external CICS interface (EXCI) provides a LINK command that performs all six commands of the interface in one invocation. See The EXCI CALL interface for information about EXCI.

The linked-to program operates independently of the program that issues the LINK command with regard to handling conditions, attention identifiers, abends, and execution key. For example, the effects of HANDLE CONDITION commands in the linking program are not inherited by the linked-to program, but the original HANDLE CONDITION commands are restored on return to the linking program. See Using the HANDLE CONDITION command for more information and an illustration of the concept of logical levels.

You can use the HANDLE ABEND command to deal with abnormal terminations in other link levels. See Using the HANDLE CONDITION command for further details about the relationship between LINK and HANDLE ABEND.

Distributed program link

In any of the following cases, the link is a distributed program link (DPL):

- You specify a remote region name on the SYSID option, with or without the associated TRANSID and SYNCONRETURN options.
- The REMOTESYSTEM option on the installed PROGRAM definition specifies the name of a remote region.
- The installed program definition specifies DYNAMIC(YES), or there is no installed program definition, and the dynamic routing program routes the link request to a remote region.

In response to a distributed program link, the local CICS region (the client region) ships the link request to the remote region (the server region). The server region runs the linked-to program (the server program) on behalf of the program that issues the link request (the client program).

The SYSID and INPUTMSG options are mutually exclusive. If you specify both options on a LINK command, the translator issues error message DFH7230E indicating conflicting options.

A server program running in the server region is restricted to a DPL subset of the CICS API. In summary, the server program cannot issue these commands:

- Terminal control commands that reference the principal facility
- Options of ASSIGN that return terminal attributes
- BMS commands
- Sign-on and sign-off commands
- Batch data interchange commands
- Commands that address the TCTUA

For details of the restricted DPL subset of the API, see Exception conditions for LINK command.

If a server program abends, the abend code is returned to the client program. If the client program is not written to handle the abend returned by the server program, the client program abends with the same abend code returned by the server program.

You cannot use DPL to link to the CICS master terminal program, DFHEMTA, or to the RDO program, DFHEDAP. The addresses passed as parameters to DFHEMTA and DFHEDAP are valid only in the region that issues the EXEC CICS LINK command, which means that you cannot route a DFHEMTA or DFHEDAP request to a remote CICS.

**Important:** For examples of the use of the LINK command when the linked program is remote, see Distributed Program Link (DPL). For information about writing a dynamic routing program, see Routing DPL requests dynamically.

**Options**
**CHANNEL**(name)
Specifies the name (1 - 16 characters) of a channel that is to be made available to the called program. The acceptable characters are A - Z a - z 0 - 9 $ @ # / % & ? ! : | " = ¬ , ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters used to name them to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

The program that issues the LINK command can do one of the following:

- Have already created the channel by using one or more **PUT CONTAINER CHANNEL** or **PUT64 CONTAINER** commands.
- Specify its current channel, by name.
- Name a channel that does not currently exist. A new empty channel is created.

**COMMAREA**(data-area)
Specifies a communication area that is to be made available to the called program. In this option the data area is passed, and you must give it the name DFHCOMMAREA in the receiving program. COMMAREA is not supported for LINK to Liberty. See Passing data to other programs.

**DATALENGTH**(data-value)
Specifies a halfword binary value that is the length of a contiguous area of storage, from the start of the COMMAREA, to be passed to the called program. For a remote LINK request, if the amount of data being passed in a COMMAREA is small, but the COMMAREA itself is large so that the linked-to program can return the requested data, specify DATALENGTH in the interest of performance.

The value of DATALENGTH is checked only when the LINK request is remote or dynamic. It is not checked for static local links.

DATALENGTH cannot be used at the same time as INPUTMSG.

**INPUTMSG**(data-area)
Specifies data to be supplied to the called program when it first issues a RECEIVE command. This data remains available until the execution of a RECEIVE or RETURN command. A called program can call a further program and so on, creating a chain of linked programs. If a linked-to chain exists, CICS supplies the INPUTMSG data to the first RECEIVE command run in the chain. If control returns to the program that issued the LINK with INPUTMSG before the INPUTMSG data has been accepted by a RECEIVE command, CICS assumes that a RECEIVE command has been issued. In this situation, the original INPUTMSG data is no longer available.

INPUTMSG cannot be used at the same time as DATALENGTH. INPUTMSG is not supported for LINK to Liberty.

For more information about the INPUTMSG option, see INPUTMSG.

**INPUTMSGLEN**(data-value)
Specifies a halfword binary value to be used with INPUTMSG.

**LENGTH**(data-value)
Specifies a halfword binary value that is the length in bytes of the COMMAREA (communication area). This value must not exceed 24 KB if the COMMAREA is to be passed between any two CICS servers (for any combination of product, version, and release). This limit allows for the COMMAREA and space for headers.
Ensure that the value you specify matches the length of the data being passed in the COMMAREA. Do not specify 0 (zero) for LENGTH, because the resulting behavior is unpredictable and the EXEC CICS LINK command might fail.

When you use a COMMAREA to pass data, the program that is linked to must verify that the EIBCALEN field in the EIB of the task matches what the program expects. Discrepancies might result in storage violations or system failures. For more information, see COMMAREA.

**PROGRAM(name)**

Specifies the identifier (1 - 8 characters) of the program to which control is to be passed unconditionally.

In any of the following cases, the linked-to program is a server program in a remote region:

- The SYSID option specifies a remote region.
- The REMOTESYSTEM option on the installed PROGRAM definition specifies the name of a remote region.
- The installed program definition specifies DYNAMIC(YES), or there is no installed program definition, and the dynamic routing program routes the link request to a remote region.

Note the use of quotes:

```cics
EXEC CICS LINK PROGRAM('PROGX')
```

PROGX is in quotes because it is the program name.

```cics
EXEC CICS LINK PROGRAM(DAREA)
```

DAREA is not in quotes because it is the name of a data area that contains the actual program name. If a data area is used to contain the program name, this data area must be defined as an 8 byte field in working storage.

**Note:** When a link is made to a CICS 3270 program that is to run under the Link3270 bridge mechanism, the PROGRAM name must be DFHL3270, not the name of the target 3270 program.

**SYNCONRETURN**

Specifies that the server region named on the SYSID option is to take a sync point on successful completion of the server program.

Changes to recoverable resources made by the server program are committed or rolled back independently of changes to recoverable resources made by the client program issuing the LINK request or changes made by the server in any subsequent LINK.

- The NORMAL condition is returned if changes to recoverable resources are committed before return from the server program.
- The ROLLEDBACK condition is returned if changes to recoverable resources are rolled back before return from the server program.
- The TERMERR condition is raised following failure of the communications link or the system in which the server program is running. The client program handles the condition and ensures that data consistency is restored.

SYNCONRETURN is only applicable to remote links, it is ignored if the link is local.

**SYSID(systemname)**

Specifies the system name of a CICS server region to where the program link request is to be routed.

If you do not specify a remote system name in the SYSID option or omit the SYSID option, CICS uses the REMOTESYSTEM attribute defined in the installed PROGRAM definition. If you specify a local system name in the SYSID option or the REMOTESYSTEM attribute, CICS ignores the name.

A remote system name specified on the SYSID option takes priority over any remote system name specified on the PROGRAM resource definition or returned by the dynamic routing program.
**TRANSID(name)**

Specifies the name of the mirror transaction that the remote region is to attach and under which it is to run the server program.

The transaction name that you specify on the LINK command takes priority over any transaction specified on the program resource definition. While you can specify your own name for the mirror transaction initiated by DPL requests, the transaction must be defined in the server region, and the transaction definition must specify the mirror program, DFHMIRS.

If you omit the TRANSID option, reference is made to PROGRAM resource definitions held locally if the installed PROGRAM definition specifies remote attribute DYNAMIC(YES). Otherwise, the server region attaches either CSMI, CPMI, or CVMI by default.

Specifying the TRANSID option with a blank transaction name is not valid. The error response in this case depends on how the link request is handled:

- If the linked-to program is defined locally, the link request succeeds in this situation.
- If the request is statically routed to a remote region, an INVREQ response is returned to the program initiating the link.
- If the request is dynamically routed to a remote region, a valid connection ID is returned, but after checking the TRANSID, CICS calls the dynamic routing program again with the parameter DYRFUNC set to 1 and the parameter DYRERROR set to 8. If the dynamic routing program responds by running the program locally, the link request succeeds. If the dynamic routing program responds by retrying without success, the link request is rejected, and a PGMIDERR response is returned to the program initiating the link.

**Conditions**

122 CHANNELERR

RESP2 values:

1

The name specified on the CHANNEL option contains an illegal character or combination of characters.

16 INVREQ

RESP2 values:

8

A LINK command with the INPUTMSG option is issued for a program that is not associated with a terminal, or that is associated with an APPC logical unit, or an IRC session.

14

The SYNCONRETURN option is specified but the program issuing the link request (the client program) is already in conversation with a mirror task in the remote region specified on the SYSID option. That is, a unit of work (UOW) is in progress, or the system initialization parameter **MROFSE=YES** is specified in the client region, or the MIRRORLIFE IPCONN setting is specified as task or UOW in the remote region. In this case, the client program is in an incorrect state to support the SYNCONRETURN option.

15

The program issuing the link request is already in conversation with a mirror task and the TRANSID specified is different from the transaction identifier of the active mirror.

16

The TRANSID specified is all blanks.

17

The TRANSID supplied by the dynamic routing program is all blanks.

19

A LINK command with the INPUTMSG option is issued for a program that is the subject of a DPL request; that is, SYSID is also specified.
The program manager domain has not yet been initialized, probably because a link request was made in a first stage PLT.

A LINK has been attempted to a Java program, but the user class cannot be found.

A LINK has been attempted to a Java program, but the JVMSERVER resource cannot be found.

A LINK has been attempted to a Java program, but the JVMSERVER resource is not enabled.

A LINK has been attempted to an application in a Liberty JVM server, but the LINK listener process was not available. The most likely cause of this error is that the feature `cicssts:link-1.0` is not enabled. To resolve this, add this feature to the `server.xml`.

The COMMAREA option is specified, but it is invalid when linking to an application in a Liberty JVM server.

The INPUTMSG option is specified, but it is invalid when linking to an application in a Liberty JVM server.

Default action: end the task abnormally.

Note: RESP2 values are not returned to the client for conditions occurring in a DPL server program.

### 22 LENGERR

RESP2 values:

- **11**: The COMMAREA length is less than 0 or greater than the permitted length.
- **12**: The length specified on the DATALENGTH option is a negative value.
- **13**: The length specified on the DATALENGTH option is greater than the length specified on the LENGTH option.
- **26**: The COMMAREA address is zero, but the COMMAREA length is nonzero.
- **27**: The INPUTMSG length is less than 0 or greater than 32767.

Also occurs (RESP2 not set) in any of the following situations:

- The length specified on the LENGTH option is greater than the length of the data area specified in the COMMAREA option, and while that data was being copied a destructive overlap occurred because of the incorrect length.

Default action: end the task abnormally.

Note: RESP2 values are not returned to the client for conditions occurring in a DPL server program.

### 70 NOTAUTH

RESP2 values:

- **101**: A resource security check has failed on PROGRAM(name).

Default action: end the task abnormally.

### 27 PGMIDERR

RESP2 values:
A program has no installed resource definition and either program autostall was switched off or the program autostall control program indicated that the program should not be autostalled. This RESP2 can also occur if the program is a private program for an application, which is not defined as entry point, and the tasks current application context does not permit it to be called.

A program is disabled.

A program was not loaded because

- This load of the program was the first one and the program load failed, typically because the load module was not found.
- This load of the program was a subsequent load, but the first load failed.

To reset the load status, the load module must be in the DFHRPL concatenation, and a SET PROGRAM NEWCOPY is required.

The program autostall control program failed either because the program autostall control program is incorrect, incorrectly defined, or as a result of an abend in the program autostall control program. Program autostall is disabled and message DFHPG0202 or DFHPG0203 is written to the CSPL.

The model returned by the program autostall control program was not defined to CICS or was not enabled.

The program autostall control program returned invalid data.

Define for the program failed because autostall returned an invalid program name or definition.

The dynamic routing program rejected the link request.

A LINK has been attempted to an application in a Liberty JVM server, but the request has failed and the target application was not invoked. Message DFHSJ1207 gives more details about why the application could not be invoked.

A LINK has been attempted to an application in a Liberty JVM server, but the request timed out and the target application was not invoked. For more information, see Troubleshooting Liberty JVM servers and Java web applications.

Default action: end the task abnormally.

Note: RESP2 values are not returned to the client for conditions occurring in a DPL server program.

121 RESUNAVAIL

RESP2 values:

0

A resource required by the linked-to program is unavailable on the target region. The RESUNAVAIL condition applies to dynamically routed distributed program link (DPL) requests.

RESUNAVAIL is returned on the EXEC CICS LINK command executed by the mirror in the target region, if an XPCERES global user exit program indicates that a required resource is unavailable on the target region. It is not returned to the application.

Default action: call again the dynamic routing program for route selection failure.

82 ROLLED_BACK

RESP2 values:
29  The SYNCONRETURN option is specified and the server program cannot successfully take a sync point. The server program has taken a rollback, and all changes made to recoverable resources in the remote region, in the current unit of work, are backed out.

Default action: end the task abnormally.

53 SYSIDERR
RESP2 values:

18  The SYSID specified cannot be found in the intersystem table.

20  The remote system specified by SYSID is an LUTYPE6.1-connected system. Distributed program link requests are not supported on LUTYPE6.1 connections.

Note:
1. No local queuing takes place in the event of a SYSIDERR.
2. RESP2 values are not returned for conditions occurring on DPL requests.

21  The CHANNEL option was used and the LINK request was shipped or routed to a remote system which does not support it. (IPIC and MRO connections.)

28  The remote system specified by SYSID is not in service. This response can also indicate that the transaction has not been defined on the remote system.

29  The remote system specified by SYSID is in service, but there are no sessions available, and the dynamic routing program has chosen not to queue the link request.

31  The request to allocate a session to the remote system has been rejected.

32  The queue of allocate requests for sessions to the remote system has failed because the session allocation queue is full or has been purged.

Default action: end the task abnormally.

81 TERMERR
RESP2 values:

17  An unrecoverable error occurs during the conversation with the mirror; for example, if the session fails, or if the server region fails.

Default action: end the task abnormally.

If the SYNCONRETURN option was not specified on the LINK, the client program must decide whether to abend or roll back on receipt of this condition.

Note: RESP2 values are not returned to the client for conditions occurring in a DPL server program.

Examples

The following example shows how to request a link to an application program called PROGNAME:

```
EXEC CICS LINK PROGRAM(PROGNAME) COMMAREA(COMA) LENGTH(LENA) DATALENGTH(LENI) SYSID('CONX')
```
LINK ACQPROCESS

Execute a CICS business transaction services process synchronously without context-switching.

**LINK ACQPROCESS**

```
> LINK ACQPROCESS
   INPUTEVENT( data-value )
```

**Conditions:** EVENTERR, INVREQ, IOERR, NOTAUTH, PGMIDERR, PROCESSBUSY, PROCESSERR

**Description**

LINK ACQPROCESS executes the CICS business transaction services process currently acquired by the requestor. The process is executed synchronously with the requestor, with no context-switching.

The only process that a program can link is the one that it has acquired in the current unit of work. (Note, however, that if the program is running as the activation of an activity, it must use a RUN, not a LINK, command to activate the process it has acquired.) See Acquiring processes and activities.

To check the response from the process, the CHECK ACQPROCESS command must be used. This is because the response to the request to activate the process does not contain any information about the success or failure of the process itself—only about the success or failure of the request to activate it. Typically, the CHECK command is issued immediately after the LINK command.

LINK ACQPROCESS causes BTS to invoke the process's root activity and send it an input event. If the root activity is in its initial state—that is, if this is the first time it is to be run—CICS sends it the DFHINITIAL system event. If the root activity is not in its initial state, the input event must be specified on the INPUTEVENT option.

**No context-switching**

When a process is activated by a LINK ACQPROCESS command, it is invoked synchronously with the requestor and:

- In the same unit of work as the requestor
- With the transaction attributes (TRANSID and USERID) of the requesting transaction.

In other words, there is no context-switch. To invoke a process synchronously with context-switching—that is, in a separate UOW from that of the requesting transaction and with the TRANSID and USERID attributes specified on its DEFINE PROCESS command—use the RUN ACQPROCESS SYNCHRONOUS command.

**Note:** A context-switch always occurs when a process is run asynchronously.

If performance is more important than failure isolation, recoverability, and security, use LINK ACQPROCESS rather than RUN ACQPROCESS SYNCHRONOUS.

**Options**

**ACQPROCESS**

specifies that the process currently acquired by the requestor is to be run.

**INPUTEVENT(data-value)**

specifies the name (1–16 characters) of the event that causes the process to be attached.

You must not specify this option if the process's root activity is in its initial state; that is, if this is the first time the process is to be run. In this case, CICS sends the root activity the DFHINITIAL system event.
You must specify this option if the root activity is not in its initial state; that is, if it has been activated before.

If you specify INPUTEVENT, for the LINK command to be successful the root activity must have defined the named event as an input event.

Conditions

111 EVENTERR
   RESP2 values:
   7
   The event named on the INPUTEVENT option has not been defined by the root activity of the process to be run as an input event; or its fire status is FIRED.

16 INVREQ
   RESP2 values:
   15
   The task that issued the LINK command has not defined or acquired a process.
   23
   The process is suspended, and therefore cannot be run synchronously.
   40
   The program that implements the process to be run is remote.
   44
   A LINK has been attempted to a Java program, but the JVM pool is disabled.
   45
   A LINK has been attempted to a Java program, but the JVM profile cannot be found.
   46
   A LINK has been attempted to a Java program, but the JVM profile is not valid.
   47
   A LINK has been attempted to a Java program, but the system properties file cannot be found.
   48
   A LINK has been attempted to a Java program, but the user class cannot be found.
   49
   The shared class cache is STOPPED and autostart is disabled, so a Java program requesting use of the shared class cache cannot be executed.

17 IOERR
   RESP2 values:
   29
   The repository file is unavailable.
   30
   An input/output error has occurred on the repository file.

70 NOTAUTH
   RESP2 values:
   101
   The user associated with the issuing task is not authorized to run the process.

27 PGMIDERR
   RESP2 values:
   1
   A program has no installed resource definition and either program autoinstall was switched off, or the program autoinstall user program indicated that the program should not be autoinstalled.
   2
   A program is disabled.
A program could not be loaded because:

• This was the first load of the program and the program load failed, usually because the load module could not be found.

• This was a subsequent load of the program, but the first load failed.

In order to reset the load status the load module must be in the DFHRPL or dynamic LIBRARY concatenation, and a SET PROGRAM NEWCOPY will be required.

The program autoinstall user program failed either because the program autoinstall user program is incorrect, incorrectly defined, or as a result of an abend in the program autoinstall user program. Program autoinstall is disabled and message DFHPG0202 or DFHPG0203 written to the CSPL.

The model returned by the program autoinstall user program was not defined to CICS, or was not enabled.

The program autoinstall user program returned invalid data.

Define for the program failed due to autoinstall returning an invalid program name or definition.

106 PROCESSBUSY
RESP2 values:

13
The request timed out. It may be that another task using this process-record has been prevented from ending.

108 PROCESSERR
RESP2 values:

6
Another process is current. That is, the program that issued the LINK command cannot link to the process it has acquired because it is itself running as an activation of a process.

9
The process-type could not be found.

14
The root activity of the process to be run is not in INITIAL or DORMANT mode.

**LINK ACTIVITY**

Execute a CICS business transaction services activity synchronously without context-switching.

**LINK ACTIVITY**

\[
\text{LINK} \rightarrow \text{ACTIVITY}(data-value) \rightarrow \text{ACQACTIVITY} \rightarrow \text{INPUTEVENT}(data-value) \rightarrow \text{LINK}
\]

**Conditions:** ACTIVITYBUSY, ACTIVITYERR, EVENTERR, INVREQ, IOERR, LOCKED, NOTAUTH, PGMIDERR

**Description**

LINK ACTIVITY executes a CICS business transaction services activity synchronously with the requestor, with no context-switching. The activity must previously have been defined to BTS.
LINK ACTIVITY causes BTS to invoke the activity and send it an input event. If the activity is in its initial state—that is, if this is the first time it is to be run, or if it has been reset by a RESET ACTIVITY command—CICS sends it the DFHINITIAL system event. If the activity is not in its initial state, the input event must be specified on the INPUTEVENT option.

The only activities a program can link to are as follows:

- If it is running as the activation of an activity, its own child activities. It can link to several of its child activities within the same unit of work.
- The activity it has acquired, by means of an ACQUIRE ACTIVITYID command, in the current unit of work. (Note, however, that if the program is running as the activation of an activity, it must use a RUN, not a LINK, command to activate the activity it has acquired.)

To check the response from the activity, the CHECK ACTIVITY command must be used. This is because the response to the request to activate the activity does not contain any information about the success or failure of the activity itself—only about the success or failure of the request to activate it. Typically, the CHECK command is issued immediately after the LINK command.

**No context-switching**

When an activity is activated by a LINK ACTIVITY command, it is invoked synchronously with the requestor and:

- In the same unit of work as the requestor
- With the transaction attributes (TRANSID and USERID) of the requesting transaction.

In other words, there is no context-switch. To invoke an activity synchronously with context-switching—that is, in a separate UOW from that of the requesting transaction and with the TRANSID and USERID attributes specified on its DEFINE ACTIVITY command—use the RUN ACTIVITY SYNCHRONOUS command.

**Note:** A context-switch always occurs when an activity is run asynchronously.

If performance is more important than failure isolation, recoverability, and security, use LINK ACTIVITY rather than RUN ACTIVITY SYNCHRONOUS.

**Options**

**ACQACTIVITY**
- specifies that the activity to be run is the one that the current unit of work has acquired by means of an ACQUIRE ACTIVITYID command.

**ACTIVITY(data-value)**
- specifies the name (1–16 characters) of the activity to be run. The name must be that of a child of the current activity.

**INPUTEVENT(data-value)**
- specifies the name (1–16 characters) of the event that causes the activity to be attached.

You **must not** specify this option if the activity is in its initial state; that is, if this is the first time it is to be run, or if it has been reset by a RESET ACTIVITY command. In this case, CICS sends the activity the DFHINITIAL system event.

You **must** specify this option if the activity is not in its initial state; that is, if it has been activated before, and has not been reset by a RESET ACTIVITY command.

If you specify INPUTEVENT, for the LINK command to be successful the activity to be attached must have defined the named event as an input event.

**Conditions**

**107 ACTIVITYBUSY**
- RESP2 values:
The request timed out. It may be that another task using this activity-record has been prevented from ending.

**109 ACTIVITYERR**

RESP2 values:

- **8** The activity named on the ACTIVITY option could not be found.

- **14** The target activity is not in the correct mode to process the specified event option. If the INPUTEVENT option was not specified, the activity must be in INITIAL mode. If the INPUTEVENT option was specified, the activity must be in DORMANT mode.

**111 EVENTERR**

RESP2 values:

- **7** The event named on the INPUTEVENT option has not been defined by the activity to be run as an input event; or its fire status is FIRED.

**16 INVREQ**

RESP2 values:

- **4** The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.

- **21** The activity is suspended, and therefore cannot be run synchronously.

- **24** The ACQACTIVITY option was used, but the issuing task has not acquired an activity.

- **40** The program that implements the activity is remote.

- **44** A LINK has been attempted to a Java program, but the JVM pool is disabled.

- **45** A LINK has been attempted to a Java program, but the JVM profile cannot be found.

- **46** A LINK has been attempted to a Java program, but the JVM profile is not valid.

- **47** A LINK has been attempted to a Java program, but the system properties file cannot be found.

- **48** A LINK has been attempted to a Java program, but the user class cannot be found.

- **49** The shared class cache is STOPPED and autostart is disabled, so a Java program requesting use of the shared class cache cannot be executed.

**17 IOERR**

RESP2 values:

- **29** The repository file is unavailable.

- **30** An input/output error has occurred on the repository file.

**100 LOCKED**

The request cannot be performed because a retained lock exists against the relevant record on the repository file.
70 NOTAUTH
RESP2 values:

101
The user associated with the issuing task is not authorized to run the activity.

27 PGMIDERR
RESP2 values:

1
A program has no installed resource definition and either program autoinstall was switched off, or the program autoinstall user program indicated that the program should not be autoinstalled.

2
A program is disabled.

3
A program could not be loaded because:
• This was the first load of the program and the program load failed, usually because the load module could not be found.
• This was a subsequent load of the program, but the first load failed.
In order to reset the load status the load module must be in the DFHRPL or dynamic LIBRARY concatenation, and a SET PROGRAM NEWCOPY will be required.

21
The program autoinstall user program failed either because the program autoinstall user program is incorrect, incorrectly defined, or as a result of an abend in the program autoinstall user program. Program autoinstall is disabled and message DFHPG0202 or DFHPG0203 written to the CSPL.

22
The model returned by the program autoinstall user program was not defined to CICS, or was not enabled.

23
The program autoinstall user program returned invalid data.

24
Define for the program failed due to autoinstall returning an invalid program name or definition.

LOAD
Load a program from the CICS DFHRPL or dynamic LIBRARY concatenation into main storage.

Load

LOAD

PROGRAM( name)

SET( ptr-ref)

LENGTH( data-area)

ENTRY( ptr-ref)

HOLD

Conditions: INVREQ, LENGERR, NOTAUTH, PGMIDERR
This command is threadsafe.

Note for dynamic transaction routing: Using LOAD with HOLD, or using a resource that has been defined with RELOAD=YES, could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see Affinity.
Description
Load makes a copy of an application program, table, or map available to the invoking task. If the program is defined with RELOAD=NO, it is fetched from the library concatenation where it resides only if there is not a copy already in main storage. If the program is defined with RELOAD=YES, a new copy is always fetched from the LIBRARY concatenation. (See for further details about maps.) Using LOAD can reduce system overhead.

Options
ENTRY(ptr-ref)
Specifies the pointer reference to be set to the address of the entry point in the program that has been loaded. CICS program load services set the entry point according to the addressing mode of the load module:
• AMODE(24): bit 0 is 0 and bit 31 is 0.
• AMODE(31): bit 0 is 1 and bit 31 is 0.
• AMODE(64): bit 0 is 0 and bit 31 is 1.
For assembler programs without an explicit ENTRY defined in the linkedit definitions, the entry point returned depends on whether there is a CICS stub, and whether the LOAD command is issued from a PLT program:
• If there is a CICS stub, the entry point address is incremented for this stub unless the LOAD command is issued from a PLT program run during the first phase of initialization or the final phase of shutdown.
• If there is not a CICS stub, the entry point address is the same as the load point address.

FLENGTH(data-area)
Specifies a fullword binary area to be set to the length of the loaded program, table, or map. Use FLENGTH if the length of the loaded program is greater than 32 KB.

HOLD
Specifies that the loaded program, table, or map is not to be released (if still available) when the task that issues the LOAD command is terminated; it is to be released only in response to a RELEASE command from this task or from another task.
If you omit HOLD, the program, table, or map is released when the task that issued the load terminates or issues a RELEASE command.
If, however, the program is defined with RELOAD=YES, neither of the above apply. RELEASE does not work, and a FREEMAIN request must be issued to remove the program.

LENGTH(data-area)
Specifies a halfword binary value to be set to the length of the loaded program, table, or map. To avoid raising the LENGERR condition, use FLENGTH if the length of the loaded program is likely to be greater than 32 KB.

PROGRAM(name)
Specifies the identifier (1 - 8 characters) of a program, table, or map to be loaded. The specified name must have been defined as a program to CICS, though if AUTOINSTALL is active, a definition is autoinstalled.

SET(ptr-ref)
Specifies the pointer reference that is to be set to the address at which a program, table, or map is loaded.

Conditions
16 INVREQ
RESP2 values:
The program manager domain is not yet initialized. This is probably because a load request was made in a first stage PLT.

Default action: terminate the task abnormally.

**22 LENGERR**
RESP2 values:

19
LENGTH is used and the length of the loaded program is greater than 32 KB.

Default action: terminate the task abnormally.

**70 NOTAUTH**
RESP2 values:

101
A resource security check has failed on PROGRAM(name).

Default action: terminate the task abnormally.

**27 PGMIDERR**
RESP2 values:

1
A program, table, or map has no installed resource definition and either program autoinstall was switched off, or the program autoinstall control program indicated that the program should not be autoinstalled.

2
A program is disabled.

3
A program could not be loaded for one of the following reasons:
- This was the first load of the program and the program load failed, usually because the load module could not be found.
- This was a subsequent load of the program, but the first load failed.

To reset the load status, the load module must be in the DFHRPL or dynamic LIBRARY concatenation, and a SET PROGRAM NEWCOPY will be required.

9
The installed program definition is for a remote program.

21
The program autoinstall control program failed either because the program autoinstall control program is incorrect, or incorrectly defined, or as a result of an abend in the program autoinstall control program. Program autoinstall is disabled and message DFHPG0202 or DFHPG0203 written to the CSPL.

22
The model returned by the program autoinstall control program was not defined in CICS, or was not enabled.

23
The program autoinstall control program returned invalid data.

24
Define for the program failed because autoinstall returned an invalid program name or definition.

42
An attempt has been made to LOAD a JVM program. This action is not valid because Java byte code programs are not managed by CICS Loader.

Default action: terminate the task abnormally.
The following example shows how to load a user-prepared table called TB1:

EXEC CICS LOAD PROGRAM('TB1') SET(PTR)

MONITOR

Code a user event-monitoring point.

MONITOR

POINT(data-value)

DATA1(data-area)

DATA2(data-area)

ENTRYNAME(data-area)

Condition: INVREQ

This command is threadsafe.

Description

MONITOR provides information about the performance of your application transactions. It replaces the monitoring aspects of ENTER TRACEID.

In addition to the monitoring data collected at predefined event monitoring points (EMPs) in CICS, a user application program can contribute data to user fields in the CICS monitoring records. You can do this by using the MONITOR command to invoke user-defined EMPs. At each of these user EMPs, you can add or change 1 - 16384 bytes of your own data in each performance monitoring record. In those 16384 bytes, you can have any combination of the following:

- 0 through 256 counters
- 0 through 256 clocks
- A single 8192-byte character string

Options

DATA1(data-area)

Specifies a 4-byte variable whose contents depend on the type of user EMP being used:

- If the user EMP contains an ADDCNT, SUBCNT, NACNT, EXCNT, or ORCNT option, the DATA1 variable is an area used as defined by the MCT user EMP definition.
- If the MCT user EMP definition contains an MLTCNT option, the DATA1 variable is an area with the address of a series of adjacent fullwords containing the values to be added to the user count fields defined in the MCT user EMP definition.
- If the MCT user EMP definition contains a MOVE option, the DATA1 variable is an area with the address of the character string to be moved.

See User event monitoring points - DFHMCT TYPE=EMP for details of user EMP options.

DATA2(data-area)

Specifies a 4-byte variable whose contents depend on the type of user EMP being used:

- If the user EMP contains an ADDCNT, SUBCNT, NACNT, EXCNT, or ORCNT option, the DATA2 variable is an area used as defined by the MCT user EMP definition.
- If the MCT user EMP definition contains an MLTCNT option, the DATA2 variable is an area with the number of user count fields to be updated. The number specified in DATA2 overrides the default

Chapter 2. CICS command summary 319
value defined in the MCT for the operation. The default value depends on the option that you have defined in the EMP definition. If you specify a null value in DATA2, monitoring uses the default value that is specified in the EMP definition. If DATA2 is not specified, the MLTCNT operation raises an INVREQ condition although the operation was successful.

- If the MCT user EMP definition contains a MOVE option, the DATA2 variable is an area with the length of the character string to be moved. The number specified in DATA2 will override the default value defined in the MCT for the operation. The default value depends on the option that you have defined in the EMP definition. If you specify a null value in DATA2, monitoring uses the default value that is specified in the EMP definition. If DATA2 is not specified, the MOVE operation raises an INVREQ although the operation was successful.

Examples of invoking application naming EMPS provides an example of how the default value is handled for EMP.

See User event monitoring points - DFHMCT TYPE=EMP for details of user EMP options.

**ENTRYNAME(data-area)**

Is the monitoring point entry name that qualifies the POINT value and is defined in the monitoring control table (MCT). ENTRYNAME defaults to USER if not specified. Specify in the data-area the name of the 8-byte field in your application program that contains the monitoring point entry name.

**POINT(data-value)**

Specifies the monitoring point identifier as defined in the MCT, and is in the range 0 - 255. Note, however, that point identifiers in the range 200 - 255 are reserved for use by IBM program products.

**Conditions**

**16 INVREQ**

RESP2 values:

1. Your POINT value is outside the range 1 through 255.

2. Your POINT value is not defined in the MCT.

3. Your DATA1 value is not valid.

4. Your DATA2 value is not valid.

5. You did not specify DATA1 for an MCT operation that required it.

6. You did not specify DATA2 for an MCT operation that required it.

Default action: terminate the task abnormally.

**Examples**

For example, you could use these user EMPS to count the number of times a certain event occurs, or to time the interval between two events.

Figure 2 on page 321 gives examples of MONITOR commands (and of the MCT entries you need for them).

**Note:**

1. Example 1 shows a user clock being started by an application identified as PROG3. This is the eleventh EMP in this application. To prevent confusion with the eleventh EMP in another application, this EMP is uniquely identified by the tag ENTRY3.11. The clock that is being started is the first clock in a string.
2. Example 2 shows the same user clock being stopped, by the same application, but from a different EMP. The EMP is uniquely identified by the tag ENTRY3.12.

3. Example 3 shows some user data being loaded into the 32-byte character string reserved for that purpose. The loading starts at offset 0, and the data is no more than 32 bytes in length.

```csh
1: EXEC CICS MONITOR
   POINT(11)
   ENTRYNAME(ENTRY3)
   needing:  DFHMCT TYPE=EMP,
             CLASS=PERFORM,
             ID=(ENTRY3.11),
             CLOCK=(1,CLOCKA),
             PERFORM=SCLOCK(1)
2: EXEC CICS MONITOR
   POINT(12)
   ENTRYNAME(ENTRY3)
   needing:  DFHMCT TYPE=EMP,
             CLASS=PERFORM,
             ID=(ENTRY3.12),
             PERFORM=PCLOCK(1)
3: EXEC CICS MONITOR
   POINT(13)
   DATA1(address of data)
   DATA2(length of data)
   ENTRYNAME(ENTRY3)
   needing:  DFHMCT TYPE=EMP,
             CLASS=PERFORM,
             ID=(ENTRY3.13),
             PERFORM=MOVE(0,32)
```

*Figure 2. Examples of coding user EMPs*

**MOVE CONTAINER (BTS)**

Move a BTS data-container (and its contents) from one activity to another.

**MOVE CONTAINER (BTS)**

```csh
MOVE CONTAINER( data-value ) AS( data-value )
```

- **FROMPROCESS**
- **FROMACTIVITY( data-value )**
- **TOPROCESS**
- **TOACTIVITY( data-value )**

**Conditions:** ACTIVITYERR, CONTAINERERR, INVREQ, IOERR, LOCKED

**Description**

MOVE CONTAINER (BTS) moves a data-container (and its contents) from one BTS activity to another. After the move, the source container is destroyed.

The source and target containers are identified by name and by the activities that own them. The activity that owns the source container can be identified:

- Explicitly, by specifying the FROMPROCESS or FROMACTIVITY option.
- Implicitly, by omitting the FROMPROCESS and FROMACTIVITY options. If these are omitted, the current activity is implied.
Similarly, the activity that owns the target container can be identified:

- Explicitly, by specifying the TOPROCESS or TOACTIVITY option.
- Implicitly, by omitting the TOPROCESS and TOACTIVITY options. If these are omitted, the current activity is implied.

You can move a container:

- From the current activity to a child of the current activity
- From a child of the current activity to the current activity
- From the current activity to the current activity (thus renaming the container)
- From one child of the current activity to another

In addition, if the current activity is the root activity, you can move a container:

- From the current process to the current (root) activity
- From the current process to a child of the current activity
- From the current process to the current process (thus renaming the container)
- From the current activity to the current process
- From a child of the current activity to the current process

You can use MOVE CONTAINER, instead of GET CONTAINER and PUT CONTAINER, as a more efficient way of transferring data between activities. For an explanation, see Container commands.

Note:

1. If the source container does not exist, an error occurs.
2. If the target container does not already exist, it is created. If the target container already exists, its previous contents are overwritten.
3. You cannot move containers from one process to another. Both the source and target containers must be within the scope of the current process.
4. Only the root activity can specify a process-container as the source or target of a MOVE CONTAINER command.

A process's containers are not the same as its root activity's containers.

See also “GET CONTAINER (BTS)” on page 218 and “PUT CONTAINER (BTS)” on page 331.

Options

AS(data-value)
- specifies the name (1 - 16 characters) of the target container. If the target container already exists, its contents are overwritten.

CONTAINER(data-value)
- specifies the name (1 - 16 characters) of the source container that is to be moved.

FROMACTIVITY(data-value)
- specifies the name (1 - 16 characters) of the activity that owns the source container. If specified, this option must name a child of the current activity (or the current activity itself).

FROMPROCESS
- specifies that the source container is owned by the current process - that is, the process that the program that issues the command is executing on behalf of.

TOACTIVITY(data-value)
- specifies the name (1 - 16 characters) of the activity that owns the target container. If specified, this option must name a child of the current activity (or the current activity itself).

TOPROCESS
- specifies that the target container is owned by the current process - that is, the process that the program that issues the command is executing on behalf of.
Conditions

109 ACTIVITYERR
RESP2 values:
8
The activity named on the FROMACTIVITY or TOACTIVITY option could not be found.

110 CONTAINERERR
RESP2 values:
10
The container named on the CONTAINER option could not be found.
26
The process container named on the CONTAINER option is read-only.

16 INVREQ
RESP2 values:
4
The command was issued outside the scope of a currently-active activity.
25
The FROMPROCESS or TOPROCESS option was used, but the command was issued outside the scope of a currently-active process.

17 IOERR
RESP2 values:
30
An input/output error has occurred on the repository file.
31
The record on the repository file is in use.

100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

MOVE CONTAINER (CHANNEL)

Move a container (and its contents) from one channel to another.

MOVE CONTAINER (CHANNEL)

MOVE CONTAINER( data-value ) AS( data-value )
CHANNEL( data-value )
TOCHANNEL( data-value )

Conditions: CHANNELERR, CONTAINERERR, INVREQ

This command is threadsafe.

Description

MOVE CONTAINER (CHANNEL) moves a container from one channel to another. After the move, the source container no longer exists.

The source and target containers are identified by name and by the channels that own them. The channel that owns the source container can be identified as follows:
• Explicitly, by specifying the CHANNEL option.
• Implicitly, by omitting the CHANNEL option. If this is omitted, the current channel is implied.
Similarly, the channel that owns the target container can be identified as follows:

- Explicitly, by specifying the TOCHANNEL option.
- Implicitly, by omitting the TOCHANNEL option. If this is omitted, the current channel is implied.

You can move a container:

- From one channel to another.
- Within the same channel—for example, from the current channel to the current channel. This has the effect of renaming the container.

You can use **MOVE CONTAINER**, instead of **GET CONTAINER** and **PUT CONTAINER**, as a more efficient way of transferring data between channels.

**Note:**

1. The source channel must be within the scope of the program that issues the **MOVE CONTAINER** command.
2. If the target channel does not exist, within the scope of the program that issues the **MOVE CONTAINER** command, it is created.
3. If the source container does not exist, an error occurs.
4. If the target container does not already exist, it is created. If the target container already exists, its previous contents are overwritten.
5. If you try to overwrite a container with itself, nothing happens. That is, if you specify the same value for the CONTAINER and AS options, and either omit both the CHANNEL and TOCHANNEL options or give them the same value, so that the same channel is specified, the source container is not changed and not deleted. No error condition is raised.

**Options**

**AS(data-value)**

Specifies the name (1–16 characters) of the target container. If the target container already exists, its contents are overwritten.

The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ¬ , ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

Container names are always in EBCDIC. The allowable set of characters for container names, listed above, includes some characters that do not have the same representation in all EBCDIC code pages. We therefore recommend that, if containers are to be shipped between regions, the characters used in naming them should be restricted to A-Z a-z 0-9 & : = , ; > . - and _.

**CHANNEL(data-value)**

Specifies the name (1–16 characters) of the channel that owns the source container. You can specify the channel name DFHTRANSACTION to use the transaction channel. If this option is not specified, the current channel is implied.

**CONTAINER(data-value)**

Specifies the name (1–16 characters) of the source container that is to be moved.

**TOCHANNEL(data-value)**

Specifies the name (1–16 characters) of the channel that owns the target container. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ¬ , ; > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters that are used to name them to A-Z a-z 0-9 : = , ; > . - and _.
You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes; it is always accessible in the transaction. For more information, see Channels and containers.

If this option is not specified, the current channel is implied.

**Conditions**

**122 CHANNELERR**

RESP2 values:

1. The name specified on the TOCHANNEL option contains an illegal character or combination of characters.

2. The channel specified on the CHANNEL option could not be found.

3. Either the current channel or the channel specified on the CHANNEL option is read-only.

**110 CONTAINERERR**

RESP2 values:

10. The container named on the CONTAINER option could not be found.

18. The name specified on the AS option contains an illegal character or combination of characters.

**16 INVREQ**

RESP2 values:

4. The CHANNEL or TOCHANNEL option (or both) was not specified, there is no current channel (because the program that issued the command was not passed one), and the command was issued outside the scope of a currently-active BTS activity.

30. You cannot move a CICS-defined read-only container.

31. You cannot move a container to (that is, overwrite) an existing, CICS-defined, read-only container.

**POINT**

Get information about an LUTYPE6.1 logical unit.

**Condition:** NOTALLOC

**Description**

POINT gets information about a named facility, such as whether it owns the given facility.

This command can be used on an MRO session.
Options

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the
token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token
representing the principal session (returned by a previously executed ASSIGN command).

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the
alternate facility to be used. If both this option and CONVID are omitted, the principal facility for the
task is used.

Conditions

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.
Default action: terminate the task abnormally.

POP HANDLE

Restore the stack.

POP HANDLE

Condition: INVREQ
This command is threadsafe.

Description

Use the POP HANDLE command to restore the effect of IGNORE CONDITION, HANDLE ABEND, HANDLE
AID, and HANDLE CONDITION commands to the state they were in before a PUSH HANDLE command
was executed at the current link level.

Restriction: This command is supported only in COBOL, PL/I, and assembler language applications (but
not AMODE(64) assembler language applications). It is not supported in all other supported high level
languages.

This command can be useful, for example, during a branch to a subroutine embedded in a main program.
Normally, when a CICS program calls a subroutine (at the same logical level), the program or routine that
receives control inherits the current HANDLE commands. These commands might not be appropriate in
the called program. The called program can use PUSH HANDLE to suspend existing HANDLE commands,
and before returning control to the caller, can then restore the original commands using the POP HANDLE
command.

Note: When a CICS program uses EXEC CICS LINK to call another CICS program, the HANDLE effects are
not inherited by the linked-to program, but CICS will search preceding logical levels for a HANDLE ABEND
exit. See Abnormal termination recovery for further details about the relationship between LINK and
HANDLE ABEND.

You can nest PUSH HANDLE ... POP HANDLE command sequences within a task. Each POP HANDLE
command restores a set of specifications.

Conditions

16 INVREQ
Occurs if no matching PUSH HANDLE command has been executed at the current link level.
Default action: terminate the task abnormally.
Request notification when a specified time has expired.

POST

- INTERVAL (0)
- INTERVAL (hhmmss)
- TIME (hhmmss)
- AFTER
- HOURS (data-value)
- MINUTES (data-value)
- SECONDS (data-value)
- AT
- HOURS (data-value)
- MINUTES (data-value)
- SECONDS (data-value)
- SET (ptr-ref)
- REQID (name)

Conditions: EXPIRED, INVREQ

Note for dynamic transaction routing: Using POST if later CANCELed by another task could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

Description

POST requests notification that a specified time has expired. In response to this command, CICS makes a timer-event control area available for testing. This 4-byte control area is initialized to binary zeros, and the pointer reference specified in the SET option is set to its address.

When the time you specify has expired, the timer-event control area is posted; that is, its first byte is set to X'40' and its third byte to X'80'. You can test posting in either of the following ways:

- By checking the timer-event control area at intervals. You must give CICS the opportunity to post the area; that is, the task must relinquish control of CICS before you test the area. Normally, this condition is satisfied as a result of other commands being issued; if a task is performing a long internal function, you can force control to be relinquished by issuing a SUSPEND command.

- By suspending task activity by a WAIT EVENT or WAIT EXTERNAL command until the timer-event control area is posted. This action is similar to issuing a DELAY command but, with a POST and WAIT EVENT or WAIT EXTERNAL command sequence, you can do some processing after issuing the POST command; a DELAY command suspends task activity at once. No other task should attempt to wait on the event set up by a POST command.

- By using WAITCICS.

The timer-event control area associated with a POST command exists if the transaction that issued the POST still exists and has not issued any of the following:

- Subsequent POST commands
- A CANCEL of the POST
• A local START command

A START command that names a transaction on a remote system does not affect the event set up by the POST command, unless the transaction is defined with LOCALQ set to YES and local queuing is performed.

• Subsequent DELAY commands

The timer-event control area is posted if the transaction that issued the POST exists and when either of the follow occurs:

• The POST time expires.
• Another transaction issues a CANCEL using the POST REQID.

The timer-event control area can be released for a variety of reasons. If this happens, the result of any other task issuing a WAIT command on the event set up by the POST command is unpredictable.

However, other tasks can cancel the event if they have access to the REQID associated with the POST command. (See the "CANCEL" on page 62 command and the description of the REQID option.)

A task can have only one POST command active at any given time. Any DELAY or POST command, or a START command naming a transaction in the local system, supersedes a POST command previously issued by the task.

The default is INTERVAL(0), but for C the default is AFTER HOURS(0) MINUTES(0) SECONDS(0).

Options

AFTER

specifies the interval of time to elapse.

There are two ways to enter the time under AFTER and AT.

1. A combination of at least two of HOURS(0–99), MINUTES(0–59), and SECONDS(0–59). HOURS(1) SECONDS(3) would mean one hour and three seconds (the minutes default to zero).
2. As one of HOURS(0–99), MINUTES(0–5999), or SECONDS(0–359999). HOURS(1) means one hour. MINUTES(62) means one hour and two minutes. SECONDS(3723) means one hour, two minutes, and three seconds.

AT

specifies the time of expiring. For the ways to enter the time, see the AFTER option.

HOURS(data-value)

specifies a fullword binary value in the range 0–99. This is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

INTERVAL(hhmmss)

specifies an interval of time that is to elapse from the time at which the POST command is issued. The mm and ss are in the range 0–59. The time specified is added to the current clock time by CICS when the command is executed to calculate the expiration time.

This option is used to specify when the posting of the timer-event control area should occur.

When using the C language, you are recommended to use the AFTER/AT HOURS, MINUTES, and SECONDS options as C does not provide a packed decimal data type. You may use INTERVAL, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format.

MINUTES(data-value)

specifies a fullword binary value in the range 0–59, when HOURS or SECONDS are also specified, or 0–5999 when MINUTES is the only option specified. This is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.
REQID(name)
specifies a name (1–8 characters), which should be unique, to identify the POST request. Using this option to specify an application-defined name is one way to enable another transaction to cancel the POST request.

If you do not specify your own REQID, CICS generates a unique request identifier for you in the EIBREQID field of the EXEC interface block. This, like your own REQID, can be used by another transaction to cancel the POST request.

To enable other tasks to cancel unexpired POST requests, you must make the request identifier dynamically available. For example, storing it in a TS queue, whose name is known to other applications that may want to cancel the POST request, is one way you can pass a request identifier to other transactions.

SECONDS(data-value)
specifies a fullword binary value in the range 0–59, when HOURS or MINUTES are also specified, or 0–359 999 when SECONDS is the only option specified. This is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

SET(ptr-ref)
specifies the pointer reference to be set to the address of the 4-byte timer-event control area generated by CICS. This area is initialized to binary zeros; on expiration of the specified time, the first byte is set to X’40’, and the third byte to X’80’.

The timer-event control area always resides below the 16MB line in shared dynamic storage (SDSA).

TIME(hhmmss)
specifies the time when the posting of the timer-event control area should occur.

When using the C language, you are recommended to use the AFTER/AT HOURS, MINUTES, and SECONDS options as C does not provide a packed decimal data type. You may use TIME, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format. See the section about expiration times in Interval control.

Conditions

31 EXPIRED
occurs if the time specified has already expired when the command is issued.

Default action: ignore the condition.

16 INVREQ
RESP2 values:

4  Hours are out of range.

5  Minutes are out of range.

6  Seconds are out of range.

also occurs (RESP2 not set) in any of the following situations:

• The POST command is not valid for processing by CICS.

Default action: terminate the task abnormally.

Examples

The following example shows you how to request a timer-event control area for a task, to be posted after 30 seconds:
The following example shows you how to ask to be notified when the specified time of day is reached. Because no request identifier is specified in the command, CICS automatically assigns one and returns it to the application program in the EIBREQID field in the EIB.

```
EXEC CICS POST
  INTERVAL(30)
  REQID('RBL3D')
  SET(PREF)
```

```
EXEC CICS POST
  TIME(PACKTIME)
  SET(PREF)
```

### PURGE MESSAGE

Discontinue building a BMS logical message.

**PURGE MESSAGE**

> PURGE MESSAGE

**Conditions:** Full BMS: INVREQ, TSIOERR

**Description**

PURGE MESSAGE discontinues the building of a BMS logical message. It deletes the current logical message, including any pages of device-dependent data stream already written to CICS temporary storage. The application program may then build a new logical message.

The portions of the logical message already built in main storage or in temporary storage are deleted.


PURGE MESSAGE is only available on full-function BMS. For further information about BMS, see [Basic mapping support](https://www.ibm.com/support/knowledgecenter/en/POWER9/bmsmaps).

**Conditions**

**16 INVREQ**

RESP2 values:

- **200**
  
  The command was called in a distributed program link server program.
  
  Default action: terminate the task abnormally.

**35 TSIOERR**

occurs if there is an irrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

### PUSH HANDLE

Suspend the stack.

**PUSH HANDLE**

> PUSH HANDLE

This command is threadsafe.
Description
You can use the **PUSH HANDLE** command to suspend the current effect of the **IGNORE CONDITION**, **HANDLE ABEND**, **HANDLE AID**, and **HANDLE CONDITION** commands.

Restriction: This command is supported only in COBOL, PL/I, and assembler language applications (but not AMODE(64) assembler language applications). It is not supported in all other supported high level languages.

This command can be useful, for example, during a branch to a subroutine embedded in a main program.

Normally, when a CICS program calls a subroutine at the same logical level, the program or routine that receives control inherits the current **HANDLE** commands. These commands may not be appropriate in the called program. The called program can use **PUSH HANDLE** to suspend existing **HANDLE** commands.

Note: When a CICS program uses EXEC CICS LINK to call another CICS program, the **HANDLE CONDITION** options are not inherited by the linked-to program, but CICS will search preceding logical levels for a **HANDLE ABEND** exit. See Abnormal termination recovery for further details about the relationship between LINK and **HANDLE ABEND**.

You can nest **PUSH HANDLE ... POP HANDLE** command sequences within a task. Each **PUSH HANDLE** command stacks a set of specifications.

**PUT CONTAINER (BTS)**

Save data in a named BTS data-container.

### PUT CONTAINER (BTS)

```plaintext
PUT CONTAINER( data-value ) FROM( data-area )

ACTIVITY( data-value )
ACQACTIVITY
PROCESS
ACQPROCESS
FLENGTH( data-value )
```

**Conditions:** ACTIVITYERR, CONTAINERERR, INVREQ, IOERR, LOCKED, PROCESSBUSY

**Description**

**PUT CONTAINER (BTS)** saves data and places it in a container associated with a specified BTS activity or process.

The container is identified by name. The process or activity that owns the container can be identified:

- Explicitly, by specifying one of the PROCESS- or ACTIVITY-related options.
- Implicitly, by omitting the PROCESS- and ACTIVITY-related options. If these are omitted, the current activity is implied.

**Note:**

1. There is no limit to the number of containers that can be associated with an activity.
2. Different activities can own identically-named containers—these are different containers.
3. If the named container does not already exist, it is created. If the named container already exists, its previous contents are overwritten.
4. Containers owned by a process (process-containers) can be read by every activity in the process. However, they can be updated only by the root activity, or by a program that has acquired the process.

A process's containers are not the same as its root activity's containers.

See also “GET CONTAINER (BTS)” on page 218 and “MOVE CONTAINER (BTS)” on page 321.

Options

ACQACTIVITY
specifies either of the following:
• If the program that issues the command has acquired a process, that the container is owned by the root activity of that process.
• Otherwise, that the container is owned by the activity that the program has acquired by means of an ACQUIRE ACTIVITYID command.

ACQPRESS
specifies that the container is owned by the process that the program that issues the command has acquired in the current unit of work.

ACTIVITY(data-value)
specifies the name (1–16 characters) of the activity that owns the container. This must be a child of the current activity.

CONTAINER(data-value)
specifies the name (1–16 characters) of the container into which data is to be placed.

The acceptable characters are A-Z a-z 0-9 $ @ / % & ? ! : | " = ¬ , ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

FLENGTH(data-value)
specifies, as a fullword binary value, the length of the data area from which data is to be read.

FROM(data-area)
specifies an area of working storage from which the data to be saved is to be read.

PROCESS
specifies that the container into which data is to be placed is owned by the current process—that is, the process that the program that issues the command is executing on behalf of.

Conditions

109 ACTIVITYERR
RESP2 values:
8
The activity named on the ACTIVITY option could not be found.

110 CONTAINERERR
RESP2 values:
10
The container named on the CONTAINER option could not be found.

18
The name specified on the CONTAINER option contains an illegal character or combination of characters.

26
The process container named on the CONTAINER option is read-only.

16 INVREQ
RESP2 values:
1 The DATATYPE option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) DATATYPE is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel. It is not valid on PUT CONTAINER (BTS) commands.

2 The FROMCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) FROMCCSID is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel. It is not valid on PUT CONTAINER (BTS) commands.

4 The command was issued outside the scope of a currently-active activity.

15 The ACQPROCESS option was used, but the unit of work that issued the request has not acquired a process.

24 The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

25 The PROCESS option was used, but the command was issued outside the scope of a currently-active process.

17 IOERR
RESP2 values:

30 An input/output error has occurred on the repository file.

31 The record on the repository file is in use.

100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

106 PROCESSBUSY
RESP2 values:

13 The request could not be satisfied because the process record is locked by another task.
PUT CONTAINER (CHANNEL)

Place data in a named channel container.

**PUT CONTAINER (CHANNEL)**

```plaintext
PUT CONTAINER(data-value) FROM(data-area)
CHANNEL(data-value)
BIT
FLENGTH(data-value)
FROMCCSID(data-value)
FROMCODEPAGE(data-value)
APPEND
DATATYPE(cvda)
CHAR
```

**Conditions:** CCSIDERR, CHANNELERR, CODEPAGEERR, CONTAINERERR, INVREQ, LENGERR

This command is threadsafe.

**Description**

PUT CONTAINER (CHANNEL) places data in a container associated with a specified channel.

The container is identified by name.

The channel that owns the container can be identified explicitly, by specifying the `CHANNEL` option, or implicitly, by omitting the `CHANNEL` option. When this option is omitted, the current channel is implied. If there is no current channel, the command is assumed to be an EXEC CICS PUT CONTAINER (BTS) command. For more information, see “PUT CONTAINER (BTS)” on page 331.

If the named container does not exist, it is created. If the named container exists, its previous contents are overwritten, unless you specify the `APPEND` option. If the named channel does not exist, it is created.

There is no limit to the number of containers that can be associated with a channel. The size of individual containers is limited only by the amount of storage available.

**CAUTION:** If you create multiple large containers, you might limit the amount of storage available to other applications.

**Options**

**APPEND**

Specifies that the data passed to the container is appended to the existing data in the container. If this option is not stated, the existing data in the container is overwritten by the data passed to the container.

**CHANNEL(data-value)**

Specifies the name (1 - 16 characters) of the channel that owns the container. The acceptable characters are A-Z a-z 0-9 $ @ # / % ? ! : | “ = ; > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters that are used to name them to A-Z a-z 0-9 : = ; > . - and _.

334 CICS TS for z/OS: API Reference
If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes; it is always accessible in the transaction. For more information, see Channels and containers.

**CONTAINER**(data-value)

Specifies the name (1 - 16 characters) of the container into which data is placed.

The acceptable characters are A-Z a-z 0-9 $ @ # / % ? ! | " = ; > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

Do not use container names that begin with DFH, unless requested to do so by CICS.

Container names are always in EBCDIC. The set of allowed characters for container names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if containers are to be shipped between regions, it is advisable to restrict the characters used to name them to A-Z 0-9 : = , ; > . - and _.

**DATATYPE**(cvda)

Specifies the type of data to put into the container. This option applies only to new containers. If the container exists, its data type was established when it was created and cannot be changed. CVDA values are:

**BIT**

Bit data. The data in the container cannot be converted. This is the default value, unless FROMCCSID is specified.

**CHAR**

Character data. The data to store in the container is converted (if required) according to the setting in the FROMCCSID or FROMCODEPAGE value. If the FROMCCSID and FROMCODEPAGE options are not specified, it is assumed that the data is encoded in the CCSID of the region, as specified in the LOCALCCSID system initialization parameter.

All the data in a container is converted as if it were a single character string. For SBCS code pages, a structure consisting of several character fields is equivalent to a single-byte character string. However, for DBCS code pages this is not the case. If you use DBCS code pages, you must put each character string into a separate container to ensure that data conversion works correctly.

**FLENGTH**(data-value)

Specifies, as a fullword binary value, the length of the data area from which data is read.

**FROM**(data-area)

Specifies the data area from which the data is written to the container.

**FROMCCSID**(data-value)

Specifies the current Coded Character Set Identifier (CCSID) of the character data to put into the container, as a fullword binary number. If you prefer to specify an IANA name for the code page, or if you prefer to specify the CCSID as alphanumeric characters, use the FROMCODEPAGE option instead. Use this option if the data to place in the container is not encoded in the CCSID of the region, as specified in the LOCALCCSID system initialization parameter.

If the FROMCCSID option is specified, DATATYPE(DFHVALUE(CHAR)) is implied.

**FROMCODEPAGE**(data-value)

Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the current code page of the character data to put into the container, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

If the FROMCODEPAGE option is specified, DATATYPE(DFHVALUE(CHAR)) is implied.
Conditions

123 CCSIDERR
RESP2 values:

1
The CCSID specified on the FROMCCSID option is outside the range of valid CCSID values.

2
The CCSID specified on the FROMCCSID option and the CCSID of the container are an unsupported combination. The CCSID of the container is the value that was specified, or defaulted, on the first PUT CONTAINER command for this container. The first time each invalid combination is used, CICS issues error message DFHAP0802, which contains the pair of CCSIDs.

4
One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data.

5
There was an internal error in the code page conversion of a container. This error can occur only when the target of the PUT is an existing, CICS-created container.

122 CHANNELERR
RESP2 values:

1
The name specified on the CHANNEL option contains an illegal character or combination of characters.

3
Either the current channel or the channel specified on the CHANNEL option is read-only.

125 CODEPAGEERR
RESP2 values:

1
The code page specified on the FROMCODEPAGE option is not supported.

2
The code page specified on the FROMCODEPAGE option and the CCSID of the container are an unsupported combination. The CCSID of the container is the value that was specified using either FROMCODEPAGE or FROMCCSID, or defaulted, on the first PUT CONTAINER command for this container. The first time each invalid combination is used, CICS issues error message DFHAP0802, which contains the pair of CCSIDs.

4
One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data. This error can occur only when the target of the PUT is an existing container.

5
There was an internal error in the code page conversion of a container. This error can occur only when the target of the PUT is an existing, CICS-created container.

110 CONTAINERERR
RESP2 values:

18
The name specified on the CONTAINER option contains an illegal character or combination of characters.

Note: This occurrence might happen if the CHANNEL attribute is not set, and that there is no default CHANNEL. The command might be interpreted as PUT CONTAINER (BTS), and be validated according to the BTS naming rules.

16 INVREQ
RESP2 values:
The DATATYPE option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) DATATYPE is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel.

2

The FROMCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) FROMCCSID is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel.

4

The CHANNEL option was not specified, there is no current channel (because the program that issued the command was not passed one), and the command was issued outside the scope of a currently-active BTS activity.

30

You tried to write to a CICS-defined read only container.

32

A CVDA value other than CHAR or BIT was specified for DATATYPE.

33

An attempt was made to change the data-type of an existing container.

34

A data-type of BIT is invalid with a CCSID.

22 LENGERR

RESP2 values:

1

A negative number was specified on the FLENGTH option.

PUT64 CONTAINER

Place data from 64-bit storage in a named channel container. This command is for use only in non-Language Environment (LE) AMODE(64) assembler language application programs. CICS business transaction services (BTS) containers are not supported.

See Assembler language programming restrictions and requirements.

PUT64 CONTAINER

PUT64 CONTAINER

Conditions: CCSIDERR, CHANNELERR, CODEPAGEERR, CONTAINERERR, INVREQ, LENGERR

This command is threadsafe.
**Description**

PUT64 CONTAINER places data from 64-bit storage in a container that is associated with a specified channel.

The container is identified by name. The channel that owns the container can be identified explicitly, by specifying the CHANNEL option, or implicitly, by omitting the CHANNEL option. When this option is omitted, the current channel is implied.

If the named container does not exist, it is created. If the named container exists, its previous contents are overwritten, unless you specify the APPEND option. If the named channel does not exist, it is created.

There is no limit to the number of containers that can be associated with a channel. The size of individual containers is limited only by the amount of storage available.

**Note:** Be aware that if you create multiple large containers you might limit the amount of storage available to other applications.

**Options**

**APPEND**

Specifies that the data passed to the container is appended to the existing data in the container. If this option is not stated, the existing data in the container is overwritten by the data that is passed to the container.

**CHANNEL(data-value)**

Specifies the name (1 - 16 characters) of the channel that owns the container. The acceptable characters are A-Z a-z 0-9 $ @ # / % ? ! : | " = , ; > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters that are used to name them to A-Z a-z 0-9 : = , ; > . - and _.

If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes; it is always accessible in the transaction. For more information, see Channels and containers.

**CONTAINER(data-value)**

Specifies the name (1–16 characters) of the container into which data is placed.

The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is fewer than 16 characters, it is padded with trailing blanks up to 16 characters.

Do not use container names that begin with DFH, unless requested to do so by CICS.

Container names are always in EBCDIC. The set of allowed characters for container names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if containers are to be shipped between regions, it is advisable to restrict the characters that are used to name them to A-Z 0-9 & : = , ; < > . - and _.

**DATATYPE(cvda)**

Specifies the type of data to put into the container. This option applies only to new containers. If the container exists, its data type was established when it was created and cannot be changed. CVDA values are as follows:

**BIT**

Bit data. The data in the container cannot be converted. This is the default value, unless FROMCCSID is specified.
CHAR
Character data. The data to store in the container is converted (if required) according to the setting in the FROMCCSID or FROMCODEPAGE value. If the FROMCCSID and FROMCODEPAGE options are not specified, it is assumed that the data is encoded in the CCSID of the region, as specified in the LOCALCCSID system initialization parameter.

All the data in a container is converted as if it were a single character string. For SBCS code pages, a structure that consists of several character fields is equivalent to a single-byte character string. However, for DBCS code pages this is not the case. If you use DBCS code pages, you must put each character string into a separate container to ensure that data conversion works correctly.

FLENGTH(data-value)
Specifies, as a fullword binary value, the length of the data area from which data is read.

FROM(data-area64)
Specifies a 64-bit data area reference to an area from which the data is written to the container. data-area64 refers to an area that is referenced by a 64-bit pointer and that can be in 64-bit (above-the-bar) storage.

FROMCCSID(data-value)
Specifies the current Coded Character Set Identifier (CCSID) of the character data to put into the container, as a fullword binary number. If you prefer to specify an IANA name for the code page, or if you prefer to specify the CCSID as alphanumeric characters, use the FROMCODEPAGE option instead. Use this option if the data to place in the container is not encoded in the CCSID of the region, as specified in the LOCALCCSID system initialization parameter.

If the FROMCCSID option is specified, DATATYPE(DFHVALUE(CHAR)) is implied.

FROMCODEPAGE(data-value)
Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the current code page of the character data to put into the container, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

If the FROMCCSID option is specified, DATATYPE(DFHVALUE(CHAR)) is implied.

Conditions
123 CCSIDERR
RESP2 values:
1
The CCSID specified on the FROMCCSID option is outside the range of valid CCSID values.

2
The CCSID specified on the FROMCCSID option and the CCSID of the container are an unsupported combination. The CCSID of the container is the value that was specified, or defaulted, on the first PUT CONTAINER command for this container. The first time each invalid combination is used, CICS issues error message DFHAP0802, which contains the pair of CCSIDs.

4
One or more characters could not be converted. Each unconverted character is replaced by a blank in the converted data.

5
There was an internal error in the code page conversion of a container. This error can occur only when the target of the PUT is an existing, CICS-created container.

122 CHANNELERR
RESP2 values:
The name specified on the CHANNEL option contains an invalid character or combination of characters.

Either the current channel or the channel specified on the CHANNEL option is read-only.

**125 CODEPAGEERR**

RESP2 values:

1. The code page specified on the FROMCODEPAGE option is not supported.

2. The code page specified on the FROMCODEPAGE option and the CCSID of the container are an unsupported combination. The CCSID of the container is the value that was specified using either FROMCODEPAGE or FROMCCSID, or defaulted, on the first PUT CONTAINER command for this container. The first time each invalid combination is used, CICS issues error message DFHAP0802, which contains the pair of CCSIDs.

4. One or more characters could not be converted. Each unconverted character is replaced by a blank in the converted data. This error can occur only when the target of the PUT is an existing container.

5. There was an internal error in the code page conversion of a container. This error can occur only when the target of the PUT is an existing, CICS-created container.

**110 CONTAINERERR**

RESP2 values:

18. The name specified on the CONTAINER option contains an invalid character or combination of characters.

**16 INVREQ**

RESP2 values:

1. The DATATYPE option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) DATATYPE is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel.

2. The FROMCCSID option was specified without the CHANNEL option, and there is no current channel (because the program that issued the command was not passed one.) FROMCCSID is valid only on PUT CONTAINER commands that specify (explicitly or implicitly) a channel.

4. The CHANNEL option was not specified and there is no current channel (because the program that issued the command was not passed one).

30. You tried to write to a CICS-defined read only container.

32. A CVDA value other than CHAR or BIT was specified for DATATYPE.

33. An attempt was made to change the data-type of an existing container.

34. A data-type of BIT is invalid with a CCSID.

**22 LENGERR**

RESP2 values:
A negative number was specified on the FLENGTH option.

QUERY CHANNEL

Count the number of containers that are in a channel.

QUERY CHANNEL

 QUERY CHANNEL( data-value ) — CONTAINERCNT( data-area )

Conditions: CHANNELERR

This command is threadsafe.

Description

QUERY CHANNEL counts the number of containers that are in a specified channel.

You must specify the CHANNEL option and identify the channel explicitly. You can use the QUERY CHANNEL command with any channel, including the transaction channel (DFHTRANSACTION), and channels that CICS created. To find the name of a program's current channel, that is, the channel with which the program was invoked, use the EXEC CICS ASSIGN CHANNEL command.

Options

CHANNEL(data-value)

specifies the 1–16 character name of the channel.

CONTAINERCNT(data-area)

returns, as a fullword binary value, a count of the number of containers that are in the specified channel.

Conditions

122 CHANNELERR

RESP2 values:

2

The channel specified on the CHANNEL option could not be found.

QUERY COUNTER and QUERY DCOUNTER

Query a named counter. Use COUNTER for fullword signed counters and DCOUNTER for doubleword unsigned counters.

QUERY COUNTER

 QUERY — COUNTER( name )

 Conditions: BUSY, INVREQ, LENGERR

This command is threadsafe.
QUERY DCOUNTER

QUERY DCOUNTER(name)

POOL(name)

VALUE(data-area)

MINIMUM(data-area)

MAXIMUM(data-area)

NOSUSPEND

Conditions: BUSY, INVREQ

This command is threadsafe.

Description

These counter commands return the current, maximum, and minimum values for the named counter.

For information about specifying fullword and doubleword variables on these named counter commands, see “CICS command argument values” on page 3.

Options

COUNTER(name)

Specifies the 16-character name of the fullword counter being queried. Valid characters for names are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

DCOUNTER(name)

Specifies the 16-character name of the doubleword counter being queried. Valid characters for names are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

MAXIMUM(data-area)

Specifies the data area in which CICS is to return the maximum number for the named counter. CICS returns a fullword signed binary value for the COUNTER command and a doubleword unsigned binary value for the DCOUNTER command.

MINIMUM(data-area)

Specifies the data area in which CICS is to return the minimum number for the named counter. CICS returns a fullword signed binary value for the COUNTER command and a doubleword unsigned binary value for the DCOUNTER command.

NOSUSPEND

Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

POOL(poolname)

Specifies the name of the pool in which the named counter resides.

Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.

This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNCO macro, see Named counter servers.
VALUE(data-area)

Specifies the data area in which CICS is to return the current value for the named counter. CICS returns a fullword signed binary value for the COUNTER command and a doubleword unsigned binary value for the DCOUNTER command.

Note that, if the named counter is in the counter-at-limit condition, CICS does not return an exception condition. In this case, CICS returns a normal response with a value that is 1 greater than the maximum value specified or assumed for the counter, using unsigned addition. If the maximum value is the largest positive number that can be held in a signed fullword, the value returned by QUERY COUNTER for a counter-at-limit condition is the largest negative number.

Conditions

128 BUSY

RESP2 values:

500

The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.

Default action: terminate the task abnormally.

16 INVREQ

RESP2 values:

201

Named counter not found.

301

The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

303

An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

304

The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.

305

The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnnnn) in the application job log.

306

An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308

The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309

During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310

An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311

A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.
The POOL parameter contains invalid characters or embedded spaces.

The COUNTER parameter contains invalid characters or embedded spaces.

Default action: terminate the task abnormally.

22 LENGERR
LENGERR occurs for COUNTER commands only and does not apply to DCOUNTER requests. It occurs when a counter that was defined by a DCOUNTER command or by the CALL interface has a value which is too large to be correctly represented as a fullword signed binary value (that is, the counter uses more than 31 bits).

In each of the three cases of overflow, the named counter server completes the operation, and returns a warning response to CICS, which CICS returns to your application program as the RESP2 value. The data area contains the low-order 32 bits returned from the named counter server, which could be a negative number.

RESP2 values:

001
The current value that the server has attempted to return in one of the data areas has overflowed into the high-order (sign) bit (that is, the value returned is negative).

Note: LENGERR with RESP2=001 cannot occur for a named counter that is in the counter-at-limit condition. If the counter-at-limit condition has been reached, the value (which could be negative) is returned with a normal response.

002
A value is too large for a fullword data area by only 1 bit. In this case, the overflow value is exactly 1.

003
A value is too large for a fullword data area by a value greater than 1.

Default action: terminate the task abnormally.

**QUERY SECURITY**
Query the security authorization of a user.

**QUERY SECURITY**

```
QUERY SECURITY
  RESTYPE( data-value )
  RESCLASS( data-value )
  RESIDLENGTH( data-value )
  RESID( data-value )
  LOGMESSAGE( cvda )
  USERID( data-value )
  READ( cvda )
  UPDATE( cvda )
  CONTROL( cvda )
  ALTER( cvda )
```

**Conditions:** INVREQ, LENGERR, NOTAUTH, NOTFND, QIDERR, USERIDERR

This command is threadsafe.
Description

The **QUERY SECURITY** command allows the application to determine whether a user has access to resources defined in the external security manager (ESM). These resources can be in CICS resource classes or in user-defined resource classes.

If USERID is not specified, the user to be queried is the user that invokes the transaction issuing the **QUERY SECURITY** command.

Alternatively, the application can query the security authorization of a different user that is specified in the USERID option.

For more information on the use of the **QUERY SECURITY** command, see Security checking using the Query Security command.

Options

**ALTER(cvda)**
Query whether the user has ALTER authority for the named resource. The cvda values returned by CICS are ALTERABLE and NOTALTERABLE.

**CONTROL(cvda)**
Query whether the user has CONTROL authority for the named resource. The cvda values returned by CICS are CTRLABLE and NOTCTRLABLE.

**LOGMESSAGE(cvda)**
Inhibit security violation messages. The values passed to CICS are LOG (the default value), or, to inhibit messages, NOLOG.

**READ(cvda)**
Query whether the user has READ authority command for the named resource. The cvda values returned by CICS are READABLE and NOTREADABLE. READ access authority usually permits nondestructive use of a resource as, for example, in the case of READ and INQUIRE commands.

**RESCLASS(data-value)**
Specifies an 8-character field identifying the name of a valid resource class, which could be non-CICS, in the ESM. The class name identified by RESCLASS is treated literally with no translation.

If the ESM is RACF, the class can be CICS-supplied or user-defined. RESCLASS enables you to define more narrowly the authorization to be queried; for example, you can query at the record or field level.

The responses returned by the command reflect the definition of the RESID resource as defined in the specified RESCLASS.

**RESID(data-value)**
Specifies the name of the CICS or user-defined resource that you want to query the users access to. The value is a character string (1-12 characters for a CICS resource, and 1-246 characters for a user-defined resource, unless you are using the COBOL3 translator option in which case the maximum length is 160 characters).

**Note:** RESID refers to a CICS-defined resource only when RESTYPE('SPCOMMAND') is specified; otherwise, it refers to a user-defined resource. For a list of the CICS RESID values that you can use when RESTYPE('SPCOMMAND') is specified, see RESID values.

Note that the actual resource checked depends on whether RESCLASS or RESTYPE is specified in the command and whether prefixing is active (SECPRFX=YES or SECPRFX=prefix specified as a system initialization parameter).

If RESCLASS is specified, the resource checked is always the actual RESID data-value, whether or not prefixing is on or off. If RESTYPE is specified and prefixing is not active (SECPRFX=NO), the resource checked is the specified RESID value. Otherwise the resource checked is the RESID value prefixed with either the CICS region userid (if SECPRFX=YES), or another prefix (if SECPRFX=prefix).

**RESIDLENGTH(data-value)**
Specifies the length, as a fullword binary, of the resource identifier in RESID. You only use this parameter when specifying the RESCLASS option.
RESTYPE(data-value)
Specifies the type of resource (1–12 characters) you want to query the user's access to.

The responses returned by the command reflect the results that would be obtained if an actual attempt was made to access the specified CICS resource. The value you specify for RESTYPE must be one of the following resource types:

<table>
<thead>
<tr>
<th>RESTYPE value</th>
<th>Xname parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATOMSERVICE</td>
<td>XRES</td>
</tr>
<tr>
<td>BUNDLE</td>
<td>XRES</td>
</tr>
<tr>
<td>DB2ENTRY</td>
<td>XDB2</td>
</tr>
<tr>
<td>DOCTEMPLATE</td>
<td>XRES</td>
</tr>
<tr>
<td>EPADAPTER</td>
<td>XRES</td>
</tr>
<tr>
<td>EPADAPTERSET</td>
<td>XRES</td>
</tr>
<tr>
<td>EVENTBINDING</td>
<td>XRES</td>
</tr>
<tr>
<td>FILE</td>
<td>XFCT</td>
</tr>
<tr>
<td>JOURNALNAME</td>
<td>XJCT</td>
</tr>
<tr>
<td>JOURNALNUM 1</td>
<td>XJCT</td>
</tr>
<tr>
<td>JVMSERVER</td>
<td>XRES</td>
</tr>
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<td>PROGRAM</td>
<td>XPPT</td>
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<tr>
<td>PSB</td>
<td>XPSB</td>
</tr>
<tr>
<td>SPCOMMAND 2</td>
<td>XCMD</td>
</tr>
<tr>
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<td>XTST</td>
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<td>XTST</td>
</tr>
<tr>
<td>XMLTRANSFORM</td>
<td>XRES</td>
</tr>
</tbody>
</table>

1. Supported for compatibility with earlier releases.
2. SPCOMMAND is a resource type that you can use to specify a RESID for a command.

The XHFS system initialization parameter controls resource security for zFS files and does not have a corresponding RESTYPE value on the QUERY SECURITY command. Access controls for zFS files follow the system of permissions used by z/OS UNIX System Services, so they operate in a different way.

With dynamic transaction routing, you do not have to install transaction definitions in terminal owning regions. A QUERY SECURITY command with a RESTYPE of TRANSATTACH returns the NOTFND condition if the transaction is not installed. Application developers must be aware that the transaction might be routed dynamically.

UPDATE(cvda)
Query whether the user has UPDATE authority for the named resource. The CVDA values returned by CICS are UPDATABLE and NOTUPDATABLE. UPDATE access authority usually permits destructive use of a resource as, for example, in the case of WRITE, DELETE, or UPDATE commands.
USERID(data-value)
Specifies the 8-character user ID of the user whose access to the specified resources is queried.

The user who invokes the transaction issuing the QUERY SECURITY command must have necessary authority to query whether another user as specified in USERID has access to the specified resource. CICS performs a surrogate user check to verify whether the user invoking the transaction is authorized to the user specified in USERID. If the surrogate user check fails, CICS returns a NOTAUTH condition.

Conditions

16 INVREQ
RESP2 values:
  7 The cvda value is not valid for the LOGMESSAGE.
  9 The RESID is invalid or filled with blanks.
10 The external security manager (ESM) is inactive or not present.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:
  6 The RESIDLENGTH value is not valid, that is, not in the range 1 through 246.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:
  102 The surrogate user security check on the specified USERID fails.

The security access capabilities of the transaction that issued the command do not allow the command to be performed with the value specified in the USERID option.

The security access capabilities of the transaction have been established by the external security manager according to the user security, and whether link security or the execution diagnostic facility (EDF) has been in use.

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:
  1 The RESID is not valid.
  2 The RESTYPE is not valid.
  3 The RESID value for RESTYPE (SPCOMMAND) is not valid.
  5 The RESCLASS is not defined to the external security manager (ESM).
  8 The resource is not protected. This is only returned when QUERY SECURITY is used with the RESCLASS option (and never occurs with RESTYPE).

Possible causes include:
  • RESCLASS not active.
• No profile found.
• ESM not active.

Default action: terminate the task abnormally.

**44 QIDERR**
RESP2 values:

1
An indirect queue name associated with the given RESID is not found.

Default action: terminate the task abnormally.

**69 USERIDERR**
RESP2 values:

11
The specified USERID is not known to the external security manager.

12
The specified USERID is revoked.

---

**READ**

Read a record from a file.

```
READ
  FILE(filename)
  UNCOMMITTED
  CONSISTENT
  REPEATABLE
  UPDATE
  TOKEN(data-area)

  INTO(data-area)
  RIDFLD(data-area)

  SET(ptr-ref)

  KEYLENGTH(data-value)

  GENERIC

  SYSID(systemname)
  LENGTH(data-area)

  DEBKEY
  DEBREC
  RBA
  RRN
  XRBA

  EQUAL
  GTEQ

  NOSUSPEND
```

**Conditions:** DISABLED, DUPKEY, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, LOADING, LOCKED, NOTAUTH, NOTFND, NOTOPEN, RECORDBUSY, SYSIDERR
This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

READ reads a record from a file on a local or a remote system.

For both UPDATE and non-UPDATE commands, you must identify the record to be retrieved by the record identification field specified in the RIDFLD option. Immediately upon completion of a READ UPDATE command, the RIDFLD data area is available for reuse by the application program.

**Data table considerations**

When the READ command reads a CICS-maintained data table, a READ request with UPDATE or RBA is always satisfied by a call to VSAM. A full key read that is neither a generic read nor a READ UPDATE, is satisfied by a reference to the data table if possible. If the record is not found in the table, the source data set is accessed, unless the table is known to be complete, that is, all records in the source are also present in the table (which is the case if loading is finished and none has been rejected by a user exit).

If you carry out a generic read (using the GENERIC option) on a CICS-maintained data table, and CICS returns a NOTFND condition because the record is not found in the table, CICS clears the INTO() and RIDFLD() areas to ensure that an incorrect record is not returned. This behavior optimizes performance, but it differs from the behavior for a generic read of a VSAM file, when the INTO() and RIDFLD() areas are left unchanged in the event of a NOTFND condition. When you convert a VSAM file to a CICS-maintained data table, ensure that any applications that carry out generic reads of the data take appropriate action if a NOTFND condition is returned and the INTO() and RIDFLD() areas are cleared.

When the READ command reads a user-maintained data table, only the data table is accessed once loading is complete; the VSAM file is not changed in any way.

When the READ command reads a coupling-facility data table, only the data table is accessed, even if the table is initially loaded from a VSAM source data set.

If a file that refers to a user-maintained or coupling facility data table is defined with RLSACCESS(YES), the RLS-specific API options CONSISTENT, NOSUSPEND, and REPEATABLE are not supported.

**Reading files accessed in RLS mode**

When a file is accessed in RLS mode, non-update read requests can specify one of the read integrity options: UNCOMMITTED, CONSISTENT, or REPEATABLE.

If none of these keywords is specified, CICS uses the value specified on the READINTEG parameter of the FILE resource definition, for which the default is UNCOMMITTED.

If you want to use the level of read integrity specified in the READINTEG keyword of the FILE definition, and then you need to change from using a local file to a remote file, or if you change the location of a remote file, ensure that:

- The remote file-owning region supports the read integrity options.
- The FILE definition in the remote system specifies:
  - RLS mode
  - The correct read integrity values for your application.
READ requests that specify the UPDATE keyword, or a CONSISTENT or REPEATABLE read integrity option (either explicitly or implicitly in the FILE definition), return the LOCKED condition if they reference a record that has a retained lock. The key of a locked record is not returned to the application program. Thus, if an application program specifies GTEQ or GENERIC on the READ request it cannot tell which record key is locked.

If a request specifying read integrity is function-shipped to a member of the CICS family of products that does not support read integrity, the request fails:

- If an ISC link is used, the request receives an ATNI abend.
- If an MRO link is used, the request receives an AXF8 abend.

The AXF8 abend code indicates that your program has attempted to function-ship a request that specifies file control options to a remote CICS region that does not support these options.

**Retained and active locks**

RECORDBUSY refers to active locks and LOCKED refers to retained locks.

These locks affect READ requests which acquire locks; that is, update requests and requests with read integrity. These are the kinds of READ requests which are referred to in the following bullets. Other READ requests are unaffected by the presence of retained or active locks.

- READ requests for records that have *retained* locks are always rejected with a LOCKED response.
- READ requests for records that have *active* locks wait for the lock to be released, except when the NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

**Options**

**CONSISTENT (RLS only)**

The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the duration of the request.

If the record is being modified by another task, which therefore holds an exclusive lock, the READ request waits until the update is complete (unless NOSUSPEND is also specified) as follows:

- For a READ request against a non-recoverable file, the READ completes as soon as any VSAM request performing the update completes.
- For a READ request against a recoverable file, the READ request completes when the updating task completes its next sync point or rollback.

**DEBKEY**

(blocked BDAM) specifies that deblocking is to occur by key. If neither DEBREC nor DEBKEY is specified, deblocking does not occur.

**DEBREC**

(blocked BDAM) specifies that deblocking is to occur by relative record (relative to zero). If neither DEBREC nor DEBKEY is specified, deblocking does not occur.

**EQUAL**

specifies that the search is satisfied only by a record having the same key (complete or generic) as that specified in the RIDFLD option.

**FILE(filename)**

specifies the name of the file to be accessed.

If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

**GENERIC**

(VSAM KSDS, paths and data tables) specifies that the search key is a generic key whose length is specified in the KEYLENGTH option. The search for a record is satisfied when a record is found that has the same starting characters (generic key) as those specified.
GTEQ
(VSAM KSDS, paths and data tables) specifies that, if the search for a record that has the same key (complete or generic) as that specified in the RIDFLD option is unsuccessful, the first record that has a greater key is retrieved.

INTO(data-area)
specifies the data area into which the record retrieved from the data set is to be written.

When INTO is specified, LENGTH must either be specified explicitly or must be capable of being defaulted from the INTO option using the length attribute reference in assembler language, or STG and CSTG in PL/I. LENGTH must be specified explicitly in C.

KEYLENGTH(data-value)
specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case the KEYLENGTH value is not valid. This option must be specified if GENERIC is specified, and it can be specified whenever a key is specified. However, if the length specified is different from the length defined for the data set and the operation is not generic, the INVREQ condition occurs.

The INVREQ condition also occurs if GENERIC is specified and the KEYLENGTH value is not less than that specified in the VSAM definition.

If KEYLENGTH(0) is used with the object of reading the first record in the data set, the GTEQ option must also be specified. If EQUAL is specified either explicitly or by default with KEYLENGTH(0), the results of the READ are unpredictable.

For remote files, the KEYLENGTH value can be specified in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

LENGTH(data-area)
specifies the length, as a halfword binary value, of the data area where the record is to be put. On completion of the READ command, the LENGTH parameter contains the actual length of the record.

This option must be specified if SYSID is specified.

If the file is on a remote system, the LENGTH parameter need not be set here but must be set in the file resource definition.

If the file is on a local system, the LENGTH parameter must be set for variable-length records, using the INTO option, but not for fixed-length records. It is, however, advisable to specify the length for fixed-length records because:

- It causes a check to be made that the record being read is not too long for the available data area.
- When reading fixed-length records into an area longer than the record being accessed, the LENGERR condition is raised for COBOL, C, PL/I, and assembler-language applications if the LENGTH option is specified. If the LENGTH option is not explicitly specified, then the LENGERR condition is returned if the length can be inferred from the data area. If the length specified exceeds the file record length, CICS uses the longer length for the move. If the target area in the application program is not large enough, storage is overlaid beyond the target area.

If you specify the SET option, you do not need to specify the LENGTH option.

When reading into a target data area that is longer than the record being read, the contents of the target data area, from the end of the retrieved record to the end of the target data area, are unpredictable.

If you specify the INTO option, the LENGTH argument must be a data area that specifies the largest record the program accepts. If the retrieved record is longer than the value specified in the LENGTH option, the record is truncated to the specified value and the LENGERR condition occurs. In this case, the LENGTH data area is set to the length of the record before truncation.

Note that a file control command issued against a variable-length record in a file defined on the local CICS system fails with a LENGERR condition if a length is not specified. However, if the same command is issued against a file defined on a remote system, the command does not fail.
NOSUSPEND (RLS only)

The request does not wait if the record is locked by VSAM with an active lock, including records locked as the result of a DEADLOCK.

**Note:** Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the RECORDBUSY response.

RBA

(VSAM KSDS or ESDS base data sets, or CICS-maintained data tables only, but not paths) specifies that the record identification field specified in the RIDFLD option contains a relative byte address. This option should be used only when reading records from an ESDS base or when reading from a KSDS base and using relative byte addresses instead of keys to identify the records.

You cannot use RBA for:

- User-maintained data tables
- Coupling facility data tables
- Any KSDS file opened in RLS access mode
- KSDS files that use extended addressing

Also, you are recommended not to use RBA for ESDS files that hold more than 4GB. (Use XRBA instead.)

REPEATABLE (RLS only)

The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the duration of the unit of work in which the read request is issued.

If the record is being modified by another task, which therefore holds an exclusive lock, the READ request waits until the update is complete (unless NOSUSPEND is also specified) as follows:

- For a recoverable file, the READ request completes when the updating transaction completes its next syncpoint or rollback.
- For a non-recoverable file, the READ completes as soon as the VSAM request performing the update completes.

After the READ request has completed, the record remains locked to the task that issued the READ. Other tasks may continue to read the record but no other task is allowed to update the record until the task that issued the READ performs its next syncpoint or rollback.

RIDFLD(data-area)

specifies the record identification field. The contents can be a key, a relative byte address, or relative record number (for VSAM data sets), or a block reference, a physical key, and a deblocking argument (for BDAM data sets). For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD value can be greater than or equal to zero. For a relative record number, the RIDFLD value must be greater than or equal to 1, even when the GTEQ option is specified.

See Identifying BDAM records and Identifying VSAM records for more information about defining the record identification field.

Immediately upon completion of the command, the RIDFLD data area is available for reuse by the application program, even if UPDATE was specified.

Make sure that the variable specified by RIDFLD value is not shorter than the KEYLENGTH specified in this command or, if KEYLENGTH is not specified, the key length of the file you are reading; otherwise, the results are unpredictable.

RRN

(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number. This option should only be used with files that reference relative record data sets.
**SET(ptr-ref)**
indicates that CICS is to supply a buffer where the record is read, and specifies the pointer reference that is to contain the address of the retrieved record.

If the DUPKEY condition occurs in assembler language the specified register has not been set. The specified register can be loaded from DFHEITP1.

The pointer reference is valid until the next READ command for the same file or until completion of a corresponding REWRITE, DELETE, or UNLOCK command, or a SYNCPOINT in the case of READ UPDATE SET. If you want to retain the data within the field addressed by the pointer, it should be moved to your own area.

If DATALOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16 MB line.

If DATALOCATION(BELOW) is associated with the application program, the address of the data is below the 16 MB line.

If TASKDATAKEY (USER) is specified for the executing transaction, the data returned is in a user-key; otherwise it is in a CICS-key.

**SYSID(systemname)**
specifies the name of the system the request is directed to.

If you specify SYSID, and omit both RBA and RRN, you must also specify LENGTH and KEYLENGTH; they cannot be found in the resource definition.

**TOKEN(data-area)**
specifies, as a fullword binary value, a unique identifier for this READ UPDATE request. This is an output value returned by file control to the requesting task, for use in associating a subsequent REWRITE or DELETE (or UNLOCK) request with the record returned on this READ UPDATE request.

TOKEN can be function shipped. However, if a request specifying TOKEN is function shipped to a member of the CICS family of products that does not recognize this keyword, the request fails.

**Note:** If you specify TOKEN it implies update.

**UNCOMMITTED**
The record is read without read integrity.

The current value of the record, as known to VSAM, is returned. No attempt is made to serialize this read request with any concurrent update activity for the same record. The record may be in the process of being updated by another task, and the record data may change later if that update is subsequently backed out.

**UPDATE**
specifies that the record is to be obtained for updating or (for VSAM and data tables) deletion. If this option is omitted, a read-only operation is assumed.

UPDATE guarantees read integrity. The mechanism used to ensure data integrity depends on the type of file resource:

- For a VSAM file accessed in RLS mode, the record to be updated is locked by the SMSVSAM server.
- For a VSAM file accessed in non-RLS mode, the record to be updated is locked by CICS and, in addition, the control interval containing the record is held in exclusive control by VSAM.
- For a VSAM file accessed in non-RLS mode, and log(UNDO), CICS holds a record lock until the task syncpoints.
- For a BDAM file, the record to be updated is held in exclusive control by BDAM.
- For a user-maintained data table, the record to be updated is locked by CICS.
- For a CICS-maintained data table, the record to be updated is locked by CICS and, in addition, the control interval containing the record is held in exclusive control by VSAM. The VSAM control interval lock is required because changes to the data table are reflected in the source data set, which is accessed in non-RLS mode.
• For a coupling facility data table using the locking model, the record to be updated is locked by the coupling facility data table server.
• For a coupling facility data table using the contention model, records are not locked, enabling the records to be read for update by more than one task. If a record read for update by one task is then changed by another, the first task is notified, when it issues a REWRITE or DELETE command, by the CHANGED exception condition. If a record read for update by one task is then deleted by another, the first task is notified, when it issues a REWRITE or DELETE command, by the NOTFND condition.

If another task has issued a READ REPEATABLE request against the same record, your READ UPDATE request is made to wait until that task reaches SYNCPOINT (unless you issued NOSUSPEND).

XRBA
specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when reading records from an ESDS extended addressing data set.

KSDS data sets cannot be accessed by XRBA.

Conditions

84 DISABLED
RESP2 values:
50
A file is disabled because it was initially defined as disabled and has not since been enabled.

A file is disabled because it has been disabled by a SET FILE or a CEMT SET FILE command.

Default action: terminate the task abnormally.

15 DUPKEY
RESP2 values: (VSAM)
140
A record is retrieved by way of an alternate index with the NONUNIQUEKEY attribute, and another alternate index record with the same key follows

In assembler language, if the SET option is being used, the specified register has not been set, but can be loaded from DFHEITP1.

Default action: terminate the task abnormally.

12 FILENOTFOUND
RESP2 values:
1
The file name supplied in the FILE option is not defined to CICS.

Default action: terminate the task abnormally.

21 ILLOGIC
RESP2 values: (VSAM)
110
A VSAM error occurs that is not in one of the other CICS response categories.

See EIBRCODE in the EXEC interface block; for details, see EIB fields.

For user-maintained data tables, this condition occurs only for a non-UPDATE READ during loading when CICS has attempted to retrieve the record from the source data set.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:
READ is not allowed according to the resource definition.

A READ command with the UPDATE option is issued to a file where update operations are not allowed according to the resource definition.

The KEYLENGTH and GENERIC options are specified, and the length specified in the KEYLENGTH option is greater than or equal to the length of a full key.

The KEYLENGTH option is specified (but the GENERIC option is not specified), and the specified length does not equal the length defined for the data set to which this file refers.

Following a READ UPDATE command without TOKEN, another READ UPDATE without TOKEN was issued against the same file without an intervening REWRITE, DELETE without RIDFLD specified, UNLOCK, or SYNCPOINT command. This condition may in some cases be raised despite the fact that the first READ UPDATE was not successful, for example because it timed out.

A BDAM key conversion error occurred.

The KEYLENGTH and GENERIC options are specified, and the length specified in the KEYLENGTH option is less than zero.

The command does not conform to the format of READ for a user-maintained or coupling facility data table; for example, if RBA is specified.

A READ to a KSDS file that is being accessed in RLS mode specifies the RBA keyword. RLS mode does not support relative byte address access to KSDS data sets.

CONSISTENT is specified on a READ request to a non-RLS mode file, or to a data table that is specified with RLSACCESS(YES). CONSISTENT is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

REPEATABLE is specified on a READ request to a non-RLS mode file or to a data table that is specified with RLSACCESS(YES). REPEATABLE is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

NOSUSPEND is specified on a READ request to a non-RLS mode file or to a data table that is specified with RLSACCESS(YES). NOSUSPEND is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

An attempt to update a recoverable coupling facility data table has failed because the current unit of work has already updated 1024 recoverable coupling facility data tables. You cannot update more than 1024 recoverable coupling facility data tables within a unit of work.

An attempt to update the file has failed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows update operations except those from replication programs.

XRBA was specified, but the data set is not an extended ESDS.

Default action: terminate the task abnormally.

17 IOERR

RESP2 values:
There is an I/O error during the READ operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR normally indicates a hardware error.

For user-maintained data tables, this condition occurs only for a non-UPDATE READ during loading when CICS has attempted to retrieve the record from the source data set.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Further information is available in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

Neither the LENGTH option nor the SET option is specified on a READ command for a file with variable-length records or for a BDAM file with variable-length or undefined-format records.

The length of a record read with the INTO option specified exceeds the value specified in the LENGTH option; the record is truncated, and the data area supplied in the LENGTH option is set to the actual length of the record.

An incorrect length is specified for a file with fixed-length records.

Default action: terminate the task abnormally.

The request cannot be satisfied because it is issued against a data table that is still being loaded. The condition can be raised for one of the following reasons:

- The READ specifies a record that has not yet been loaded into a coupling facility data table. Records can be read or modified while a CFDT is loading only if the requested key is within the range of those records already loaded.

  The LOADING response can also be returned for a coupling facility data table that has failed during loading. For more information about what happens if the load for a coupling facility data table fails, see the description of the XDTLC global user exit in Data tables management exits (XDTRD, XDTAD, and XDTLC).

- The READ specifies the UPDATE option for a user-maintained data table. A user-maintained data table cannot be modified during loading.

- The READ specifies the GENERIC or GTEQ options for a user-maintained data table. While a UMT is being loaded, you can use read requests with precise keys only.

If your application programs encounter the LOADING condition persistently or too frequently, check that this is not caused by conflicting file definitions that reference the same data set.

Default action: terminate the task abnormally.
100 LOCKED
RESP2 values:

106
An attempt is being made to read a record either specifying the UPDATE keyword, or specifying (explicitly or implicitly) CONSISTENT or REPEATABLE, but the record is locked by a retained lock (see “Retained and active locks” on page 350).

The LOCKED condition can also occur for a READ UPDATE request to a recoverable CFDT that uses the locking model, if the record being read is locked by a retained lock. See the Coupling facility data table retained locks for information about investigating retained locks on records in a coupling facility data table.

Default action: abend the task with code AEX8.

70 NOTAUTH
RESP2 values:

101
A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:

80
An attempt to retrieve a record based on the search argument provided is unsuccessful. For data tables, this condition occurs if an attempt to read a record is unsuccessful because there is no entry with the specified key in the data table. This does not mean that there is no such record in the source data set (if the table was created from one); it may be that such a record is present but was either rejected during initial loading by the user exit XDTRD, or was subsequently deleted from the data table. For remote files, this condition occurs if an attempt to read a record is made without keylength specified either in the application or the file definition, and the actual key is longer than 4 characters.

81
XRBA was specified, and the value of RIDFLD was greater than 4 GB, but the data set is not an extended ESDS.

Default action: terminate the task abnormally.

19 NOTOPEN
RESP2 values:

60
NOTOPEN (RESP2 60) is returned for one of the following reasons:

• The requested file is CLOSED and UNENABLED. The CLOSED, UNENABLED state is reached after a CLOSE request has been received against an OPEN ENABLED file and the file is no longer in use. You can also make CLOSED, UNENABLED the initial state, by specifying STATUS(UNENABLED) and OPENTIME(FIRSTREF) on the FILE resource definition. (For BDAM files, you use the FILSTAT parameter of DFHFCT TYPE=FILE.)

• The requested file is OPEN and in use by other transactions, but a CLOSE request against the file has been received.

• A READ command is issued against a data set that is quiesced, or is being quiesced, as a result of a SET DSNAME QUIESCED or IMMQUIESCED command.

• The requested file is CLOSED and ENABLED, so CICS has tried to open the file as part of executing the request. This file open has failed for some reason. You should examine the console for messages that explain why the file open has been unsuccessful.

This condition does not occur if the request is made to a CLOSED, DISABLED file. In this case, the DISABLED condition occurs.

Default action: terminate the task abnormally.
101 RECORDBUSY
RESP2 values:

107
The NOSUSPEND keyword is specified and the record is locked by an active lock (see “Retained and active locks” on page 350).

Default action: abend the task with code AEX9.

53 SYSIDERR
RESP2 values:

130
The SYSID option specifies a name that is neither the local system nor a remote system that is defined by a CONNECTION or IPCONN definition. SYSIDERR also occurs when the link to the remote system is known but unavailable. In the case of an IPCONN, SYSIDERR occurs if the link is known but either the local or remote systems do not support file control commands that are function shipped using IP interconnectivity.

131
For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132
The READ is issued for a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See the Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

Examples

The following example shows you how to read a record from a file named MASTER into a specified data area:

```cics
EXEC CICS READ
INTO(RECORD)
FILE('MASTER')
RIDFLD(ACCTNO)
```

The following example shows you how to read a record for update from a VSAM file using a generic key and specifying a greater-or-equal key search.

```cics
EXEC CICS READ
INTO(RECORD)
LENGTH(RECLEN)
FILE('MASTVSAM')
RIDFLD(ACCTNO)
KEYLENGTH(4)
GENERIC
GTEQ
UPDATE
```
READNEXT

Read next record during a browse of a file.

**READNEXT**

```plaintext
READNEXT ➤ FILE(filename) ➤ INTO(data-area) ➤ SET(ptr-ref) ➤

RIDFLD(data-area) ➤

UNCOMMITTED
CONSISTENT
REPEATABLE
UPDATE ➤ TOKEN(data-area)

KEYLENGTH(data-value) ➤ REQID(data-value)

SYSID(systemname) ➤ LENGTH(data-area) ➤ LENGTH(data-area)

RBA
RRN
XRBA

NOSUSPEND
```

**Conditions:** DUPKEY, ENDFILE, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, LOADING, LOCKED, NOTAUTH, NOTFND, RECORDBUSY, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

READNEXT can be used repeatedly to read records in sequential order from a file on a local or a remote system. Such a series of sequential read commands is known as a browse of the file. A browse can also consist of a sequence of READNEXT and READPREV commands in any order. A browse must be initiated with the STARTBR command, to identify the starting point of the browse, and terminated with the ENDBR command.

You must provide, in the RIDFLD option, a data area that is sufficiently large to contain a complete identifier (full key, RBA, or RRN) of records in the file. This data area can be used both as an output and as an input parameter.

It is used as an output parameter when CICS, on completion of each READNEXT command, places the complete identifier of the record just retrieved into the RIDFLD data area. CICS then holds this identifier to mark the point from which the subsequent READNEXT is to continue.

It may, except for BDAM, also be used as an input parameter. Modifying the RIDFLD before issuing the next READNEXT command causes that command to reposition the browse to the new identifier, from which it continues in the usual way. If the browse was started with the GENERIC option, the modified
RIDFLD must be generic. If the browse was started with the GTEQ option, the next record returned is the
first record in the data set with a key greater than or equal to the modified RIDFLD.

A READNEXT command following a READPREV, or a STARTBR or RESETBR that specified a 'last' key
value, is treated as though the RIDFLD value has been modified, and results in a reposition (as above).

**Reading files accessed in RLS mode**

For files accessed in RLS mode, you can include the UPDATE keyword on the READNEXT request to
update some records during the browse. If you specify UPDATE you must also specify TOKEN. You can
then update the record by issuing a DELETE or REWRITE command that specifies the TOKEN returned on
the browse function.

**Note:** TOKEN without the UPDATE keyword implies UPDATE.

Use of the UPDATE option is subject to the following rules:

- You can specify UPDATE on a READNEXT command only if the file is accessed in RLS mode. If you
  specify UPDATE for a file accessed in non-RLS mode, CICS returns INVREQ.
- You can specify UPDATE on READNEXT, but not on the STARTBR or RESETBR commands.
- You can intermix UPDATE and non-update requests within the same browse.
- CICS does not preserve the UPDATE option for you from one READNEXT command to the next.

CICS supports only one TOKEN in a browse sequence, and the TOKEN value on each READNEXT
invalidates the previous value.

**Locks for UPDATE**

Specifying UPDATE on a READNEXT command acquires an exclusive lock. The duration of these exclusive
locks within a browse depends on the action your application program takes:

- If you decide to DELETE or REWRITE the last record acquired by a READNEXT UPDATE in a browse,
  using the associated token, the lock remains active as follows:
  - If the file is recoverable, the lock is released at completion of the next syncpoint or rollback.
  - If the file is non-recoverable, the lock will be released by the time ENDBR has completed, but might
    be released earlier.
- If you decide not to update the last record read, CICS frees the exclusive lock when your program either
  issues another READNEXT or READPREV command, or ends the browse.

**Important:** The UNLOCK command does **not** free an exclusive lock held by VSAM against a record
acquired by READNEXT UPDATE. An UNLOCK in a browse invalidates the TOKEN returned by the last
request.

**Locks for read integrity**

Specifying one of the read integrity options acquires a shared lock on each READNEXT. The duration of
these shared locks with a browse depends on the type of read integrity you specify:

- If you specify CONSISTENT read integrity, the shared lock is held only for the duration of each read
  request—that is, until the record is returned to your program.
- If you specify REPEATABLE read integrity, the shared lock is held for the duration of the unit of work in
  which the browse is performed. In this case, your program could acquire a large number of shared
  locks, which will prevent the granting of exclusive locks for update functions. You should use
  REPEATABLE read integrity in a browse with caution.

**Function shipping READNEXT with UPDATE or read integrity**

If a READNEXT command that specifies UPDATE or one of the read integrity options is function-shipped
to a member of the CICS family of products that does not support UPDATE or the read integrity options,
the request fails:
• If an ISC link is used, the request receives an ATNI abend.
• If an MRO link is used, the request receives an AXF8 abend.

AXF8 is an abend code, received by the sending side of a function-shipped request. It indicates that an attempt has been made to send a request that specifies UPDATE on an MRO link to a CICS region that does not support update or read integrity options.

Read integrity
When a file is accessed in RLS mode, non-update read requests can specify read integrity options: UNCOMMITTED, CONSISTENT, or REPEATABLE.

If you do not specify any of these keywords, CICS uses the value specified on the READINTEG parameter of the FILE resource definition, for which the default is UNCOMMITTED.

If you want to use the level of read integrity specified in the READINTEG keyword of the FILE definition, and then you need to change from using a local file to a remote file, or if you change the location of a remote file, ensure that:
• The remote file-owning region is at the CICS Transaction Server for OS/390®, Version 1 Release 1 (or later) level.
• The FILE definition in the remote system specifies:
  – RLS mode
  – The correct read integrity values for your application.

Retained and active locks
RECORDBUSY refers to active locks, and LOCKED refers to retained locks.

These locks affect READNEXT requests which acquire locks; that is, update requests and requests with read integrity. These are the kinds of READNEXT requests which are referred to in the following bullets. Other READNEXT requests are unaffected by the presence of retained or active locks.

• READNEXT requests for records that have retained locks are always rejected with a LOCKED response.
• READNEXT requests for records that have active locks wait for the lock to be released, except when the NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

Options
CONSISTENT (RLS only)
The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the duration of the request.

If the record is being modified by another task, which therefore holds an exclusive lock, the READNEXT request waits until the update is complete (unless NOSUSPEND is also specified) as follows:
• For a READNEXT request against a non-recoverable file, the READ completes as soon as any VSAM request performing the update completes.
• For a READNEXT request against a recoverable file, the READ request completes when the updating task completes its next sync point or rollback.

FILE(filename)
specifies the name of the file to be browsed.

If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

INTO(data-area)
specifies the data area into which the record retrieved from the data set is to be written.
KEYLENGTH(data-value)
specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case KEYLENGTH is not valid.

If the browse was started without the GENERIC option (that is a full key browse) and if the length specified is different from the length defined for the data set, the INVREQ condition occurs.

If the browse was started with the GENERIC option (that is, a generic key browse), and if the length specified is greater than the length specified for the data set, the INVREQ condition occurs.

If GTEQ and GENERIC were specified on the most recent STARTBR or RESETBR command, issuing READNEXT with KEYLENGTH(0) specified repositions the BROWSE at the start of the file. If EQUAL had been specified, the effect of READNEXT KEYLENGTH(0) would be unpredictable.

For a generic browse, CICS maintains a current key length for the browse. The current key length is initialized to be the value specified as KEYLENGTH on the STARTBR command.

You can modify the current key length by specifying KEYLENGTH on a READNEXT or RESETBR command. If the current key length is changed, this causes the browse to be repositioned. The browse is repositioned to the key whose initial characters match the value specified in the RIDFLD for the current key length.

The current key length is zero after a request that specifies KEYLENGTH(0).

IF KEYLENGTH is omitted on a READNEXT command, the current key length remains the same and the browse continues without repositioning.

If KEYLENGTH is specified on a READNEXT command and is equal to the current key length, this is treated as being no change and the browse is not repositioned. The one exception to this is when KEYLENGTH(0) is specified, which always causes the browse to be repositioned to the beginning of the file.

KEYLENGTH can be specified during a generic browse with a value equal to the full key length. This does not cause the current key length to change and the browse is not repositioned. The ability to specify the full key length during a generic browse is provided to allow requests that specify SYSID to be able to tell the function-shipping transformers how long the key is, so that the transformers can ship the key to the file-owning region.

A browse can be repositioned by modifying the RIDFLD data area. A generic browse is repositioned only if the modification to RIDFLD changes the part of RIDFLD corresponding to the current key length. A consequence of this is that the browse cannot be repositioned by modifying the RIDFLD data area if the current key length is zero.

For remote files, the KEYLENGTH can be specified in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

LENGTH(data-area)
specifies the length, as a halfword binary value, of the data area where the record is to be put. On completion of the READNEXT command, the LENGTH parameter contains the actual length of the record.

This option must be specified if SYSID is specified.

If the file is on a remote system, the LENGTH parameter need not be set here but must be set in the file resource definition.

If the file is on a local system, the LENGTH parameter must be set for variable-length records, using the INTO option, but not for fixed-length records. It is, however, advisable to specify the length for fixed-length records because:

• It causes a check to be made that the record being read is not too long for the available data area.
• When browsing fixed-length records into an area longer than the record being accessed, the LENGERR condition is raised for COBOL, C, PL/I, and assembler-language applications if the LENGTH option is specified. If the LENGTH option is not explicitly specified, then the LENGERR
condition is returned if the length can be inferred from the data area. If the length specified exceeds
the file record length, CICS uses the longer length for the move. If the target area in the application
program is not large enough, storage is overlaid beyond the target area.

If you specify the SET option, you need not also specify the LENGTH option.

When browsing into a target data area longer than the record being read, the contents of the target
data area, from the end of the retrieved record to the end of the target data area, are unpredictable.

If you specify the INTO option, the LENGTH argument must be a data area that specifies the largest
record the program accepts. If the retrieved record is longer than the value specified in the LENGTH
option, the record is truncated to the specified value and the LENGERR condition occurs. In this case,
the LENGTH data area is set to the length of the record before truncation.

Note that a file control command issued against a variable-length record in a file defined on the local
CICS system fails with a LENGERR condition if a length is not specified. However, if the same
command is issued against a file defined on a remote system, the command does not fail.

NOSUSPEND (RLS only)
The request does not wait if the record is locked by VSAM with an active lock, including records locked
as the result of a DEADLOCK.

Note: Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the
RECORDBUSY response.

RBA
(VSAM KSDS or ESDS base data sets, or CICS-maintained data tables only, but not paths) specifies
that the record identification field specified in the RIDFLD option contains a relative byte address.

This option must be specified when the STARTBR or RESETBR command specified the RBA option. It
must not be specified when the STARTBR or RESETBR command did not specify RBA.

You cannot use RBA for:
• User-maintained data tables
• Coupling facility data tables
• Any KSDS file opened in RLS access mode
• KSDS files that use extended addressing

Also, you are recommended not to use RBA for ESDS files that hold more than 4GB. (Use XRBA
instead.)

REPEATABLE (RLS only)
The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the
duration of the unit of work in which the read request is issued.

If the record is being modified by another task, which therefore holds an exclusive lock, the
READNEXT request waits until the update is complete (unless NOSUSPEND is also specified) as
follows:
• For a recoverable file, the READNEXT request completes when the updating transaction completes
  its next sync point or rollback.
• For a non-recoverable file, the READNEXT completes as soon as the VSAM request performing the
  update completes.

After the READNEXT request has completed, the record remains locked to the task that issued the
READNEXT. Other tasks may continue to read the record but no other task is allowed to update the
record until the task that issued the READNEXT performs its next syncpoint or rollback.

REQID(data-value)
 specifies as a halfword binary value a unique request identifier for a browse, used to control multiple
browse operations on a file. If this option is not specified, a default value of zero is assumed.
**RIDFLD(data-area)**

specifies the record identification field. The contents can be a key, a relative byte address, or relative record number (for VSAM data sets), or a block reference, physical key, and deblocking argument (for BDAM data sets). For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD can be greater than or equal to zero. For a relative record number, the RIDFLD value can be greater than or equal to 1.

See Identifying BDAM records and Identifying VSAM records for more information about defining the record identification field.

Even if the browse is generic, this RIDFLD should always be large enough to accommodate the complete record identifier. This is because, on completion of the READNEXT command, the field is updated by CICS with the complete identification of the record retrieved.

**RRN**

(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number.

**SET(ptr-ref)**

specifies the pointer reference that is to be set to the address of the retrieved record.

In assembler language, if the DUPKEY condition occurs, the register specified will not have been set, but can be loaded from DFHEITP1.

The pointer reference is valid until the next READNEXT or READPREV command specifies SET for the same browse (REQID) for the same file. The pointer is no longer valid after an ENDBR or SYNCPOINT command. If you want to retain the data within the field addressed by the pointer, you must move it to your own area.

If DATALLOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16 MB line.

If DATALLOCATION(BELOW) is associated with the application program, the address returned in the SET pointer is below the 16 MB line.

If TASKDATAKEY(USER) is specified for the running task, the data returned is in user-key storage; otherwise it is in CICS-key storage.

**SYSID(systemname)**

specifies the name of the system to which the request is directed.

If you specify SYSID, and omit both RBA and RRN, you must also specify LENGTH and KEYLENGTH; they cannot be found in the resource definition.

**TOKEN(data-area) (RLS only)**

Returns, as a fullword binary value, the request identifier for this READNEXT UPDATE request. This is an output value returned by file control to the requesting task, for use in associating a subsequent REWRITE or DELETE (or UNLOCK) request with the record returned on this READNEXT command.

You must specify the returned TOKEN on a subsequent REWRITE or DELETE command to identify the record being rewritten or deleted. You can also specify the value returned by CICS on the TOKEN option on a subsequent UNLOCK command, to identify the token that is being invalidated.

You must specify TOKEN if you specify UPDATE (but UPDATE is assumed if you specify TOKEN without UPDATE).

CICS supports only one active TOKEN at a time for a given REQID. Thus, a TOKEN value remains valid only until the following READNEXT, READPREV, RESETBR, or ENDBR command for this browse, or until a REWRITE, DELETE, or UNLOCK command (whichever is first).

TOKEN can be function shipped. However, if a request specifying TOKEN is function shipped to a member of the CICS family of products that does not recognize this keyword, the request fails.

**UNCOMMITTED**

The record is read without read integrity. The current data, as known to VSAM, is returned. No attempt is made to serialize this read request with any concurrent update activity for the same record.
record may be being updated by another transaction, therefore the value of the record may change later if that update is subsequently backed out.

**UPDATE (RLS only)**
Specifies that the record is to be obtained for updating or deletion. If this option and TOKEN are both omitted, read only is assumed.

If you specify UPDATE, you must also specify TOKEN.

UPDATE is only valid for files defined to the local region

**XRBA**
specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when browsing records in an ESDS extended addressing data set.

You cannot specify XRBA on a READNEXT command unless the associated STARTBR or RESETBR command also specified XRBA.

KSDS data sets cannot be accessed by XRBA.

**Conditions**

**15 DUPKEY**
RESP2 values (VSAM):

140
A record is retrieved by way of an alternate index with the NONUNIQUEKEY attribute, and another alternate index record with the same key follows. It does not occur as a result of a READNEXT command that reads the last of the records having the nonunique key.

In assembler language, if the SET option is being used, the register specified will not have been set, but can be loaded from DFHEITP1.

Default action: terminate the task abnormally.

**20 ENDFILE**
RESP2 values:

90
An end-of-file condition is detected during the browse.

Default action: terminate the task abnormally.

**12 FILENOTFOUND**
RESP2 values:

1
A file name referred to in the FILE option is not defined to CICS.

Default action: terminate the task abnormally.

**21 ILLOGIC**
The browse that is currently in progress is terminated when this condition is raised.
RESP2 values (VSAM):

110
A VSAM error occurs that is not in one of the other CICS response categories.

See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

**16 INVREQ**
RESP2 values:

20
The FILE definition does not allow updates.
The KEYLENGTH option is specified for a generic browse (that is, one where GENERIC was specified on the STARTBR or the last RESETBR) and the value of KEYLENGTH was greater than the full key length.

The KEYLENGTH option is specified for a nongeneric browse, and the specified length does not equal the length defined for the data set to which this file refers.

The REQID, SYSID, or file name does not match that of any successful STARTBR command, or a SYNCPOINT was issued causing STARTBR, READNEXT/READPREVs position to be lost.

The type of record identification (for example, key or relative byte address) used to access a data set during the browse has been changed. You cannot specify one type of addressing on STARTBR and another on READNEXT.

The KEYLENGTH option is specified for a generic browse (that is one where GENERIC was specified on the STARTBR or the last RESETBR) and the value of KEYLENGTH was less than zero.

CONSISTENT is specified on a READ request to a non-RLS mode file, or to a data table that is specified with RLSACCESS(YES). CONSISTENT is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

REPEATABLE is specified on a READ request to a non-RLS mode file, or to a data table that is specified with RLSACCESS(YES). REPEATABLE is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

UPDATE is not allowed because the file is not a VSAM file that is accessed in RLS mode.

NOSUSPEND is specified on a READ request to a non-RLS mode file, or to a data table that is specified with RLSACCESS(YES). NOSUSPEND is not allowed if the file refers to a data table, even if the file definition specifies RLSACCESS(YES).

An attempt to update the file has failed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows update operations except those from replication programs.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:

120 There is an I/O error during the READNEXT command. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Further information is available in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:

70 The remote system indicates a failure that does not correspond to a known condition.
Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:
10 Neither the LENGTH nor the SET option is specified for a file with variable-length records or a BDAM file with undefined-format records.
11 The length of the record read with the INTO option specified exceeds the value specified in the LENGTH option; the record is truncated, and the data area supplied in the LENGTH option is set to the actual length of the record.
13 An incorrect length is specified for a file with fixed-length records.

Default action: terminate the task abnormally.

94 LOADING
RESP2 values:
104 The read request specifies a record key for a record in a coupling facility data table that is still being loaded, and the key is out of range of the records already loaded. Records can be browsed in a coupling facility data table during loading only if the requested key is within the range of those records already loaded.

The LOADING response can also be returned for a coupling facility data table that has failed during loading. For more information about what happens if the load for a coupling facility data table fails, see the description of the XDTLC global user exit in Data tables management exits (XDTRD, XDTAD, and XDTLC).

If your application programs encounter the LOADING condition persistently or too frequently, check that this is not caused by conflicting file definitions that reference the same data set.

100 LOCKED
RESP2 values:
106 The read request specifies the UPDATE keyword, or one of the read integrity keywords CONSISTENT or REPEATABLE, or the file resource definition specifies read integrity, but VSAM holds a retained lock against the record (see “Retained and active locks” on page 361).

The key of the locked record is not returned to your application program. If you handle this condition and control is returned to your program, the browse can continue and retrieve the record following the locked record by issuing another READNEXT request.

The LOCKED condition can also occur for a request to a recoverable CFDT that uses the locking model, if the record that is being read is locked by a retained lock. See Coupling facility data table retained locks for information about investigating retained locks on records in a coupling facility data table.

Default action: abend the task with code AEX8.

70 NOTAUTH
RESP2 values:
101 A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:
An attempt to retrieve a record based on the search argument provided is unsuccessful. This may occur if the READNEXT command immediately follows a STARTBR command that specified the key of the last record in the data set (a complete key of X'FF's).

XRBA was specified, and the value of RIDFLD was greater than 4 GB, but the data set is not an extended addressing ESDS.

Default action: terminate the task abnormally.

**101 RECORDBUSY**

RESP2 values:

107

NOSUSPEND is specified on the request but VSAM holds an active lock against the record, which would cause the request to wait (see “Retained and active locks” on page 361).

The key of the locked record is not returned to your application program. If you handle this condition and control is returned to your program, the browse can continue and retrieve the record following the locked record by issuing another READNEXT request.

Default action: abend the task with code AEX9.

**53 SYSIDERR**

RESP2 values:

130

The SYSID option specifies a name that is neither the local system nor a remote system that is defined by a CONNECTION or IPCCONN definition. SYSIDERR also occurs when the link to the remote system is known but unavailable. In the case of an IPCCONN, SYSIDERR occurs if the link is known but either the local or remote systems do not support file control commands that are function shipped using IP interconnectivity.

131

For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132

The READNEXT is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.
**READPREV**

Read previous record during a file browse; VSAM and data tables only.

**Syntax**

```plaintext
READPREV — FILE(filename) INTO(data-area) SET(ptr-ref)

RIDFLD(data-area)

UNCOMMITTED
CONSISTENT
REPEATABLE
UPDATE — TOKEN(data-area)

KEYLENGTH(data-value) — REQID(data-value)

SYSID(systemname) — LENGTH(data-area)

LENGTH(data-area)

RBA
RRN
XRBA

NOSUSPEND
```

**Conditions:** DUPKEY, ENDFILE, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, LOCKED, NOTAUTH, NOTFND, RECORDBUSY, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

READPREV can be used repeatedly to read records in reverse sequential order from a VSAM file on a local or a remote system.

Such a series of sequential read commands is known as a browse of the file. A browse can also consist of a sequence of READNEXT and READPREV commands in any order. A browse must be initiated with the STARTBR command, to identify the start of the browse, and terminated with the ENDBR command.

You must provide, in the RIDFLD option, a data area that is sufficiently large to contain a complete identifier (full key, RBA, or RRN) of records in the file. This data area is used both as an output and as an input parameter.

It is used as an output parameter when CICS, on completion of each READPREV command, places the complete identifier of the record just retrieved into the RIDFLD data area. CICS then holds this identifier to mark the point from which the subsequent READPREV is to continue.
It may also be used as an input parameter. Modifying the RIDFLD before issuing the next READPREV command causes that command to reposition the browse to the new identifier, from which it continues in the usual way. The modified record identifier must always be a full key, RBA, or RRN. A generic key may not be specified, nor may a browse that was started with the GENERIC option include a READPREV command.

If you include a READPREV command immediately following a STARTBR command, your STARTBR command RIDFLD must specify the key of a record that exists on the data set; otherwise the NOTFND condition will occur.

A READPREV command following a READNEXT, or a STARTBR or RESETBR that did not specify a 'last' key value, is treated as though the RIDFLD value had been modified and results in a reposition (as above).

**Reading files accessed in RLS mode**

For files accessed in RLS mode, you can include the UPDATE keyword on the READPREV request to update some records during the browse. If you specify UPDATE you must also specify TOKEN. You can then update the record by issuing a DELETE or REWRITE command that specifies the TOKEN returned on the browse function.

**Note:** TOKEN without the UPDATE keyword implies UPDATE.

Use of the UPDATE option is subject to the following rules:

- You can specify UPDATE on a READPREV command only if the file is accessed in RLS mode. If you specify UPDATE for a file accessed in non-RLS mode, CICS returns INVREQ.
- You can specify UPDATE on READPREV, but not on the STARTBR or RESETBR commands.
- You can intermix UPDATE and non-update requests within the same browse.
- CICS does not preserve the UPDATE option for you from one READPREV command to the next.

CICS supports only one TOKEN in a browse sequence, and the TOKEN value on each READPREV invalidates the previous value.

**Locks for UPDATE**

Specifying UPDATE on a READPREV command acquires an exclusive lock. The duration of these exclusive locks within a browse depends on the action your application program takes:

- If you decide to DELETE or REWRITE the last record acquired by a READPREV UPDATE in a browse, using the associated token, the lock remains active as follows:
  - If the file is recoverable, the lock is released at completion of the next sync point or rollback.
  - If the file is non-recoverable, the lock will be released by the time ENDBR has completed, but might be released earlier.
- If you decide not to update the last record read, CICS frees the exclusive lock when your program either issues another READNEXT or READPREV command, or ends the browse.

**Important:** The UNLOCK command does not free an exclusive lock held by VSAM against a record acquired by READPREV UPDATE. An UNLOCK in a browse invalidates the TOKEN returned by the last request.

**Locks for read integrity**

Specifying one of the read integrity options acquires a shared lock on each READPREV. The duration of these shared locks with a browse depends on the type of read integrity you specify:

- If you specify CONSISTENT read integrity, the shared lock is held only for the duration of each read request—that is, until the record is returned to your program.
- If you specify REPEATABLE read integrity, the shared lock is held for the duration of the unit of work in which the browse is performed. In this case, your program could acquire a large number of shared
locks, which will prevent the granting of exclusive locks for update functions. You should use
REPEATABLE read integrity in a browse with caution.

Function shipping READPREV with UPDATE or read integrity

If a READPREV command that specifies UPDATE or one of the read integrity options is function-shipped
to a member of the CICS family of products that does not support UPDATE or the read integrity options,
the request fails:

- If an ISC link is used, the request receives an ATNI abend.
- If an MRO link is used, the request receives an AXF8 abend.

AXF8 is an abend code, received by the sending side of a function-shipped request. It indicates that an
attempt has been made to send a request that specifies UPDATE on an MRO link to a CICS region that
does not support update or read integrity options.

Read integrity

When a file is accessed in RLS mode, non-update read requests can specify read integrity options:
UNCOMMITTED, CONSISTENT, or REPEATABLE.

If you do not specify any of these keywords, CICS uses the value specified on the READINTEG parameter
of the FILE resource definition, for which the default is UNCOMMITTED.

If you want to use the level of read integrity specified in the READINTEG keyword of the FILE definition,
and then you need to change from using a local file to a remote file, or if you change the location of a
remote file, ensure that:

- The remote file-owning region is at the CICS Transaction Server for OS/390, Version 1 Release 1 (or
later) level.
- The FILE definition in the remote system specifies:
  - RLS mode
  - The correct read integrity values for your application.

Retained and active locks

RECORDBUSY refers to active locks and LOCKED refers to retained locks.

These locks affect READPREV requests which acquire locks; that is, update requests and requests with
read integrity. These are the kinds of READPREV requests which are referred to in the following bullets. Other READPREV requests are unaffected by the presence of retained or active locks.

- READPREV requests for records that have retained locks are always rejected with a LOCKED response.
- READPREV requests for records that have active locks wait for the lock to be released, except when the
NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

Options

CONSISTENT (RLS only)

The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the
duration of the request.

If the record is being modified by another task, which therefore holds an exclusive lock, the
READPREV request waits until the update is complete (unless NOSUSPEND is also specified) as
follows:

- For a READPREV request against a non-recoverable file, the READPREV completes as soon as any
VSAM request performing the update completes.
- For a READPREV request against a recoverable file, the READPREV request completes when the
updating task completes its next syncpoint or rollback.
FILE(filename)
  specifies the name of the file being browsed.

  If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined in the file resource definition. Otherwise, the file definition is used to find out whether the data set is on a local or a remote system.

INTO(data-area)
  specifies the data area into which the record retrieved from the data set is to be written.

KEYLENGTH(data-value)
  specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case KEYLENGTH is not valid. If the length specified is different from the length defined for the data set, the INVREQ condition occurs.

  For remote files, the KEYLENGTH can be specified in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

LENGTH(data-area)
  specifies the length, as a halfword binary value, of the data area where the record is to be put. On completion of the READNEXT command, the LENGTH parameter contains the actual length of the record.

  This option must be specified if SYSID is specified.

  If the file is on a remote system, the LENGTH parameter need not be set here but must be set in the file resource definition

  If the file is on a local system, the LENGTH parameter must be set for variable-length records, using the INTO option, but not for fixed-length records. It is, however, advisable to specify the length for fixed-length records because:

  • It causes a check to be made that the record being read is not too long for the available data area.

  • When browsing fixed-length records into an area longer than the record being accessed, the LENGERR condition is raised for COBOL, C, PL/I, and assembler-language applications if the LENGTH option is specified. If the LENGTH option is not explicitly specified, then the LENGERR condition is returned if the length can be inferred from the data area. If the length specified exceeds the file record length, CICS uses the longer length for the move. If the target area in the application program is not large enough, storage is overlaid beyond the target area.

  If you specify the SET option, you need not also specify the LENGTH option.

  When browsing into a target data area longer than the record being read, the contents of the target data area, from the end of the retrieved record to the end of the target data area, are unpredictable.

  If you specify the INTO option, the LENGTH argument must be a data area that specifies the largest record the program accepts. If the retrieved record is longer than the value specified in the LENGTH option, the record is truncated to the specified value and the LENGERR condition occurs. In this case, the LENGTH data area is set to the length of the record before truncation.

  Note that a file control command issued against a variable-length record in a file defined on the local CICS system fails with a LENGERR condition if a length is not specified. However, if the same command is issued against a file defined on a remote system, the command does not fail.

NOSUSPEND (RLS only)
  The request does not wait if the record is locked by VSAM with an active lock, including records locked as the result of a DEADLOCK.

  Note: Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the RECORDBUSY response.

RBA
  (VSAM KSDS or ESDS base data sets, or CICS-maintained data tables only, but not paths) specifies that the record identification field specified in the RIDFLD option contains a relative byte address.
This option must be specified when the STARTBR or RESETBR command specified the RBA option. It must not be specified when the STARTBR or RESETBR command did not specify RBA.

You cannot use RBA for:

- User-maintained data tables
- Coupling facility data tables
- Any KSDS file opened in RLS access mode
- KSDS files that use extended addressing.

Also, you are recommended not to use RBA for ESDS files that hold more than 4GB. (Use XRBA instead.)

**REPEATABLE (RLS only)**

The record is read with a level of read integrity provided by a VSAM shared lock that lasts for the duration of the unit of work in which the read request is issued.

If the record is being modified by another task, which therefore holds an exclusive lock, the READPREV request waits until the update is complete (unless NOSUSPEND is also specified) as follows:

- For a recoverable file, the READPREV request completes when the updating transaction completes its next sync point or rollback.
- For a non-recoverable file, the READPREV completes as soon as the VSAM request performing the update completes.

After the READPREV request has completed, the record remains locked to the task that issued the READPREV. Other tasks can continue to read the record, but no other task is allowed to update the record until the task that issued the READPREV performs its next sync point or rollback.

**REQID(data-value)**

specifies as a halfword binary value a unique request identifier for a browse, used to control multiple browse operations on a file. If this option is not specified, a default value of zero is assumed.

**RIDFLD(data-area)**

specifies the record identification field. The contents can be a key, a relative byte address, or relative record number. For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD value can be greater than or equal to zero. For a relative record number, the RIDFLD value can be greater than or equal to 1.

On completion of the READPREV command, this field is updated by CICS with the complete identification of the record retrieved.

**RRN**

(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number.

**SET(ptr-ref)**

specifies the pointer reference that is to be set to the address of the retrieved record.

In assembler language, if the DUPKEY condition occurs, the register specified will not have been set, but can be loaded from DFHEITP1.

The pointer reference is valid until the next READPREV or READNEXT command that specifies SET for the same browse (REQID) for the same file. The pointer is no longer valid after an ENDBR or SYNCPOINT command. If you want to retain the data within the field addressed by the pointer, you must move it to your own area.

If DATALLOCATION(ANY) is associated with the application program, the address returned in the SET pointer can be above or below the 16 MB line.

If DATALLOCATION(BELOW) is associated with the application program, the address returned in the SET pointer is below the 16 MB line.
If TASKDATAKEY(USER) is specified for the running task, the data returned is in user-key storage; otherwise it is in CICS-key storage.

**SYSID(systemname)**

specifies the name of the system to which the request is directed.

If you specify SYSID, and omit both RBA and RRN, you must also specify LENGTH and KEYLENGTH.

**TOKEN(data-area) (RLS only)**

Returns, as a fullword binary value, a unique identifier for this READPREV UPDATE request. This is an output value returned by file control to the requesting task, for use in associating a subsequent REWRITE or DELETE (or UNLOCK) request with the record returned on this READPREV command.

Your application program must specify the returned TOKEN on a subsequent REWRITE or DELETE command to identify the record being rewritten or deleted. Your application program can also specify the returned TOKEN on a subsequent UNLOCK command to identify the token that is being invalidated.

You must specify TOKEN if you specify UPDATE (but UPDATE is assumed if you specify TOKEN without UPDATE).

CICS supports only one active TOKEN at a time for a given REQID. Thus, a TOKEN value remains valid only until the following READNEXT, READPREV, or ENDBR command for this browse, or until a REWRITE, DELETE, or UNLOCK command (whichever is first).

TOKEN can be function shipped. However, if a request specifying TOKEN is function shipped to a member of the CICS family of products that does not recognize this keyword, the request fails.

**UNCOMMITTED**

The record is read without read integrity. The current data, as known to VSAM, is returned. No attempt is made to serialize this read request with any concurrent update activity for the same record. The record may be being updated by another transaction, therefore the value of the record may change later if that update is subsequently backed out.

**UPDATE (RLS only)**

Specifies that the record is to be obtained for updating or deletion. If this option and TOKEN are both omitted, read only is assumed.

If you specify UPDATE, you must also specify TOKEN.

UPDATE is only valid for files defined to the local region

**XRBA**

specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when browsing records in an ESDS extended addressing data set.

You cannot specify XRBA on a READPREV command unless the associated STARTBR or RESETBR command also specified XRBA.

KSDS data sets cannot be accessed by XRBA.

**Conditions**

**15 DUPKEY**

RESP2 values:

**140**

A record is retrieved by way of an alternate index with the NONUNIQUEKEY attribute, and another alternate index record with the same key exists.

In assembler language, if the SET option is being used, the specified register has not been set, but can be loaded from DFHEITP1.

Default action: terminate the task abnormally.
20 **ENDFILE**  
RESP2 values:

90  
An end-of-file condition is detected during a browse.
Default action: terminate the task abnormally.

12 **FILENAME**  
RESP2 values:

1  
A file name referred to in the FILE option is not defined to CICS.
Default action: terminate the task abnormally.

21 **ILLOGIC**  
The browse that is currently in progress is terminated when this condition is raised.
RESP2 values (VSAM):

110  
A VSAM error occurs that is not in one of the other CICS response categories.
   See EIBRCODE in the EXEC interface block; for details, see EIB fields.
Default action: terminate the task abnormally.

16 **INVREQ**  
RESP2 values:

20  
The FILE definition does not allow updates.

24  
A READPREV command is issued for a file for which the previous STARTBR or RESETBR command has the GENERIC option.

26  
The KEYLENGTH option is specified and the specified length does not equal the length defined for the data set for this file refers to.

37  
The type of record identification (for example, key or relative byte address) used to access a data set during the browse has been changed. You cannot specify one type of addressing on STARTBR and another on READPREV.

39  
A READPREV is issued for a BDAM file.

41  
The REQID, SYSID, or file name does not match that of any successful STARTBR command.

52  
CONSISTENT is not allowed because the file is not a VSAM file that is accessed in RLS mode.

53  
REPEATABLE is not allowed because the file is not a VSAM file that is accessed in RLS mode.

54  
UPDATE is not allowed because the file is not a VSAM file that is accessed in RLS mode.

55  
NOSUSPEND is not allowed because the file is not a VSAM file that is accessed in RLS mode.

57  
An attempt to update the file has failed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows update operations except those from replication programs.
Default action: terminate the task abnormally.
17 IOERR
RESP2 values:

120
An I/O error occurred during the browse. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:

70
The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

10
Neither the LENGTH nor the SET option is specified for a file with variable-length records.

11
The length of the record read with the INTO option specified exceeds the value specified in the LENGTH option; the record is truncated, and the data area supplied in the LENGTH option is set to the actual length of the record.

13
An incorrect length is specified for a file with fixed-length records.

Default action: terminate the task abnormally.

100 LOCKED
RESP2 values:

106
The read request specifies the UPDATE keyword, or one of the read integrity keywords CONSISTENT or REPEATABLE, or the file resource definition specifies read integrity, but VSAM holds a retained lock against the record (see “Retained and active locks” on page 371).

The key of the locked record is not returned to your application program. If you handle this condition and control is returned to your program, the browse can continue and retrieve the record following the locked record by issuing another READPREV request.

The LOCKED condition also can occur for a request to a recoverable CFDT that uses the locking model, if the record that is being read is locked by a retained lock. See Coupling facility data table retained locks for information about investigating retained locks on records in a coupling facility data table.

Default action: abend the task with code AEX8.

70 NOTAUTH
RESP2 values:

101
A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:
An attempt to retrieve a record based on the search argument provided is unsuccessful. One place where this may occur is where the READPREV command immediately follows a STARTBR or RESETBR command that specified GTEQ and the key of a record that does not exist on the data set.

XRBA was specified, and the value of RIDFLD was greater than 4 GB, but the data set is not an extended addressing ESDS.

Default action: terminate the task abnormally.

101 RECORDBUSY
RESP2 values:

107
NOSUSPEND is specified on the request but VSAM holds an active lock against the record, which would cause the request to wait (see “Retained and active locks” on page 371).

The key of the locked record is not returned to your application program. If you handle this condition and control is returned to your program, the browse can continue and retrieve the record following the locked record by issuing another READPREV request.

Default action: abend the task with code AEX9.

53 SYSIDERR
RESP2 values:

130
The SYSID option specifies a name that is neither the local system nor a remote system that is defined by a CONNECTION or IPCONN definition. SYSIDERR also occurs when the link to the remote system is known but unavailable. In the case of an IPCONN, SYSIDERR occurs if the link is known but either the local or remote systems do not support file control commands that are function shipped using IP interconnectivity.

131
For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132
The READPREV is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

**READQ TD**

Read data from the transient data queue.

**READQ TD**

```
READQ TD       QUEUE(name) INTO(data-area) SET(ptr-ref) LENGTH(data-area)

SYSID(systemname) NOSUSPEND
```

**Conditions:** DISABLED, INVREQ, IOERR, ISCINVREQ, LENGERR, LOCKED, NOTAUTH, NOTOPEN, QBUSY, QIDERR, QZERO, SYSIDERR
This command is threadsafe when it is used with a queue in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is non-threadsafe when it is function shipped to a remote CICS region over another type of connection.

Description

**READQ TD** reads transient data from a queue (after which the record is no longer available).

If you are using automatic transaction initiation (ATI), your application should test for the QZERO condition to ensure that termination of an automatically initiated task occurs only when the queue is empty. For introductory information about ATI, see Automatic transaction initiation (ATI).

If the **READQ TD** command attempts to access a record in a logically recoverable intrapartition queue that is being written to, or deleted by, another task, and there are no more committed records, the command waits until the queue is no longer being used for output. If, however, the NOSUSPEND option has been specified, or there is an active HANDLE CONDITION for QBUSY, the QBUSY condition is raised.

Options

**INTO(data-area)**

Specifies the user data area into which the data read from the transient data queue is to be placed.

**LENGTH(data-area)**

Specifies the length, as a halfword binary value, of the record to be read.

If you specify the INTO option, LENGTH specifies the maximum length of data that the program accepts. If the value specified is less than zero a LENGERR condition will be raised and the queue will not be read. If the value specified is zero a LENGERR condition will be raised and the queue will be read. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs. On completion of the retrieval operation, the data area is set to the original length of the data record read from the queue.

If you specify the INTO option, LENGTH need not be specified if the length can be generated by the compiler from the INTO variable. See “LENGTH options in CICS commands” on page 10 for more information about when LENGTH must be specified.

**NOSUSPEND**

Specifies that if the application program attempts to read from a queue that is already being used for output, the task is not suspended until the queue becomes available. Instead, the QBUSY condition is raised.

Note, however, that if a HANDLE CONDITION for QBUSY is active when the command is executed, this also overrides the default action, and control is passed to the user label supplied in the HANDLE CONDITION. This takes precedence over the NOSUSPEND option but is, of course, negated by either NOHANDLE or RESP.

This option only applies to intrapartition queues.

**QUEUE(name)**

Specifies the symbolic name (1 - 4 alphanumeric characters) of the queue to be read from. The named queue must have been defined to CICS.

If SYSID is specified, the queue is assumed to be on a remote system whether or not it is defined as remote. Otherwise the transient data queue definition is used to find out whether the data set is on a local or a remote system.

**SET(ptr-ref)**

Specifies a pointer reference that is to be set to the address of the data read from the queue. CICS acquires an area large enough to hold the record and sets the pointer reference to the address of that area. The area is retained until another transient data command is executed. The pointer reference, unless changed by other commands or statements, is valid until the next **READQ TD** command or the end of task.
If DATALLOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16 MB line.

If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16 MB line, the data is copied below the 16 MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

**SYSID(systemname)**

(remote systems only) Specifies the name (1 - 4 characters) of the system to which the request is directed.

**Conditions**

84 DISABLED
occurs when the queue has been disabled.
Default action: terminate the task abnormally.

16 INVREQ
Occurs if READQ names an extrapartition queue that has been opened for output. This condition cannot occur for intrapartition queues.
Default action: terminate the task abnormally.

17 IOERR
Occurs when an input/output error occurs and the data record in error is skipped.
This condition occurs if the queue can be read; when the queue cannot be read, a QZERO condition occurs in this situation.
This condition can also occur if the FREE=CLOSE operand has been used in the data set definition for an extrapartition queue, and the queue has been closed and reopened.
Default action: terminate the task abnormally.

54 ISCINVREQ
Occurs when the remote system indicates a failure that does not correspond to a known condition.
Default action: terminate the task abnormally.

22 LENGERR
Occurs if READQ names an INTO area that cannot hold all the data that is to be returned to the application or an invalid length has been supplied. The check is made after the XTDIN exit has been invoked.
Default action: terminate the task abnormally.

100 LOCKED
Occurs when the request cannot be performed because use of the queue has been restricted owing to a unit of work failing indoubt. This can happen on any request for a logically-recoverable queue defined with WAIT(YES) and WAITACTION(REJECT) in the TDQUEUE resource definition.
Specify WAIT(YES) and WAITACTION(QUEUE) in the TDQUEUE resource definition if you want the transaction to wait.
Default action: terminate the task abnormally.

70 NOTAUTH
Occurs when a resource security check has failed on QUEUE(name).
Default action: terminate the task abnormally.

19 NOTOPEN
Occurs if the destination is closed. This condition applies to extrapartition queues only.
Default action: terminate the task abnormally.

**25 QBUSY**
Occurs if a **READQ TD** command attempts to access a record in a logically recoverable intrapartition queue that is being written to or is being deleted by another task, and there are no more committed records.

The NOSUSPEND option must be specified, or a HANDLE for the condition must be active, for this condition to be raised.

This condition applies only to intrapartition queues.

Default action: ignore the condition.

**44 QIDERR**
Occurs if the symbolic destination to be used with **READQ TD** cannot be found.

Default action: terminate the task abnormally.

**23 QZERO**
Occurs when the destination (queue) is empty or the end of the queue has been reached.

Default action: terminate the task abnormally.

**53 SYSIDERR**
Occurs when the SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION or an IPCONN). SYSIDERR also occurs when the link to the remote system is closed.

Default action: terminate the task abnormally.

**Examples**

The following example shows how to read a record from an intrapartition data set (queue), which in this case is the control system message log (CSML), into a data area specified in the request:

```
EXEC CICS READQ TD
  QUEUE('CSML')
  INTO(DATA)
  LENGTH(LDATA)
```

The following example shows how to read a record from an extrapartition data set (queue) that has fixed-length records into a data area provided by CICS; the pointer reference specified by the SET option is set to the address of the storage area reserved for the data record. It is assumed that the record length is known.

```
EXEC CICS READQ TD
  QUEUE(EX1)
  SET(PREF)
```
READQ TS

Read data from a temporary storage queue.

**READQ TS**

```
READQ TS
  TS
  QUEUE( name )
  INTO( data-area )
  QNAME( name )
  SET( ptr-ref )
  LENGTH( data-area )
  NUMITEMS( data-area )
  ITEM( data-value )
  NEXT
  SYSID( systemname )
```

**Conditions:** INVREQ, IOERR, ISCINVREQ, ITEMERR, LENGERR, NOTAUTH, QIDERR, SYSIDERR

This command is threadsafe when it is used with a queue in main storage or auxiliary storage, either in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is also threadsafe when it is used with a queue in a shared temporary storage pool in a z/OS coupling facility that is managed by a temporary storage data sharing server (TS server). The command is non-threadsafe when it is function shipped to a remote CICS region over another type of connection other than IPIC.

**Note for dynamic transaction routing:** Using this command might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see [Affinity](#).

**Description**

READQ TS retrieves data from a temporary storage queue in main or auxiliary storage.

**Options**

- **INTO( data-area )**
  - Specifies the data area into which the data is to be written. The data area can be any variable, array, or structure.

- **ITEM( data-value )**
  - Provides a halfword binary value that specifies the item number of the logical record to be retrieved from the queue.

- **LENGTH( data-area )**
  - Specifies the length, as a halfword binary value, of the record to be read.

  If you specify the INTO option, LENGTH need not be specified if the length can be generated by the compiler from the INTO variable.

  If you specify INTO, LENGTH defines the maximum length of data that the program accepts. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value that is specified, the data is truncated to that value and the LENGERR condition occurs.

  On completion of the retrieval operation, the data area is set to the original length of the data record that is read from the queue.

  If you specify the SET option, the LENGTH must be specified.

  For more information about when LENGTH must be specified, see “**LENGTH options in CICS commands**” on page 10.
**NEXT**

Specifies retrieval for the next sequential logical record following the last record that was retrieved by any task, or the first record if no previous record has been retrieved.

**Attention:** It is possible for two tasks to interleave if they lose control during the browse operation. For example, task 1 might retrieve items 1, 3, and 6 while task 2 retrieves items 2, 4, and 5. Using the `READQ TS` command with `NEXT` from a threadsafe program increases the likelihood of tasks interleaving, because they are running in parallel on their own TCBs. If the order of retrieval of items is important, add serialization logic to the application in order to single thread the browse of the queue, especially if the application is to be defined with CONCURRENCY (THREADSAFE) or CONCURRENCY (REQUIRED).

**NUMITEMS(data-area)**

Specifies a halfword binary field into which CICS stores a number that indicates how many items there are in the queue. This occurs only if the command completes normally.

**QNAME(name)**

An alternative to QUEUE, QNAME specifies the symbolic name (1 - 16 characters) of the queue to be read from. If the name has fewer than 16 characters, you must still use a 16-character field, padded with blanks if necessary.

**QUEUE(name)**

Specifies the symbolic name (1 - 8 characters) of the queue to be read from. If the name has fewer than 8 characters, you must still use an 8-character field, padded with blanks if necessary.

**SET(ptr-ref)**

Specifies the pointer reference that is set to the address of the retrieved data. The pointer reference, unless changed by other commands or statements, is valid until the next READQ TS command or the end of task.

If the application program is defined with DATALOCATION(ANY), the address of the data can be above or below the 16 MB line. If the application program is defined with DATALOCATION(BELOW), the address of the data is below the 16 MB line.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data that is returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data that is returned is in a CICS-key.

**SYSID(systemname)**

(Remote and shared queues only) Specifies the system name (1 - 4 characters) identifying the remote system or shared queue pool to which the request is directed. TSMODEL resource definitions do not support specifying a SYSID for a queue that resides in a temporary storage data sharing pool. Use the QUEUE or QNAME option instead. Using an explicit SYSID for a shared queue pool requires the support of a temporary storage table (TST).

**Conditions**

**16 INVREQ**

Occurs in either of the following situations:

- The queue was created by CICS internal code.
- The queue name that is specified consists solely of binary zeros.

Default action: terminate the task abnormally.

**17 IOERR**

RESP2 values:

5

There is an unrecoverable input/output error for a shared queue.

Default action: terminate the task abnormally.

**54 ISCINVREQ**

Occurs when the remote system indicates a failure that does not correspond to a known condition.
Default action: terminate the task abnormally.

26 ITEMERR
Occurs in either of the following situations:

• The item number that is specified is invalid (that is, outside the range of item numbers that are written to the queue).
• An attempt is made to read beyond the end of the queue by using the NEXT (default) option.

Default action: terminate the task abnormally.

22 LENGERR
Occurs when the length of the stored data is greater than the value specified by the LENGTH option.

This condition applies only to the INTO option and cannot occur with SET.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101
A resource security check has failed on QUEUE(name).

Default action: terminate the task abnormally.

44 QIDERR
Occurs when the queue specified cannot be found, either in main or in auxiliary storage.

Default action: terminate the task abnormally.

53 SYSIDERR
RESP2 values:

4
Occurs in any of the following situations:

• The SYSID option specifies a name that is not the local system or a remote system (made known to CICS by defining a CONNECTION or an IPCCONN).
• When IPIC connectivity is used, the local system, the remote system, or both, are not CICS TS 4.2 or later regions.
• The link to the remote system is closed.
• The CICS region in which the temporary storage command is executed fails to connect to the TS server that manages the TS pool that supports the referenced temporary storage queue. For example, this situation can occur if the CICS region is not authorized to access the temporary storage server.

This condition can also occur if the temporary storage server is not started, or because the server has failed (or been stopped) while CICS continues to run.

Default action: terminate the task abnormally.

Examples

The following example shows how to read the first (or only) record from a temporary storage queue into a data area that is specified in the request. The LENGTH data area is given the value of the length of the record.

EXEC CICS READQ TS
ITEM(1)
QUEUE(UNIQNAME)
INTO(DATA)
LENGTH(LDATA)
The following example shows how to read the next record from a temporary storage queue into a data area that is provided by CICS. The pointer reference that is specified by the SET option is set to the address of the storage area that is reserved for the data record, and the LENGTH data area is given the value of the length of the record.

```
EXEC CICS READQ TS
   QUEUE(DESCRQ)
   SET(PREF)
   LENGTH(LENG)
   NEXT
```

**RECEIVE (z/OS Communications Server default)**

Receive data from standard CICS terminal support or from a task that is not attached to a terminal.

**RECEIVE (default)**

![Diagram of RECEIVE (default) command]

**Conditions:** INVRREQ, LENGERR, NOTALLOC

**Description**

This form of the RECEIVE command is used by all CICS-supported terminals for which the other RECEIVE descriptions are not appropriate.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**RECEIVE (APPC)**

Receive data on an APPC mapped conversation.

**RECEIVE (APPC)**

![Diagram of RECEIVE (APPC) command]

**Conditions:** EOC, INVRREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR
Description
RECEIVE receives data from the conversation partner in an APPC mapped conversation.

**RECEIVE (LUTYPE2/LUTYPE3)**
Receive data from a 3270-display logical unit (LUTYPE2) or a 3270-printer logical unit (LUTYPE3).

```plaintext
RECEIVE (LUTYPE2/LUTYPE3)
  INTO(data-area)
  SET(ptr-ref)
  LENGTH(data-area)
  FLENGTH(data-area)
  MAXLENGTH(data-value)
  MAXFLENGTH(data-value)
  NOTRUNCATE

Conditions: EOC, INVREQ, LENGERR, TERMERR
```

Description
RECEIVE receives data from the terminal.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) (and BUFFER has not been specified), you can omit both the INTO and SET options.

**RECEIVE (LUTYPE4)**
Receive data from an LUTYPE4 logical unit.

```plaintext
RECEIVE (LUTYPE4)
  INTO(data-area)
  SET(ptr-ref)
  LENGTH(data-area)
  FLENGTH(data-area)
  MAXLENGTH(data-value)
  MAXFLENGTH(data-value)
  NOTRUNCATE

Conditions: EOC, EODS, INBFMH, INVREQ, LENGERR, SIGNAL, TERMERR
```

Description
RECEIVE receives data from the terminal.
If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**RECEIVE (LUTYPE6.1)**

Receive data on an LUTYPE6.1 session.

**Conditions:** EOC, INBFMH, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

**Description**

RECEIVE receives data from the conversation partner in an LUTYPE6.1 conversation.

**RECEIVE (3270 logical)**

Receive data from a 3270 logical unit.

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

RECEIVE receives data from a terminal.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) (and BUFFER has not been specified), you can omit both the INTO and SET options.
**RECEIVE (3600 pipeline)**

Receive initial input data from a 3600 pipeline logical unit. Subsequent RECEIVES for further input data are not allowed.

**Conditions:** INVREQ, LENGERR, NOTALLOC

**Description**

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**RECEIVE (3600-3601)**

Receive data from a 3600 (3601) logical unit.

**Conditions:** EOC, EODS, INBFMH, INVREQ, LENGERR, SIGNAL, TERMERR

**Description**

RECEIVE receives data from the terminal. This form of RECEIVE also applies to the 3630 plant communication system.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.
**RECEIVE (3600-3614)**

Receive data from a 3600 (3614) logical unit.

**Conditions**: INVREQ, LENGERR, TERMERR

**Description**

RECEIVE receives data from the terminal.

The data-stream and communication format used between a CICS application program and a 3614 is determined by the 3614. The application program is therefore device dependent when handling 3614 communication.

For further information about designing 3614 application programs for CICS, refer to the IBM 4700/3600/3630 Guide.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

---

**RECEIVE (3650)**

Receive data from 3650 logical units.

**Conditions**: EOC, EODS, INBFMH, INVREQ, LENGERR, TERMERR

**Description**

RECEIVE receives data from the terminal. This form of RECEIVE also applies to the following 3650 devices:
• Interpreter logical unit
• Host conversational (3270) logical unit
• Host conversational (3653) logical unit
• 3650/3680 command processor logical unit

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

### RECEIVE (3767)

Receive data from a 3767 interactive logical unit.

**RECEIVE (3767)**

- `RECEIVE` into `data-area`
- `LENGTH(data-area)`
- `FLENGTH(data-area)`
- `MAXLENGTH(data-value)`
- `MAXFLENGTH(data-value)`
- `NOTRUNCATE`

**Conditions:** EOC, INVREQ, LENGERR, SIGNAL, TERMERR

**Description**

RECEIVE receives data from the terminal. This form of RECEIVE also applies to the 3770 interactive logical unit.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

### RECEIVE (3770)

Receive data from a 3770 batch logical unit.

**RECEIVE (3770)**

- `RECEIVE` into `data-area`
- `LENGTH(data-area)`
- `FLENGTH(data-area)`
- `MAXLENGTH(data-value)`
- `MAXFLENGTH(data-value)`
- `NOTRUNCATE`

**Conditions:** EOC, EODS, INBFMH, INVREQ, LENGERR, SIGNAL, TERMERR
**Description**

RECEIVE receives data from the terminal. If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**RECEIVE (3790 full-function or inquiry)**

Receive data from a 3790 full-function or inquiry logical unit.

**Options**

**ASIS**

specifies that lowercase characters in the 3270 input data stream are not translated to uppercase; this allows the current task to receive a message containing both uppercase and lowercase data.

This option has no effect on the first RECEIVE command of a transaction, because terminal control performs a READ INITIAL and uses the terminal defaults to translate the operation data.

This option has no effect if the screen contains data before a transaction being initiated. This data is read and translated in preparation for the next task and the first RECEIVE command in that task retrieves the translated data.

**Note:** If you are using a katakana terminal, you might see some messages containing mixed English and katakana characters. That is because katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.
**BUFFER**
specifies that the contents of the 3270 buffer are to be read, beginning at buffer location 1 and continuing until all contents of the buffer have been read. All character and attribute sequences (including nulls) appear in the input data stream in the same order as they appear in the 3270 buffer.

**CONVID(name)**
identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs should use CONVID.

If this option is omitted, the principal facility is assumed.

**FLENGTH(data-area)**
An alternative to LENGTH. For architectural reasons, this option is limited to a maximum of 32K for all terminal-related RECEIVE commands.

**INTO(data-area)**
specifies the receiving field for the data read from the logical unit or terminal, or the application target data area into which data is to be received from the application program connected to the other end of the current conversation.

**LENGTH(data-area)**
specifies the length, as a halfword binary value, of the data received.

If you specify the INTO option, but omit the MAXLENGTH option, the argument must be a data area that specifies the maximum length that the program accepts. If the value specified is less than zero, zero is assumed.

If you specify the SET option, the argument must be a data area. When the data has been received, the data area is set to the length of the data.

**MAXFLENGTH(data-value)**
A fullword alternative to MAXLENGTH.

**MAXLENGTH(data-value)**
specifies the maximum amount (halfword binary value) of data that CICS is to recover. If INTO is specified, MAXLENGTH overrides the use of LENGTH as an input to CICS. If SET is specified, MAXLENGTH provides a way for the program to limit the amount of data it receives at one time.

If the length of data exceeds the value specified and the NOTRUNCATE option is not present, the data is truncated to that value and the LENGERR condition occurs. The data area specified in the LENGTH option is set to the original length of data.

If the length of data exceeds the value specified and the NOTRUNCATE option is present, CICS retains the remaining data and uses it to satisfy subsequent RECEIVE commands. The data area specified in the LENGTH option is set to the length of data returned.

If this option is omitted, the value indicated in the LENGTH option is assumed.

**NOTRUNCATE**
specifies that, when the data available exceeds the length requested, the remaining data is not to be discarded but is to be retained for retrieval by subsequent RECEIVE commands.

**SESSION(name)**
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If this option is omitted, the principal facility for the task is used.

**SET(ptr-ref)**
specifies the pointer reference that is to be set to the address of the data read from the logical unit or terminal, or the partner transaction. The pointer reference is valid until the next receive command or the end of task.

If DATALLOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16MB line.
If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**Conditions**

Some of the following conditions may occur in combination with others. CICS checks for these conditions in the following order:

1. EODS
2. INBFMH
3. EOC

If more than one occurs, only the first is passed to the application program. EIBRCODE, however, is set to indicate all the conditions that occurred.

**06 EOC**

occurs when a request/response unit (RU) is received with end-of-chain-indicator set. Field EIBEOC also indicates this condition.

Default action: ignore the condition.

**05 EODS (interpreter logical unit only)**

occurs when an end-of-data-set indicator is received.

Default action: terminate the task abnormally.

**07 INBFMH**

occurs if a request/response unit (RU) contains a function management header (FMH). Field EIBFMH contains this indicator and it should be used in preference to INBFMH. The IGNORE CONDITION command can be used to ignore the condition.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

**200**

A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.
also occurs (RESP2 not set) in any of the following situations:

- The command is used on an APPC conversation that is not using the EXEC CICS interface or that is not a mapped conversation.

Default action: terminate the task abnormally.

**22 LENGERR**

occurs if data is discarded by CICS because its length exceeds the maximum the program accepts and the NOTRUNCATE option is not specified.

Default action: terminate the task abnormally.

**61 NOTALLOC**

occurs if the RECEIVE command is issued by a transaction that has been started as a nonterminal task by the START command, or if the CONVID value or facility specified in the command does not relate to a conversation owned by the application.

Default action: terminate the task abnormally.

**24 SIGNAL**

occurs when an inbound SIGNAL data-flow control command is received from a partner transaction. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

**81 TERMERR**

occurs for a session-related or terminal-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

---

**RECEIVE (non-z/OS Communications Server default)**

Receive data from a task that is not attached to a terminal.

**RECEIVE (default)**

```
RECEIVE INTO(data-area) LENGTH(data-value) FLENGTH(data-value) SET(ptr-ref)
```

**Conditions:** INVREQ, LENGERR, NOTALLOC

**Description**

This form of the RECEIVE command is used by all CICS-supported terminals for which the other RECEIVE descriptions are not appropriate.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.
**RECEIVE (MRO)**

Receive data on an MRO conversation.

**Conditions:** EOC, INBFMH, INVREQ, LENGERR, NOTALLOC, TERMERR

**Description**

RECEIVE receives data from the conversation partner in an MRO conversation.

**RECEIVE (2260)**

Receive data from a 2260 or 2265 display station.

**Conditions:** INVREQ, LENGERR

**Description**

RECEIVE receives data from the terminal.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**RECEIVE (2980)**

Receive data from a 2980 general banking terminal system.
**RECEIVE (2980)**

- **RECEIVE**
  - INTO(data-area)
  - LENGTH(data-area)
  - FLENGTH(data-area)
  - SET(ptr-ref)
- **MAXLENGTH(data-value)**
- **MAXFLENGTH(data-value)**
- **PASSBK**
- **NOTRUNCATE**

**Conditions:** INVREQ, LENGERR, NOPASSBKRD

**Description**

RECEIVE receives data from the terminal.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) you can omit both the INTO and SET options.

**Passbook control**

All input and output requests to the passbook area of a 2980 are dependent on the presence of a passbook. The PASSBK option is used to specify that communication is with a passbook. The conditions NOPASSBKRD (RECEIVE) and NOPASSBKWR (SEND) occur on input and output requests respectively when a passbook is not present. These conditions can be handled by a HANDLE CONDITION command and appropriate handling routines.

If the passbook is present on an input request, the application program generally writes back to the passbook area to update the passbook. If the NOPASSBKWR condition occurs, CICS allows immediate output to the terminal. In a routine for the NOPASSBKWR condition, the application program should send an error message to the journal area of the terminal to inform the 2980 operator of this error condition. To allow the operator to insert the required passbook, CICS causes the transaction to wait 23.5 seconds before continuing.

On regaining control from CICS after sending the error message, the application program can attempt again to update the passbook when it has ensured that the print element is positioned correctly in the passbook area. This is generally accomplished by issuing two carrier returns followed by the number of tabs required to move the print element to the correct position.

If the NOPASSBKWR condition occurs during the second attempt to write to the passbook area, the application program can send another error message or take some alternative action (for example, place the terminal out of service). The presence of the Auditor Key on a 2980 Administrative Station Model 2 is controlled by the SEND PASSBK command and may be used in a manner similar to that described above.

**Output control**

The unit of transmission for a 2980 is called a **segment**. However, for the passbook and journal areas, CICS allows an application program to send messages that exceed the buffer size. For the passbook area, the maximum length of message is limited to one line of a passbook to avoid spacing (indexing) past the bottom of the passbook. For the journal area, the maximum length of message is specified in the LENGTH option of the SEND command.

For example, consider a 2972 buffer size of 48 characters and a 2980 Teller Station Model 4 passbook print area of 100 characters per line. The application program can send a message of 100 characters to this area; CICS segments the message to adjust to the buffer size. The application program must insert the passbook indexing character (X'25') as the last character written in one output request to the passbook area. This is done to control passbook indexing and thereby achieve positive control of passbook presence.
If a message contains embedded passbook indexing characters, and segmentation is necessary because of the length of the message, the output is terminated if the passbook spaces beyond the bottom of the passbook; the remaining segments are not printed.

**Output to a common buffer**

The SEND CBUFF command is used to transmit data to a common buffer. The data is translated to the character set of the receiving 2980 model. If more than one 2980 model type is connected to the 2972 control unit, the lengths are truncated if they exceed the buffer size.

**The DFH2980 structure**

The DFH2980 structure contains constants that may only be used when writing COBOL or PL/I application programs for the 2980. The structure is obtained by copying DFH2980 into the application program.

For COBOL, DFH2980 is copied into the working-storage section; for PL/I, DFH2980 is included using a %INCLUDE statement.

The station identification is given in the field STATIONID, whose value must be determined by the ASSIGN command. To test whether a normal or alternate station is being used, the STATIONID field is compared with values predefined in DFH2980. The values are:

<table>
<thead>
<tr>
<th>Station Identification</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATION-n-A or STATION-n-N-</td>
<td>STATION_n_A or STATION_n_N</td>
</tr>
</tbody>
</table>

where n is an integer (0 through 9) and A and N signify alternate and normal stations. (The break symbol is hyphen (-) for COBOL, and underscore (_) for PL/I.)

The teller identification on a 2980 Teller Station Model 4 is given in the 1-byte character field TELLERID. An ASSIGN command must be used to find out the TELLERID value.

Tab characters (X'05') must be included in the application program. The number of tabs required to position the print element to the first position of a passbook area is given in the field NUMTAB. An ASSIGN command must be used to find out the NUMTAB value. The value of NUMTAB is specified by the system programmer and may be unique to each terminal.

Other tab characters are inserted as needed to control formatting.

Any of the DFH2980 values TAB-ZERO through TAB-NINE for COBOL and PL/I, may be compared with NUMTAB to find out the number of tab characters that need to be inserted in an output message to get correct positioning of the print element. The tab character is included in DFH2980 as TABCHAR.

Thirty special characters are defined in DFH2980. Twenty-three of these can be referred to by the name SPECCHAR-# or SPECCHAR_# (for American National Standard COBOL or PL/I) where # is an integer (0 through 22). The seven other characters are defined with names that imply their usage, for example, TABCHAR.

Several other characters defined in DFH2980, such as HOLDPCF or TCTTEPCR, are intended for use in application programs using CICS macros, and should not be required in application programs using CICS commands.
**RECEIVE (3790 3270-display)**

Receive data from a 3790 (3270-display) logical unit.

**RECEIVE (3790 3270-display)**

- RECEIVE
- INTO(data-area)
- SET(ptr-ref)
- LENGTH(data-area)
- FLENGTH(data-area)
- MAXLENGTH(data-value)
- MAXFLENGTH(data-value)
- ASIS
- BUFFER
- NOTRUNCATE

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

RECEIVE receives data from the terminal.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID) (and BUFFER has not been specified), you can omit both the INTO and SET options.

**RECEIVE: non-z/OS Communications Server options**

Common options used on the RECEIVE command (non-z/OS Communications Server).

**Options**

**ASIS**

indicates that output is to be sent in transparent mode (with no recognition of control characters and accepting any of the 256 possible combinations of eight bits as valid transmittable data).

This option has no effect on the first RECEIVE command of a transaction, because terminal control performs a READ INITIAL operation and uses the terminal defaults to translate the data.

This option has no effect if the screen contains data before a transaction being initiated. This data is read and translated in preparation for the next task and the first RECEIVE command in that task retrieves the translated data.

**Note:** If you are using a katakana terminal, you might see some messages containing mixed English and katakana characters. That is because katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.

**BUFFER**

specifies that the contents of the 3270 buffer are to be read, beginning at buffer location one and continuing until all contents of the buffer have been read. All character and attribute sequences (including nulls) appear in the input data stream in the same order that they appear in the 3270 buffer.

**FLENGTH(data-area)**

A fullword alternative to LENGTH.
INTO(data-area)
specifies the receiving field for the data read from the terminal or logical unit, or the application target area receiving the data from the application program connected to the other end of the current conversation.

If you specify the INTO option, but omit the MAXLENGTH option, the argument for the LENGTH option must be a data area that specifies the maximum length that the program accepts. If the value specified is less than zero, zero is assumed.

If the length of the data exceeds the value specified, but the NOTRUNCATE option is not specified, the data is truncated to that value and the LENGERR condition occurs. When the data has been received, the data area for the LENGTH option is set to the original length of the data.

LEAVEKB
specifies that the keyboard is to remain locked at the completion of the data transfer.

LENGTH(data-area)
specifies the length, as a halfword binary value, of the data transmitted.

If you specify the INTO option, but omit the MAXLENGTH option, the argument must be a data area that specifies the maximum length that the program accepts. If the value specified is less than zero, zero is assumed.

If the length of the data exceeds the value specified, but the NOTRUNCATE option is not specified, the data is truncated to that value and the LENGERR condition occurs. When the data has been received, the data area is set to the original length of the data.

If you specify the SET option, the argument must be a data area. When the data has been received, the data area is set to the length of the data.

For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

MAXFLENGTH(data-value)
A fullword alternative to MAXLENGTH.

MAXLENGTH(data-value)
specifies the maximum amount (halfword binary value) of data that CICS is to recover. If INTO is specified, MAXLENGTH overrides the use of LENGTH as an input to CICS. If SET is specified, MAXLENGTH provides a way for the program to limit the amount of data it receives at one time.

If the value specified is less than zero, zero is assumed.

If the length of data exceeds the value specified and the NOTRUNCATE option is not present, the data is truncated to that value and the LENGERR condition occurs. The data area specified in the LENGTH option is set to the original length of data.

If the length of data exceeds the value specified and the NOTRUNCATE option is present, CICS retains the remaining data and uses it to satisfy subsequent RECEIVE commands. The data area specified in the LENGTH option is set to the length of data returned.

If this option is omitted, the value indicated in the LENGTH option is assumed.

NOTRUNCATE
specifies that, when the data available exceeds the length requested, the remaining data is not to be discarded but is to be retained for retrieval by subsequent RECEIVE commands.

PASSBK
specifies that communication is with a passbook.

PSEUDOBIN
specifies that the data being read is to be translated from System/7 pseudobinary representation to hexadecimal.

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If this option is omitted, the principal facility for the task is used.
**SET(ptr-ref)**

specifies a pointer reference that is to be set to the address of data received from the conversation partner in an MRO conversation. The pointer reference is valid until the next receive command or the end of task.

If DATALOCATION(ANY) is associated with the application program, the address of the data can be above or below the 16MB line.

If DATALOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

If you specify the SET option, the argument for the LENGTH option must be a data area. When the data has been received, the data area is set to the length of the data.

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- FREE
- PENDFREE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

**Conditions**

The following conditions can occur in combination with others. CICS checks for these conditions in the order:

1. INBFMH
2. EOC

If more than one occurs, only the first is passed to the application program. EIBRCODE, however, is set to indicate all the conditions that occurred.

**08 ENDINPT**

occurs when an end-of-input indicator is received.

Default action: terminate the task abnormally.

**06 EOC**

occurs when a request/response unit (RU) is received with the end-of-chain indicator set. Field EIBEOC also contains this indicator.

Default action: ignore the condition.

**04 EOF**

occurs when an end-of-file indicator is received.

Default action: terminate the task abnormally.

**07 INBFMH**

occurs if a request/response unit (RU) contains a function management header (FMH). Field EIBFMH contains this indicator and it should be used in preference to INBFMH. The IGNORE CONDITION command can be used to ignore the condition.
Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

**200**

A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

**22 LENGERR**

occurs if data is discarded by CICS because its length exceeds the maximum the program accepts and the NOTRUNCATE option is not specified.

Default action: terminate the task abnormally.

**50 NOPASSBKRD**

occurs if no passbook is present.

Default action: terminate the task abnormally.

**61 NOTALLOC**

occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

**02 RDATT**

occurs if a RECEIVE command is terminated by the attention (ATTN) key rather than the return key.

Default action: ignore the condition.

**81 TERMERR**

occurs for a terminal-related error, such as a session failure. This condition applies to z/OS Communications Server-connected terminals only.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

---

**RECEIVE MAP**

Receive screen input into an application data area.

For further information about BMS, see Basic mapping support.
Receive Map

**Receive Map**

```
RECEIVE MAP( name )
      MAPSET( name )
      INTO( data-area )
      SET( ptr-ref )
      TERMINAL
      FROM( data-area )
      LENGTH( data-value )
      TERMINAL
      ASIS
      INPARTN( name )
```

**Conditions:** EOC, EODS, INVMPSZ, INVPARTN, INVREQ, MAPFAIL, PARTNFAIL, RDATT, UNEXPIN

**Note:** INPARTN is supported by Standard and full BMS

**Description**

Receive Map maps input data from a terminal into a data area in an application program. Data from certain logical units is not mapped, but is left unaltered. Refer to the appropriate CICS subsystem guide to see if this is true for a particular logical unit.

Following a Receive Map command, the inbound cursor position is placed in EIBCPOSN, and the terminal attention identifier (AID) placed in EIBAID.

See BMS macros for map definitions.

If data is to be received, you must specify either the INTO or the SET option. If a Receive is issued purely to detect an attention identifier (AID), you can omit both the INTO and the SET options.

**Options**

**ASIS**

specifies that lowercase characters in the 3270 input data stream are not translated to uppercase; this allows the current task to receive a message containing both uppercase and lowercase data.

This option has no effect on the first Receive command of a transaction, or if the screen contains data before a transaction being initiated. For example, if a transaction is initiated by another transaction, and begins by receiving data originally output by that transaction, it cannot suppress uppercase translation on the data. This data is read and translated in preparation for the next task and the first Receive command in that task retrieves the translated data.

**Note:** If you are using a katakana terminal, you might see some messages containing mixed English and katakana characters. That is because katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.

**FROM(data-area)**

specifies the data area containing the data to be mapped by a Receive Map command. This includes the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and specifying NODDS in the BMS operand).
**INPARTN**(name)
specifies the name (1–2 characters) of the partition in which the terminal operator is expected to enter data. If the terminal operator enters data in some other partition, the INPARTN partition is activated, the keyboard is unlocked for the partition, and an error message is output to any error message partition. This option is ignored if the terminal does not support partitions, or if there is no application partition set.

**INTO**(data-area)
specifies the data area into which the mapped data is to be written. If this field is not specified, the name defaults to the name of the map suffixed with an I.

**LENGTH**(data-value)
specifies the length of the data to be formatted as a halfword binary value. It must not exceed the length of the FROM data area, but this should include the length of the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and specifying NODDS in the BMS operand).

For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**MAP**(name)
specifies the name (1–7 characters) of the map to be used.

**MAPSET**(name)
specifies the unsuffixed name (1–7 characters) of the mapset to be used. The mapset must reside in the CICS program library. The mapset can be defined either by using RDO or by program autoinstall when the mapset is first used. If this option is not specified, the name given in the MAP option is assumed to be that of the mapset.

**SET**(ptr-ref)
specifies the pointer that is to be set to the address of the 12-byte prefix to the mapped data. The 12-byte prefix is generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and specifying NODDS in the BMS operand).

The pointer reference is valid until the next receive command or the end of task.

If DATALOCATION(ANY) is associated with the application program, the address of the data may be above or below the 16MB line. The data area includes the 12-byte prefix. Ensure that the 12-byte prefix is not overwritten, because this might cause a storage violation.

If DATALOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

**TERMINAL**
specifies that input data is to be read from the terminal that originated the transaction.

**Conditions**

Some of the following conditions can occur in combination. If more than one occurs, only the first is passed to the application program.

EIBRCODE, however, is set to indicate all the conditions that occurred.

**06 EOC**
occurs if the request/response unit (RU) is received with the end-of-chain (EOC) indicator set. It applies only to logical units.

Default action: ignore the condition.

**05 EODS**
occurs if no data is received (only an FMH). It applies only to 3770 batch LUs and to 3770 and 3790 batch data interchange LUs.
Receive screen input into an application data area, without reference to the principal facility, if any.
Terminal characteristics are obtained from the MAPPINGDEV parameter.
For further information about BMS, see Basic mapping support.
**Receive Map Mappingdev**

```
RECEIVE MAP( name ) — MAPPINGDEV( data-value ) — FROM( data-area )
```

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEN(data-value)</td>
<td>Specifies the length of the data to be formatted as a halfword binary value. It must not exceed the length of the FROM data area, but this should include the length of the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and specifying NODDS in the BMS operand). For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.</td>
</tr>
<tr>
<td>CURSOR(data-value)</td>
<td>Specifies an unsigned halfword binary field containing the cursor position (relative to zero) to be used. Usually this will be the value contained in EIBCPOSN following the RECEIVE operation that originally received the datastream from the terminal. The value specified is moved into EIBCPOSN in the EXEC interface block on completion of the operation. No check is made that the CURSOR value specified is valid. If CURSOR(data-value) is not specified, then the cursor value defaults to X'0000'.</td>
</tr>
<tr>
<td>AID(data-value)</td>
<td>Specifies the one-byte data area containing the value of the 3270 attention identifier (AID) to be used when performing the mapping operation. Usually this will be the value contained in EIBAID following the RECEIVE operation that originally received the datastream from the terminal. The value specified is moved into field EIBAID in the EXEC interface block on completion of the operation. No check is made that the AID value specified is valid. If AID(data-value) is not specified, then the AID value defaults to X'7D' (the Enter key). If the AID byte (either explicitly, or by default) indicates an operation other than CLEAR, PA1, PA2, or PA3, and CURSLOC=YES is specified for the map, then the field containing the cursor is flagged by setting the X'02' bit in its flag byte. If the AID (whether specified explicitly, or by default) is the subject of a HANDLE AID command, the specified branch will be taken in the usual way.</td>
</tr>
<tr>
<td>FROM(data-area)</td>
<td>Specifies the data area containing the data to be mapped. This must be in the format of a TIOA and must contain a 12-byte prefix.</td>
</tr>
<tr>
<td>INTO(data-area)</td>
<td>Specifies the data area into which the mapped data is to be written. If this field is not specified, the name defaults to the name of the map suffixed with an I.</td>
</tr>
</tbody>
</table>

**Conditions:** INVMSZ, INVREQ, MAPFAIL,

**Description**

RECEIVE MAP MAPPINGDEV allows the mapping of input data from a 3270 terminal that is not necessarily the principal facility of the transaction.

MAPPINGDEV specifies the name of a 3270 terminal whose BMS characteristics were used to create the input data stream. This might be a terminal from which the data was originally received using a RECEIVE command.

**Options**
MAP(name)
Specifies the name (1–7 characters) of the map to be used.

MAPPINGDEV(data-value)
Specifies the name of a 3270 terminal whose characteristics match those of the terminal from which the data was originally received using a RECEIVE command.

MAPSET(name)
Specifies the unsuffixed name (1–7 characters) of the mapset to be used. The mapset must reside in the CICS program library. The mapset can be defined either by using RDO or by program autoinstall when the mapset is first used. If this option is not specified, the name given in the MAP option is assumed to be that of the mapset.

SET(ptr-ref)
Specifies the pointer that is to be set to the address of the 12-byte prefix to the mapped data. The pointer reference is valid until the next RECEIVE or RECEIVE MAP command, or until the end of the transaction, unless the application releases it by using a FREEMAIN request.

If TASKDATALOC(ANY) is specified for the running task, the data returned may be above or below the 16MB line.
If TASKDATALOC(BELOW) is specified for the running task, the data returned is below the 16MB line.
If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in CICS-key.

Conditions
Some of the following conditions may occur in combination. If more than one occurs, only the first is passed to the application program.

38 INVMPSZ
occurs if the specified map is too wide or too long for the terminal.
Default action: terminate the task abnormally.

16 INVREQ
occurs if the terminal specified by MAPPINGDEV does not exist, does not support BMS, or is not a 3270 printer or display.
Default action: terminate the task abnormally.

36 MAPFAIL
occurs if the data to be mapped has a length of zero or does not contain a set-buffer-address (SBA) sequence.
Default action: terminate the task abnormally.

RECEIVE PARTN
Receive data from an 8775 terminal partition. This command is only available on standard and full BMS.
For further information about BMS, see Basic mapping support.

RECEIVE PARTN

Standard and full BMS:
RECEIVE PARTN

\[\text{INTO(} \text{data-area} \text{)} \quad \text{LENGTH(} \text{data-value} \text{)} \quad \text{ASIS} \]

\[\text{SET(} \text{ptr-ref} \text{)} \]

Conditions: EOC, EODS, INVPARTN, INVREQ, LENGERR

Description

RECEIVE PARTN reads data from a partition on an 8775 terminal. It indicates which partition the data came from, and puts the data into the INTO or the SET data area. You can then treat the data as though it had originated from a terminal in base (unpartitioned) state.

Following a RECEIVE PARTN command, the inbound cursor position is placed in EIBCPOSN, and the terminal attention identifier (AID) placed in EIBAID. EIBAID and EIBCPOSN are also updated at task initiation for non-ATI tasks as well as after each terminal control and BMS input.

See BMS macros for map definitions.

If data is to be received, you must specify either the INTO or the SET option. If a RECEIVE is issued purely to detect an attention identifier (AID), you can omit both the INTO and the SET options.

Options

ASIS

specifies that lowercase characters in the 3270 input data stream are not translated to uppercase; this allows the current task to receive a message containing both uppercase and lowercase data.

The ASIS option has no effect on the first RECEIVE command of a transaction, or if the screen contains data prior to a transaction being initiated. For example, if a transaction is initiated by another transaction, and begins by receiving data originally output by that transaction, it cannot suppress uppercase translation on the data. This data is read and translated in preparation for the next task and the first RECEIVE command in that task retrieves the translated data.

Note: If you are using a katakana terminal, you might see some messages containing mixed English and katakana characters. That is because katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.

INTO(data-area)

specifies the area into which the input data stripped of partition controls is to be written. The length of this area must be specified by the LENGTH option. If the area is not large enough to hold the input data, the input data is truncated, and the LENGERR condition raised. The length option data area is set to the length of data received, before any truncation.

LENGTH(data-value)

specifies the length of the data to be formatted as a halfword binary value. It must be set to the length of any INTO area before the command. After the command, BMS sets the LENGTH option to the length of data received before any truncation if the INTO area is too small.

For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

PARTN(data-area)

is set to the name (1–2 characters) of the input partition. The partition can be defined either by using RDO or by program autoinstall when the partition is first used.

SET(ptr-ref)

specifies the pointer that is to be set to the address of the 12-byte prefix to the mapped data. The pointer reference is valid until the next receive command or the end of task.

If DATALOCATION(ANY) is associated with the application program, the address of the data may be above or below the 16MB line.
If DATALOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

**Conditions**

Some of the following conditions can occur in combination. If more than one occurs, only the first one is passed to the application program.

**06 EOC**

occurs if the request/response unit (RU) is received with the end-of-chain (EOC) indicator set. It applies only to logical units.

Default action: ignore the condition.

**05 EODS**

occurs if no data is received (only an FMH). It applies only to 3770 batch LUs and to 3770 and 3790 batch data interchange LUs.

Default action: terminate the task abnormally.

**65 INVPARTN**

occurs if the specified partition is not defined in the partition set associated with the application program.

Default action: terminate the task abnormally.

**16 INVREQ**

occurs if a RECEIVE PARTN command is issued in a nonterminal task; these tasks do not have a TIOA or a TCTTE.

Default action: terminate the task abnormally.

**22 LENGERR**

occurs if the INTO area of a RECEIVE PARTN command is not large enough to hold the input data.

Default action: truncate the data to fit within the INTO area.

---

**RELEASE**

Release a loaded program, table, or mapset.

**RELEASE**

```
  RELEASE PROGRAM( name )
```

**Conditions:** INVREQ, NOTAUTH, PGMIDERR

This command is threadsafe.

**Note for dynamic transaction routing:** Using RELEASE of a program LOADed with HOLD could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

**Description**

RELEASE releases the program, table, or mapset previously loaded by a LOAD command. This means that the issuing task can no longer use the resource unless another LOAD is issued.

**Note:** RELEASE does not remove a program from storage. It reduces the RESCOUNT by 1 and when the count reaches zero, the storage occupied by the program can be released by CICS storage manager.
If the HOLD option is specified in the LOAD command, the loaded resource is not released at the end of the task. It can only be released by a RELEASE command. This RELEASE command may be issued by the task that loaded the resource or by any other task.

If the HOLD option is not specified in the LOAD command, the loaded resource is released at the end of the task. It may, however, be released before this by the task that loaded the resource issuing a RELEASE command.

Options

**PROGRAM(name)**

specifies the identifier (1–8 characters) of a program, table, or mapset to be released.

Conditions

16 INVREQ

RESP2 values:

5  
An invalid attempt is made by the program to release itself. A RELEASE command for the program that contains this command is allowed only when a corresponding LOAD command for the program has been issued from the same task, or when a LOAD command with the HOLD option has been issued from another task.

6  
The command is issued for a program that is not loaded.

7  
Either the command is issued for a program that was loaded, without the HOLD option, by another task; or the program has been enabled as a global user exit.

17  
The program is defined with RELOAD=YES. It must be released by a FREEMAIN rather than a RELEASE command.

30  
The program manager domain has not yet been initialized. This is probably due to a release request having been made in a first stage PLT.

Default action: terminate the task abnormally.

70 NOTAUTH

occurs when a resource security check has failed on PROGRAM(name).

Default action: terminate the task abnormally.

27 PGMIDERR

RESP2 values:

1  
A program, table, or mapset has no installed resource definition.

2  
A program, table, or mapset is disabled.

9  
The installed program definition is for a remote program.

42  
An attempt has been made to RELEASE a JVM program. This is invalid because Java byte codes programs are not managed by CICS Loader.

Default action: terminate the task abnormally.
Examples

The following example shows how to release an application program, called PROG4, loaded in response to a LOAD command:

```cicssource
EXEC CICS RELEASE PROGRAM('PROG4')
```

### REMOVE SUBEVENT

Remove a sub-event from a BTS composite event.

**REMOVE SUBEVENT**

```cicssource
  REMOVE SUBEVENT( data-value ) EVENT( data-value )
```

**Conditions:** EVENTERR, INVREQ

**Description**

REMOVE SUBEVENT removes a sub-event from a named BTS composite event. This call does not delete the removed event. Nor does it reset the event's fire status. Note that, after this call, the removed event—because it is no longer a sub-event—will cause the current activity to be reattached if it fires.

Removing a sub-event causes the composite's predicate to be re-evaluated.

**Options**

- **EVENT(data-value)** specifies the name (1–16 characters) of the composite event.
- **SUBEVENT(data-value)** specifies the name (1–16 characters) of the event which is to be removed from the named composite event.

**Conditions**

- **111 EVENTERR**
  - RESP2 values:
    - 4: The event specified on the EVENT option is not recognized by BTS.
    - 5: The sub-event specified on the SUBEVENT option is not recognized by BTS.
- **16 INVREQ**
  - RESP2 values:
    - 1: The command was issued outside the scope of an activity.
    - 2: The event specified on the EVENT option is not a composite event.
    - 3: The event specified on the SUBEVENT option is not a sub-event of the composite event specified on the EVENT option.
REQUEST ENCRYPTPTKT

Request an external security manager to generate an encrypted PassTicket.

REQUEST ENCRYPTPTKT

\[
\text{REQUEST ENCRYPTPTKT} \quad \text{REQUEST} \quad \text{ENCRYPTPTKT( ptr_ref)} \quad \text{FLENGTH( data-area)} \quad \text{ENCRYPTKEY( data-area)} \quad \text{ESMAPNAME( data-value)} \quad \text{ESMREASON( data-area)} \quad \text{ESMRESP( data-area)}
\]

Conditions: NOTAUTH, INVREQ

This command is threadsafe.

Description

The REQUEST ENCRYPTPTKT command requests an external security manager (ESM), such as RACF, to generate an encrypted PassTicket.

A PassTicket that is not encrypted is a password substitute that your program can use to sign on to a particular application on a particular system, such as another CICS region. You must use the ESMAPPNAME option to specify the profile name by which the external security manager refers to the application to which you are signing on.

ENCRYPTKEY must contain a value that is returned by a previous VERIFY TOKEN command for the same CICS task.

Note: When a VERIFY TOKEN command is run with the ENCRYPTKEY option, any previous value of ENCRYPTKEY that was obtained for the same task is no longer valid. It means if a number of VERIFY TOKEN commands are run, it is only an ENCRYPTKEY value from the last one that is valid to use with a REQUEST ENCRYPTPTKT command.

A value in ENCRYPTKEY can be used once to obtain an encrypted PassTicket with a REQUEST ENCRYPTPTKT command. Having run a REQUEST ENCRYPTPTKT command once, if another encrypted PassTicket is required, it is necessary to run a VERIFY TOKEN command again to obtain a new value with the ENCRYPTKEY option. Then, you can run a REQUEST ENCRYPTPTKT command for a second time.

The encrypted PassTicket returned by a REQUEST ENCRYPTPTKT command is intended for decryption by the subsystem that supplied the Kerberos token, and that was used with the VERIFY TOKEN command with ENCRYPTKEY option.

The encrypted PassTicket that the external security manager generates is for the user ID associated with the task that issues the REQUEST ENCRYPTPTKT command. Use the EXEC CICS ASSIGN command with the USERID option to identify the user ID that is associated with the task. A PassTicket cannot be obtained for the default user ID.

Note: A request for a PassTicket succeeds if a userid is revoked, but an attempt to sign on with that userid fails.

A PassTicket must be used within 10 minutes of being generated. If the PassTicket times out (because, for example, of a session failure), your application must generate another PassTicket before you can attempt to sign on again. Repeated failed sign-on attempts with PassTickets can result in the user ID being revoked.

Before you use PassTickets, you must ensure that the system clocks for the target system and the originating system are synchronized to within the valid time range. You must also define a Secure Signon key for each target system. For information on the requirements for using PassTickets, see Generating and using PassTickets for secure sign-on.
Options

**ENCRYPTPTK**(ptr-ref)
Specifies a data area in which the encrypted PassTicket is returned.

**FLENGTH**(fullword binary data-area)
Returns the length of the encrypted PassTicket.

**ENCRYPTKEY**(data-area)
This is the 4-byte token that is obtained from a previous VERIFY TOKEN representing the key to be used to encrypt the PassTicket.

**ESMAPNAME**(data-value)
Specifies the eight-character profile name by which the external security manager refers to the application for which the supplied PassTicket is used. For example, if the application is another CICS region, the profile name might be the APPLID of the CICS region. If the external security manager is RACF, for more information about RACF profile names and PassTickets, see Using the secured signon function in z/OS Security Server RACF Security Administrator's Guide.

**ESMRESP**(data-area)
Returns the response code from the external security manager, as a fullword binary variable. When RACF is in use, the possible values are the return codes that are supplied when you are using the RACF secured sign-on service to generate a PassTicket, as follows:

- **0**: A PassTicket was produced.
- **8**: A PassTicket was not produced.

**ESMREASON**(data-area)
Returns the reason code from the external security manager, as a fullword binary variable.

If the external security manager is RACF, the possible values are the RACF reason codes that are supplied by the z/OS Security Server RACF Callable Services > GSS-API functions (Function code 2) > Subfunction codes > Wrap a message. See GSS-API Subfunction codes in z/OS Security Server RACF Callable Services. For an explanation of a reason code, see R_GenSec Return and reason codes in z/OS Security Server RACF Callable Services and Status codes in z/OS Integrated Security Services Network Authentication Service Administration.

Conditions

**16 INVREQ**
RESP2 values:

- **251**: The interface between CICS and the external security manager is not active.
- **252**: The value that is returned by the external security manager in ESMRESP is not classified by CICS.
- **254**: The external security manager does not support requests for a PassTicket.
- **255**: Invalid ENCRYPTKEY.
- **256**: This command is not valid when you are running under the default user ID.
- **257**: The ENCRYPTTOKEN option was specified, but the associated kerberos token originated from a system that does not support message confidentiality.

**70 NOTAUTH**
RESP2 values:
PassTicket not built successfully. The external security manager does not authorize a request for a PassTicket for the combination of the user ID associated with the task that issued this command, and the profile name that is specified in ESMAPPNAME.

The external security manager does not authorize a request to generate a PassTicket for this region.

**REQUEST PASSTICKET**

Request an external security manager to build a PassTicket.

**Syntax**

```plaintext
REQUEST PASSTICKET
```

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESMAPPNAME(data-area)</td>
<td>Specifies the eight-character profile name by which the external security manager refers to the application for which the supplied PassTicket is used. For CICS regions, the profile name is the APPLID of the CICS region. If the external security manager is RACF, for more information about RACF profile names and PassTickets, see Using the secured signon function in z/OS Security Server RACF Security Administrator's Guide.</td>
</tr>
</tbody>
</table>

**Conditions:** NOTAUTH, INVREQ

This command is threadsafe.

**Description**

The `REQUEST PASSTICKET` command requests an external security manager (ESM), such as RACF, to build a PassTicket. The PassTicket is a password substitute that your program can use to sign on to a particular application on a particular system, such as another CICS region. You must use the ESMAPPNAME option to specify the profile name by which the external security manager refers to the application to which you are signing on.

The PassTicket that the external security manager generates is for the user ID associated with the task that issues the `REQUEST PASSTICKET` command. Use the EXEC CICS ASSIGN command with the USERID option to identify the user ID that is associated with the task.

**Note:** A request for a PassTicket succeeds if a userid is revoked, but an attempt to sign on with that userid and PassTicket fails.

A PassTicket must be used within 10 minutes of being generated. If the PassTicket times out (because, for example, of a session failure), your application must generate another before attempting to sign on again. Repeated failed sign-on attempts with PassTickets can result in the user ID being revoked.

PassTickets are not displayed when the CICS execution diagnostic facility (EDF) is used.

Before using PassTickets, you must ensure that the system clocks for the target system and the originating system are synchronized to within the valid time range. You must also define a Secure Signon key for each target system. For information on the requirements for using PassTickets, see Generating and using PassTickets for secure sign-on.

**Options**

ESMAPNAME(data-area)

Specifies the eight-character profile name by which the external security manager refers to the application for which the supplied PassTicket is used. For CICS regions, the profile name is the APPLID of the CICS region. If the external security manager is RACF, for more information about RACF profile names and PassTickets, see Using the secured signon function in z/OS Security Server RACF Security Administrator's Guide.
ESMREASON(*data-area*)
Displays the ESM reason code returned for the ESM function issued. It is returned when CICS returns a NOTAUTH RESP. See the corresponding RESP2 values for details of the ESM reason code.

ESMRESP(*data-area*)
Displays the ESM return code returned for the ESM function issued. It is returned when CICS returns a NOTAUTH RESP. See the corresponding RESP2 values for details of the ESM return code.

PASSTICKET(*data-area*)
Returns the 8-character PassTicket generated by the external security manager.

Conditions

16 INVREQ
RESP2 values:

247
An invalid value has been specified for ESMAPPNAME.

251
The interface between CICS and the external security manager is not active.

252
The value returned by the external security manager in ESMRESP is not classified by CICS.

254
The external security manager does not support requests for a PassTicket.

256
This command is not valid when running under the default userid.

70 NOTAUTH
RESP2 values:

250
The external security manager does not authorize a request for a PassTicket for the combination of the user ID associated with the task that issued this command and the profile name specified in ESMAPPNAME.

If you are using RACF, see the instruction for the destination system, described in Implementing PassTickets for secure sign-on, for the RACF definitions required to generate PassTickets.

If the ESM is RACF, the return codes and reason codes are defined in the RACROUTE REQUEST=AUTH function. See z/OS Security Server RACROUTE Macro Reference: Return codes and reason codes for RACROUTE REQUEST=AUTH (standard form) for more information.

260
The external security manager does not authorize a request for a PassTicket for the combination of the user ID associated with the task that issued this command and the profile name specified in ESMAPPNAME.

If you are using RACF, see the instruction for the originating system, described in Implementing PassTickets for secure sign-on, for the RACF definitions required to generate PassTickets.

If the ESM is RACF, the return codes and reason codes are defined in the RACF secured signon PassTicket service (RCVTPTGN). See Using the RACF secured signon PassTicket service to generate a PassTicket for more information.

RESET ACQPROCESS
Reset a BTS process to its initial state.
RESET ACQPROCESS

Description
RESET ACQPROCESS resets the currently-acquired BTS process to its initial state. Any descendant activities of the root activity are deleted.

Note: RESET has no effect on the process containers, nor on the root activity's containers, the contents of which are unchanged.

Issue this command, before a second RUN command, when a process needs to be retried. When the process is re-run, the root activity is sent a DFHINITIAL event.

To be eligible to be reset, a process must:
1. Have been acquired in the current unit of work—that is, it must be the currently-acquired process.
2. Be in one of the following modes:
   - COMPLETE. This is the usual case. Perhaps the process has completed abnormally, and needs to be reset before being retried.
   - INITIAL. The process has not yet been run.

Options
ACQPROCESS
specifies that the process that is currently acquired by the requestor is to be reset.

Conditions
16 INVREQ
   RESP2 values:
   15
   The unit of work that issued the request has not acquired a process.

17 IOERR
   RESP2 values:
   29
   The repository file is unavailable.
   30
   An input/output error has occurred on the repository file.

100 LOCKED
   The request cannot be performed because a retained lock exists against the relevant record on the repository file.

70 NOTAUTH
   RESP2 values:
   101
   The user associated with the issuing task is not authorized to reset the process.

106 PROCESSBUSY
   RESP2 values:
   13
   The request timed out. It may be that another task using this process-record has been prevented from ending.
The process to be reset is not in COMPLETE or INITIAL mode.

**RESET ACTIVITY**

Reset a BTS activity to its initial state.

**RESET ACTIVITY**

 drama_RESET — ACTIVITY( data-value ) drama

**Conditions:** ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED, NOTAUTH

**Description**

RESET ACTIVITY resets a BTS child activity to its initial state. Its completion event is added to the parent’s event pool, with the fired status set to NOTFIRED. If the activity has children of its own, they are deleted.

**Note:** RESET has no effect on the contents of the activity’s data containers, which are unchanged.

Issue this command, before a second RUN command, when an activity needs to be retried. When the activity is re-run, it is sent a DFHINITIAL event.

To be eligible to be reset, an activity must:

1. Be a child of the activity that issues the RESET command.
2. Be in one of the following modes:
   - COMPLETE. This is the usual case. Perhaps the activity has completed abnormally, and needs to be reset before being retried.
   - INITIAL. The activity has not yet been run.

**Options**

**ACTIVITY(data-value)**

specifies the name (1–16 characters) of the activity to be reset. This must be a child of the current activity.

**Conditions**

**107 ACTIVITYBUSY**

RESP2 values:

19

The request timed out. It may be that another task using this activity-record has been prevented from ending.

**109 ACTIVITYERR**

RESP2 values:

8

The activity named in the ACTIVITY option is not a child of the current activity.

14

The activity to be reset is not in COMPLETE or INITIAL mode.

**16 INVREQ**

RESP2 values:
The RESET ACTIVITY command was issued outside the scope of a currently-active activity.

**17 IOERR**

RESP2 values:

29  The repository file is unavailable.

30  An input/output error has occurred on the repository file.

**100 LOCKED**

The request cannot be performed because a retained lock exists against the relevant record on the repository file.

**70 NOTAUTH**

RESP2 values:

101  The user associated with the issuing task is not authorized to reset the activity.

---

**RESETBR**

Reset the start of a browse.

**RESETBR**

```
  RESETBR  FILE(filename)  RIDFLD(data-area)  KEYLENGTH(data-value)  GTEQ  EQUAL  RBA  RRN  XRBA
  SYSID(systemname)  REQID(data-value)  GENERIC
```

Conditions: FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFND, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

RESETBR specifies, during a browse, the record in a file or data table on a local or a remote system, where you want the browse to be repositioned.

When browsing a VSAM file or data table, you can use the RESETBR command to reposition the browse (which you can also achieve by modifying the RIDFLD data area on a READNEXT or READPREV command).
and you can also change the browse characteristics from those specified on STARTBR, without ending the browse. The characteristics that can be changed are those specified by the GENERIC, GTEQ, and RBA options.

When browsing a BDAM file, you can include this command at any time before issuing any other browse command. It is similar to an ENDBR–STARTBR sequence (but with less function), and gives the BDAM user the sort of skip sequential capability that is available to VSAM users through use of the READNEXT command.

If a RESETBR request specifies the precise key at which the browse is to start (that is, it specifies a full key and the EQUAL keyword) the record returned on the following READNEXT (or READPREV) command might not be the same as the record specified by the RESETBR command for a file opened in VSAM NSR or RLS mode. This can occur because the initial record specified on the RESETBR command can be deleted by another transaction in between the RESETBR completing and a READNEXT or READPREV command being issued. In VSAM LSR mode, the initial record cannot be deleted between the RESETBR and the READNEXT.

**Note:** RESETBR invalidates a TOKEN set by a previous READ or READNEXT command.

**Options**

**EQUAL**

specifies that the search is satisfied only by a record having the same key (complete or generic) as that specified in the RIDFLD option.

**FILE(filename)**

(VSAM and data table) specifies the name of the file to be accessed.

If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

**GENERIC**

(VSAM KSDS, path or data table) specifies that the search key is a generic key whose length is specified in the KEYLENGTH option. The search for a record is satisfied when a record is found that has the same starting characters (generic key) as those specified.

**GTEQ**

(VSAM and data table) specifies that if the search for a record that has the same key (complete or generic) as that specified in the RIDFLD option is unsuccessful, the first record that has a greater key is retrieved. Use this option only with keyed or RRN.

**KEYLENGTH(data-value)**

specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case KEYLENGTH is not valid.

This option must be specified if GENERIC is specified, and it can be specified whenever a key is specified. If the length specified is different from the length defined for the data set and the operation is not generic, the INVREQ condition occurs.

The INVREQ condition also occurs if a RESETBR command specifies GENERIC, and the KEYLENGTH value is not less than that specified in the VSAM definition.

If KEYLENGTH(0) is used with the object of reading the first record in the data set, the GTEQ option must also be specified. If EQUAL is specified either explicitly or by default with KEYLENGTH(0), the results of the STARTBR are unpredictable.

For remote files, the KEYLENGTH can be specified in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

**RBA**

(VSAM KSDS or ESDS base data sets, or CICS-maintained data tables only, not paths) specifies that the record identification field specified in the RIDFLD option contains a relative byte address. Use this
option only when browsing an ESDS or KSDS base and using relative byte addresses instead of keys to identify the records.

You cannot use RBA for:

- User-maintained data tables
- Coupling facility data tables
- Any KSDS file opened in RLS access mode
- KSDS files that use extended addressing

Also, you are recommended not to use RBA for ESDS files that hold more than 4 GB. (Use XRBA instead.)

REQID(data-value)

specifies as a halfword binary value a unique request identifier for a browse, used to control multiple browse operations on a data set. If this option is not specified, a default value of zero is assumed.

RIDFLD(data-area)

specifies the record identification field. The contents can be a key, a relative byte address, or a relative record number (for VSAM data sets), or a block reference, physical key, and a deblocking argument (for BDAM data sets). For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD value can be greater than or equal to zero. For a relative record number, the RIDFLD value can be greater than or equal to 1.

For VSAM, a full record ID of X'FF's indicates that the browse is to be positioned at the end of the data set in preparation for a backwards browse using READPREV commands.

RRN

(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number.

SYSID(systemname)

specifies the name of the system to which the request is directed.

If you specify SYSID, and omit both RBA and RRN, you must also specify KEYLENGTH; it cannot be found in the resource definition.

XRBA

specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when browsing records in an ESDS extended addressing data set.

You cannot specify XRBA on a RESETBR command unless the associated STARTBR command also specified XRBA.

Conditions

12 FILENOTFOUND

RESP2 values:

1

A file name referred to in the FILE option is not defined to CICS.

Default action: terminate the task abnormally.

21 ILLOGIC

RESP2 values VSAM):

110

A VSAM error occurs that is not in one of the other CICS response categories.

See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.
16 INVREQ
RESP2 values:

25
The KEYLENGTH and GENERIC options are specified, and the length specified in the KEYLENGTH option is greater than or equal to the length of a full key.

26
The KEYLENGTH option is specified (but the GENERIC option is not specified), and the specified length does not equal the length defined for the data set to which this file refers.

36
The REQID, SYSID, or file name does not match that of any successful STARTBR command.

37
The type of record identification (for example, key or relative byte address) used to access a data set during the browse has been changed. You cannot specify one type of addressing on STARTBR and another on RESETBR.

42
The KEYLENGTH and GENERIC options are specified, and the length specified in the KEYLENGTH option is less than zero.

44
The command does not conform to the format of RESETBR for a user-maintained or coupling facility data table; for example, RBA is specified.

51
A RESETBR command to a KSDS file that is being accessed in RLS mode specifies the RBA keyword. RLS mode does not support RBA access to KSDS data sets.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:

120
There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:

70
The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101
A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

13 NOTFND
RESP2 values:

80
An attempt to retrieve a record based on the search argument provided is unsuccessful.
NOTFND can also occur if a generic RESETBR with KEYLENGTH(0) specifies the EQUAL option.

81
XRBA was specified, and the value of RIDFLD was greater than 4 GB, but the data set is not an extended addressing ESDS.

Default action: terminate the task abnormally.

53 SYSIDERR
RESP2 values:

130
The SYSID option specifies a name that is neither the local CICS region nor a remote system (as defined by a CONNECTION definition). SYSIDERR also occurs when the link to the remote system is closed.

131
For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132
The RESETBR is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

**RESUME**

Resume a suspended BTS process or activity.

**Conditions:** ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED, PROCESSERR

**Description**

RESUME resumes a BTS process or activity that has previously been suspended (by means of a SUSPEND command). That is, it allows the process or activity to be reattached when events in its event pool are fired. If events that would normally have caused reattachment have occurred during the time the process or activity was suspended, the latter is reattached for all these events.

The only process a program can resume is the one it has acquired in the current unit of work.

The only activities a program can resume are as follows:

- If it is running as the activation of an activity, its own child activities. It can resume several of its child activities within the same unit of work.
- The activity it has acquired, by means of an ACQUIRE ACTIVITYID command, in the current unit of work.
Options

**ACQACTIVITY**
- specifies that the activity to be resumed is the one that the current unit of work has acquired by means of an ACQUIRE ACTIVITYID command.

**ACQPROCESS**
- specifies that the process that is currently acquired by the requestor is to be resumed.

**ACTIVITY(data-value)**
- specifies the name (1–16 characters) of the child activity to be resumed.

Conditions

107 **ACTIVITYBUSY**
- RESP2 values:
  - 19: The request timed out. It may be that another task using this activity-record has been prevented from ending.

109 **ACTIVITYERR**
- RESP2 values:
  - 8: The activity named on the ACTIVITY option could not be found.
  - 14: The activity is in COMPLETE or CANCELLING mode, and therefore cannot be resumed.

16 **INVREQ**
- RESP2 values:
  - 4: The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.
  - 15: The ACQPROCESS option was used, but the unit of work that issued the request has not acquired a process.
  - 24: The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

17 **IOERR**
- RESP2 values:
  - 29: The repository file is unavailable.
  - 30: An input/output error has occurred on the repository file.

100 **LOCKED**
- The request cannot be performed because a retained lock exists against the relevant record on the repository file.

108 **PROCESSERR**
- RESP2 values:
  - 14: The process is in COMPLETE or CANCELLING mode, and therefore cannot be resumed.
Retrieve data stored for a task.

**RETRIEVE**

- INTO(*data-area*)
- LENGTH(*data-area*)
- SET(*)
- RTRANSID(*data-area*)
- RTERMID(*data-area*)
- QUEUE(*data-area*)
- WAIT

**Conditions:** ENDDATA, ENVDEFERR, INVREQ, IOERR, LENGERR

**Note for dynamic transaction routing:** Using RETRIEVE with WAIT could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

**Description**

The RETRIEVE command retrieves data stored by expired START commands. It is the only method available for accessing such data.

A task that is not associated with a terminal can access only the single data record associated with the original START command; it does so by issuing a RETRIEVE command. The storage occupied by the data associated with the task is normally released on execution of the RETRIEVE command, or on termination of the task if no RETRIEVE command is executed before termination.

If the START command specified ATTACH, the storage is not released. (ASSIGN STARTCODE in such a task returns 'U' rather than 'S' or 'SD').

A task that is associated with a terminal can access all data records associated with all expired START commands having the same transaction identifier and terminal identifier as this task, that is the task issuing the RETRIEVE command; it does so by issuing consecutive RETRIEVE commands. Expired data records are presented to the task on request in expiration-time sequence, starting with any data stored by the command that started the task, and including data from any commands that have expired since the task started. Each data record is retrieved from temporary storage using the REQID of the original START command as the identification of the record in temporary storage.

When all expired data records have been retrieved, the ENDDATA condition occurs. The storage occupied by the single data record associated with a START command is released after the data has been retrieved by a RETRIEVE command; any storage occupied by data that has not been retrieved is released when the CICS system is terminated.

If the retrieved data contains FMHs (Function Management Headers), as specified by the FMH option on the associated START command, field EIBFMH in the EIB is set to X'FF'. If no FMH is present, EIBFMH is set to X'00'.

**Options**

**INTO(*data-area*)**

- specifies the user data area into which retrieved data is to be written.

**LENGTH(*data-area*)**

- specifies a halfword binary value to define the length of the data area the retrieved data is written into.
If you specify the INTO option, the argument must be a data area that specifies the maximum length of data that the program is prepared to handle. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs. On completion of the retrieval operation, the data area is set to the original length of the data.

If you specify the SET option, the argument must be a data area. On completion of the retrieval operation, the data area is set to the length of the data.

For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

QUEUE(data-area)
specifies the 8-character area for the temporary storage queue name that may be accessed by the transaction issuing the RETRIEVE command.

RTERMID(data-area)
specifies a 4-character area that can be used in the TERMID option of a START command that may be executed subsequently.

RTRANSID(data-area)
specifies a 4-character area that can be used in the TRANSID option of a START command that may be executed subsequently.

SET(ptr-ref)
specifies the pointer reference to be set to the address of the retrieved data.

If DATALLOCATION(ANY) is associated with the application program, the address of the data may be above or below the 16MB line.

If DATALLOCATION(BELOW) is associated with the application program, and the data resides above the 16MB line, the data is copied below the 16MB line, and the address of this copy is returned.

If TASKDATAKEY(USER) is specified for the running task, and storage protection is active, the data returned is in a user-key. If TASKDATAKEY(CICS) is specified and storage protection is active, the data returned is in a CICS-key.

If you use SET you must also include LENGTH.

WAIT
specifies that, if all expired data records have already been retrieved, the task is to be put into a wait state until further expired data records become available. Although this means that the ENDDATA condition is not raised at the time the RETRIEVE command is issued, it is raised later if CICS enters shutdown or if the task is subject to deadlock timeout and it waits for longer than the deadlock timeout interval. (See the DTIMOUT option of RDO DEFINE TRANSACTION.)

An attempt to issue RETRIEVE WAIT during shutdown leads to an AICB abend if there is no data record already available to satisfy the request.

If you use WAIT, you must have at least one other option.

Conditions

29 ENDDATA
occurs in any of the following situations:

- No more data is stored for the task issuing a RETRIEVE command. It can be considered a normal end-of-file response when retrieving data records sequentially.
- The RETRIEVE command is issued by a task that is started by a START command that did not specify any of the data options FROM, RTRANSID, RTERMID, or QUEUE.
- The RETRIEVE command is issued by a nonterminal task that was not created as a result of a START command.
- WAIT was specified and the task was waiting for a data record but none became available before the deadlock timeout interval (see the DTIMOUT option of RDO DEFINE TRANSACTION).
• WAIT was specified and the task was waiting when CICS entered shutdown. An attempt to issue RETRIEVE WAIT during shutdown leads to an AICB abend if there is no data record already available to satisfy the request.

• A RETRIEVE command with the WAIT option is issued when no data is available; the task was initiated by a START command that specified an APPC connection or terminal in the TERMID option.

Default action: terminate the task abnormally.

56 ENVDEFERR
occurs when a RETRIEVE command specifies an option not specified by the corresponding START command.

Default action: terminate the task abnormally.

16 INVREQ
occurs if the RETRIEVE command is not valid for processing by CICS.

Default action: terminate the task abnormally.

17 IOERR
occurs if an input/output error occurs during a RETRIEVE operation. The operation can be retried by reissuing the RETRIEVE command.

Default action: terminate the task abnormally.

22 LENGERR
occurs if the length specified is less than the actual length of the stored data.

Default action: terminate the task abnormally.

Examples

The following example shows how to retrieve data stored by a START command for the task, and store it in the user-supplied data area called DATAFLD.

```c
EXEC CICS RETRIEVE
   INTO(DATAFLD)
   LENGTH(LENG)
```

The following example shows how to request retrieval of a data record stored for a task into a data area provided by CICS; the pointer reference (PREF) specified by the SET option is set to the address of the storage area reserved for the data record.

```c
EXEC CICS RETRIEVE
   SET(PREF)
   LENGTH(LENG)
```

**RETRIEVE REATTACH EVENT**

Retrieve the name of an event that caused the current BTS activity to be reattached.

```
RETRIEVE REATTACH EVENT( data-area ) EVENTTYPE( cvda )
```

**Conditions:** END, INVREQ
Description

RETRIEVE REATTACH EVENT:

- Returns the name of the next event in the current BTS activity’s reattachment queue.
- If the retrieved event is atomic, resets its fire status to NOTFIRED. (Composite events are not reset by this command, but only when their predicates become false.)

Use this command to find the name of the event that caused the activity to be reattached. In some cases, reattachment could result from the firing of more than one event—if, for example, the activity has previously been suspended, and reattachment events occurred while it was suspended; or if two or more timer events fire simultaneously. The event name or names are placed on the reattachment queue, from where they can be retrieved by issuing one or more RETRIEVE REATTACH EVENT commands.

Each time it is activated, an activity must deal with at least one reattachment event. That is, it must issue at least one RETRIEVE REATTACH EVENT command, and (if this is not done automatically by CICS) reset the fire status of the retrieved event to NOTFIRED—see Resetting and deleting reattachment events. Failure to do so results in the activity completing abnormally, because it has made no progress—it has not reset any reattachment events and is therefore in danger of getting into an unintentional loop.

If there are multiple events on its reattachment queue, an activity can, by issuing multiple RETRIEVE REATTACH EVENT commands, deal with several or all of them in a single activation. Alternatively, it can deal with them singly, by issuing only one RETRIEVE command per activation and returning; it is then reactivated to deal with the next event on its reattachment queue. Which approach you choose is a matter of program design. Bear in mind, if you deal with several reattachment events in the same activation, that a syncpoint does not occur until the activation returns.

Note: The retrieval of a composite event from the reattachment queue does not reset the state of the composite event to NOTFIRED. Thus, if it retrieves a composite reattachment event, the activity program may need to issue one or more RETRIEVE SUBEVENT commands, to retrieve (and reset) the sub-event or sub-events that have fired. This in turn causes the fire status of the composite event to be re-evaluated.

Options

EVENT(data-area)

returns the 16-character name of the event which caused this activity to be reattached.

EVENTTYPE(cvda)

returns the type of the reattachment event. CVDA values are:

- **ACTIVITY**
  - Activity completion.
- **COMPOSITE**
  - Composite.
- **INPUT**
  - Input
- **SYSTEM**
  - The BTS system event, DFHINITIAL.
- **TIMER**
  - Timer.

Conditions

83 END

RESP2 values:

8

There are no more events to retrieve.

16 INVREQ

RESP2 values:
The command was issued outside the scope of an activity.

**RETRIEVE SUBEVENT**

Retrieves the name of the next sub-event in a BTS composite event's sub-event queue.

**RETRIEVE SUBEVENT**

```
- RETRIEVE SUBEVENT( data-area ) EVENT( data-value )
```

**Conditions:** END, EVENTERR, INVREQ

**Description**

**RETRIEVE SUBEVENT:**

- Retrieves the name of the next sub-event in a BTS composite event's sub-event queue.
- Resets the retrieved sub-event's fire status to NOTFIRED.
- Causes the composite event's fire status to be re-evaluated.

The firing of a composite event results from the firing of a set of one or more sub-events. The names of sub-events that have fired are placed on the composite event's sub-event queue, from which they can be retrieved, in sequence, by issuing successive RETRIEVE SUBEVENT commands.

You can use this command to discover which sub-event or sub-events caused a composite event to fire.

**Note:**

1. The presence of events on the sub-event queue does not imply that the composite event has fired. (Some sub-events in the set required to fire the composite event may still be in NOTFIRED state, and not yet on the sub-event queue.) To discover whether a composite event has fired, use the TEST EVENT command.
2. Retrieval is destructive; when the name of a fired sub-event is retrieved, that sub-event cannot be retrieved again.
3. Because it resets the fire status of the sub-event, RETRIEVE SUBEVENT causes the fire status of the composite event to be re-evaluated.

**Options**

**EVENT(data-value)**

specifies the name (1–16 characters) of the composite event.

**EVENTTYPE(cvda)**

returns the type of the sub-event. CVDA values are:

- **ACTIVITY**
  Activity completion.
- **INPUT**
  Input
- **TIMER**
  Timer.

**SUBEVENT(data-area)**

returns the 16-character name of the sub-event at the head of the sub-event queue.
Conditions

83 END
RESP2 values:
9
There are no more sub-events to retrieve.
10
The composite event contains no sub-events (it is empty).

111 EVENTERR
RESP2 values:
4
The event specified on the EVENT option is not recognized by BTS.

16 INVREQ
RESP2 values:
1
The command was issued outside the scope of an activity.
2
The event specified on the EVENT option is invalid. It is not a composite event.

RETURN

Return program control.

RETURN

Conditions: CHANNELERR, INVREQ, LENGERR

This command is threadsafe.

Description

RETURN returns control from an application program either to an application program at the next higher logical level, or to CICS.

When returning a communications area (COMMAREA), the LENGTH option specifies the length of the data to be passed. The LENGTH value being passed must not be greater than the length of the data area specified in the COMMAREA option. If it is, the results are unpredictable and may result in a LENGERR condition, as described in the section about passing data to other programs in Passing data to other programs.

The valid range for the COMMAREA length is 0 through 32 763 bytes. If the length provided is outside this range, the LENGERR condition occurs.
The COMMAREA, IMMEDIATE, and CHANNEL options can be used only when the RETURN command is returning control to CICS; otherwise, the INVREQ condition occurs.

No resource security checking occurs on the RETURN TRANSID command. However, transaction security checking is still available when CICS attaches the returned transaction.

Options

**CHANNEL(name)**

specifies the name (1–16 characters) of a channel that is to be made available to the next program that receives control. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ¬ , ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The allowable set of characters for channel names, listed above, includes some characters that do not have the same representation in all EBCDIC code pages. We therefore recommend that, if a channel is to be shipped between regions (that is, if the transaction named on the TRANSID option is remote), the characters used in naming it should be restricted to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

The program that issues the RETURN command can do one of the following:

• Have already created the channel by means of one or more PUT CONTAINER CHANNEL commands
• Specify its current channel, by name
• Name a non-existent channel, in which case a new, empty, channel is created

This option is valid only on a RETURN command issued by a program at the highest logical level; that is, a program returning control to CICS.

**COMMAREA(data-area)**

specifies a communication area that is to be made available to the next program that receives control. In a COBOL receiving program, you must give this data area the name DFHCOMMAREA. See Sharing data across transactions for more information about the CICS COMMAREA. Because the data area is freed before the next program starts, a copy of the data area is created and a pointer to the copy is passed.

The communication area specified is passed to the next program that runs at the terminal. To ensure that the communication area is passed to the correct program, include the IMMEDIATE option.

This option is valid only on a RETURN command issued by a program at the highest logical level, that is, a program returning control to CICS.

**ENDACTIVITY**

This option is for use by programs that implement CICS business transaction services (BTS) activities. It specifies that the current activity is completing, and is not to be reactivated.

If there are no user events in the activity's event pool, the activity completes normally.

If there are user events (fired or unfired) in the activity's event pool:

• If one or more of the events are activity completion events, the activity abends. Trying to force an activity to complete before it has dealt with one or more of its child activities is a program logic error.
• If none of the events are activity completion events, the events are deleted and the activity completes normally.

For information about BTS in general and the ENDACTIVITY option in particular, see Activity completion.
This option is ignored outside the CICS BTS environment.

**IMMEDIATE**
ensures that the transaction specified in the TRANSID option is attached as the next transaction regardless of any other transactions enqueued by ATI for this terminal. The next transaction starts immediately and appears to the operator as having been started by terminal data. If the terminal is using bracket protocol, the terminal is also held in bracket. This option is valid only on a RETURN command issued by a program at the highest logical level, that is a program returning control to CICS.

Note that in a multi region environment, using IMMEDIATE does not affect the transaction definition as this is still found in the terminal-owning region (TOR).

**INPUTMSG**(data-area)
specifies data to be passed either to another transaction, identified by the TRANSID option, or to a calling program in a multiprogram transaction. You can also use INPUTMSG when returning control to CICS from a user-written dynamic transaction routing program, when you might want to modify the initial input.

In all cases, the data in the INPUTMSG data area is passed to the first program to issue a RECEIVE command following the RETURN.

See INPUTMSG for more information and illustrations about the use of INPUTMSG.

**INPUTMSGLEN**(data-value)
specifies a halfword binary value to be used with INPUTMSG.

**LENGTH**(data-value)
specifies a halfword binary value that is the length in bytes of the COMMAREA. For a description of a safe upper limit, see LENGTH options in CICS commands.

**TRANSID**(name)
specifies the transaction identifier (1–4 characters) to be used with the next input message entered from the terminal with which the task that issued the RETURN command has been associated. The specified name must have been defined as a transaction to CICS.

If TRANSID is specified for a program running on a terminal that is defined with a permanent transaction ID, the terminal's permanent transaction is initiated next rather than the transaction specified on the RETURN.

If you specify a TRANSID of binary zeros, the transaction identifier for the next program to be associated with the terminal may be determined from subsequent input from the terminal. Issuing a RETURN with a TRANSID of binary zeros and a COMMAREA can cause unpredictable results if the next transaction is not coded to handle the COMMAREA or if it receives a COMMAREA not intended for it.

If you specify TRANSID on a program that is not at the highest level, and there is a subsequent error on COMMAREA, INPUTMSG, or CHANNEL on the final RETURN, the TRANSID is cleared.

The next transaction identifier is also cleared on an abnormal termination of the transaction.

If IMMEDIATE is specified with this option, control is passed to the transaction specified in the TRANSID option in preference to any transactions enqueued by ATI.

If IMMEDIATE is not specified with this option, an ATI initiated transaction of the same name enqueued to the terminal nullifies this option.

This option is not valid if the transaction issuing the RETURN command is not associated with a terminal, or is associated with an APPC logical unit.

**Conditions**

**122 CHANNELERR**
RESP2 values:

1
The name specified on the CHANNEL option contains an illegal character or combination of characters.
16 INVREQ
   RESP2 values:

   1
   A RETURN command with the TRANSID option is issued in a program that is not associated with a
terminal.

   2
   A RETURN command with the CHANNEL, COMMAREA, or IMMEDIATE option is issued by a
program that is not at the highest logical level.

   4
   A RETURN command with the TRANSID option is issued in a program that is associated with an
APPC logical unit.

   8
   A RETURN command with the INPUTMSG option is issued for a program that is not associated
with a terminal, or that is associated with an APPC logical unit, or an IRC session.

   30
   PG domain not initialized. Parameters are not allowed on the EXEC RETURN statement in first
stage PLT programs.

   200
   A RETURN command is issued with an INPUTMSG option by a program invoked by DPL.

   203
   The CHANNEL option was specified but the remote region to which control is returned does not
support channels.

   Default action: terminate the task abnormally.

22 LENGERR
   RESP2 values:

   11
   The COMMAREA length is less than 0 or greater than 32763.

   26
   The COMMAREA ADDRESS passed was zero, but the commarea length was non-zero.

   27
   The INPUTMSG LENGTH was less than 0 or greater than 32767.

   Default action: terminate the task abnormally.

**REWIND COUNTER and REWIND DCOUNTER**

Rewind a named counter that has reached its limit (that is, the maximum number has been assigned). Use
COUNTER for fullword signed counters and DCOUNTER for doubleword unsigned counters.

**REWIND COUNTER**

```plaintext
REWIND COUNTER( name )
       POOL( name )
       INCREMENT( data-value )
       NOSUSPEND
```

**Conditions:** BUSY, INVREQ, SUPPRESSED

This command is threadsafe.
REWIND D COUNTER

REWIND — D COUNTER(name)

POOL(name)

INCREMENT(data-area)

NOSUSPEND

Conditions: BUSY, INVREQ, SUPPRESSED

This command is threadsafe.

Description

These counter commands reset the current value of the named counter to its defined minimum number.

For information about specifying fullword and doubleword variables on these named counter commands, see “CICS command argument values” on page 3.

Options

**COUNTER(name)**

Specifies the name of the named counter to reset to its minimum value. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**DCOUNTER(name)**

Specifies the name of the named counter to reset to its minimum value. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**INCREMENT(data-value)**

Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), an increment to use to determine whether the named counter is in a valid state to be reset. If a previous GET command (that did not specify the REDUCE option) specified an increment that caused the GET command to fail, specify the same increment on the REWIND. The named counter server applies the increment before testing whether the counter is in a counter-at-limit condition.

See the INCREMENT option on the GET command for more details.

**NOSUSPEND**

Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

**POOL(poolname)**

Specifies an 8-character string to use as a pool selection parameter to select the pool in which the named counter resides. The string can be a logical pool name, or the actual pool name.

Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.

This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNCO macro, see Named counter servers.
Conditions

128 BUSY
RESP2 values:

500
The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

201
Named counter not found.

301
The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

303
An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

304
The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.

305
The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnmmm) in the application job log.

306
An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308
The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309
During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310
An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311
A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.

403
The POOL parameter contains invalid characters or embedded spaces.

404
The COUNTER parameter contains invalid characters or embedded spaces.

406
The INCREMENT value is invalid. The value specified cannot be greater than the total range of the counter (maximum value - minimum value + 1).

Default action: terminate the task abnormally.
The named counter has not yet reached its limit (that is, the current value is not equal to the maximum value plus 1, giving the counter-at-limit condition). This error condition is returned if the named counter is not at its limit even after applying any specified increment.

Default action: terminate the task abnormally.

**REWRITE**

Update a record in a file.

```
REWRITE

<table>
<thead>
<tr>
<th>FILE(filename)</th>
<th>TOKEN(data-area)</th>
<th>FROM(data-area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSID(systemname)</td>
<td>LENGTH(data-value)</td>
<td>NOSUSPEND</td>
</tr>
<tr>
<td>LENGTH(data-value)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Conditions:** CHANGED, DUPREC, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, LOCKED, NOSPACE, NOTAUTH, NOTFND, RECORDBUSY, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

**Description**

REWRITE updates a record in a file on a local or a remote system. You must always precede this command with a read with the UPDATE option.

For VSAM data sets, you must not change the key field in the record.

When this command is used to update a record in a CICS-maintained data table, the update is made to both the source VSAM KSDS and the in-memory data table. The details of the command for a CICS-maintained table are the same as for a VSAM KSDS.

When this command is used to update a record in a user-maintained data table, the update is made to the in-memory data table.

When this command is used to update records in a coupling facility data table, the update is made only to the data table in the coupling facility.

If an update to a user-maintained table or coupling facility data table does not succeed because there is insufficient space, a NOSPACE response is returned to the command. CICS also issues message DFHFC0432 to alert system administrators to the situation.
Options

FILE(filename)
   specifies the name of the file to be accessed.

   If SYSID is specified, the data set to which this file refers is assumed to be on a remote system
   irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find
   out whether the data set is on a local or a remote system.

FROM(data-area)
   specifies the record that is to be written to the data set referred to by this file.

LENGTH(data-value)
   specifies the length, as a halfword binary value, of the data area where the record is written from.

   This option must be specified if SYSID is specified.

   If the file is on a remote system, the LENGTH parameter need not be set here but must be set in the
   file resource definition.

   If the file is on a local system, the LENGTH parameter must be set for variable-length records, using
   the INTO option, but not for fixed-length records. It is, however, advisable to specify the length for
   fixed-length records because it causes a check to be made that the record being written is not longer
   than that defined for the data set.

NOSUSPEND (RLS only)
   The request does not wait if VSAM is holding an active lock against the record, including records
   locked as the result of a DEADLOCK.

   Lock contention can occur if the update involves changes made in RLS mode to records in a VSAM
   data set that has one or more alternate indexes, and an alternate index is defined with unique keys.

   In most other cases, you should not need this option because the active lock is acquired when the
   task issues the READ UPDATE command.

   Note: Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the
   RECORDBUSY response.

SYSID(systemname)
   specifies the name of the system to which the request is directed.

TOKEN(data-area)
   specifies as a fullword binary value a unique request identifier for a REWRITE, used to associate it
   with a previous READ, READNEXT, or READPREV command that specified UPDATE.

   TOKEN can be function shipped. However, if a request specifying TOKEN is function shipped to a
   member of the CICS family of products that does not support the TOKEN option, the request fails:

Conditions

105 CHANGED
   RESP2 values:

   109
      A REWRITE command is issued for a file that is a defined as a coupling facility data table using the
      contention update model, and for which the record has been changed since the application
      program read it for update. To successfully update the record, repeat the READ for UPDATE to get
      the latest version of the record, reapply the change, and try the rewrite again.

      Default action: terminate the task abnormally.

14 DUPREC
   RESP2 values:
An attempt is made to rewrite a record to a data set whose upgrade set has an alternate index with the UNIQUEKEY attribute, if the corresponding alternate key already exists in the alternate index.

Default action: terminate the task abnormally.

12 FILENOTFOUND
RESP2 values:

1
A file name referred to in the FILE option is not defined to CICS.

Default action: terminate the task abnormally.

21 ILLOGIC
Any browse that is currently in progress is terminated when this condition is raised.

RESP2 values: (VSAM)

110
A VSAM error occurs that is not in one of the other CICS response categories.

See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

30
A REWRITE command is issued without a token and no previous READ for UPDATE (also without a token) can be found.

A possible reason for the previous READ for UPDATE not being found is that it failed for some reason, and the failure has not been correctly handled or has been ignored.

46
A REWRITE command has attempted to change the length of a BDAM variable length record or block.

47
A REWRITE instruction includes a token whose value cannot be matched against any token that is in use for an existing READ for UPDATE request.

55
NOSUSPEND is not allowed because the file is not a VSAM file that is accessed in RLS mode.

56
An attempt to update a recoverable coupling facility data table has failed because the current unit of work has already updated 1024 recoverable coupling facility data tables. You cannot update more than 1024 recoverable coupling facility data tables within a unit of work.

57
REWRITE operations are not allowed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows such operations except those from replication programs.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:

120
An I/O error occurred during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.
For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

**54 ISCINVREQ**

RESP2 values:

- **70**
  - The remote system indicates a failure that does not correspond to a known condition.
  
  Default action: terminate the task abnormally.

**22 LENGERR**

RESP2 values:

- **10**
  - The LENGTH option is not specified for a file with variable-length records, or for a BDAM file with undefined format records.

- **12**
  - The length specified exceeds the maximum record size (of the source data set for a data-table); the record is truncated.

- **14**
  - An incorrect length is specified for a file with fixed-length records.

Default action: terminate the task abnormally.

**13 NOTFND**

RESP2 values:

- **80**
  - For user-maintained data tables, this condition occurs when an attempt to REWRITE a record has failed because the REWRITE is associated with a READ UPDATE request for a record that this transaction has deleted (using DELETE with RIDFLD) after it was read for update. This may be caused by a logic error in the application program.

  This condition can also occur when a REWRITE command is issued to a coupling facility data table using the contention model and the record has been deleted since it was read for update.

Default action: terminate the task abnormally.

**100 LOCKED**

RESP2 values:

- **106**
  - An attempt has been made to update a record, but a retained lock exists against a unique alternate key that is involved in the request.

Default action: abend the task with code AEX8.

**18 NOSPACE**

RESP2 values:

- **100**
  - No space is available on the direct access device for adding the updated record to the data set.

- **102**
  - The maximum number of records specified for a recoverable coupling facility data table has been exceeded. This can occur on a rewrite operation because an extra record is required in the coupling facility data table for recovery purposes until the update has been committed.

- **103**
  - For user-maintained data tables, this condition occurs if CICS is unable to get sufficient storage in the CICS address space to store the updated data table entry.
For coupling facility data tables, this condition occurs if there is insufficient space in the coupling facility data table pool to store the updated record.

Default action: terminate the task abnormally.

108

**NOTAUTH**

RESP2 values:

101

A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

**RECORDBUSY**

RESP2 values:

107

NOSUSPEND is specified but VSAM holds an active lock against a unique alternate index key that is involved in the request, which would cause the request to wait. See Retained and active locks for more information.

Default action: abend the task with code AEX9.

53 **SYSIDERR**

RESP2 values:

130

The SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION). SYSIDERR also occurs when the link to the remote system is closed.

131

For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132

The REWRITE is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

**Retained and active locks:** RECORDBUSY refers to active locks and LOCKED refers to retained locks:

- REWRITE requests for records that have retained locks are always rejected with a LOCKED response.
- REWRITE requests for records that have active locks wait for the lock to be released, except when the NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

**Examples**

Here is an example of a simple REWRITE command:

```cics
EXEC CICS REWRITE
   FROM(RECORD)
   FILE('MASTER')
   TOKEN(APTOK)
```
ROUTE

Route a BMS message. This command is only available on full BMS.
For more information about BMS, see Basic mapping support.

ROUTE

<table>
<thead>
<tr>
<th>INTERVAL(0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERVAL(hhmmss)</td>
</tr>
<tr>
<td>TIME(hhmmss)</td>
</tr>
<tr>
<td>AFTER</td>
</tr>
<tr>
<td>HOURS(data-value)</td>
</tr>
<tr>
<td>MINUTES(data-value)</td>
</tr>
<tr>
<td>SECONDS(data-value)</td>
</tr>
<tr>
<td>AT</td>
</tr>
<tr>
<td>HOURS(data-value)</td>
</tr>
<tr>
<td>MINUTES(data-value)</td>
</tr>
<tr>
<td>SECONDS(data-value)</td>
</tr>
<tr>
<td>ERRTERM</td>
</tr>
<tr>
<td>(name)</td>
</tr>
<tr>
<td>TITLE(data-area)</td>
</tr>
<tr>
<td>LIST(data-area)</td>
</tr>
<tr>
<td>OPCLASS(data-area)</td>
</tr>
<tr>
<td>REQID(name)</td>
</tr>
<tr>
<td>LDC(name)</td>
</tr>
<tr>
<td>NLEOM</td>
</tr>
</tbody>
</table>

Conditions: IGREQID, INVERRTERM, INVLDLC, INVREQ, RTEFAIL, RTESOME

Description

ROUTE routes a BMS logical message to one or more terminals or terminal operators.
The default is INTERVAL(0), but for C the default is AFTER HOURS(0) MINUTES(0) SECONDS(0).

Options

AFTER
specifies the amount of time to elapse before the route.

There are two ways to enter the time under AFTER and AT.

1. A combination of at least two of HOURS(0–99), MINUTES(0–59), and SECONDS(0–59). HOURS(1) SECONDS(3) would mean one hour and three seconds (the minutes default to zero).

2. As one of HOURS(0–99), MINUTES(0–5999), or SECONDS(0–35999). HOURS(1) means one hour. MINUTES(62) means one hour and two minutes. SECONDS(3723) means one hour, two minutes, and three seconds.

AT
specifies the time of the route. For the ways to enter the time, see the AFTER option.
ERRTERM(name)
    specifies the name of the terminal to be notified if the message is deleted because it is undeliverable.
The message number, title identification, and destination are indicated. If no name is specified, the
originating terminal is assumed.

This option is effective only if PRGDLAY has been specified in the system initialization parameters.

HOURS(data-value)
    specifies a fullword binary value in the range 0–99. This is a suboption of the AFTER and AT options.
    For its use and meaning, see the AFTER option.

INTERVAL(hhmmss)
    specifies the interval of time after which the data is to be transmitted to the terminals specified in the
    ROUTE command. The mm and ss are in the range 0–59.

    When using the C language, you are recommended to use the AFTER/AT HOURS, MINUTES, and
    SECONDS options as C does not provide a packed decimal data type. You may use INTERVAL, but if
    the value specified is not an integer constant, the application is responsible for ensuring that the
    value passed to CICS is in packed decimal format.

LDC(name) — logical units only
    specifies a 2-character mnemonic to be used to determine the logical device code (LDC) to be
    transmitted in the FMH to the logical unit. The mnemonic identifies an LDC entry defined by the
    DFHTCT TYPE=LDC macro.

    When an LDC is specified, BMS uses the device type, the page size, and the page status associated
    with the LDC mnemonic to format the message. These values are taken from the extended local LDC
    table for the LU, if it has one. If the LU has only a local (unextended) LDC table, the values are taken
    from the system LDC table. The numeric value of the LDC is obtained from the local LDC table, unless
    this is an unextended table and the value is not specified, in which case it is taken from the system
    table.

    If the LDC option is omitted, the LDC mnemonic specified in DFHMSD is used; see “DFHMSD” on page
    810 for further details. If the LDC option has also been omitted from DFHMSD, the action depends on
    the type of logical unit, as follows:

    3601 LU
    The first entry in the local or extended local LDC table is used, if there is one. If a default cannot
    be obtained in this way, a null LDC numeric value (X'00') is used. The page size used is the value
    that is specified by the RDO TYPETERM options PAGESIZE or ALTPAGE, or (1,40) if such a value is
    not specified.

    LUTYPE4 LU, batch LU, or batch data interchange LU
    The local LDC table is not used to supply a default LDC; instead, the message is directed to the LU
    console. (Here, LU console means any medium on which the LU elects to receive such messages.
    For a batch data interchange LU, this does not imply sending an LDC in an FMH). The page size is
    obtained in the manner described for the 3601 LU.

    For message routing, the LDC option of the ROUTE command takes precedence over all other sources.
    If this option is omitted and a route list is specified (LIST option), the LDC mnemonic in the route list is
    used; if the route list contains no LDC mnemonic, or no route list is specified, a default LDC is chosen
    as described above.

LIST(data-area)
    specifies the data area that contains a list of terminals and operators to which data is to be directed. If
    this option is omitted, all terminals supported by BMS receive the data (unless the OPCLASS option is
    in effect). See Route list format for the format of the route list.

MINUTES(data-value)
    specifies a fullword binary value in the range 0–59, when HOURS or SECONDS are also specified, or
    0–5999 when MINUTES is the only option specified. This is a suboption of the AFTER and AT options.
    For its use and meaning, see the AFTER option.
NLEOM specifies that data for a 3270 printer or a 3275 display with the printer adapter feature should be built with blanks and new-line (NL) characters, and that an end-of-message (EM) character should be placed at the end of the data. As the data is printed, each NL character causes printing to continue on the next line, and the EM character terminates printing.

The option is ignored if the device receiving the message (direct or routed) is not one of those mentioned above.

If this option is used, buffer updating and attribute modification of fields previously written into the buffer are not allowed. CICS includes the ERASE option with every write to the terminal.

The NL character occupies a buffer position. A number of buffer positions, equivalent to the value of the RDO options PAGESIZE or ALTPAGE for that terminal, are unavailable for data. This may cause data to wrap around in the buffer; if this occurs, the PAGESIZE or ALTPAGE value must be reduced.

OPCLASS(data-area) specifies the data area that contains a list of operator classes to which the data is to be routed. The classes are supplied in a 3-byte field, each bit position corresponding to one of the codes in the range 1 through 24 but in reverse order, that is, the first byte corresponds to codes 24 through 17, the second byte to codes 16 through 9, and the third byte to codes 8 through 1.

REQID(name) specifies a prefix (2-character field) to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

BMS message recovery is provided for a logical message only if the PAGING option is specified in the BMS SEND commands, and if the syncpoint has been reached.

SECONDS(data-value) specifies a fullword binary value in the range 0–59, when HOURS or MINUTES are also specified, or 0–359 999 when SECONDS is the only option specified. This is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

TIME(hhmmss) specifies the time of day at which data is to be transmitted to the terminals specified in the ROUTE command.

When using the C language, you are recommended to use the AFTER/AT HOURS, MINUTES, and SECONDS options as C does not provide a packed decimal data type. You may use TIME, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format.

TITLE(data-area) specifies the data area that contains the title to be used with a routing logical message. This title appears as part of the response to a page query command. See Programming considerations with routing for the format of the title option.

Conditions

39 IGREQID occurs if the prefix specified in the REQID option is different from that established by a previous REQID option, or by default for this logical message—REQID (**).

37 INVERRTERM occurs if the terminal identifier specified in the ERRTERM option is not valid or is assigned to a type of terminal not supported by BMS.

Default action: terminate the task abnormally.

41 INVLDC occurs if the specified LDC mnemonic is not included in the LDC list for the logical unit.

Default action: terminate the task abnormally.
16 INVREQ
RESP2 values:

4
Hours out of range

5
Minutes out of range

6
Seconds out of range

200
BMS commands are not supported for distributed program link.
also occurs (RESP2 not set) in the following situations:
• Bytes 10 through 15 of a route list entry do not contain blanks.
Default action: terminate the task abnormally.

33 RTEFAIL
occurs in any of the following situations:
• A ROUTE command would result in the message being sent only to the terminal that initiated the transaction.
• A ROUTE command is issued against a remote, shippable terminal that is not yet installed in the application-owning region.
Default action: return control to the application program at the point immediately following the ROUTE command.

34 RTESOME
occurs if any of the terminals specified by the ROUTE command options do not receive the message.
Default action: return control to the application program at the point immediately following the ROUTE command.

RUN
Execute a CICS business transaction services process or activity synchronously or asynchronously, with context-switching.

RUN

ACTIVITY(data-value)

ACQACTIVITY

ACQPROCESS

SYNCHRONOUS

ASYNCHRONOUS

FACILITYTOKN(data-value)

INPUTEVENT(data-value)

Conditions: ACTIVITYBUSY, ACTIVITYERR, EVENTERR, INVREQ, IOERR, LOCKED, NOTAUTH, PROCESSBUSY, PROCESSERR
Description

RUN executes a CICS business transaction services process or activity synchronously or asynchronously with the requestor, with context-switching. The process or activity must previously have been defined to BTS.

RUN causes BTS to attach the process or activity, by sending it an input event. If the process or activity is in its initial state—that is, if this is the first time it is to be run, or if the activity has been reset by a RESET ACTIVITY command—CICS sends it the DFHINITIAL system event. If the process or activity is dormant—that is, waiting for a reattachment event to occur—the input event must be specified on the INPUTEVENT option.

If the process or activity is in any mode other than INITIAL or DORMANT, it cannot be run. The SYNCHRONOUS and ASYNCHRONOUS options allow you to specify whether the process or activity should be executed synchronously or asynchronously with the requestor.

Context-switching

When a process or activity is activated by a RUN command, it is run:

- In a separate unit of work from the requestor.
- With the transaction attributes (TRANSID and USERID) specified on the DEFINE PROCESS or DEFINE ACTIVITY command.

In other words, a context-switch takes place. The relationship of the process or activity to the requestor is as between separate transactions, except that:

- Data can be passed between the two units of work
- The start and finish of the activity is related to the requestor's syncpoints.

To run a process or activity without context-switching—that is, in the same UOW and with the same TRANSID and USERID attributes as the requesting transaction—use the LINK ACQPROCESS, LINK ACQACTIVITY, or LINK ACTIVITY command. This is possible only if the process or activity is run synchronously.

If the ability to isolate a failure is more important than performance, use RUN SYNCHRONOUS rather than LINK.

Activities

The only activities a program can run are as follows:

- If it is running as the activation of an activity, its own child activities. It can run several of its child activities within the same unit of work.
- The activity it has acquired, by means of an ACQUIRE ACTIVITYID command, in the current unit of work.

To check the response from the activity, the CHECK ACTIVITY command must be used. This is because the response to the request to run the activity does not contain any information about the success or failure of the activity itself—only about the success or failure of the request to run it.

Typically, if the activity is run synchronously, the CHECK command is issued immediately after the RUN command. If it is run asynchronously, the CHECK command could be issued:

- When the activity's parent is reattached due to the firing of the activity's completion event
- When the requestor is reattached due to the expiry of a timer.

The activity's completion event is one of the following:

1. The event named on the EVENT option of the DEFINE command for the activity.
2. If the DEFINE command did not specify a completion event, an event of the same name as the activity.
To retry an activity:

1. Issue a RESET ACTIVITY command to reset the activity to its initial state.
2. Issue a RUN command.

**Processes**

The only process that a program can run is the one that it has acquired in the current unit of work—see Acquiring processes and activities.

To check the response from the process, the CHECK ACQPROCESS command must be used. This is because the response to the request to run the process does not contain any information about the success or failure of the process itself—only about the success or failure of the request to run it.

Typically, if the process is run synchronously, the CHECK command is issued immediately after the RUN command. If the process is run asynchronously, the CHECK command could be issued when the requestor is reattached due to the expiry of a timer.

**Options**

**ACQACTIVITY**

specifies that the activity to be run is the one that the current unit of work has acquired by means of an ACQUIRE ACTIVITYID command.

**ACQPROCESS**

specifies that the process currently acquired by the requestor is to be run.

**ACTIVITY(data-value)**

specifies the name (1–16 characters) of the activity to be run. The name must be that of a child of the current activity.

**ASYNCHRONOUS**

specifies that the process or activity is to be executed asynchronously with the requestor.

**FACILITYTOKN(data-value)**

specifies an 8-byte bridge facility token.

This option applies when a BTS client activity runs a 3270-based pseudoconversational transaction. To ensure that the existing bridge facility is reused for the next transaction in the pseudoconversation, the client passes its token to the next child activity. This is explained in more detail in Reusing existing 3270 applications in BTS.

**INPUTEVENT(data-value)**

specifies the name (1–16 characters) of the event that causes the process or activity to be attached.

You must not specify this option if the process or activity is in its initial state; that is, if this is the first time it is to be run, or if the activity has been reset by a RESET ACTIVITY command. In this case, CICS sends the process or activity the DFHINITIAL system event.

You must specify this option if the process or activity is not in its initial state; that is, if it has been activated before, and has not been reset by a RESET ACTIVITY command.

If you specify INPUTEVENT, for the RUN command to be successful the process or activity to be attached must have defined the named event as an input event.

If you issue multiple asynchronous RUN commands against the same activity within the same unit of work:

- If you specify the same input event, each RUN command after the first fails.
- If you specify different input events, the activity may or may not be invoked as many times as the number of RUN requests—the only guarantee is that it will be invoked at least once. For example, if, within the same unit of work, you issue five asynchronous RUN requests for the same activity, specifying different input events, the activity might be invoked twice. At the first invocation, three input events might be presented, and at the second two.
SYNCHRONOUS
specifies that the process or activity is to be executed synchronously with the requestor.

Conditions
107 ACTIVITYBUSY
RESP2 values:
   19  The request timed out. It may be that another task using this activity-record has been prevented from ending.

109 ACTIVITYERR
RESP2 values:
   8   The activity named on the ACTIVITY option could not be found.
   14  The activity to be run is not in INITIAL or DORMANT mode.
   27  The activity named on the RUN SYNCHRONOUS command has abended.

111 EVENTERR
RESP2 values:
   7   The event named on the INPUTEVENT option has not been defined by the activity or process to be run as an input event; or its fire status is FIRED.

16 INVREQ
RESP2 values:
   4   The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.
   15  The task that issued the RUN ACQPROCESS command has not defined or acquired a process.
   20  The SYNCHRONOUS option was used, but the activity to be run is suspended.
   24  The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.
   28  CICS could not attach the transaction associated with the process or activity to be run. (This response occurs only on RUN SYNCHRONOUS commands.)
   32  The SYNCHRONOUS option was used, but the transaction associated with the process or activity to be run is defined as remote. You cannot run a process or activity synchronously if its transaction is remote.
   40  The program that implements the process or activity to be run is remote.

17 IOERR
RESP2 values:
   29  The repository file is unavailable.
   30  An input/output error has occurred on the repository file.
100 LOCKED
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

70 NOTAUTH
RESP2 values:
101
The user associated with the issuing task is not authorized to run the process or activity.

106 PROCESSBUSY
RESP2 values:
13
The request timed out. It may be that another task using this process-record has been prevented from ending.

108 PROCESSERR
RESP2 values:
6
You cannot run the current process.
9
The process-type could not be found.
14
The process to be run is not in INITIAL or DORMANT mode.
27
The process named on the RUN SYNCHRONOUS command has abended.

RUN TRANSID
RUN TRANSID initiates a local child transaction that runs asynchronously with the parent transaction.

RUN TRANSID

RUN TRANSID (name) CHANNEL(name) CHILD(data-area)

Conditions: CHANNELERR, INVREQ, TRANSIDERR, NOTAUTH, DISABLED
This command is threadsafe.

Description
RUN TRANSID starts a task on the local system, optionally passing it a channel. The started task (child task) runs asynchronously with the starting task (parent task), and runs with the same security context as the parent task. The parent task uses the channel to pass input data to the child task. The parent task will get a response back when the API command FETCH CHILD or FETCH ANY is issued.

When a child task is started using EXEC CICS RUN TRANSID, it inherits the security context of the parent task. The security context is checked when RUN TRANSID is issued, and checked again at child task attach. If the child task does not have the authorization to run within the given context, it will abend with code AASA.

If the transaction (specified by TRANSID) is defined with DYNAMIC(YES), this option is ignored and no routing decision is made.

Options
CHANNEL(name)
Specifies the name (1 - 16 characters) of a channel that is to be made available to the child task. The acceptable characters are A-Z a-z 0-9 $ @ # /-_%&?!:|" = - ; < >. Leading and embedded blank
characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters used to name them to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

The program that issues the RUN TRANSID command can do one of the following:

- Create the channel before issuing the RUN TRANSID command, by using one or more PUT CONTAINER CHANNEL or PUT64 CONTAINER commands.
- Specify its current channel, by name.
- Name a channel that does not currently exist. A new empty channel is created.

The child task is given a copy of the channel’s containers (and the data that they contain). The copy is made when the RUN TRANSID command is issued.

CHILD(data-area)
Specifies a 16-character binary data area, into which CICS will place the child token that represents the child task. The child token is used to refer to the child task in order to get a response back from it through an API command such as FETCH CHILD.

TRANSID(name)
Specifies the symbolic identifier (1–4 characters) of the local transaction to be started as the result of a RUN command.

Conditions

122 CHANNELERR
RESP2 values:

1 The channel specified on the CHANNEL option contains an incorrect character or combination of characters.

16 INVREQ
RESP2 values:

17 The started transaction is not shutdown-enabled, and the CICS region is in the process of shutting down. INVREQ also occurs (RESP2 not set) if the RUN command is not valid for processing by CICS.

19 RUN TRANSID was issued during transaction termination.

28 TRANSIDERR
RESP2 values:

1 The transaction identifier specified in a RUN TRANSID command is not defined to CICS.

11 The specified transaction is defined as remote.

70 NOTAUTH
RESP2 values:
The user associated with the issuing task is not authorized to run the child task.

**84 DISABLED**

RESP2 values:

**50**

The specified transaction is disabled.

**SEND (z/OS Communications Server default)**

Write data to a standard CICS supported terminal.

**SEND (z/OS Communications Server default)**

\[
\text{SEND} \quad \text{FROM(} \text{data-area} \text{)} \quad \text{LENGTH(} \text{data-value} \text{)} \quad \text{FLENGTH(} \text{data-value} \text{)} \quad \text{WAIT}
\]

**Conditions:** INVREQ, LENGERR, NOTALLOC

**Description**

SEND writes data to a terminal. This form of the send command can be used by all CICS-supported terminals for which the other SEND descriptions are not appropriate.

**SEND (APPC)**

Send data on an APPC mapped conversation.

**SEND (APPC)**

\[
\text{SEND} \quad \text{CONVID(} \text{name} \text{)} \quad \text{FROM(} \text{data-area} \text{)} \quad \text{LENGTH(} \text{data-value} \text{)} \quad \text{FLENGTH(} \text{data-value} \text{)}
\]

\[
\text{INVITE} \quad \text{CONFIRM} \quad \text{STATE(} \text{cvda} \text{)} \quad \text{LAST} \quad \text{WAIT}
\]

**Conditions:** INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

**Description**

SEND sends data to a conversation partner on an APPC mapped conversation.
**SEND (LUTYPE2/LUTYPE3)**

Write data to a 3270-display logical unit (LUTYPE2) or a 3270-printer logical unit (LUTYPE3).

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

The `SEND` command writes data to a terminal.

---

**SEND (LUTYPE4)**

Write data to a LUTYPE4 logical unit.

**Conditions:** INVREQ, IGREQCD, LENGERR, SIGNAL, TERMERR

**Description**

`SEND` writes data to a terminal.

---

**SEND (LUTYPE6.1)**

Send data on an LUTYPE6.1 conversation.
SEND (LUTYPE6.1)

SEND

SESSION(name) ➔ WAIT

IN VITE ➔ LAST

ATTACHID(name) ➔ FROM(data-area)

LENGTH(data-value) ➔ FLENGTH(data-value)

FMH ➔ DEFRESP

Conditions: CBIDERR, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

Description
SEND sends data to a conversation partner on an LUTYPE6.1 conversation.

SEND (SCS)

Write data to a 3270 SCS printer logical unit.

SEND (SCS)

SEND ➔ FROM(data-area)

LENGTH(data-value) ➔ WAIT

INVITE ➔ LAST

CNOTCOMPL ➔ STRFIELD ➔ FMH

DEFRESP

Conditions: INVREQ, LENGERR, TERMERR

Description
SEND writes data to a logical unit. The SCS printer logical unit accepts a character string as defined by Systems Network Architecture (SNA).

SEND (3270 logical)

Write data to a 3270 logical unit.
**SEND (3270 logical)**

SEND (3270 logical)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT INVITE LAST ERASE DEFAULT ALTERNATE CTLCHAR(data-value) STRFIELD DEFRESP

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

SEND writes data to a terminal.

---

**SEND (3600 pipeline)**

Write data to a 3600 pipeline logical unit.

SEND (3600 pipeline)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

SEND writes data to a terminal.

---

**SEND (3600-3601)**

Write data to a 3600 (3601) logical unit.

SEND (3600-3601)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

SEND writes data to a terminal.
Description
SEND writes data to a terminal. This form of SEND also applies to the 4770 and the 3630 plant communication system.

A logical device code (LDC) is a code that can be included in an outbound FMH to specify the disposition of the data (for example, to which subsystem terminal it should be sent). Each code can be represented by a unique LDC mnemonic.

The installation can specify up to 256 2-character mnemonics for each TCTTE, and two or more TCTTEs can share a list of these mnemonics. Corresponding to each LDC mnemonic for each TCTTE is a numeric value (0 through 255).

A 3600 device and a logical page size are also associated with an LDC. LDC or LDC value is used in this information to refer to the code specified by the user. LDC mnemonic refers to the 2-character symbol that represents the LDC numeric value.

When the LDC option is specified, the numeric value associated with the mnemonic for the particular TCTTE, is inserted in the FMH. The numeric value associated with the LDC mnemonic is chosen by the installation, and is interpreted by the 3601 application program.

On output, the FMH can be built by the application program or by CICS. If your program supplies the FMH, you place it at the front of your output data and specify the FMH option on your SEND command. If you omit the FMH option, CICS will provide an FMH but you must reserve the first three bytes of the message for CICS to complete.

SEND (3600-3614)
Write data to a 3600 (3614) logical unit.
Description
SEND writes data to a terminal. The data stream and communication format used between a CICS application program and a 3614 is determined by the 3614. The application program is therefore device dependent when handling 3614 communication.

For further information about designing 3614 application programs for CICS, refer to the IBM 4700/3600/3630 Guide.

SEND (3650 interpreter)
Write data to a 3650 interpreter logical unit.

SEND (3650 interpreter)
SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT INVITE LAST DEFRESP FMH

Conditions: INVREQ, LENGERR, TERMERR

Description
SEND writes data to a terminal.

SEND (3650-3270)
Write data to a 3650 logical unit.

SEND (3650-3270)
SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) CTLCHAR(data-value) WAIT ERASE DEFAULT ALTERNATE INVITE LAST CNOTCOMPL DEFRESP FMH

Conditions: INVREQ, LENGERR, TERMERR

Description
SEND writes data to a terminal.
**SEND (3650-3653)**

Write data to a 3650 (3653) logical unit.

**SEND (3650-3653)**

SEND — FROM( data-area ) LENGTH( data-value ) FLENGTH( data-value ) WAIT INVITE LAST CNOTCOMPL DEFRESP

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

SEND writes data to a terminal.

**SEND (3650-3680)**

Write data to a 3650 (3680) logical unit.

**SEND (3650-3680)**

SEND — FROM( data-area ) LENGTH( data-value ) FLENGTH( data-value ) WAIT INVITE LAST CNOTCOMPL DEFRESP FMH

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**

SEND writes data to a terminal.

**SEND (3767)**

Write data to a 3767 interactive logical unit.
SEND (3767)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT INVITE LAST

Conditions: INVREQ, LENGERR, SIGNAL, TERMERR

Description
SEND writes data to a terminal. This form of SEND also applies to the 3770 interactive logical unit.

SEND (3770)

Write data to a 3770 batch logical unit.

SEND (3770)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) WAIT INVITE LAST

Conditions: INVREQ, LENGERR, SIGNAL, TERMERR

Description
SEND writes data to a terminal.

SEND (3790 full-function or inquiry)

Write data to a 3790 full-function or inquiry logical unit.
**SEND (3790 full-function or inquiry)**

SEND writes data to a terminal. This form of SEND also applies to the following devices:
- 3650/3680 full-function logical unit
- 3770 full-function logical unit

**Conditions:** INVREQ, LENGERR, SIGNAL, TERMERR

**Description**
SEND writes data to a terminal.

**SEND (3790 SCS)**
Write data to a 3790 SCS printer logical unit.

**SEND (3790 SCS)**

**Conditions:** INVREQ, LENGERR, TERMERR

**Description**
SEND writes data to a terminal.

**SEND (3790 3270-display)**
Write data to a 3790 (3270-display) logical unit.
SEND (3790 3270-display)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) CTLCHAR(data-value)

WAIT ERASE DEFAULT ALTERNATE INVITE LAST DEFRESP

Conditions: INVREQ, LENGERR, TERMERR

Description
SEND writes data to a terminal.

SEND (3790 3270-printer)

Write data to a 3790 (3270-printer) logical unit.

SEND (3790 3270-printer)

SEND FROM(data-area) LENGTH(data-value) FLENGTH(data-value) CTLCHAR(data-value)

WAIT ERASE DEFAULT ALTERNATE INVITE LAST DEFRESP

Conditions: INVREQ, LENGERR, TERMERR

Description
SEND writes data to a terminal.

SEND: z/OS Communications Server options

Common options used on the SEND command (z/OS Communications Server).

Options

ALTERNATE
Sets the terminal to use the ALTERNATE screen size.
ATTACHID(name)
Specifies that an attach header (created by a BUILD ATTACH command) is to precede, and be concatenated with, the user data supplied in the FROM option. “name” (1–8 characters) identifies the attach header control block to be used in the local task.

CNOTCOMPL
Indicates that the request/response unit (RU) sent as a result of this SEND command does not complete the chain. If this option is omitted and chain assembly is specified, the RU terminates the chain.

CONFIRM
Indicates that an application using a synchronization level 1 or 2 conversation requires a response from the remote application. A remote CICS application can respond positively by running an ISSUE CONFIRMATION command, or negatively, by running an ISSUE ERROR command, in which case the sending application has EIBERR and EIBERRCD set. CICS does not return control to the sending application until the response is received.

CONVID(name)
Identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previous ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previous ASSIGN command).

For compatibility with earlier releases, SESSION is accepted as a synonym for CONVID. New programs must use CONVID.
If this option is omitted, the principal facility is assumed.

CTLCHAR(data-value)
Specifies a 1-byte write control character (WCC) that controls a SEND command for a 3270. These characters are described in IBM 3270 Data Stream Programmers Reference. A COBOL user must specify a data area containing this character. If the option is omitted, all modified data tags are reset to zero and the keyboard is restored.

DEFAULT
Sets the terminal to use the DEFAULT screen size.

DEFRESP
Indicates that a definite response is required when the output operation completes.

ERASE
Specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display.

The first output operation in any transaction, or in a series of pseudoconversational transactions, must always specify the ERASE option. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this option also ensures that the correct screen size is selected, as defined for the transaction by the SCRN SIZE option in the PROFILE resource definition.

FLENGTH(data-value)
An alternative to the LENGTH option. For architectural reasons, this option is limited to a maximum of 32 KB for all terminal-related SEND commands.

FMH
Specifies that a function management header is included in the data to be written. If the ATTACHID option is specified as well, the concatenated FMH flag is set in the attach FMH.

The use of FMH is optional and is not supported for all terminal types. If not supplied, CICS takes no action, except for 3600/4700 terminals, where an FMH is mandatory. In this case, if FMH is not specified, CICS supplies one and places it in the first 3 bytes of the message, which you must reserve for this purpose.

FROM(data-area)
Specifies the data to be written to the logical unit, or a partner transaction.
INVITE
For the SEND (APPC) command, an application can use the INVITE option to add a change-direction indicator to data already sent to a process in a connected APPC system. Control data is not transmitted by CICS until the subsequent WAIT or a SYNCPOINT command, unless CONFIRM or WAIT is also coded on the GDS SEND INVITE command.

For the other SEND commands, INVITE specifies that the next terminal control command to be run for this facility is a RECEIVE. This allows optimal flows to occur.

LAST
Specifies that this is the last SEND command for a transaction.

LDC(name)
Specifies the 2-character mnemonic used to determine the appropriate logical device code (LDC) numeric value. The mnemonic represents an LDC entry in the terminal control table TYPE=LDC.

LENGTH(data-value)
Specifies the length, as a halfword binary value, of the data to be written. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

SESSION(name)
Specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If this option is omitted, the principal facility for the task is used.

STATE(cvda)
Gets the state of the current conversation. The CVDA values returned by CICS are:
- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

STRFIELD
Specifies that the data area specified in the FROM option contains structured fields. If this option is specified, the contents of all structured fields must be handled by the application program. The CONVERSE command, rather than a SEND command, must be used if the data area contains a read partition structured field. Structured fields are described in IBM 3270 Data Stream Programmers Reference.

The CTLCHAR and ERASE options are mutually exclusive with STRFIELD, and their use with STRFIELD generates an error message.

WAIT
Specifies that processing of the command must be completed before any subsequent processing is attempted.

If the WAIT option is not specified, control is returned to the application program when processing of the command starts. A subsequent input or output request (terminal control, BMS, or batch data interchange) to the terminal associated with the task causes the application program to wait until the previous request completes.
Conditions

Some of the following conditions might occur in combination. If more than one occurs, only the first is passed to the application program. EIBRCODE, however, is set to indicate all the conditions that occurred.

62 CBIDERR

Occurs if the requested attach header control block named in ATTACHID cannot be found.

Default action: terminate the task abnormally.

57 IGREQCD

Occurs when an attempt is made to run a SEND command after a SIGNAL data flow control command with a request change direction (RCD) code has been received from the logical unit.

Default action: terminate the task abnormally.

16 INVREQ

RESP2 values:

200

A distributed program link server application attempted to send on its function-shipping session (its principal facility).

For SEND (APPC), a distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Also occurs (RESP2 not set) in any of the following situations:

• The CONFIRM option has been specified, but the APPC conversation is not sync level 1 or 2.
• The SEND command has been used on an APPC conversation that is not a mapped conversation or that is not using the EXEC CICS interface.

Default action: terminate the task abnormally.

22 LENGERR

Occurs if an out-of-range value is supplied in the LENGTH or FLENGTH option.

Default action: terminate the task abnormally.

61 NOTALLOC

Occurs if the CONVID value in the command does not relate to a conversation that is owned by the application, or if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

24 SIGNAL

Occurs when an inbound SIGNAL data flow control command is received from a logical unit or session. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

81 TERMERR

Occurs for a session-related error. Any action on that conversation other than a FREE causes an ATCV abend.

A CANCEL TASK request by a user node error program (NEP) might cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.
**SEND (non-z/OS Communications Server default)**

Write data to standard CICS terminal support.

SEND (non-z/OS Communications Server default)

SEND (non-z/OS Communications Server default)

SEND (non-z/OS Communications Server default)

SEND (non-z/OS Communications Server default)

SEND (non-z/OS Communications Server default)

**SEND (MRO)**

Send data on an MRO conversation.

SEND (MRO)

SEND (MRO)

SEND (MRO)

SEND (MRO)

SEND (MRO)

SEND (MRO)

**SEND (2260)**

Write data to a 2260 or 2265 display station.

SEND (2260)

SEND (2260)

SEND (2260)

SEND (2260)

SEND (2260)

**Conditions:** INVREQ, LENGERR, NOTALLOC

**Description**

SEND writes data to a terminal. This form of the send command can be used by all CICS-supported terminals for which the other SEND descriptions are not appropriate.

**SEND (MRO)**

SEND sends data to a conversation partner on an MRO conversation.

**SEND (2260)**

Write data to a 2260 or 2265 display station.
## SEND (2260)

SEND — FROM(data-area) — LENGTH(data-value) — FLENGTH(data-value) — CTLCHAR(data-value) — LINEADDR(data-value) — WAIT — LEAVEKB

**Conditions:** INVREQ, LENGERR

**Description**
SEND writes data to a terminal.

---

## SEND (2980)

SEND — FROM(data-area) — LENGTH(data-value) — FLENGTH(data-value) — PASSBK — CBUFF

**Conditions:** INVREQ, LENGERR, NOPASSBKWR

**Description**
SEND writes data to a terminal. For more information about the 2980 general banking system, see “RECEIVE (2980)” on page 394.

---

## SEND: non-z/OS Communications Server options

Common options used on the SEND command (non-z/OS Communications Server).

**Options**

- **ALTERNATE**
  sets the terminal to use the ALTERNATE screen size.

- **ASIS**
  indicates that output is to be sent in transparent mode (with no recognition of control characters and accepting any of the 256 possible combinations of eight bits as valid transmittable data).

  **Note:** If you are using a katakana terminal, you might see some messages containing mixed English and katakana characters. That is because katakana terminals cannot display mixed-case output. Uppercase characters in the data stream appear as uppercase English characters, but lowercase characters appear as katakana characters. If this happens, ask your system programmer to specify MSGCASE=UPPER in the system initialization parameters so that messages contain uppercase characters only.

- **ATTACHID(name)**
  specifies that an attach header (created by a BUILD ATTACH command) is to precede, and be concatenated with, the user data supplied in the FROM option. “name” (1–8 characters) identifies the attach header control block to be used in the local task.
CBUFF
specifies that data is to be written to a common buffer in a 2972 control unit. The WAIT option is implied.

CNOTCOMPL
indicates that the request/response unit (RU) sent as a result of this SEND command does not complete the chain. If this option is omitted and chain assembly has been specified, the RU terminates the chain.

CTLCHAR(data-value)
specifies a 1-byte write control character (WCC) that controls a SEND command for a 3270. These are documented in the IBM 3270 Data Stream Programmers Reference. A COBOL user must specify a data area containing this character. If the option is omitted, all modified data tags are reset to zero and the keyboard is restored.

DEFAULT
sets the terminal to use the DEFAULT screen size.

DEFRESP
indicates that a definite response is required when the output operation has been completed.

ERASE
specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display.)

The first output operation in any transaction, or in a series of pseudoconversational transactions, should always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE resource definition.

FLENGTH(data-value)
A fullword alternative to LENGTH.

FMH
specifies that a function management header has been included in the data in the FROM area. If the ATTACHID option is specified as well, the concatenated FMH flag is set in the attach FMH.

FROM(data-area)
specifies the data to be written to the logical unit or terminal.

INVITE
specifies that the next terminal control command to be executed for this facility is a RECEIVE. This allows optimal flows to occur.

LAST
specifies that this is the last output operation for a transaction and therefore the end of a bracket.

LEAVEKB
specifies that the keyboard is to remain locked at the completion of the data transfer.

LENGTH(data-value)
specifies the length, as a halfword binary value, of the data to be written. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

LINEADDR(data-value)
specifies that the writing is to begin on a specific line of a 2260/2265 screen. The data value is a halfword binary value in the range 1 through 12 for a 2260, or 1 through 15 for a 2265.

PASSBK
specifies that communication is with a passbook. The WAIT option is implied.

PSEUDOBIN (start-stop only)
specifies that the data being written is to be translated from System/7 hexadecimal to pseudobinary.

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the alternate facility to be used. If this option is omitted, the principal facility for the task is used.
STATE\textit{(cvda)}
gets the state of the transaction program. The cvda values returned by CICS are:
- ALLOCATED
- FREE
- PENDFREE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
- SYNCSEND

\textbf{STRFIELD}
specifies that the data area specified in the FROM option contains structured fields. If this option is specified, the contents of all structured fields must be handled by the application program. The CONVERSE command, rather than a SEND command, must be used if the data area contains a read partition structured field. (Structured fields are described in the IBM 3270 Data Stream Programmers Reference.)

\texttt{CTLCHAR} and \texttt{ERASE} are mutually exclusive with \texttt{STRFIELD}, and their use with \texttt{STRFIELD} generates an error message.

\textbf{WAIT}
specifies that processing of the command must be completed before any subsequent processing is attempted.

If the \texttt{WAIT} option is not specified, control is returned to the application program when processing of the command has started. A subsequent input or output request (terminal control, BMS, or batch data interchange) to the terminal associated with the task causes the application program to wait until the previous request has been completed.

\textbf{Conditions}

\textbf{62 CBIDERR}
occurs if the requested attach header control block named in ATTACHID cannot be found.

Default action: terminate the task abnormally.

\textbf{16 INVREQ}
RESP2 values:
- 200
  occurs if a distributed program link server application attempted to send on its function-shipping session (its principal facility)

Default action: terminate the task abnormally.

\textbf{22 LENGERR}
occurs if an out-of-range value is supplied in the LENGTH or FLENGTH option.

Default action: terminate the task abnormally.

\textbf{51 NOPASSBKWR}
occurs if no passbook is present.

Default action: terminate the task abnormally.

\textbf{61 NOTALLOC}
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.
**81 TERMERR**
occurs for a terminal-related error, such as a session failure. This condition applies to z/OS Communications Server-connected terminals only.

A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program (DFHZNAC) handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

**03 WRBRK**
occurs if the command is terminated by the attention key.

Default action: ignore the condition.

---

**SEND CONTROL**

Send device controls to a terminal without map or text data. The keywords are separated into those supported by minimum, standard, and full BMS.

For further information about BMS, see Basic mapping support.

**SEND CONTROL**

```
SEND CONTROL
```

**SEND CONTROL Minimum BMS**

```
CURSOR ( data-value )
```

```
FORMFEED
```

```
ERASE
```

```
DEFAULT
```

```
ALTERNATE
```

```
ERASEAUP
```

```
PRINT
```

```
FREEKB
```

**SEND CONTROL Standard BMS**

```
MSR( data-value )
```

```
OUTPARTN( name )
```

```
ACTPARTN( name )
```

```
LDC( name )
```

---
SEND CONTROL Full BMS

SEND CONTROL sends device controls to a terminal.

When using the SEND CONTROL command with any of the ALARM, FREEKB, FRSET, HONEOM, L40, L64, L80, or PRINT options, see DFHMDI options, CTRL for a description of the option priority.

ACCUM specifies that this command is one of a number of commands that are used to build a logical message. The logical message is completed by a SEND PAGE command, or deleted by a PURGE MESSAGE command.

ACTPARTN(name) specifies the name (1–2 characters) of the partition to be activated. Activating a partition moves the cursor into the specified partition, and unlocks the keyboard for the specified partition.

This option is ignored if the target terminal does not support partitions, or if there is no application partition set.

ALARM specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHs (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.

ALTERNATE sets the terminal to use the ALTERNATE screen size.

CURSOR(data-value) specifies the location the 3270 or 3604 cursor is returned to on completion of a SEND CONTROL command.

The data value must be a halfword binary value that specifies the cursor position relative to zero; the range of values that can be specified depends on the size of the screen being used.

If ACCUM is being used, the most recent value of CURSOR specified is used to position the cursor.

The value specified in the CURSOR option must be positive. A negative value leads to unpredictable results.

If this option is omitted, the cursor is positioned at position zero of the screen.

DEFAULT sets the terminal to use the DEFAULT screen size.

Conditions: IGREQCD, IGREQID, INVLDC, INVPARTN, INVREQ, RETPAGE, TSIOERR, WRBRK

Description

SEND CONTROL sends device controls to a terminal.

When using the SEND CONTROL command with any of the ALARM, FREEKB, FRSET, HONEOM, L40, L64, L80, or PRINT options, see DFHMDI options, CTRL for a description of the option priority.

ACCUM specifies that this command is one of a number of commands that are used to build a logical message. The logical message is completed by a SEND PAGE command, or deleted by a PURGE MESSAGE command.

ACTPARTN(name) specifies the name (1–2 characters) of the partition to be activated. Activating a partition moves the cursor into the specified partition, and unlocks the keyboard for the specified partition.

This option is ignored if the target terminal does not support partitions, or if there is no application partition set.

ALARM specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHs (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.

ALTERNATE sets the terminal to use the ALTERNATE screen size.

CURSOR(data-value) specifies the location the 3270 or 3604 cursor is returned to on completion of a SEND CONTROL command.

The data value must be a halfword binary value that specifies the cursor position relative to zero; the range of values that can be specified depends on the size of the screen being used.

If ACCUM is being used, the most recent value of CURSOR specified is used to position the cursor.

The value specified in the CURSOR option must be positive. A negative value leads to unpredictable results.

If this option is omitted, the cursor is positioned at position zero of the screen.

DEFAULT sets the terminal to use the DEFAULT screen size.
ERASE
specifies that the screen printer buffer or partition is to be erased and the cursor returned to the
upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604
Keyboard Display.)

The first output operation in any transaction, or in a series of pseudoconversational transactions,
should always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly
overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is
selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

ERASEAUP
specifies that all unprotected character locations in the partition or the entire screen are to be erased.
(This option applies only to the 3270 and 8775.)

FORMFEED
specifies that a new page is required. For 3270 printers and displays, the FORMFEED character is
positioned at the start of the buffer. The application program must thus ensure that this buffer
position is not overwritten by map or text data. It is ignored if the target terminal does not support
FORMFEED (that is, the RDO TYPETERM option FORMFEED was not used).

FREEKB
specifies that the 3270 keyboard is to be unlocked. If FREEKB is omitted, the keyboard remains
locked.

Note that the keyboard lock status is maintained separately for each partition on a terminal that
supports partitions.

FRSET
specifies that the modified data tags (MDTs) of all fields currently in the 3270 (or partition) buffer are
to be reset to the unmodified condition (that is, field reset).

This allows the ATTRB operand of DFHMDF for the next requested map to control the final status of
fields written or rewritten in response to a BMS command, if no other attribute information has been
written in the symbolic map.

HONEYEM
specifies that the default printer line length is to be used. This length should be the same as that
specified using the RDO TYPETERM options PAGESIZE or ALTPAGE.

LAST
specifies that this is the last output operation for a transaction and, therefore, the end of a bracket.
This option applies to logical units only.

LDC(name)
specifies a 2-character mnemonic to be used to determine the logical device code (LDC) to be
transmitted in the FMH to the logical unit. The mnemonic identifies an LDC entry defined by a DFHTCT
TYPE=LDC macro. When an LDC is specified, BMS uses the device type, the page size, and the page
status associated with the LDC mnemonic to format the message. These values are taken from the
extended local LDC table for the LU, if it has one. If the LU has only a local (unextended) LDC table, the
values are taken from the system LDC table. The numeric value of the LDC is obtained from the local
LDC table, unless this is an unextended table and the value is not
specified, in which case it is taken from the system table.

L40, L64, or L80
specifies the line length for a 3270 printer; a carrier return and line feed are forced after 40, 64, or 80
characters have been printed on a line. Unacceptable results are likely if this differs from the page
width specified by the RDO TYPETERM options PAGESIZE or ALTPAGE.

When using the options, refer to DFHMDI options, CTRL for a description of the option priority.

MSR(data-value)
specifies the 4-byte data value that controls the 10/63 magnetic stripe reader attached to an 8775 or
3643 terminal. A set of constants is provided in DFHMSRCA to assist in setting this 4-byte area. See
“Magnetic slot reader (MSR) control value constants, DFHMSRCA” on page 785 for a complete list.
This option is ignored if the RDO TYPETERM option MSRCONTROL was not used.
OUTPARTN(name) specifies the name (1–2 characters) of the partition to which data is to be sent. This option is ignored if the terminal does not support partitions, or if there is no application partition set associated with the terminal. If there is an application partition set, and the OUTPARTN option is omitted, data is sent to the partition named by the PARTN operand of the DFHMSD (see “DFHMSD” on page 810) or the DFHMDI (see “DFHMDI” on page 801) map definition macros. If maps are not used, or if there is no PARTN operand, the output is sent to the first partition in the partition set.

PAGING specifies that the output data is not to be sent immediately to the terminal, but is to be placed in temporary storage and displayed in response to paging commands entered by the terminal operator.

If PAGING is specified with a REQID prefix that is used for temporary storage queues that are defined as recoverable, CICS provides message recovery for logical messages if the task has reached a syncpoint.

PRINT specifies that a print operation is to be started at a 3270 printer or at a 3275 with the printer adapter feature, or that data on an LUTYPE2 (3274/76 or 3790) is to be printed on a printer allocated by the controller. If this option is omitted, the data is sent to the printer buffer but is not printed.

REQID(name) specifies a 2-character prefix to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

BMS message recovery is provided for a logical message only if the PAGING option is specified in the BMS SEND commands, and if the syncpoint has been reached.

SET(ptr-ref) specifies the pointer to be set to the address of the output data.

The SET option specifies that completed pages are to be returned to the application program. The pointer is set to the address of a list of completed pages.

If TIOAPFX=YES is specified in the map definition, the pointer returned contains the address of the TIOA prefix. The user data starts at offset X'0C' from the start of the TIOA prefix.

TERMINAL specifies that the output data is to be sent to the terminal that originated the transaction.

WAIT specifies that control should not be returned to the application program until the output operation has been completed.

If WAIT is not specified, control returns to the application program when the output operation has started. A subsequent input or output command (terminal control, BMS, or batch data interchange) causes the application program to wait until the previous command has been completed.

Conditions

57 IGREQCD occurs when an attempt is made to execute a SEND CONTROL command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.

39 IGREQID occurs if the prefix specified in the REQID option is different from that established by a previous REQID option, or by default for this logical message—REQID (**).

Default action: terminate the task abnormally.

41 INVLDC occurs if the specified LDC mnemonic is not included in the LDC list for the logical unit.
Default action: terminate the task abnormally.

**65 INVPARTN**
occurs if the specified partition is not defined in the partition set associated with the application program.

Default action: terminate the task abnormally.

**16 INVREQ**
RESP2 values:

**200**
A distributed program link server application attempted to send on its function-shipping session (its principal facility).

also occurs (RESP2 not set) in the following situation:

• Control information is output to the same partition or LDC as mapped data while a BMS logical message is active. If neither partitions nor LDCs are in use, control information is output to the same device as mapped data.

Default action: terminate the task abnormally.

**32 RETPAGE**
occurs if the SET option is specified and a completed page is ready for return to the application program.

Default action: return control to the application program at the point immediately following the BMS SEND command.

**35 TSIOERR**
occurs if there is an irrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

**03 WRBRK**
occurs if the command is interrupted by the terminal operator pressing the ATTN key. It applies only to the 2741 Communication Terminal, and only if write break is supported for CICS.

Default action: ignore the condition.

---

**SEN D MAP**

Send mapped output data to a terminal. The keywords are separated into those supported by minimum, standard, and full BMS. For further information about BMS, see Basic mapping support.

**SEND MAP**

`SEND MAP(name) →`
Conditions: IGREQCD, IGREQID, INVLD, INVMPSZ, INVPARTN, INVREQ, OVERFLOW, RETPAGE, TSIOERR, WRBRK

Description

SEND MAP sends output data to a terminal.

When using the SEND MAP command with any of the ALARM, FREEKB, FRSET, HONEOM, L40, L64, L80, or PRINT options, see “DFHMDI” on page 801 for a description of the option priority.
See BMS macros for map definition.

Options

ACCUM
specifies that this command is one of a number of commands that are used to build a logical message. The logical message is completed by a SEND PAGE command, or deleted by a PURGE MESSAGE command.

ACTPARTN(name)
specifies the name (1–2 characters) of the partition to be activated. Activating a partition moves the cursor into the specified partition, and unlocks the keyboard for the specified partition.

This option is ignored if the target terminal does not support partitions, or if there is no application partition set.

ALARM
specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHs (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.

When using the ALARM option, refer to “DFHMDI” on page 801 for a description of the option priority.

ALTERNATE
sets the terminal to use the ALTERNATE screen size.

CURSOR(data-value)
specifies the location to which the 3270 or 3604 cursor is to be returned upon completion of a SEND MAP command.

The data value must be a halfword binary value that specifies the cursor position relative to zero; the range of values that can be specified depends on the size of the screen being used. If no data value is specified, symbolic cursor positioning is assumed.

This option overrides any IC option of the ATTRB operand of DFHMDF. If ACCUM is being used, the most recent value of CURSOR specified is used to position the cursor.

The value specified in the CURSOR option must be positive. A negative value leads to unpredictable results.

DATAONLY
specifies that only application program data is to be written. The attribute characters (3270 only) must be specified for each field in the supplied data. If the attribute byte in the user-supplied data is set to X'00', the attribute byte on the screen is unchanged. Any default data or attributes from the map are ignored.

DEFAULT
sets the terminal to use the DEFAULT screen size.

ERASE
specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display.)

The first output operation in any transaction, or in a series of pseudoconversational transactions, should always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

ERASEAUP
specifies that before this page of output is displayed, all unprotected character locations in the partition or the entire screen are to be erased. (This option applies only to the 3270 and 8775.)

FMHPARM(name)
specifies the name (1–8 characters) of the outboard map to be used. (This option applies only to 3650 logical units with outboard formatting.)
FORMFEED
specifies that a new page is required. For 3270 printers and displays, the FORMFEED character is positioned at the start of the buffer. The application program must thus ensure that this buffer position is not overwritten by map or text data. It is ignored if the target terminal does not support FORMFEED (that is, the RDO TYPETERM option FORMFEED was not used).

FREEKB
specifies that the 3270 keyboard should be unlocked after the data is written. If FREEKB is omitted, the keyboard remains locked.

Note that the keyboard lock status is maintained separately for each partition on a terminal that supports partitions.

When using the FREEKB option, refer to DFHMDI options, CTRL for a description of the option priority.

FROM(data-area)
specifies the data area containing the data to be processed. If this field is not specified, the name defaults to the name of the map suffixed with an O. This includes the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see “DFHMDI” on page 801 and specifying NODDS in the BMS operand).

FRSET
specifies that the modified data tags (MDTs) of all fields currently in the 3270 (or partition) buffer are to be reset to the unmodified condition (that is, field reset) before any map data is written to the buffer.

This allows the ATTRB operand of DFHMDF for the requested map to control the final status of fields written or rewritten in response to a BMS command, if no other attribute information has been written in the symbolic map.

When using the FRSET option refer to “DFHMDI” on page 801 for a description of the option priority.

HONEOM
specifies that the default printer line length is to be used. This length should be the same as that specified using the RDO TYPETERM options PAGESIZE or ALTPAGE, and the same as the printer platen width; otherwise the data may not format correctly.

When using the HONEOM option, refer to “DFHMDI” on page 801 for a description of the option priority.

LAST
specifies that this is the last output operation for a transaction and, therefore, the end of a bracket. This option applies to logical units only.

LDC(name)
specifies a 2-character mnemonic to be used to determine the logical device code (LDC) to be transmitted in the FMH to the logical unit. The mnemonic identifies an LDC entry defined by a DFHTCT TYPE=LDC macro.

When an LDC is specified, BMS uses the device type, the page size, and the page status associated with the LDC mnemonic to format the message. These values are taken from the extended local LDC table for the logical unit, if it has one. If the logical unit has only a local (unextended) LDC table, the values are taken from the system LDC table. The numeric value of the LDC is obtained from the local LDC table, unless this is an unextended table and the value is not specified, in which case it is taken from the system table.

If the LDC option is omitted, the LDC mnemonic specified in the DFHMSD macro is used; see “DFHMSD” on page 810. If the LDC option has also been omitted from the DFHMSD macro, the action depends on the type of logical unit, as follows:

3601 logical unit
The first entry in the local or extended local LDC table is used, if there is one. If a default cannot be obtained in this way, a null LDC numeric value (X’00’) is used. The page size used is the value that is specified in the RDO TYPETERM options PAGESIZE or ALTPAGE, or (1,40) if such a value is not specified.
**LUTYPE4 logical unit, batch logical unit, or batch data interchange logical unit**

The local LDC table is not used to supply a default LDC; instead, the message is directed to the logical unit console (that is, to any medium that the logical unit elects to receive such messages).

For a batch data interchange logical unit, this does not imply sending an LDC in an FMH. The page size is obtained in the manner described for the 3601 logical unit.

**LENGTH(data-value)**

specifies the length of the data to be formatted as a halfword binary value.

If the data area sending the map is longer than the data to be mapped, LENGTH should be specified. This should include the length of the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see “DFHMDI” on page 801 and specifying NODDS in the BMS operand). For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

**L40, L64, or L80**

specifies the line length for a 3270 printer; a carrier return and line feed are forced after 40, 64, or 80 characters have been printed on a line. Unacceptable results are likely if this differs from the page width specified by the RDO TYPETERM options PAGESIZE or ALTPAGE.

When using the options, refer to “DFHMDI” on page 801 for a description of the option priority.

**MAP(name)**

specifies the name (1–7 characters) of the map to be used.

**MAPONLY**

specifies that only default data from the map is to be written.

**MAPSET(name)**

specifies the unsuffixed name (1–7 characters) of the mapset to be used. The mapset must reside in the CICS program library. The mapset can be defined either by using RDO or by program autoinstall when the mapset is first used. If this option is not specified, the name given in the MAP option is assumed to be that of the mapset.

The number of maps per mapset is limited to a maximum of 9 998.

**MSR(data-value)**

specifies the 4-byte data value that controls the 10/63 magnetic stripe reader attached to an 8775 or 3643 terminal. A set of constants is provided in DFHMSRCA to assist in setting this 4-byte area. See “Magnetic slot reader (MSR) control value constants, DFHMSRCA” on page 785 for a complete list. This option is ignored if the RDO TYPETERM option MSRCONTROL was not used.

**NLEOM**

specifies that data for a 3270 printer or a 3275 display with the printer adapter feature should be built with blanks and new-line (NL) characters, and that an end-of-message (EM) character should be placed at the end of the data. As the data is printed, each NL character causes printing to continue on the next line, and the EM character terminates printing.

This option must be specified in the first SEND MAP command used to build a logical message. The option is ignored if the device receiving the message (direct or routed) is not one of those mentioned above.

If this option is used, buffer updating and attribute modification of fields previously written into the buffer are not allowed. CICS includes the ERASE option with every write to the terminal.

The NL character occupies a buffer position. A number of buffer positions, equivalent to the value of the RDO TYPETERM options PAGESIZE or ALTPAGE, for that terminal, is unavailable for data. This may cause data to wrap around in the buffer; if this occurs, the PAGESIZE or ALTPAGE value must be reduced.

The NLEOM option overrides the ALARM option if the latter is present.

**NOFLUSH**

specifies that CICS does not clear pages on completion but returns control to the program (having set the OVERFLOW condition in EIBRESP).
OUTPARTN(name)  
specifies the name (1–2 characters) of the partition to which data is to be sent. This option is ignored if the terminal does not support partitions, or if there is no application partition set associated with the terminal. If there is an application partition set, and the OUTPARTN option is omitted, data is sent to the partition named by the PARTN operand of the DFHMSD or DFHMDI map definitions. If maps are not used, or if there is no PARTN operand, the output is sent to the first partition in the partition set.

PAGING  
specifies that the output data is not to be sent immediately to the terminal, but is to be placed in temporary storage and displayed in response to paging commands entered by the terminal operator. If PAGING is specified with a REQID prefix that is used for temporary storage queues that are defined as recoverable, CICS provides message recovery for logical messages if the task has reached a syncpoint.

PRINT  
specifies that a print operation is to be started at a 3270 printer or at a 3275 with the printer adapter feature, or that data on an LUTYPE2 (3274/76 or 3790) is to be printed on a printer allocated by the controller. If this option is omitted, the data is sent to the printer buffer but is not printed.

When using the PRINT option, refer to “DFHMDI” on page 801 for a description of the option priority.

REQID(name)  
specifies a 2-character prefix to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

BMS message recovery is provided for a logical message only if the PAGING option is specified in the BMS SEND commands and if the syncpoint has been reached.

SET(ptr-ref)  
specifies the pointer to be set to the address of the input or output data.

The SET option specifies that completed pages are to be returned to the application program. The pointer is set to the address of a list of completed pages.

The application program regains control either immediately following the SEND MAP command (if the current page is not yet completed), or at the label specified in a HANDLE CONDITION RETPAGE command, if the page has been completed.

If TIOAPFX=YES is specified in the map definition, the pointer returned contains the address of the TIOA prefix. The user data starts at offset X'0C' from the start of the TIOA prefix.

TERMINAL  
specifies that the output data is to be sent to the terminal that originated the transaction.

WAIT  
specifies that control should not be returned to the application program until the output operation has been completed.

If WAIT is not specified, control returns to the application program when the output operation has started. A subsequent input or output command (terminal control, BMS, or batch data interchange) causes the application program to wait until the previous command has been completed.

Conditions  
Some of the following conditions may occur in combination. If more than one occurs, only the first is passed to the application program.

57 IGREQCD  
occurs when an attempt is made to execute a SEND MAP command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.
39 IGREQID
occurs if the prefix specified in the REQID option is different from that established by a previous
REQID option, or by default for this logical message -REQID (**).
Default action: terminate the task abnormally.

41 INVLD
occurs if the specified LDC mnemonic is not included in the LDC list for the logical unit.
Default action: terminate the task abnormally.

38 INVMSZ
occurs if the specified map is too wide for the terminal, or if a HANDLE CONDITION OVERFLOW
command is active and the specified map is too long for the terminal.
Default action: terminate the task abnormally.

65 INVPARTN
occurs if the specified partition is not defined in the partition set associated with the application
program.
Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:
200
Command not allowed for a distributed program link server program.
also occurs (RESP2 not set) in any of the following situations:
• Text data is output to the same partition or LDC as mapped data while a BMS logical message is
active. If neither partitions nor LDCs are in use, text data is output to the same logical message as
mapped data.
• A separate SEND MAP command with the ACCUM option is issued to the terminal that originated the
transaction while a routed logical message is being built.
• A SEND MAP command is issued for a map without field specifications by specifying the FROM
option without the DATAONLY option.
• During overflow processing, data is sent to a different LDC from the LDC that caused page overflow.
• Partitions are in use, the OUTPARTN option has not been coded on the SEND MAP command, but
the PARTN operand has been coded in the mapset definition. If the condition arises, it suggests that
different versions of the mapset have different PARTN values, and that the suffix deduced for the
partition is not the same as the suffix of the loaded mapset.
• A SEND MAP command with the DATAONLY option is issued with a data area, supplied by the user,
that resides above the 16MB line. But the length of this data area is not longer than the TIOA prefix.
Default action: terminate the task abnormally.

40 OVERFLOW
occurs if the mapped data does not fit on the current page. This condition is only raised if a HANDLE
CONDITION OVERFLOW command is active.
Default action: ignore the condition.

32 RETPAGE
occurs if the SET option is specified and a completed page is ready for return to the application
program.
Default action: return control to the application program at the point immediately following the BMS
SEND MAP command.

35 TSIOERR
occurs if there is an irrecoverable temporary storage input/output error.
Default action: terminate the task abnormally.
03 WRBRK
occurs if a SEND MAP command is interrupted by the terminal operator pressing the ATTN key. It applies only to the 2741 Communication Terminal, and only if write break is supported for CICS.
Default action: ignore the condition.

SEND MAP MAPPINGDEV
Create mapped output data to be sent to a terminal described by MAPPINGDEV at some later time.
For further information about BMS, see Basic mapping support.
Minimum BMS:
SEND MAP MAPPINGDEV

SEND MAP MAPPINGDEV

SEND MAP( name) — MAPPINGDEV( data-value) — SET( ptr-ref) — MAPSET( name)

FROM( data-area) — DATAONLY — LENGTH( data-value) — MAPONLY

CURSOR( data-value) — FORMFEED

ERASE — ERASEAUP — PRINT — FREEKB — ALARM

FRSET

Conditions: INVMPSZ, INVREQ

Description
SEND MAP MAPPINGDEV creates mapped output data to be sent to a terminal that is not the principal facility of the transaction. The terminal characteristics to be used are defined by MAPPINGDEV.
The mapped data is not transmitted but is returned to the application in a buffer defined by the SET option.

Options
ALARM
specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHS (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.
When using the ALARM option, refer to DFHMDI options, CTRL for a description of the option priority.
CURSOR(data-value)
specifies the location to which the 3270 cursor is to be returned upon completion of a SEND MAP MAPPINGDEV command.
The data value must be a halfword binary value that specifies the cursor position relative to zero; the range of values that can be specified depends on the size of the screen being used. If no data value is specified, symbolic cursor positioning is assumed.
This option overrides any IC option of the ATTRB operand of DFHMDF.

The value specified in the CURSOR option must be positive. A negative value leads to unpredictable results.

DATAONLY
specifies that only application program data is to be written. The attribute characters (3270 only) must be specified for each field in the supplied data. If the attribute byte in the user-supplied data is set to X'00', the attribute byte on the screen is unchanged. Any default data or attributes from the map are ignored.

ERASE
specifies that the screen printer buffer is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775)

The first output operation in any transaction, or in a series of pseudoconversational transactions, should always specify ERASE. For transactions attached to 3270 screens or printers, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

ERASEAUP
specifies that before this page of output is displayed, all unprotected character locations in the entire screen are to be erased. (This option applies only to the 3270 and 8775.)

FORMFEED
specifies that a new page is required. For 3270 printers and displays, the FORMFEED character is positioned at the start of the buffer. The application program must thus ensure that this buffer position is not overwritten by map or text data. It is ignored if the target terminal does not support FORMFEED (that is, the RDO TYPETERM option FORMFEED was not used, or the terminal control table TYPE=TERMINAL does not specify FF=YES).

FREEKB
specifies that the 3270 keyboard should be unlocked after the data is written. If FREEKB is omitted, the keyboard remains locked.

When using the FREEKB option, refer to CTRL DFHMDI options, CTRL for a description of the option priority.

FROM(data-area)
specifies the data area containing the data to be processed. If this field is not specified, the name defaults to the name of the map suffixed with an O. This includes the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and Specifying NODDS in the BMS operand).

FRSET
specifies that the modified data tags (MDTs) of all fields currently in the 3270 buffer are to be reset to the unmodified condition (that is, field reset) before any map data is written to the buffer.

This allows the ATTRB operand of DFHMDF for the requested map to control the final status of fields written or rewritten in response to a BMS command, if no other attribute information has been written in the symbolic map.

When using the FRSET option refer to DFHMDI options, CTRL for a description of the option priority.

LENGTH(data-value)
specifies the length of the data to be formatted as a halfword binary value.

If the data area sending the map is longer than the data to be mapped, LENGTH should be specified. This should include the length of the 12-byte prefix generated by the TIOAPFX=YES option on the DFHMDI and DFHMSD BMS map definitions (see DFHMDI operands, TERM and Specifying NODDS in the BMS operand). For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

MAP(name)
specifies the name (1–7 characters) of the map to be used.
**MAPPINGDEV(data-value)**
specifies the name of a 3270 terminal whose BMS characteristics match those of the terminal to which the data will eventually be sent using a SEND TEXT MAPPED command or a terminal control SEND or CONVERSE.

**MAPONLY**
specifies that only default data from the map is to be written.

**MAPSET(name)**
specifies the unsuffixed name (1–7 characters) of the mapset to be used. The mapset must reside in the CICS program library. The mapset can be defined either by using RDO or by program autoinstall when the mapset is first used. If this option is not specified, the name given in the MAP option is assumed to be that of the mapset.

The number of maps per mapset is limited to a maximum of 9 998.

**PRINT**
specifies that a print operation is to be started at a 3270 printer or at a 3275 with the printer adapter feature, or that data on an LTYPE2 (3274/76 or 3790) is to be printed on a printer allocated by the controller. If this option is omitted, the data is sent to the printer buffer but is not printed.

When using the PRINT option, refer to DFHMDI options, CTRL for a description of the option priority.

**SET(ptr-ref)**
specifies the pointer to be set to the address of the mapped data.

The storage area containing the mapped data has the same format as the page buffer returned when using the SET option in the full BMS SEND command. For more guidance about using the SET option, see The MAPPINGDEV facility.

**Conditions**
Some of the following conditions may occur in combination. If more than one occurs, only the first is passed to the application program.

**38 INVMPZ**
occurs if the specified map is too wide for the terminal specified by MAPPINGDEV or if a HANDLE CONDITION OVERFLOW command is active and the specified map is too long for the terminal specified by MAPPINGDEV.

Default action: terminate the task abnormally.

**16 INVREQ**
occurs if the terminal specified by MAPPINGDEV does not exist, does not support BMS, or is not a 3270 printer or display.

Default action: terminate the task abnormally.
SEND PAGE

Send last page of data.

SEND PAGE

SEND PAGE

RELEASE

TRANSID( name)

TRAILER( data-area)

RETAIN

SET( ptr-ref)

AUTOPAGE

CURRENT

ALL

NOAUTOPAGE

OPERPURGE

FMHPARM( name)

LAST

Conditions: IGREQCD, INVREQ, RETPAGE, TSIOERR, WRBRK

Description

SEND PAGE completes a BMS logical message. It causes BMS to generate a device-dependent data stream for the last (perhaps the only) page of data. Typically, this last page is only partially full. SEND PAGE is supplied only by full BMS. For further information about BMS, see Basic mapping support.

Options can be included to specify how much control the terminal operator should have over the disposition of the logical message (AUTOPAGE, NOAUTOPAGE, and OPERPURGE), to determine whether control should return to the application program after transmission of the logical message (RELEASE or RETAIN), to add trailer data to a text logical message (TRAILER), and to return the device-dependent data stream for the last page of a logical message to the application program (SET). If this is a paging message, the last page of the logical message is transmitted to temporary storage and the terminal operator paging transaction is initiated. If it is a terminal logical message, the last page is transmitted to the terminal.

This is supported by full BMS only.

Options

ALL
specifies that if the ATTN key on a 2741 is pressed while a BMS logical message is being sent to the terminal, and the WRBRK condition is not active, transmission of the current page is to cease and no additional pages are to be transmitted. The logical message is deleted.

AUTOPAGE
specifies that each page of a BMS logical message is to be sent to the terminal as soon as it is available. If paging on request is specified for the terminal by the RDO TYPETERM option AUTOPAGE(NO), AUTOPAGE overrides it for this logical message.

AUTOPAGE is assumed for 3270 printers; it does not apply to 3270 display terminals. If neither AUTOPAGE nor NOAUTOPAGE is specified, the terminal has the paging status specified for it using the RDO TYPETERM option AUTOPAGE.
CURRENT
  specifies that if the ATTN key on a 2741 is pressed while a BMS logical message is being sent to the
terminal, and the WRBRK condition is not active, transmission of the current page is to cease and
transmission of the next page (if any) is to begin.

FMHPARM(name)
  specifies the name (1–8 characters) of the outboard map to be used. This option applies only to 3650
logical units with outboard formatting.

LAST
  specifies that this is the last output operation for a transaction and, therefore, the end of a bracket. If
RELEASE is specified, LAST is assumed unless the SEND PAGE command is terminating a routing
operation. This option applies to logical units only.

NOAUTOPAGE
  specifies that pages of a BMS logical message are to be sent one at a time to the terminal. BMS sends
the first page to the terminal when the terminal becomes available or on request of the terminal
operator. Subsequent pages are sent to the terminal in response to requests from the terminal
operator.

If automatic paging is specified for the terminal by the RDO TYPETERM option AUTOPAGE(YES),
NOAUTOPAGE overrides it for this logical message. For logical units, NOAUTOPAGE applies to all
pages for all LDCs in the logical message. NOAUTOPAGE does not apply to 3270 printers.

OPERPURGE
  specifies that CICS is to delete the BMS logical message only when the terminal operator requests
deletion. If the option is omitted, CICS deletes the message if the operator enters data that is not a
paging command.

RELEASE
  specifies that, after the SEND PAGE command, control is to be returned to CICS.

RETAIN
  specifies that after the SEND PAGE command, control is returned to the application program when the
operator has finished displaying the pages.

SET(ptr-ref)
  specifies the pointer to be set to the address of the output data.

  The SET option specifies that the last or only page is returned to the application program. The pointer
is set to the address of the current page. A list of addresses is created and, if the ROUTE command is
in operation, there is an address entry for each device. If the ROUTE command is not in operation, the
list contains only the one entry.

  The application program regains control either immediately following the SEND PAGE command (if the
current page is not yet completed), or at the label specified in a HANDLE CONDITION RETPAGE
command if the page has been completed.

  If TIOAPFX=YES is specified in the map definition, the pointer returned contains the address of the
TIOA prefix. The user data starts at offset X'0C' from the start of the TIOA prefix.

TRAILER(data-area)
  specifies the text data area that contains trailer data to be placed at the bottom of the last page only.
The format of the trailer is:

  2 bytes
    Binary length of the data (n)

  2 bytes
    Binary zero

  n bytes
    Data.

  See The SEND PAGE command for more information.
**TRANSID**(<i>name</i>)

specifies the transaction identifier (1–4 alphanumeric characters) to be used with the next input message from the terminal the task is attached to. The identifier must have been defined to CICS via a RDO TRANSACTION resource definition. TRANSID is valid only if SEND PAGE RELEASE is specified.

If this option is specified in a program that is not at the highest logical level, the specified transaction identifier is used only if a new transaction identifier is not provided in another SEND PAGE command (or in a RETURN program control command) issued in a program at a higher logical level.

**Conditions**

57 IGREQCD

occurs when an attempt is made to execute a SEND PAGE command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.

16 INVREQ

RESP2 values:

200

Command not allowed for a distributed program link server program.

also occurs (RESP2 not set) in any of the following situations:

- The disposition (TERMINAL, PAGING, or SET) of a BMS logical message is changed before its completion by the SEND PAGE command.
- Text data is output to the same partition or LDC as mapped data while a BMS logical message is active. If neither partitions nor LDCs are in use, text data is output to the same logical message as mapped data.
- The TRAILER option is specified when terminating a logical message built with SEND MAP commands only.
- During overflow processing data is sent to a different LDC from the LDC that caused page overflow.
- The length of the trailer is negative.

Default action: terminate the task abnormally.

32 RETPAGE

occurs if the SET option is specified and the last or only completed page is ready for return to the application program.

Default action: return control to the application program at the point immediately following the BMS SEND PAGE command.

35 TSIOERR

occurs if there is an unrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

03 WRBRK

occurs if the SEND PAGE command is interrupted by the terminal operator pressing the ATTN key. It applies only to the 2741 Communication Terminal, and only if write break is supported for CICS.

Default action: ignore the condition.
SEND PARTNSET

 Associates the partition set specified by the PARTNSET option with the application program.

SEND PARTNSET

\[ \text{SEND PARTNSET (name)} \]

**Conditions:** INVPARTNSET, INVREQ

**Description**

SEND PARTNSET associates the partition set specified by the PARTNSET option with the application program. If the partition set name is omitted, the terminal is reset to the base (unpartitioned) state. This command is available on standard and full BMS only. For further information about BMS, see Basic mapping support.

**Note:** A SEND PARTNSET command must not be followed immediately by a RECEIVE command. The two commands must be separated by a SEND MAP, SEND TEXT, or SEND CONTROL command, so that the partition set is sent to the terminal.

**Conditions**

The following conditions may occur together. If both occur, only the first one is passed to the application program.

**64 INVPARTNSET**

occurs if the partition set named in the SEND PARTNSET command is not a valid partition set (for example, it may be a mapset).

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

**200**

Command not allowed for a distributed program link server program.

also occurs (RESP2 not set) in the following situation:

- A SEND PARTNSET command is issued while a logical message is active.

Default action: terminate the task abnormally.

SEND TEXT

Send data without mapping. The keywords are separated into those supported by standard and full BMS. For further information about BMS, see Basic mapping support.

SEND TEXT

\[ \text{SEND TEXT} \]
SEND TEXT Standard BMS

FROM(data-area) ➔ LENGTH(data-value) ➔ CURSOR(data-value) ➔ FORMFEED ➔ ERASE ➔ DEFAULT ➔ ALTERNATE ➔ PRINT ➔ FREEKB ➔ ALARM ➔ NLEOM ➔ FMHPARM(name) ➔ OUTPARTN(name) ➔ ACTPARTN(name) ➔ MSR(data-value) ➔ LDC(name)

SEND TEXT Full BMS

TERMINAL ➔ SET(ptr-ref) ➔ REQID(name) ➔ TERMINAL ➔ PAGING ➔ WAIT ➔ LAST ➔ HEADER(data-area) ➔ TRAILER(data-area) ➔ JUSTIFY(data-value) ➔ HONEOM ➔ ACCUM ➔ L40 ➔ L64 ➔ L80

Conditions: IGREQCD, IGREQID, INVLD, INVPARTN, INVREQ, LENGERR, RETPAGE, TSIOERR, WRBRK

Description

SEND TEXT sends text data without mapping. The text is split into lines of the same width as the terminal, such that words are not broken across line boundaries. If the text exceeds a page, it is split into pages that fit on the terminal with application-defined headers and trailers.

When using the SEND TEXT command with any of the ALARM, FREEKB, FRSET, HONEOM, L40, L64, L80, or PRINT options, see DFHMDI options, CTRL for a description of the option priority.

Options
ACCUM
specifies that this command is one of a number of commands that are used to build a logical message. The logical message is completed by a SEND PAGE command, or deleted by a PURGE MESSAGE command.

HEADER, JUSFIRST, JUSLAST, JUSTIFY and TRAILER all imply ACCUM.

ACTPARTN(name)
specifies the name (1–2 characters) of the partition to be activated. Activating a partition moves the cursor into the specified partition, and unlocks the keyboard for the specified partition.

This option is ignored if the target terminal does not support partitions, or if there is no application partition set.

ALARM
specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHs (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.

ALTERNATE
sets the terminal to use the ALTERNATE screen size.

CURSOR(data-value)
specifies the location to which the 3270 or 3604 cursor is to be returned on completion of a SEND TEXT command.

The data value must be a halfword binary value that specifies the cursor position relative to zero; the range of values that can be specified depends on the size of the screen being used.

This option overrides any IC option of the ATTRB operand of DFHMDF. If ACCUM is being used, the most recent value of CURSOR specified is used to position the cursor.

The value specified in the CURSOR option must be positive. A negative value leads to unpredictable results.

DEFAULT
sets the terminal to use the DEFAULT screen size.

ERASE
specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display.)

The first output operation in any transaction, or in a series of pseudoconversational transactions, should always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

FMHPARM(name)
specifies the name (1–8 characters) of the outboard map to be used. (This option applies only to 3650 logical units with outboard formatting.)

FORMFEED
specifies that a new page is required. For 3270 printers and displays, the FORMFEED character is positioned at the start of the buffer. The application program must thus ensure that this buffer position is not overwritten by map or text data. It is ignored if the target terminal does not support FORMFEED (that is, the RDO TYPETERM option FORMFEED was not used).

The FORMFEED option can appear on any SEND TEXT ACCUM command. You need only specify it once within a physical page because it always forces a FORMFEED at the start of the physical page. To force a FORMFEED at the start of a particular SEND TEXT ACCUM command, use the JUSFIRST option instead.

FREEKB
specifies that the 3270 keyboard should be unlocked after the data is written. If FREEKB is omitted, the keyboard remains locked.

When using the FREEKB option, see DFHMDI options, CTRL for a description of the option priority.
Note that the keyboard lock status is maintained separately for each partition on a terminal that supports partitions.

**FROM(data-area)**
specifies the data area containing the data to be sent.

**HEADER(data-area)**
specifies the header data to be placed at the beginning of each page of text data. The format of the header is:

- **2 bytes**
  - Binary length of the data (n).

- **1 byte**
  - Page numbering required or not (blank).

- **1 byte**
  - Reserved field.

- **n bytes**
  - Data.

See Header and trailer format for more information.

**HONEOM**
specifies that the default printer line length is to be used. This length should be the same as that specified using the RDO TYPETERM options PAGESIZE or ALTPAGE, and the same as the printer platen width; otherwise the data may not format correctly.

When using the HONEOM option, see DFHMDI options, CTRL for a description of the option priority.

**JUSFIRST**
specifies that the text data is to be placed at the top of the page. Any partially formatted page from previous requests is considered to be complete. If the HEADER option is specified, the header precedes the data. See also the description of the JUSTIFY option.

**JUSLAST**
specifies that the text data is to be positioned at the bottom of the page. The page is considered to be complete after the request has been processed. If the TRAILER option is specified, the trailer follows the data. See also the description of the JUSTIFY option.

**JUSTIFY(data-value)**
specifies the line of the page at which the text data is to be positioned. The data value must be a halfword binary value in the range 1 through 240. Although they may not be specified as constants, the special values -1 and -2 can be supplied dynamically to signify JUSFIRST or JUSLAST, respectively.

**LAST**
specifies that this is the last output operation for a transaction and, therefore, the end of a bracket. This option applies to logical units only.

**LDC(name)**
specifies a 2-character mnemonic to be used to determine the logical device code (LDC) to be transmitted in the FMH to the logical unit. The mnemonic identifies an LDC entry defined by a DFHTCT TYPE=LDC macro.

When an LDC is specified, BMS uses the device type, the page size, and the page status associated with the LDC mnemonic to format the message. These values are taken from the extended local LDC table for the logical unit, if it has one. If the logical unit has only a local (unextended) LDC table, the values are taken from the system LDC table. The numeric value of the LDC is obtained from the local LDC table, unless this is an unextended table and the value is not specified, in which case it is taken from the system table.

**LENGTH(data-value)**
specifies the length of the data to be sent as a halfword binary value. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.
L40, L64, or L80
specifies the line length for a 3270 printer; a carrier return and line feed are forced after 40, 64, or 80 characters have been printed on a line. Unacceptable results are likely if this differs from the page width specified by the RDO TYPETERM options PAGESIZE or ALTPAGE.

When using the options, see DFHMDI options, CTRL for a description of the option priority.

MSR(data-value)
specifies the 4-byte data value that controls the 10/63 magnetic stripe reader attached to an 8775 or 3643 terminal. A set of constants is provided in DFHMSRCA to assist in setting this 4-byte area. See "Magnetic slot reader (MSR) control value constants, DFHMSRCA" on page 785 for a complete list. This option is ignored if the RDO TYPETERM option MSRCONTROL was not used.

NLEOM
specifies that data for a 3270 printer or a 3275 display with the printer adapter feature should be built with blanks and new-line (NL) characters, and that an end-of-message (EM) character should be placed at the end of the data. As the data is printed, each NL character causes printing to continue on the next line, and the EM character terminates printing.

This option must be specified in the first SEND TEXT command used to build a logical message. The option is ignored if the device receiving the message (direct or routed) is not one of those mentioned above.

If this option is used, buffer updating and attribute modification of fields previously written into the buffer are not allowed. CICS includes the ERASE option with every write to the terminal.

The NL character occupies a buffer position. A number of buffer positions, equivalent to the value of the RDO TYPETERM options PAGESIZE or ALTPAGE for that terminal, is unavailable for data. This may cause data to wrap around in the buffer; if this occurs, the PGESIZE value must be reduced.

The NLEOM option overrides the ALARM option if the latter is present.

OUTPARTN(name)
specifies the name (1–2 characters) of the partition to which data is to be sent. This option is ignored if the terminal does not support partitions, or if there is no application partition set associated with the terminal. If there is an application partition set, and the OUTPARTN option is omitted, data is sent to the partition named by the PARTN operand of the DFHMSD or DFHMDI map definition. If maps are not used, or if there is no PARTN operand, the output is sent to the first partition in the partition set.

PAGING
specifies that the output data is not to be sent immediately to the terminal, but is to be placed in temporary storage and displayed in response to paging commands entered by the terminal operator.

If PAGING is specified with a REQID prefix that is used for temporary storage queues that are defined as recoverable, CICS provides message recovery for logical messages if the task has reached a syncpoint.

PRINT
specifies that a print operation is to be started at a 3270 printer or at a 3275 with the printer adapter feature, or that data on an LUTYPE2 (3274/76 or 3790) is to be printed on a printer allocated by the controller. If this option is omitted, the data is sent to the printer buffer but is not printed.

When using the PRINT option, see DFHMDI options, CTRL for a description of the option priority.

REQID(name)
specifies a 2-character prefix to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

BMS message recovery is provided for a logical message only if the PAGING option is specified in the BMS SEND commands and if the syncpoint has been reached.

SET(ptr-ref)
specifies the pointer to be set to the address of the data. It specifies that completed pages are to be returned to the application program. The pointer is set to the address of a list of completed pages.
The application program regains control either immediately following the BMS SEND command (if the current page is not yet completed), or at the label specified in a HANDLE CONDITION RETPAGE command if the page has been completed.

If TIOAPFX=YES is specified in the map definition, the pointer returned contains the address of the TIOA prefix. The user data starts at offset X'0C' from the start of the TIOA prefix.

**TERMINAL**

specifies that data is to be sent to the terminal that originated the transaction.

**TRAILER(data-area)**

specifies the text data area that contains trailer data to be placed at the bottom of each output page. The format of the trailer is:

- **2 bytes**
  - Binary length of the data (n)
- **1 byte**
  - Page numbering required or not (blank)
- **1 byte**
  - Reserved field
- **n bytes**
  - Data

See the Header and trailer format for more information.

**WAIT**

specifies that control should not be returned to the application program until the output operation has been completed.

If WAIT is not specified, control returns to the application program when the output operation has started. A subsequent input or output command (terminal control, BMS, or batch data interchange) causes the application program to wait until the previous command has been completed.

**Conditions**

**57 IGREQCD**

occurs when an attempt is made to execute a SEND TEXT command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.

**39 IGREQID**

occurs if the prefix specified in the REQID option on a BMS SEND command is different from that established by a previous REQID option, or by default for this logical message—REQID (**).

Default action: terminate the task abnormally.

**41 INVLDC**

occurs if the specified LDC mnemonic is not included in the LDC list for the logical unit.

Default action: terminate the task abnormally.

**65 INVPARTN**

occurs if the specified partition is not defined in the partition set associated with the application program.

Default action: terminate the task abnormally.

**16 INVREQ**

**RESP2 values:**

- **200**
  - Command not allowed for a distributed program link server program.

also occurs (RESP2 not set) in any of the following situations:
- Text data is output to the same partition or LDC as mapped data while a BMS logical message is active. If neither partitions nor LDCs are in use, text data is output to the same logical message as mapped data.
- During overflow processing, data is sent to a different LDC from the LDC that caused page overflow.
- The length of a header on a SEND TEXT command is negative.
- The length of a trailer on a SEND TEXT command is negative.

Default action: terminate the task abnormally.

**22 LENGERR**
occurs if an out-of-range value is supplied in the LENGTH option.

Default action: terminate the task abnormally.

**32 RETPAGE**
occurs if the SET option is specified and a completed page is ready for return to the application program.

Default action: return control to the application program at the point immediately following the BMS SEND TEXT command.

**35 TSIOERR**
occurs if there is an irrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

**03 WRBRK**
occurs if a SEND command is interrupted by the terminal operator pressing the ATTN key. It applies only to the 2741 Communication Terminal, and only if write break is supported for CICS.

Default action: ignore the condition.

---

**SEND TEXT MAPPED**

Send data with mapping. Only supplied by full BMS.

**SEND TEXT MAPPED**

FROM(data-area) LENGTH(data-value) TERMINAL PAGING TERMINAL WAIT LAST

**Conditions:** IGREQCD, IGREQID, INVREQ, TSIOERR, WRBRK

**Description**

SEND TEXT MAPPED sends a page of a device-dependent data stream previously built by BMS, and returned to the application program with the SET option.

It must only be used to send data previously generated by a BMS SEND command specifying the SET option. It references a 4-byte page control area (PGA) that BMS placed at the end of the device-dependent data stream.
The length of the device-dependent data stream set in the TIOATDL field of the page buffer returned by the SET option does not include the PGA. The LENGTH option of the SEND TEXT MAPPED command should be set from this TIOATDL, and hence does not include the PGA. However, if the application program copies the page buffer returned by the SET option, it should include the PGA in the copied data.

This command is only supported by full BMS.

Options

FROM(data-area)  
specifies the data area containing the data to be sent.

LAST  
specifies that this is the last output operation for a transaction and, therefore, the end of a bracket. This option applies to logical units only.

LENGTH(data-value)  
specifies the length of the data to be formatted as a halfword binary value. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

PAGING  
specifies that the output data is not to be sent immediately to the terminal, but is to be placed in temporary storage and displayed in response to paging commands entered by the terminal operator.

If PAGING is specified with a REQID prefix that is used for temporary storage queues that are defined as recoverable, CICS provides message recovery for logical messages if the task has reached a syncpoint.

REQID(name)  
specifies a 2-character prefix to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

BMS message recovery is provided for a logical message only if the PAGING option is specified in the BMS SEND commands and if the syncpoint has been reached.

TERMINAL  
specifies that input data is to be sent to the terminal that originated the transaction.

WAIT  
specifies that control should not be returned to the application program until the output operation has been completed.

If WAIT is not specified, control returns to the application program when the output operation has started. A subsequent input or output command (terminal control, BMS, or batch data interchange) causes the application program to wait until the previous command has been completed.

Conditions

57 IGREQCD  
occurs when an attempt is made to execute a SEND TEXT command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.

39 IGREQID  
occurs if the prefix specified in the REQID option on a BMS SEND command is different from that established by a previous REQID option, or by default for this logical message—REQID (**).

Default action: terminate the task abnormally.

16 INVREQ  
RESP2 values:
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

**35 TSIOERR**

occurs if there is an irrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

**03 WRBRK**

occurs if a SEND command is interrupted by the terminal operator pressing the ATTN key. It applies only to the 2741 Communication Terminal, and only if write break is supported for CICS.

Default action: ignore the condition.

### SEND TEXT NOEDIT

Send a page. Only supplied by full BMS.

**SEND TEXT NOEDIT**

---

**SEND TEXT NOEDIT**  
- SEND TEXT NOEDIT  
  FROM(data-area)  
  LENGTH(data-value)  
  ERASE  
  DEFAULT  
  ALTERNATE  
  PRINT  
  FREEKB  
  ALARM  
  OUTPARTN(name)  
  TERMINAL  
  TERMINAL  
  WAIT  
  LAST  
  PAGING  
  REQID(name)  
  HONEOM  
  L40  
  L64  
  L80

**Conditions:** IGREQCD, IGREQID, INVREQ, INVPARTN, TSIOERR, WRBRK

**Description**

SEND TEXT NOEDIT sends a page of a device-dependent data stream built by the application program. The data stream cannot contain structured fields. This command differs from a terminal control SEND, because the data stream may be written to temporary storage and interfaced to the terminal operator.
paging transaction (using the PAGING option). Also the device-dependent data stream can be sent to a partition (using the OUTPARTN option).

If the OUTPARTN option is specified, the data stream is sent to the specified partition. This command is used to output a user-generated data stream. It differs from a terminal control SEND in that data may be output to temporary storage (using the PAGING option), or routed like any other BMS data.

When using the SEND TEXT NOEDIT command with any of the ALARM, FREEKB, FRSET, HONEOM, L40, L64, L80, or PRINT options, see DFHMDI options, CTRL for a description of the option priority.

This command is supported on full BMS only.

Options

ALARM
specifies that the 3270 audible alarm feature is to be activated. For logical units supporting FMHs (except interactive and batch logical units), ALARM instructs BMS to set the alarm flag in the FMH.

ALTERNATE
sets the terminal to use the ALTERNATE screen size.

DEFAULT
sets the terminal to use the DEFAULT screen size.

ERASE
specifies that the screen printer buffer or partition is to be erased and the cursor returned to the upper left corner of the screen. (This option applies only to the 3270, or 8775, and to the 3604 Keyboard Display.)

The first output operation in any transaction, or in a series of pseudoconversational transactions, should always specify ERASE. For transactions attached to 3270 screens or printers, unless explicitly overridden by the DEFAULT or ALTERNATE option, this also ensures that the correct screen size is selected, as defined for the transaction by the SCRNSIZE option in the RDO PROFILE definition.

FREEKB
specifies that the 3270 keyboard should be unlocked after the data is written. If FREEKB is omitted, the keyboard remains locked.

Note that the keyboard lock status is maintained separately for each partition on a terminal that supports partitions.

When using the FREEKB option, refer to DFHMDI options, CTRL for a description of the option priority.

FROM(data-area)
specifies the data area containing the data to be sent.

HONEOM
specifies that the default printer line length is to be used. This length should be the same as that specified using the RDO TYPETERM options PAGESIZE or ALTPAGE, and the same as the printer platen width; otherwise the data may not format correctly.

When using the HONEOM option, refer to DFHMDI options, CTRL for a description of the option priority.

LAST
specifies that this is the last output operation for a transaction and, therefore, the end of a bracket. This option applies to logical units only.

LENGTH(data-value)
specifies the length of the data to be sent as a halfword binary value. For a description of a safe upper limit, see “LENGTH options in CICS commands” on page 10.

L40, L64, or L80
specifies the line length for a 3270 printer; a carrier return and line feed are forced after 40, 64, or 80 characters have been printed on a line. Unacceptable results are likely if this differs from the page width specified by the RDO TYPETERM options PAGESIZE or ALTPAGE.
When using the options, refer to CTRL DFHMDI options, CTRL for a description of the option priority.

**OUTPARTN(name)**
specifies the name (1–2 characters) of the partition to which data is to be sent. This option is ignored if the terminal does not support partitions, or if there is no application partition set associated with the terminal. If there is an application partition set, and the OUTPARTN option is omitted, data is sent to the partition named by the PARTN operand of the DFHMSD or DFHMDI map definition. If maps are not used, or if there is no PARTN operand, the output is sent to the first partition in the partition set.

**PAGING**
specifies that the output data is not to be sent immediately to the terminal, but is to be placed in temporary storage and displayed in response to paging commands entered by the terminal operator. If PAGING is specified with a REQID prefix that is used for temporary storage queues that are defined as recoverable, CICS provides message recovery for logical messages if the task has reached a syncpoint.

**PRINT**
specifies that a print operation is to be started at a 3270 printer or at a 3275 with the printer adapter feature, or that data on an LUTYPE2 (3274/76 or 3790) is to be printed on a printer allocated by the controller. If this option is omitted, the data is sent to the printer buffer but is not printed.

When using the PRINT option, refer to DFHMDI options, CTRL for a description of the option priority.

**REQID(name)**
specifies a 2-character prefix to be used as part of a temporary storage identifier for CICS message recovery. Only one prefix can be specified for each logical message. The default prefix is **.

**TERMINAL**
specifies that the data is to be sent to the terminal that originated the transaction.

**WAIT**
specifies that control should not be returned to the application program until the output operation has been completed.

If WAIT is not specified, control returns to the application program when the output operation has started. A subsequent input or output command (terminal control, BMS, or batch data interchange) causes the application program to wait until the previous command has been completed.

**Conditions**

**57 IGREQCD**
occurs when an attempt is made to execute a SEND TEXT command after a SIGNAL data-flow control command with a request change direction (RCD) code has been received from an LUTYPE4 logical unit.

Default action: terminate the task abnormally.

**39 IGREQID**
occurs if the prefix specified in the REQID option on a BMS SEND command is different from that established by a previous REQID option, or by default for this logical message—REQID (**).

Default action: terminate the task abnormally.

**65 INVPARTN**
occurs if the specified partition is not defined in the partition set associated with the application program.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

200
Command not allowed for a distributed program link server program.
also occurs (RESP2 not set) in any of the following situations:

• Text data is output to the same partition or LDC as mapped data while a BMS logical message is
  active. If neither partitions nor LDCs are in use, text data is output to the same logical message as
  mapped data.
• During overflow processing, data is sent to a different LDC from the LDC that caused page overflow.
• The length of a header on a SEND TEXT command is negative.
• The length of a trailer on a SEND TEXT command is negative.

Default action: terminate the task abnormally.

**35 TSIOERR**

occurs if there is an irrecoverable temporary storage input/output error.

Default action: terminate the task abnormally.

**03 WRBRK**

occurs if a SEND command is interrupted by the terminal operator pressing the ATTN key. It applies
only to the 2741 Communication Terminal, and only if write break is supported for CICS.

Default action: ignore the condition.

### SIGNAL EVENT

**Identify a place in an application program where one or more events could be emitted.**

**SIGNAL EVENT**

```plaintext
SIGNAL EVENT(data-value)
  FROMCHANNEL(data-value)
  FROM(data-area)
  FROMLENGTH(data-value)
```

**Conditions:** CHANNELERR, EVENTERR, LENGERR

This command is threadsafe.

**Description**

The SIGNAL EVENT identifies a place in an application program where one or more events could be
emitted. Events are emitted when the following conditions are satisfied:

• Event processing is active.
• There is least one matching capture specification enabled. A capture specification matches if it has a
capture point of SIGNAL EVENT, and all its predicates evaluate to true.

SIGNAL EVENT has a primary predicate of EVENT, and allows secondary predicates on the FROM data-
area or the FROMCHANNEL and its containers. The data in any CICS Event emitted as a result of SIGNAL
EVENT is defined in the Business Event that contains the matching capture specification.

**Options**

**EVENT(data-value)**

Specifies an identifier (1 – 32 characters) that identifies this SIGNAL EVENT.

The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ; < > . - and _. Leading and
embedded blank characters are not permitted. If the name supplied is fewer than 32 characters, it is
padded with trailing blanks up to 32 characters.

Event identifiers are always in EBCDIC. The allowable set of characters for event identifiers, listed
above, includes some characters that do not have the same representation in all EBCDIC code pages.
We therefore recommend that the characters used in naming them should be restricted to A-Z a-z 0-9 & : = , ; < > . - and _.

**FROMCHANNEL(data-value)**

Specifies the name (1 – 16 characters) of a channel containing data for this event. You can specify the channel name DFHTRANSACTION to use the transaction channel.

**FROM(data-area)**

Specifies a data area containing data for this event.

**FROMLENGTH(data-value)**

Specifies a fullword binary value that is the length in bytes of the FROM data area.

### Conditions

**122 CHANNELERR**

Resp2 values:

2  The channel specified on the FROMCHANNEL option could not be found.

**111 EVENTERR**

Resp2 values:

6  The identifier specified on the EVENT option contains an incorrect character or combination of characters.

**22 LENGERR**

Resp2 values:

3  The length that you have specified in FROMLENGTH is not greater than zero.

---

**SIGNOFF**

Sign off from a terminal.

**SIGNOFF**

➡️ SIGNOFF ➡️

**Condition:** INVREQ

This command is threadsafe.

**Description**

SIGNOFF enables you to sign off from the terminal or principal facility that you previously signed on to. When sign-off is complete, the terminal reverts to the security capabilities and operator characteristics associated with the default user for this CICS region. The national language reverts to the national language of the default user, if defined, or the national language associated with the definition of the terminal.

When this command is executed, CICS immediately recognizes the sign-off and establishes the default attributes for the terminal. The transaction (and any associated task-related user exits, function shipping, or distributed transaction processing) may have invoked other resource managers (RMs), for example, IMS, 

* It is unpredictable whether these other RMs recognize the sign-off before the transaction terminates.

The default attributes apply for all RMs invoked by subsequent transactions at the terminal.
**Conditions**

16 **INVREQ**

RESP2 values:

1
No user is currently signed on. This could be because the CICS ESM is not initialized.

2
There is no terminal with this task.

3
This task's terminal has preset security.

4
Sign-off is attempted using transaction routing without using the CRTE transaction.

18
The CICS ESM interface is not initialized.

200
Command not allowed for a distributed program link server program.

Default action: terminate the task abnormally.

---

**SIGNON**

Sign on to a terminal.

**SIGNON**

```
SIGNON  — USERID( data-value)  
         ESMREASON( data-area) 

         ESMRESP( data-area)  
         GROUPID( data-value) 

         LANGUAGECODE( data-value)  
         LANGINUSE( data-area)  
         NATLANG( data-value)  
         NATLANGINUSE( data-area) 

         PASSWORD( data-value)  
         NEWPASSWORD( data-value)  
         PHRASE( data-area)  
         PHRASELEN( data-value)  
         NEWPHRASE( data-area)  
         NEWPHRASELEN( data-value) 

         OIDCARD( data-value) 
```

**Conditions:** INVREQ, LENGERR, NOTAUTH, USERIDERR

This command is threadsafe.

**Description**

The **SIGNON** command enables your application to associate a new user ID with the current terminal. When you use the **SIGNON** command, the following rules apply:
• The sign-on operation is terminal related only. Sign-on has no meaning if the transaction does not have a terminal as its principal facility.

• When you issue an EXEC CICS SIGNON command, CICS modifies the state of the terminal that is the principal facility of the transaction that issues the command.

• Sign-on does not affect the user ID and security capabilities currently in effect for the transaction issuing the command. This is because:
  − A transaction's user ID and security capabilities are established at transaction-attach time. It is not possible to modify these subsequently during the life of the transaction.
  − All actions performed by a transaction (whether to a local or remote resource, or to a connected system) take place in the security context established at the time the transaction was attached.

• If authorization is required, you can sign on with either a valid password or a valid password phrase. However, you cannot set a new password phrase using a password for authentication, nor can you set a new password using a password phrase for authentication.

If you supply an incorrect password on the SIGNON request, the invalid attempt count is increased for the user ID. If you supply multiple incorrect passwords on successive SIGNON requests, the user ID may be revoked by the external security manager (ESM). CICS issues message DFHXS1201 when you supply an incorrect password on a SIGNON request. When you supply a correct password following one or more invalid attempts, CICS issues message DFHXS1206, which includes a count of the invalid attempts.

There is no implied sign-off with the SIGNON command. If your application program attempts to associate a new user with a terminal that already has a signed-on user ID, CICS returns an INVREQ (Resp2=9) error response. Note that there is no default value for the USERID option.

PASSWORD is used as a parameter which means that if CICS has a memory dump, the password may be visible. You should therefore clear the PASSWORD field as soon as possible after using it in a SIGNON command.

For more information on how CICS uses the USERID and GROUPID, see Verifying CICS users.

Options

If an optional input field contains all blanks, it is ignored.

ESMREASON(data-area)
  Returns the reason code, in a fullword binary field, that CICS receives from the ESM.
  If the ESM is RACF, this field is the RACF reason code.

ESMRESP(data-area)
  Returns the response code, in a fullword binary field, that CICS receives from the ESM.
  If the ESM is RACF, this field is the RACF return code.

GROUPID(data-value)
  Assigns, to a RACF user group, the user that is being signed on. This overrides, for this session only, the default group name specified for the user in the RACF database.

LANGUAGECODE(data-value)
  Specifies the national language that the user being signed on wants CICS to use. You specify the language as a standard 3-character IBM code. This is an alternative to the 1-character code that you specify on the NATLANG option.

  See National language codes for possible values of the code.

  Note: CICS messages are supported only in UK English, Simplified Chinese, and Japanese. If any other language other than those three is specified, English is used by default.

LANGINUSE(data-area)
  Allows an application program to receive the national language chosen by the sign-on process. The language is identified as a standard three-character IBM code, instead of the one-character code used by NATLANGINUSE. It is an alternative to the existing NATLANGINUSE option.
See National language codes for possible values of the code.

**NATLANG**(data-value)

Specifies a 1-character code identifying the national language the user wants to use during the signed-on session.

See National language codes for possible values of the code.

**Note:** CICS messages are supported only in UK English, Simplified Chinese, and Japanese. If any other language other than those three is specified, English is used by default.

**NATLANGINUSE**(data-area)

Specifies a 1-character code representing the national language used during the signed-on session. The current implementation always returns the character E (U.S. English), which corresponds to the language supplied in the NATLANG option. NATLANGINUSE corresponds to the following (in order of decreasing priority):

- The language supplied in the NATLANG option of the SIGNON command.
- The language associated with the user. This is specified in the ESM language segment.
- The language associated with the definition of the terminal.
- The language associated with the default USERID for the CICS region.
- The default language specified in the system initialization parameters.

See National language codes for possible values of the code.

**NEWPASSWORD**(data-value)

Specifies an optional 8-byte field defining a new password. This option is valid only if PASSWORD is also specified. You cannot enter a password phrase in this field.

If this field is blank then it is ignored.

If the ESM does not allow mixed case passwords, the password is converted to uppercase.

**NEWPHRASE**(data-area)

Specifies an optional 1- to 8-character new password or a 9- to 100-character new password phrase required by the ESM. This option is valid only if PHRASE is also specified.

If this field is blank then it is ignored.

If the ESM does not allow mixed case passwords, the 1- to 8-character password is converted to uppercase.

**NEWPHRASELEN**(data-value)

Specifies the length of the new password phrase as a fullword binary value. This option is valid only if NEWPHRASE is also specified.

If NEWPHRASELEN is 0 then NEWPHRASE is ignored.

**OIDCARD**(data-value)

Specifies an optional 65-byte field containing further security data from a magnetic strip reader (MSR) on 32xx devices.

**PASSWORD**(data-value)

Specifies an 8-byte password required by the ESM.

If the ESM does not allow mixed case passwords, the password is converted to uppercase.

**PHRASE**(data-area)

Specifies an optional 1- to 8-character password or a 9- to 100-character password phrase required by the ESM.

If the ESM does not allow mixed case passwords, the 1- to 8-character password is converted to uppercase.
PHRASELEN(*data-value*)
Specifies the length of the password phrase as a fullword binary value. This option is valid only if PHRASE is also specified.

USERID(*data-value*)
Specifies the 8-byte sign-on user ID.
The user ID supplied is converted to uppercase.

Conditions
16 INVREQ
RESP2 values:

2 A password cannot be used to change a password phrase or a password phrase cannot be used to change a password.
9 The terminal is already signed on.
10 No terminal is associated with this task.
11 This task's terminal has preset security.
12 The response from CICS security modules is unrecognized.
13 There is an unknown return code in ESMRESP from the ESM; or the ESM is not active or has failed in an unexpected way.
14 The required national language is not available.
15 Sign-on was attempted using transaction routing without using the CRTE transaction.
18 The CICS ESM interface is not initialized (SEC=NO specified as a system initialization parameter).
25 The terminal is of an invalid type.
26 An error occurred during SNSCOPE checking. The limit of MVS ENQ requests was reached.
27 The ESM is not active.
28 The required national language is invalid.
29 The user is already signed on. This relates to the sign-on scope checking.
200 Command not allowed for a distributed program link server program.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

1 PHRASELEN was out-of-range.
2 NEWPHRASELEN was out-of-range.
70 NOTAUTH
RESP2 values:

1  A password or password phrase is required.

2  The supplied password or password phrase is wrong.

3  A new password or password phrase is required.

4  The new password or password phrase is not acceptable.

5  An OIDCARD is required.

6  The supplied OIDCARD is wrong.

16  The USERID is not authorized to use this terminal.

17  The USERID is not authorized to use the application.

19  The USERID is revoked.

20  The USERID’s access to the specified group has been revoked.

21  The sign-on failed during SECLABEL checking.

22  The sign-on failed because the ESM is not currently accepting sign-on.

23  The GROUPID is not known to the ESM.

24  The USERID is not contained in the GROUPID.

Default action: terminate the task abnormally.

69 USERIDERR
RESP2 values:

8  The USERID is not known to the ESM.

30  The USERID is all blanks or nulls.

Default action: terminate the task abnormally.

SIGNON TOKEN

Validate a security token and sign on to a terminal with the user ID extracted from the token.
**SIGNON TOKEN**

```
SIGNON TOKEN(data-area) TOKENLEN(data-value) TOKENTYPE(cvda) KERBEROS
```

- **BIT**
  - DATATYPE(cvda)
  - GROUPID(data-value)
  - BASE64

- **LANGUAGECODE(data-value)**
  - NATLANG(data-value)

- **LANGINUSE(data-area)**
  - NATLANGINUSE(data-area)
  - ESMREASON(data-area)

  - **ESMRESP(data-area)**

**Conditions:** INVREQ, LENGERR, NOTAUTH

This command is threadsafe.

**Description**

The SIGNON TOKEN command enables your application to validate a Kerberos security token, as determined by an external security manager (ESM), and associate a new user ID with the current terminal. When you use the SIGNON TOKEN command, the following applies:

- The sign-on operation is terminal related only. Sign-on has no meaning if the transaction does not have a terminal as its principal facility.
- When you issue an EXEC CICS SIGNON TOKEN command, CICS modifies the state of the terminal that is the principal facility of the transaction that issues the command.
- Sign-on does not affect the user ID and security capabilities currently in effect for the transaction issuing the command. This is because:
  - A transaction's user ID and security capabilities are established at transaction-attach time. It is not possible to modify these subsequently during the life of the transaction.
  - All actions performed by a transaction (whether to a local or remote resource, or to a connected system) take place in the security context established at the time the transaction was attached.
- The SIGNON TOKEN command uses the z/OS Security Server to verify that the token is a valid Kerberos token and that it can be used by the CICS region.
- If the ESM is RACF, the CICS region in which the command is run must be authorized by RACF so that the Kerberos principal for the token can be obtained. For more information, see Configuring RACF for Kerberos.
- There is no implied sign-off with the SIGNON TOKEN command. If your application program attempts to associate a new user with a terminal that already has a signed-on user ID, CICS returns an INVREQ (Resp2=9) error response.

For more information about how CICS uses the USERID and GROUPID, see Verifying CICS users.

For more information about a security failure of this command, see the error messages that are written to destination CSCS.
Options
If an optional input field contains all blanks, it is ignored.

**DATATYPE**
Specifies the type of data in the token. CVDA values are as follows:

**BIT**
Bit data. This is the default value.

**BASE64**
Base64 encoded character data. The acceptable characters are A-Z a-z 0-9 + / =
If your character data is not in a US EBCDIC compatible character CCSID you must convert it. You can use the CONTAINER API to do the conversion.

**ESMREASON(data-area)**
Returns the reason code, in a fullword binary field, that CICS receives from the external security manager.
If the ESM is RACF, this field is the RACF reason code.
The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values that are returned by this command in addition to checking the ESMRESP and ESMREASON values.

**ESMRESP(data-area)**
Returns the response code, in a fullword binary field, that CICS receives from the external security manager.
If the ESM is RACF, this field is the RACF return code.
The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values that are returned by this command in addition to checking the ESMRESP and ESMREASON values.

**GROUPID(data-value)**
Assigns, to a RACF user group, the user that is being signed on. This overrides, for this session only, the default group name specified for the user in the RACF database.

**LANGUAGECODE(data-value)**
Specifies the national language that the user being signed on wants CICS to use. You specify the language as a standard 3-character IBM code. This is an alternative to the 1-character code that you specify on the NATLANG option.
See Chapter 5, “National language codes for application development,” on page 771 for possible values of the code.
**Note:** CICS messages are supported only in UK English, Simplified Chinese, and Japanese. If any other language other than those three is specified, English is used by default.

**LANGINUSE(data-area)**
The LANGINUSE option allows an application program to receive the national language chosen by the sign-on process. The language is identified as a standard three-character IBM code, instead of the one-character code used by NATLANGINUSE. It is an alternative to the existing NATLANGINUSE option.
See Chapter 5, “National language codes for application development,” on page 771 for possible values of the code.

**NATLANG(data-value)**
Specifies a 1-character field identifying the national language the user wants to use during the signed-on session.
See Chapter 5, “National language codes for application development,” on page 771 for possible values of the code.
**Note:** CICS messages are supported only in UK English, Simplified Chinese, and Japanese. If any other language other than those three is specified, English is used by default.

**NATLANGINUSE(data-area)**
Specifies a one-character code for the national language used during the signed-on session. The current implementation always returns the character E (U.S. English), which corresponds to the language supplied in the NATLANG option. NATLANGINUSE corresponds to the following (in order of decreasing priority):

- The language supplied in the NATLANG option of the SIGNON TOKEN command.
- The language associated with the user. This is specified in the ESM language segment.
- The language associated with the definition of the terminal.
- The language associated with the default USERID for the CICS region.
- The default language specified in the system initialization parameters.

See Chapter 5, “National language codes for application development,” on page 771 for possible values of the code.

**TOKEN(data-area)**
A token that has been obtained from a Security Token Service (STS).

**TOKENLEN(data-value)**
The length of the token as a fullword binary value.

**TOKENTYPE(cvda)**
Indicates the type of token.

- **KERBEROS**
The token is a Kerberos token.

**Conditions**

**16 INVREQ**
RESP2 values:

- 9  The terminal is already signed on.
- 10  No terminal is associated with this task.
- 11  This task's terminal has preset security.
- 12  The response from CICS security modules is unrecognized.
- 13  There is an unknown return code in ESMRESP from the external security manager (ESM), or the ESM is not active, or has failed in an unexpected way.
- 14  The required national language is not available.
- 15  Signon was attempted using transaction routing without using the CRTE transaction.
- 18  The CICS ESM interface is not initialized (SEC=NO specified as a System initialization parameter).
- 25  The terminal is of an invalid type.
- 26  An error occurred during SNSCOPE checking. The limit of MVS ENQ requests was reached.
27 The ESM is not active.
28 The required national language is invalid.
29 The user is already signed on. This relates to the sign-on scope checking.
30 The ESM is not responding.
31 A CVDA value other than KERBEROS was specified for TOKENTYPE.
32 A CVDA value other than BASE64 or BIT was specified for DATATYPE.
36 A data-type of BASE64 was specified, but TOKEN does not contain BASE64 data.
40 The key distribution center is not started or is terminating.
41 The key distribution center is not responding.
47 The ESM does not have a user ID defined for the Kerberos principal that is associated with the token.
50 The data specified in TOKEN is not a Kerberos token
200 Command not allowed for a distributed program link server program.
   Default action: terminate the task abnormally.

22 LENGERR
   RESP2 values:
   45 The length of the Kerberos token exceeds the maximum value of 65535.

70 NOTAUTH
   RESP2 values:
   16 The USERID is not authorized to use this terminal.
   17 The USERID is not authorized to use the application.
   19 The USERID is revoked.
   20 The USERID's access to the specified group has been revoked.
   21 The sign-on failed during SECLABEL checking.
   22 The sign-on failed because the ESM is not currently accepting sign-on.
   23 The GROUPID is not known to the ESM.
   24 The USERID is not contained in the GROUPID.
The ESM does not authorize the request to verify the token. Error messages are written to destination CSCS.

A Kerberos request cannot be completed because the associated ticket has expired.

The authenticator has expired.

Default action: terminate the task abnormally.

**SOAPFAULT ADD**

Adds information to an existing SOAPFAULT object. You can use this command only in a program that is invoked from a CICS-supplied SOAP message handler.

**Description**

This command adds information to a SOAPFAULT object that was created with an earlier SOAPFAULT CREATE command. The information that can be added comprises:

- A subcode
- A fault string for a particular national language. If the fault already contains a fault string for the language, then this command replaces the fault string for that language. In SOAP 1.1, only the fault string for the original language is used.

This command requires information that is held in containers on the channel of the supplied SOAP message handler. To use this command, you must have access to the channel. Only the following types of programs have this access:

- Programs that are invoked as SOAP header handlers
- Programs that are invoked directly from a CICS-supplied SOAP message handler
- Programs deployed with the CICS web services assistant that have a channel interface. Programs with a COMMAREA interface do not have access to the channel.
- Programs that are using global user exits to monitor web services.

Many of the options on this command apply to SOAP 1.1 and SOAP 1.2 faults, although their behavior is slightly different for each level of SOAP. Other options apply to one SOAP level or the other, but not to both, and if you specify any of them when the message uses a different level of SOAP, the command raises an INVREQ condition. To help you determine which SOAP level applies to the message, container DFHWS-SOAPLEVEL contains a binary fullword with one of the following values:
The request or response is a SOAP 1.1 message.

The request or response is a SOAP 1.2 message.

The request or response is not a SOAP message.

Options

**SUBCODESTR**(`data-value`)

Specifies the contents of a `<Subcode>` element that is to be added to the SOAPFAULT object. The subcode can be up to 64 characters in length, and must be an XML qualified name (QName).

- For SOAP 1.1, this option is ignored.
- For SOAP 1.2, this option supplies the contents of the `<Subcode>` element.

**SUBCODELEN**(`data-value`)

Specifies the length, as a fullword binary value, of the `<Subcode>` element specified in the SUBCODESTR option.

**FAULTSTRING**(`data-value`)

Specifies a human-readable explanation of the fault. The FAULTSTRING value can be up to 2056 characters in length.

- For SOAP 1.1, this option supplies the contents of the `<faultstring>` element.
- For SOAP 1.2, this option supplies the contents of the `<Reason>` element.

**FAULTSTRLEN**(`data-value`)

Specifies the length, as a fullword binary value, of the FAULTSTRING option.

**FROMCCSID**(`data-value`)

Specifies, as a fullword binary number, the current Coded Character Set Identifier (CCSID) of the character data to be put into the SOAP fault. If this option is not specified, CICS uses the value that is specified in the LOCALCCSID system initialization parameter. For more information about CCSIDs, and a list of the CCSIDs supported by CICS, see CICS-supported conversions.

**NATLANG**(`data-value`)

Specifies an 8 character field containing the national language used for the FAULTSTRING. The language is specified using the XML 1.0 language identification. The default value is ‘en’ (English).

When the language identifier is shorter than eight characters, you must pad it on the right with space characters in the character set specified in the FROMCCSID option (or the CICS LOCALCCSID). For example, if you specify the UTF-8 character set with FROMCCSID(1208), you must pad the NATLANG value with X’20’ characters.

This option is used only for SOAP 1.2 faults.

Conditions

**122 CHANNELERR**

RESP2 values are:

- 3
  The channel where this SOAPFAULT object is being added is read-only.

**16 INVREQ**

RESP2 values are:

- 3
  The command was issued outside the environment of a CICS-supplied SOAP handler.

- 7
  No SOAP fault present
11
Invalid subcode

22 LENGERR
RESP2 values are:
6
The FAULTSTRLEN value is invalid
10
The SUBCODELEN value is invalid

**SOAPFAULT CREATE**

Create a SOAP fault response message that is returned as the response to a web service request. The web service application response is not processed.

**SOAPFAULT CREATE**

- **FAULTCODE**
  - CLIENT
  - SERVER
  - SENDER
  - RECEIVER

- **FAULTCODESTR**
  - **data-value**

- **FAULTCODELEN**
  - **data-value**

- **FAULTSTRING**
  - **data-value**

- **FAULTSTRLEN**
  - **data-value**

- **NATLANG**
  - *en*

- **NATLANG**
  - **data-value**

- **ROLE**
  - **data-value**

- **ROLELENGTH**
  - **data-value**

- **FAULTACTOR**
  - **data-value**

- **FAULTACTLEN**
  - **data-value**

- **DETAIL**
  - **data-value**

- **DETAILLENGTH**
  - **data-value**

- **FROMCCSID**
  - **data-value**

**Conditions:** CCSIDERR, CHANNELERR, INVREQ, LENGERR

This command is threadsafe.
Description

SOAPFAULT CREATE creates a SOAP fault. If a SOAP fault already exists in the context of the SOAP message that is being processed by the message handler, the existing fault is overwritten. This command can be used only in programs attached from a supplied SOAP handler. Axis2 applications hosted in a Java pipeline in CICS cannot make use of this command.

This command requires information that is held in containers on the channel of the supplied SOAP message handler. To use this command, you must have access to the channel. Only the following types of programs have this access:

- Programs that are invoked as SOAP header handlers
- Programs that are invoked directly from a CICS-supplied SOAP message handler
- Programs deployed with the CICS web services assistant that have a channel interface. Programs with a COMMAREA interface do not have access to the channel.
- Programs that are using global user exits to monitor web services.

Many of the options on this command apply to SOAP 1.1 and SOAP 1.2 faults, although their behavior is slightly different for each level of SOAP. Other options apply to one SOAP level or the other, but not to both, and if you specify any of them when the message uses a different level of SOAP, the command raises an INVREQ condition. To help you determine which SOAP level applies to the message, container DFHWS-SOAPLEVEL contains a binary fullword with one of the following values:

1  The request or response is a SOAP 1.1 message.
2  The request or response is a SOAP 1.2 message.
10 The request or response is not a SOAP message.

Options

DETAIL(data-value)
Specifies the following contents:

- For SOAP 1.1, this option supplies the contents of the <detail> element of the SOAP fault.
- For SOAP 1.2, this option supplies the contents of the <Detail> element of the SOAP fault.

It should contain either one or more valid namespace-qualified XML elements, or white space. Refer to the appropriate SOAP specifications for a full description of the valid content of the element.

The element carries application-specific error information related to the <Body> element, and is used when the contents of the <Body> element could not be successfully processed. For SOAP 1.1, the <detail> element must be present if the contents of the <Body> element could not be successfully processed; for SOAP 1.2, the <Detail> element is optional.

If the SOAPFAULT CREATE command is issued in a header handler program, the detail content is carried in a header block for SOAP 1.1. For SOAP 1.2 the <Detail> element is carried within the SOAP fault.

DETAILLENGTH(data-value)
Specifies the length, as a fullword binary value, of the DETAIL option.

FAULTACTLEN(data-value)
Specifies the length, as a fullword binary value, of the FAULTACTOR option.

FAULTACTOR(data-value)
Specifies the following contents:

- For SOAP 1.1, this option supplies the contents of the <faultactor> element.
- For SOAP 1.2, this option supplies the contents of the <Node> element.

The FAULTACTOR option can be up to 2056 characters in length, and must be a valid URI (anyURI).
FAULTCODE (cvda)
CVDA values are as follows:

CLIENT
For SOAP 1.1, the CVDA value of Client should be specified. However, if you specify Sender for a SOAP 1.1 fault response message, CICS will use the CVDA value of Client.

SENDER
For SOAP 1.2, the CVDA value of Sender should be specified. However, if you specify Client for a SOAP 1.2 fault response message, CICS will use the CVDA value of Sender.

SERVER
For SOAP 1.1, the CVDA value of Server should be specified. However, if you specify Receiver for a SOAP 1.1 fault response message, CICS will use the CVDA value of Server.

RECEIVER
For SOAP 1.2, the CVDA value of Receiver should be specified. However, if you specify Server for a SOAP 1.2 fault response message, CICS will use the CVDA value of Receiver.

FAULTCODELEN (data-value)
Specifies the length, as a fullword binary value, of the FAULTCODESTR option.

FAULTCODESTR (data-value)
Specifies a user-defined SOAP fault code for a SOAP 1.1 message. The fault code can be up to 64 characters in length, and must be an XML qualified name (QName). The use of the dot (.) character to separate fault code values is not supported. For SOAP 1.1, this option supplies the contents of the <faultcode> element.

If you set this option for a SOAP 1.2 message, an INVREQ condition occurs.

FAULTSTRING (data-value)
Specifies a human-readable explanation of the fault. The FAULTSTRING value can be up to 2056 characters in length.

• For SOAP 1.1, this option supplies the contents of the <faultstring> element.
• For SOAP 1.2, this option supplies the contents of the <Reason> element.

FAULTSTRLEN (data-value)
Specifies the length, as a fullword binary value, of the FAULTSTRING option.

FROMCCSID (data-value)
Specifies, as a fullword binary number, the current Coded Character Set Identifier (CCSID) of the character data to be put into the SOAP fault. If this option is not specified, CICS uses the value that is specified in the LOCALCCSID system initialization parameter. For more information about CCSIDs, and a list of the CCSIDs supported by CICS, see CICS-supported conversions.

NATLANG (data-value)
Specifies an 8 character field containing the national language used for the FAULTSTRING. The language is specified using the XML 1.0 language identification. The default value is 'en' (English).

When the language identifier is shorter than eight characters, you must pad it on the right with space characters in the character set specified in the FROMCCSID option (or the CICS LOCALCCSID). For example, if you specify the UTF-8 character set with FROMCCSID(1208), you must pad the NATLANG value with X'20' characters.

This option is used only for SOAP 1.2 faults.

ROLE (data-value)
Specifies the URI that describes the role of the SOAP node that generated the fault. The ROLE option can be up to 2056 characters in length, and must be a valid URI (XML type anyURI).

• For SOAP 1.1, this option is ignored.
• For SOAP 1.2, this option supplies the contents of the <Role> element.

ROLELENGTH (data-value)
Specifies the length, as a fullword binary value, of the ROLE option.
Conditions

**123 CCSIDERR**
RESP2 values are:

13  
An invalid CCSID has been specified.

14  
An unsupported CCSID has been specified.

**122 CHANNELERR**
RESP2 values are:

3  
The channel where this SOAPFAULT object is being created is read-only.

**16 INVREQ**
RESP2 values are:

3  
The command was issued outside the environment of a CICS-supplied SOAP handler.

11  
The FAULTCODE specified is invalid or FAULTCODESTR was specified for a SOAP 1.2. fault.

13  
The DETAIL option does not contain valid namespace-qualified XML or whitespace.

**22 LENGERR**
RESP2 values are:

5  
The FAULTCODELEN value is invalid.

6  
The FAULTSTRLEN value is invalid.

7  
The ROLELENGTH value is invalid.

8  
The FAULTACTLEN value is invalid.

9  
The DETAILLENGTH value is invalid.

---

**SOAPFAULT DELETE**

Deletes an existing SOAPFAULT object. You can use it only in a program that is invoked from a CICS-supplied SOAP message handler.

**SOAPFAULT DELETE**

**Conditions:** CHANNELERR, INVREQ, NOTFND

This command is threadsafe.

**Description**

This command deletes a SOAPFAULT object that was created with an earlier **SOAPFAULT CREATE** command.

This command requires information that is held in containers on the channel of the supplied SOAP message handler. To use this command, you must have access to the channel. Only the following types of programs have this access:
• Programs that are invoked as SOAP header handlers
• Programs that are invoked directly from a CICS-supplied SOAP message handler
• Programs deployed with the CICS web services assistant that have a channel interface. Programs with a COMMAREA interface do not have access to the channel.
• Programs that are using global user exits to monitor web services.

**Conditions**

**122 CHANNELERR**

3

The channel where this SOAPFAULT object is being deleted is read-only.

**16 INVREQ**

RESP2 values are:

3

The function was called when a CICS-supplied SOAP node was not in use.

**13 NOTFND**

2

There is no SOAPFAULT object to delete.

**SPOOLCLOSE**

Close a spool report.

**SPOOLCLOSE TOKEN**

![Diagram of SPOOLCLOSE command]

**Conditions:** ALLOCERR, INVREQ, NOSPOOL, NOSTG, NOTFND, NOTOPEN, STRELERR

**Description**

The SPOOLCLOSE command closes a CICS spool report and, optionally, changes its retention characteristics. If more than one transaction is trying to read reports from JES, SPOOLCLOSE should not be immediately followed by SPOOLOPEN. It should be followed by a WAIT, so that other transactions can use the interface.

A default disposition is taken if both KEEP and DELETE are omitted from the SPOOLCLOSE command, or if the report is closed implicitly by a SYNCPOINT or RETURN command:

• When an INPUT report is explicitly closed by a SPOOLCLOSE command, the default disposition is DELETE.
• In all other cases, the default disposition is KEEP.
Options

DELETE
For an INPUT report, DELETE specifies that the next report is to be read on the subsequent OPEN INPUT.

For an OUTPUT report, DELETE specifies that the report is to be purged.

Note: When a JCL job is submitted using the internal reader (INTRDR) with the DELETE option specified, the job is sometimes run before the output is deleted.

KEEP
For an INPUT report, KEEP specifies that the report is to be read again when SPOOLOPEN INPUT is next issued.

For an OUTPUT report, KEEP specifies that the report is to be sent to its destination node.

TOKEN(data-area)
specifies the 8-character CICS-allocated token used to identify a report.

Conditions

Note: There are no default actions.

85 ALLOCERR
occurs in any of the following situations:

• Dynamic allocation has rejected a request to allocate an input data set.

RESP2 gives the dynamic allocation response code that denotes this error. The first two characters are the information reason code (S99INFO), and the second two are the error reason code (S99ERROR), as defined in the z/OS MVS Programming: Authorized Assembler Services Guide.

16 INVREQ
RESP2 values:

4 Unsupported language.

8 Unsupported function.

40 Subsystem interface already enabled.

Note: Errors 1024 and over are internal, and should not occur. If one of these error codes is returned, contact your IBM support center.

80 NOSPOOL
RESP2 values:

4 No subsystem present.

8 Interface being disabled; CICS is quiescing.

12 Interface has been stopped.

42 NOSTG
occurs in any of the following situations:

• A GETMAIN has failed within the JES interface subtask (DFHPSPSS).

RESP2 gives the GETMAIN register 15 return code.

13 NOTFND
RESP2 values:
1024
Input or output function has been corrupted, and SPOOLCLOSE could not complete.

19 NOTOPEN
RESP2 values:

8
Data set has not been opened.

86 STRELERR
occurs in any of the following situations:

• A FREEMAIN has failed within the JES interface subtask (DFHPSPSS).

RESP2 gives the FREEMAIN register 15 return code.

Restriction: You must specify the RESP or NOHANDLE option on the EXEC CICS SPOOLCLOSE command.

SPOOLOPEN INPUT
Open a spool report.

SPOOLOPEN INPUT

TOKEN( data-area ) USERID( data-value )

CLASS( data-value )

NOHANDLE

RESP

RESP2

Conditions: ALLOCERR, ILLOGIC, INVREQ, NOSPOOL, NOSTG, NOTAUTH, NOTFND, NOTOPEN, OPENERR, SPOLOBUSY, SPOLERR, STRELERR

Description
The SPOOLOPEN INPUT command opens a spool report for input from the system spooler to CICS. It prepares to get (read) an existing spool data set directly using external writer name (USERID) and specified class.

Another task could have allocated a spool file for input. In this case, you should retry after a suitable time interval.

When this command has been successfully executed, you should read the report and proceed to CLOSE as soon as possible, in order to permit other users to use the JES single thread. If SPOOLCLOSE is not issued before transaction end or SYNCPOINT, CICS performs an implicit SPOOLCLOSE KEEP, and writes a message to CSMT to alert the system programmer to the possible unnecessary retention of resources. You should not SPOOLOPEN a data set using this command until you are prepared to process it completely.

This command, if successful, returns a token, which is used later to identify the report in SPOOLREAD and SPOOLCLOSE commands.

Options

CLASS(data-value)
specifies a 1-character class designation. The CLASS operand can be used as a selection parameter for input reports. If it is omitted, the first report for the specified USERID is obtained, regardless of its class.
**TOKEN**(data-area)
specifies the 8-character CICS-allocated token used to identify a report.

**USERID**(data-value)
specifies the 8-character user identifier. It must begin with the same 4 characters as the CICS generic applid, so that CICS can check that users are not attempting to access data sets not intended for their CICS system.

**Conditions**

**Note:** There are no default actions.

**85 ALLOCERR**
occurs in any of the following situations:
- Dynamic allocation has rejected a request to allocate an input data set.
  
  RESP2 gives the dynamic allocation response code that denotes this error. The first two characters are the information reason code (S99INFO), and the second two are the error reason code (S99ERROR), as defined in the z/OS MVS Programming: Authorized Assembler Services Guide.

**21 ILLOGIC**

RESP2 values:
- 3
  Invalid CLASS value specified.

**16 INVREQ**

RESP2 values:
- 4
  Unsupported language.
- 8
  Unsupported function.
- 16
  USERID missing.
- 36
  INPUT|OUTPUT missing.
- 40
  Subsystem interface already enabled.
  **Note:** Errors 1024 and over are internal, and should not occur. If one of these error codes is returned, contact your IBM Support Center.

**80 NOSPOOL**

RESP2 values:
- 4
  No subsystem present.
- 8
  Interface being disabled; CICS is quiescing.
- 12
  Interface has been stopped.

**42 NOSTG**

occurs in any of the following situations:
- A GETMAIN has failed within the JES interface subtask (DFHPSPSS).
  
  RESP2 gives the GETMAIN register 15 return code.

**70 NOTAUTH**

occurs in any of the following situations:
• An application has issued a SPOOLOPEN INPUT command with an unauthorized USERID. For the USERID to be authorized, its first four characters must match the first four characters of the current CICS applid id.

13 NOTFND
RESP2 values:

4
No data sets could be located for retrieval for the specified external writer name; or the data set exists, but it is in HELD status.

Can also be returned if the CICS region USERID does not have ALTER access to the appropriate PROFILE in the JESSPOOL class.

1024
Input or output function has been corrupted, and SPOOLCLOSE could not complete.

19 NOTOPEN
RESP2 values:

8
Data set has not been opened or a task which has not issued the SPOOLOPEN for a spool data set has attempted to access it.

1024
Subtask OPEN macro failure.

87 OPENERR
RESP2 values:

4
A VSAM SHOWCB macro failed to return the lengths of the VSAM control blocks used to access the JES spool file.

Also occurs (RESP2 not set) in any of the following situations:
• An internal error occurred during SPOOLOPEN processing that has forced the request to fail.

88 SPOLBUSY
RESP2 values:

4
Interface already in use by another task.

8
Interface already in use by current task.

Also occurs (RESP2 not set) in any of the following situations:
• The JES/input single thread within the JES interface was not available.

89 SPOLERR
occurs in any of the following situations:
• The subsystem interface macro (IEFSSREQ) has failed. No input data set name was selected.

RESP2 gives the 'IEFSSREQ' response code.

86 STRELERR
occurs in any of the following situations:
• A FREEMAIN has failed within the JES interface subtask (DFHPSPSS).

RESP2 gives the FREEMAIN register 15 return code.

Restriction: You must specify the RESP or NOHANDLE option on the EXEC CICS SPOOLOPEN command.
Open a spool report for output.

**SPOOLOPEN OUTPUT**

- **TOKEN**(*data-area*) — **USERID**(*data-value*) — **NODE**(*data-value*)
- **CLASS**(*data-value*) — **OUTDESCR**(*ptr-ref*)
- **NOCC**
- **ASA**
- **MCC**
- **PRINT**
- **RECORDLENGTH**(*data-value*)
- **PUNCH**
- **NOHANDLE**
- **RESP**
- **RESP2**

**Conditions:** ALLOCERR, ILLOGIC, INVREQ, LENGERR, NODEIDERR, NOSPOOL, NOSTG, NOTFND, NOTOPEN, OPENERR, OUTDESCERR, SPOLBUSY, STRELERR

**Description**

The SPOOLOPEN OUTPUT command opens a spool report for output from CICS to the system spooler and defines its characteristics.

It results in a dynamic allocation of the output file using the nodeid to specify the remote destination and the userid to specify the remote user. As this is a multithread output request, requesters of this service could interleave. This SPOOLOPEN OUTPUT command enables users to acquire the token for a report that it expects to create (write). This token is used to identify the report in later SPOOLWRITE and SPOOLCLOSE commands.

When printing on a local device, use the NOCC|ASA|MCC options to control output formatting. If you do not specify a format, the default value of NOCC is used. NODE and USERID can be used to write the data set directly to the local spool file only if specified with a value of ‘*’.

If you do not issue SPOOLCLOSE before the end of the transaction, CICS performs an implicit SPOOLCLOSE DELETE and writes a message to CSMT to alert you to the possible unnecessary retention of resources.

**Note:** If you retrieve a formatted data set, the system spooler could have changed the data set format. For example, the system spooler could have converted an MCC format data set to ASA format during data set creation. This does not affect the final printed output.

**Options**

- **ASA** specifies that the report has each record prefixed with an ASA carriage-control character, and this character must be used by the operating system to control formatting when the report is printed.
CLASS(data-value)
specifies a 1-character class designation. If it is omitted, class A is assumed.

MCC
specifies that the report has each record prefixed with an IBM machine command code carriage-control character, and this character must be used by the operating system to control formatting when the report is printed.

NOCC
specifies that the report has no internal formatting controls. When the report is printed, the operating system prefixes each record with a carriage-control character that causes page skipping according to the default operating system lines-per-page value.

NODE(data-value)
specifies the 8-character identifier of a destination node that the system spooler uses to route the file. It is a sender field. If you want to specify the local spool file and to enable the OUTDESCR operand to override the NODE and USERID operands, code NODE("*”) and also USERID("*”). (Do not use NODE("*”) with any other userid.) Otherwise, code the actual NODE, which is the name of the operating system (for example, MVS, VM) as that system is known to VTAM in the MVS system in which your CICS is executing. NODE(LOCAL) is also a valid specification.

Validity checking is performed for NODE. Checks are made for blanks (X’40’), and nulls (X’00’).

OUTDESCR(ptr-ref)
(MVS/SP—JES2 Version 3, or JES3 Version 4.2.1 only, or a later upward-compatible release) specifies a pointer variable to be set to the address of a field that contains the address of a string of parameters to the OUTPUT statement of JCL. This is called double indirect addressing. The user must set up the pointer, the address field, and the string. This means that the OUTDESCR option cannot be used from within CECI. The format of the string is:

<table>
<thead>
<tr>
<th>Offset</th>
<th>Length</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>Length (n) of following text string</td>
</tr>
<tr>
<td>4</td>
<td>n</td>
<td>OUTPUT statement parameters</td>
</tr>
</tbody>
</table>

The parameters use the same keywords and values as the OUTPUT statement but the syntax varies slightly. The following is the format of the OUTDESCR parameter string:

keyword1(value1) [keyword2(value2)]
[keyword3(value3,value4)] ...

This corresponds to the following OUTPUT statement parameter string:

keyword1=value1 [keyword2=value2]
[keyword3=(value3,value4)] ...

For details of valid keywords and values, see z/OS TSO/E System Programming Command Reference.

The OUTDESCR operand:
• Can override the NODE and USERID operands only if they are specified with a value of ‘*’.
• Cannot override the CLASS operand, even if it is omitted and defaults to class A.

Use this operand to set additional attributes for the spool data set.

PRINT
allows large records (maximum 32 760 bytes) to be written to the spool. This is the default setting. This is included for compatibility with the spool support provided with CICS Transaction Server for z/OS.

PUNCH
must be specified if the CLASS parameter for the output data set implies punch, and the data set is destined for a VM/RSCS node. This ensures that the record length indicator is set to 80, which is a requirement of VM/RSCS for punch files.
RECORDLENGTH(data-value)
specifies, as a halfword binary variable, the maximum length of record to write to a print data set. The
default value is 32 760.

TOKEN(data-area)
specifies the 8-character CICS-allocated token used to identify a report.

USERID(data-value)
specifies the 8-character identifier of the destination userid that processes the report. The report
carries this identifier, which is used to select the report at its destination. It is a sender field and must
be declared with a length of 8 characters.

If you want to specify the local spool file and to enable the OUTDESCR operand to override the NODE
and USERID operands, code USERID('**') and also NODE('**'). Otherwise, code the actual USERID. The
meaning of USERID varies with the operating system. In VM, it is a particular user; in MVS, it might be
a JES external writer or another JES destination, a TSO user, or another job executing on that system.
One such destination is the JES internal reader, which normally has the reserved name INTRDR. If you
code an actual USERID, do not use NODE('**'); code the actual NODE instead.

The USERID parameter is equivalent to the WRITER parameter in JES.

Validity checking is performed for USERID. Checks are made for blanks (X'40'), and nulls (X'00').

**Sending the internal reader buffer directly to JES:** Instead of waiting for the buffer in your address
space to fill up, send the contents of the internal reader buffer directly to JES by coding as your last
record:

```
/*EOF
```

This control statement delimits the job in the data set, and makes it eligible for immediate processing.

For more information about using the internal reader, and about other /* control statements, see the
z/OS MVS JCL User's Guide.

**Restriction:** You must specify the RESP or NOHANDLE option on the EXEC CICS SPOOLOPEN command.

**Conditions**

**Note:** There are no default actions.

**85 ALLOCERR**
occurs in any of the following situations:
• Dynamic allocation has rejected a request to allocate an input data set.

RESP2 gives the dynamic allocation response code that denotes this error. The first two characters
are the information reason code (S99INFO), and the second two are the error reason code
(S99ERROR), as defined in the z/OS MVS Programming: Assembler Services Guide.

**21 ILLOGIC**
occurs in any of the following situations:
• Invalid CLASS value specified.

**16 INVREQ**
RESP2 values:
4
  Unsupported language.
8
  Unsupported function.
16
  USERID missing.
20
  NODE missing.
INPUT|OUTPUT missing.

Subsystem interface already enabled.

**Note:** Errors 1024 and over are internal, and should not occur. If one of these error codes is returned, contact your IBM support center.

Error in the OUTDESCR string.

OUTDESCR specified but function not available (wrong level of CICS or JES).

OUTDESCR specified but bad pointer found on keyword or in OUTDESCR condition.

**22 LENGERR**
occurs in any of the following situations:

- RECORDLENGTH not in the range 0 through 32760. RESP2 shows the incorrect value.

**90 NODEIDERR**
occurs in any of the following situations:

- JES cannot identify the NODE/USERID combination specified on SPOOLOPEN OUTPUT.
  
  RESP2 gives the dynamic allocation response code that denotes this error. The first two characters are the information reason code (S99INFO), and the second two are the error reason code (S99ERROR), as defined in the z/OS MVS Programming: Assembler Services Guide.

**80 NOSPOOL**
RESP2 values:

- 4 No subsystem present.
- 8 Interface being disabled; CICS is quiescing.
- 12 Interface has been stopped.

**42 NOSTG**
occurs in any of the following situations:

- A GETMAIN has failed within the JES interface subtask (DFHPSPSS).
  
  RESP2 gives the GETMAIN register 15 return code.
- Insufficient storage was available to copy and modify the OUTDESCR argument string.

**13 NOTFND**
RESP2 values:

- 4 No data sets could be located for retrieval for the specified external writer name.

**19 NOTOPEN**
RESP2 values:

- 8 Data set has not been opened.
- 1024 Subtask OPEN macro failure.

**87 OPENERR**
RESP2 values:
A VSAM SHOWCB macro failed to return the lengths of the VSAM control blocks used to access the JES spool file.

Also occurs (RESP2 not set) in any of the following situations:
• An internal error occurred during SPOOLOPEN processing that has forced the request to fail.

96 OUTDESCERR occurs in any of the following situations:
• The macro OUTADD or OUTDEL (invoked as a result of the OUTDESCR specification) failed.

RESP2 gives the reason code from the OUTADD or OUTDEL macro. See the z/OS MVS Programming: Assembler Services Guide for descriptions of codes.

88 SPOLBUSY
RESP2 values:
4  Interface already in use by another task.
8  Interface already in use by current task.

Also occurs in the following situation:
• The JES/input single thread within the JES interface was not available.

86 STRELERR occurs in the following situation:
• A FREEMAIN has failed within the JES interface subtask (DFHPSPSS).

RESP2 gives the FREEMAIN register 15 return code.

**SPOOLREAD**

The SPOOLREAD command obtains the next record from the system spooler.

**SPOOLREAD**

\[
\text{SPOOLREAD} \quad \text{TOKEN} ( \text{data-area} ) \quad \text{INTO} ( \text{data-area} )
\]

\[
\text{MAXFLENGTH} ( \text{data-value} )
\]

\[
\text{TOFLENGTH} ( \text{data-area} ) \quad \text{NOMHANDLE} \quad \text{RESP} \quad \text{RESP2}
\]

**Conditions:** ALLOCERR, ENDFILE, ILLOGIC, INVREQ, LENGERR, NOSPOOL, NOSTG, NOTFND, NOTOPEN, SPOLBUSY, SPOLELR, STRELERR

**Options**

**INTO(data-area)**

specifies the data area for the variable-length data. It is a receiver field.

**MAXFLENGTH(data-value)**

specifies, as a fullword binary variable, the maximum length of data transferred. This is set by the user on input. The limit of length is 32,760 bytes. This is the maximum size of the CICS buffer used to read a record.
TOFLENGTH(*data-area*) specifies, as a fullword binary variable, the length of the data that is transferred. This is set by CICS on input. It is optional and, if it is omitted, you are not notified of the actual length of the data received.

TOKEN(*data-area*) specifies the 8-character CICS-allocated token used to identify a report.

**Restriction:** You must specify the RESP or NOHANDLE option on the EXEC CICS SPOOLREAD command.

**Conditions**

**Note:** There are no default actions.

**85 ALLOCERR** occurs in any of the following situations:

- Dynamic allocation has rejected a request to allocate an input data set.

  RESP2 gives the dynamic allocation response code that denotes this error. The first two characters are the information reason code (S99INFO), and the second two are the error reason code (S99ERROR), as defined in the z/OS MVS Programming: Authorized Assembler Services Guide.

**20 ENDFILE** occurs in any of the following situations:

- All data for the current spool file being read has been retrieved. You should proceed to issue a SPOOLCLOSE command as soon as possible, to release the lock on the JES single thread, and to terminate current SYSOUT data set processing.

**21 ILLOGIC**

RESP2 values:

3  
Invalid CLASS value specified.

**16 INVREQ**

RESP2 values:

4  
Unsupported language.

8  
Unsupported function.

12  
Read attempt after end of file.

24  
INTO missing.

40  
Subsystem interface already enabled.

**Note:** Errors 1024 and over are internal, and should not occur. If one of these error codes is returned, contact your IBM support center.

**22 LENGERR** occurs in any of the following situations:

- You provided insufficient buffer space to read your record, or you requested more than the maximum allowable buffer size of 32 760 bytes (the size of a CICS buffer used to read a record). If the buffer space is too small, it receives as much data as possible. The amount of data truncated is then placed in the RESP2 field. If the TOFLENGTH operand is specified, the actual length of the record is placed here.

  **Note:** In the event of a length error due to insufficient buffer space, the next record is not read until the error has been corrected and the current record reread.
RESP2 indicates the amount of data truncated, or shows zero if the MAXFLENGTH field is greater than the maximum allowable buffer size 32760 bytes.

**80 NOSPOOL**
RESP2 values:

1. **4**
   - No subsystem present.
2. **8**
   - Interface being disabled; CICS is quiescing.
3. **12**
   - Interface has been stopped.

**42 NOSTG**
occurs in any of the following situations:

- A GETMAIN has failed within the JES interface subtask (DFHPSPSS).
  
  RESP2 gives the GETMAIN register 15 return code.

**13 NOTFND**
RESP2 values:

1. **4**
   - No data sets could be located for retrieval for the specified external writer name.

**19 NOTOPEN**
RESP2 values:

1. **8**
   - Data set has not been opened.
2. **12**
   - Attempt to read an output file.
3. **1024**
   - Subtask OPEN macro failure.

**88 SPOLBUSY**
RESP2 values:

1. **4**
   - Interface already in use by another task.
2. **8**
   - Interface already in use by current task.

Also occurs (RESP2 not set) in any of the following situations:

- The JES/input single thread within the JES interface was not available.

**89 SPOLERR**
occurs in any of the following situations:

- The subsystem interface macro (IEFSSREQ) has failed. No input data set name was selected.
  
  RESP2 gives the 'IEFSSREQ' response code.

**86 STRELERR**
occurs in any of the following situations:

- A FREEMAIN has failed within the JES interface subtask (DFHPSPSS).
  
  RESP2 gives the FREEMAIN register 15 return code.
Write data to a spool report.

**SPOOLWRITE**

```
  TOKEN(data-area)  FROM(data-area)  FLENGTH(data-value)
```

**Conditions:** ALLOCERR, INVREQ, LENGERR, NOSPOOL, NOSTG, NOTAUTH, NOTOPEN, SPOLBUSY, SPOLLERR, STRELERR

**Description**
The **SPOOLWRITE** command writes data to a spool report.

**Options**

- **FLENGTH(data-value)**
  - specifies the fullword binary variable that is to be set to the length of the data that is transferred. This is set by the user on output. It is optional and, if it is omitted, CICS uses the length of the data area.

- **FROM(data-area)**
  - specifies the data area from which to take the variable length data. The data itself is not altered in any way by CICS. FROM is a sender field.

- **LINE|PAGE**
  - specifies the format of the data to be sent. The default action is LINE.

  The PAGE option must be used to correctly format information for the advanced function printer (AFP) page printing devices. If a customer is creating MIXED mode type data, that is LINE records and X'5A' (AFPDS or MODCA) pagemode records, the LINE or PAGE operand must match the type record being written to spool.

- **TOKEN(data-area)**
  - specifies the 8-character CICS-allocated token used to identify a report. It is a receiver on SPOOLOPEN and a sender on all other commands.

**Restriction:** You must specify the RESP or NOHANDLE option on the EXEC CICS SPOOLWRITE command.

**Conditions**

**Note:** There are no default actions.

- **85 ALLOCERR**
  - occurs in any of the following situations:
    - Dynamic allocation has rejected a request to allocate an input data set.

    RESP2 gives the dynamic allocation response code that denotes this error. The first two characters are the information reason code (S99INFO), and the second two are the error reason code (S99ERROR), as defined in the z/OS MVS Programming: Authorized Assembler Services Guide.

- **16 INVREQ**
  - RESP2 values:
Unsupported language.

Unsupported function.

FROM missing.

Subsystem interface already enabled.

Note: Errors 1024 and over are internal, and should not occur. If one of these error codes is returned, contact your IBM support center.

22 LENGERR
occurs in any of the following situations:

- The value specified in the FLENGTH parameter on a SPOOLWRITE command is not in the valid range 1 to RECORDLENGTH value specified or defaulted at the SPOOLOPEN data set. If the buffer space is too small, it receives as much data as possible.

RESP2 contains the difference between FLENGTH and RECORDLENGTH, or zero if FLENGTH is negative or greater than 32760.

80 NOSPPOOL
RESP2 values:

4 No subsystem present.

8 Interface being disabled; CICS is quiescing.

12 Interface has been stopped.

42 NOSTG
occurs in any of the following situations:

- A GETMAIN has failed within the JES interface subtask (DFHPSPSS).

RESP2 gives the GETMAIN register 15 return code.

70 NOTAUTH
RESP2 values:

1 A surrogate security check has failed. For more information, see Security for submitting a JCL job to the internal reader.

Default action: terminate the task abnormally.

19 NOTOPEN
RESP2 values:

8 Spool report has not been opened.

16 Attempt to write an input file.

1024 Subtask OPEN macro failure.

88 SPOLBUSY
RESP2 values:

4 Interface already in use by another task.
8

Interface already in use by current task.

Also occurs (RESP2 not set) in the following situation:
- The JES/input single thread within the JES interface was not available.

89 SPOLEUR
occurs in the following situation:
- The subsystem interface macro (IEFSSREQ) has failed. No input data set name was selected.
  RESP2 gives the 'IEFSSREQ' response code.

86 STRELERR
occurs in the following situation:
- A FREEMAIN has failed within the JES interface subtask (DFHPSPSS).
  RESP2 gives the FREEMAIN register 15 return code.

START

Start a task at a specified time.

See also:
- START ATTACH
- START BREXIT
- START CHANNEL
Conditions: INVREQ, IOERR, ISCINVREQ, LENGERR, NOTAUTH, RESUNAVAIL, SYSIDERR, TERMIDERR, TRANSIDERR, USERIDERR

Note: For dynamic transaction routing: If a START is later canceled by another task, or if the started transaction uses RETRIEVE WAIT, inter-transaction affinities might be created that adversely affect the use of dynamic transaction routing. For more information, see Affinity.

Description

START starts a task, on a local or remote system, at a specified time. The time is specified by INTERVAL, AFTER, AT, or TIME. See the section about expiration times in Interval control.

The starting task can pass data to the started task. The starting task can also specify a terminal to be used by the started task as its principal facility.

The default is INTERVAL(0), but for C the default is AFTER HOURS(0) MINUTES(0) SECONDS(0).

CEDF is an exception to the START command and is not valid as a TRANSID name. Therefore, do not attempt to start CEDF in this way.

Important: There is a 6-hours rule, if the START gets triggered at any time within 6 hours after the time specified on the START, it executes immediately. This happens regardless of whether the previous 6 hours includes a midnight. To illustrate here are some examples:

• EXEC CICS START TIME(123000)
This command, issued at 05:00 or 07:00 on Monday, expires at 12:30 on the same day.

- **EXEC CICS START TIME (020000)**

  This command, issued at 05:00 or 07:00 on Monday expires immediately because the specified time is within the preceding 6 hours.

For more information, see **Expiration times**.

You can use the RTRANSID, RTERMID, and QUEUE options to pass further data to the started task. These options can contain arbitrary data values with meanings that depend on what is specified in the started and starting tasks. One possible way of using them is in the following situation. One task can start a second task, passing it a transaction name and a terminal name to be used when the second task starts a third task. The first task can also pass the name of a queue to be accessed by the second task.

If you are using an IPIC connection, the maximum length for the FROM data area is 32,500 bytes. This limit allows for the 32,500 byte FROM data area and space for headers.

**START** with TERMDID specified does not propagate the origin data record (ODR), so tasks are always started at a new point of origin.

The following constraints must be satisfied before the transaction to be run can be started:

- The specified interval must have elapsed or the specified expiration time must be reached. For more information, see **Interval control**. Specify the INTERVAL or AFTER options when a transaction is to be run on a remote system, to avoid complications when the local, and remote systems are in different time zones.
- If you specify the TERMINID option, the named terminal must exist and be available. If the named terminal does not exist when the time interval expires, the START is discarded.
- If you specify the PROTECT option, the starting task must take a successful sync point. This option, coupled to extensions to system tables, reduces the exposure to lost or duplicated data caused by failure of a starting task.
- If the transaction to be run is on a remote system, the format of the data must be declared to be the same as the data at the local system. Use the RDO options DATASTREAM and RECORDFORMAT. For CICS to CICS, these options are always the default values. For CICS-to-IMS/VS, make sure that you specify the correct values.

Running a START command that names a transaction in the local system cancels any outstanding POST commands run by the starting task.

You can queue START commands by specifying the LOCALQ option on the RDO TRANSACTION resource definition, as described in **TRANSACTION attributes**.

### Passing data by interval control

If data is to be passed by interval control (by using the FROM option), it is queued on a temporary storage queue. Use the REQID option to specify the name of the temporary storage queue to be used. This identifier might be recoverable (in temporary storage terms) or unrecoverable. For more information on how to define recoverable temporary storage queues, see **TSMODEL resources**.

If you also specify the PROTECT option, you must define the temporary storage queue identified by the REQID option as recoverable. If you do not specify the PROTECT option, do not define the temporary storage queue as recoverable. Unpredictable results can occur if you do not follow these rules. See **Recovery of START requests**.

If you specify the FROM and not the REQID option, a default 'DF' prefix temporary storage queue is used. The same rules apply as previously listed; specify the PROTECT option only if you define the 'DF' prefix temporary storage queues as recoverable.

A START command with REQID, issued from a task that was itself initiated by a START with the same REQID, returns an AEIQ abend (IOERR condition) if the FROM data for the task has not been read by a RETRIEVE.
You also receive this error if more than one START command with the same REQID is issued by a task or tasks in the same CICS system. CICS TS regions always reject with an IOERR any START commands that specify a duplicate REQID.

Started tasks without data run without a facility address. Started tasks with data run with a facility address of an ICE until the data is retrieved.

If an ICRX is used, it is saved across restarts. If the start request is subsequently cancelled, the ICRX is deleted.

Error checking and performance considerations

The NOCHECK option specifies that no response (to running of the START command) is expected by the starting transaction. For START commands that name tasks to be started on a local system, error conditions are returned; error conditions are not returned for tasks to be started on a remote system. The NOCHECK option allows CICS to improve performance when the START command must be shipped to a remote system; it is also a prerequisite if the shipping of the START command is queued pending the establishing of links to the remote system.

Starting tasks without terminals

If the task to be started is not associated with a terminal, each START command starts a separate task, regardless of whether data is passed to the started task. The following examples show how to start a specified task, not associated with a terminal, in one hour:

```
EXEC CICS START
   TRANSID('TRNL')
   INTERVAL(10000)
   REQID('NONGL')
⋮
EXEC CICS START
   TRANSID('TRNL')
   AFTER HOURS(1)
   REQID('NONGL')
⋮
```

Starting tasks with terminals but without data

Only one task is started if several START commands, each specifying the same transaction and terminal, expire at the same time or before the terminal is available.

The following examples show how to request initiation of a task associated with a terminal. Because no request identifier is specified in these examples, CICS assigns one and returns it to the application program in the EIBREQID field of the EXEC interface block.

```
EXEC CICS START
   TRANSID('TRNL')
   TIME(185000)
   TERMID('STA5')
⋮
EXEC CICS START
   TRANSID('TRNL')
   AT HOURS(18) MINUTES(50)
   TERMID('STA5')
⋮
```

Starting tasks with terminals and data

Data is passed to a started task if one or more of the FROM, RTRANSID, RTERMID, and QUEUE options is specified. Such data is accessed by the started task by using a RETRIEVE command.

It is possible to pass many data records to a new task by issuing several START commands, each specifying the same transaction, and terminal.
Running of the first START command ultimately causes the new task to be started and allows it to retrieve the data specified on the command. The new task is also able to retrieve data specified on subsequent START commands that expire before the new task is ended. If the transaction has been defined as restartable (by defining the transaction as using the RDO option RESTART(YES)) and such data has not been retrieved before the new task is ended, another new task is started and can retrieve the outstanding data.

If the transaction abends and has not been defined as restartable, no new task is initiated and the data is discarded.

The following examples show how to start a task associated with a terminal and to pass data to it:

EXEC CICS START
  TRANSID('TRN2')
  TIME(173000)
  TERMID('STA3')
  REQID(DATAREC)
  FROM(DATAFLD)
  LENGTH(100)
:
EXEC CICS START
  TRANSID('TRN2')
  AT HOURS(17) MINUTES(30)
  TERMID('STA3')
  REQID(DATAREC)
  FROM(DATAFLD)
  LENGTH(100)
:

When you use the C language, use the AFTER/AT HOURS, MINUTES, and SECONDS options because C does not provide a packed decimal data type. You can use INTERVAL or TIME, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format.

**Routed transactions started by START commands**

Some transactions started by a subset of START commands can be dynamically routed to a remote region. For general information about dynamic transaction routing, and specific information about which transactions started by START commands are eligible for dynamic routing, see Routing transactions invoked by START commands.

When security is active, the user ID associated with the transaction in the remote region is set according to the value specified in the ATTACHSEC parameter of the connection definition in the remote region. For more information about security checking done in the AOR, follow the link below based on the communication method in use:

- Security checking done in AOR with LU6.2
- Security checking done in AOR with LU6.1
- Security checking done in AOR with IPIC
- Security checking done in AOR with MRO

**Note:** You cannot use identity propagation with a START command that is shipped to a remote region across a LU61 or LU62 connection. For this type of connection, the ICRX will not be shipped and the identity information is lost. Identity propagation is also not available for delayed dynamically routed START commands.

**START failures without exception conditions**

In the following circumstances, a START command runs without error, but the started task never takes place:

- When the transaction or its initial program is unavailable at the time CICS attempts to create the task.
- When the START specifies a terminal and an expiration time, and the terminal is not defined (and cannot be located by the XICTENF or XALTENF exits) at expiration time.
• When the START specifies a terminal that is not defined (and cannot be located by the XICTENF or XALTENF exits) at the time CICS attempts to create the task.

These exposures result from the delay between the running of the START command and the time of task creation. Even when the START is immediate, CICS can delay creating the task, either because the required terminal is not free or because of other system constraints.

You can use INQUIRE commands to ensure that the transaction and program are enabled at the time of the START command, but either might become unavailable before task creation.

You get a TERMIDERR condition if the requested terminal does not exist at the time of the START, but if it is deleted later, as occurs if the user logs off, your START request is discarded with the terminal definition.

Application context propagation

Application context propagation is a process that passes application context data from a task that issues a START command to a task that runs the started transaction. The data is used for monitoring and measuring application resource usage. Both the initial and current application contexts are passed between applications. Application context data is not propagated with the following START commands:

• A local EXEC CICS START command generated from a transient data (TD) trigger.
• A local asynchronous EXEC CICS START command received from an event processing (EP) adapter.
• An EXEC CICS START command that specifies a TERMIN or a USERID parameter value.

For more information, see Application context.

Options

AFTER
Specifies the interval of time that is to elapse before the new task is started.

Enter the time under AFTER and AT in two ways:

1. A combination of at least two of HOURS(0 - 99), MINUTES(0 - 59), and SECONDS(0 - 59).
   HOURS(1) SECONDS(3) means one hour and three seconds (the minutes default to zero).
2. As one of HOURS(0 - 99), MINUTES(0 - 5959), or SECONDS(0 - 359999). HOURS(1) means one hour.
   MINUTES(62) means one hour and two minutes. SECONDS(3723) means one hour, two minutes, and three seconds.

AT
Specifies the time at which the new task is to be started. For the ways to enter the time, see the AFTER option.

FMH
Specifies that the user data to be passed to the started task contains function management headers. FMH is not valid for LUTYPE2 or LUTYPE3 terminals.

FROM(data-area)
Specifies the data to be stored for a task that is to be started at some future time.

HOURS(data-value)
Specifies a fullword binary value in the range 0 - 99. HOURS is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

INTERVAL(hhmmss)
Specifies the expiration time as an interval of time that is to elapse from the time at which the START command is issued. The mm and ss are each in the range 0 - 59. The time specified is added to the current clock time by CICS when the command is run, to calculate the expiration time.

LENGTH(data-value)
Specifies a halfword binary data value that is the length of the data to be stored for the new task. See “LENGTH options in CICS commands” on page 10 for guidance on limits when setting the LENGTH option.
MINUTES(data-value)
  Specifies as a fullword binary value the number of minutes for use with AFTER or AT. The value must be in the range 0 through 59 if HOURS or SECONDS is also specified, or in the range 0 through 5999 otherwise. MINUTES is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

NOCHECK
  Specifies that, for a remote system, CICS improves performance of the START command by providing less error checking and slightly less function. For more information, see Improving performance of intersystem START requests

PROTECT
  Specifies that the new task is not started until the starting task has taken a sync point. If the starting task abends before the sync point is taken, the request to start the new task is canceled. If the REQID option is also specified, the request identifier must be a name defined as recoverable to temporary storage. If the started transaction is remote, PROTECT specifies that it must not be scheduled until the local transaction has successfully completed a sync point. For more information about the PROTECT option with remote transactions, see Improving performance of intersystem START requests

QUEUE(name)
  Specifies a name (1 - 8 characters) that is passed to the started task. If this name represents a temporary storage queue, the queue must be local to the started task. The contents of the queue are not passed.

  If you are also specifying REQID, make sure that the name of the REQID and the name of the QUEUE are not the same.

REQID(name)
  Specifies a name (1 - 8 characters), which must be unique, to identify a command. You can use this option when another task is to be provided with the capability of canceling an unexpired command.

  If you omit this option, CICS generates a unique request identifier in the EIBREQID field of the EXEC interface block, unless you specify the NOCHECK option, in which case field EIBREQID is set to nulls and cannot be used later to cancel the START command.

  If you include any of the data options (FROM, RTERMID, RTRANSID, or QUEUE), the data is stored in a TS queue by using the REQID name specified (or CICS generated) as the identifier. The queue record thus identified must be local to the CICS system where the START command is processed. The START command is processed on the system identified by the SYSID option or, if the SYSID option is omitted, on the system associated with the TRANSID option.

RTERMID(name)
  Specifies a value (1 - 4 characters), for example a terminal name, that can be retrieved when the transaction, specified in the TRANSID option in the START command, is started.

  When retrieved, the value can be used in the TERMID option of a subsequent START command.

RTRANSID(name)
  Specifies a value (1 - 4 characters), for example a transaction name, that can be retrieved when the transaction, specified in the TRANSID option in the START command, is started.

  When retrieved, the value can be used in the TRANSID option of a subsequent START command.

SECONDS(data-value)
  Specifies a fullword binary value in the range 0 - 59, when HOURS or SECONDS are also specified, or 0 - 359999 when SECONDS is the only option specified. SECONDS is a suboption of the AFTER and AT options. For its use and meaning, see the AFTER option.

SYSID(systemname)
  Specifies the name of the system to which the request is directed.

TERMID(name)
  Specifies the symbolic identifier (1 - 4 alphanumeric characters) of the principal facility associated with a transaction to be started as a result of a START command. This principal facility can be either a
terminal (the usual case) or an APPC session. Where an APPC session is specified, the connection (or modeset) name is used instead of a terminal identifier. This option is required when the transaction to be started must communicate with a terminal; it should be omitted otherwise.

Define the terminal identifier as either a local or a remote terminal on the system in which the START command is run when the start of the transaction takes effect.

The TERMID option is used in previous hop data that is collected. For more information about using the TERMID option with previous hop data, see Previous hop data characteristics.

Do not use the TERMID option if you are using identity propagation.

**TIME**(hhmmss)

Specifies the time when a new task is started.

When using the C language, use the AFTER/AT HOURS, MINUTES, and SECONDS options because C does not provide a packed decimal data type. You can use TIME, but if the value specified is not an integer constant, the application is responsible for ensuring that the value passed to CICS is in packed decimal format.

**TRANSID**(name)

Specifies the symbolic identifier (1 - 4 characters) of the transaction to be run by a task started as the result of a START command.

If you specify SYSID and name a remote system, the transaction is assumed to be on that system whether the transaction is defined as remote. Otherwise, the transaction resource definition is used to find out whether the transaction is on a local or a remote system.

The TRANSID option is used in previous hop data that is collected. For more information, see Previous hop data characteristics.

**USERID**(data-value)

Specifies the user ID under whose authority the started transaction is to run, if the started transaction is not associated with a terminal (that is, when TERMID is not specified). This user ID is referred to as userid1.

If you omit both TERMID and USERID, CICS uses instead the user ID under which the transaction that issues the START command is running. This user ID is referred to as userid2.

By using either userid1 or userid2, CICS ensures that a started transaction always runs under a valid user ID, which must be authorized to all the resources referenced by the started transaction.

CICS performs a surrogate security check against userid2 to verify that this user is authorized to userid1. If userid2 is not authorized, CICS returns a NOTAUTH condition.

If you are using identity propagation, and your task has a distributed user ID associated with its security context, this information is not propagated to tasks that are started with the USERID option.

**Conditions**

**16 INVREQ**

RESP2 values:

4 The value specified in HOURS, for AFTER or AT options, or the hh value specified for INTERVAL, is out of range.

5 The value specified in MINUTES, for AFTER or AT options, or the mm value specified for INTERVAL, is out of range.

6 The value specified in SECONDS, for AFTER or AT options, or the ss value specified for INTERVAL, is out of range.
The transaction that has been started by the START operation is not shutdown-enabled, and the CICS region is in the process of shutting down.

A USERID is specified and the CICS external security manager interface is not initialized.

The START command was issued by a distributed program link (DPL) server program and used the TERMID option, the value of which matched the ID of the intersystem session. Where TERMID is equal to EIBTRMID (that is, where the issuing task's principal facility is a session rather than a terminal), START TERMID is not in the permitted subset of commands available to DPL server programs.

The START command has been rejected because the threshold for an AID system rule has been exceeded.

INVREQ also occurs (RESP2 not set) in any of the following situations:

- The START command is not valid for processing by CICS.
- Values specified in the INTERVAL option are out of range.

Default action: end the task abnormally.

Occurs in any of the following situations:

- An input/output error occurred during a START operation.
- A START operation attempts to write to a temporary storage queue when the DFHTEMP data set is full.
- A START operation uses a REQID name that exists. This condition occurs only when the FROM option is also used.

Default action: end the task abnormally.

Occurs when the remote system indicates a failure that does not correspond to a known condition.

Default action: end the task abnormally.

Occurs if LENGTH is not greater than zero.

Default action: end the task abnormally.

RESP2 values:

7

A resource security check fails on TRANSID (name).

9

A surrogate user security check fails on USERID (name).

The security access capabilities of the transaction that issued the command do not allow the command to be performed with the value specified in the USERID option. The security access capabilities of the transaction have been established by the external security manager according to user security, and whether link security or the execution diagnostic facility (EDF) have been in use.

Default action: end the task abnormally.

RESP2 values:
A resource required by the transaction to be started is unavailable on the target region. The RESUNAVAIL condition applies only to dynamically-routed, non-terminal-related EXEC CICS START requests.

RESUNAVAIL is returned on the EXEC CICS START command run by the mirror in the target region, if an XICERES global user exit program indicates that a required resource is unavailable on the target region. It is not returned to the application.

Default action: reinvoke the distributed routing program for route selection failure.

**53 SYSIDERR**

Occurs when the SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION). SYSIDERR also occurs when the link to the remote system is known but unavailable.

The following error is indicated by a RESP2 value:

1

The dynamic routing program rejected the START request.

Default action: end the task abnormally.

**11 TERMIIDERR**

Occurs if the terminal identifier in a START command is not defined to CICS. This condition can be produced if you specify the name of a connection that is not an ISC or MRO connection.

Default action: end the task abnormally.

**28 TRANSIDERR**

Occurs if the transaction identifier specified in a START command is not defined to CICS.

Default action: end the task abnormally.

**69 USERIDERR**

RESP2 values:

8

The specified USERID is not known to the external security manager.

10

The external security manager is in a state such that CICS cannot determine whether a specified USERID is valid.

19

The specified USERID is revoked.

Default action: end the task abnormally.

---

**START ATTACH**

Start a task immediately.

See also:

- “START” on page 523
- “START BREXIT” on page 534
- “START CHANNEL” on page 536
START ATTACH

START ATTACH --- TRANSID( name) --- FROM( data-area) --- LENGTH( data-value)

Conditions: INVREQ, LENGERR, NOTAUTH, TRANSIDERR

Description

START ATTACH starts a non-terminal task immediately in the local CICS region.

The attached task has a STARTCODE of U and cannot be canceled, so EIBREQID is set to nulls.

ATTACH allows a START issued in a PLTPI program to take effect before initialization completes.

The starting task can pass data to the started task by using the FROM option.

START ATTACH does not propagate the origin data record (ODR), so tasks are always started at a new point of origin

Starting tasks with data

If data is to be passed, it is not written to a temporary storage queue; only its address is passed.

The attached task retrieves data in the normal way. The task that issued the START must ensure that the data is valid when it is retrieved, either by synchronizing its execution with the attached task, or by placing the data in shared storage.

Each START ATTACH command results in a separate task started, optionally with data passed to the started task. The following example shows how to start a specified task, and pass data to it:

EXEC CICS START ATTACH
TRANSID('TRNL')
FROM(DATAFLD)
LENGTH(100)

Options

FROM(data-area)

Specifies the data to be passed to a started task.

LENGTH(data-value)

Specifies a halfword binary data value that is the length of the data to be passed to a started task.

TRANSID(name)

Specifies the symbolic identifier (1–4 characters) of the transaction to be started by a task started as the result of a START ATTACH command.

The TRANSID option is used in previous hop data that is collected. For more information, see Previous hop data characteristics.

Conditions

16 INVREQ

RESP2 values:

11

An attempt was made to route a START ATTACH request.

12

A START ATTACH request failed.

Default action: terminate the task abnormally.
22 LENGERR
Occurs if LENGTH is not greater than zero.
Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:
7
A resource security check fails on TRANSID (name).
Default action: terminate the task abnormally.

28 TRANSIDERR
Occurs if the transaction identifier specified in a START command is not defined to CICS.
RESP2 values:
11
The specified transaction is defined as remote.
Default action: terminate the task abnormally.

START BREXIT
Start task in the 3270 bridge environment and associate it with the named bridge exit.
See also:
• “START” on page 523
• “START ATTACH” on page 532
• “START CHANNEL” on page 536

START BREXIT
START BREXIT BREXIT( name) TRANSID( name)
BRDATA( data-area) BRDATALENGTH( data-value)
USERID( data-value)

Conditions: INVREQ, LENGERR, NOTAUTH, PGMIDERR, TRANSIDERR, USERIDERR

Description
START BREXIT starts a task immediately in the local CICS region, and initializes the specified transaction (TRANSID) and bridge exit (BREXIT). In the 3270 bridge environment, all 3270 terminal requests issued by the transaction specified by TRANSID, are intercepted and passed to the user-replaceable program (the bridge exit) specified by BREXIT.

The bridge exit (BREXIT) emulates the 3270 interface by passing the terminal requests to a client application that might be executing inside or outside of CICS.

See Introduction to the 3270 bridge for more information about the 3270 bridge and its interfaces.

The attached task cannot be canceled; its STARTCODE is defined by the bridge exit.
Options

**BREXIT**(name)
Specifies the name (1-8 characters) of the bridge exit to be associated with the started task. If no name is specified, the value of BREXIT on the TRANSACTION resource definition for TRANSID is used.

**BRDATA**(data-area)
Specifies the data to be passed to the bridge exit specified by BREXIT when the task is started.

**BRDATALENGTH**(data-value)
Specifies a fullword binary data value that is the length of the BRDATA to be passed to the bridge exit specified by BREXIT when the task is started.

**TRANSID**(name)
Specifies the symbolic identifier (1-4 characters) of the transaction to be executed by a task started as the result of a START BREXIT command. The transaction is started in the 3270 bridge environment, and executes in association with the bridge exit specified in BREXIT.

The TRANSID option is used in previous hop data that is collected. See Association data for more information about using the TRANSID option with previous hop data.

**USERID**(data-value)
Specifies the user ID under whose authority the started transaction is to run.

Conditions

16 INVREQ
RESP2 values:

11  An attempt was made to route a START BREXIT request.

12  A START BREXIT request has failed.

18  A USERID option is specified and the CICS external security manager interface is not initialized.

Default action: terminate the task abnormally.

22 LENGERR
Occurs if BRDATALENGTH is not greater than zero.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

7   A resource security check fails on TRANSID (name).

9   A surrogate user security check fails on USERID (name). The security access capabilities of the transaction that issued the command do not allow the command to be performed with the value specified in the USERID option.

Default action: terminate the task abnormally.

27 PGMIDERR
Occurs if no name is supplied by the BREXIT option and the transaction definition for TRANSID does not provide a default BREXIT name.

Default action: terminate the task abnormally.

28 TRANSIDERR
Occurs if the TRANSID specified in a START BREXIT command has not been defined to CICS.

RESP2 values:
The specified transaction is defined as remote.
Default action: terminate the task abnormally.

**69 USERIDERR**
RESP2 values:

8  The specified user ID is not known to the external security manager.

10 The external security manager is in a state such that CICS cannot determine whether a specified user ID is valid.
Default action: terminate the task abnormally.

**Passing data to the bridge exit**
Data can be passed to the bridge exit by using the BRDATA and BRDATALENGTH options.
The following example shows how to start a specified task, in the 3270 bridge environment and pass data to its bridge exit:

```
EXEC CICS START BREXIT('DFH0CBRE')
  TRANSID('TRNL')
  BRDATA(BRSD)
  BRDATALENGTH(72)
```

**START CHANNEL**
Start a task, passing it a channel.
See also:
• “START” on page 523
• “START ATTACH” on page 532
• “START BREXIT” on page 534

**START CHANNEL**

```
START — TRANSID( name) — CHANNEL( name) —
        TERMID( name) —
        USERID( data-value) —
        SYSID( systemname)
```

**Conditions:** CHANNELERR, INVREQ, ISCINVREQ, NOTAUTH, RESUNAVAIL, SYSIDERR, TERMIDERR, TRANSIDERR, USERIDERR

**Description**
START CHANNEL starts a task on a local or remote system, passing it a channel.
Typically, the starting task uses the channel to pass data to the started task (although in some circumstances the channel can be empty; see the description of the CHANNEL option). The starting task can also specify a terminal to be used by the started task as its principal facility.
For example, the started task can do the following:
1. Use an **ASSIGN CHANNEL** command to discover the name of the channel that has been passed to it.

2. Use **STARTBROWSE CONTAINER CHANNEL** and **GETNEXT CONTAINER** commands to browse the containers in the channel.

3. Use **GET CONTAINER CHANNEL** or **GET64 CONTAINER** commands to access the data in the containers.

The following constraints must be satisfied before the transaction to be run can be started:

- If you specify the **TERMID** option, the named terminal must exist and be available. If the named terminal does not exist, the START is discarded.
- **START CHANNEL** does not support IMS; that is, you cannot use **START CHANNEL** to start a transaction on a remote IMS system.

Each **START CHANNEL** command results in a separate task being started.

**START** with **TERMID** specified does not propagate the origin data record (ODR), so tasks are always started at a new point of origin.

**Dynamically routed transactions started by START commands**

Some transactions started by a subset of **START** commands can be dynamically routed to a remote region. For general information about dynamic transaction routing, and specific information about which transactions started by **START** commands are eligible for dynamic routing, see Routing transactions invoked by **START** commands.

**START failures without exception conditions**

In the following circumstances, a **START** command runs without error, but the started task never takes place:

- When the transaction or its initial program is unavailable at the time CICS attempts to create the task.
- When the **START** specifies a terminal that is not defined (and cannot be located by the XICTENF or XALTENF exits) at the time CICS attempts to create the task.
- You get a **TERMIDERR** condition if the requested terminal does not exist at the time of the **START**. However, if the terminal becomes unavailable later, as occurs if the user logs off, your **START** request is discarded, and no **TERMIDERR** occurs.

These exposures result from the delay between running the **START** command and the time of task creation. Even on a **START CHANNEL** request, when the **START** is always immediate, CICS can delay creating the task, either because the required terminal is not free or because of other system constraints.

You can use **INQUIRE** commands to ensure that the transaction and program are enabled at the time of the **START** command, but either can become unavailable before task creation.

**Options**

**CHANNEL(name)**

Specifies the name (1 - 16 characters) of a channel that is to be made available to the started task. The acceptable characters are A-Z a-z 0-9 $ @ # .-/_% & ? ! : | " = , ; < >. . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters used to name them to A-Z a-z 0-9 & : = , ; < > . - and _.
You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

The program that issues the START command can do one of the following:

• Create the channel before issuing the START command, by using one or more PUT CONTAINER CHANNEL or PUT64 CONTAINER commands.
• Specify its current channel, by name.
• Name a channel that does not currently exist. A new empty channel is created.

The started task is given a copy of the channel's containers (and the data that they contain). The copy is made when the START command is issued.

Note: All EXEC CICS START requests that specify a channel cannot be deferred by specifying INTERVAL, AT, FOR or UNTIL as this is not supported.

SYSID(systemname)

Specifies the name of the system to which the request is directed.

TERMID(name)

Specifies the symbolic identifier (1 - 4 alphanumeric characters) of the principal facility associated with a transaction to be started as a result of a START command. This principal facility can be either a terminal (the usual case) or an APPC session. Where an APPC session is specified, the connection (or modeset) name is used instead of a terminal identifier. This option is required when the transaction to be started must communicate with a terminal; it should be omitted otherwise.

You must define the terminal identifier as either a local or a remote terminal on the system in which the START command is run.

The TERMID option is used in previous hop data that is collected. For more information, see Previous hop data characteristics.

Do not use the TERMID option if you are using identity propagation.

TRANSID(name)

Specifies the symbolic identifier (1 - 4 characters) of the transaction to be run by a task started as the result of a START command.

If you specify the SYSID, and name a remote system, the transaction is assumed to be on that system irrespective of whether the transaction is defined as remote. Otherwise, the transaction definition is used to find out whether the transaction is on a local or a remote system.

The TRANSID option is used in previous hop data that is collected. For more information, see Previous hop data characteristics.

USERID(data-value)

Specifies the user ID under whose authority the started transaction is to run, if the started transaction is not associated with a terminal (that is, when TERMID is not specified). This user ID is referred to as userid1.

If you omit both TERMID and USERID, CICS uses instead the user ID under which the transaction that issues the START command is running. This user ID is referred to as userid2.

By using either userid1 or userid2 CICS ensures that a started transaction always runs under a valid user ID, which must be authorized to all the resources referenced by the started transaction.

CICS performs a surrogate security check against userid2 to verify that this user is authorized to userid1. If userid2 is not authorized, CICS returns a NOTAUTH condition. The surrogate check is not done here if USERID is omitted.

Do not use the USERID option if you are using identity propagation.
Conditions

122 CHANNELERR
RESP2 values:

1
The channel specified on the CHANNEL option contains an incorrect character or combination of characters.

16 INVREQ
RESP2 values:

9
The options specified on the command are incompatible.

17
The STARTed transaction is not shutdown-enabled, and the CICS region is in the process of shutting down.

18
A USERID is specified and the CICS external security manager interface is not initialized.

200
The START command was issued by a distributed program link (DPL) server program and used the TERMID option, the value of which matched the ID of the intersystem session. Where TERMID is equal to EIBTRMID (that is, where the issuing task's principal facility is a session rather than a terminal), START TERMID is not in the permitted subset of commands available to DPL server programs.

INVREQ also occurs (RESP2 not set) if the START command is not valid for processing by CICS.
Default action: end the task abnormally.

54 ISCINVREQ
Occurs when the remote system indicates a failure that does not correspond to a known condition.
Default action: end the task abnormally.

70 NOTAUTH
RESP2 values:

7
A resource security check fails on TRANSID (name).

9
A surrogate user security check fails on USERID (name).

The security access capabilities of the transaction that issued the command do not allow the command to be performed with the value specified in the USERID option. The security access capabilities of the transaction have been established by the external security manager according to user security, and whether link security or the execution diagnostic facility (EDF) have been in use.

Default action: end the task abnormally.

121 RESUNAVAIL
RESP2 values:

121
A resource required by the transaction to be started is unavailable on the target region. The RESUNAVAIL condition applies only to dynamically-routed, non-terminal-related EXEC CICS START requests.

RESUNAVAIL is returned on the EXEC CICS START command run by the mirror in the target region, if an XICERES global user exit program indicates that a required resource is unavailable on the target region. It is not returned to the application.

Default action: reinvoke the distributed routing program for route selection failure.
53 SYSIDERR
Occurs in all of the following cases:

- The SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION).
- The link to the remote system is known but unavailable.

In all the previous cases, the nature of the error is indicated by the second byte of the EIBRCODE.

The following errors are indicated by RESP2 values:

1
The dynamic routing program rejected the START request.

2
The CHANNEL option was used and the START request was shipped or routed to a remote system which does not support it. (MRO connections only).
Default action: end the task abnormally.

20
The CHANNEL option is specified and the START request is to be shipped over an LUTYPE61 connection. START CHANNEL requests cannot be shipped over LUTYPE61 connections.

11 TERMDERR
The terminal identifier in a START command is not defined to CICS.
Default action: end the task abnormally.

28 TRANSMERR
The transaction identifier specified in a START command is not defined to CICS.
Default action: end the task abnormally.

69 USERIDERR
RESP2 values:

8
The specified USERID is not known to the external security manager.

10
The external security manager is in a state such that CICS cannot determine whether a specified USERID is valid.
Default action: end the task abnormally.
STARTBR

Start browse of a file.

```
STARTBR
  ➞ STARTBR ➞ FILE(filename) ➞ RIDFLD(data-area) ➞
    KEYLENGTH(data-value) ➞ GENERIC ➞ REQID(data-value) ➞
    SYSID(systemname) ➞ DEBKEY ➞ DEBREC ➞ RBA ➞ RRN ➞ XRBA ➞
    GTEQ ➞ EQUAL

Conditions: DISABLED, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCVREQ, LOADING, NOTAUTH, NOTFND, NOTOPEN, SYSIDERR
```

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

Description

STARTBR specifies the record in a file, or in a data table, on a local or a remote system, where you want the browse to start. No records are read until a READNEXT command (or, for VSAM and tables, a READPREV command) is executed.

The following browse operations are possible. A direct browse is a browse of the base data set by using the primary key.

- A direct browse of a key sequenced data set (KSDS or data-table) by record key.
- A direct browse of an entry sequenced data set (ESDS) by relative byte address (RBA).
- A direct browse of a relative record data set (RRDS) by relative record number (RRN).
- A browse of a key sequenced data set (KSDS) using an alternate index path.
- A browse of an entry sequenced data set (ESDS) using an alternate index path. In this case, an ESDS is browsed by key in the same way as a KSDS. Some of the options that are not valid for a direct ESDS browse are valid for an alternate index browse.
- A browse of a KSDS by RBA.

The options specified on the STARTBR command define the characteristics that apply throughout the subsequent browse operation. Specifically, if GENERIC or GTEQ are specified, they are used not only when determining the starting point of the browse, but also whenever the value of RIDFLD is changed before issuing a READNEXT command.
If you specify the RBA option, it applies to every READNEXT or READPREV command in the browse, and causes CICS to return the relative byte address of each retrieved record.

None of these options can be changed during a browse, except by means of the RESETBR command.

If a STARTBR request specifies the precise key at which the browse is to start (that is, it specifies a full key and the EQUAL keyword) the record returned on the following READNEXT (or READPREV) may not be the same as the record specified by the STARTBR for a file opened in VSAM NSR or RLS mode. This can occur because the initial record specified on the STARTBR command can be deleted by another transaction in between the STARTBR completing and a READNEXT or READPREV being issued. In VSAM LSR mode, the initial record cannot be deleted between the STARTBR and the READNEXT.

A browse can end by using the ENDBR, SYNCPOINT, or SYNCPOINT ROLLBACK commands. Also an implicit sync point at the end of task ends the browse.

**Options**

**DEBKEY**

(blocked BDAM) specifies that deblocking is to occur by key. If neither DEBREC nor DEBKEY is specified, deblocking does not occur.

**DEBREC**

(blocked BDAM) specifies that deblocking is to occur by relative record (relative to zero). If neither DEBREC nor DEBKEY is specified, deblocking does not occur.

**EQUAL**

(VSAM and data table) specifies that the search is satisfied only by a record having the same key (complete or generic) as that specified in the RIDFLD option.

This option is the default field for a direct ESDS browse.

**FILE(filename)**

specifies the name of the file to be accessed.

If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

**GENERIC**

(VSAM KSDS, path or data table) specifies that the search key is a generic key whose length is specified in the KEYLENGTH option. The search for a record is satisfied when a record is found that has the same starting characters (generic key) as those specified.

**GTEQ**

(VSAM or data table) specifies that, if the search for a record that has the same key (complete or generic) as that specified in the RIDFLD option is unsuccessful, the first record that has a greater key satisfies the search.

This option is the default for directly browsing through a KSDS or an RRDS. It is not valid for directly browsing an ESDS, although it is valid for browsing through an ESDS using a path.

**KEYLENGTH(data-value)**

specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case KEYLENGTH is not valid.

This option must be specified if GENERIC is specified, and it can be specified whenever a key is specified. If the length specified is different from the length defined for the data set and the operation is not generic, the INVREQ condition occurs.

The INVREQ condition also occurs if a STARTBR command specifies GENERIC, and the KEYLENGTH value is not less than that specified in the VSAM definition.

If KEYLENGTH(0) is used with the object of positioning on the first record in the data set, the GTEQ option must also be specified. If EQUAL is specified either explicitly or by default with KEYLENGTH(0), the results of the STARTBR is unpredictable.
For remote files, the KEYLENGTH value can be specified in the FILE definition. If KEYLENGTH is not defined there, and is not specified in the application program, and the key is longer than 4 characters, the default value is 4.

**RBA**

(VSAM KSDS or ESDS base data sets, or CICS-maintained data tables only, not paths) specifies that the record identification field specified in the RIDFLD option contains a relative byte address. Use this option only when browsing an ESDS or KSDS base and using relative byte addresses instead of keys to identify the records.

You cannot use RBA for:
- User-maintained data tables
- Coupling facility data tables
- Any KSDS file opened in RLS access mode
- KSDS files that use extended addressing

Also, you are recommended not to use RBA for ESDS files that hold more than 4GB. (Use XRBA instead.)

**REQID(data-value)**

specifies as a halfword binary value a unique request identifier for a browse, used to control multiple browse operations on the same or different data sets. If this option is not specified, a default value of zero is assumed.

**RIDFLD(data-area)**

specifies the record identification field. The contents can be a key, a relative byte address, or relative record number (for VSAM data sets), or a block reference, physical key, and deblocking argument (for BDAM data sets). For a relative byte address or a relative record number, the format of this field must be fullword binary. For a relative byte address, the RIDFLD value can be greater than or equal to zero. For a relative record number, the RIDFLD value can be greater than or equal to 1.

See Identifying BDAM records and Identifying VSAM records for more information about defining the record identification field.

For VSAM, a full record id of X'FF's indicates that the browse is to be positioned at the end of the data set in preparation for a backwards browse using READPREV commands.

**RRN**

(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number. This option should only be used with files referencing relative record data sets.

**SYSID(systemname)**

specifies the name of the system to which the request is directed.

If you specify SYSID, and omit both RBA and RRN, you must also specify KEYLENGTH.

**XRBA**

specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. This option should be used when browsing records in an ESDS extended addressing data set.

If you specify XRBA on a STARTBR command, all other commands within the same browse must also specify XRBA.

KSDS data sets cannot be accessed by XRBA.

**Conditions**

**84 DISABLED**

RESP2 values:

**50**

A file is disabled. A file may be disabled because:
• It was initially defined as disabled and has not since been enabled.
• It has been disabled by a SET FILE or a CEMT SET FILE command.

Default action: terminate the task abnormally.

12 FILENOTFOUND
RESP2 values:
1
A file name referred to in the FILE option is not defined to CICS, and SYSID has not been specified.

Default action: terminate the task abnormally.

21 ILLOGIC
RESP2 values: (VSAM)
110
A VSAM error occurs that is not in one of the other CICS response categories.
See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:
20
Browse operations are not allowed according to the resource definition.

25
The KEYLENGTH and GENERIC options are specified, and the length defined for the data set to which this file refers in the KEYLENGTH option is greater than or equal to the length of a full key.

26
The KEYLENGTH option is specified (but the GENERIC option is not specified), and the specified length does not equal the length defined for the data set to which this file refers.

33
An attempt is made to start a browse with a REQID already in use for another browse.

42
The KEYLENGTH and GENERIC options are specified, and the length specified in the KEYLENGTH option is less than zero.

44
The specified file is a user-maintained or coupling facility data table and the command does not conform to the format of STARTBR for such a data table (for example, RBA is specified).

51
A STARTBR command to a KSDS file that is being accessed in RLS mode specifies the RBA keyword. RLS mode does not support RBA access to KSDS files.

59
XRBA was specified, but the data set is not an extended ESDS.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:
120
There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.
Default action: terminate the task abnormally.

**54 ISCINVREQ**
RESP2 values:

- **70**
  The remote system indicates a failure that does not correspond to a known condition.
  Default action: terminate the task abnormally.

**94 LOADING**
RESP2 values:

- **104**
  The request cannot be satisfied because it is issued against a data table that is still being loaded. The condition can be raised for one of the following reasons:
  - The STARTBR specifies a record that has not yet been loaded into a coupling facility data table. Records can be read while a CFDT is loading only if the requested key is within the range of those records already loaded.
  - The LOADING response can also be returned for a coupling facility data table that has failed during loading. For more information about what happens if the load for a coupling facility data table fails, see the description of the XDTLC global user exit in Data tables management exits (XDTAD, XDTLC).
  - The READ specifies the GENERIC or GTEQ options for a user-maintained data table. While a UMT is being loaded, you can issue start browse requests with precise keys only.

If your application programs encounter the LOADING condition persistently or too frequently, check that this is not caused by conflicting file definitions that reference the same data set.

Default action: terminate the task abnormally.

**70 NOTAUTH**
RESP2 values:

- **101**
  A resource security check has failed on FILE(filename).
  Default action: terminate the task abnormally.

**13 NOTFND**
RESP2 values:

- **80**
  An attempt to position on a record based on the search argument provided is unsuccessful.

- **81**
  XRBA was specified, and the value of RIDFLD was greater than 4 GB, but the data set is not an extended addressing ESDS.

NOTFND can also occur if a generic STARTBR with KEYLENGTH(0) specifies the EQUAL option.

Default action: terminate the task abnormally.

**19 NOTOPEN**
RESP2 values:

- **60**
  NOTOPEN (RESP2 60) is returned for one of the following reasons:
  - The requested file is CLOSED and UNENABLED. The CLOSED, UNENABLED state is reached after a CLOSE request has been received against an OPEN ENABLED file and the file is no longer in use. You can also make CLOSED, UNENABLED the initial state, by specifying STATUS(UNENABLED) and OPENTIME(FIRSTREF) on the FILE resource definition. (For BDAM files, you use the FILSTAT parameter of the DFHFCT TYPE=FILE macro.)
- The requested file is OPEN and in use by other transactions, but a CLOSE request against the file has been received.
- A STARTBR command is issued against a data set that is quiesced, or is being quiesced, as a result of a SET DSNAME QUIESCED or IMMQUIESCED command.
- The requested file is CLOSED and ENABLED, so CICS has tried to open the file as part of executing the request. This file open has failed for some reason. You should examine the console for messages that explain why the file open has been unsuccessful.

This condition does not occur if the request is made to a CLOSED, DISABLED file. In this case, the DISABLED condition occurs.

Default action: terminate the task abnormally.

53 SYSIDERR

RESP2 values:

130
The SYSID option specifies a name that is neither the local system nor a remote system that is defined by a CONNECTION or IPCONN definition. SYSIDERR also occurs when the link to the remote system is known but unavailable. In the case of an IPCONN, SYSIDERR occurs if the link is known but either the local or remote systems do not support file control commands that are function shipped using IP interconnectivity.

131
For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132
The start browse is operating on a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

STARTBROWSE ACTIVITY

Start a browse of the child activities of a BTS activity, or of the descendant activities of a process.

STARTBROWSE ACTIVITY

STARTBROWSE ACTIVITY

ACTIVITYID(DATA-VALUE)

PROCESS(DATA-VALUE) — PROCESSTYPE(DATA-VALUE)

BROWSETOKEN(DATA-AREA)

Conditions: ACTIVITYERR, NOTAUTH, PROCESSERR

Description

STARTBROWSE ACTIVITY initializes a browse token which can be used to identify either:

- Each child activity of a specified BTS parent activity
- Each descendant activity of a specified BTS process.

If you specify the ACTIVITYID option, the children (but not the grandchildren nor other descendants) of the specified activity can be browsed. This option takes as its argument an activity identifier. This
identifier may, for example, have been returned on a previous GETNEXT ACTIVITY command. If it was, the command starts a browse of child activities one level down the activity tree.

If you specify the PROCESS and PROCESSTYPE options, all the descendant activities of the specified process can be browsed. This type of browse is known as a flat browse. A flat browse is one which can return every descendant activity exactly once. A parent activity is always returned before its children. The value returned in the LEVEL option of a GETNEXT ACTIVITY command indicates the depth at which the activity lies in the process's activity-tree, with the root activity having a level of zero.

If you specify neither the ACTIVITYID nor the PROCESS and PROCESSTYPE options, the children of the current activity can be browsed.

Options

ACTIVITYID(data-value)
specifies the identifier (1–52 characters) of the activity whose child activities are to be browsed.

Typically, the activity identifier specified on this option has been returned on a previous GETNEXT ACTIVITY command (or, in the case of a root activity, on a GETNEXT PROCESS command). ACTIVITYID allows you to start a browse of child activities one level down the activity tree.

If you omit both this and the PROCESS option, the children of the current activity are browsed.

BROWSETOKEN(data-area)
specifies a fullword binary data area, into which CICS will place the browse token.

PROCESS(data-value)
specifies the name (1–36 characters) of the process whose descendant activities are to be browsed.

PROCESSTYPE(data-value)
specifies the process-type (1–8 characters) of the process named on the PROCESS option.

Conditions

109 ACTIVITYERR
RESP2 values:

1  The activity indicated by the ACTIVITYID option could not be found.

2  Because neither the ACTIVITYID nor the PROCESS options were specified, a browse of the children of the current activity was implied—but there is no current activity associated with the request.

19  The request timed out. It may be that another task using this activity-record has been prevented from ending.

29  The repository file is unavailable.

30  An input/output error has occurred on the repository file.

70 NOTAUTH
RESP2 values:

101  The user associated with the issuing task is not authorized to access the file whose data set contains the records to be browsed.

108 PROCESSERR
RESP2 values:

3  The process specified on the PROCESS option could not be found.
The process-type specified on the PROCESSTYPE option could not be found.

**STARTBROWSE CONTAINER (BTS)**

Start a browse of the containers associated with a BTS activity or process.

```
STARTBROWSE CONTAINER

STARTBROWSE CONTAINER

ACTIVITYID( data-value )

PROCESS( data-value )

PROCESSTYPE( data-value )

BROWSETOKEN( data-area )
```

**Conditions:** ACTIVITYERR, IOERR, NOTAUTH, PROCESSERR

This command is threadsafe.

**Description**

STARTBROWSE CONTAINER initializes a browse token which can be used to identify the name of each data-container associated with a specified BTS activity or process.

**Note:** The browse token should be used only by the program that issues the STARTBROWSE command.

If you do not specify the ACTIVITYID or the PROCESS option, CICS examines the context (channel or BTS) of the request. If a current channel exists, the command is assumed to be a STARTBROWSE CONTAINER (CHANNEL) command. If a current activity exists, its containers are browsed. If neither exists, an ACTIVITYERR 2 is raised: see the description of the ACTIVITYERR condition, below.

**Options**

**ACTIVITYID(data-value)**

specifies the identifier (1–52 characters) of the activity whose containers are to be browsed.

Typically, the identifier specified on this option has been returned on a previous GETNEXT ACTIVITY command.

**BROWSETOKEN(data-area)**

specifies a fullword binary data area, into which CICS will place the browse token.

**PROCESS(data-value)**

specifies the name (1–36 characters) of the process whose containers are to be browsed.

**Note:** The containers associated with a process (process containers) are globally available throughout the process. They are not the same as the root activity’s containers.

**PROCESSTYPE(data-value)**

specifies the process-type (1–8 characters) of the process named on the PROCESS option.

**Conditions**

**109 ACTIVITYERR**

RESP2 values:

1

The activity indicated by the ACTIVITYID option could not be found.
None of the ACTIVITYID, PROCESS, or CHANNEL options were specified and there is no current channel and no current activity associated with the request.

The repository file is unavailable.

An input/output error has occurred on the repository file.

**17 IOERR**

RESP2 values:

An input/output error has occurred on the repository file.

**70 NOTAUTH**

RESP2 values:

The user associated with the issuing task is not authorized to access this resource in the way requested.

**108 PROCESSERR**

RESP2 values:

The process specified on the PROCESS option could not be found.

The process-type specified on the PROCESSTYPE option could not be found.

The request timed out. It may be that another task using this process-record has been prevented from ending.

---

**STARTBROWSE CONTAINER (CHANNEL)**

Start a browse of the containers associated with a channel.

**STARTBROWSE CONTAINER**

\[ \text{STARTBROWSE} \quad \text{CONTAINER} \quad \text{BROWSETOKEN(} \quad \text{data-area} \quad \text{)} \quad \text{CHANNEL(} \quad \text{data-value} \quad \text{)} \quad \text{STARTBROWSE CONTAINER (BTS)} \quad \text{on page 548} \]

**Conditions:** CHANNELERR

This command is threadsafe.

**Description**

**STARTBROWSE CONTAINER (CHANNEL)** initializes a browse token that can be used to identify the name of each data-container associated with a specified channel.

**Note:** The browse token should be used only by the program that issues the **STARTBROWSE** command.

If you do not specify the CHANNEL option, CICS examines the channel of the request. If a current channel exists, its containers are browsed. If no current channel exists, the command is assumed to be a “STARTBROWSE CONTAINER (BTS)” on page 548 command.

The order in which containers are returned is undefined and might change. As best practice, applications should not rely on the order of returned containers. If you have existing applications that are written as such, see Upgrading applications for advice. For more best practices on using a channel in applications, see Designing a channel: Best practices.
Options

**BROWSETOKEN(data-area)**
Specifies a fullword binary data area, into which CICS will place the browse token.

**CHANNEL(data-value)**
Specifies the 1– to 16–character name of the channel whose containers are to be browsed. This must be the name of either the current channel or of a channel created by the program that issues the **STARTBROWSE CONTAINER** command. You can specify the channel name DFHTRANSACTION to use the transaction channel.

If this option is not specified, and the current context is channel, the current channel's containers are browsed.

Conditions

**122 CHANNELERR**
RESP2 values:

2
The channel specified on the CHANNEL option could not be found.

**STARTBROWSE EVENT**

Start a browse of events known to a BTS activity.

**STARTBROWSE EVENT**

\[\text{STARTBROWSE} \quad \text{EVENT} \quad \text{BROWSETOKEN}(\text{data-area})\]

\[\text{ACTIVITYID}(\text{data-value})\]

**Conditions:** ACTIVITYERR, INVREQ, IOERR, NOTAUTH

**Description**

STARTBROWSE EVENT initializes a browse token which can be used to identify each event (including each sub-event and system event) that is within the scope of a specified BTS activity. If you do not specify an activity, events within the scope of the current activity are browsed.

A browse started by STARTBROWSE EVENT returns:

- Atomic events. An atomic event returned on this command may or may not be included in the predicate of a composite event—that is, it may or may not be a sub-event.
- Composite events.
- System events.

**Options**

**ACTIVITYID(data-value)**
specifies the identifier (1–52 characters) of the activity whose events are to be browsed.

If you omit this option, events known to the current activity are browsed.

**BROWSETOKEN(data-area)**
specifies a fullword binary data area, into which CICS will place the browse token.

**Conditions**

**109 ACTIVITYERR**
RESP2 values:
1 The activity identifier specified on the ACTIVITYID option does not relate to any activity that is within the scope of this task.

29 The repository file is unavailable.

30 An input/output error has occurred on the repository file.

16 INVREQ
RESP2 values:

1 There is no current activity within the scope of this task.

17 IOERR
RESP2 values:

30 An input/output error has occurred on the repository file.

70 NOTAUTH
RESP2 values:

101 The user associated with the issuing task is not authorized to access this resource in the way requested.

**STARTBROWSE PROCESS**

Start a browse of all processes of a specified type within the CICS business transaction services system.

**STARTBROWSE PROCESS**

**STARTBROWSE** PROCESS PROCSSTYP(e( data-value)) BROWSETOKEN( data-area)

**Conditions:** IOERR, NOTAUTH, PROCESSERR

**Description**

STARTBROWSE PROCESS initializes a browse token which can be used to identify each process of a specified type within the CICS business transaction services system.

When you add a process to the BTS system, you use the PROCSSTYP(e option of the DEFINE PROCESS command to categorize it. You specify the name of a PROCSSTYP(e resource definition, which in turn names a CICS file definition that maps to a physical VSAM data set (the repository) on which details of the process and its constituent activities will be stored. (Records for multiple process-types can be stored on the same repository data set.)

The STARTBROWSE PROCESS command enables you to start a browse of processes of a specified type.

**Options**

**BROWSETOKEN(data-area)**

specifies a fullword binary data area, into which CICS will place the browse token.

**PROCSSTYP(e(data-value)**

specifies the process-type (1–8 characters) of the processes to be browsed.
Conditions

17 IOERR
RESP2 values:

29
   The repository file is unavailable.

30
   An input/output error has occurred on the repository file.

70 NOTAUTH
RESP2 values:

101
   The user associated with the issuing task is not authorized to access this resource in the way requested.

108 PROCESSERR
RESP2 values:

1
   No processes of this process-type could be found.

4
   The process-type specified on the PROCESSTYPE option could not be found.

13
   The request timed out. It may be that another task using this process-record has been prevented from ending.

STARTBROWSE TIMER

Start a browse of a BTS timer.

STARTBROWSE TIMER

STARTBROWSE TIMER

STARTBROWSE TIMER

STARTBROWSE TIMER

ACTIVITYID(data-value)
   Specifies the identifier (1–52 characters) of the activity with which the timer is associated.
   If this option is omitted, the current activity is assumed.

BROWSETOKEN(data-area)
   Specifies a fullword binary data area, into which CICS will place the browse token.

TIMER(data-value)
   Specifies the name (1–16 characters) of the timer.

Conditions: ACTIVITYERR, INVREQ, IOERR, NOTAUTH, TIMERERR

Description

STARTBROWSE TIMER initializes a browse token that can be used to identify a BTS timer.

Options

ACTIVITYID(data-value)

BROWSETOKEN(data-area)

TIMER(data-value)
The activity indicated by the ACTIVITYID option could not be found.

The repository file is unavailable.

An input/output error has occurred on the repository file.

**16 INVREQ**
RESP2 values:

1

The command was issued outside the scope of a currently—active activity.

**17 IOERR**
RESP2 values:

30

An input/output error has occurred on the repository file.

**70 NOTAUTH**
RESP2 values:

101

The user associated with the issuing task is not authorized to access this resource in the way requested.

**115 TIMERERR**
RESP2 values:

1

The timer specified on the TIMER option could not be found.

---

**SUSPEND**

Suspend a task.

---

**SUSPEND**

This command is threadsafe.

**Description**

SUSPEND relinquishes control to a task of higher or equal dispatching priority. Control is returned to the task issuing the command as soon as no other task of a higher or equal priority is ready to be processed.

**SUSPEND (BTS)**

Suspend a BTS process or activity.
**SUSPEND (BTS)**

**Conditions:** ACTIVITYBUSY, ACTIVITYERR, INVREQ, IOERR, LOCKED, PROCESSERR

**Description**

SUSPEND (BTS) prevents a BTS process or activity being reattached when events in its event pool are fired.

The only process a program can suspend is the one that it has acquired in the current unit of work.

The only activities a program can suspend are as follows:

- If it is running as the activation of an activity, its own child activities. It can suspend several of its child activities within the same unit of work.
- The activity it has acquired, by means of an ACQUIRE ACTIVITYID command, in the current unit of work.

To resume a suspended process or activity, a RESUME command must be issued.

**Options**

- **ACQACTIVITY** specifies that the activity to be suspended is the one that the current unit of work has acquired by means of an ACQUIRE ACTIVITYID command.
- **ACQPROCESS** specifies that the process that is currently acquired by the requestor is to be suspended.
- **ACTIVITY(data-value)** specifies the name (1–16 characters) of the child activity to be suspended.

**Conditions**

**107 ACTIVITYBUSY**

RESP2 values:

- **19** The request timed out. It may be that another task using this activity-record has been prevented from ending.

**109 ACTIVITYERR**

RESP2 values:

- **8** The activity named on the ACTIVITY option could not be found.

**16 INVREQ**

RESP2 values:

- **4** The ACTIVITY option was used to name a child activity, but the command was issued outside the scope of a currently-active activity.
- **14** The activity is in COMPLETE or CANCELLING mode, and therefore cannot be suspended.
- **15** The ACQPROCESS option was used, but the unit of work that issued the request has not acquired a process.
The ACQACTIVITY option was used, but the unit of work that issued the request has not acquired an activity.

**17 IOERR**
RESP2 values:

**29**
The repository file is unavailable.

**30**
An input/output error has occurred on the repository file.

**100 LOCKED**
The request cannot be performed because a retained lock exists against the relevant record on the repository file.

**108 PROCESSERR**
RESP2 values:

**5**
The process could not be found.

**SYNCPOINT**
Establish a syncpoint.

**SYNCPOINT**

**Conditions:** INVREQ, ROLLEDBACK

This command is threadsafe.

**Note:** The Recovery Manager processes this command on an open TCB wherever possible to minimize TCB switching. Syncpoint processing can take place on an open TCB for all resource types declared as threadsafe that were accessed in the unit of work. If resource types not declared as threadsafe were accessed in the unit of work, the Recovery Manager switches to the QR TCB for those resource types. A CICS resource type declares itself to the Recovery Manager as threadsafe if the EXEC CICS commands relating to the resource type are threadsafe.

**Description**

SYNCPOINT divides a task (usually a long-running one) into smaller units of work. It specifies that all changes to recoverable resources made by the task since its last syncpoint are to be committed.

**Note:** A failure occurring during the commit phase (phase 2) of syncpoint processing does not return an error condition and the transaction is not abnormally terminated. Subsequent units of work in the transaction are allowed to continue normally. See the Unit of work recovery and abend processing for further information.

**Conditions**

**16 INVREQ**
RESP2 values:

**200**
SYNCPOINT was in a program that is linked to from a remote system that has not specified the SYNCONRETURN option, or if it has been linked to locally and is defined with EXECUTIONSET=DPLSUBSET.
Default action: terminate the task abnormally.

82 ROLLEDBACK occurs when a SYNCPOINT command is driven into rollback by a remote system that is unable to commit the syncpoint. All changes made to recoverable resources in the current unit of work are backed out.

Default action: terminate the task abnormally.

**SYNCPOINT ROLLBACK**

Back out to last syncpoint.

**SYNCPOINT ROLLBACK**

➡️ SYNCPOINT — ROLLBACK ➡️

**Condition:** INVREQ

This command is threadsafe.

**Note:** The Recovery Manager processes this command on an open TCB wherever possible to minimize TCB switching. Syncpoint processing can take place on an open TCB for all resource types declared as threadsafe that were accessed in the unit of work. If resource types not declared as threadsafe were accessed in the unit of work, the Recovery Manager switches to the QR TCB for those resource types. A CICS resource type declares itself to the Recovery Manager as threadsafe if the EXEC CICS commands relating to the resource type are threadsafe.

**Options**

**ROLLBACK** specifies that all changes to recoverable resources made by the task since its last syncpoint are to be backed out.

This option can be used, for example, to tidy up in a HANDLE ABEND routine, or to revoke database changes after the application program finds irrecoverable errors in its input data.

If the unit of work updates remote recoverable resources using an MRO or APPC session, the ROLLBACK option is propagated to the back-end transaction.

When a distributed transaction processing conversation is in use, the remote application program has the EIB fields EIBSYNRB, EIBERR, and EIBERRCD set. For the conversation to continue, the remote application program should execute a SYNCPOINT ROLLBACK command.

When the mirror transaction is involved in the unit of work using an MRO or APPC session, the mirror honors the rollback request, revokes changes, and then terminates normally.

This option is not supported across LUTYPE6.1 z/OS Communications Server sessions to the mirror or back-end transactions. In these cases, the front-end transactions could be abended to cause the back-end transactions to back out.

**Note:** A failure occurring during the backout phase (phase 2) of syncpoint processing does not return an error condition and the transaction is not abnormally terminated. Subsequent units of work in the transaction are allowed to continue normally. See Unit of work recovery and abend processing for further information.

**Note:** A deferred EXEC CICS SEND request is canceled during a SYNCPOINT ROLLBACK command.
TEST EVENT

Test whether a BTS event has fired.

TEST EVENT

\texttt{TEST EVENT( event-name) --- FIRESTATUS( cvda) ---}

Conditions: EVENTERR, INVREQ

Description

TEST EVENT tests whether a named BTS event has occurred (fired).

Options

\texttt{EVENT(data-value)}

specifies the name (1–16 characters) of the event to test for completion.

\texttt{FIRESTATUS(cvda)}

FIRESTATUS returns the fire status of the event. CVDA values are:

\texttt{FIRED}

The event has fired.

\texttt{NOTFIRED}

The event has not fired.

Conditions

111 EVENTERR

RESP2 values:

\texttt{4}

The event specified on the EVENT option is not recognized by BTS.

16 INVREQ

RESP2 values:

\texttt{1}

The command was issued outside the scope of an activity.
TRANSFORM DATATOJSON

Use the TRANSFORM DATATOJSON command to convert application data to JSON.

```
TRANSFORM DATATOJSON
  CHANNEL( data-value )
  INCONTAINER( data-value )
  TRANSFORMER( name )
  OUTCONTAINER( data-value )
```

Conditions: CHANNELERR, CONTAINERERR, INVREQ, NOTFND

This command is threadsafe.

**Description**

The TRANSFORM DATATOJSON command transforms application data to JSON using mappings that are defined in the JSON binding. The JSON transformer resource is a bundle that defines where the JSON binding and the JSON schema are located.

**Options**

**CHANNEL (data-value)**

Specify the name of the channel used to pass the containers that hold the OUTCONTAINER and INCONTAINER data. The name of the channel must be 16 characters in length. If the channel name is less than 16 characters, you must pad the data value with trailing blanks. You can specify DFHTRANSACTION to use the transaction channel.

**INCONTAINER (data-value)**

Specify the name of the container that contains the application data to be converted. This container must be present on the channel. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks.

CICS reads from this container in BIT mode.

**OUTCONTAINER (data-value)**

Optionally specify the name of the container to contain the JSON output when the command completes. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks. If this option is omitted, DFHJSON-JSON is used.

Do not create the target container before you issue the command because one container is created and populated as part of the command itself. If the container does exist, it is deleted before the transformation takes place. CICS populates this container in CHAR mode.

**TRANSFORMER (name)**

Specify the 16-byte name of the JSON transformer resource bundle that CICS uses to transform the data to JSON. The resource defines the JSON binding and the JSON schema. The name of the JSON transformer resource must be 16 characters in length. If the resource name is less than 16 characters, you must pad the value with blanks.

This resource bundle must be installed and enabled for this command to work.

**Conditions**

**122 CHANNELERR**

RESP2 values:

1

The channel specified by the CHANNEL parameter is incorrect.
The channel specified by the CHANNEL parameter was not found.

110 CONTAINERERR
RESP2 values:

3 The container specified by the INCONTAINER parameter was not found.

16 INVREQ
RESP2 values:

1 The JSON transformer bundle resource is not enabled.

6 The application data cannot be converted. For more information, see the error message in the DFHJSON-ERRORMSG container.

8 The INCONTAINER container is not populated in BIT mode.

101 The user is not authorized to use the JSON transformer.

13 NOTFND
RESP2 values:

1 The JSON transformer bundle resource was not found.

TRANSFORM DATATOXML

Use the TRANSFORM DATATOXML command to convert application data to XML.

TRANSFORM DATATOXML

TRANSFORM DATATOXML  CHANNEL( data-value )  DATCONTAINER( data-value )

ELEMNAME( data-area )  ELEMNAMELEN( data-area )

ELEMSNS( data-area )  ELEMSNSLEN( data-area )

TYPENAME( data-area )  TYPENAMELEN( data-area )  TYPENS( data-area )  TYPENSLEN( data-area )

XMLCONTAINER( data-value )  XMLTRANSFORM( name )

Conditions: NOTFND, LENGERR, CHANNELERR, CONTAINERERR, INVREQ

This command is threadsafe.

Description

The TRANSFORM DATATOXML command transforms application data to XML using mappings that are defined in the XML binding. The XMLTRANSFORM resource defines where the XML binding and the XML schema are located.
Options

CHANNEL (data-value)
Specify the name of the channel used to pass the containers holding the XMLCONTAINER and DATCONTAINER data. The name of the channel must be 16 characters in length. If the channel name is less than 16 characters, you must pad the data value with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

DATCONTAINER (data-value)
Specify the name of the container that contains the application data for conversion. This container must be present on the channel. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks.

CICS reads from this container in BIT mode.

ELEMNAME (data-area)
Specify the name of an XML element. CICS returns the local name of the XML element that CICS generates.

ELEMNAMELEN (data-area)
Specify the fullword binary length of the XML element in the ELEMNAME option. The maximum value of ELEMNAMELEN is 255.

ELEMS (data-area)
Specify the namespace URI of the XML element that is returned in the ELEMNAME option.

ELEMNSLEN (data-area)
Specify the fullword binary length of the namespace in the ELEMNS option. The maximum value of ELEMNSLEN is 255.

TYPENAME (data-area)
Specify the xsi:type of the XML element that is returned in the ELEMNAME option.

TYPENAMELEN (data-area)
Specify the fullword binary length of the xsi:type that is returned in the TYPENAME option.

TYPENS (data-area)
Specify the namespace of the xsi:type attribute of the XML element that is returned in the ELEMNAME option.

TYPENSLEN (data-area)
Specify the fullword binary length of the namespace for the xsi:type attribute that is returned in the TYPENS option.

XMLCONTAINER (data-value)
Specify the name of the container that will contain the output XML once the command completes. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks.

You do not need to create the target container before issuing the command. The container is created and populated as part of the command itself. If the container does exist, and has been defined as a data type of BIT, it is deleted and redefined as type CHAR as part of the command.

XMLTRANSFORM (data-value)
Specify the name of the XMLTRANSFORM resource that CICS uses to transform the data to XML. The resource defines the XML binding and the XML schema. The name of the XMLTRANSFORM resource must be 32 characters. If the resource name is less than 32 characters, you must pad the value with blanks.

Conditions

13 NOTFND
RESP2 values:

1
The XMLTRANSFORM was not found.
122 CHANNELERR
RESP2 values:

1
The channel specified by the CHANNEL parameter is incorrect.

2
The channel specified by the CHANNEL parameter was not found.

110 CONTAINERERR
RESP2 values:

1
The container specified by the XMLCONTAINER parameter was not found.

2
The container specified by the NSCONTAINER parameter was not found.

3
The container specified by the DATCONTAINER parameter was not found.

22 LENGERR
RESP2 values:

1
The data in the container specified by the DATCONTAINER parameter is too short for the specified transformation type.

2
The ELEMNAME buffer is too small.

3
The ELEMNS buffer is too small.

4
The TYPENAME buffer is too small.

5
The TYPENS buffer is too small.

6
The ELEMNAMELEN value exceeds the maximum value of 255.

7
The ELEMNSLEN value exceeds the maximum value of 255.

16 INVREQ
RESP2 values:

1
The XMLTRANSFORM resource is not enabled.

2
The XMLCONTAINER container is empty.

3
The XML input data is invalid. For more information, see the error message in the DFH-XML-ERRORMSG container.

4
The XML input data cannot be converted. For more information, see the error message in the DFH-XML-ERRORMSG container.

5
The application data is invalid. For more information, see the error message in the DFH-XML-ERRORMSG container.

6
The application data cannot be converted. For more information, see the error message in the DFH-XML-ERRORMSG container.
The application data container is not populated in BIT mode.

The XMLTRANSFORM does not support the requested XML element.

The XMLTRANSFORM does not support the requested XML type.

There was a problem linking to a vendor-supplied transformer program.

The CHANNEL parameter was not supplied and is required.

The ELEMNAME parameter was not supplied and is required.

The ELEMNS parameter was not supplied and is required.

The DATCONTAINER parameter was not set and is required.

There is a runtime validation failure.

There is a container datatype error.

The user is not authorized to use the XMLTRANSFORM.

**TRANSFORM JSONTODATA**

Use the **TRANSFORM JSONTODATA** command to convert JSON to application data.

**TRANSFORM JSONTODATA**

```
<table>
<thead>
<tr>
<th>TRANSFORM JSONTODATA</th>
<th>CHANNEL( data-value )</th>
<th>INCONTAINER( data-value )</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTCONTAINER( data-value )</td>
<td>TRANSFORMER( name )</td>
<td></td>
</tr>
</tbody>
</table>
```

Conditions: CHANNELERR, CONTAINERERR, INVREQ, NOTFND

This command is threadsafe.

**Description**

The **TRANSFORM JSONTODATA** command transforms JSON to application data. The JSON transformer resource is a bundle that defines the location of the JSON binding and the JSON schema for transforming JSON to application data.

**Options**

**CHANNEL( data-value )**

Specify the name of the channel used to pass the containers that hold the OUTCONTAINER and INCONTAINER data. The name of the channel must be 16 characters in length. If the channel name is less than 16 characters, you must pad the data value with trailing blanks. You can specify DFHTRANSACTION to use the transaction channel.

**INCONTAINER( data-value )**

Specify the 16-byte name of the container that contains the JSON to be converted. This container must already exist and be populated in CHAR mode. If it is populated in BIT mode, CICS tries to determine the data encoding.
OUTCONTAINER(*data-value*)

Optionally specify the name of the output container to contain the converted data. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks. If this option is omitted, DFHJSON-DATA is used.

Do not create the target container before you issue the command because one container is created and populated as part of the command itself. If the container does exist, it is deleted before the transformation takes place. CICS populates this container in BIT mode.

TRANSFORMER(*name*)

Specify the 16-byte name of the JSON transformer resource bundle that CICS uses to transform the data to JSON. The resource defines the JSON binding and the JSON schema. The name of the JSON transformer resource must be 16 characters in length. If the resource name is less than 16 characters, you must pad the value with blanks.

Conditions

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>RESP2 Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>122</td>
<td>CHANNELERR</td>
<td>1: Channel specified by CHANNEL parameter is incorrect. 2: Channel specified by CHANNEL parameter was not found.</td>
</tr>
<tr>
<td>110</td>
<td>CONTAINERERR</td>
<td>1: Container specified by INCONTAINER parameter was not found.</td>
</tr>
<tr>
<td>16</td>
<td>INVREQ</td>
<td>1: JSON transformer bundle resource is not enabled. 4: Application data cannot be converted. For more information, see the error message in the DFHJSON-ERRORMSG container. 7: INCONTAINER container is not populated in CHAR mode.</td>
</tr>
<tr>
<td>101</td>
<td></td>
<td>The user is not authorized to use the JSON transformer.</td>
</tr>
<tr>
<td>13</td>
<td>NOTFND</td>
<td>1: JSON transformer bundle resource was not found.</td>
</tr>
</tbody>
</table>
Use the `TRANSFORM XMLTODATA` command to convert XML to application data.

**Options**

**CHANNEL**(data-value)**

Specify the 16-byte name of the channel used to pass the containers holding the XMLCONTAINER and DATCONTAINER data. The name of the channel must be 16 characters in length. If the channel name is less than 16 characters, you must pad the data value with trailing blanks. You can specify the channel name `DFHTRANSACTION` to use the transaction channel.

**DATCONTAINER**(data-value)**

Specify the 16-byte name of the output container that CICS populates with the converted data. The name of the container must be 16 characters in length. If the container name is less than 16 characters, you must pad the data value with trailing blanks.

CICS populates this container in BIT mode.

**ELEMNAME**(data-area)**

Specify an input value to return the name of an XML element. CICS populates the ELEMNAME option with the local name of the first XML element that it finds in the XMLCONTAINER container. The application must also specify an input value for the ELEMNAMELEN option that indicates the maximum length of the data area.

**Conditions:** CHANNELERR, CONTAINERERR, INVREQ, LENGERR, NOTFND,

This command is threadsafe.

**Description**

The `TRANSFORM XMLTODATA` command can either transform XML to application data or query XML to return information about the XML elements to the application program. The XMLTRANSFORM resource defines the location of the XML binding and schema for transforming the XML to application data. If you do not specify an XMLTRANSFORM resource on the command, CICS queries the XML instead.
**ELEMNAMELEN** *(data-area)*
Specify an input value to return the fullword binary length of the XML element in the ELEMNAME option. CICS updates the value of the ELEMNAMELEN option to indicate the real length of the element name that it finds.

**ELEMNS** *(data-area)*
Specify an input value to return the namespace URI of the XML element to which the ELEMNAME option refers. CICS populates this parameter with the namespace URI of the first XML element that it finds in the XMLCONTAINER container. The application must also specify an input value for the ELEMNSLEN option that indicates the maximum length of the data area.

**ELEMNSLEN** *(data-area)*
Specify an input value to return the length of the ELEMNS option. CICS updates the value of the ELEMNSLEN option to indicate the real length of the namespace URI.

**NSCONTAINER** *(data-value)*
Specify the 16-byte name of the container that contains a list of XML namespace declarations that are in scope. These XML namespace declarations can be referenced in the body of the XMLCONTAINER container. The container must be populated in CHAR mode.

**TYPENAME** *(data-area)*
Specify an input value to return the xsi:type of the XML element referred to by the ELEMNAME option. This parameter is populated by CICS with the local name of the xsi:type attribute of the first XML tag that is found in the XMLCONTAINER container. If the first XML tag does not have an xsi:type attribute, this parameter remains empty. If the application supplies a value for the TYPENAME option, this value overrides any element and type information in the supplied XML and CICS attempts the transformation using the type name supplied by this application (together with the associated TYPENS option).

**TYPENAMELEN** *(data-area)*
Specify an input value to return the length of the TYPENAME option.

**TYPENS** *(data-area)*
Specify an input value to return the namespace of the xsi:type attribute of the XML element to which the ELEMNAME option refers. This parameter is populated by CICS with the namespace of the xsi:type attribute of the first XML element that is found in the XMLCONTAINER container.

**TYPENSLEN** *(data-area)*
Specify an input value to return the length of the TYPENS option.

**XMLCONTAINER** *(data-value)*
Specify the 16-byte name of the input container that contains the XML to be converted. This container must already exist and be populated in CHAR mode. If it is populated in BIT mode, CICS tries to determine the data encoding.

**XMLTRANSFORM** *(name)*
Specify the 32-byte name of the XMLTRANSFORM resource that CICS uses to transform the data to XML. The resource defines the XML binding and the XML schema. The name of the XMLTRANSFORM resource must be 32 characters. If the resource name is less than 32 characters, you must pad the value with blanks.

If you do not specify the XMLTRANSFORM option, no data transformation occurs. Instead, the application queries the XML. CICS returns the XML element and type information in the ELEMNAME, ELEMNS, TYPENAME, and TYPENS options.

**Conditions**

13 NOTFND
RESP2 values:

1
The XMLTRANSFORM was not found.
**122 CHANNELERR**
RESP2 values:

1. The channel specified by the `CHANNEL` parameter is incorrect.
2. The channel specified by the `CHANNEL` parameter was not found.

**110 CONTAINERERR**
RESP2 values:

1. The container specified by the `XMLCONTAINER` parameter was not found.
2. The container specified by the `NSCONTAINER` parameter was not found.
3. The container specified by the `DATCONTAINER` parameter was not found.

**22 LENGERR**
RESP2 values:

1. The data in the container specified by the `DATCONTAINER` parameter is too short for the specified transformation type.
2. The `ELEMNAME` buffer is too small.
3. The `ELEMNS` buffer is too small.
4. The `TYPENAME` buffer is too small.
5. The `TYPENS` buffer is too small.

**16 INVREQ**
RESP2 values:

1. The XMLTRANSFORM resource is not enabled.
2. The `XMLCONTAINER` container is empty.
3. The XML input data is incorrect. For more information, see the error message in the DFH-XML-ERRORMSG container.
4. The XML input data cannot be converted. For more information, see the error message in the DFH-XML-ERRORMSG container.
5. The application data is incorrect. For more information, see the error message in the DFH-XML-ERRORMSG container.
6. The application data cannot be converted. For more information, see the error message in the DFH-XML-ERRORMSG container.
7. Either the XML container or the NAMESPACE container is not CHAR mode.
8. The XMLTRANSFORM does not support the requested XML element.
The XMLTRANSFORM does not support the requested XML type.

There was a problem linking to a vendor-supplied transformer program.

The CHANNEL parameter was not supplied and is required.

The ELEMNAME parameter was not supplied and is required.

The ELEMNS parameter was not supplied and is required.

The DATCONTAINER parameter was not set and is required.

There is a runtime validation failure.

There is a container datatype error.

The user is not authorized to use the XMLTRANSFORM.

**UNLOCK**

Release exclusive control.

```
UNLOCK FILE(filename) TOKEN(data-area) SYSID(systemname)
```

**Conditions:** DISABLED, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTOPEN, SYSIDERR

This command is threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:

- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or a BDAM file.

**Description**

**UNLOCK** releases the exclusive control established in response to a read command with the UPDATE option. You use it if you retrieve a record for update, and then decide that you do not want to update the record after all. However, for a recoverable file (other than one that refers to a coupling facility data table), the resource remains locked until either a **SYNCPOINT** command is executed or the task is terminated. The record can be in a data set, or in a CICS or user-maintained data table, on a local or a remote system.

If the **UNLOCK** command refers to a record in a recoverable coupling facility data table the record lock is released immediately provided that the task has not made any previous change to the same record (or added it as a new record) within the current unit of work. If changes have been made to the record, or it is...
a new record added to the table, it remains locked until either a **SYNCPOINT** command is executed or the task is terminated.

If an **UNLOCK** command does not have a token, an attempt is made to match it to either a read with the **UPDATE** option that also does not have a token, or to a **WRITE MASSINSERT** operation. If neither of these is found, no action is taken and a **NORMAL** response is returned.

Use this command to terminate a VSAM WRITE MASSINSERT operation against a VSAM file.

**Releasing locks when updating in browse**

The **UNLOCK** command does not release locks held against records locked in response to **READNEXT** or **READPREV** commands that specify the update option. It only invalidates the TOKEN value so that it cannot be used to complete an update.

**Options**

**FILE(filename)**

Specifies the name of the file to be released.

If **SYSID** is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

**SYSID(systemname)**

Specifies the name of the system to which the request is directed.

**TOKEN(data-area)**

Specifies as a fullword binary value a unique request identifier for an **UNLOCK**, used to associate it with a previous **READ**, **READNEXT**, or **READPREV** command that specified the **UPDATE** option.

If you specify **UNLOCK** with the **TOKEN** returned on a **READNEXT UPDATE** or **READPREV UPDATE** command for a file accessed in RLS mode, the **UNLOCK** command invalidates the **TOKEN** value so that it cannot be used to complete an update. It does not release the record lock.

**TOKEN** can be function shipped. However, if a request specifying **TOKEN** is function shipped to a CICS region that does not support this keyword, the request fails.

**Conditions**

**84 DISABLED**

**RESP2** values:

**50**

A file is disabled because it was initially defined as disabled and has not since been enabled.

A file is disabled by an **EXEC CICS SET FILE** or a **CEMT SET FILE** command.

This condition cannot occur when the **UNLOCK** follows a successful read for update or a VSAM **WRITE MASSINSERT**.

Default action: terminate the task abnormally.

**12 FILENOTFOUND**

**RESP2** values:

**1**

A file name referred to in the **FILE** option is not defined to CICS and **SYSID** has not been specified.

Default action: terminate the task abnormally.

**21 ILLOGIC**

**RESP2** values: (VSAM and CICS-maintained data tables)

**110**

A VSAM error occurs that is not in one of the other CICS response categories.
See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

16 INVREQ
RESP2 values:

47 An unlock includes a token whose value cannot be matched against any token in use for an existing READ with the UPDATE option.

48 An attempt is made to function-ship a request that includes a TOKEN keyword.

Default action: terminate the task abnormally.

17 IOERR
RESP2 values:

120 There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition.

For VSAM files, IOERR usually indicates a hardware error. Further information is available in the EXEC interface block; for details, see EIB fields.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

54 ISCINVREQ
RESP2 values:

70 The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101 A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

19 NOTOPEN
RESP2 values:

60 NOTOPEN (RESP2 60) is returned for one of the following reasons:

- The requested file is CLOSED and UNENABLED. The CLOSED, UNENABLED state is reached after a CLOSE request has been received against an OPEN ENABLED file and the file is no longer in use. You can also make CLOSED, UNENABLED the initial state, by specifying STATUS(UNENABLED) and OPENTIME(FIRSTREF) on the FILE resource definition. (For BDAM files, you use the FILSTAT parameter of the DFHFCT TYPE=FILE macro.)

- The requested file is OPEN and in use by other transactions, but a CLOSE request against the file has been received.

- An UNLOCK command is issued against a data set that is quiesced, or is being quiesced, as a result of a SET DSNAME QUIESCED or IMMQUIESCED command.

- The requested file is CLOSED and ENABLED, so CICS has tried to open the file as part of executing the request. This file open has failed for some reason. You should examine the console for messages that explain why the file open has been unsuccessful.
This condition does not occur if the request is made to a CLOSED, DISABLED file. In this case, the DISABLED condition occurs.

It also cannot occur when the UNLOCK follows a successful READ for update or a WRITE MASSINSERT operation.

Default action: terminate the task abnormally.

53 SYSIDERR

RESP2 values:

130

The SYSID option specifies a name that is neither the local CICS region nor a remote system defined to CICS by a CONNECTION definition. SYSIDERR also occurs when the link to the remote system is closed.

131

For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132

The UNLOCK is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Defining and starting a coupling facility data table server region for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

UPDATE COUNTER and UPDATE DCOUNTER

Update the current value of a named counter. Use COUNTER for fullword signed counters and DCOUNTER for doubleword unsigned counters.

**UPDATE COUNTER**

```plaintext
UPDATE COUNTER( name )
   VALUE( data-value )
   POOL( name )
   COMPAREMIN( data-value )
   COMPAREMAX( data-value )
   NOSUSPEND
```

**Conditions:** BUSY, INVREQ, SUPPRESSED

This command is threadsafe.

**UPDATE DCOUNTER**

```plaintext
UPDATE DCOUNTER( name )
   VALUE( data-area )
   POOL( name )
   COMPAREMIN( data-area )
   COMPAREMAX( data-area )
   NOSUSPEND
```

**Conditions:** BUSY, INVREQ, SUPPRESSED

This command is threadsafe.
These counter commands set a new current value for the named counter.

You can use the COMPAREMAX and COMPAREMIN options to set a new current value only if it falls within a specified range, or is above or below a specified value.

For information about specifying fullword and doubleword variables on these named counter commands, see “CICS command argument values” on page 3.

Options

**COMPAREMAX**(data-value)

Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), a value to compare with the current value of the named counter, and makes the result of the UPDATE command conditional on the comparison:

- If the current value to assign is less than, or equal to, the value specified for the COMPAREMAX parameter, the current value is reset and the response is normal.
- If the current value is greater than the specified value, CICS returns an exception condition.

Normally, the COMPAREMAX value is greater than the COMPAREMIN value and the current value must satisfy both comparisons (that is, it must be between the two values or equal to one of them).

You can specify a COMPAREMAX value that is less than the COMPAREMIN value. In this situation, the current value is considered to be in range if it satisfies either the COMPAREMIN or the COMPAREMAX comparison.

**COMPAREMIN**(data-value)

Specifies, as a fullword signed binary value (or doubleword unsigned binary value for DCOUNTER), a value to compare with the current value of the named counter, and makes the result of the UPDATE command conditional on the comparison:

- If the current value to assign is equal to, or greater than, the value specified for the COMPAREMIN parameter, the current value is reset and the response is normal.
- If the current value is less than the specified value, CICS returns an exception condition.

**Note:** You can specify a COMPAREMIN value that is greater than the COMPAREMAX value. See the COMPAREMAX parameter for the effect of this.

**COUNTER**(name)

Specifies the name of the named counter for which the current number is to be reset to the value specified on the value parameter. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**DCOUNTER**(name)

Specifies the name of the named counter for which the current number is to be reset to the value specified on the value parameter. The name can be up to 16 alphanumeric characters. If name is a variable that contains a name that is less than 16 characters, the name must be padded with trailing blanks.

**NOSUSPEND**

Specifies an immediate return to the application program during a coupling facility structure rebuild. If you omit the NOSUSPEND parameter, the request is retried until it is successful. If you specify NOSUSPEND, the request fails immediately, and CICS returns BUSY, RESP2=500.

**POOL**(poolname)

Specifies the name of the pool in which the named counter resides.

Valid characters for the pool selector string are A through Z, 0 through 9, $ @ # and _ (underscore). If name is a variable that contains a name that is less than 8 characters, the name must be padded with trailing blanks.
This parameter is optional. If you omit the name of the pool, a pool selector value of 8 blanks is assumed.

If there is no matching entry in the DFHNCOPT options table, CICS uses the name specified on the NCPLDFT system initialization parameter, which specifies the default named counter pool.

For information about generating a named counter options table using the DFHNC macro, see Named counter servers.

**VALUE**(data-value)

Specifies the new number to set as the current value for the named counter, using a fullword signed binary value for COUNTER and a doubleword unsigned value for DCOUNTER.

**Conditions**

**128 BUSY**

RESP2 values:

500

The NOSUSPEND option was specified on the command, and the coupling facility structure is not currently available during a rebuild.

Default action: terminate the task abnormally.

**16 INVREQ**

RESP2 values:

201

Named counter not found.

301

The server has reported an error code that is not understood by the named counter interface. Generally, this is not possible unless the interface load module, DFHNCIF, is at a lower maintenance or release level than the server itself.

303

An unexpected error, such as structure failure or loss of connectivity, has occurred on a macro used to access the coupling facility. Further information is in message DFHNC0441 in the application job log.

304

The pool selection parameter specified in the program cannot be resolved to a valid server name using the current options table.

305

The interface cannot establish a connection to the server for the selected named counter pool. Further information is in an AXM services message (AXMSCnnnn) in the application job log.

306

An abend occurred during server processing of a request. Further information is in a message in the application job log and the server job log.

308

The DFHNCOPT options table module, required to resolve a pool name, cannot be loaded.

309

During processing of the options table, the named counter interface encountered an unknown entry format. Either the options table is not correctly generated, or the DFHNCIF interface load module is not at the same release level as the options table.

310

An options table entry that matches the given pool name specified a user exit program, but the user exit program is not link-edited with the options table and cannot be loaded.

311

A response from the named counter server to the client region interface module, DFHNCIF, indicates that a system-managed rebuild is in progress but the EXEC CICS interface does not recognize the condition. This means that the CICS region is at CICS TS 2.1 or earlier.
The POOL parameter contains invalid characters or embedded spaces.

The COUNTER parameter contains invalid characters or embedded spaces.

The VALUE parameter is invalid. You cannot set the current value to less than the minimum value, or greater than the maximum value plus 1.

Default action: terminate the task abnormally.

**72 SUPPRESSED**

RESP2 values:

One of the following:

- The current value of the named counter is not within the range specified by the COMPAREMAX and COMPAREMIN parameters, when both are specified
- The current value of the named counter is greater than the COMPAREMAX parameter or less than the COMPAREMIN parameter, when only one option is specified.

Default action: terminate the task abnormally.

### VERIFY PASSWORD

Verify that a password matches the password recorded by an external security manager (ESM).

**VERIFY PASSWORD**

```plaintext
VERIFYPASSWORD( data-value ) — USERID( data-value )
GROUPID( data-value )

CHANGETIME( data-area ) — DAYSLEFT( data-area )

ESMREASON( data-area ) — ESMRESP( data-area )

EXPIRYTIME( data-area ) — INVALIDCOUNT( data-area )
LASTUSETIME( data-area )
```

**Conditions:** INVREQ, NOTAUTH, USERIDERR

This command is threadsafe.

**Description**

Use the **VERIFY PASSWORD** command to check that a password matches the password recorded by an ESM for a user ID. The command returns the values recorded by the ESM for the password. This process is called password verification. If your system uses password phrases in addition to or instead of standard passwords, use the **VERIFY PHRASE** command instead of the **VERIFY PASSWORD** command.

**Attention:** To ensure that passwords are not revealed in system or transaction dumps, clear the password or password phrase fields on the EXEC CICS commands that have a password or password phrase option as soon as possible after use.
If a **VERIFY PASSWORD** request is successful, do not infer that the user ID could also be used to sign on in the CICS region with the **EXEC CICS SIGNON** command. For example, a password verification request cannot identify the following problems:

- The user ID's connections to groups have been revoked.
- The user ID is not authorized to access the CICS address space (identified by the APPLID).
- The user ID is not authorized to use the terminal at which the user is signing on (identified by the TERMINAL class).

If you supply an incorrect password on the **VERIFY PASSWORD** request, the invalid attempt count is increased for the user ID. If you supply multiple incorrect passwords on successive **VERIFY PASSWORD** requests, the user ID may be revoked by the ESM. CICS issues message DFHXS1201 when you supply an incorrect password on a **VERIFY PASSWORD** request. When you supply a correct password following one or more invalid attempts, CICS issues message DFHXS1206, which includes a count of the invalid attempts.

Unlike the **EXEC CICS SIGNON** command, the **VERIFY PASSWORD** command does not depend upon the principal facility; therefore, it can be issued in non-terminal environments such as web applications.

CICS enforces a full verification request at the first time each day that a user ID is used to log on to the CICS region or is verified through a **VERIFY PASSWORD** command. The full verification request records the date and time of last access for the user ID, and writes user statistics. A full verification is also made if an incorrect password is entered, and in the next successful request. In other cases, the **VERIFY PASSWORD** uses a fastpath method to verify the password. For details of the SAF interfaces used, see CICS security control points.

The GROUPID option identifies a group that is to be included as part of the verification of the password. When the GROUPID option is used, if the **VERIFY PASSWORD** request is successful, do not infer that the group ID can also be used to sign on to the CICS region with the **EXEC CICS SIGNON** command.

**Note:** In the CHANGETIME, LASTUSETIME, and EXPIRYTIME options, the time value returned is in the same format as the ASKTIME command, that is, in ABSTIME units. For more information about the ABSTIME format, see ASKTIME. The data can be reformatted to a specified date and time format by using the FORMATTIME command.

### Options

**CHANGETIME**(data-area)

- Returns the date and time the password was last changed, in ABSTIME units.
- When the ESM is RACF, the time is shown as midnight.

**DAYSLEFT**(data-area)

- Returns the number of days from now until the password expires, in a halfword binary field. If the password is non-expiring, -1 is returned.

**ESMREASON**(data-area)

- Returns the reason code, in a fullword binary field, that CICS receives from the ESM.
- If the ESM is RACF, this field is the RACF reason code.
- The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values returned by this command in addition to checking the ESMRESP and ESMREASON values.

**ESMRESP**(data-area)

- Returns the response code, in a fullword binary field, that CICS receives from the ESM.
- If the ESM is RACF, this field is the RACF return code.
- The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values returned by this command in addition to checking the ESMRESP and ESMREASON values.
EXPIRYTIME(data-area)
Returns the date and time the password will expire, in ABSTIME units.
When the ESM is RACF, the time is shown as midnight.

GROUPID(data-value)
Specifies the 8-character group ID of the user whose password is to be checked.

INVALIDCOUNT(data-area)
Returns the number of times, in a halfword binary field, that an invalid password was entered for this user.

LASTUSETIME(data-area)
Returns the data and time this user ID was last accessed, in ABSTIME units.

PASSWORD(data-value)
Specifies the 8-character password that you want the ESM to check for the specified user ID. The other data is not returned if the password is not valid.
If the ESM does not allow mixed case passwords, the password is converted to uppercase.

USERID(data-value)
Specifies the 8-character user ID of the user whose password is to be checked.
The user ID supplied is converted to uppercase.

Conditions

16 INVREQ
RESP2 values:
13
There is an unknown return code in ESMRESP from the ESM.
18
The CICS ESM interface is not initialized.
29
The ESM is not responding.
32
The user ID field contains a blank character in an invalid position.
Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:
2
The supplied password is wrong. If the ESM is RACF, the revoke count maintained by RACF is incremented.
However, if ESM RESP = 24, the revoke count is not incremented.
3
A new password is required.
19
The user ID is revoked.
20
The user's connection to their default group has been revoked.
23
The value of GROUPID is not valid with the values of USERID and PASSWORD.

ESM RESP values:
24
The RACROUTE REQUEST=VERIFY(X) was failed by an ICHRIX01 installation exit routine.
Default action: terminate the task abnormally.

**69 USERIDERR**

RESP2 values:

8

The user ID is not known to the ESM.

Default action: terminate the task abnormally.

---

**VERIFY PHRASE**

Verify that a password or password phrase matches the password or password phrase recorded by an **external security manager (ESM)**.

**VERIFY PHRASE**

```
VERIFY PHRASE(data-area) PHRASELEN(data-value) USERID(data-value)
```

- GROUPID(data-value)
- CHANGETIME(data-area)
- DAYSLEFT(data-area)
- ESMREASON(data-area)
- ESMRESP(data-area)
- EXPIRYTIME(data-area)
- INVALIDCOUNT(data-area)
- LASTUSETIME(data-area)

**Conditions:** INVREQ, LENGERR, NOTAUTH, USERIDERR

This command is threadsafe.

**Description**

Use the **VERIFY PHRASE** command to check that a password or password phrase matches the password or password phrase recorded by an ESM for a user ID. The command returns the values recorded by the ESM for the password or password phrase. This process is called password verification.

**Attention:** To ensure that passwords are not revealed in system or transaction dumps, clear the password or password phrase fields on the EXEC CICS commands that have a password or password phrase option as soon as possible after use.

A user ID can have both a standard password and a password phrase. If the length of the phrase as specified by PHRASELEN is between 1 and 8 characters, it is treated as a standard password and the ESM checks that the PHRASE value matches the password recorded by the ESM for the user ID. If the length is between 9 and 100 characters, it is treated as a password phrase and the ESM checks that the PHRASE value matches the password phrase recorded for the user ID.

Although the expiry interval is the same for passwords and password phrases, because they are changed independently, there are separate values for the CHANGETIME and DAYSLEFT options. The values returned for these two parameters depend on whether a valid password or a password phrase is used in the **VERIFY PHRASE** command.

If a **VERIFY PHRASE** request is successful, do not infer that the user ID could also be used to sign on in the CICS region with the **EXEC CICS SIGNON** command. For example, a password verification request cannot identify the following problems:

- The user ID’s connections to groups have been revoked.
- The user ID is not authorized to access the CICS address space (identified by the APPLID).
The user ID is not authorized to use the terminal at which the user is signing on (identified by the TERMINAL class).

Unlike the EXEC CICS SIGNON command, the VERIFY PHRASE command does not depend upon the principal facility; therefore, it can be issued in non-terminal environments such as web applications. CICS enforces a full verification request at the first time each day that a user ID is used to log on to the CICS region or is verified through a VERIFY PASSWORD command. The full verification request records the date and time of last access for the user ID, and writes user statistics. A full verification is also made if an incorrect password is entered, and in the next successful request. In other cases, the VERIFY PASSWORD uses a fastpath method to verify the password. For details of the SAF interfaces used, see CICS security control points.

The GROUPID option identifies a group that is to be included as part of the verification of the password or password phrase. When the GROUPID option is used, if the VERIFY PHRASE request is successful, do not infer that the group ID can also be used to sign on to the CICS region with the EXEC CICS SIGNON command.

**Note:** In the CHANGETIME, LASTUSETIME, and EXPIRYTIME options, the time value returned is in the same format as the ASKTIME command, that is, in ABSTIME units. For more information about the ABSTIME format, see ASKTIME. The data can be reformatted to a specified date and time format by using the FORMATTIME command.

### Options

**CHANGETIME(data-area)**

Returns the date and time the password or password phrase was last changed, in ABSTIME units.

When the ESM is RACF, the time is shown as midnight.

**DAYSLEFT(data-area)**

Returns the number of days from now until the password or password phrase expires, in a halfword binary field. If the password or password phrase does not expire, a value of -1 is returned. If a user has a password or password phrase that does not expire, DAYSLEFT has no meaning and is shown as -1.

**ESMREASON(data-area)**

Returns the reason code, in a fullword binary field, that CICS receives from the ESM.

If the ESM is RACF, this field is the RACF reason code.

The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values returned by this command in addition to checking the ESMRESP and ESMREASON values.

**ESMRESP(data-area)**

Returns the response code, in a fullword binary field, that CICS receives from the ESM.

If the ESM is RACF, this field is the RACF return code.

The ESM does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values returned by this command in addition to checking the ESMRESP and ESMREASON values.

**EXPIRYTIME(data-area)**

Returns the date and time the password will expire, in ABSTIME units.

When the ESM is RACF, the time is shown as midnight. If a user has a password or password phrase that does not expire, EXPIRYTIME has no meaning and is shown as -1.

**GROUPID(data-value)**

Specifies the 8-character group ID of the user whose password phrase is to be checked.

**INVALIDCOUNT(data-area)**

Returns the number of times, in a halfword binary field, that an invalid password or password phrase was entered for this user.
LASTUSETIME(data-area)
  Returns the data and time this user ID was last accessed, in ABSTIME units.

PHRASE(data-area)
  Specifies a 1- to 8-character password or a 9- to 100-character password phrase required by the ESM. The other data is not returned if the phrase is not valid.
  If the ESM does not allow mixed case passwords, the 1- to 8-character password is converted to uppercase.

PHRASELEN(data-value)
  Specifies the length of the password or password phrase as a fullword binary value.

USERID(data-value)
  Specifies the user ID associated with the password or password phrase that to be checked.
  The user ID supplied is converted to uppercase.

Conditions

16 INVREQ
  RESP2 values:

  13
  The ESM has issued an unknown return code in ESMRESP.

  18
  The CICS ESM interface is not initialized.

  29
  The ESM is not responding.

  32
  The USERID field contains a blank character in an invalid position.
  Default action: terminate the task abnormally.

22 LENGERR
  RESP2 values:

  1
  PHRASELEN was out-of-range.

70 NOTAUTH
  RESP2 values:

  2
  The supplied password or password phrase is wrong. If the ESM is RACF, the revoke count maintained by RACF is incremented.
  However, if ESM RESP = 24, the revoke count is not incremented.

  3
  A new password or password phrase is required.

  19
  The user ID is revoked.

  20
  The user's connection to their default group has been revoked.

  23
  The value of GROUPID is not valid with the values of USERID and PHRASE.

  ESM RESP values:

  24
  The RACROUTE REQUEST=VERIFY(X) was failed by an ICHRRIX01 installation exit routine.
  Default action: terminate the task abnormally.
69 USERIDERR
    RESP2 values:
    8
        The user ID is not known to the ESM.
        Default action: terminate the task abnormally.

VERIFY TOKEN

Verify that a Kerberos token is valid, as determined by an external security manager, and optionally allow the caller to extract the RACF user ID that is associated with the principal in the Kerberos token.

VERIFY TOKEN

CONDITIONS: INVREQ, LENGERR, NOTAUTH

This command is threadsafe.

Description

Use the VERIFY TOKEN command to verify that a Kerberos token is valid, as determined by an external security manager. The command optionally returns the user ID of a Kerberos principal that is associated with the token. If the Kerberos token indicates mutual authentication is in use, the command returns a Kerberos output token.

The VERIFY TOKEN command uses the z/OS Security Server to verify that the token is a valid Kerberos token and that it can be used by the CICS region. If ISUSERID is specified, the user ID of the Kerberos principal for the token is obtained.

The VERIFY TOKEN command does not depend upon the principal facility. Therefore, it can be issued in non-terminal environments, for example to provide authentication for web services.

If the external security manager is RACF, the CICS region in which the command is run must be authorized by RACF so that the Kerberos principal for the token can be obtained. For more information, see Configuring RACF for Kerberos. This RACF authorization is required whether ISUSERID is specified.

If ENCRYPTKEY is specified, TOKEN must be a Kerberos token that is obtained from a Security Token Service that supports message confidentiality.

Note: When ENCRYPTKEY is specified, an external security manager such as RACF is called by using the z/OS Security Server RACF Callable Services > R_GenSec function code 2 GSS-API > Accept a GSS-API security context. This R_Gensec subfunction can be called once for a particular Kerberos token. As a
result the VERIFY TOKEN command with the ENCRYPTKEY option can be called once for a particular Kerberos token.

If TOKEN is a Kerberos token that indicates mutual authentication is in use, OUTTOKEN and OUTTOKENLEN options must be specified. In this case, OUTTOKEN returns an output token that is obtained from an external security manager such as z/OS Security Server, and OUTTOKENLEN returns the length of the output token. The calling program should return the output token to the system that supplied the Kerberos token, to allow authentication of the CICS region.

If TOKEN is a Kerberos token that does not indicate mutual authentication is in use, and if OUTTOKEN and OUTTOKENLEN are specified, the values returned in these options are zero.

For more information about a security failure of this command, see the error messages that are written to destination CSCS.

Options

DATATYPE
  Specifies the type of data in the TOKEN and OUTTOKEN options. CVDA values are as follows:
  
  BIT
    Bit data. This is the default value.
  
  BASE64
    Base64 encoded character data. The acceptable characters are A-Z a-z 0-9 + / =.
    If your character data is not in a US EBCDIC compatible character CCSID, you must convert it. You can use the CONTAINER API to do the conversion.

ENCRIPTKEY(data-area)
  This is the 4-byte token to be used to encrypt a returned PassTicket.

ESMREASON(data-area)
  Returns the reason code, in a fullword binary field, that CICS receives from the external security manager.
  If the external security manager is RACF, this field is the RACF reason code.
  If the external security manager is RACF, and ENCRYPTKEY is used, the possible values are the RACF reason codes that are supplied by the z/OS Security Server RACF Callable Services. See GSS-API Subfunction codes in z/OS Security Server RACF Callable Services. For an explanation of a reason code, see R_GenSec Return and reason codes in z/OS Integrated Security Services Network Authentication Service Administration.
  The external security manager does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values that are returned by this command in addition to checking the ESMRESP and ESMREASON values.

ESMRESP(data-area)
  Returns the response code, in a fullword binary field, that CICS receives from the external security manager.
  If the external security manager is RACF, this field is the RACF return code.
  The external security manager does not always return response and reason codes to CICS. Make sure that you check the EIBRESP and EIBRESP2 values that are returned by this command in addition to checking the ESMRESP and ESMREASON values.

ISUSERID(data-area)
  Returns an 8-byte user ID of a Kerberos principal that is associated with the token.

OUTTOKEN(ptr-ref)
  Returns the address in 31-bit user-key storage of the output token that is obtained from an external security manager.
OUTTOKENLEN(*data-area*)
   Returns the length of an output token, in a fullword binary field with a maximum value of 1024.

TOKEN(*data-area*)
   A token that is obtained from a Security Token Service (STS).

TOKENLEN(*data-value*)
   The length of the token as a fullword binary value.

TOKENTYPE(*cvda*)
   Indicates the type of token.
      KERBEROS
         The token is a Kerberos token.

Conditions

16 INVREQ
   RESP2 values are as follows:

   13  The external security manager issues an unknown return code in ESMRESP.
   18  The CICS external security manager interface is not initialized.
   29  The external security manager is not responding.
   31  A CVDA value other than KERBEROS was specified for TOKENTYPE.
   32  A CVDA value other than BASE64 or BIT was specified for DATATYPE.
   36  A data-type of BASE64 was specified, but TOKEN does not contain BASE64 data.
   40  The key distribution center is not started or is terminating.
   41  The key distribution center is not responding.
   47  The external security manager does not have a user ID defined for the Kerberos principal that is associated with the token.
   50  The data that is specified in TOKEN is not a Kerberos token.
   51  The Kerberos token does not support message confidentiality.
   52  The Kerberos token indicates mutual authentication is in use, but OUTTOKEN and OUTTOKENLEN have not been specified on the command.
   53  This CICS region is not configured to support Kerberos. To enable Kerberos support, specify the SIT parameter KERBEROSUSER with the user id associated with the service principal.

22 LENGERR
   RESP2 values are as follows:

   45  The length of the Kerberos token exceeds the maximum value of 65535.
   Default action: terminate the task abnormally.
**70 NOTAUTH**

RESP2 values are as follows:

**20**

The external security manager does not authorize the request to verify the token. See the error messages that are written to destination CSCS.

**42**

A Kerberos request cannot be completed because the associated ticket expired.

**43**

The authenticator expired.

Default action: terminate the task abnormally.

---

**WAIT CONVID (APPC)**

Ensure that accumulated data is transmitted on an APPC mapped conversation.

---

**WAIT CONVID (APPC)**

WAIT CONVID( name) STATE( cvda)

**Conditions:** INVREQ, NOTALLOC

**Description**

WAIT CONVID allows an application program to ensure that any accumulated application data and control indicators from a SEND command, or the results of a CONNECT PROCESS command, are transmitted to the partner transaction.

**Options**

**CONVID(name)**

identifies the conversation to which the command relates. The 4-character name identifies either the token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token representing the principal session (returned by a previously executed ASSIGN command).

**STATE(cvda)**

gets the state of the current conversation. The cvda values returned by CICS are:

- ALLOCATED
- CONFFREE
- CONFRECEIVE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE
- SYNCRECEIVE
SYNCSEND

Conditions

16 INVREQ
RESP2 values:

200
Command not supported for distributed program link when it refers to the principal facility.
also occurs (RESP2 not set) if the command is used on a conversation that is not using the EXEC CICS
interface or that is not a mapped conversation.
Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the CONVID value does not relate to a conversation that is owned by the application.
Default action: terminate the task abnormally.

WAIT EVENT

Wait for an event to occur.

WAIT EVENT

ECADDR(ptr-value)
NAME(name)

Condition: INVREQ

Note for dynamic transaction routing: Using this command could create inter-transaction affinities that
adversely affect the use of dynamic transaction routing. See the Affinity for more information about
transaction affinities.

Description

WAIT EVENT synchronizes a task with the completion of an event initiated by the same task or by another
task. The event would normally be the posting, at the expiration time, of a timer-event control area
provided in response to a POST command, as described in “POST” on page 327. The WAIT EVENT
command provides a method of directly relinquishing control to some other task until the event being
waited on is completed.

CICS includes the addresses of all ECBs passed by WAIT EVENT commands of current tasks in the
ECBLIST passed by CICS to the WAIT facility when it runs out of work.

A given ECB may not be waited on by more than one task at the same time. If this rule is not followed and
the ECBLIST passed by CICS on the MVS WAIT contains duplicate ECB addresses, MVS abends CICS.

Make sure that asynchronous cross memory post (posting completion of an event in an address space
other than the user's own) is not used more frequently than necessary. Large numbers of cross memory
posts can consume excessive amounts of system resources.

Options

ECADDR(ptr-value)
specifies the address of the timer-event control area that must be posted before task activity can be
resumed.
**NAME**(name)

specifies the symbolic name, 1–8 alphanumeric characters, that is returned in SUSPENDVALUE or HVALUE, when a task issues WAIT EVENT and is the subject of an INQUIRE TASK command or a CEMT INQ TASK.

**Conditions**

**16 INVREQ**

RESP2 values:

2

The ECB address is a null pointer, (X'00000000') or (X'FF000000').

3

The specified event control area address is above the 16MB line for programs executing in 24-bit mode.

4

The event control area address is not aligned on a fullword boundary.

6

The timer-event control area specified on a WAIT EVENT is in user-key task-lifetime storage, and is inaccessible to another transaction. This condition can only occur if the storage for the timer-event control area is obtained other than by a POST command, and is for posting as an ECB by some other task on completion of an event.

**Note:** CICS obtains storage for a timer-event control area in response to a POST command (and which can be used in conjunction with the WAIT EVENT command) from a shared subpool in user-key storage. This ensures that timer-event control areas are in shared storage and, when referenced by a subsequent WAIT EVENT command, do not fail with an INVREQ.

Default action: terminate the task abnormally.

**Examples**

The following example shows you how to suspend the processing of a task until the specified event control area is posted:

```
EXEC CICS WAIT EVENT ECADDR(PVALUE)
```

**WAIT EXTERNAL**

Synchronize events.

```
WAIT EXTERNAL — ECBLIST(ptr-value) — NUMEVENTS(data-value)
```

**Condition:** INVREQ

This command is threadsafe.
Note for dynamic transaction routing: Using this command could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

Description

WAIT EXTERNAL waits for events that post MVS-format ECBs. The command causes the issuing task to be suspended until one of the ECBs has been posted, that is until one of the events has occurred. The task can wait on one or more ECBs. If it waits on more than one, it is dispatchable as soon as one of the ECBs is posted. You must ensure that each ECB is cleared (set to binary zeros) no later than the earliest time it could be posted. CICS cannot do this for you. If you wait on an ECB that has been previously posted and not subsequently cleared, your task is not suspended and continues to run as though the WAIT EXTERNAL had not been issued.

CICS uses extended ECBs and the MVS POST exit mechanism for ECBs passed by WAIT EXTERNAL; therefore do not use WAIT EXTERNAL unless you are sure that the ECBs are not posted by any method other than the MVS POST service or the standard 'optimized post' logic using a compare-and-swap (CS) instruction. Note that the standard 'optimized post' logic is only applicable when the ECB is not waiting, that is when the wait bit X'80' is not on.

If a WAIT EXTERNAL ECB is hand posted, for example by another task moving a value into the ECB, unpredictable errors occur. If there is any possibility of hand posting, use the WAITCICS command. Use WAIT EXTERNAL whenever possible, because it usually has less overhead.

A given ECB must not be waited on by more than one task at the same time. If this rule is not followed, the second task to wait on the ECB gets an INVREQ condition.

Make sure that asynchronous cross memory post (posting completion of an event in an address space other than the user's own) is not used more frequently than necessary. Large numbers of cross memory posts can consume excessive amounts of system resources.

Options

**ECBLIST(ptr-value)**
- is a pointer to a list of addresses of MVS-format ECBs representing events. Both the ECBLIST and the ECBs can be above the 16MB line, that is they can be 31-bit addresses. Each ECB must be fullword aligned. Null (X'00000000' and X'FF000000') ECB addresses are ignored.

**NAME(name)**
- specifies the symbolic name, 1–8 alphanumeric characters, that is returned in SUSPENDVALUE or HVALUE, when a task issues WAIT EXTERNAL and is the subject of an INQ TASK command or a CEMT INQ TASK.

**NUMEVENTS(data-value)**
- is the number of such events, corresponding to the number of addresses in the ECBLIST. The field is fullword binary. When NUMEVENTS is specified as 1, ECBLIST must still be an address that points to a list containing just one ECB address.

**PURGEABILITY(cvda)**
- determines the outcome of:
  - An attempt to perform a deadlock timeout
  - A SET TASK PURGE|FORCEPURGE command
  - A CEMT SET TASK PURGE|FORCEPURGE

on the issuing task while it is waiting. The values passed to CICS are PURGEABLE (the default value), or NOTPURGEABLE. The outcome is:

<table>
<thead>
<tr>
<th>Function</th>
<th>PURGEABLE</th>
<th>NOTPURGEABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTIMOUT expired</td>
<td>Abend AEXY</td>
<td>No effect</td>
</tr>
<tr>
<td>Function</td>
<td>PURGEABLE</td>
<td>NOTPURGEABLE</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>CENT SET TASK PURGE EXEC CICS SET TASK PURGE</td>
<td>Abend AEXY</td>
<td>No effect</td>
</tr>
<tr>
<td>CENT SET TASK FORCEPURGE EXEC CICS SET TASK FORCEPURGE</td>
<td>Abend AEXY</td>
<td>Abend AEXY</td>
</tr>
</tbody>
</table>

See Recovery for transactions for information about DTIMOUT and SET TASK PURGE|FORCEPURGE.

**Conditions**

**16 INVREQ**

RESP2 values: CVDA values are:

1. An ECB is not valid, for example the ECB is not fullword aligned.
2. The ECB address is a null pointer, (X'00000000') or (X'FF000000').
3. NUMEVENTS is not a positive number.
4. PURGEABILITY is specified with an incorrect CVDA.
5. No valid ECBs have been found in the list, because either the ECBLIST address is not valid or all the ECB addresses are not valid.
   The ECBs specified are in read-only storage.
   Default action: terminate the task abnormally.

**Examples**

The following figure shows how to use the ECBLIST parameter to point to a list of ECB addresses that in turn point to individual ECBs. Note that the ECBLIST variable is a pointer pointing to the first address of the list.
**WAIT JOURNALNAME**

Synchronize the task with journal output being written to a system logger log stream.

**Conditions:** IOERR, JIDERR, NOTOPEN

This command is threadsafe.
Description

WAIT JOURNALNAME synchronizes the task with the output of one or more journal records that have been created but whose output has been deferred; that is, with asynchronous journal output requests.

The journal records may already be written out from the journal buffer area to the corresponding system logger log stream, or the system logger output operation may be in progress. If the log stream output operation has already been completed, control returns immediately to the requesting task; if not, the requesting task waits until the operation has been completed.

If the requesting program has made a succession of successful asynchronous output requests to the same journal, it is necessary to synchronize on only the last of these requests to ensure that all of the journal records have been output to the system logger log stream. This may be done either by issuing a stand-alone WAIT JOURNALNAME command, or by making the last output command itself synchronous (by specifying the WAIT option in the WRITE JOURNALNAME command).

Options

JOURNALNAME(data-value)
specifies a 1– to 8– character journal name identifying the journal on which the task is to wait for synchronization. The name must be a journal name known to CICS.

To issue the wait against the CICS system log, specify DFHLOG as the journal name.

To issue the wait against journals defined using the journal numbering convention, as in file resource definitions, specify the name as DFHJnn, where nn is the journal number in the range 1 to 99.

Note: Specifying DFHJ01 on this command refers to a user journal, not the system log.

REQID(data-value)
specifies, in a fullword binary variable, the token that refers to a journal record that has been created but possibly not yet written out. The token is returned by CICS from a previous WRITE JOURNALNAME command issued by this task.

If you do not specify REQID, the task is synchronized with the output of the current buffer for the journal specified by JOURNALNAME.

Conditions

17 IOERR
a journal record was not output because of an irrecoverable error condition returned by the system logger or by SMF.

Default action: If the log is the system log, CICS either quiesces or abends. If it is a general log, the task is terminated abnormally.

43 JIDERR
occurs in either of the following situations:

• The specified journal name is not known in the CICS region.
• The specified journal name refers to a DASD-only log stream to which a CICS region in another MVS image is currently connected.

Default action: terminate the task abnormally.

19 NOTOPEN
occurs in any of the following situations:

• The command cannot be satisfied because the user explicitly disabled the specified journal.
• A wait request is issued against a journal that has not previously been written to.
• This journal was defined using a model that maps it into the logstream used by the system log for this system. This error is not detected when trying to connect to the logstream. A definition for the journal will be installed and set to failed.

Default action: terminate the task abnormally.
70 NOTAUTH

A resource security check has failed on the JOURNALNAME (data-value).
Default action: terminate the task abnormally.

Examples

The following example shows how to request synchronization with the output of journal records written to a user journal named ‘ACCOUNTS’

EXEC CICS WAIT JOURNALNAME('ACCOUNTS')
REQID(RECTOKEN)

WAIT JOURNALNUM

Synchronize with journal output.

This command is supported for compatibility with earlier releases of CICS. It is superseded by the WAIT JOURNALNAME command, which you are recommended to use instead.

The syntax is the same as for WAIT JOURNALNAME except that JOURNALNUM specifies a numeric instead of a character value. The numeric value, nn, is in the range 01-99 and corresponds to journal name DFHJnn.

This command is threadsafe.

WAIT SIGNAL

Suspend task on a logical unit.

WAIT SIGNAL

Conditions: NOTALLOC, SIGNAL, TERMERR

Description

WAIT SIGNAL, for a principal facility only, suspends a task until a SIGNAL condition occurs. Some logical units can interrupt the normal flow of data to the application program by a SIGNAL data-flow control command to CICS, signaling an attention, that in turn causes the SIGNAL condition to occur.

The HANDLE CONDITION SIGNAL command causes a branch to a user routine when an attention is received.

The logical units for which you can code a WAIT SIGNAL command are:

- LUTYPE4
- LUTYPE6.1
- 3600 (3601)
- 3767 interactive
- 3770 batch
- 3790 full-function
Conditions

61 NOTALLOC
occurs if the principal facility of the task is not a terminal.
Default action: terminate the task abnormally.

24 SIGNAL
occurs when the data-flow control command has been received from the principal facility.
EIBSIG is always set when an inbound signal is received.
Default action: ignore the condition.

81 TERMERR
occurs for a terminal-related error.
A CANCEL TASK request by a user node error program (NEP) may cause this condition if the task has
an outstanding terminal control request active when the node abnormal condition program (CSNE)
handles the session error.
Default action: terminate the task abnormally with abend code ATNI.

WAIT TERMINAL

Ensure terminal operation has completed.

WAIT TERMINAL

\[
\text{WAIT TERMINAL} \quad \text{CONVID}(\text{name}) \quad \text{SESSION}(\text{name})
\]

Conditions: EOC, INVREQ, NOTALLOC, SIGNAL, TERMERR

Description

WAIT TERMINAL ensures that terminal operation has completed.

Options

CONVID(name)
identifies the conversation to which the command relates. The 4-character name identifies either the
token returned by a previously executed ALLOCATE command in EIBRSRCE in the EIB, or the token
representing the principal session (returned by a previously executed ASSIGN command).

SESSION(name)
specifies the symbolic identifier (1–4 characters) of a session TCTTE. This option specifies the
alternate facility to be used. If both this option and CONVID are omitted, the principal facility for the
task is used.

Conditions

06 EOC
occurs when a request/response unit (RU) is received with end-of-chain-indicator set. Field EIBEOC
also indicates this condition.
Default action: ignore the condition.
16 INVREQ
RESP2 values:

200
A distributed program link server application specified the function-shipping session (its principal facility) on the CONVID option.

Default action: terminate the task abnormally.

61 NOTALLOC
occurs if the facility specified in the command is not owned by the application.

Default action: terminate the task abnormally.

24 SIGNAL
occurs when an inbound SIGNAL data-flow control command is received from a logical unit or session. EIBSIG is always set when an inbound signal is received.

Default action: ignore the condition.

81 TERMERR
occurs for a terminal-related error.

A CANCEL TASK request by a user node error program (NEP) can cause this condition if the task has an outstanding terminal control request active when the node abnormal condition program handles the session error.

Default action: terminate the task abnormally with abend code ATNI.

**WAITCICS**

Synchronize events.

**WAITCICS**

```plaintext
WAITCICS — ECBLIST( ptr-value ) — NUMEVENTS( data-value ) — PURGEABLE — PURGEABILITY( cvda ) — NOTPURGEABLE

NAME( name )
```

Condition: INVREQ

**Note for dynamic transaction routing:** Using this command could create inter-transaction affinities that adversely affect the use of dynamic transaction routing. See Affinity for more information about transaction affinities.

**Description**

WAITCICS waits for events that post MVS-format ECBs. The command causes the issuing task to be suspended until one of the ECBs has been posted, that is until one of the events has occurred. The task can wait on one or more ECBs. If it waits on more than one, it is dispatchable as soon as one of the ECBs is posted. You must ensure that each ECB is cleared, set to binary zeros, no later than the earliest time it could be posted. CICS cannot do this for you. If you wait on an ECB that has been previously posted and not subsequently cleared, your task is not suspended and continues to run as though the WAITCICS had not been issued.

CICS includes the addresses of all ECBs passed by WAITCICS commands of current tasks in the ECBLIST passed by CICS to the MVS WAIT facility when it runs out of work. Such ECBs can be posted using the
MVS POST facility or by hand posting. Hand posting could, for example, be done by moving an appropriate value into the ECB. If hand posting is definitely not going to be used, it is preferable to use WAIT EXTERNAL.

A given ECB may not be waited on by more than one task at the same time. If this rule is not followed and the ECBLIST passed by CICS on the MVS WAIT contains duplicate ECB addresses, MVS abends CICS.

Options

**ECBLIST**(ptr-value)

is a pointer to a list of addresses of MVS-format ECBs representing events. Both the ECBLIST and the ECBs can be above the 16MB line, that is they can be 31-bit addresses. Each ECB must be fullword aligned. Null (X'00000000' and X'FF000000') ECB addresses are ignored.

**NAME**(name)

specifies the symbolic name, 1–8 alphanumeric characters, as the reason for the wait. The value you specify is returned in the SUSPENDVALUE or HVALUE option respectively of the EXEC CICS INQ TASK or CEMT INQ TASK commands.

**NUMEVENTS**(data-value)

is the number of such events, corresponding to the number of addresses in the ECBLIST. The field is fullword binary. When NUMEVENTS is specified as one, ECBLIST must still be an address that points to a list containing just one ECB address.

**PURGEABILITY**(cvda)

causes the issuing task to be suspended until one of the ECBs has been posted; that is, until one of the events has occurred. The values passed to CICS are PURGEABLE (the default value), or NOTPURGEABLE. The field is fullword binary. If while this task is waiting another function attempts to purge it, the result is as follows:

<table>
<thead>
<tr>
<th>Function</th>
<th>PURGEABLE</th>
<th>NOTPURGEABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTIMOUT expired</td>
<td>Abend AEXY</td>
<td>No effect</td>
</tr>
<tr>
<td>CEMT SET TASK PURGE</td>
<td>Abend AEXY</td>
<td>No effect</td>
</tr>
<tr>
<td>EXEC CICS SET TASK PURGE</td>
<td>Abend AEXY</td>
<td>No effect</td>
</tr>
<tr>
<td>CEMT SET TASK FORCEPURGE</td>
<td>Abend AEXY</td>
<td>Abend AEXY</td>
</tr>
<tr>
<td>EXEC CICS SET TASK FORCEPURGE</td>
<td>Abend AEXY</td>
<td>Abend AEXY</td>
</tr>
</tbody>
</table>

See Recovery for transactions for information about DTIMOUT and SET TASK for information about SET TASK PURGE|FORCEPURGE.

Conditions

**16 INVREQ**

RESP2 values:

1. An ECB is not valid, for example the ECB is not fullword aligned.

3. NUMEVENTS is not a positive number.

4. PURGEABILITY is specified with an incorrect CVDA.
No valid ECBs have been found in the list, because either the ECBLIST address is not valid, or all the ECB addresses are not valid.

The ECBs specified are in read-only storage.

Default action: terminate the task abnormally.

**Examples**

The following figure shows how to use the ECBLIST parameter to point to a list of ECB addresses that in turn point to individual ECBs. Note that the ECBLIST variable is a pointer pointing to the first address of the list.

```plaintext
DCL
  ECB1      FIXED BIN(31), /* actual ecb */
  ECB2      FIXED BIN(31), /* actual ecb */
  ECB3      FIXED BIN(31); /* actual ecb */
DCL     /* list of ecb addresses */
  1 ECB_ADDR_LIST, PTR;
DCL     /* ptr to each addr list */
  PTR_ECB_ADDR_LIST  PTR;
ECB_ADDR(1) = ADDR(ECB1);
ECB_ADDR(2) = ADDR(ECB2);
ECB_ADDR(3) = ADDR(ECB3); /* set up pointer */
PTR_ECB_ADDR_LIST = ADDR(ECB_ADDR_LIST);
/* PTR_ECB_ADDR_LIST = ADDR(ECB_ADDR(1)); */
(alternative) */
EXEC CICS WAITCICS
  ECBLIST(PTR_ECB_ADDR_LIST)
  NUMEVENTS(3)
  PURGEABLE
```

*Figure 4. ECBLIST option, EXEC CICS WAITCICS*
WEB CLOSE

Completes the application's use of a connection to a server for CICS as an HTTP client.

WEB CLOSE

➤➤ WEB — CLOSE — SESSTOKEN( data-value ) ➤➤

Conditions: NOTOPEN

This command is threadsafe.

Description

WEB CLOSE notifies CICS that the application program has finished using a client HTTP connection to a server. The session token represents the application's use of the connection. After the application issues the WEB CLOSE command, the specified session token is no longer valid for use. The session token is required to receive a response from the server and to read the HTTP headers for the response, so the WEB CLOSE command should not be issued until all interaction with the server and with the response that it sends is complete.

When the application program finishes using a client HTTP connection, CICS might or might not close the connection:

• If the connection is still open when you issue the WEB CLOSE command, and it was opened using a URIMAP resource that specified connection pooling, CICS does not close the connection. CICS checks the state of the connection and places it in a pool for reuse.

• If the connection is not suitable for connection pooling when you issue the WEB CLOSE command, because the server or your application program has previously made a request to close the connection, or it was not opened using a suitable URIMAP resource, or it is not in a good state, CICS closes the connection and does not place it in a pool.

• If you do not issue the WEB CLOSE command, CICS closes the connection at end of task. To enable connection pooling, your application must issue the WEB CLOSE command.

When you issue the WEB CLOSE command, CICS does not request the server to close the connection. If you are not using connection pooling, and CICS will close the connection after the application program has finished, it is good practice to request the server to close the connection by specifying the CLOSESTATUS(CLOSE) option on the final WEB SEND or WEB CONVERSE command. When this option is specified, CICS writes a Connection: close header on the request, or, for a server at HTTP/1.0 level, omits the Connection: Keep-Alive header. The information in the headers means that the server can close its connection immediately after sending the final response, rather than waiting for any further requests before timing out. If you are using connection pooling, do not specify the CLOSESTATUS(CLOSE) option, because closed connections cannot be pooled.

The connection might be closed at the request of the server before the WEB CLOSE command is issued. If you need to test whether the server has requested closure of the connection, use the WEB READ HTTPHEADER command to look for the Connection: close header in the last message from the server.

If the server does request closure of the connection, the data relating to that connection is still kept available within CICS until the WEB CLOSE command is issued. The available data includes the most recent message received from the server, and the parameters used to open the connection (such as the scheme and the host name of the server). When a server has closed the connection, the application program cannot perform the following tasks:

• Send further requests on that connection, using the WEB SEND or WEB CONVERSE commands.

• Write HTTP headers, using the WEB WRITE HTTPHEADER command.

However, the application program can still perform the following tasks:

• Receive a response, using the WEB RECEIVE command.
• Examine HTTP headers, using the WEB READ HTTPHEADER and HTTP header browsing commands.
• Extract connection information, using the WEB EXTRACT command.

When the WEB CLOSE command is issued, the data associated with the application's use of the connection is cleared.

Options

**SESSTOKEN(data-value)**

Specifies the session token, an 8-byte binary value that uniquely identifies an application's use of a client HTTP connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. When you issue the WEB CLOSE command for the connection identified by the session token, CICS clears the data associated with the application's use of the connection, and makes the session token invalid for further use by the application program. Session tokens explains the use of the session token.

Conditions

**19 NOTOPEN**

RESP2 values are:

27

Invalid session token.

**144**

One or more of the Web command parameters is invalid.
WEB CONVERSE

Send an HTTP request by CICS as an HTTP client, and receive a response from the server, using a single command. WEB CONVERSE is an alternative to the WEB SEND and WEB RECEIVE commands for CICS as an HTTP client.

WEB CONVERSE

\[\text{WEB} \quad \text{CONVERSE} \quad \text{SESTOKEN}(\ \text{data-value}) \quad \text{GET}\]

\[\text{PATH}(\ \text{data-area}) \quad \text{PATHLENGTH}(\ \text{data-value})\]

\[\text{URIMAP}(\ \text{data-value})\]

\[\text{METHOD}(\ \text{cvda})\]

\[\text{GET} \quad \text{HEAD} \quad \text{POST} \quad \text{PUT} \quad \text{TRACE} \quad \text{OPTIONS} \quad \text{DELETE}\]

\[\text{MEDIATYPE}(\ \text{data-area})\]

\[\text{QUERYSTRING}(\ \text{data-area}) \quad \text{QUERYSTRLEN}(\ \text{data-value})\]

\[\text{Body}\]

\[\text{ACTION}(\ \text{cvda}) \quad \text{EXPECT}\]

\[\text{NOCLOSE}\]

\[\text{CLOSE} \quad \text{CLOSESTATUS}(\ \text{cvda})\]

\[\text{Credentials}\]

\[\text{INTO}(\ \text{data-area})\]

\[\text{SET}(\ \text{ptr-ref})\]

\[\text{TOCONTAINER}(\ \text{data-value}) \quad \text{TOCHANNEL}(\ \text{data-value})\]

\[\text{TOLENGTH}(\ \text{data-area}) \quad \text{MAXLENGTH}(\ \text{data-value}) \quad \text{NOTRUNCATE}\]

\[\text{STATUSCODE}(\ \text{data-area})\]

\[\text{STATUSTEXT}(\ \text{data-area}) \quad \text{STATUSLEN}(\ \text{data-value})\]

\[\text{Translation}\]

\[\text{BODYCHARSET}(\ \text{data-area})\]
WEB CONVERSE enables an application program to compose and send an HTTP client request, and receive a response from the server. A session token must be included on this command. For guidance on the correct use of the WEB CONVERSE command, see Making HTTP requests through CICS as an HTTP client.

- **The HTTP client request** is made using a connection that has been opened using the WEB OPEN command. The WEB CONVERSE command can be used in place of the WEB SEND command to compose and send the request.

- **The response from the server** is received by CICS Web support and passed to the application. The WEB CONVERSE command can be used in place of the WEB RECEIVE command to make the application program wait for and receive the HTTP response. The headers for the HTTP response can be examined separately using the WEB READ HTTPHEADER command or the HTTP header browsing commands.

**Note:** The RTIMOUT value specified for the transaction that starts the user application indicates the time that the application is prepared to wait to receive the incoming message. (RTIMOUT is specified on the transaction profile definition). When the period specified by RTIMOUT expires, CICS returns a TIMEDOUT response to the application. An RTIMOUT value of zero means that the application is prepared to wait indefinitely. The default setting for RTIMOUT on transaction profile definitions is zero,
so it is important to check and change that setting for applications that are making HTTP client requests.

The request can also time out when sending a message to the server. In this case, the deadlock timeout interval specified in the DTIMOUT attribute of the TRANSACTION definition applies, and CICS returns a TIMEDOUT response to the application.

The WEB CONVERSE command does not support chunked transfer-coding for the request, because this requires a sequence of send actions, and the WEB CONVERSE command provides a single send action. If you want to send a chunked message, use the WEB SEND command to send it, and the WEB RECEIVE command to receive it. If the server sends a chunked response, this can be received using the WEB CONVERSE command.

The WEB CONVERSE command cannot be used after the connection to the server has been closed. If you need to test whether the server has requested termination of the connection, use the WEB READ HTTPHEADER command to look for the Connection: close header in the last message from the server.

The WEB CONVERSE command performs a single send action and a single receive action, and it is designed to be used in place of a WEB SEND command and a WEB RECEIVE command. You may use WEB SEND and WEB RECEIVE commands, and WEB CONVERSE commands, in relation to the same connection (that is, with the same SESSTOKEN). However, if you are pipelining requests (that is, sending a sequence of requests without waiting for a response), you must not follow a WEB SEND command with a WEB CONVERSE command. CICS checks at program run time that each WEB SEND command has a subsequent WEB RECEIVE command before any WEB CONVERSE command is issued. For example, if you use the WEB SEND command three times to issue a pipelined sequence of requests, you must use the WEB RECEIVE command three times to receive the responses for those requests, before you can use the WEB CONVERSE command.

HTTP headers are normally received, processed, held, and sent using 64-bit (above-the-bar) storage. When the body of the client HTTP request is received into, or sent from, a container, the container data is received, processed, and sent using 64-bit storage. When the HTTP body is received into an application buffer and CICS must hold that data before it can be returned to the application, CICS holds the data in 64-bit buffers. When the HTTP body is sent from an application buffer and CICS needs to convert the data, that data is converted in, and sent from, a 64-bit buffer. However, when a document is sent, the document is processed in 31-bit (above-the-line) storage.

Options for sending the HTTP client request

**ACTION(cvda)**

This option is used to specify how the message should be sent out. The CVDA value is as follows:

**EXPECT**

Makes CICS send an Expect header along with the request line and headers for the request, and await a 100-Continue response before sending the message body to the server. If a response other than 100-Continue is received, CICS informs the application program and cancels the send. If no response is received after a period of waiting, CICS sends the message body anyway.

The Expect header is not supported by servers below HTTP/1.1. If CICS does not yet know the HTTP version of the server, CICS makes an additional request before sending your request, in order to determine the HTTP version of the server. If the Expect header would not be suitable, CICS sends your request without it.

This option must only be used if your request has a message body.

**AUTHENTICATE(cvda)**

This option allows you to specify user authentication details (credentials), to control access to restricted data. CVDA values are as follows:

**NONE**

Specifies that there are no restrictions on accessing this data, therefore no credentials are required. This is the default value for AUTHENTICATE.
BASICAUTH
Specifies that HTTP Basic Authentication credentials are required for this session. These details can be supplied within the command or by using the XWBAUTH global user exit.

CHANNEL(data-value)
Specifies the name of the channel to which the container belongs. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

If the CONTAINER option is specified, CHANNEL is optional.

If the CHANNEL option is not specified, CICS assumes the current channel.

CHARACTERSET(data-value)
Specifies a character set into which CICS translates the entity body of the item sent by the command before sending. The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation. CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

To allow code page conversion of the entity body, the CLIENTCONV option must be set (or allowed to default) to CLICONVERT. If the NOCLICONVERT option is specified, code page conversion will not take place. If conversion is requested and CHARACTERSET is not specified, ISO-8859-1 is used as the default character set.

CLOSESTATUS(cvda)
Specifies whether or not a Connection header with the "close" connection option (Connection: close) should be included on the request. The default is that the header is not included. CVDA values are as follows:

CLOSE
Makes CICS write a Connection: close header for this request. The header notifies the server that the connection should be closed after the server has sent its response to the request. (For a server at HTTP/1.0 level, CICS achieves the same effect by omitting the Connection: Keep-Alive header.) Do not specify this option if you implemented connection pooling in the URIMAP resource for this connection, because a closed connection cannot be pooled for reuse. Only specify this option if this is your final request to the server and you are not using connection pooling.

NOCLOSE
Means that the Connection: close header is not used for this request. If the server is identified as HTTP/1.0, CICS sends a Connection header with the "Keep-Alive" connection option (Connection: Keep-Alive), to notify that a persistent connection is intended.

CONTAINER(data-value)
Specifies the name of the container where the HTTP body is held, before it is sent to the server. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is shorter than 16 characters, it is padded with trailing blanks.

When CONTAINER is specified, CICS stores the HTTP body in, and sends it from, 64-bit storage.

DOCSTATUS(cvda)
Indicates whether the document should be deleted or not deleted during processing of the WEB CONVERSE command. CVDA values are as follows:

DOCDDELETE
CICS deletes the document after the document contents are saved for sending. Storage allocated for the document is released immediately. If you make subsequent requests for the document, these generate a TOKENERR response.

NODOCDELETE
CICS does not delete the document during processing of the WEB CONVERSE command. This is the default value for DOCSTATUS.
DOCTOKEN\textit{(data-value)}
Specifies the 16-byte binary token of a document to be sent as the message body. The document must be created using the CICS Document interface, using the \texttt{EXEC CICS DOCUMENT CREATE}, \texttt{INSERT}, and \texttt{SET} commands. The \texttt{FROM} option provides an alternative way to create a message body.

When DOCTOKEN is specified, the document is processed in 31-bit storage.

FROM\textit{(data-area)}
Specifies a buffer of data which holds the message body. The message body is built by the application program. When you specify the FROM option, use the FROMLENGTH option to specify the length of the buffer of data. The DOCTOKEN option provides an alternative way to create the message body.

There is no set maximum limit for the size of the data area, but its size is limited in practice by storage considerations. Producing an entity body for an HTTP message has more information about storage considerations.

When FROM is specified, if CICS needs to copy or convert the HTTP body before it is sent, the body is copied or converted in, and sent from, 64-bit storage.

FROMLENGTH\textit{(data-area)}
Specifies the length, as a fullword binary value, of the buffer of data supplied on the FROM option (the message body). It is important to state this value correctly, because an incorrect data length can cause problems for the recipient of the message.

MEDIATYPE\textit{(data-area)}
Specifies the data content of any message body provided, for example \texttt{text/xml}. You must specify a 56-byte area for MEDIATYPE. The media type is up to 56 alphanumeric characters, including appropriate punctuation, but not spaces. For more information on media types, see IANA media types and character sets. CICS checks that the format of the media type is correct, but does not check the validity of the media type against the data content. CICS uses this information to produce the Content-Type header for the message.

For requests that require a body, you must specify the MEDIATYPE option. There is no default. However, if the required Content-Type header needs to contain spaces or more than 56 characters, the application can provide it using the WEB WRITE HTTPHEADER command. In this case, do not specify the MEDIATYPE option.

The supplied media type is used to determine whether code page conversion is required under the following circumstances:

- If you are sending a message from a buffer, using the FROM option, and the CLIENTCONV and CHARACTERSET options are not specified.
- If you are sending a message from a document, using the DOCTOKEN option, and the CLIENTCONV and CHARACTERSET options are not specified.
- If you are sending a message from a named container, using the CONTAINER option, and either CLICONVERT is specified, or the CLIENTCONV and CHARACTERSET options are not specified.

If the supplied media type is text, the message is converted. If the supplied media type is nontext, the message is not converted.

The MEDIATYPE option is used for both the sending and receiving functions of the WEB CONVERSE command. If it is specified with a value, the value is used to construct the Content-Type header in the request, and the same field is used to receive the media type of the response that is returned by the server. If it is specified without a value, it is used only to receive the media type of the response.

METHOD\textit{cvda)}
Specifies the HTTP method for the request.

The GET, HEAD, POST, PUT, TRACE, OPTIONS, and DELETE methods are supported by this command. However, some HTTP servers, particularly HTTP/1.0 servers, might not implement all of these methods.
Producing an entity body for an HTTP message has more information about the correct use of methods, including the HTTP versions that apply to each.

CICS bars the sending of a message body for methods where it is inappropriate, and requires it for methods where it is appropriate.

CVDA values are as follows:

**GET**
- Obtain a resource from the server. A request body is not allowed.

**HEAD**
- Obtain the HTTP headers, but not the response body, for a resource. A request body is not allowed.

**POST**
- Send data to a server. A request body is required.

**PUT**
- Create or modify a resource on the server. A request body is required.

**TRACE**
- Trace the route of your request to the server. A request body is not allowed.

**OPTIONS**
- Obtain information about the server. A request body is allowed, but there is no defined purpose for the body. If you do use a request body, then you must specify a media type.

**DELETE**
- Delete a resource on the server. A request body is not allowed.

**PASSWORD**(data-value)
- Specifies the password associated with the user ID or logon name that is allowed access to this data. The PASSWORD option is required only if the USERNAME option is used. If the specified password is over 8 characters long, it is treated as a password phrase when it is sent to z/OS systems.

**PASSWORDLEN**(data-value)
- Specifies the buffer length supplied for the PASSWORD option as a fullword binary variable.

**PATH**(data-area)
- Specifies the path information for the specific resource within the server that the application needs to access.

If the URIMAP option was used to specify an existing URIMAP definition on the WEB OPEN command for this connection, the path specified in that URIMAP definition is the default path for the WEB SEND command. In these circumstances, if you do not specify path information on the WEB SEND command, the path from the URIMAP definition is used. If you specify a different path from that given in the URIMAP definition, this overrides the path from the URIMAP definition.

If the URIMAP option was not used on the WEB OPEN command, there is no default path, and you must provide path information. Path information can be extracted from a known URL using the WEB PARSE URL command.

As an alternative to using the PATH option to provide the path information, you can use the URIMAP option on the WEB CONVERSE command to specify a URIMAP definition from which the path information is taken directly.

**PATHLENGTH**(data-value)
- Specifies the length of the path, as a fullword binary value. If you are providing path information using the PATH option, you need to specify the PATHLENGTH option. Path length information is returned if you use the WEB PARSE URL command to parse a URL.

**QUERYSTRING**(data-area)
- Specifies a query string that is to be supplied to the server as part of the request. You do not need to include a question mark (?) at the beginning of the query string; if you do not include it, CICS supplies it for you automatically when constructing the request. If you include escaped characters in the query string, CICS passes them to the server in their escaped format.
QUERYSTRLEN(data-value)
Specifies the length of the query string supplied on the QUERYSTRING option, as a fullword binary value.

SESSID_TOKEN(data-value)
Specifies the session token, an 8-byte binary value that uniquely identifies this connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explain the use of the session token.

URIMAP(data-value)
Specifies the name (up to 8 characters, in mixed case) of a URIMAP definition that provides the path information for the specific resource within the server that the application needs to access. The URIMAP definition must be for CICS as an HTTP client (with USAGE(CLIENT) specified). Its HOST attribute must be the same as the HOST attribute of the URIMAP definition that was specified on the WEB OPEN command for this connection, or the same as the host name specified in the HOST option on the WEB OPEN command for this connection. A URIMAP definition specified on the WEB CONVERSE command applies only to this request.

If the URIMAP option is specified, do not specify the PATH or PATHLENGTH options.

USERNAME(data-value)
Specifies the user ID or logon name that is allowed access to this data. If the USERNAME is specified, you also need to use the PASSWORD option.

USERNAMELEN(data-value)
Specifies the buffer length supplied for the USERNAME option as a fullword binary variable.

Options for receiving the server's response

BODYCHARSET(data-area)
Specifies the character set of the HTTP response body.

The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation.

If the HTTP body is received into an application buffer, the character set returned is as follows:

- If the INTO or SET option is specified, and the HTTP body is converted, CICS returns the character set of the HTTP body before conversion.
- If the INTO or SET option is specified, and the HTTP body is not converted, CICS returns the character set specified in the Content-Type header. If character set information is not available, blanks are returned.

If the HTTP body is received into a named container, the character set returned is as follows:

- If the container is a CHAR container, CICS returns the character set of the encoded data.
- If the container is a BIT container, CICS returns blanks.

If the value returned is more than 40 bytes, the data is truncated. If the value returned is less than 40 bytes, the data is padded to the right with blanks.

INTO(data-area)
Specifies the buffer that is to contain the data being received.

If the HTTP request contains a Content-Length header, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage to the application buffer that is specified in the INTO option.

MAXLENGTH(data-value)
Specifies the maximum amount, as a fullword binary value, of data that CICS is to pass to the application. The MAXLENGTH option applies whether the INTO or the SET option is specified for receiving data. If the data has been sent using chunked transfer-coding, CICS assembles the chunks into a single message before passing it to the application, so the MAXLENGTH option applies to the total length of the chunked message, rather than to each individual chunk. The data is measured after any code page conversion has taken place.
If the length of data exceeds the value specified and the NOTRUNCATE option is not specified, the data is truncated to that value, and the remainder of the data is discarded.

If the length of data exceeds the value specified and the NOTRUNCATE option is specified, CICS retains the remaining data and can use it to satisfy subsequent RECEIVE commands.

**MEDIATYPE**(data-area)

Specifies a 56-character data area to receive the media type (that is, the type of data content) for the body, for example text/xml. See IANA media types and character sets for more information about media types.

The MEDIATYPE option is used for both the sending and receiving functions of the WEB CONVERSE command. If it is specified with a value, the value is used to construct the Content-Type header in the request, and the same field is used to receive the media type of the response that is returned by the server. If it is specified without a value, it is used only to receive the media type of the response.

**NOTRUNCATE**

Specifies that when the data available exceeds the length requested on the MAXLENGTH option, the remaining data is not to be discarded immediately but is to be retained for retrieval by subsequent RECEIVE commands. (If no further RECEIVE commands are issued, the data is discarded during transaction termination.)

A single RECEIVE command using the SET option and without the MAXLENGTH option receives all the remaining data, whatever its length. Alternatively, you can use a series of RECEIVE commands with the NOTRUNCATE option to receive the remaining data in appropriate chunks. Keep issuing the RECEIVE command until you are no longer getting a LENGERR response. Bear in mind that if you receive less than the length requested on the MAXLENGTH option, this does not necessarily indicate the end of the data; this could happen if CICS needs to avoid returning a partial character at the end of the data.

**SET**(ptr-ref)

Specifies a pointer reference that is to be set to the address of data received. The pointer reference is valid until the next RECEIVE command or the end of task.

If the HTTP request contains a Content-Length header, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage into storage that is accessible to the application, and the pointer reference is set to this copy.

**STATUSCODE**(data-area)

Specifies a data area to receive the HTTP status code sent by the server. The code is a binary halfword value. Examples are 200 (normal) or 404 (not found). Receiving the status code is optional, but you should always receive and check the status code in the following circumstances:

- If you intend to make an identical request to the server, now or during a future connection.
- If you intend to make further requests to the server using this connection.
- If your application is carrying out any further processing that depends on the information you receive in the response.

HTTP status code reference for CICS web support has basic guidance on appropriate actions for an application to take in response to the status codes for HTTP/1.1.

**STATUSLEN**(data-value)

Specifies, as a fullword binary value, the length of the data area to receive any text returned by the server to describe the status code (the STATUSTEXT option). The text is known as a reason phrase. Most reason phrases recommended for HTTP are short, but a data-area length of 256 characters is suggested here, in case the server replaces the recommended reason phrase with more detailed information.

**STATUSTEXT**(data-area)

Specifies a data area to receive any text returned by the server to describe the status code. The text is known as a reason phrase. Examples are “OK” (accompanying a 200 status code), or “Bad Request” (accompanying a 400 status code). The STATUSLEN option gives the length allowed for the text.
TOCHANNEL(data-value)
Specifies the name of the channel that the container belongs to. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

If you plan to ship your channels between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

If the TOCHANNEL option is not specified, then CICS assumes the current channel.

When TOCONTAINER is specified, CICS holds the received body of the HTTP request in 64-bit storage until the application uses a CONTAINER API command to obtain the HTTP body.

TOCONTAINER(data-value)
Specifies the name of the container where the data is placed. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks.

If you plan to ship your containers between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

Do not use container names starting with "DFH", unless requested to do so by CICS.

When TOCONTAINER is specified, CICS holds the received body of the HTTP request in 64-bit storage until the application uses a CONTAINER API command to obtain the HTTP body.

TOLENGTH(data-area)
Specifies a fullword binary variable that is set to the amount of data that CICS has returned to the application. Note that this might be slightly less than the limit that you set using the MAXLENGTH option, especially if a double-byte or multi-byte character set is involved, because CICS does not return a partial character at the end of the data.

• If the NOTRUNCATE option is not specified, any further data present in the message is discarded. A LENGERR response with a RESP2 value of 57 is returned if further data was present.
• If the NOTRUNCATE option is specified, any additional data is retained. A LENGERR response with a RESP2 value of 36 is returned if additional data is available. The description for the NOTRUNCATE option tells you what to do in this case.

This option is the equivalent of the LENGTH option on the WEB RECEIVE command.

If you are using the TOCONTAINER option, do not specify the TOLENGTH option.

Options for converting items sent and received

CLIENTCONV(cvda)
Specifies whether or not CICS translates the entity body of the HTTP request before sending, and translates the entity body of the server’s response. The default is that the entity body is converted both when the request is sent out, and when the response is received (CLICONVERT).

If you are receiving data into a named container (specified by the TOCONTAINER option), conversion does not take place.

• For the request body, you can use the CHARACTERSET option on this command to specify a character set that is suitable for the server. If conversion is requested (or happens as the default)
but you do not specify a character set, the default is that CICS converts the entity body to the ISO-8859-1 character set.

- For the response body, you do not need to specify the character set used by the server. CICS identifies this by examining the Content-Type header of the message. If the header does not provide this information, or if the named character set is not supported by CICS for code page conversion, the ISO-8859-1 character set is used.

- For the application's code page, the default code page for the local CICS region (as specified in the LOCALCCSID system initialization parameter) is used, or an alternative EBCDIC code page that you specified on the WEB OPEN COMMAND.

CVDA values are as follows:

**CLICONVERT**

CICS converts the entity body of the request into the character set that you identify for the server, and converts the entity body of the response into a code page suitable for the application.

If the TOCONTAINER option is specified, conversion does not take place when the HTTP response is received. Instead, the media type of the HTTP response header determines whether the HTTP body is stored in a BIT or CHAR container. If the media type is a text media type, the body is stored in a CHAR container. If the media type is a non-text media type, the body is stored in a BIT container. If the HTTP response does not contain media type information, the default of text media type is assumed.

**NOINCONVERT**

CICS converts the entity body of the request into the character set that you identify for the server. However, CICS does not convert the entity body of the response, and it is passed to the application in the character set used by the server.

If the TOCONTAINER option is specified, conversion does not take place when the HTTP response is received. Instead, the media type of the HTTP response header determines whether the HTTP body is stored in a BIT or CHAR container. If the media type is a text media type, the body is stored in a CHAR container. If the media type is a non-text media type, the body is stored in a BIT container. If the HTTP response does not contain media type information, the default of text media type is assumed.

**NOOUTCONVERT**

CICS does not convert the entity body of the request, and it is sent to the server in the code page used by the application. However, CICS does convert the entity body of the response into a code page suitable for the application.

If the TOCONTAINER option is specified, conversion does not take place when the HTTP response is received. Instead, the media type of the HTTP response header determines whether the HTTP body is stored in a BIT or CHAR container. If the media type is a text media type, the body is stored in a CHAR container. If the media type is a non-text media type, the body is stored in a BIT container. If the HTTP response does not contain media type information, the default of text media type is assumed.

**NOCCLICONVERT**

CICS does not convert the entity body of the request, and it is sent to the server in the code page used by the application. CICS does not convert the entity body of the response, and it is passed to the application in the character set used by the server.

If the TOCONTAINER option is specified, conversion does not take place when the HTTP response is received. Instead, the media type of the HTTP response header determines whether the HTTP body is stored in a BIT or CHAR container. If the media type is a text media type, the body is stored in a CHAR container. If the media type is a non-text media type, the body is stored in a BIT container. If the HTTP response does not contain media type information, the default of text media type is assumed.
Conditions

122 CHANNELERR
RESP2 values are:

1
The name specified by the TOCHANNEL option contains an illegal character or combination of characters.

2
The channel specified on the CHANNEL option could not be found.

110 CONTAINERERR
RESP2 values are:

1
The name specified by the TOCONTAINER option contains an illegal character or combination of characters.

2
The container specified by the CONTAINER option could not be found.

19 NOTOPEN
RESP2 values are:

27
Invalid session token.

16 INVREQ
RESP2 values are:

10
Invalid response header.

11
Action code invalid.

13
Close status invalid.

15
Code page conversion failure.

17
Expect-100 request was rejected by the server.

22
Invalid chunk size.

32
Media type invalid.

33
Method does not support a body.

34
Method requires a body.

41
The connection has been closed.

43
The DOCSTATUS value specified is invalid.

45
The character set specified is invalid.

46
The CLIENTCONV option is invalid.

49
The format of the path option is invalid.
The HTTP method is not valid.

URIMAP object disabled.

Host in URIMAP definition does not match host specified when this session was opened.

The content of the response does not conform to HTTP format. The error is generated because there is a syntax problem.

The connection has been closed (CICS sent a Connection: close header to the server, or the server may have timed out due to inactivity on this connection).

MEDIATYPE option required.

Pipelining is in progress. WEB CONVERSE command cannot be used.

CHARACTERSET cannot be specified with NOSRVCONVERT.

AUTHENTICATE is invalid. The CVDA is not NONE or BASICAUTH.

One or more of the Web command parameters is invalid.

Either CHANNEL was not specified with CONTAINER, or TOCHANNEL was not specified with TOCONTAINER (and there is no current channel).

The named container is a read-only container.

Internal conversion error.

Conversion requested, but data to be sent is in a DATATYPE BIT container.

The HTTP headers in the response are longer than 4k, and CICS is unable to process this HTTP response. The session is unusable, and a WEB CLOSE command is required.

22 LENERR
RESP2 values are:

5  The PATHLENGTH option value was not greater than zero.

8  The QUERYSTRLEN option value was not greater than zero.

16  Invalid MAXLENGTH.

36  Partial response body returned. Use additional RECEIVES to obtain remainder.

50  The FROMLENGTH option value was not greater than zero.

57  The response body exceeds the length specified, and the remainder of the body has been discarded.
WEB ENDBROWSE FORMFIELD

Signal the end of a formfield browse in an HTML form.

WEB ENDBROWSE FORMFIELD

Conditions: INVREQ

This command is threadsafe.
Description
WEB ENDBROWSE FORMFIELD terminates the browse of a set of name-value pairs in an HTML form. The form is part of the body of an HTTP request being processed by the current CICS task. No information is returned on the ENDBROWSE.

Conditions
16 INVREQ
RESP2 values are:
1 The command is being issued in a non-CICS Web support application.
3 The command is being issued for a non-HTTP request.
4 The command is being issued before a WEB STARTBROWSE command is issued.

WEB ENDBROWSE HTTPHEADER
Signal the end of an HTTP header browse.

WEB ENDBROWSE HTTPHEADER
WEB — ENDBROWSE — HTTPHEADER — SESSTOKEN(data-value)

Conditions: INVREQ, NOTOPEN
This command is threadsafe.

Description
WEB ENDBROWSE HTTPHEADER terminates the browse. No information is returned on the ENDBROWSE. The SESSTOKEN option is required if the HTTP header information is part of a response sent to CICS as an HTTP client.

Options
SESSTOKEN(data-value)
For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token.

Conditions
16 INVREQ
RESP2 values are:
1 The command is being issued in a non-CICS Web support application.
3 The command is being issued for a non-HTTP request.
4 The command is being issued before a WEB STARTBROWSE command is issued.
19 NOTOPEN
RESP2 value is:
WEB ENDBROWSE QUERYPARM

Finish browsing query string data in a URL.

WEB ENDBROWSE QUERYPARM

Conditions: INVREQ
This command is thread-safe.

Description
WEB ENDBROWSE QUERYPARM terminates the browse of a set of keyword parameters, consisting of name and value pairs, from a query string in a URL. No information is returned on the ENDBROWSE.

Conditions
16 INVREQ
RESP2 values are:

1
The command is being issued in a non-CICS Web support application.

3
The command is being issued for a non-HTTP request.

4
The command is being issued before a WEB STARTBROWSE command is issued.
WEB EXTRACT

Obtain information about an HTTP request that has been made to CICS as an HTTP server or about a connection between an Internet server and CICS as an HTTP client. This command is a synonym of EXTRACT WEB.

WEB EXTRACT (CICS as an HTTP server)

WEB — EXTRACT

SCHEME(cvda)

HOST(data-area) — HOSTLENGTH(data-value)

HOSTTYPE(cvda)

HTTPMETHOD(data-area) — METHODLENGTH(data-area)

HTTPVERSION(data-area) — VERSIONLEN(data-area)

PATH(data-area) — PATHLENGTH(data-area)

PORTNUMBER(data-area)

QUERYSTRING(data-area) — QUERYSTRLEN(data-area)

REQUESTTYPE(cvda)

Conditions: INVREQ, IOERR, LENGERR, NOTFND, NOTOPEN, TIMEDOUT

This command is threadsafe.

WEB EXTRACT (CICS as an HTTP client)

WEB — EXTRACT — SESSTOKEN(data-area)

SCHEME(cvda)

HOST(data-area) — HOSTLENGTH(data-value)

HOSTTYPE(cvda)

HTTPVERSION(data-area) — VERSIONLEN(data-area)

PATH(data-area) — PATHLENGTH(data-area)

PORTNUMBER(data-area)

URIMAP(data-area)

REALM(data-area) — REALMLEN(data-area)

Conditions: INVREQ, IOERR, LENGERR, NOTFND, NOTOPEN, TIMEDOUT

This command is threadsafe.
Description

For CICS as an HTTP server, WEB EXTRACT enables an application to obtain information about the most recent HTTP request that has been made to CICS by a Web client and assigned to the application for handling.

For CICS as an HTTP client, when the SESSTOKEN option is specified, the command enables an application to obtain information about a connection that it has opened with a server. The information returned to the application comprises global information about the connection, such as the host name of the server and its HTTP version. Information about specific requests made by the application, and responses made by the server, is not available using this command. The WEB RECEIVE command is used to receive information from a server response.

Options

**HOST**(data-area)

For CICS as an HTTP server, HOST specifies a buffer to contain the host component of the URL, as specified either in the Host header field for the request or in the request line (if an absolute URI was used for the request). The port number is presented separately using the PORTNUMBER option.

For CICS as an HTTP client, with the SESSTOKEN option, HOST specifies a buffer to contain the host name of the server in the connection identified by the SESSTOKEN option. The port number is presented separately using the PORTNUMBER option.

An IPv4 or IPv6 address can represent the host name. IPv4 addresses are returned as native IPv4 dotted decimal addresses; for example, 1.2.3.4. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses; for example, ::a:b:c:d

For information on IP addresses, see IP addresses.

**HOSTLENGTH**(data-area)

Specify the length of the buffer supplied on the HOST option, as a fullword binary variable, and is set to the length of the data returned to the application. 116 characters is an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**HOSTTYPE**(cvda)

Returns the address format of the HOST option. CVDA values are as follows:

- **HOSTNAME**
  - The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

- **IPV4**
  - The address is a dotted decimal IPv4 address.

- **IPV6**
  - The address is a colon hexadecimal IPv6 address.

- **NOTAPPLIC**
  - An incorrect host address was returned (HOST=0.0.0.0).

**HTTPMETHOD**(data-area)

For CICS as an HTTP server, this option specifies a buffer to contain the HTTP method string on the request line of the message.

This option is not relevant for CICS as an HTTP client.

**HTTPVERSION**(data-area)

For CICS as an HTTP server, this option specifies a buffer to contain the HTTP version for the Web client, as stated on its request.

For CICS as an HTTP client (with the SESSTOKEN option), this option specifies a buffer to contain the HTTP version of the server in the connection identified by the SESSTOKEN option. If CICS does not already know the HTTP version of the server, CICS makes a request to the server with the OPTIONS method to find out this information.
1.1 indicates HTTP/1.1, and 1.0 indicates HTTP/1.0 or lower.

**METHODLENGTH(data-area)**

Specifies the length of the buffer supplied on the HTTPMETHOD option, as a fullword binary variable, and is set to the actual length of the data returned to the application. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**PATH(data-area)**

For CICS as an HTTP server, this option specifies a buffer to contain the path specified in the request line of the message.

For CICS as an HTTP client (with the SESSTOKEN option), this option specifies a buffer to contain the default path that applies to requests made using the connection. If a URIMAP definition was specified on the WEB OPEN command for the connection, the default path is the path specified in the URIMAP definition. Otherwise, the default path is a single forward slash.

**PATHLENGTH(data-area)**

Specifies the length of the buffer supplied on the PATH option, as a fullword binary variable, and is set to the length of the data returned to the application. 256 characters is an appropriate size to specify for this data-area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**PORTNUMBER(data-area)**

For CICS as an HTTP server, this option returns a data area containing the port number specified in the request line of the message.

For CICS as an HTTP client (with the SESSTOKEN option), this option returns a data containing the port number used to access the server in the connection specified by the SESSTOKEN option.

The value returned in the data area is a fullword binary value.

Well-known port numbers for a service are normally omitted from the URL. If the port number is not present in the URL, the command identifies and returns it based on the scheme. For HTTP, the well-known port number is 80, and, for HTTPS, the well-known port number is 443. If a port number is returned that is not the default for the scheme, you must specify the port number explicitly to gain access to the URL; for example, if you are using this information in a WEB OPEN command.

**QUERYSTRING(data-area)**

For CICS as an HTTP server, this option specifies a buffer to contain the query string on the request line of the message. The query string is the value or values encoded after the question mark (?) delimiting the end of the path. The query string is returned in its escaped form.

This option is not relevant for CICS as an HTTP client.

**QUERYSTRLEN(data-area)**

Specifies the length of the buffer supplied on the QUERY option, as a fullword binary variable, and is set to the length of the data returned to the application (the query string). 256 characters is an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**REALM(data-area)**

Specifies, for CICS as an HTTP client, the realm or security environment that contains the data that you are requesting. If you are issuing a command in response to an HTTP 401 message, REALM is the realm value in the most recently received WWW-Authenticate header.

**REALMLEN(data-area)**

Specifies, for CICS as an HTTP client, the buffer length supplied for the REALM option, as a fullword binary variable. If you are issuing a command in response to an HTTP 401 message, REALMLEN is the length of the realm name in the most recently received WWW-Authenticate header.

**REQUESTTYPE(cvda)**

For CICS as an HTTP server, this option specifies the type of request received. This option is not relevant for CICS as an HTTP client. CVDA values are as follows:

**HTTPYES**

Indicates an HTTP request.
HTTPNO
Indicates a non-HTTP request.

SCHEME(cveda)
For both CICS as an HTTP server, and CICS as an HTTP client (with the SESSTOKEN option), this option returns the scheme used for the connection between CICS and the Web client or server. CVDA values are as follows:

HTTP
Is the HTTP protocol, without SSL.

HTTPS
Is the HTTPS protocol, which is HTTP with SSL.

SESSTOKEN(data-value)
For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token. For the command, information is returned about the specified connection.

This option is not relevant for CICS as an HTTP server.

URIMAP(data-area)
For CICS as an HTTP client (with the SESSTOKEN option), this option returns the 8-character name (in mixed case) of any URIMAP definition that was specified on the WEB OPEN command to open the connection specified by the SESSTOKEN option. The INQUIRE URIMAP command can be used to find information about the attributes of this URIMAP definition.

This option is not relevant for CICS as an HTTP server.

VERSIONLEN(data-area)
Specifies the length of the buffer supplied on the HTTPVERSION option, as a fullword binary variable, and is set to the length of the data returned to the application.

Conditions

16 INVREQ
RESP2 values:

1
The command is being issued in a non-CICS Web support application.

3
The command is being issued for a non-HTTP request. This command is set only if one or more of HTTPMETHOD, HTTPVERSION, or PATH is specified and the request is a non-HTTP request).

41
The connection has closed. This is a WEB EXTRACT (Client) error only. The server may have timed out due to inactivity on this connection.

67
The content of the response does not conform to HTTP format. The error is generated because there is a syntax problem. This error is for WEB EXTRACT (Client) only.

71
A chunked transfer-coding error has occurred. This error is for WEB EXTRACT (Client) only.

144
One or more of the Web command parameters is invalid. This error is for WEB EXTRACT (Client) only.

17 IOERR
RESP2 values:

42
Socket error.
22 LENGERR
   RESP2 values:
   4   The method exceeds the length specified (METHODLENGTH option).
   5   The PATHLENGTH option value was not greater than zero.
   6   The HTTP version exceeds the length specified (VERSIONLEN option).
   7   The VERSIONLEN option value was not greater than zero.
   8   The query string exceeds the length specified (QUERYSTRLEN option).
   21  The HOSTLENGTH option value was not greater than zero.
   29  The host name exceeds the length specified (HOSTLENGTH option).
   30  The path exceeds the length specified (PATHLENGTH option).
   141 REALMLEN is not positive, or is not large enough to contain the realm value returned in the HTTP 401 response.

13 NOTFND
   RESP2 values:
   155 Request line information not found.

19 NOTOPEN
   RESP2 values:
   27 Session token not valid.

124 TIMEDOUT
   RESP2 values:
   62 Timeout on socket receive.
WEB OPEN

Open a connection to a server for CICS as an HTTP client.

WEB OPEN

- **URIMAP**: data-value
- **Host**: CERTIFICATE: data-value
- **CIPHERS**: data-value
- **NUMCIPHERS**: data-value
- **CODEPAGE**: data-value
- **SESTOKEN**: data-area
- **HTTPVNUM**: data-area
- **HTTPRNUM**: data-area

**Host**

- **HOST**: data-value
- **HOSTLENGTH**: data-value
- **PORTNUMBER**: data-value
- **SCHEME**: cvda

**Conditions**: IOERR, INVREQ, LENGERR, NOTFND, NOTAUTH, TIMEDOUT

This command is threadsafe.

**Description**

**WEB OPEN** enables an application program, through CICS web support, to open a connection with a specified host on an HTTP server on the Internet. When the connection is open, the application program can make HTTP client requests to the server and receive responses from it.

When you open the connection, you can specify a URIMAP resource that contains the information about the URL for the connection. You can specify this information directly on the **WEB OPEN** command instead of using a URIMAP resource. However, using a URIMAP resource has the following advantages:

- System administrators can manage any changes to the endpoint of the connection, so you do not need to recompile your applications if the URL for your request changes.
- If you are using SSL, you can specify an SSL client certificate or cipher suite codes in the URIMAP resource, so that system administrators can manage any changes to these certificates and codes.
- You can choose to make CICS keep the connections that were opened with the URIMAP resource open after use, and place them in a pool for reuse by another application or another instance of the same application. Connection pooling is only available when you specify a URIMAP resource that has the SOCKETCLOSE attribute set. For more information about the performance benefits of connection pooling, see Connection pooling for HTTP client performance.

For information about creating a URIMAP resource for a client request, see Creating a URIMAP resource for CICS as a HTTP client.

The **WEB OPEN** command drives the XWBOPEN user exit, which can make the connection to the server go through a proxy server, if required.

**Note**: If the connection request does not complete within the deadlock timeout interval (specified in the DTIMOUT attribute of the TRANSACTION definition for the transaction that starts the user application), CICS returns a TIMEDOUT response to the application. Setting DTIMOUT to NO, or allowing it to default to NO, means that the application is prepared to wait indefinitely.
Options

**CERTIFICATE**(data-value)**

Specifies the label of the X.509 certificate that is to be used as the SSL client certificate during the SSL handshake. Certificate labels can consist of up to 32 alphanumeric characters. This option is relevant only when the HTTPS option is specified. If HTTPS is specified, but the CERTIFICATE option is omitted, the default certificate defined in the key ring for the CICS region user ID is used. The certificate must be stored in a key ring in the external security manager's database. For more information, see Building a key ring manually.

**CIPHERS**(data-value)**

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. The cipher suite codes are used when SSL is active for the connection, so this option is relevant only when the HTTPS option is specified. They indicate the method of encryption to be used for this connection.

Use the NUMCIPHERS option to specify the number of cipher suite codes in your list. The codes that are available depend on what level of encryption has been specified by the ENCRYPTION system initialization parameter. If you specify any cipher codes that are not in the default list for the active encryption level, they are ignored. For more information on cipher suites, see Cipher suites and cipher suite specification files.

You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the CIPHERS option is not required. You can still specify the CIPHERS option, and the setting in the URIMAP definition is overridden by any codes that you specify for this option.

**Note:** EXEC CICS WEB OPEN does not support the use of an SSL cipher suite specification file in the CIPHERS option.

If you omit the CIPHERS option and the URIMAP option, but SSL is active for the connection, the default cipher list for the encryption level for the running system is used.

**CODEPAGE**(data-value)**

Specifies a code page that is suitable for the application program. The code page name can be up to 8 alphanumeric characters. The default is the default code page for the local CICS region, as specified in the LOCALCCSID system initialization parameter. The code page applies for the duration of this connection. When the server returns a response to an HTTP request, if conversion is requested (which is the default), CICS converts the request body into this code page before passing it to the application.

The standard CICS form of this code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

**HOST**(data-value)**

Specifies the host name on the server to which you want to connect. You can extract this information from a known URL using the WEB PARSE URL command, or from an existing URIMAP definition using the WEB EXTRACT URIMAP command. You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the HOST option is not required. Client HTTP connections can only be pooled for reuse when you specify the URIMAP option; using the HOST option does not enable connection pooling, even if you extract the information from a URIMAP definition.

A character host name, IPv4 address, or IPv6 address can represent the host name. If you specify an IPv6 address (or a host name that resolves to an IPv6 address), ensure that you are operating in a dual-mode (IPv4 and IPv6) environment and that the client or server that you are communicating with is also operating in a dual-mode (IPv4 and IPv6) environment.

For more information on IPv6, see Understanding IPv6 and CICS.

You can specify IPv4 and IPv6 addresses in a number of formats. For information on IP addresses, see IP addresses.
If you require a port number, you must not include the port number as part of the HOST option. Use the PORTNUMBER option instead.

**Acceptable characters:**

Alphanumeric characters, hyphens (-), colons (:), or periods (.)

Colons (:) can be used only in the IP address. Colons (:) cannot be used in a character host name.

**HOSTLENGTH(data-value)**

Specifies as a fullword binary value, the length of the host name. This information is returned if you use the WEB PARSE URL command to parse a URL, or it can be extracted from an existing URIMAP definition using the WEB EXTRACT URIMAP command. You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the HOSTLENGTH option is not required.

**HTTPRNUM(data-area)**

Returns the release number for the HTTP version of the server, as a halfword binary value. (HTTPVNUM returns the version number.) For example, if the server is at HTTP/1.0 level, HTTPRNUM returns 0.

**HTTPVNUM(data-area)**

Returns the version number for the HTTP version of the server, as a halfword binary value. (HTTPRNUM returns the release number.) For example, if the server is at HTTP/1.0 level, HTTPVNUM returns 1.

If you specify the HTTPVNUM and HTTPRNUM options, CICS obtains the HTTP version information when it opens the connection to the server. If the server does not provide HTTP version information in response to this request, or the version is lower than 1.0, CICS assumes that it is at HTTP/1.0 level.

Specify these options if it is essential for you to check the HTTP version information to confirm whether a planned action by your application, before or during its first request, will succeed. Actions dependent on the HTTP version include:

- Writing HTTP headers that request an action which might not be carried out correctly by a server below HTTP/1.1 level
- Using HTTP methods that might be unsuitable for servers below HTTP/1.1 level
- Using chunked transfer-coding
- Sending a pipelined sequence of requests

The additional HTTP request made by CICS to obtain the HTTP version information has an impact on performance, so do not specify these options if it is not necessary at this stage. When the first response has been received from the server, you can obtain this information using the WEB EXTRACT command.

**NUMCIPHERS(data-value)**

Specifies, as a halfword binary value, the number of cipher suite codes that you specified for the CIPHERS option.

**PORTNUMBER(data-value)**

Specifies the port number, as a fullword binary value. You specify the port number only if it is not the default for the specified scheme. For HTTP, the default port number is 80, and for HTTPS, the default port number is 443. Port number information can be extracted from a known URL using the WEB PARSE URL command, or from an existing URIMAP definition using the WEB EXTRACT URIMAP command. You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the PORTNUMBER option is not required. Client HTTP connections can only be pooled for reuse when you specify the URIMAP option; using the PORTNUMBER option does not enable connection pooling, even if you extract the information from a URIMAP definition.

**SCHEME(cvda)**

Specifies the scheme that is to be used for the connection to the server, which can be with or without SSL. CVDA values are as follows:
HTTP

The HTTP protocol, without SSL.

HTTPS

The HTTPS protocol, which is HTTP with SSL. If HTTPS is used, the CICS address space must be enabled for SSL.

This information can be extracted from a known URL using the WEB PARSE URL command, or from an existing URIMAP definition using the WEB EXTRACT URIMAP command. You can specify the URIMAP option to use this information directly from an existing URIMAP definition, in which case the SCHEME option is not required. Client HTTP connections can be pooled for reuse only when you specify the URIMAP option; using the SCHEME option does not enable connection pooling, even if you extract the information from a URIMAP definition.

SESSTOKEN(data-area)

Returns the session token, an 8-byte binary value that uniquely identifies this application's use of the connection between CICS and the server. The session token must be used on all CICS WEB commands that relate to this connection. See Session tokens for information about use of the session token.

URIMAP(data-value)

Specifies the name, up to 8 characters in mixed case, of a URIMAP definition that provides the following information:

- The scheme that is to be used for the connection to the server.
- The host name on the server to which you want to connect.
- A port number, if required.
- A path component for the URI, representing the resource on the server that you want to access. This path becomes the default path for WEB SEND or WEB CONVERSE commands relating to this connection, but it can be overridden by specifying another path on the WEB SEND or WEB CONVERSE command.
- The expiry period for pooled connections that are opened using the URIMAP resource. Connection pooling is enabled when you specify an expiry period in the URIMAP definition using the SOCKETCLOSE attribute, and name the URIMAP resource on the WEB OPEN command.
- The label of the X.509 certificate that is to be used as the SSL client certificate, if required.
- The cipher suite codes that can be used for the connection.

If the URIMAP option is specified, do not specify the CERTIFICATE, HOST, HOSTLENGTH, PORTNUMBER, PORTLENGTH, or SCHEME options. The CIPHERS and NUMCIPHERS options can be omitted or specified in the command; if specified, they override these settings in the URIMAP definition.

Note: EXEC CICS WEB OPEN does not support the use of an SSL cipher suite specification file in the CIPHERS option.

The URIMAP definition must be for CICS as an HTTP client, with USAGE(CLIENT) specified.

Conditions

17 IOERR

RESP2 values:

38

Proxy error.

42

SSL socket error. There is an issue with the SSL connectivity. One possible cause of this response is that the system initialization parameter TCPIP is set to NO, or defaulted to NO, for this CICS region. Another possible cause is that there are no matching ciphers for this connection. Check for SSL and cipher connection messages.
16 INVREQ
   RESP2 values:
   14
      Code page incorrect.
   22
      Incorrect chunk received during the initial HTTP request using the OPTIONS method.
   23
      Incorrect client certificate.
   40
      Scheme incorrect.
   41
      Server closed the connection during the initial HTTP request using the OPTIONS method.
   48
      The format of the host option is incorrect.
   63
      URIMAP object is not available.
   66
      An error occurred in processing for the XWOPEN exit.
   67
      The content of the response does not conform to HTTP format. The error is generated because there is a syntax problem.
   96
      SSL not supported.
   137
      All requested cipher codes have been rejected.
   138
      The port number is greater than 65535.
   144
      One or more of the Web command parameters is incorrect.

22 LENGERR
   RESP2 values:
   21
      Incorrect host length.

13 NOTFND
   RESP2 values:
   20
      Host name is not resolved by name server or the format of the host option is incorrect.
   39
      Unknown proxy.
   61
      The URIMAP object specified was not found.

70 NOTAUTH
   RESP2 values:
   100
      Host name barred by security exit.

124 TIMEDOUT
   RESP2 values:
   62
      Timeout on socket receive.
WEB PARSE URL

Break down a URL string into its component parts.

WEB PARSE URL

WEB — PARSE URL( data-value) — URLLENGTH( data-value) —

SCHEMENAME( data-area)

—

HOST( data-area) — HOSTLENGTH( data-area) —

HOSTTYPE( cvda)

—

PORTNUMBER( data-area) — PATH( data-area) — PATHLENGTH( data-area) —

QUERYSTRING( data-area) — QUERYSTRLEN( data-area)

Conditions: INVREQ, LENGERR

This command is threadsafe.

Description

With WEB PARSE URL, you can break down a URL string into its component parts: scheme, host, port, path, and query string. The components of a URL explains these components. You can use this process to examine the construction of the URL and to separate the components. The returned information can be used in the WEB OPEN command to open a client connection to the host named in the URL.

Any escape sequences found in the URL are checked for validity. An escape sequence consists of the percent character (%) followed by two hexadecimal characters. Valid hexadecimal characters are the digits 0 to 9 and the letters A to F.

Note that where the string input to the WEB PARSE URL command has been delimited in the correct way for a URL, the command does not detect incorrect content, such as a host name that does not represent an existing host on the Internet, or a character that is not permitted in a URL.

Options

HOST(data-area)

Returns the host component of the URL. This value can be either a character host name or a numeric IP address. If a port number is specified explicitly in the URL, the port number is returned separately as the PORTNUMBER option.

An IPv4 or IPv6 address can represent the host name. IPv6 addresses are returned as native IPv6 colon hexadecimal addresses, for example, :a:b:c:d. If you specify an IPv6 address in a URL, for example, http://[::a:b:c:d]:80, HOST returns the address without brackets.

Use the characters X’BA’ and X’BB’ (code page 37) to represent square brackets when you specify IPv6 addresses.

For information on IP addresses, see IP addresses.

HOSTLENGTH(data-area)

Specifies the length of the buffer supplied on the HOST option, as a fullword binary variable, and is set to the length of the data returned to the application (the host name). 116 characters is suggested as an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

HOSTTYPE(cvda)

Returns the address format of the HOST option. CVDA values are as follows:
HOSTNAME
The HOST option contains a character host name. The IP address that corresponds to the host name is looked up in the domain name server.

IPV4
The address is a dotted decimal IPv4 address.

IPV6
The address is a colon hexadecimal IPv6 address.

PATH(data-area)
Returns the path component of the URL.

PATHLENGTH(data-area)
Specifies the length of the buffer supplied on the PATH option, as a fullword binary variable, and is set to the actual length of the data returned to the application (the path component of the URL). 256 characters is suggested as an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

PORTNUMBER(data-area)
Returns as a fullword binary data area, the port number that is specified in, or appropriate for, the URL. Port numbers are sometimes specified explicitly in a URL, following the host name. However, well-known port numbers for a service are normally omitted from a URL. If the port number is not present in the URL, the WEB PARSE URL command identifies and returns it based on the scheme. For HTTP, the well-known port number is 80, and, for HTTPS, the well-known port number is 443. If a port number is returned that is not the default for the scheme, you must specify the port number explicitly to gain access to the URL, for example, if you are using this information in a WEB OPEN command.

QUERYSTRING(data-area)
Returns the query string from the URL. The query string is the value or values encoded after the question mark (?) delimiting the end of the path. The query string is returned in its escaped form.

QUERYSTRLEN(data-area)
Specifies the length of the buffer supplied on the QUERYSTRING option, as a fullword binary variable, and is set to the length of the data returned to the application (the query string). 256 characters is suggested as an appropriate size to specify for this data area. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

SCHEMENAME(data-area)
Returns the scheme component of the URL, as a 16-character data area. Only the HTTP and HTTPS schemes (the HTTP protocol with and without SSL) are supported by CICS and can be used in a WEB OPEN command.

The scheme name is always returned in uppercase.

URL(data-value)
Specifies the complete URL string.

URLLENGTH(data-value)
Specifies the length of the buffer containing the URL string, as a fullword binary value.

Conditions
16 INVREQ
RESP2 values:
28
Incorrect URL.
65
Bad escape sequence.

22 LENGERR
RESP2 values:
8
Length of query string returned is greater than QUERYSTRLEN.
Length of host name returned is greater than HOSTLENGTH.

Length of path returned is greater than PATHLENGTH.

**WEB READ FORMFIELD**

Retrieve the value of a field from an HTML form.

**WEB READ FORMFIELD**

WEB — READ — FORMFIELD( data-area )

NAMELENGTH( data-value )

VALUE( data-area )

SET( ptr-ref )

VALUELENGTH( data-area )

CHARACTERSET( data-value )

HOSTCODEPAGE( data-value )

**Conditions:** INVREQ, LENGERR, NOTFND

This command is threadsafe.

**Description**

WEB READ FORMFIELD retrieves the value of a specific field from an HTML form. The name of the form field is given in the FORMFIELD parameter. The form data is sent as part of an HTTP request being processed by the current CICS task.

The Web client sends form data in a query string when the GET method is used, and in the entity body when the POST method is used. CICS can extract the data from either of these locations.

The form data is returned in its unescaped form (see Reserved and excluded characters for an explanation of this).

If the data that is received represents a file, the uploaded file does not undergo code page conversion.

CICS only reads form data when CICS is the HTTP server. The facility is not available when CICS is an HTTP client.

**Options**

**CHARACTERSET(name)**

specifies the 40-character name of the character set that is required for encoding the form data. This option should match the forms encoding determined by the corresponding HTML form (see How the client encoding is determined for more information). CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

**CLNTCODEPAGE(name)**

This option is supported for upgrade purposes only. CHARACTERSET replaces it. The action taken by CICS is the same for both keywords.

**FORMFIELD(data-area)**

specifies the name of the form field to extract. It is a string of text containing the name of the requested field. The string of text supplied is not case sensitive.

**HOSTCODEPAGE(data-value)**

specifies the 8-character name of the CICS (host) code page required by the application program, into which the form data is to be converted. This code page is normally an EBCDIC code page.
The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

If the code page is not specified, the data is returned in the EBCDIC code page specified by the LOCALCCSID system initialization parameter (which applies to the local CICS region, and has a default of 037), provided that the specified code page is supported by the CICS web interface. The code page is supported if it is one of a list of EBCDIC code pages that are recognized by CICS as being sufficiently standard to allow successful parsing of the web headers (this includes all SBCS CECP and Euro code pages). Otherwise, CICS returns the data in the default EBCDIC code page 037 instead.

**NAMELENGTH(data-value)**

specifies the length, as a fullword binary value, of the form field name.

**SET(ptr-ref)**

specifies a pointer reference that is to be set to the address of data received. The pointer reference is valid until the end of the task.

**VALUE(data-area)**

specifies the buffer to contain the value of the named form field. CICS unescapes any escaped characters before placing them in the buffer.

**VALUELENGTH(data-area)**

specifies the length, as a fullword binary value, of the form field value. The actual length of the value is returned in this data area. If you specify the VALUE option, VALUELENGTH specifies the maximum length of the data that the program accepts. If the value exceeds the length of the buffer, it is truncated. If the length of the form field value is less than the size of the buffer, the form field value is placed in the leftmost byte positions.

**Conditions**

**16 INVREQ**

RESP2 values are:

1. The command is being issued in a non-CICS Web support application.

3. The command is being issued for a non-HTTP request.

11. The client code page cannot be found.

12. The host code page cannot be found.

13. No forms data has been supplied in the HTTP request.

14. The code page combination for client and server is invalid.

17. Invalid forms data was found in the input message.

**22 LENGERR**

RESP2 values are:

1. The length in NAMELENGTH or VALUELENGTH is less than or equal to zero.

4. The form field name has been truncated during a read operation because the receiving buffer is too small.
The form field value has been truncated during a read operation because the receiving buffer is too small.

The form type is unknown.

A boundary string was expected in the forms data, but was not found.

**WEB READ HTTPHEADER**

Extract HTTP header information.

**WEB READ HTTPHEADER**

```plaintext
WEB READ HTTPHEADER( data-area )  NAMELENGTH( data-value )
```

```plaintext
  SESSTOKEN( data-area )  VALUE( data-area )  VALUELENGTH( data-area )
```

**Conditions:** INVREQ, LENGERR, NOTFND, NOTOPEN

This command is threadsafe.

**Description**

WEB READ HTTPHEADER enables an application to extract HTTP header information from a message. When CICS is an HTTP server, the message is a request from a Web client. When CICS is an HTTP client, the message is a response from a server, and the SESSTOKEN option is specified.

For CICS as an HTTP server, you can use the WEB READ HTTPHEADER command either before, or after, you use the WEB RECEIVE command to receive the body of the message. For CICS as an HTTP client, you must first receive the message using the WEB RECEIVE command, and then you can read the headers using the WEB READ HTTPHEADER command.

HTTP header reference for CICS web support lists HTTP/1.1 headers that you are likely to receive, and gives guidance for the actions that you might take in response to them.

The HTTP header browsing commands (WEB STARTBROWSE HTTPHEADER, WEB READNEXT HTTPHEADER, WEB ENDNBROWSE HTTPHEADER) can be used to browse through all the HTTP header information for a message.

**Options**

**HTTPHEADER**(data-area)

specifies the name of the HTTP header to be extracted.

**NAMELENGTH**(data-value)

specifies the length, as a fullword binary value, of the HTTP header name.

**SESSTOKEN**(data-value)

For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token.
**VALUE**(data-area)  
specifies the buffer to contain the value of the HTTP header being extracted.

**VALUELENGTH**(data-area)  
specifies the length of the buffer supplied on the VALUE option, as a fullword binary variable, and is set to the actual length of the data returned to the application. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**Conditions**

**16 INVREQ**  
RESP2 values are:

1. The command is being issued in a non-CICS Web support application.

3. The command is being issued for a non-HTTP request.

43. No HTTP headers found.

**22 LENGERR**  
RESP2 values are:

1. The length in VALUELENGTH is not greater than zero (CICS as an HTTP server).

2. The header value has been truncated because the receiving buffer is too small (CICS as an HTTP server).

35. The length in NAMELENGTH is not greater than zero (CICS as an HTTP client).

52. The header value has been truncated because the receiving buffer is too small (CICS as an HTTP client).

55. The length in VALUELENGTH is not greater than zero (CICS as an HTTP client).

**13 NOTFND**  
RESP2 value is:

1. The header with the given name could not be found.

**19 NOTOPEN**  
RESP2 value is:

27. Invalid session token.
WEB READ QUERYPARM

Read name and value pairs from a query string in a URL.

WEB READ QUERYPARM

WEB — READ — QUERYPARM( data-value )

NAMELENGTH( data-value )

VALUE( data-area )

VALUELENGTH( data-area )

SET( ptr-ref )

HOSTCODEPAGE( data-value )

Conditions: INVREQ, LENGERR, NOTFND

This command is threadsafe.

Description

The WEB READ QUERYPARM command reads a keyword parameter, consisting of a name and value pair, from a query string in a URL, and returns it in a specified code page. Escaped characters in the query string data are unescaped into the code page.

The WEB READ QUERYPARM command processes query string data for all HTTP methods, including GET, POST, PUT, and DELETE. You can continue to use the existing WEB READ FORMFIELD command for forms (messages with the media types application/x-www-form-urlencoded or multipart/form-data). Although the WEB READ FORMFIELD command can read name and value pairs from a query string, it does so only when the HTTP method is GET, because it assumes that the message is an HTML form.

You can use the query string browsing commands (WEB STARTBROWSE QUERYPARM, WEB READNEXT QUERYPARM, and WEB ENDBROWSE QUERYPARM) to browse through all the query parameters in a URL.

CICS only reads query string data when CICS is the HTTP server. The facility is not available when CICS is an HTTP client.

Options

QUERYPARAM(data-value)

Specifies the name of the query parameter to extract. Specify a string of text containing the name of the requested parameter. The string of text supplied is not case-sensitive. If you specify the HOSTCODEPAGE option, you must supply the name of the query parameter in the code page that you specify for that option.

HOSTCODEPAGE(data-value)

Specifies the 8-character name of the CICS (host) code page required by the application program. This code page is normally an EBCDIC code page. CICS converts the value of the query parameter into this code page before returning it as the VALUE option.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

If the code page is not specified, the data is returned in the EBCDIC code page specified by the LOCALCCSID system initialization parameter (which applies to the local CICS region, and has a default of 037), provided that the specified code page is supported by the CICS web interface. The code page is supported if it is one of a list of EBCDIC code pages that are recognized by CICS as being sufficiently
A standard to allow successful parsing of the web headers (this includes all SBCS CECP and Euro code pages). Otherwise, CICS returns the data in the default EBCDIC code page 037 instead.

**NAMELENGTH(data-value)**
Specifies the length, as a fullword binary value, of the query parameter name.

**SET(ptr-ref)**
Specifies a pointer reference that is to be set to the address of data received.

**VALUE(data-area)**
Specifies the buffer to contain the value of the named query parameter. CICS unescapes any escaped characters before placing them in the buffer.

**VALUELENGTH(data-area)**
Specifies the length, as a fullword binary value, of the query parameter value. The real length of the value is returned in this data area. If you specify the VALUE option, VALUELENGTH specifies the maximum length of the data that the program accepts. If the value exceeds the length of the buffer, the value is truncated. If the length of the query parameter value is less than the size of the buffer, the query parameter value is placed in the leftmost byte positions.

**Conditions**

**16 INVREQ**
RESP2 values are:

- **1** The command is being issued in a non-CICS Web support application.
- **3** The command is being issued for a non-HTTP request.
- **12** The host code page cannot be found.
- **13** No keyword parameters were supplied in the HTTP request.
- **14** The code page combination for client and server is invalid.
- **17** Invalid keyword parameters found in the HTTP request.

**22 LENGERR**
RESP2 values are:

- **1** The length in NAMELENGTH or VALUELENGTH is less than or equal to zero.
- **5** The keyword parameter value has been truncated during a read operation because the receiving buffer is too small.

**13 NOTFND**
RESP2 value is:

- **1** The keyword parameter with the given name could not be found.
WEB READNEXT FORMFIELD

Retrieve next name-value pair in an HTML form.

WEB READNEXT FORMFIELD

WEB — READNEXT — FORMFIELD(data-area) — NAMELENGTH(data-area) —

VALUE(data-area) — VALUELENGTH(data-area)

Conditions: ENDFILE, INVREQ, LENGERR

This command is threadsafe.

Description

WEB READNEXT FORMFIELD retrieves the next name-value pair in an HTML form.

The data is returned in its unescaped form (see Reserved and excluded characters for an explanation of this).

Options

FORMFIELD(data-area)

Specifications the buffer to contain the name of the form field being retrieved. The case of the name is as it is stored in the form.

NAMELENGTH(data-area)

Specifies the length, as a fullword binary value, of the form field name. The actual length of the name is returned in this data area.

If the length of the form field name is less than the size of the buffer, the form field name is placed in the leftmost byte positions.

If the form field name exceeds the buffer, a LENGERR condition is raised and the name is truncated. The next execution of WEB READNEXT FORMFIELD returns the same field that caused the LENGERR condition. Ensure to use a buffer that is large enough to contain the name.

VALUE(data-area)

Specifies the buffer to contain the value corresponding to the name returned in the FORMFIELD data area. CICS unescapes any escaped characters before placing them in the buffer.

VALUELENGTH(data-area)

Specifies the length, as a fullword binary value, of the form field value. The actual length of the value is returned in this data area.

If the length of the form field value is less than the size of the buffer, the form field value is placed in the leftmost byte positions.

If the value exceeds the buffer, a LENGERR condition is raised and the value is truncated. The next execution of WEB READNEXT FORMFIELD returns the same field that caused the LENGERR condition. Ensure to use a buffer that is large enough to contain the value.

Conditions

20 ENDFILE

The end of the list of name-value pairs has been reached.

16 INVREQ

RESP2 values are:

1

The command is being issued in a non-CICS Web support application.
The command is being issued for a non-HTTP request.

The command is being issued before a WEB STARTBROWSE FORMFIELD has been issued.

A form field has been found that is not in the format NAME:VALUE.

The form type is unknown.

A boundary string was expected in the forms data, but was not found.

**WEB READNEXT HTTPHEADER**

Retrieve next HTTP header.

**WEB READNEXT HTTPHEADER**

Retrieves the next HTTP header in the list of headers. The SESSTOKEN option is required if the HTTP header information is part of a response sent to CICS as an HTTP client.

**Options**

**HTTPHEADER**(*data-area*)

specifies the buffer to contain the name of the HTTP header being extracted.

**NAMELENGTH**(*data-area*)

specifies the length of the buffer supplied on the HTTPHEADER option, as a fullword binary data area, and is set to the actual length of the data returned to the application. If the data exceeds the buffer length, a LENGERR condition is raised and the data is truncated.

**Conditions:** ENDFILE, INVREQ, LENGERR, NOTOPEN

This command is threadsafe.

**Description**

WEB READNEXT HTTPHEADER retrieves the next HTTP header in the list of headers. The SESSTOKEN option is required if the HTTP header information is part of a response sent to CICS as an HTTP client.
**SESSTOKEN**(data-value)
For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. **Session tokens** explains the use of the session token.

**VALUE**(data-area)
specifies the buffer to contain the value of the HTTP header being extracted.

**VALUELENGTH**(data-area)
specifies the length of the buffer supplied on the VALUE option, as a fullword binary data area, and is set to the actual length of the data returned to the application. If the data exceeds the buffer length, a **LENGERR** condition is raised and the data is truncated.

**Conditions**

20 **ENDFILE**
The end of the list of HTTP headers has been reached.

16 **INVREQ**
RESP2 values are:

1. The command is being issued in a non-CICS Web support application.

3. The command is being issued for a non-HTTP request.

4. The command is being issued before a WEB STARTBROWSE has been issued.

6. A header has been found which is not in the format NAME:VALUE.

22 **LENGERR**
RESP2 values are:

1. The length in NAMELENGTH or VALUELENGTH is less than or equal to zero (CICS as an HTTP server).

4. The header name has been truncated because the receiving buffer is too small (CICS as an HTTP server).

5. The header value has been truncated because the receiving buffer is too small (CICS as an HTTP server).

35. The length in NAMELENGTH is less than or equal to zero (CICS as an HTTP client).

51. The header name has been truncated because the receiving buffer is too small (CICS as an HTTP client).

52. The header value has been truncated because the receiving buffer is too small (CICS as an HTTP client).

55. The length in VALUELENGTH is less than or equal to zero (CICS as an HTTP client).

19 **NOTOPEN**
RESP2 value is:

27. Invalid session token.
WEB READNEXT QUERYPARM

Retrieve next name and value pair in query string data in a URL.

WEB READNEXT QUERYPARM

WEB — READNEXT — QUERYPARM( data-area ) — NAMELENGTH( data-area ) —

VALUE( data-area ) — VALUELENGTH( data-area )

Conditions: ENDFILE, INVREQ, LENGERR

This command is threadsafe.

Description

WEB READNEXT QUERYPARM retrieves the next keyword parameter (name and value pair) in a query string in a URL.

The data is returned in its unescaped form (see Reserved and excluded characters for an explanation of this).

Options

QUERYPARM( data-area )

Specifies the buffer to contain the name of the keyword parameter being retrieved. The case of the name is as it is stored in the keyword parameter.

NAMELENGTH( data-area )

Specifies the length, as a fullword binary value, of the keyword parameter name. The actual length of the name is returned in this data area. If the length of the keyword parameter name is less than the size of the buffer, the keyword parameter name is placed in the leftmost byte positions.

VALUE( data-area )

Specifies the buffer to contain the value corresponding to the name returned in the QUERYPARM data area. CICS unescapes any escaped characters before placing them in the buffer.

VALUELENGTH( data-area )

Specifies the length, as a fullword binary value, of the keyword parameter value. The actual length of the value is returned in this data area. If the value exceeds the buffer length, it is truncated. If the length of the keyword parameter value is less than the size of the buffer, the keyword parameter value is placed in the leftmost byte positions.

Conditions

20 ENDFILE

The end of the list of keyword parameters has been reached.

16 INVREQ

RESP2 values are:

1

The command is being issued in a non-CICS Web support application.

3

The command is being issued for a non-HTTP request.

4

The command is being issued before a WEB STARTBROWSE has been issued.

6

A keyword parameter has been found which is not in the format NAME=VALUE.

22 LENGERR

RESP2 values are:
NAMELENGTH or VALUELENGTH is less than or equal to zero.

The keyword parameter name has been truncated during a browse operation because the receiving buffer is too small.

The keyword parameter value has been truncated because the receiving buffer is too small.

WEB RECEIVE (Server)

Receive an HTTP request, or a non-HTTP message.

WEB RECEIVE (CICS as an HTTP server using buffers)

WEB RECEIVE INTO(data-area) LENGTH(data-area)

SET(ptr-ref)

MAXLENGTH(data-value)

NOTTRUNCATE

TYPE(cvda)

SRVCONVERT

NOSRVCONVERT

SERVERCONV(cvda)

HOSTCODEPAGE(data-value)

BODYCHARSET(data-area)

MEDIATYPE(data-value)

WEB RECEIVE (CICS as an HTTP server using containers)

WEB RECEIVE TOCONTAINER(data-value)

TOCHANNEL(data-value)

TYPE(cvda)

CHARACTERSET(data-value)

BODYCHARSET(data-area)

MEDIATYPE(data-value)

Conditions: CHANNELERR, CONTAINERERR, INVREQ, LENGERR, NOTFND

This command is threadsafe.

Description

WEB RECEIVE receives the body of an HTTP request, or all the data for a non-HTTP message, into an application-supplied buffer, or set buffer. Alternatively, an HTTP request can be stored in a named container. The headers for an HTTP request can be examined separately using the WEB HTTPHEADER commands. The item received by the WEB RECEIVE command can be:

- The body of an HTTP request that a Web client has made to CICS as an HTTP server. For guidance on the correct use of the WEB RECEIVE command for this purpose, see Receiving the entity body of an HTTP request.
• A non-HTTP message handled by CICS Web support facilities, with the user-defined (USER) protocol on the TCPIPSERVICE definition. For guidance on non-HTTP messages, see CICS web support and non-HTTP requests.

• A request from another application that has used the CICS business logic interface to contact the application program directly, rather than going through the CICS HTTP listener. For guidance on the CICS business logic interface, see Introduction to the CICS business logic interface.

The data is returned in its escaped form.

When receiving the HTTP body into an application buffer (using the INTO or SET options), WEB RECEIVE allows you to specify the type of code page conversion used for incoming data received by the CICS application program. If you omit all of the code page conversion options (SERVERCONV, CLNTCODEPAGE, CHARACTERSET, HOSTCODEPAGE), no code page conversion takes place.

Code page conversion is not permitted when receiving an HTTP body into a named container. If the named container was created by the user application before the WEB RECEIVE command was issued, the container is deleted and re-created. The HTTP request Content-Type header media type information determines whether the named container is re-created as a BIT or CHAR container (unless the CHARACTERSET option is specified, in which case CICS assumes that the data stored in the container is encoded in the CHARACTERSET code page). If the media type is:

• a text media type, a CHAR container is created.

• a non-text media type, a BIT container is created.

If the HTTP request does not contain media type information, the default of text media type is assumed.

If a CHAR container is created, the IANA-registered name of the Coded Character Set Identifier (CCSID) for the data’s current code page is retrieved from the HTTP request Content-Type header charset. If this information is not provided or not supported by CICS, the default of ISO-8859-1 is assumed.

The charset can be overridden by using the CHARACTERSET option. If CHARACTERSET is specified, a CHAR container is created.

Options LENGTH, MAXLENGTH, NOTRUNCATE, SERVERCONV and HOSTCODEPAGE are not permitted when receiving an HTTP body into a named container.

Containers cannot be used to receive messages that are sent over a user protocol socket.

CICS receives the body of the server HTTP request into 64-bit (above-the-bar) storage if the HTTP request contains a Content-Length header or is sent as a chunked request. The body is copied into 31-bit (above-the-line) storage only when CICS needs to provide a 31-bit version for the server application.

Options

BODYCHARSET(data-area)

Specifies the character set of the HTTP request body.

The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation.

If the HTTP body is received into an application buffer, the character set returned is as follows:

• If the INTO or SET option is specified, and the HTTP body is converted, CICS returns the character set of the HTTP body before conversion.

• If the INTO or SET option is specified, and the HTTP body is not converted, CICS returns the character set specified in the Content-Type header. If character set information is not available, blanks are returned.

If the HTTP body is received into a named container, the character set returned is as follows:

• If the container is a CHAR container, CICS returns the character set of the encoded data.

• If the container is a BIT container, CICS returns blanks.

If the value returned is more than 40 bytes, the data is truncated. If the value returned is less than 40 bytes, the data is padded to the right with blanks.
CHARACTERSET(data-value)
Specifies the character set that was used by the Web client for the entity body of the received item. The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation. CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

If the HTTP request body is stored in a buffer and the CHARACTERSET option is specified, the SRVCONVERT option is assumed, so code page conversion of the entity body takes place. CICS can identify the character set for the message body, when receiving data into a buffer (using either the INTO or SET options), if you specify SRVCONVERT or HOSTCODEPAGE, or both options (without specifying CHARACTERSET). The description for the SERVERCONV option tells you what happens in this case.

If the HTTP request body is stored in a container and the CHARACTERSET option is specified, CICS assumes that the data stored in the container is encoded in that code page. CHARACTERSET overrides the Content-Type charset of the received data, and sets the CCSID of the container to the specified CHARACTERSET. This means that when the GET CONTAINER command is issued with that container, the data is converted from the CCSID that was set by the CHARACTERSET parameter on the WEB RECEIVE command, to any code page requested by the user.

CLNTCODEPAGE(data-value)
This option is supported for upgrade purposes only. CHARACTERSET replaces it. The action taken by CICS is the same for both keywords.

HOSTCODEPAGE(data-value)
Specifies the 8-character name of the CICS (host) code page used by the application program, into which the entity body of the received item should be converted from the character set in which it was received from the Web client.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

If you are receiving data into a buffer (and either the INTO or SET option is specified), then the HOSTCODEPAGE option is specified and SRVCONVERT is assumed, so code page conversion of the entity body takes place. Specifying either SRVCONVERT, or CHARACTERSET, or both, and omitting HOSTCODEPAGE, lets CICS determine the host code page.

The default if this option is not specified is the default code page for the local CICS region, as specified in the LOCALCCSID system initialization parameter.

If you are using the TOCONTAINER option, do not specify the HOSTCODEPAGE option.

INTO(data-area)
Specifies the buffer that is to contain the data being received. If the HTTP request contains a Content-Length header or was sent in chunks, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage to the application buffer that is specified in the INTO option.

If the INTO option is specified, MAXLENGTH must also be specified, with a value greater than zero (otherwise an INVRREQ error with RESP2 16 is returned to the application).

LENGTH(data-area)
Specifies a fullword binary variable that is set to the amount of data that CICS has returned to the application. Note that this might be slightly less than the limit that you set using the MAXLENGTH option, especially if a double-byte or multi-byte character set is involved, because CICS does not return a partial character at the end of the data.

• If the NOTRUNCATE option is not specified, any further data present in the message has now been discarded. A LENGERR response with a RESP2 value of 57 is returned if further data was present.
- If the NOTRUNCATE option is specified, any additional data is retained. A LENGERR response with a RESP2 value of 36 is returned if additional data is available. The description for the NOTRUNCATE option tells you what to do in this case.

If you are using an application buffer to store your HTTP body, the LENGTH option must be specified when the INTO or SET options are used. If you are using a named container to store your HTTP body (and therefore specify the TOCONTAINER option), do not use the LENGTH option.

MAXLENGTH(data-value)
Specifies the maximum amount, as a fullword binary value, of data that CICS is to pass to the application. The MAXLENGTH option applies whether the INTO or the SET option is specified for receiving data. If the data has been sent using chunked transfer-coding, CICS assembles the chunks into a single message before passing it to the application, so the MAXLENGTH option applies to the total length of the chunked message, rather than to each individual chunk. The data is measured after any code page conversion has taken place. If the length of data exceeds the value specified and the NOTRUNCATE option is not specified, the data is truncated to that value, and the remainder of the data is discarded. If the length of data exceeds the value specified and the NOTRUNCATE option is specified, CICS retains the remaining data and can use it to satisfy subsequent RECEIVE commands.

If you are using the TOCONTAINER option, do not specify the MAXLENGTH option.

MEDIATYPE (data-area)
Specifies the data content of any message body provided, for example text/xml. You must specify a 56-byte area for MEDIATYPE. The media type is up to 56 alphanumeric characters, including appropriate punctuation.

NOTRUNCATE
Specifies that when the data available exceeds the length requested on the MAXLENGTH option, the remaining data is not to be discarded immediately but is to be retained for retrieval by subsequent RECEIVE commands. (If no further RECEIVE commands are issued, the data is discarded during transaction termination.)

A single RECEIVE command using the SET option and without the MAXLENGTH option receives all the remaining data, whatever its length. Alternatively, you can use a series of RECEIVE commands with the NOTRUNCATE option to receive the remaining data in appropriate chunks. Keep issuing the RECEIVE command until you are no longer getting a LENGERR response. If you receive less than the length requested on the MAXLENGTH option, this does not necessarily indicate the end of the data; this could happen if CICS needs to avoid returning a partial character at the end of the data.

If you are using the TOCONTAINER option, do not specify the NOTRUNCATE option. The entire HTTP body is stored in the named container by the first WEB RECEIVE command.

SERVERCONV(cvda)
Specifies whether or not CICS translates the entity body of the item received, from the character set used by the Web client, to a code page suitable for the application. You can use the CHARACTERSET and HOSTCODEPAGE options on this command to specify the character set and code page that are used. If you specify either of these options, code page conversion (SRVCONVERT) is assumed. Alternatively, you can omit either or both of these options, specify SRVCONVERT and let CICS determine a suitable character set and code page.

If you are using the TOCONTAINER option, do not specify the SERVERCONV option.

SRVCONVERT
CICS converts the entity body of the message, before it is passed to the application.

When you specify SRVCONVERT without CHARACTERSET, CICS identifies the character set as follows:
1. If the Web client’s request has a Content-Type header naming a character set supported by CICS, that character set is used.
2. If the Web client’s request has no Content-Type header or the named character set is unsupported, the ISO-8859-1 character set is used.
3. For non-HTTP messages (sent using the USER protocol), the ISO-8859-1 character set is used.
When you specify SRVCONVERT without HOSTCODEPAGE, CICS determines the host code page as the default code page for the local CICS region, as specified in the LOCALCCSID system initialization parameter.

If you specify SRVCONVERT alone, note that for code page conversion to take place, the media type for the message must specify a type of data content that can be identified as text according to the IANA definitions. For messages where no media type is given but SRVCONVERT is specified, code page conversion also takes place. If a non-text media type is present, CICS does not convert the message body. However, for compatibility with Web-aware applications coded in earlier releases, if you specify either of the CHARACTERSET or HOSTCODEPAGE options or omit the SERVERCONV option, the media type for the message does not influence code page conversion.

**NOSRVCONVERT**

CICS does not convert the entity body of the item, and it is passed to the application in the character set used by the Web client. If you specify NOSRVCONVERT, you cannot specify the CHARACTERSET or HOSTCODEPAGE options.

**SET(ptr-ref)**

Specifies a pointer reference that is to be set to the address of data received. The pointer reference is valid until the next receive command or the end of task.

If the HTTP request contains a Content-Length header or has been sent in chunks, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage into storage that is accessible to the application, and the pointer reference is set to this copy.

**TOCHANNEL(data-value)**

Specifies the name of the channel that the container belongs to. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

If you plan to ship your channels between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

If the TOCHANNEL option is not specified, then CICS assumes the current channel.

**TOCONTAINER(data-value)**

Specifies the name of the container where the data is placed. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks.

If you plan to ship your containers between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

Do not use container names starting with "DFH", unless requested to do so by CICS.

The TOCONTAINER option can only be specified on the first WEB RECEIVE command.

When TOCONTAINER is specified, CICS holds the received body of the HTTP request in 64-bit storage until the application uses a CONTAINER API command to obtain the HTTP body.

**TYPE(cvda)**

Returns the type of request received. CVDA values are:
HTTPYES
indicates an HTTP request.

HTTPNO
indicates a non-HTTP request.

In CICS Transaction Server for z/OS, Version 3, HTTP requests and non-HTTP requests use different protocols, which are specified on TCPIPSERVICE definitions, and must therefore use different ports. Non-HTTP requests use the user-defined (USER) protocol. You might use the TYPE option to distinguish between the request types if you specify the same user-written application program for responding to both HTTP and non-HTTP requests.

Conditions

122 CHANNELERR
RESP2 values are:

1
The name specified by the TOCHANNEL option contains an illegal character or combination of characters.

110 CONTAINERERR
RESP2 values are:

1
The name specified by the TOCONTAINER option contains an illegal character or combination of characters.

16 INVREQ
RESP2 values are:

1
The command is being issued in a non-CICS Web support application.

14
Invalid code page combination.

46
The SERVERCONV option is invalid.

80
CHARACTERSET cannot be specified with NOSRVCONVERT.

81
HOSTCODEPAGE cannot be specified with NOSRVCONVERT.

84
Body incomplete.

145
Channel was not specified, and there is no current channel.

146
The named container is a read-only container.

147
Internal conversion error.

148
User protocol is not supported for containers.

149
The TOCONTAINER option can only be specified on the first WEB RECEIVE command.

22 LENGERR
RESP2 values are:

16
The MAXLENGTH option value was less than or equal to zero.
36 Partial response body returned. Use additional RECEIVEs to obtain remainder.

57 The response body exceeds the length specified, and the remainder of the body has been discarded.

13 NOTFND
RESP2 values are:
7 Code page not found.
82 Client code page (character set) not found.
83 Host code page (for server) not found.

WEB RECEIVE (Client)

Receive an HTTP response for CICS as an HTTP client.

WEB RECEIVE (CICS as an HTTP client using buffers)

WEB RECEIVE (CICS as an HTTP client using containers)

Conditions: CHANNELERR, CONTAINERERR, INVREQ, LENGERR, NOTOPEN, IOERR, TIMEDOUT

This command is threadsafe.
Description

WEB RECEIVE for CICS as an HTTP client receives the body of an HTTP response that a server has made. The headers for the HTTP response can be examined separately using the WEB READ HTTPHEADER command or the HTTP header browsing commands. A session token must be included on this command. For guidance on the correct use of the WEB RECEIVE command for CICS as an HTTP client, see Making HTTP requests through CICS as an HTTP client.

When receiving the HTTP body into an application buffer (using the INTO or SET options), WEB RECEIVE allows you to specify the type of code page conversion used for incoming data received by the CICS application program. If you omit all of the code page conversion options (SERVERCONV, CLNTCODEPAGE, CHARACTERSET, HOSTCODEPAGE), no code page conversion takes place.

Code page conversion is not permitted when receiving an HTTP body into a named container. If the named container was created by the user application before the WEB RECEIVE command was issued, the container is deleted and re-created. The HTTP request Content-Type header media type information determines whether the named container is re-created as a BIT or CHAR container (unless the CHARACTERSET option is specified, in which case CICS assumes that the data stored in the container is encoded in the CHARACTERSET code page). If the media type is:

- a text media type, a CHAR container is created.
- a non-text media type, a BIT container is created.

If the HTTP request does not contain media type information, the default of text media type is assumed.

If a CHAR container is created, the IANA-registered name of the Coded Character Set Identifier (CCSID) for the data's current code page is retrieved from the HTTP request Content-Type header charset. If this information is not provided or not supported by CICS, the default of ISO-8859-1 is assumed.

Options LENGTH, MAXLENGTH, NOTRUNCATE and CLIENTCONV are not permitted when receiving an HTTP body into a named container.

Note: The RTIMOUT value specified for the transaction that starts the user application indicates the time that the application is prepared to wait to receive the incoming message. (RTIMOUT is specified on the transaction profile definition). When the period specified by RTIMOUT expires, CICS returns a TIMEDOUT response to the application. An RTIMOUT value of zero means that the application is prepared to wait indefinitely. The default setting for RTIMOUT on transaction profile definitions is zero, so it is important to check and change that setting for applications that are making HTTP client requests.

HTTP headers are normally received, processed, and held in 64-bit (above-the-bar) storage. When the body of the client HTTP request is received into a container, the container data is received and processed in 64-bit storage. When the HTTP body is received into an application buffer and CICS must hold that data before it can be returned to the application, CICS holds the data in 64-bit buffers.

Options

BODYCHARSET(data-area)

specifies the character set of the HTTP response body.

The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation.

If the HTTP body is received into an application buffer, the character set returned is as follows:

- If the INTO or SET option is specified, and the HTTP body is converted, CICS returns the character set of the HTTP body before conversion.
- If the INTO or SET option is specified, and the HTTP body is not converted, CICS returns the character set specified in the Content-Type header. If character set information is not available, blanks are returned.

If the HTTP body is received into a named container, the character set returned is as follows:

- If the container is a CHAR container, CICS returns the character set of the encoded data.
- If the container is a BIT container, CICS returns blanks.
If the value returned is more than 40 bytes, the data is truncated. If the value returned is less than 40 bytes, the data is padded to the right with blanks.

**CLIENTCONV(cvda)**
If you are receiving data into a buffer (and either the INTO or SET option is specified), this option specifies whether or not CICS translates the entity body of the response from the character set used by the server, to a code page suitable for the application. The default is that the entity body is converted.

**CLICONVERT**
CICS converts the entity body of the response from the character set used by the server, into the code page that you identify for the application.

**NOCLICONVERT**
CICS does not convert the entity body of the response, and it is passed to the application in the character set used by the server.

You do not need to specify a character set or application code page on the WEB RECEIVE command for CICS as an HTTP client. If code page conversion is required, CICS identifies the character set used by the server by examining the Content-Type header of the message. If the header does not provide this information, or if the named character set is not supported by CICS for code page conversion, the ISO-8859-1 character set is used. For the application’s code page, the default code page for the local CICS region (as specified in the LOCALCCSID system initialization parameter) is used, or an alternative EBCDIC code page that you specified on the WEB OPEN command.

There are certain considerations for code page conversion to take place when using buffers (with either the INTO or SET option specified). If you are receiving data into a buffer, and CHARACTERSET and CLICONVERT are not specified, the media type for the message must specify text as the data content type (according to the IANA definitions) for code page conversion to take place. For messages where no media type is given, but CLICONVERT is specified, code page conversion also takes place. If a non-text media type is present, CICS does not convert the message body.

If you are using the TOCONTAINER option, do not specify the CLIENTCONV option.

**INTO(data-area)**
specifies the buffer that is to contain the data being received. If the INTO parameter is specified, then MAXLENGTH must also be specified, with a value greater than zero (otherwise an INVREQ error with RESP2 16 is returned to the application).

If the HTTP request contains a Content-Length header or was sent in chunks, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage to the application buffer that is specified in the INTO option.

**LENGTH(data-area)**
specifies a fullword binary variable that is set to the amount of data that CICS has returned to the application. Note that this might be slightly less than the limit that you set using the MAXLENGTH option, especially if a double-byte or multi-byte character set is involved, because CICS does not return a partial character at the end of the data.

- If the NOTRUNCATE option is not specified, any further data present in the message has now been discarded. A LENGERR response with a RESP2 value of 57 is returned if further data was present.
- If the NOTRUNCATE option is specified, any additional data is retained. A LENGERR response with a RESP2 value of 36 is returned if additional data is available. The description for the NOTRUNCATE option tells you what to do in this case.

If you are using an application buffer to store your HTTP body, the LENGTH option must be specified when the INTO or SET options are used. If you are using a named container to store your HTTP body (and therefore specify the TOCONTAINER option), do not use the LENGTH option.

**MAXLENGTH(data-value)**
specifies the maximum amount, as a fullword binary value, of data that CICS is to pass to the application. The MAXLENGTH option applies whether the INTO or the SET option is specified for receiving data. If the data has been sent using chunked transfer-coding, CICS assembles the chunks
into a single message before passing it to the application, so the MAXLENGTH option applies to the total length of the chunked message, rather than to each individual chunk. The data is measured after any code page conversion has taken place.

If the length of data exceeds the value specified and the NOTRUNCATE option is not specified, the data is truncated to that value, and the remainder of the data is discarded.

If the length of data exceeds the value specified and the NOTRUNCATE option is specified, CICS retains the remaining data and can use it to satisfy subsequent RECEIVE commands.

If you are using the TOCONTAINER option, do not specify the MAXLENGTH option.

**MEDIATYPE**(data-area)

specifies the data content of any message body provided, for example `text/xml`. You must specify a 56-byte area for MEDIATYPE. The media type is up to 56 alphanumeric characters, including appropriate punctuation. For more information on media types, see [IANA media types and character sets](https://www.iana.org/assignments/media-types).

**NOTRUNCATE**

specifies that when the data available exceeds the length requested on the MAXLENGTH option, the remaining data is not to be discarded immediately but is to be retained for retrieval by subsequent RECEIVE commands. (If no further RECEIVE commands are issued, the data is discarded during transaction termination.)

A single RECEIVE command using the SET option and without the MAXLENGTH option receives all the remaining data, whatever its length. Alternatively, you can use a series of RECEIVE commands with the NOTRUNCATE option to receive the remaining data in appropriate chunks. Keep issuing the RECEIVE command until you are no longer getting a LENGERR response. If you receive less than the length requested on the MAXLENGTH option, this does not necessarily indicate the end of the data; this could happen if CICS needs to avoid returning a partial character at the end of the data.

If you are using the TOCONTAINER option, do not specify the NOTRUNCATE option. The entire HTTP body is stored in the named container by the first `WEB RECEIVE` command.

**SET**(ptr-ref)

specifies a pointer reference that is to be set to the address of data received. The pointer reference is valid until the next receive command or the end of task.

If the HTTP request contains a Content-Length header or has been sent in chunks, CICS holds the HTTP body in internal 64-bit storage; otherwise CICS holds the body in internal 31-bit storage. The body is copied from this internal storage into storage that is accessible to the application, and the pointer reference is set to this copy.

**SESSTOKEN**(data-value)

specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. [Session tokens](#) explains the use of the session token.

**STATUSCODE**(data-value)

specifies a data-area to receive the HTTP status code sent by the server. The code is a binary halfword value. Examples are 200 (normal) or 404 (not found). Receiving the status code is optional, but you should always receive and check the status code in the following circumstances:

- If you intend to make an identical request to the server, now or during a future connection.
- If you intend to make further requests to the server using this connection.
- If your application is carrying out any further processing that depends on the information you receive in the response.

[HTTP status code reference for CICS web support](#) has basic guidance on appropriate actions for an application to take in response to the status codes for HTTP/1.1.
STATUTEXT(data-area)
specifies a data-area to receive any text returned by the server to describe the status code. The text is known as a reason phrase. Examples are "OK" (accompanying a 200 status code), or "Bad Request" (accompanying a 400 status code). The STATUSLEN option gives the length allowed for the text.

STATUSLEN(data-value)
specifies, as a fullword binary value, the length of the data-area to receive any text returned by the server to describe the status code (the STATUTEXT option). The text is known as a reason phrase. Most reason phrases recommended for HTTP are short, but a data-area length of 256 characters is suggested here, in case the server replaces the recommended reason phrase with more detailed information.

TOCHANNEL(data-value)
Specifies the name of the channel that the container belongs to. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. If the channel does not exist, it is created. This new channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

If you plan to ship your channels between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the transaction. For more information, see Channels and containers.

If the TOCHANNEL option is not specified, then CICS assumes the current channel.

TOCONTAINER(data-value)
Specifies the name of the container where the data is placed. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; < > . - and _. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks.

If you plan to ship your containers between CICS regions, bear in mind that you should restrict your characters to standard alphanumeric characters (A-Z 0-9 & : = , ; <>. - _) to ensure they are represented in the same way by all EBCDIC code pages.

Do not use container names starting with "DFH", unless requested to do so by CICS.

The TOCONTAINER option can only be specified on the first WEB RECEIVE command.

When TOCONTAINER is specified, CICS holds the received body of the HTTP request in 64-bit storage until the application uses a CONTAINER API command to obtain the HTTP body.

Conditions

122 CHANNELERR
RESP2 values are:

1
The name specified by the TOCHANNEL option contains an illegal character or combination of characters.

110 CONTAINERERR
RESP2 values are:

1
The name specified by the TOCONTAINER option contains an illegal character or combination of characters.

19 NOTOPEN
RESP2 values are:
Invalid session token.

**INVREQ**

RESP2 values are:

**10**
Invalid response header.

**15**
Code page conversion failure.

**16**
An INTO and MAXLENGTH error has occurred, as a result of one of the following:
- Both parameters, INTO and MAXLENGTH, are not specified.
- Parameters INTO and MAXLENGTH are both specified, but MAXLENGTH is less than or equal to zero.

**22**
Invalid chunk received.

**41**
The connection has been closed. The server may have timed out due to inactivity on this connection.

**46**
The CLIENTCONV option is invalid.

**67**
The content of the response does not conform to HTTP format. The error is generated because there is a syntax problem.

**68**
Message send with chunked transfer-coding is in progress.

**71**
Chunked transfer-coding error.

**144**
One or more of the Web command parameters is invalid.

**145**
Channel was not specified, and there is no current channel.

**146**
The named container is a read-only container.

**147**
Internal conversion error.

**149**
The TOCONTAINER option can only be specified on the first WEB RECEIVE command.

**157**
The HTTP headers in the response are longer than 4k, and CICS is unable to process this HTTP response. The session is unusable, and a WEB CLOSE command is required.

**LENGERR**

RESP2 values are:

**16**
Invalid MAXLENGTH.

**36**
Partial response body returned. Use additional RECEIVEs to obtain remainder.

**57**
The response body exceeds the length specified, and the remainder of the body has been discarded.
The status text exceeds the length specified and has been truncated.

The STATUSLEN option value was not greater than zero.

**17 IOERR**
RESP2 values are:

42
Socket error.

**124 TIMEDOUT**
RESP2 values are:

62
Timeout on socket receive.

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**WEB RETRIEVE**

Retrieve the DOCTOKEN for a CICS document that was sent using a WEB SEND command.

**WEB RETRIEVE**

 Candidata  WEB  RETRIEVE  DOCTOKEN( data-area )

**Conditions:** INVREQ, NOTFND
This command is threadsafe.

The WEB RETRIEVE command allows an application to retrieve the binary token for a document that was sent. For the WEB RETRIEVE command to be able to retrieve the document token, the previous WEB SEND command must specify the ACTION(EVENTUAL) option, so that the SEND command is pending when the application completes. This is because if the ACTION(EVENTUAL) option is used, the Web domain keeps a copy of the information for a document after it is sent. Note that the document that is retrieved is the document that was sent, and it does not include any changes that might have occurred up to the time when the RETRIEVE command is issued.

A valid sequence of events for issuing the WEB RETRIEVE command is as follows:

| EXEC CICS WEB SEND ACTION(EVENTUAL) |
| EXEC CICS WEB SEND ACTION(EVENTUAL) |
| EXEC CICS WEB RETRIEVE DOCTOKEN(MYDOC) |

The DOCTOKEN for the second WEB SEND command is retrieved successfully.

If the WEB SEND command specified the option DOCSTATUS(DOCDELETE), the WEB RETRIEVE command cannot retrieve the document, and a NOTFND response with a RESP2 value of 1 is returned.

If the WEB SEND command specified the option ACTION(IMMEDIATE), the WEB RETRIEVE command cannot retrieve the document, and a NOTFND response with a RESP2 value of 1 is returned. WEB SEND client processing does not support ACTION(EVENTUAL), so the WEB RETRIEVE command is not valid for use with WEB SEND (Client) commands.

**Options**

**DOCTOKEN(data-area)**
specifies a buffer that contains the 16-byte binary token of the document to be retrieved.
Conditions

16 INVREQ
RESP2 values:

1
The command is issued in a non-CICS Web support application.

2
A WEB SEND command has not been issued.

13 NOTFND
RESP2 values:

1
Document is not available as the last WEB SEND specified DOCSTATUS(DOCDELETE) or the last WEB SEND was not a SEND for a document with ACTION(EVENTUAL).

WEB SEND (Server)

Send an HTTP response, or a non-HTTP message.

WEB SEND

Conditions: CHANNELERR, CONTAINERERR, IOERR, INVREQ, LENGERR, NOTFND

This command is threadsafe.
Description

When the CICS application is in the server role, the **WEB SEND** command specifies a response to be sent using CICS Web support or the CICS business logic interface. Here are the possible responses:

- A response to an HTTP request that was made by a Web client, to CICS as an HTTP server. For guidance on the correct use of the WEB SEND command for this purpose, see Sending an HTTP response from CICS as an HTTP server.
- A non-HTTP message handled by CICS Web support facilities, with the user-defined (USER) protocol on the TCPIPSERVICE definition. For guidance on non-HTTP messages, see CICS web support and non-HTTP requests.
- A response to a request from another application that has used the CICS business logic interface to contact the program directly, rather than going through the CICS HTTP listener. For guidance on the CICS business logic interface, see Introduction to the CICS business logic interface.

One response only can be sent during a task. This can be a standard response using one WEB SEND command, or a chunked response using a sequence of WEB SEND commands.

If you attempt to send a second response during the same task, the result depends on whether the IMMEDIATE option or the EVENTUAL option was specified on the WEB SEND command for the first response.

- If the IMMEDIATE option was used for the first response, an error is returned when you attempt the second response.
- If the EVENTUAL option was used for the first response, the second response overwrites the components of the previous response (status line, HTTP headers and message body). The first response is lost, and the second response is sent.

Each time a request from a Web client is received, CICS starts a new task to process the request.

If the body of the server HTTP request is held in a container before it is sent to the server, CICS keeps the body in, and sends it from, 64-bit storage. If the body of the server HTTP request is held in an application buffer and needs to be copied or converted before it is sent, CICS keeps the body in, and sends it from, 64-bit storage. However, when a document is sent, the document is processed in 31-bit storage.

Options

**ACTION(cvda)**

Specifies how the message should be sent out. The CVDA values that apply for CICS as an HTTP server are:

- **IMMEDIATE** sends the response immediately to the Web client. If CHUNKING is specified, the IMMEDIATE option is assumed.
- **EVENTUAL** sends the response to the Web client at end of task. If CHUNKING is specified, the EVENTUAL option is ignored. For message sends that do not use chunked transfer-coding, EVENTUAL is the default.

**CHANNEL(data-value)**

Specifies the name of the channel to which the container belongs. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

If the CONTAINER option is specified, CHANNEL is optional.

If the CHANNEL option is not specified, CICS assumes the current channel.

**CHARACTERSET(data-value)**

Specifies a character set into which CICS translates the entity body of the item sent by the command before sending. The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation. CICS does not support all the character sets named by IANA.
HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

When the CHARACTERSET option is specified, SRVCONVERT is assumed, so code page conversion of the entity body takes place. As an alternative to selecting the character set yourself, specifying either SRVCONVERT, or HOSTCODEPAGE (if allowed), or both, and omitting CHARACTERSET, lets CICS determine a suitable character set for the message body. The description for the SERVERCONV option tells you what happens in this case.

If you omit all of the code page conversion options, no code page conversion takes place.

CHUNKING(cvda)

is used for controlling the message send when the message is being sent in chunks (known as chunked transfer-coding). The default when the option is not specified is that chunked transfer-coding is not in use. Chunked transfer-coding is only acceptable to HTTP/1.1 clients, and it cannot be used with HTTP/1.0 clients or non-HTTP messages.

The content of a chunked message can be divided into chunks in whatever way is most convenient for the application program. The body of a chunked message cannot be formed directly from CICS documents, so the DOCTOKEN option cannot be used.

Use a separate WEB SEND command with the CHUNKYES option for each chunk of the message. Use the FROM option to specify the chunk of data, and the FROMLENGTH option to specify the length of the chunk. Other options for the message, such as the CLOSESTATUS option, can be specified on the first WEB SEND command of the sequence (which sends the first chunk), but do not specify them on subsequent commands (which send the second and subsequent chunks).

When you have sent the last chunk of the data, specify a further WEB SEND command with the CHUNKEND option and no FROM or FROMLENGTH option. CICS then sends an empty chunk to the recipient to complete the chunked message.

If one of the WEB SEND commands fails during the sequence, an error response is returned, and subsequent sends will also fail. The application should handle this situation appropriately. If all of the chunks are sent successfully but the application does not issue the final WEB SEND command with the CHUNKEND option, the transaction is abended with abend code AWBP. An incomplete chunked message should be ignored and discarded by the recipient.

Sending an HTTP request or response with chunked transfer-coding has a full description of the procedure for chunked transfer-coding, which should be followed in order for your chunked message to be acceptable to the recipient.

CVDA values are:

CHUNKNO
- Chunked transfer-coding is not used for the message. This is the default if the CHUNKING option is not specified.

CHUNKYES
- Chunked transfer-coding is in progress. The data specified by the FROM option represents a chunk of the message.

CHUNKEND
- Chunked transfer-coding is complete. No data is specified for this send. CICS sends an empty chunk to the recipient to complete the chunked message.

If you are using the CONTAINER option, do not specify the CHUNKING option. A chunked response cannot be sent from a container.

CLNTCODEPAGE(data-value)

This option is supported for upgrade purposes only. CHARACTERSET replaces it. The action taken by CICS is the same for both keywords.

CLOSESTATUS(cvda)

Specifies whether or not CICS closes the connection after sending the message. The default is that the connection is not closed. The CVDA values are:
CLOSE
CICS writes a Connection header with the "close" connection option (Connection: close) for this response, and closes the connection with the Web client after sending the response. The header notifies the Web client of the closure. (For a Web client at HTTP/1.0 level, CICS achieves the same effect by omitting the Connection: Keep-Alive header.)

If chunked transfer-coding is in use, the CLOSE option can be specified on the first chunk of the message, to inform the Web client that the connection is closed after the chunked message is complete.

NOCLOSE
means that the Connection: close header is not used for this response, and the connection is kept open. If the Web client is identified as HTTP/1.0 and has sent a Connection header with the "Keep-Alive" connection option (Connection: Keep-Alive), CICS sends the same header, to notify that a persistent connection will be maintained.

CONTAINER(data-value)
Specifies the name of the container where the HTTP body is held, before it is sent to the server. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is shorter than 16 characters, it is padded with trailing blanks.

When CONTAINER is specified, CICS stores the HTTP body in, and sends it from, 64-bit storage.

DOCSTATUS(cvda)
indicates whether the document should be deleted or not deleted during processing of the WEB SEND command. The CVDA values are:

DOCODELETE
CICS deletes the document after the document contents are saved for sending. Storage allocated for the document is released immediately. If you make subsequent requests for the document, these generate a NOTFND response.

NODOCODELETE
CICS does not delete the document during processing of the WEB SEND command. This is the default value for DOCSTATUS.

DOCTOKEN(data-value)
Specifies the 16-byte binary token of a document to be sent as the message body. The document is created using the CICS Document interface using the EXEC CICS DOCUMENT CREATE, INSERT, and SET commands. The FROM option provides an alternative way to create a message body.

The body of a chunked message cannot be formed from CICS documents, so the DOCTOKEN option cannot be used for chunked transfer-coding.

When DOCTOKEN is specified, the document is processed in 31-bit storage.

FROM(data-area)
Specifies a buffer of data that holds the complete message body, or a chunk of the message body. The message body is built by the application program. When you specify the FROM option, use the FROMLENGTH option to specify the length of the buffer of data. The DOCTOKEN option provides an alternative way to create the message body, but that option cannot be used for the body of a chunked message.

When FROM is specified, if CICS needs to copy or convert the HTTP body before it is sent, the body is copied or converted in, and sent from, 64-bit storage.

There is no set maximum limit for the size of the data-area, but its size is limited in practice by storage considerations. Producing an entity body for an HTTP message has more information about these.

FROMLENGTH(data-value)
Specifies the length, as a fullword binary value, of the buffer of data supplied on the FROM option. It is important to state this value correctly, because an incorrect data length can cause problems for the recipient of the message.
HOSTCODEPAGE(data-value)
Specifies the 8-character name of the CICS (host) code page that was used by the application program for the entity body of the response.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

When the HOSTCODEPAGE option is specified, SRVCONVERT is assumed, so code page conversion of the entity body takes place. Specifying either SRVCONVERT, or CHARACTERSET, or both, and omitting HOSTCODEPAGE, lets CICS identify the host code page.

If a CICS document is used to form the response body (DOCTOKEN option), do not specify the HOSTCODEPAGE option, because CICS identifies the host code page from the CICS document domain's record of the host code pages for the document.

If a buffer of data is used to form the response body (FROM option), you may need to specify HOSTCODEPAGE. The default if this option is not present is the default code page for the local CICS region, as set in the LOCALCCSID system initialization parameter. If you require code page conversion but your application has used a different code page, use HOSTCODEPAGE to specify it.

If you omit all of the code page conversion options, no code page conversion takes place.

If you are using the CONTAINER option, do not specify the HOSTCODEPAGE option.

LENGTH(data-value)
This option is supported for upgrade purposes only. STATUSLEN replaces it.

MEDIATYPE(data-value)
Specifies the data content of any message body provided, for example text/xml. You must specify a 56-byte area for MEDIATYPE. The media type is up to 56 alphanumeric characters, including appropriate punctuation, but not spaces. For more information on media types, see IANA media types and character sets. CICS checks that the format of the media type is correct, but does not check the validity of the media type against the data content. CICS does not provide a default. In some circumstances, the media type that you specify affects whether or not code page conversion is carried out; see the description of the SERVERCONV option for more information.

SERVERCONV(cvda)
Specifies whether or not CICS translates the entity body of the item sent by the command before sending, from the code page used by the application, to a character set suitable for the recipient. You can use the CHARACTERSET and HOSTCODEPAGE options on this command to specify the character set and code page that are used. If you specify either of these options, code page conversion (SRVCONVERT) is assumed. Alternatively, you can omit either or both of these options, specify SRVCONVERT and let CICS determine a suitable character set and code page.

SRVCONVERT
CICS converts the entity body of the message.

When you specify SRVCONVERT without CHARACTERSET, CICS determines a suitable character set as follows:

1. If the Web client's request has a Content-Type header naming a character set supported by CICS, that character set is used.
2. If the Web client's request has no Content-Type header or the named character set is unsupported, the ISO-8859-1 character set is used.
3. For non-HTTP messages (sent using the USER protocol), the ISO-8859-1 character set is used.

When you specify SRVCONVERT without HOSTCODEPAGE, CICS identifies the host code page as follows:

- If the FROM option is used, CICS identifies the host code page as the default code page for the local CICS region, as specified in the LOCALCCSID system initialization parameter.
• If the DOCTOKEN option is used, CICS identifies the host code page from the CICS document domain’s record of the host code pages for the document.

• If the CONTAINER option is used, CICS identifies the host code page as the code page that was used for data encoding, when the HTTP body was stored in the container.

If you specify SRVCONVERT alone, note that for code page conversion to take place, the MEDIATYPE option must specify a type of data content that can be identified as text according to the IANA definitions. For non-text media types, CICS does not convert the message body, and an INVREQ RESP2 code is issued. However, for compatibility with Web-aware applications coded in earlier releases, if you specify either of the CHARSETSET or HOSTCODEPAGE options or omit the SERVERCONV option, the MEDIATYPE option does not influence code page conversion.

BIT containers contain non-text media, and therefore do not support code page conversion. As a result, if you code either the SRVCONVERT or CHARSETSET options with a BIT container, an INVREQ RESP2 error is produced.

NOSRVCONVERT
CICS does not convert the entity body of the HTTP request, and it is sent to the server in the code page used by the application. If you specify NOSRVCONVERT, you cannot specify the CHARSETSET or HOSTCODEPAGE options.

Note: If you omit all of the code page conversion options (SERVERCONV, CLNTCODEPAGE, CHARSETSET, HOSTCODEPAGE), no code page conversion takes place.

STATUSCODE(data-value)
Specifies a standard HTTP status code determined by the application program, which is to be inserted on the status line of the HTTP response. The code is a halfword binary value. Examples are 200 (normal response) or 404 (not found). If this option is not specified, CICS supplies a default of 200.

HTTP status code reference for CICS web support has information about the use of status codes for CICS Web support. For status codes 204, 205, and 304, a message body is not allowed, and CICS returns an error response to the command if you attempt to include one. Other than that, CICS does not check that your use of the status code is appropriate.

STATUSLEN(data-value)
Specifies the length, as a fullword binary value, of the string supplied on the STATUSTEXT option.

STATUSTEXT(data-area)
Specifies a data-area containing human-readable text to describe the reason for the status code. The text is known as a reason phrase. Examples are "OK" (accompanying a 200 status code), or "Bad Request" (accompanying a 400 status code). The HTTP/1.1 specification (RFC 2616) defines a recommended reason phrase for each status code, but you do not have to use these.

Conditions
122 CHANNELERR
RESP2 values are:
2
The channel specified by the CHANNEL option could not be found.

110 CONTAINERERR
RESP2 values are:
2
The container specified by the CONTAINER option could not be found.

16 INVREQ
RESP2 values are:
1
The command is being issued in a non-CICS Web support application.

11
Action code invalid.
13 Close status invalid.
14 Invalid code page combination.
32 Media type invalid.
41 The connection has been closed.
46 The SERVERCONV option is invalid.
72 Status code does not support a message body.
75 Invalid send sequence.
77 Chunk incomplete.
80 CHARACTERSET cannot be specified with NOSRVCONVERT.
81 HOSTCODEPAGE cannot be specified with NOSRVCONVERT.
85 Chunking cannot be used with non-HTTP messages.
86 Chunking cannot be used with HTTP/1.0 clients.
87 Status code not allowed.
88 Host code page not allowed.
89 Previous send over this connection failed. No further sends permitted.
90 STATUSCODE and STATUSTEXT options not allowed for second or subsequent chunks.
91 CHARACTERSET and CLNTCODEPAGE options not allowed for second or subsequent chunks.
92 HOSTCODEPAGE option not allowed for second or subsequent chunks.
93 MEDIATYPE option not allowed for second or subsequent chunks.
94 CLOSESTATUS option not allowed for second or subsequent chunks.
95 SERVERCONV option not allowed for second or subsequent chunks.
120 The CHUNKING option is invalid.
121 FROMLENGTH option required.
122 FROM option required.
123 No message body specified. Use FROM, DOCTOKEN or CHUNKEND.
124  CHUNKING option not specified, FROMLENGTH option required.
125  CHUNKNO specified, FROM option required.
126  CHUNKNO specified, FROMLENGTH option required.
127  CHUNKYES specified, FROM option required.
128  CHUNKYES specified, FROMLENGTH option required.
129  FROM option not allowed with CHUNKEND.
130  FROMLENGTH option not allowed with CHUNKEND.
131  FROMLENGTH option specified as zero.
143  The DOCSTATUS value specified is invalid.
145  Channel was not specified, and there is no current channel.
147  Internal conversion error.
148  User protocol is not supported for containers.
150  Conversion requested, but data to be sent is in a DATATYPE BIT container.
151  Chunking is invalid during Web error processing.
152  ACTION(EVENTUAL) is invalid during Web error processing.

17 IOERR
  RESP2 values are:
  42  Socket error.
22 LENGERR
  RESP2 values are:
  50  The FROMLENGTH option value was not greater than zero.

13 NOTFND
  RESP2 values are:
  1  The document has not been created, or has been deleted, or the name is incorrectly specified.
  7  Client code page (character set) not found.
  83  Host code page (for server) not found.
WEB SEND (Client)

Send an HTTP request by CICS as an HTTP client, using CICS Web support.

WEB SEND (CICS as an HTTP client)

WEB SEND — SESSTOKEN( data-value )

GET
HEAD
POST
PUT
TRACE
OPTIONS
DELETE
METHOD( cvda )

PATH( data-area ) — PATHLENGTH( data-value )

URIMAP( data-value )

QUERYSTRING( data-area ) — QUERYSTRLEN( data-value )

Body

CLICONVERT
NOCLICONVERT
CLIENTCONV( cvda )

CHARACTERSET( data-value )

EXPECT
ACTION( cvda )
CLOSE
CLOSESTATUS( cvda )

NONE

BASICAUTH
AUTHENTICATE( cvda )

Credentials

Body
This command is threadsafe.

**Description**

WEB SEND for CICS as an HTTP client is used to make an HTTP request to a server. A session token must be included on this command. For guidance on the correct use of the WEB SEND command for CICS as an HTTP client, see Making HTTP requests through CICS as an HTTP client.

For CICS as an HTTP client, the WEB SEND command cannot be used after the connection to the server has been closed. You might encounter this situation if either the application program or the server sends a Connection: close header on a message. If you need to test whether the server has requested termination of the connection, use the WEB READ HTTPHEADER command to look for the Connection: close header in the last message from the server.

For CICS as an HTTP client, you can use the WEB CONVERSE command as an alternative to issuing a WEB SEND command followed by a WEB RECEIVE command. However, the WEB CONVERSE command does not support chunked transfer-coding, because this mechanism requires a sequence of send actions and the WEB CONVERSE command provides a single send action.

The request can time out when sending a message to the server. In this case, the deadlock timeout interval specified in the DTIMOUT attribute of the TRANSACTION definition applies, and CICS returns a TIMEDOUT response to the application.

HTTP headers are normally held, processed, and sent from 64-bit (above-the-bar) storage. When the body of the client HTTP request is sent from a container, the container data is processed and sent from 64-bit storage. When the HTTP body is sent from an application buffer and CICS needs to convert the data, that data is converted in, and sent from, a 64-bit buffer. However, when a document is sent, the document is processed in 31-bit (above-the-line) storage.
Options

**ACTION(cvda)**

Specifies how the message will be sent out. This CVDA value applies for CICS as an HTTP client:

**EXPECT**

Makes CICS send an Expect header with the request line and headers for the request and await a 100-Continue response before sending the message body to the server. If a response other than 100-Continue is received, CICS informs the application program and cancels the send. If no response is received after a period of waiting, CICS sends the message body.

The Expect header is not supported by servers below HTTP/1.1. If CICS does not yet know the HTTP version of the server, CICS makes an additional request before sending your request, to determine the HTTP version of the server. If the Expect header is not suitable, CICS sends your request without it.

This option must be used only if your request has a message body.

**AUTHENTICATE(cvda)**

Specifies user authentication details, to control access to restricted data. The CVDA values that apply for CICS as an HTTP client are as follows:

**NONE**

Specifies that there are no restrictions on accessing this data, therefore no credentials are required. This is the default value for AUTHENTICATE.

**BASICAUTH**

Specifies that HTTP Basic Authentication credentials are required for this session. These details can be supplied within the command or by using the XWBAUTH global user exit.

**CHANNEL(data-value)**

Specifies the name of the channel to which the container belongs. The name of the channel can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is less than 16 characters, it is padded with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

If the CONTAINER option is specified, CHANNEL is optional.

If the CHANNEL option is not specified, CICS assumes the current channel.

**CHARACTERSET(data-value)**

Specifies the character set into which CICS translates the entity body of the request before sending. The name of the character set can consist of up to 40 alphanumeric characters, including appropriate punctuation. CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

For conversion of the entity body to take place, the CLIENTCONV option must be specified as (or allowed to default to) CLICONVERT. Specifying NOCLICONVERT suppresses conversion of the entity body. If conversion is requested, ISO-8859-1 is used as the default if the CHARACTERSET attribute is not specified.

**CHUNKING(cvda)**

Is used for controlling the message send when the message is being sent in chunks (known as chunked transfer-coding). The default when the option is not specified is that chunked transfer-coding is not in use.

The content of a chunked message can be divided into chunks to suit the application program. The body of a chunked message cannot be formed directly from CICS documents, so the DOCTOKEN option cannot be used.

Use a separate WEB SEND command with CHUNKYES for each chunk of the message. Use the FROM option to specify the chunk of data, and the FROMLENGTH option to specify the length of the chunk. Other options for the message, such as the CLOSESTATUS option, can be specified on the first WEB SEND command of the sequence (which sends the first chunk), but do not specify them on subsequent commands (which send the second and subsequent chunks).
When you have sent the last chunk of the data, specify a further WEB SEND command with
CHUNKEND, but not the FROM and FROMLENGTH options. CICS then sends an empty chunk to the
recipient to end the chunked message.

If your application program is informed of an error at any point in the chunking process, use the WEB
CLOSE command to stop the process and close the connection. The recipient of the chunked message
will not receive the final empty chunk, and so ignores and discards the data that you have sent so far.

Sending an HTTP request or response with chunked transfer-coding has a full description of the
procedure for chunked transfer-coding, which must be followed for your chunked message to be
acceptable to the recipient.

CVDA values are as follows:

CHUNKNO
- Chunked transfer-coding is not used for the message. CHUNKNO is the default if the CHUNKING
  option is not specified.

CHUNKYES
- Chunked transfer-coding is in progress. The data specified by the FROM option represents a chunk
  of the message.

CHUNKEND
- Chunked transfer-coding is complete. No data is specified for this send. CICS sends an empty
  chunk to the recipient to complete the chunked message.

Notes:
1. The method (METHOD option) must be compatible with chunked transfer-coding.
2. When you have begun sending the parts of a chunked message, the application program cannot
   send any different messages or receive any items until the final empty chunk is sent and the
   chunked message is complete.

If you are using the CONTAINER option, do not specify the CHUNKING option. A chunked response
cannot be sent from a container.

CLOSESTATUS(cvda)
- Specifies whether a Connection header with the "close" connection option (Connection: close) will be
  included on the message. The default is that the header is not included. The CVDA values are as
  follows:

CLOSE
- Makes CICS write a Connection: close header for this request. The header notifies the server that
  the connection will be closed after the server has sent its response to the request. (For a server at
  HTTP/1.0 level, CICS achieves the same effect by omitting the Connection: Keep-Alive header.) Do
  not specify this option if you have implemented connection pooling in the URIMAP resource for
  this connection, because a closed connection cannot be pooled for reuse. Only specify this option
  if this is your final request to the server and you are not using connection pooling.

When you specify the CLOSE option on a WEB SEND command, no further messages can be sent
to the server until a new connection is made. The exception is where chunked transfer-coding is in
use, when you can specify the CLOSE option on the first chunk of the message, to inform the
server that the connection will be closed after the chunked message is complete and a response
has been sent.

NOCLOSE
- Means that the Connection: close header is not used for this request. If the server is identified as
  HTTP/1.0, CICS sends a Connection header with the Keep-Alive connection option (Connection:
  Keep-Alive), to notify that a persistent connection is required.

CLIENTCONV(cvda)
- Specifies whether CICS translates the entity body of the HTTP request before sending, from the code
  page used by the application, to a character set suitable for the recipient. If this option is omitted, the
  default is that any entity body is converted, unless a nontext media type is specified. CVDA values are
  as follows:
CLICONVERT
CICS converts the entity body of the HTTP request from the code page used by the application, into the character set that you identify for the server. You can use the CHARACTERSET option on this command to specify the character set that is used. If conversion is requested but you do not specify a character set, the default is that CICS converts the entity body to the ISO-8859-1 character set. (The code page used by the application was identified on the WEB OPEN command for the connection.)

For non-text media types, CICS only converts the message body under the following circumstances:

- The message body is sent from a buffer, using the FROM option, and either the CLICONVERT or CHARACTERSET options, or both, are specified.
- The message body is sent from a document, using the DOCTOKEN option.
- The message body is sent from a container and the CHARACTERSET option is specified.

BIT containers contain nontext media, and therefore do not support code page conversion. As a result, if you code either the CLICONVERT or CHARACTERSET options with a BIT container, an INVREQ RESP2 error is produced.

NOCLICONVERT
CICS does not convert the entity body of the HTTP request, and it is sent to the server in the code page used by the application, as identified on the WEB OPEN command for the connection.

CONTAINER(data-value)
Specifies the name of the container where the HTTP body is held, before it is sent to the server. The name of the container can consist of up to 16 alphanumeric characters, including appropriate punctuation. Leading and embedded blanks are not permitted. If the name is shorter than 16 characters, it is padded with trailing blanks.

When CONTAINER is specified, CICS stores the HTTP body in, and sends it from, 64-bit storage.

DOCSTATUS(cvda)
Indicates whether the document will be deleted or not deleted during processing of the WEB SEND command. The CVDA values are as follows:

**DOCDDELETE**
CICS deletes the document after the document contents are saved for sending. Storage allocated for the document is released immediately. If you make subsequent requests for the document, the requests generate a TOKENERR response.

**NODOCDELETE**
CICS does not delete the document during processing of the WEB SEND command. This value is the default for DOCSTATUS.

DOCTOKEN(data-value)
Specifies the 16-byte binary token of a document to be sent as the message body. You create the document using the CICS Document interface (EXEC CICS DOCUMENT CREATE, INSERT, and SET commands). You do not have to retrieve the document before sending it. The FROM option provides an alternative way to create a message body.

The body of a chunked message cannot be formed from CICS documents, so the DOCTOKEN option cannot be used for chunked transfer-coding.

When DOCTOKEN is specified, the document is processed in 31-bit storage.

FROM(data-area)
Specifies a buffer of data that holds the message body. The message body is built by the application program. When you specify the FROM option, use the FROMLENGTH option to specify the length of the buffer of data. The DOCTOKEN and CONTAINER options provide an alternative way to create the message body, but the DOCTOKEN option cannot be used for the body of a chunked message.
The size of the data-area has no set maximum limit, but its size is limited in practice by storage considerations. Producing an entity body for an HTTP message has more information about storage considerations.

When FROM is specified, if CICS needs to copy or convert the HTTP body before it is sent, the body is copied or converted in, and sent from, 64-bit storage.

**FROMLENGTH**(data-value)

Specifies the length, as a fullword binary value, of the buffer of data supplied on the FROM option (the message body). You must state this value correctly, because an incorrect data length can cause problems for the recipient of the message.

**MEDIATYPE**(data-value)

Specifies the data content of any message body provided, for example text/xml. You must specify a 56-byte area for MEDIATYPE. The media type is up to 56 alphanumeric characters, including appropriate punctuation, but not spaces. For more information on media types, see IANA media types and character sets. CICS checks that the format of the media type is correct, but does not check the validity of the media type against the data content. CICS uses this information to produce the Content-Type header for the message.

For requests that require a body, you must specify the MEDIATYPE option. There is no default. However, if the required Content-Type header must contain spaces or more than 56 characters, the application can provide it using the WEB WRITE HTTPHEADER command. In this case, do not specify the MEDIATYPE option.

The supplied media type is used to determine whether code page conversion is required under the following circumstances:

- If you are sending a message from a buffer, using the FROM option, and the CLIENTCONV and CHARACTERSET options are not specified.
- If you are sending a message from a document, using the DOCTOKEN option, and the CLIENTCONV and CHARACTERSET options are not specified.
- If you are sending a message from a named container, using the CONTAINER option, and either CLICONVERT is specified, or the CLIENTCONV and CHARACTERSET options are not specified.

If the supplied media type is text, the message is converted. If the supplied media type is nontext, the message is not converted.

**METHOD**(cvda)

Specifies the HTTP method for the request.

The GET, HEAD, POST, PUT, TRACE, OPTIONS, and DELETE methods are supported by this command. However, some HTTP servers, particularly HTTP/1.0 servers, might not implement all of these methods.

HTTP method reference for CICS web support has more information about the correct use of methods, including the HTTP versions that apply to each.

CICS prevents the sending of a message body for methods for which it is inappropriate, and requires it for methods where it is appropriate. Chunked transfer-coding is not relevant for methods that do not have a request body.

CVDA values are as follows:

**GET**

Obtain a resource from the server. A request body is not allowed.

**HEAD**

Obtain the HTTP headers, but not the response body, for a resource. A request body is not allowed.

**POST**

Send data to a server. A request body is required.

**PUT**

Create or modify a resource on the server. A request body is required.
TRACE
Trace the route of your request to the server. A request body is not allowed.

OPTIONS
Obtain information about the server. A request body is allowed, but the body has no defined purpose. If you do use a request body, then you must specify a media type.

DELETE
Delete a resource on the server. A request body is not allowed.

PASSWORD(data-value)
Specifies the password associated with the user ID or logon name that is allowed access to this data. The PASSWORD option is required only if the USERNAME option is used.

If you specify USERNAME and PASSWORD in the WEB SEND command and you also specify AUTHENTICATE in the URIMAP resource, the WEB SEND values are used.

If the specified password is over 8 characters long, it is treated as a password phrase when sent to z/OS systems.

PASSWORDLEN(data-value)
Specifies the buffer length supplied for the PASSWORD option as a fullword binary variable.

PATH(data-area)
Specifies the path information for the specific resource in the server that the application needs to access.

If the URIMAP option was used to specify an existing URIMAP definition on the WEB OPEN command for this connection, the path specified in that URIMAP definition is the default path for the WEB SEND command. In these circumstances, if you do not specify path information on the WEB SEND command, the path from the URIMAP definition is used. If you specify a different path from that given in the URIMAP definition, that path overrides the path from the URIMAP definition.

If the URIMAP option was not used on the WEB OPEN command, there is no default path, and you must provide path information. You can extract path information from a known URL using the WEB PARSE URL command.

As an alternative to using the PATH option to provide the path information, you can use the URIMAP option on the WEB SEND command to specify a URIMAP definition from which the path information is taken directly.

PATHLENGTH(data-value)
Specifies the length of the path, as a fullword binary value. If you are providing path information using the PATH option, you must specify the PATHLENGTH option. Path length information is returned if you use the WEB PARSE URL command to parse a URL.

QUERYSTRING(data-area)
Specifies a query string that is to be supplied to the server as part of the request. You do not have to include a question mark (?) at the beginning of the query string; if you do not include it, CICS supplies it for you automatically when constructing the request. If you include escaped characters in the query string, CICS passes them to the server in their escaped format.

QUERYSTRLEN(data-value)
Specifies the length of the query string supplied on the QUERYSTRING option, as a fullword binary value.

SESSTOKEN(data-value)
Specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token.

URIMAP(data-value)
Specifies the name, up to 8 characters, in mixed case, of a URIMAP definition that provides the path information for the specific resource in the server that the application will access. The URIMAP definition must be for CICS as an HTTP client, with USAGE(CLIENT) specified. Its HOST attribute must be the same as the HOST attribute of the URIMAP definition that was specified on the WEB OPEN
command for this connection, or the same as the host name specified in the HOST option on the WEB OPEN command for this connection. A URIMAP definition specified on the WEB SEND command applies only to this request.

If the URIMAP option is specified, do not specify the PATH or PATHLENGTH options.

**USERNAME** *(data-value)*
Specifies the user ID or logon name that is allowed access to this data. If the USERNAME is specified, you must also use the PASSWORD option.

If you specify USERNAME and PASSWORD in the WEB SEND command and you also specify AUTHENTICATE in the URIMAP resource, the WEB SEND values are used.

**USERNAMELEN** *(data-value)*
Specifies the buffer length supplied for the USERNAME option as a fullword binary variable.

**Conditions**

**122 CHANNELERR**
RESP2 values are:

12
The channel specified by the CHANNEL option was not found.

**110 CONTAINERERR**
RESP2 values are:

2
The container specified by the CONTAINER option was not found.

**16 INVREQ**
RESP2 values are:

11
Action code invalid.

12
URIMAP and PATH are both specified. Only one is allowed. Or, the URIMAP option is not allowed for second or subsequent chunks.

13
Close status invalid.

15
Code page conversion failure.

17
Expect-100 request was rejected by the server.

22
Invalid chunk size.

32
Media type invalid.

33
Method does not support a body.

34
Method requires a body.

43
The DOCSTATUS value specified is invalid.

45
The character set specified is invalid.

46
The CLIENTCONV option is invalid.
The format of the path option is invalid.
The HTTP method is not valid.
URIMAP object disabled.
Host in URIMAP definition does not match the host specified when this session was opened.
Chunked transfer-coding not supported with this HTTP version.
Chunked transfer-coding error.
The connection has been closed. The server might have timed out because of inactivity on this connection.
MEDIATYPE option required.
Pipelining is in progress. Expect header cannot be sent.
CHARACTERSET cannot be specified with NOCLICONVERT.
The CHUNKING option is invalid.
FROMLENGTH option required.
FROM option required.
No message body specified. Use FROM, DOCTOKEN, or CHUNKEND.
CHUNKING option not specified, FROMLENGTH option required.
CHUNKNO specified, FROM option required.
CHUNKNO specified, FROMLENGTH option required.
CHUNKYES specified, FROM option required.
CHUNKYES specified, FROMLENGTH option required.
FROM option not allowed with CHUNKEND.
FROMLENGTH option not allowed with CHUNKEND.
FROMLENGTH option specified as zero.
METHOD option not allowed for second or subsequent chunks.
MEDIATYPE option not allowed for second or subsequent chunks.
PATH option not allowed for second or subsequent chunks.

METHOD option required.

AUTHENTICATE is invalid. The CVDA is not NONE or BASICAUTH.

One or more of the Web command parameters is invalid.

Channel was not specified, and there is no current channel.

Internal conversion error.

Conversion requested, but the data to be sent is in a DATATYPE BIT container.

**17 IOERR**

RESP2 values are:

- 42 Socket error.

**22 LENGERR**

RESP2 values are:

- 5 The PATHLENGTH option value was not greater than zero.
- 8 The QUERYSTRLEN option value was not greater than zero.
- 50 The FROMLENGTH option value was not greater than zero.
- 139 USERNAMELEN is negative or is greater than 256.
- 140 PASSWORDLEN is negative or is greater than 256.

**70 NOTAUTH**

RESP2 values are:

- 100 Path barred by security exit.
- 110 XWBAUTH error. The XWBAUTH global user exit has issued a UERCERR return code because the XWBAUTH exit is required but cannot return a valid response.

  This error code is issued when the following are true: BASICAUTH is specified; USERNAME, PASSWORD, or both are omitted; XWBAUTH is inactive or returns a response of UERCERR.

**13 NOTFND**

RESP2 values are:

- 61 The URIMAP object specified was not found.

**19 NOTOPEN**

RESP2 values are:

- 27 Invalid session token.
**WEB STARTBROWSE FORMFIELD**

Signal start of HTML form field browse.

**Options**

**CHARACTERSET(name)**

specifies the 40–character name of the character set that is required for encoding the form data. This option should match the forms encoding determined by the corresponding HTML form (see How the client encoding is determined for more information). CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS for code page conversion.

**CLNTCODEPAGE(name)**

This option is supported for upgrade purposes only. CHARACTERSET replaces it. The action taken by CICS is the same for both keywords.

**FORMFIELD(data-area)**

is the keyword that initiates the STARTBROWSE FORMFIELD command. You can optionally specify the name of the form field at which browsing is to start, by specifying this in a data-area, followed by the NAMELENGTH option, for example,

```
WEB STARTBROWSE FORMFIELD(name) NAMELENGTH(len)
```

The name is a string of text containing the name of the requested field. If a name is not specified, browsing starts at the first name and value pair in the HTML form.

**HOSTCODEPAGE(name)**

specifies the 8–character name of the CICS (host) code page required by the application program, into which the form data is to be converted. This code page is normally an EBCDIC code page.
The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

If the code page is not specified, the data is returned in the EBCDIC code page specified by the LOCALCCSID system initialization parameter (which applies to the local CICS region, and has a default of 037), provided that the specified code page is supported by the CICS web interface. The code page is supported if it is one of a list of EBCDIC code pages that are recognized by CICS as being sufficiently standard to allow successful parsing of the web headers (this includes all SBCS CECP and Euro code pages). Otherwise, CICS returns the data in the default EBCDIC code page 037 instead.

**NAMELENGTH(data-value)**

specifies the length, as a fullword binary value, of the form field name. This field must be specified if a name data-area is specified with the FORMFIELD option.

**Conditions**

**21 ILLOGIC**

RESP2 value is:

5

A browse of form fields is already in progress.

**16 INVREQ**

occurs for the following conditions. RESP2 values are:

1 The command is being issued in a non-CICS Web support application.

3 The command is being issued for a non-HTTP request.

11 The client code page cannot be found.

12 The host code page cannot be found.

13 No forms data has been supplied in the HTTP request.

14 The code page combination for client and server is invalid.

17 Invalid forms data was found in the input message.

153 The form type is unknown.

154 A boundary string was expected in the forms data, but was not found.

**22 LENGERR**

occurs for the following conditions. RESP2 values are:

1 NAMELENGTH or VALUELENGTH is less than or equal to zero.

**13 NOTFND**

occurs for the following conditions. RESP2 values are:

1 The form field name given in the FORMFIELD parameter could not be found.
WEB STARTBROWSE HTTPHEADER
Signal start of HTTP header browse.

WEB STARTBROWSE HTTPHEADER

Conditions: ILLOGIC, INVREQ, NOTFND, NOTOPEN
This command is threadsafe.

Description
WEB STARTBROWSE HTTPHEADER signals the start of a browse of the HTTP header information. The SESSTOKEN option is required if the HTTP header information is part of a response sent to CICS as an HTTP client.

Options
SESSTOKEN(data-value)
For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token.

Conditions
21 ILLOGIC
RESP2 value is:
10
An HTTP header browse is already in progress.

16 INVREQ
RESP2 values are:
1
The command is being issued in a non-CICS Web support application.
3
The command is being issued for a non-HTTP request.
43
No HTTP headers found.

13 NOTFND
RESP2 value is:
1
Header not found.

19 NOTOPEN
RESP2 value is:
27
Invalid session token.
WEB STARTBROWSE QUERYPARM

Start browsing query string data in a URL.

WEB STARTBROWSE QUERYPARM

Conditions: ILLOGIC, INVREQ, LENGERR, NOTFND

This command is threadsafe.

Description

WEB STARTBROWSE QUERYPARM signals the start of a browse of the keyword parameters, consisting of name and value pairs, from a query string in a URL.

For forms, you can also use the WEB STARTBROWSE FORMFIELD command. Forms are messages with the media types application/x-www-form-urlencoded or multipart/form-data.

Options

QUERYPARM(data-area)

is the keyword that initiates the STARTBROWSE QUERYPARM command. You can optionally specify the name of the keyword parameter at which browsing is to start, by specifying this in a data-area, followed by the NAMELENGTH option, for example,

WEB STARTBROWSE QUERYPARM(name) NAMELENGTH(len)

The name is a string of text containing the name of the requested keyword parameter. If a name is not specified, browsing starts at the first name and value pair in the query string.

HOSTCODEPAGE(data-value)

specifies the 8–character name of the CICS (host) code page required by the application program, into which the query string data is to be converted. This code page is normally an EBCDIC code page.

The standard CICS form of a host code page name consists of the code page number (or more generally CCSID) written using 3 to 5 decimal digits as necessary then padded with trailing spaces to 8 characters. For code page 37, which is fewer than 3 digits, the standard form is 037. CICS now also accepts any decimal number of up to 8 digits (padded with trailing spaces) in the range 1 to 65535 as a code page name, even if it is not in the standard form.

If the code page is not specified, the data is returned in the EBCDIC code page specified by the LOCALCCSID system initialization parameter (which applies to the local CICS region, and has a default of 037), provided that the specified code page is supported by the CICS web interface. The code page is supported if it is one of a list of EBCDIC code pages that are recognized by CICS as being sufficiently standard to allow successful parsing of the web headers (this includes all SBCS CECP and Euro code pages). Otherwise, CICS returns the data in the default EBCDIC code page 037 instead.

NAMELENGTH(data-value)

specifies the length, as a fullword binary value, of the keyword parameter name. This field must be specified if a name data-area is specified with the QUERYPARM option.

Conditions

21 ILLOGIC

RESP2 value is:
A browse of keyword parameters is already in progress.

**INVREQ**
RESP2 values are:

1. The command is being issued in a non-CICS Web support application.

3. The command is being issued for a non-HTTP request.

12. The host code page cannot be found.

13. No keyword parameters found.

14. The code page combination for client and server is invalid.

17. Invalid keyword parameters found in the HTTP request.

**LENGERR**
RESP2 value is:

1. An invalid value for the NAMELEN parameter has been provided.

**NOTFND**
RESP2 value is:

1. Keyword parameter not found.

---

**WEB WRITE HTTPHEADER**

Build HTTP header information.

**WEB WRITE HTTPHEADER**

```
WEB WRITE HTTPHEADER( data-area )
```

```
NAMELENGTH( data-value )
```

```
SESSTOKEN( data-value )
```

```
VALUE( data-area )
```

```
VALUELENGTH( data-value )
```

**Conditions:** INVREQ, LENGERR, NOTOPEN

This command is threadsafe.

**Description**

**WEB WRITE HTTPHEADER** enables an application to add HTTP header information to a message. When CICS is an HTTP server, the message is a response to a Web client. When CICS is an HTTP client, the message is a request to a server, and the SESSTOKEN option is specified.

Some HTTP headers are created automatically by CICS if the message requires them, and the application does not need to write these headers. These are:

- ARM correlator
- Connection
- Content-Type (written by CICS, but can be supplied by a client application if a complex header is required)
HTTP header reference for CICS web support describes the circumstances in which these headers are created. If the user application program writes a header that CICS also generates, CICS handles this depending on the situation:

- For CICS as an HTTP server, if the header is appropriate for a response, CICS does not overwrite it, but allows the application's version to be used.
- For CICS as an HTTP client, if the header is appropriate for a request, CICS does not allow the application to write it, and returns an error response to the `WEB WRITE HTTPHEADER` command. The exceptions are the TE header and the Content-Type header. Application programs can add further instances of the TE header. They can also supply the Content-Type header, if the required header needs to contain spaces or more than 56 characters, and so cannot be specified on the MEDIATYPE option of the WEB SEND command.
- If the header is not normally appropriate for the type of message (request or response), CICS allows it, as is the case for all user-defined headers. This situation should not occur if your message is compliant with the HTTP specification to which you are working.
- If the `WEB WRITE HTTPHEADER` is used to write a server header then a server header will be provided, even if the CICS supplied server header is suppressed by the HTTPSERVERHDR=NO parameter.

The `WEB WRITE HTTPHEADER` command adds a single header, and you can repeat the command to add further headers. If you write a header that you have already written for the request or response, CICS adds the new header to the request or response in addition to the existing header.

The name and value of the headers you write, and the circumstances in which you choose to write them, should conform to the requirements of the HTTP specification to which you are working.

If you want to use a header to request an action that might not be carried out correctly by a server or client below HTTP/1.1 level, and you need to confirm whether the action will succeed, use the `WEB EXTRACT` command with the HTTPVERSION option to check the HTTP version of the server.

For CICS as an HTTP client, if you are writing a Trailer header (for use with a chunked message) on your first request to the server, and you did not specify the options HTTPVNUM and HTTPRNUM on the `WEB OPEN` command for the session, CICS makes a request with the OPTIONS method to check the HTTP version of the server. This additional request is only made for the Trailer header.

The `WEB WRITE HTTPHEADER` command cannot be used if the connection with the server or Web client has been closed by either party sending a Connection: close header on a request or response.

For guidance on the correct use of this command:

- When writing headers for an HTTP response sent by CICS as an HTTP server, see Writing HTTP headers for a response.
- When writing headers for an HTTP request sent by CICS as an HTTP client, see Making HTTP requests through CICS as an HTTP client.
- When using chunked transfer-coding to send an HTTP request or response, see Sending an HTTP request or response with chunked transfer-coding. That topic explains the correct procedure for writing trailing headers for a chunked message.
Options

HTTPHEADER(data-area)
Specifies the name of the HTTP header to be added to the request or response. The name, which is a string of text, should conform to the standards in the HTTP specification to which you are working.

NAMELENGTH(data-value)
Specifies the length, as a fullword binary value, of the HTTP header name.

SESSTOKEN(data-value)
For CICS as an HTTP client, this option is required. It specifies the session token, an 8-byte binary value that uniquely identifies a connection between CICS and a server. This value is returned by a WEB OPEN command for CICS as an HTTP client. Session tokens explains the use of the session token.

VALUE(data-area)
Specifies the value of the named HTTP header. The value, which is a string of text, should conform to the standards in the HTTP specification to which you are working.

VALUELENGTH(data-value)
Specifies the length, as a fullword binary value, of the HTTP header value.

Conditions

16 INVREQ
RESP2 values are:

1
The command is being issued in a non-CICS Web support application.

6
Client did not send TE: trailers on request, so trailing headers cannot be used.

19
Header not allowed. Some request headers may only be generated by CICS.

44
Header not allowed as a trailing header (trailer).

69
Chunked transfer-coding not supported.

70
Trailer header has not been created, so trailing headers cannot be written.

71
Chunked transfer-coding error.

74
Previous send failed.

78
Too late to write trailing headers for this message.

22 LENGERR
RESP2 values are:

35
The length in NAMELENGTH is not greater than zero.

55
The length in VALUELENGTH is not greater than zero or greater than 32000.

19 NOTOPEN
RESP2 values are:

27
Invalid session token.
WRITE

Write a record.

WRITE

FILE(filename)  MASSINSERT  FROM(data-area)    RIDFLD(data-area)

KEYLENGTH(data-value)  SYSID(systemname)  LENGTH(data-value)

LENGTH(data-value)

RBA  RRN  XRBA  NOSUSPEND

Conditions: DISABLED, DUPREC, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, LOADING, LOCKED, NOSPACE, NOTAUTH, NOTOPEN, RECORDBUSY, SUPPRESSED, SYSIDERR

This command is threadsafe if the file to which it refers is:
- Defined as remote and the command is function shipped over an IPIC connection to a remote CICS region.
- Defined as a local VSAM file, a VSAM RLS file, or a coupling facility data table.

This command is not threadsafe if the file to which it refers is:
- Defined as remote and the command is function shipped over a non-IPIC connection.
- Defined as a shared data table or BDAM file.

Description

WRITE writes a new record to a file on a local or a remote system.

When this command is used to write a record to a CICS-maintained data table, the update is made to both the source VSAM KSDS and the in-memory data table, unless the XDTAD user exit rejects the record from the table. The details of the command for a CICS-maintained table are the same as for a VSAM KSDS.

When this command is used to write a record to a user-maintained data table, the update is made to the in-memory data table (unless rejected by the XDTAD user exit).

When the command is used to write a record to a coupling facility data table, the update is made to the data table in the coupling facility (unless it is rejected by the XDTAD user exit).

If a write to a user-maintained table or coupling facility data table does not succeed because there is insufficient space, a NOSPACE response is returned to the command. CICS also issues message DFHFC0432 to alert system administrators to the situation.

For a VSAM ESDS or VSAM extended format, extended addressing ESDS, the record is always added at the end of the data set. CICS does not use the identification field specified in RIDFLD when calculating the relative byte address (RBA), or, for an extended addressing ESDS, the extended relative byte address (XRBA), of the new record. However, the new RBA or XRBA is returned to the application in the record identification field specified in the RIDFLD option.

For a VSAM KSDS, the record is added in the location specified by the associated key; this location may be anywhere in the data set. For VSAM data sets, the key in the record and the key in the RIDFLD identification field must be the same.
For a VSAM ESDS or KSDS, records can be either fixed-length or variable-length. MASSINSERT operations must proceed with ascending keys, and must be terminated by an UNLOCK before any other request to the same data set.

Options

FILE(filename)
specifies the name of the file to be accessed.
If SYSID is specified, the data set to which this file refers is assumed to be on a remote system irrespective of whether the name is defined to CICS. Otherwise, the resource definition is used to find out whether the data set is on a local or a remote system.

FROM(data-area)
specifies the record that is to be written to the data set referred to by this file.

KEYLENGTH(data-value)
specifies the length (halfword binary) of the key that has been specified in the RIDFLD option, except when RBA or RRN is specified, in which case KEYLENGTH is not valid. You must code KEYLENGTH if you are also using SYSID (unless you are also using RBA or RRN). If the length specified is different from the length defined for the data set, the INVREQ condition occurs. The KEYLENGTH clause is required when the WRITE FILE is being function shipped, otherwise an INVREQ with RESP2=23 might occur.

LENGTH(data-value)
specifies the length, as a halfword binary value, of the data area from which the record is written.
This option must be specified if SYSID is specified.
If the file is on a remote system and SYSID is not specified, the LENGTH parameter need not be set here but must be set in the file resource definition.
If the file is on a local system, the LENGTH option must be specified for variable-length records, but is optional for fixed-length records. It is, however, advisable to specify the length of fixed-length records because this causes CICS to check that the record being written is not longer than that defined for the data set.
If an incorrect length is specified for a WRITE to a file with fixed-length records, a record of the fixed length is written and the LENGERR condition is raised. If you supply too much data, the record is truncated. If you supply too little data, the record is padded with binary zeros.

MASSINSERT
(VSAM) specifies that the WRITE command is part of a mass-insert operation, that is, a series of WRITes each specifying MASSINSERT. See RLS Record level locking for information about using MASSINSERT on files opened in RLS access mode.
You cannot use MASSINSERT for user-maintained or coupling facility data tables.

Note: Avoid using MASSINSERT in concurrency(required) programs that write records to empty VSAM data sets, because TCB switching from open TCB to QR TCB and back again will occur for each write operation while the files are in load mode. You should use a single WRITE without mass insert to avoid TCB switching. For more information, see Loading empty VSAM data sets.

NOSUSPEND (RLS only)
The request does not wait if VSAM is holding an active lock against the record, including records locked as the result of a DEADLOCK.
A task could wait when it issues a WRITE request if the key is for a record that is being modified, created, or deleted by another task, because VSAM always acquires the lock first.
Note: Requests that specify NOSUSPEND wait for at least 1 second before CICS returns the RECORDBUSY response.
RBA
(VSAM ESDS base data sets only) specifies that the record identification field specified in the RIDFLD option contains a relative byte address. Use this option only when writing to an ESDS base.

RIDFLD(data-area)
specifies the record identification field. The contents can be a key, a relative byte address, or relative record number (for VSAM data sets), or a block reference, a physical key, and a deblocking argument (for BDAM data sets). For a relative byte address or a relative record number, the format of this field must be fullword binary. If RBA or XRBA is specified, the RIDFLD is an output field that contains the relative byte address (greater than or equal to zero) of the record if the command is successful. This RBA value is calculated for you by CICS. If RRN is specified, RIDFLD contains the relative record number (greater than or equal to 1) of the record to be written.

See Identifying BDAM records and Identifying VSAM records for more information about defining the record identification field.

When adding records to a keyed data set, the field must contain the complete key.

RRN
(VSAM RRDS) specifies that the record identification field specified in the RIDFLD option contains a relative record number.

SYSID(systemname)
specifies the name of the system to which the request is directed.

If you specify SYSID and omit RBA, XRBA, and RRN, you must also specify LENGTH and KEYLENGTH; they cannot be found in the resource definition.

LENGTH must either be specified explicitly or must be capable of being defaulted from the FROM option using the length attribute reference in assembler language, or STG and CSTG in PL/I. LENGTH must be specified explicitly in C.

XRBA
specifies that the record identification field specified in the RIDFLD option contains an extended relative byte address. Use this option when writing to an extended addressing ESDS data set.

Conditions

84 DISABLED
RESP2 values:

50
A file was initially defined as disabled and has not since been enabled, or was disabled by a SET FILE or a CEMT SET FILE command.

Default action: terminate the task abnormally.

14 DUPREC
RESP2 values:

150
An attempt is made to add a record to a data set by referring to a file, or a path over a file (with the UNIQUEKEY attribute), in which the same key already exists.

This condition is also raised for a coupling facility data table that uses the contention model, even if another task has read the record with the same key for update. (For a coupling facility data table that uses the locking model, and for all other kinds of files, if another task has read the record for update, it is locked, and the WRITE request waits for the lock to be released, rather than returning a DUPREC response immediately.)

Default action: terminate the task abnormally.

12 FILENOTFOUND
RESP2 values:
A file name referred to in the FILE option is not defined to CICS.

Default action: terminate the task abnormally.

**21 ILLOGIC**
RESP2 values: (VSAM)

**110**
A VSAM error occurs that is not in one of the other CICS response categories.
See EIBRCODE in the EXEC interface block; for details, see EIB fields.

Default action: terminate the task abnormally.

**16 INVREQ**
RESP2 values:

**20**
Add operations are not allowed according to the resource definition.

**23**
When writing records containing embedded keys, the key in the record area (FROM option) and the key in RIDFLD do not match.

**26**
The KEYLENGTH option is specified, and the specified length does not equal the length defined for the data set that this file refers to.

**38**
A WRITE with the MASSINSERT option is issued against a BDAM file.

**40**
A BDAM key conversion error occurred.

**44**
The WRITE command does not conform to the format of WRITE for a user-maintained or coupling facility data table (for example, MASSINSERT or RBA is specified).

**51**
A WRITE command specifying the RBA keyword was issued against a KSDS file that is being accessed in RLS mode. RLS mode does not support relative byte address access to KSDS files.

**55**
NOSUSPEND is not allowed because the file is not a VSAM file that is accessed in RLS mode.

**56**
An attempt to update a recoverable coupling facility data table has failed because the current unit of work has already updated 1024 recoverable coupling facility data tables. You cannot update more than 1024 recoverable coupling facility data tables within a unit of work.

**57**
WRITE operations are not allowed because the associated VSAM data set has an AVAILABILITY state of RREPL, which disallows such operations except those from replication programs.

**59**
XRBA was specified, but the data set is not an extended addressing ESDS.

Default action: terminate the task abnormally.

**17 IOERR**
RESP2 values:

**120**
There is an I/O error during the file control operation. An I/O error is any unusual event that is not covered by a CICS condition. Further information is available in the EXEC interface block; for details, see EIB fields.

For VSAM files, IOERR usually indicates a hardware error.
For BDAM files, IOERR could mean that you are trying to write to a BDAM track address that is not defined for the data set.

For a coupling facility data table, an IOERR indicates a bad response returned from a coupling facility access.

Default action: terminate the task abnormally.

54 ISCNVREQ
RESP2 values:

70
The remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

12
The length specified for the write operation exceeds the maximum record size; the record is truncated.

10
The LENGTH option is not specified. LENGTH must be specified for a WRITE to a file with variable-length records or to a BDAM file with records of undefined format.

14
An incorrect length is specified for a WRITE to a file with fixed-length records. A record of the fixed length has been written. If you supplied too much data, the record is truncated. If you supplied too little data, the record is padded with binary zeros.

94 LOADING
RESP2 values:

104
The request cannot be satisfied because it is issued against a data table that is still being loaded. The condition can be raised for one of the following reasons:

- The WRITE specifies a record key that has out of range of the records so far loaded into a coupling facility data table. Records can be added while a CFDT is loading only if the specified key is within the range of those records already loaded.

  The LOADING response can also be returned for a coupling facility data table that has failed during loading. For more information about what happens if the load for a coupling facility data table fails, see the description of the XDTLC global user exit in Data tables management exits (XDTRD, XDTAD, and XDTLC).

- A WRITE is issued to a user-maintained data table that is currently being loaded. A user-maintained data table cannot be modified during loading.

If your application programs encounter the LOADING condition persistently or too frequently, check that this is not caused by conflicting file definitions that reference the same data set.

Default action: terminate the task abnormally.

100 LOCKED
RESP2 values:

106
An attempt has been made to write a record, but a retained lock exists against the key of this record.

Default action: abend the task with code AEX8.

18 NOSPACE
RESP2 values:
No space is available on the direct access device for adding records to a data set.

The maximum number of table entries specified for the user-maintained table or coupling facility data table has already been reached.

This condition can also occur for a recoverable coupling facility data table when the table apparently contains fewer than the maximum number of records allowed if there are uncommitted updates outstanding.

CICS is unable to get sufficient storage in the CICS address space to create an in-memory table entry for the record being written.

There is insufficient space in the coupling facility data table pool to store the record.

Default action: terminate the task abnormally.

A resource security check has failed on FILE(filename).

Default action: terminate the task abnormally.

NOTOPEN (RESP 60) is returned for one of the following reasons:

- The requested file is CLOSED and UNENABLED. The CLOSED, UNENABLED state is reached after a CLOSE request has been received against an OPEN ENABLED file and the file is no longer in use. You can also make CLOSED, UNENABLED the initial state, by specifying STATUS(UNENABLED) and OPENTIME(FIRSTREF) on the FILE resource definition. (For BDAM files, you use the FILSTAT parameter of the DFHFCT TYPE=FILE macro.)
- The requested file is OPEN and in use by other transactions, but a CLOSE request against the file has been received.
- A WRITE request is issued against a data set is quiesced, or is being quiesced, as a result of a SET DSN NAME QUIESCED or IMMQUIESCED command.
- The requested file is CLOSED and ENABLED, so CICS has tried to open the file as part of executing the request. This file open has failed for some reason. You should examine the console for messages that explain why the file open has been unsuccessful.

This condition does not occur if the request is made to a CLOSED, DISABLED file. In this case, the DISABLED condition occurs.

Default action: terminate the task abnormally.

NOSUSPEND is specified on the request but VSAM holds an active lock against the record, which would cause the request to wait. See Retained and active locks for more information.

Default action: abend the task with code AEX9.
A user exit program that is invoked at the XDTAD exit point decides not to add the record to the user-maintained or coupling facility data table.

Default action: terminate the task abnormally.

53 SYSIDERR

RESP2 values:

130

The SYSID option specifies a name that is neither the local CICS region nor a remote system defined to CICS by a CONNECTION definition. SYSIDERR also occurs when the link to the remote system is closed.

131

For a coupling facility data table, the connection to the coupling facility data table server has failed. This could be because the server itself has failed, or the server is available, but CICS has failed to connect to it.

132

The WRITE is issued against a coupling facility data table that no longer exists, probably because of a coupling facility failure, in which case the coupling facility data table server also fails. See Setting up and running a coupling facility data table server for information about restarting a coupling facility data table server and reloading a table.

Default action: terminate the task abnormally.

Retained and active locks: RECORDBUSY refers to active locks, and LOCKED refers to retained locks:

- READNEXT requests for records that have retained locks are always rejected with a LOCKED response.
- READNEXT requests for records that have active locks wait for the lock to be released, except when the NOSUSPEND keyword is specified, in which case CICS returns the RECORDBUSY response.

Examples

Here is an example of a simple WRITE command:

```
EXEC CICS WRITE
   FROM(RECORD)
   LENGTH(DATLEN)
   FILE('MASTER')
   RIDFLD(KEYFLD)
```

**WRITE JOURNALNAME**

Create a journal record
WRITE JOURNALNAME

WRITE JOURNALNAME( data-value ) JTYPEID( data-value ) FROM( data-area )

FLENGTH( data-value )

PREFIX( data-value )

PFXLENG( data-value )

WAIT

REQID( data-area )

NOSUSPEND

Conditions: INVREQ, IOERR, JIDERR, LENGERR, NOJBUFSP, NOTAUTH, NOTOPEN

This command is threadsafe.

Description

WRITE JOURNALNAME writes a journal record from the specified data area to the system logger log stream that corresponds to the CICS journal name, or to SMF. The request can be for synchronous or asynchronous output; definitions of these terms, and information regarding the synchronization of journal output, are in Journal output synchronization.

Options

FLENGTH(data-value)

specifies, as a full word binary value, the length in bytes of the user data to be built into the journal record.

Note that the maximum total length of a journal record depends on a number of factors:

• There is a limit of 32KB minus 400 bytes if the journal is using SMF.
• The limit for journals that map to log streams is the value expressed in the MAXBUFSIZE attribute for the structure being used minus 400 bytes. This has to include the user data, the prefix data, and the 2-byte JTYPEID.

Note: Data longer than 32K bytes cannot be read by offline jobs using the SUBSYS=LOGR interface.

FROM(data-area)

specifies the user data to be built into the journal record.

JOURNALNAME(data-value)

specifies a 1- to 8-character journal name. The valid characters for a journal name are the upper-case letters A through Z, the numeric characters 0 through 9, and the special symbols $ @ and #.

On first reference to this journal name, CICS must be able to map the journal name to a corresponding MVS system logger log stream, or MVS SMF data set. To do this, CICS searches the installed JOURNALMODEL definitions, looking for a matching journal name in a journal model. CICS looks for either a specific match or a generic match. If a matching entry cannot be found, CICS attempts to use a default log stream name.

To write to the CICS system log, specify DFHLOG as the journal name.

Note: The CICS system log should be used only for short-lived data required for recovery purposes. You should not write user records for such things as audit trails to it.
To write to journals defined using the journal numbering convention (for example, to the auto journals defined in file resource definitions), specify the name as DFHJnn, where nn is the journal number in the range 1 to 99.

You cannot write to a forward recovery log that is known to CICS only by its 26-character log stream name (as derived directly from the VSAM ICF catalog) unless you write to a journal whose matching JOURNALMODEL is associated with the same log stream name.

Specifying DFHJ01 on this command refers to a user journal, not the system log.

**JTYPEID(data-value)**
specifies a 2-character identifier to be placed in the journal record to identify its origin.

**NOSUSPEND**
specifies that the application program is not to be suspended for the NOJBUFSP condition. The user record is ignored.

**PFXLENG(data-value)**
specifies the length (halfword binary value) in bytes of the user prefix data to be included in the journal record.

Note that the maximum total length of a journal record depends on a number of factors:

- There is a limit of 32KB minus 400 bytes if the journal is using SMF.
- The limit for journals that map to log streams is the value expressed in the MAXBUFSIZE attribute for the structure being used minus 400 bytes. This has to include the prefix data, the user data, and the 2-byte JTYPEID.

The minimum value is 0. See FLENGTH for the limits to the size of a journal record.

**Note:** Data longer than 32K bytes cannot be read by offline jobs using the SUBSYS=LOGR interface.

**PREFIX(data-value)**
specifies the user prefix data to be included in the journal record. A data area must be provided in COBOL programs.

**REQID(data-area)**
specifies a data area that identifies the journal record. The data area is a fullword binary variable. CICS sets the variable to a token that can be used for synchronization. REQID is only valid for asynchronous output (that is, the WAIT option is not specified).

**WAIT**
specifies that synchronous journal output is required. The requesting task waits until the record has been hardened.

**Conditions**

**16 INVREQ**
the command is not valid for processing by CICS.

Default action: Terminate the task abnormally.

**17 IOERR**
a journal record has not been output because an irrecoverable error condition was returned by the system logger log stream or by SMF.

Default action: If the log is the system log, CICS either quiesces or abends CICS. If the log is a general log, the task is terminated abnormally.

**43 JIDERR**
CICS cannot connect to a log stream referenced by the specified journal name, for one of the following reasons:

- The log stream does not exist and cannot be created dynamically using default model definitions.
- The log stream is a DASD-only log stream to which a CICS region in another MVS image is currently connected.
Default action: terminate the task abnormally.

**22 LENGERR**
the aggregate length of the journal record, comprising the user data (FROM, JTYPE, and PREFIX data) and the CICS header data, is too great to fit the maximum block size allowed for the log stream.

Default action: terminate the task abnormally.

**45 NOJBUFSP**
the journal buffers are logically full (that is, the current buffer has insufficient space for this journal record, and I/O is in progress on the alternate buffer).

Default action: CICS suspends task activity until the journal request can be satisfied. CICS ensures that both buffers are written out to auxiliary storage, thus freeing them for new records. (You can override the default action by the NOSUSPEND option.)

**70 NOTAUTH**
a resource security check has failed on the JOURNALNAME(data-value).

Default action: terminate the task abnormally.

**19 NOTOPEN**
occurs in any of the following situations:

- The command cannot be executed because the specified journal has been explicitly disabled by the user.
- The request could not be satisfied because the specified journal was defined using a journal model that maps it onto the logstream that is being used as the system log for this CICS system. The error is detected when trying to connect to the logstream and results in a definition for the JOURNALNAME being installed and set to 'failed'.

Default action: terminate the task abnormally.

**Examples**

The following example shows how to write synchronous journal output and wait for the output operation to be completed:

```
EXEC CICS WRITE
  JOURNALNAME('ACCTSJNL')
  JTYPEID('XX')
  FROM(KEYDATA)
  FLENGTH(40000)
  PREFIX(PROGNAME)
  PFXLENG(6)
  WAIT
```

The following example shows how to write deferred (asynchronous) user recovery data to the CICS system log:

```
EXEC CICS WRITE
  JOURNALNAME('DFHLOG')
  JTYPEID('UR')
  FROM(COMDATA)
  FLENGTH(10)
  REQID(ENTRYID)
```

**WRITE JOURNALNUM**

Create a journal record.

This command is supported for compatibility with earlier releases of CICS. It is superseded by the WRITE JOURNALNAME command, which you are recommended to use instead.
WRITE OPERATOR

Write a message on the system console.

WRITE OPERATOR

```
WRITE OPERATOR  TEXT(data-value)  TEXTLENGTH(data-value)

ROUTECODES(data-value)  NUMROUTES(data-value)

EVENTUAL

ACTION(cvda)
CRITICAL
IMMEDIATE

REPLY(data-area)  MAXLENGTH(data-value)
REPLYLENGTH(data-area)  TIMEOUT(data-value)
```

Conditions: EXPIRED, INVREQ, LENGERR

This command is threadsafe.

Note: This command is threadsafe, but the REPLY option is not compatible with a key 9 TCB. If an EXEC CICS WRITE OPERATOR command specifying the REPLY option is issued from a key 9 TCB then CICS will switch to the QR TCB to process the command.

Description

WRITE OPERATOR enables an application to write a message to one or more system consoles and, if required, wait for a reply. The command can specify route codes, which is of particular use to application packages that have to issue their own operator messages.

As a result of a change in the way CICS handles messages sent to the console, text lengths of greater than 113 characters are split into two lines. None of the variables below can be defined as PL/I variable character strings.

Note: If ACTION (or one of the equivalent CVDA values below) is specified, the message is retained until the console operator explicitly deletes it or CICS terminates.

The action code is identical with the descriptor code to be associated with the message. Only one of the descriptor codes 2, 3, or 11 may be specified for this parameter.

If ACTION is not specified, no descriptor code is associated with the message. The descriptor codes have the following meanings:

2
   Immediate action

3
   Eventual action

11
   Critical eventual action.

The CRITICAL option is equivalent to a specification of ACTION(11). The EVENTUAL option is equivalent to a specification of ACTION(3). The IMMEDIATE option is equivalent to a specification of ACTION(2).
Retained messages can be handled by the console operator in a variety of ways (see z/OS MVS System Commands). Refer to your system programmer for information about how this command affects the appearance of the console screen to the operator.

Options

**ACTION(cvda)**

Specifies an action code that is associated with this message. CVDA values are:

- **CRITICAL**  
  Specifies that the message requires eventual action by the operator and has enough critical importance to remain on the console screen. The message remains on the screen until it is deleted by the operator.

- **EVENTUAL**  
  Specifies that the operator should take action when there is time. The message is rolled off when other messages fill up the screen, but is still retained by the operating system until the operator explicitly deletes it.

- **IMMEDIATE**  
  Specifies that the operator should take action immediately. The message remains on the console screen until it is deleted by the operator.

**MAXLENGTH(data-value)**

Specifies a fullword binary field that contains the length of the reply area (in the range 1–119 bytes). You must specify MAXLENGTH if you specify REPLY.

**NUMROUTES(data-value)**

Specifies a fullword binary field that defines the number of routing codes.

**REPLY(data-area)**

Specifies a data area for receiving the operator's reply. If you specify this option, your application pauses until either a reply is received or the TIMEOUT period expires.

**REPLYLENGTH(data-area)**

Specifies the actual length (fullword binary value) of the operator's reply.

**ROUTECODES(data-value)**

Specifies a variable-length field. Each code is one byte and contains a binary number in the range 1–28. The default is a single code, set to 2. In COBOL programs only, you must use a data-area that contains the 1-byte values rather than a data-value.

**TEXT(data-value)**

Specifies a data value containing the text to be sent.

- If the data value begins with DFHnnnn or DFHaannnn, the message is treated as a CICS message and is reformatted accordingly.

- If you are using the COBOL2 translator option, you must use a data-area that contains the text to be sent to the operator, and not a data-value.

**TEXTLENGTH(data-value)**

Specifies the length, as a fullword binary value, of the text. This option is required only for C and C++ programs.

- If the REPLY option is specified, the length is in the range 0–121 bytes.
- If the REPLY option is not specified, the length is in the range 0–690 bytes.

If the length of the text is greater than 113, CICS formats the message in a multiline write to operator (WTO); each line has 69 bytes with a maximum of ten lines.

The output is edited in such a way that each line is broken, if possible, at a space character. The next line starts with a non-space character. If there is no room to reformat the data within the overall limit of 690 bytes of ten lines of 69 bytes, the output is not reformatted.
**TIMEOUT**(data-value)

Specifies a fullword binary field that contains the maximum time (in seconds) that CICS waits for a reply before returning control to this transaction. This must be in the range 0–86 400 (24 hours). The system default value is specified by the **OPERTIM** system initialization parameter. You can only specify TIMEOUT if you have also specified REPLY.

**Conditions**

31 EXPIRED

RESP2 values:

7  
TIMEOUT has occurred before the operator's reply was received.

Default action: return the exception condition to the application.

16 INVREQ

RESP2 values:

1  
The TEXTLENGTH value is not valid.

2  
The NUMROUTES value is not valid.

3  
The ROUTECODES value is not valid.

4  
The MAXLENGTH value is not valid.

5  
The TIMEOUT value is not valid.

6  
The ACTION value is not valid.

Default action: terminate the task abnormally.

22 LENGERR

RESP2 values:

8  
The reply was longer than MAXLENGTH, and has been truncated.

Default action: terminate the task abnormally.

**WRITEQ TD**

Write data to transient data queue.

**WRITEQ TD**

```
WRITEQ TD — QUEUE( name ) — FROM( data-area ) — LENGTH( data-value ) —

SYSID( systemname )
```

**Conditions:** DISABLED, ERROR, INVREQ, IOERR, ISCINVREQ, LENGERR, LOCKED, NOSPACE, NOTAUTH, NOTOPEN, QIDERR, SYSIDERR

This command is threadsafe when it is used with a queue in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is non-threadsafe when it is function shipped to a remote CICS region over another type of connection.
Description

WRITEQ TD writes transient data to a predefined symbolic destination.

Options

FROM(data-area)
Specifies the data that is to be written to the transient data queue.

LENGTH(data-value)
Specifies the length (halfword binary value) of the data to be written.

QUEUE(name)
Specifies the symbolic name (1 - 4 alphanumeric characters) of the queue to which the data is written. The named queue must have been defined to CICS.

SYSID(systemname)
(remote systems only) Specifies the name (1 - 4 characters) of the system to which the request is directed.

If SYSID is specified, the queue is assumed to be on a remote system whether or not it is defined as remote. Otherwise the transient data queue definition is used to find out whether the data set is on a local or a remote system.

Conditions

84 DISABLED
Occurs when the queue has been disabled.
Default action: terminate the task abnormally.

1 ERROR
Occurs for an error that does not raise any other condition.
Default action: terminate the task abnormally.

16 INVREQ
Occurs if WRITEQ names an extrapartition queue that has been opened for input.

Note: This condition cannot be raised for intrapartition queues.
Default action: terminate the task abnormally.

17 IOERR
Occurs when an input/output error occurs and the data record in error is skipped.
Default action: terminate the task abnormally.

54 ISCINVREQ
Occurs when the remote system indicates a failure that does not correspond to a known condition.
Default action: terminate the task abnormally.

22 LENGERR
Occurs in either of the following situations:
- WRITEQ names an extrapartition queue and does not specify a length consistent with the RECORDSIZE and associated formations specified in the TDQUEUE resource definition. The check is made after the XTDOUT exit has been invoked; this exit may change the length of the data to be passed to the access method.
- WRITEQ names an intrapartition queue and does not specify a length consistent with the control interval defined for the intrapartition data set. Again, the check is made after the XTDOUT exit has been invoked.
Default action: terminate the task abnormally.
100 LOCKED
Occurs when the request cannot be performed because use of the queue has been restricted owing to a unit of work failing indoubt. This can happen on any request for a logically-recoverable queue defined with WAIT(YES) and WAITACTION(REJECT) in the TDQUEUE resource definition.

Specify WAIT(YES) and WAITACTION(QUEUE) in the TDQUEUE resource definition if you want the transaction to wait.

Default action: terminate the task abnormally.

18 NOSPACE
Occurs if no more space exists on the intrapartition or extrapartition queue, or the relative byte address (RBA) for an intrapartition queue would exceed 2 GB. When this happens, no more data should be written to the queue because it may be lost.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101 A resource security check has failed on QUEUE(name).

102 A surrogate security check has failed. For more information, see Security for submitting a JCL job to the internal reader.

Default action: terminate the task abnormally.

19 NOTOPEN
Occurs if the destination is closed.

Note: This condition cannot be raised for intrapartition queues.

Default action: terminate the task abnormally.

44 QIDERR
Occurs if the symbolic destination to be used with a transient data control command cannot be found.

Default action: terminate the task abnormally.

53 SYSIDERR
Occurs when the SYSID option specifies a name that is neither the local system nor a remote system (made known to CICS by defining a CONNECTION or an IPCONN). SYSIDERR also occurs when the link to the remote system is closed.

Default action: terminate the task abnormally.
WRITEQ TS

Write data to a temporary storage queue.

**WRITEQ TS**

```
  WRITEQ TS
    QUEUE( name ) FROM( data-area )
    QNAME( name )
    LENGTH( data-value )
    NUMITEMS( data-area )
    ITEM( data-area )
    REWRITE

  AUXILIARY
  MAIN
  NOSUSPEND
```

**Conditions:** INVREQ, IOERR, ISCVREQ, ITEMERR, LENGERR, LOCKED, NOSPACE, NOTAUTH, QIDERR, SYSIDERR

This command is threadsafe when it is used with a queue in main storage or auxiliary storage, either in a local CICS region, or function shipped to a remote CICS region over an IPIC connection. It is also threadsafe when it is used with a queue in a shared temporary storage pool in a z/OS coupling facility that is managed by a temporary storage data sharing server (TS server). The command is non-threadsafe when it is function shipped to a remote CICS region over another type of connection other than IPIC.

**Note for dynamic transaction routing:** Using this command might create inter-transaction affinities that adversely affect the use of dynamic transaction routing. For more information about transaction affinities, see [Affinity](#).

**Description**

**WRITEQ TS** stores temporary data records in a temporary storage queue in main or auxiliary storage.

If a queue is defined as recoverable, the program must not issue a **WRITEQ TS** command if a **DELETEQ TS** command has previously been issued in the same logical unit of work. That is, following a **DELETEQ TS** command, a **WRITEQ TS** command must not be issued until after a sync point occurs.

If there is insufficient space available in the temporary storage data set or main storage to satisfy the **WRITEQ TS** request, the task is suspended until space does become available. (Other tasks in the system might release space.) If space is not available and you specified the **NOSUSPEND** option, the NOSPACE condition is raised, and you can decide whether to stop the transaction with an abend, or wait.

**Options**

**AUXILIARY**

- Specifies that the temporary storage queue is on a direct access storage device in auxiliary storage.
- This is the default value for the first write.

This option is ignored in the following situations:

- For an existing queue
- If a TSMODEL resource definition with a matching prefix is installed in the system
- If the specified temporary storage data queue resides in a shared temporary storage pool
- If CICS has been initialized with TS main-only support, that is, the system initialization parameter TS=(0) has been specified
FROM(data-area)
  Specifies the data to be written to temporary storage.

ITEM(data-area)
  Specifies, as a halfword binary value, the item number of the logical record to be replaced in the queue (REWRITE option also specified).

  ITEM can be both an input and output field to CICS. Therefore, programmers must ensure that the ITEM field is not defined in protected storage when issuing a WRITEQ command. If the ITEM value was a literal (for example), command checking (CMDPROT=YES) would result in an AEYD abend occurring.

  Note: In earlier releases, ITEM on a WRITEQ TS without REWRITE would perform a similar function to NUMITEMS. This function is retained for compatibility.

LENGTH(data-value)
  Specifies the length, as a halfword binary value, of the data to be written.
  You must specify this option if you are using SYSID.
  The maximum length is 32763. For a description of a safe upper limit, see LENGTH options in CICS commands.

MAIN
  Specifies that the temporary storage queue is in main storage.
  This option is ignored in the following situations:
  • For an existing queue
  • If a TSMODEL resource definition with a matching prefix is installed in the system
  • If the specified temporary storage data queue resides in a shared temporary storage pool
  
  If you use the MAIN option to write data to a temporary storage queue on a remote system, the data is stored in main storage if the remote system is accessed by the CICS multiregion operation (MRO) facility or IPIC connectivity. If these conditions are not met, the data is stored in auxiliary storage.
  
  If the system is MRO and MAIN is specified, the queue is not recoverable and SYNCPOINT ROLLBACK does not function.

NOSUSPEND
  Specifies that if there is insufficient space in the temporary storage data set or in main storage to satisfy the WRITEQ TS request, the application program is not suspended. The NOSPACE condition is raised instead.

  However, if a HANDLE CONDITION command for NOSPACE is active when the command is executed, this condition also overrides the default action, and control is passed to the user label supplied in the HANDLE CONDITION command. This condition takes precedence over the NOSUSPEND option but is, of course, negated by either NOHANDLE or RESP.

NUMITEMS(data-area)
  Specifies a halfword binary field where CICS stores a number that indicates how many items there are now in the queue, after the WRITEQ TS command is executed.
  
  If the record starts a new queue, the item number assigned is 1; subsequent item numbers follow on sequentially. NUMITEMS is not valid if REWRITE is specified.

QNAME(name)
  An alternative to QUEUE, QNAME specifies the symbolic name (1 - 16 characters) of the queue to be written to. If the name has less than 16 characters, you must still use a 16-character field, padded with blanks if necessary. If the queue is defined to CICS as remote, the request is shipped to a remote system. Do not use X'FA' through X'FF', or **, or $$, or DF, as the first character of the name; these characters are reserved for CICS use. The name cannot consist solely of binary zeros.

QUEUE(name)
  Specifies the symbolic name (1 - 8 characters) of the queue to be written to. If the name has less than 8 characters, you must still use an 8-character field, padded with blanks if necessary. If the queue is
defined to CICS as remote, the request is shipped to a remote system. Do not use X'FA' through X'FF', or **, or $$, or DF, as the first character of the name; these characters are reserved for CICS use. The name cannot consist solely of binary zeros.

**REWRITE**

Specifies that the existing record in the queue is to be overwritten with the data provided. If the REWRITE option is specified, the ITEM option must also be specified. If the specified queue does not exist, the QIDERR condition occurs. If the correct item within an existing queue cannot be found, the ITEMERR condition occurs and the data is not stored.

**SYSID(systemname)**

(Remote and shared queues only) Specifies the system name (1 - 4 characters) identifying the remote system or shared queue pool to which the request is directed. Note that TMODEL resource definitions do not support specifying a SYSID for a queue that resides in a temporary storage data sharing pool. Use the QUEUE or QNAME option instead. Using an explicit SYSID for a shared queue pool requires the support of a temporary storage table (TST).

**Conditions**

**16 INVREQ**

Occurs in any of the following situations:

- A WRITEQ TS command specifies a queue name that consists solely of binary zeros.
- A WRITEQ TS command specifies a queue that is locked and awaiting ISC session recovery.
- The queue was created by CICS internal code.

Default action: terminate the task abnormally.

**17 IOERR**

RESP2 values:

5

There is an irrecoverable input/output error for a shared queue.

Default action: terminate the task abnormally.

**54 ISCINVREQ**

Occurs when the remote system indicates a failure that does not correspond to a known condition.

Default action: terminate the task abnormally.

**26 ITEMERR**

Occurs in any of the following situations:

- The item number specified in a WRITEQ TS command with the REWRITE option, is not valid (that is, it is outside the range of entry numbers assigned for the queue).
- The maximum number of items (32767) is exceeded.

Default action: terminate the task abnormally.

**22 LENGERR**

Occurs in any of the following situations:

- The length of the stored data is zero or negative.
- The length of the stored data is greater than 32763.

Default action: terminate the task abnormally.

**100 LOCKED**

RESP2 values:

0

The request cannot be performed because use of the queue has been restricted owing to a unit of work failing indoubt.

Default action: terminate the task abnormally.
18 NOSPACE
Occurs when the NOSUSPEND option is specified and there is no space for the data in the following:
- Main storage
- The auxiliary temporary storage data set
- The temporary storage pool list structure
This condition also occurs if there is no space and there is an active HANDLE CONDITION for NOSPACE.
Default action: ignore the condition.

70 NOTAUTH
RESP2 values:
101
A resource security check has failed on QUEUE(name).
Default action: terminate the task abnormally.

44 QIDERR
Occurs when the queue specified by a WRITEQ TS command with the REWRITE option cannot be found in any of the following:
- Main storage
- Auxiliary storage
- Temporary storage pool
Default action: terminate the task abnormally.

53 SYSIDERR
RESP2 values:
4
Occurs in any of the following situations:
- The SYSID option specifies a name that is not the local system or a remote system (made known to CICS by defining a CONNECTION or an IPCONN).
- When IPIC connectivity is used, the local system, the remote system, or both, are not CICS TS 4.2 or later regions.
- The link to the remote system is closed.
- The CICS region in which the temporary storage command is executed fails to connect to the TS server managing the TS pool that supports the referenced temporary storage queue. For example, this situation can occur if the CICS region is not authorized to access the temporary storage server.
- This condition can also occur if the temporary storage server is not started, or because the server has failed (or been stopped) while CICS continues to run.
Default action: terminate the task abnormally.
**WSACONTEXT BUILD**

Use the **WSACONTEXT BUILD** command to insert or replace WS-Addressing message addressing properties (MAPs) in the addressing context.

**Conditions:** CCSIDERR, CHANNELERR, CODEPAGEERR, INVREQ, LENGERR

This command is threadsafe.

**Description**

Use the **WSACONTEXT BUILD** command for any of the following actions:

- To insert or replace the Action or Message ID MAPs
- To insert or replace the To, From, ReplyTo, or FaultTo endpoint reference MAPs.
- To insert the RelatesTo MAPs.

You can use the command repeatedly to supply different data on each call, for example different endpoint references (EPRs). The MAPs are applied to all outbound SOAP messages created by the **INVOKE SERVICE** or **INVOKE WEBSERVICE** commands and to response SOAP messages from a service provider.

**Options**

**ACTION**(data-value)

Specifies an input value containing an Action MAP of the request or response SOAP message; for example, http://example.ibm.com/namespace/bookingInterface/MakeBooking. Actions are supplied in the WSDL or are calculated by the web services assistant, but can be overridden by this option. The data value must be 255 characters in length. If the Action MAP is less than 255 characters, you must pad the data value with trailing blanks.

**CHANNEL**(data-value)

Specifies the name of the channel that holds the addressing context. The name of the channel can be up to 16 characters in length. If the channel name is fewer than 16 characters, you must pad the data value with trailing blanks. If you do not specify this option, the current channel is implied.

Acceptable characters for the channel name are A-Z a-z 0-9 @ # / % & ? ! : | " = , < > . - and _. Leading and embedded blank characters are not permitted. The accepted set of characters for channel names includes some characters that do not have the same representation in all EBCDIC code pages. It is therefore recommended that, if channels are to be shipped between regions, the characters used in naming them should be restricted to A-Z a-z 0-9 & : = , < > . - and _.
You can specify the channel name DFHTRANSACTION to use the transaction channel.

This option is required when the WSACONTEXT BUILD command is used by a web service requester application and is the channel name used by subsequent INVOKE SERVICE commands.

**EPRFIELD(cvda)**

Specifies the endpoint reference field. You can use this option multiple times to build a full endpoint reference.

- **ADDRESS**
  The Address field of the endpoint reference is specified as a URI in the EPRFROM option.

- **ALL**
  A complete endpoint reference, described in XML, is specified in the EPRFROM option.

- **METADATA**
  The Metadata section of the endpoint reference, described in XML, is specified in the EPRFROM option.

- **REFPARMS**
  The ReferenceParameters section of the endpoint reference, described in XML, is specified in the EPRFROM option.

**EPRFROM(data-value)**

An input data value that contains a complete or partial endpoint reference that is to be placed in the addressing context. The EPRFIELD option describes what part of the endpoint reference is specified in this option by the application. The endpoint reference can be supplied by a web service application that uses the WSAEPR CREATE command or from another source, such as a service registry.

If the EPRFROM option contains an address, any special characters in the address are automatically escaped or unescaped.

The following characters in an address are replaced with an escape sequence:
```
" , >, <, ', &
```

**EPRLENGTH(data-value)**

A fullword binary input data value used to contain the length of the supplied EPR.

**EPRTYPE(cvda)**

Specifies the type of EPR that is being built:

- **TOEPR**
  The destination EPR to which a SOAP message is sent.

- **REPLYTOEPR**
  An EPR to which a SOAP response message is returned.

- **FAULTTOEPR**
  An EPR to which a SOAP fault message is returned.

- **FROMEPR**
  An EPR that represents the sender of the SOAP message.

**FROMCCSID(data-value)**

Specifies the current Coded Character Set Identifier (CCSID) of the character data to be put into the addressing context, as a fullword binary number. If you want to specify an IANA name for the code page or if you want to specify the CCSID as alphanumeric characters, use the FROMCODEPAGE option instead.

For CICS Transaction Server for z/OS applications, the CCSID is typically an EBCDIC CCSID.

The default CCSID of the region is specified on the LOCALCCSID system initialization parameter.

For an explanation of CCSIDs, and a list of the CCSIDs supported by CICS, see CICS-supported conversions.
FROMCODEPAGE *(data-value)*
Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the current code page of the character data to be put into the addressing context, using up to 40 alphanumeric characters including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID in CICS-supported conversions.

MESSAGEID *(data-value)*
Specifies a data value for a URI that uniquely identifies a SOAP message. The data value must be 255 characters in length. If the URI is less than 255 characters, you must pad the data area with trailing blanks.

RELATESTYPE *(data-value)*
Specifies a URI denoting the relationship type between the message to be sent and another message. The value must be 255 characters long. If the URI is less than 255 characters, you must pad the data value with trailing blanks. You are allowed to specify multiple RelatesTo MAPs. Subsequent calls of the RELATESTYPE and RELATESURI options create new RelatesTo MAPs.

If you do not specify a value for this option, the RelatesTo MAP does not have a type attribute in the SOAP message and defaults to a value of http://www.w3.org/2005/08/addressing/reply.

RELATESURI *(data-value)*
Specifies a URI denoting the message ID of a message that the message to be sent is related to. The value must be 255 characters long. If the URI is less than 255 characters long, you must pad the data value with trailing blanks.

Conditions

**123 CCSIDERR**
RESP2 values:

1. The CCSID specified on the FROMCCSID option is outside the range of valid CCSID values.
2. The CCSID specified on the FROMCCSID option and the CCSID of the addressing context are an unsupported combination.
4. One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data.
5. There was an internal error in the code page conversion of the addressing context data.
6. Either the text encoding is not compatible with the specified CCSID on the FROMCCSID option, or one or more characters are truncated.

**122 CHANNELERR**
RESP2 values:

1. The name specified for the CHANNEL option contains an illegal character or combination of characters.
2. The specified channel was not located.

**125 CODEPAGEERR**
RESP2 values:
1. The code page specified on the FROMCODEPAGE option is not supported.

2. The code page specified on the FROMCODEPAGE option and the CCSID of the addressing context are an unsupported combination.

3. One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data.

4. There was an internal error in the code page conversion of a container.

5. Either the text encoding is not compatible with the specified CCSID on the FROMCCSID option, or one or more characters are truncated.

16 INVREQ
The INVREQ RESP2 values and the corresponding messages are shown below. For this command, if the EIBRESP2 value is > 100, the fullword EIBRESP2 field is regarded as a structure containing two halfwords. The low-order halfword always contains the error number. The high-order halfword contains the offset into the XML data where the parsing error occurred.

RESP2 values:

4. The CHANNEL option was not specified. There is no current channel because the program that issued the command was not passed the name of a channel.

6. The ACTION field does not contain valid URI characters.

7. The MESSAGEID field does not contain valid URI characters.

8. The RELATESURI field does not contain valid URI characters.

9. The RELATESTYPE field does not contain valid URI characters.

10. The EPRFROM option does not contain valid XML.

13. The EPRFROM option does not contain valid XML. The EPR <Metadata> might not contain valid XML.

14. The EPRFROM option does not contain valid XML. The EPR <ReferenceParameters> might not contain valid XML.

15. The EPRFROM option might not contain a valid URI.

22 LENGERR
RESP2 values:

20. This condition occurs when the length of the stored data is greater than the value specified by the EPRLENGTH option. This condition only applies to the EPRINTO option and cannot occur with the EPRSET option.

Default action: ends the task abnormally.
WSACONTEXT DELETE

Use the **WSACONTEXT DELETE** command to delete the addressing context.

**WSACONTEXT DELETE**

```plaintext
  ➔ WSADDCONTEXT DELETE  — CHANNEL( data-value ) ➔
```

**Conditions:** CHANNELERR, NOTFND, INVREQ

This command is threadsafe.

**Description**

The **WSACONTEXT DELETE** command deletes the addressing contexts for the request and response SOAP messages from the specified channel. You can use this command only in a web service requester.

**Options**

**CHANNEL (data-value)**

Specifies the name of the channel holding the addressing context. The name of the channel can be up to 16 characters in length. If the channel name is less than 16 characters, you must pad the data value with trailing blanks. You can specify the channel name DFHTRANSACTION to use the transaction channel.

**Conditions**

**122 CHANNELERR**

RESP2 values:

1. The name specified for the CHANNEL option contains an incorrect character or combination of characters.

2. The specified channel was not located.

**16 INVREQ**

RESP2 values:

5. This command is not allowed in a web service provider.

**13 NOTFND**

RESP2 values:

3. The addressing context was not located on the specified channel.

WSACONTEXT GET

Use the **WSACONTEXT GET** command in a service provider to get the message addressing properties (MAPs) sent by the service requester. Use the **WSACONTEXT GET** command in a service requester to get the MAPs of the reply message. This command cannot be used by Axis2 applications hosted in an Axis2 pipeline in CICS.
WSACONTEXT GET

**Description**

The **WSACONTEXT GET** command is used in a service provider to get the MAPs of the requester from the addressing context, or in a service requester to get the MAPs of the provider from the response message. The **WSACONTEXT GET** command can be called repeatedly to return different MAPs.

**Options**

**ACTION** *(data-area)*

Specifies an output area to contain the Action MAP of the request or response SOAP message. The data area must be 255 characters in length. If the Action MAP is fewer than 255 characters, CICS pads the data area with trailing blanks.

**CHANNEL** *(data-value)*

Specifies the name of the channel that holds the addressing context. The name of the channel can be up to 16 characters in length. If the channel name is fewer than 16 characters, you must pad the data value with trailing blanks. If you do not specify this option, the current channel is implied.

Acceptable characters for the channel name are A-Z a-z 0-9 $ @ # / % & ? ! : | " = , ; < > . - and _.

Leading and embedded blank characters are not permitted. The accepted set of characters for channel names includes some characters that do not have the same representation in all EBCDIC code pages. It is therefore recommended that, if channels are to be shipped between regions, the characters used in naming them should be restricted to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use the transaction channel.

This option is required when the **WSACONTEXT GET** command is used by a web service requester application and is the channel name used by subsequent **INVOKE SERVICE** commands.

**CONTEXTTYPE**(cvda)

Specifies which type of addressing context to fetch the MAPs from. CVDA values are as follows:

- **REQCONTEXT**
  Addressing context containing the request. Either a web service requester, or a web service provider application can access the MAPs in this addressing context.

- **RESPCONTEXT**
  Addressing context containing the response. Only a web service requester application can access the MAPs in this addressing context.
EPRFIELD(cvda)
Specifies the part of the endpoint reference that is to be returned in the EPRINTO data area. CVDA values are as follows:

ADDRESS
Return the Address field of the endpoint reference.

ALL
Return the complete endpoint reference in XML.

METADATA
Return the Metadata section of the endpoint reference in XML.

REFPARMS
Return the ReferenceParameters section of the endpoint reference in XML.

EPRINTO(data-area)
An output data area used to contain the complete or partial endpoint reference. The EPRINTO and EPRSET options are mutually exclusive.

If the EPRINTO option contains an address, any special characters in the address are automatically escaped or unescaped.

The following characters in an address are replaced with an escape sequence:
"", «, <, ′, &

EPRLENGTH(data-area)
Specifies the length, as a halfword binary value, of the endpoint reference.

If you specify the EPRINTO option, you must specify a value for EPRLENGTH unless the length can be generated by the compiler from the EPRINTO option.

The EPRLENGTH option defines the maximum length of data that the program accepts. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs.

EPRSET(ptr-ref)
Specifies the pointer reference that is set to the address of the output data area used to contain the complete or partial endpoint reference. The pointer reference, unless changed by other commands or statements, is valid until the next WSACONTEXT GET command or the end of the task. The EPRINTO and EPRSET options are mutually exclusive.

EPRTYPE(cvda)
Specifies the type of endpoint reference that is being requested. CVDA values are as follows:

TOEPR
The destination endpoint reference to which a SOAP message is sent.

REPLYTOEPR
An endpoint reference to which a SOAP response message is returned.

FAULTTOEPR
An endpoint reference to which a SOAP fault message is returned.

FROMEPR
An endpoint reference that represents the sender of the SOAP message.

INTOCCSID(data-value)
Specifies the Coded Character Set Identifier (CCSID) into which the character data in the addressing context is to be converted, as a fullword binary number. If you prefer to specify an IANA name for the code page, or if you prefer to specify the CCSID as alphanumeric characters, use the INTOCODEPAGE option instead.

For CICS Transaction Server for z/OS applications, the CCSID is typically an EBCDIC CCSID.

For an explanation of CCSIDs, and a list of the CCSIDs supported by CICS, see CICS-supported conversions.
**INTOCODEPAGE** *(data-value)*

Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the code page into which the character data in the addressing context is to be converted, using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID in CICS-supported conversions.

**MESSAGEID** *(data-area)*

Specifies an output area to contain the MessageID MAP of the request or response SOAP message. The data area must be 255 characters in length. If the MessageID MAP is less than 255 characters, CICS pads the data area with trailing blanks.

**RELATESINDEX** *(data-value)*

Specifies a numeric value that indicates which RelatesTo MAP to return. If this value is not specified, the first RelatesTo MAP is returned. The index starts at 1. If the value of the index is greater than the number of RelatesTo MAPs, spaces are returned in the RELATESTYPE and RELATESURI data areas.

**RELATESTYPE** *(data-area)*

Specifies an output area that contains a URI denoting the relationship type between this message and another message. The data area must be 255 characters in length. If the URI is less than 255 characters, CICS pads the data area with trailing blanks.

**RELATESURI** *(data-area)*

Specifies an output area that contains the RelatesTo MAP relationship URI between this message and another. The data area must be 255 characters in length. If the MessageID MAP is less than 255 characters, CICS pads the data area with trailing blanks.

**Conditions**

**123 CCSIDERR**

RESP2 values:

1. The CCSID specified on the INTOCCSID option is outside the range of valid CCSID values.
2. The CCSID specified on the INTOCCSID option and the CCSID of the addressing context are an unsupported combination.
4. One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data.
5. There was an internal error in the code page conversion of the addressing context data.

**122 CHANNELERR**

RESP2 values:

1. The name specified for the CHANNEL option contains an incorrect character or combination of characters.
2. The channel specified was not located.

**125 CODEPAGEERR**

RESP2 values:

1. The code page specified on the INTOCODEPAGE option is not supported.
The code page specified on the INTOCODEPAGE option and the CCSID of the addressing context are an unsupported combination.

One or more characters could not be converted. Each unconverted character has been replaced by a blank in the converted data.

There was an internal error in the code page conversion of a container.

**16 INVREQ**

RESP2 values:

4  The CHANNEL option was not specified. There is no current channel because the program that issued the command was not passed the name of a channel.

11  The RELATESINDEX option is not valid.

12  The RELATESINDEX option is greater than the number of RelatesTo MAPs.

**22 LENGERR**

RESP2 values:

20  This condition occurs when the length of the stored data is greater than the value specified by the EPRLENGTH option. This condition only applies to the EPRINTO option and cannot occur with the EPRSET option.

Default action: ends the task abnormally.

**13 NOTFND**

RESP2 values:

3  The addressing context was not located.

---

**WSAEPRE CREATE**

Use the **WSAEPRE CREATE** command to create an endpoint reference (EPR) to represent a web service or web service resource.

**WSAEPRE CREATE**

```
WSAEPRE CREATE EPRINTO( data-area ) EPRLENGTH( data-area )
EPRSET( data-area )
ADDRESS( data-value )
REFPARMS( data-value )REFPARMSLEN( data-value )
METADATA( data-value )METADATALEN( data-value )
FROMCCSID( data-value )
FROMCODEPAGE( data-value )
```

**Conditions:** CCSIDERR, CODEPAGEERR, INVREQ, LENGERR

This command is threadsafe.
Description
The WSAEPR CREATE command creates an endpoint reference, which can represent a web service or web service resource. You can send this EPR to a client so that the addressing context is used for requests to the service.

Options
ADDRESS(data-value)
Specifies a URI that forms the address of the endpoint reference. The value of this option must be 255 characters in length. If the URI is less than 255 characters, you must pad the data value with trailing blanks.

The default address of http://www.w3.org/2005/08/addressing/anonymous returns information to the caller of the command. Use an address of http://www.w3.org/2005/08/addressing/none if no request or response is required. If the To EPR contains a URI, the SOAP message is sent to this URI. If the ReplyTo or FaultTo EPRs contain a URI, response messages are sent to the web service using that URI and not back to the sender of the request message.

EPRINTO(data-area)
Specifies the data area used to contain the generated endpoint reference. The EPRINTO and EPRSET options are mutually exclusive.

If the EPRINTO option contains an address, any special characters in the address are automatically escaped or unescaped.

The following characters in an address are replaced with an escape sequence:
" , >, <, ', &

EPRLENGTH(data-area)
Specifies the length, as a halfword binary value, of the endpoint reference.

If you specify the EPRINTO option, you must specify a value for EPRLENGTH unless the length can be generated by the compiler from the EPRINTO option.

The EPRLENGTH option defines the maximum length of data that the program accepts. If the value specified is less than zero, zero is assumed. If the length of the data exceeds the value specified, the data is truncated to that value and the LENGERR condition occurs.

EPRSET(ptr-ref)
Specifies the pointer reference that is set to the address of the output data area used to contain the complete or partial endpoint reference. The pointer reference, unless changed by other commands or statements, is valid until the next WSACONTEXT GET command or the end of the task. The EPRINTO and EPRSET options are mutually exclusive.

FROMCCSID(data-value)
Specifies the current Coded Character Set Identifier (CCSID) of the character data to be read or written as a fullword binary number. If you prefer to specify an IANA name for the code page, or if you prefer to specify the CCSID as alphanumeric characters, use the FROMCODEPAGE option instead.

For CICS Transaction Server for z/OS applications, the CCSID is typically an EBCDIC CCSID.

The default CCSID of the region is specified on the LOCALCCSID system initialization option.

For an explanation of CCSIDs, and a list of the CCSIDs supported by CICS, see CICS-supported conversions.

FROMCODEPAGE(data-value)
Specifies an IANA-registered alphanumeric charset name or a Coded Character Set Identifier (CCSID) for the current code page of the character data to be read or written using up to 40 alphanumeric characters, including appropriate punctuation. Use this option instead of the CCSID option if you prefer to use an IANA-registered charset name, as specified in the Content-Type header for an HTTP request. CICS converts the IANA name into a CCSID, and the subsequent data conversion process is
identical. Also use this option if you prefer to specify the CCSID in alphanumeric characters, rather than as a fullword binary number.

Where an IANA name exists for a code page and CICS supports its use, the name is listed with the CCSID in CICS-supported conversions.

**METADATA(data-value)**
Specifies metadata that describes the behavior, policies, and capabilities of the endpoint targeted by the endpoint reference. The metadata must be described in XML.

**METADATALEN(data-value)**
Specifies the length, as fullword binary, of the METADATA option.

**REFPARMS(data-value)**
Specifies application reference options that form part of the endpoint reference. These options are described in XML.

**REFPARMSLEN(data-value)**
Specifies the length, as fullword binary, of the reference options.

**Conditions**

**123 CCSIDERR**
RESP2 values:

1. The CCSID specified on the FROMCCSID option is outside the range of valid CCSID values.
2. The CCSID specified on the FROMCCSID option and the CCSID of the container are an unsupported combination.
5. There was an internal error in the code page conversion of a container.
6. Either the text encoding is not compatible with the specified CCSID on the FROMCCSID option, or one or more characters are truncated.

**125 CODEPAGEERR**
RESP2 values:

1. The code page specified on the FROMCODEPAGE option is not supported.
2. The code page specified on the FROMCODEPAGE option and the CCSID of the container are an unsupported combination.
5. There was an internal error in the code page conversion of a container.
6. Either the text encoding is not compatible with the specified CODEPAGE on the FROMCODEPAGE option, or one or more characters are truncated.

**16 INVREQ**
The INVREQ RESP2 values and the corresponding messages are shown below. For this command, if the EIBRESP2 value is > 100, the fullword EIBRESP2 field is regarded as a structure containing two halfwords. The low-order halfword always contains the error number. The high-order halfword contains the offset into the XML data where the parsing error occurred.

RESP2 values:

8. One of the input parameters contains an incorrect value. The ADDRESS option might not contain a valid URI.
One of the input parameters contains an incorrect value. The METADATA option might not contain valid XML.

One of the input parameters contains an incorrect value. The REFPARMS option might not contain valid XML.

22 LENGERR

RESP2 values:

20 This condition occurs when the length of the stored data is greater than the value specified by the EPRLENGTH option. This condition only applies to the EPRINTO option and cannot occur with the EPRSET option.

Default action: ends the task abnormally.

XCTL

Transfer program control.

XCTL

PROGRAM( name)

COMMAREA( data-area)

LENGTH( data-value)

CHANNEL( name)

INPUTMSG( data-area)

INPUTMSGLEN( data-value)

Conditions: CHANNELERR, INVREQ, LENGERR, NOTAUTH, PGMIERR

This command is threadsafe.

Description

XCTL transfers control from one application program to another at the same logical level. The program from which control is transferred is released. If the program to which control is transferred is not already in main storage, it is loaded.

This command operates in the current application context. If the command is issued by a program that is running under a task for an application deployed on a platform, CICS searches for the named program in the private program directory for the application. This command cannot be used to change application context.

Note: Using XCTL to invoke a Java EE application running in a Liberty JVM server is not supported. You can link to a Java EE application running in a Liberty JVM server either as the initial program of a CICS transaction, or by using the LINK, START, or START CHANNEL commands from any CICS program. For more information, see Linking to a Java EE application from a CICS program.

Options

CHANNEL(name)

Specifies the name (1–16 characters) of a channel that is to be made available to the invoked program. The acceptable characters are A-Z a-z 0-9 $ @ # / % & ? ! : | ^ = ¬ ; < > . - and _. Leading and embedded blank characters are not permitted. If the name supplied is less than 16 characters, it is padded with trailing blanks up to 16 characters. If the channel does not exist, it is created. This new
channel remains in scope until the link level changes. For more information about channel scope, see The scope of a channel.

Channel names are always in EBCDIC. The set of allowed characters for channel names, as listed earlier, includes some characters that do not have the same representation in all EBCDIC code pages. Therefore, if channels are to be shipped between regions, it is advisable to restrict the characters used to name them to A-Z a-z 0-9 & : = , ; < > . - and _.

You can specify the channel name DFHTRANSACTION to use a transaction channel. A transaction channel does not go out of scope when the link level changes: it is always accessible in the task. For more information, see Channels and containers.

The program that issues the XCTL command can do one of the following:

- Create the channel before issuing the XCTL command, by using one or more PUT CONTAINER CHANNEL or PUT64 CONTAINER commands.
- Specify its current channel, by name.
- Name a channel that does not currently exist. A new empty channel is created.

**COMMAREA(data-area)**
Specifies a communication area to be made available to the invoked program. In this option the contents of the data-area are passed. In COBOL, you must give this data area the name DFHCOMMAREA in the receiving program. See Passing data to other programs.

**INPUTMSG(data-area)**
Specifies data to be passed to the invoked program when it first issues a RECEIVE command. If the invoked program passes control to another program by using a LINK command, a linked chain is created, as described under the INPUTMSG option of the LINK command. The INPUTMSG data remains available until a RECEIVE command is issued or until control returns to CICS.

**INPUTMSGLEN(data-value)**
Specifies a halfword binary value that specifies the length of the data passed by INPUTMSG.

**LENGTH(data-value)**
Specifies the length (halfword binary data value) in bytes of the communication area. For a description of a suitable upper limit, see “LENGTH options in CICS commands” on page 10.

**PROGRAM(name)**
Specifies the identifier (1–8 alphanumeric characters) of the program to which control is to be passed unconditionally. The specified name must have been defined as a program to CICS, though if AUTOINSTALL is active a definition is autoinstalled.

Note the use of quotes:

```cics
EXEC CICS XCTL PROGRAM('PROGX')
```

PROGX is in quotes because it is the program name.

```cics
EXEC CICS XCTL PROGRAM(DAREA)
```

DAREA is not in quotes because it is the name of a data area that contains the actual program name. It a data area is used to contain the program name, this data area must be defined as an 8 byte field in working storage.

**Conditions**

**122 CHANNELERR**
RESP2 values:

1
The name specified on the CHANNEL option contains an illegal character or combination of characters.

**16 INVREQ**
RESP2 values:
An XCTL command with the INPUTMSG option is issued for a program that is not associated with a terminal, or that is associated with an APPC logical unit, or an IRC session.

EXEC XCTL is not allowed in a GLUE or TRUE.

The program manager domain has not yet been initialized. This is probably because an XCTL request was made in a first stage PLT.

An XCTL command is issued from a program that is running with an application context, to another program that is an application entry point.

An XCTL command is issued from a program that would invoke a Java EE application in a Liberty JVM server. This operation is not supported.

An XCTL command is issued from a public program to another program that is an application entry point.

An XCTL command is issued from a program that is running with an application context, to a public program.

An XCTL command with the INPUTMSG option is issued in a program invoked by DPL.

Default action: terminate the task abnormally.

22 LENGERR
RESP2 values:

11 LENGTH is less than 0 or greater than 32763.

26 The COMAREA address passed was zero, but LENGTH was non-zero.

27 INPUTMSGLEN was less than 0 or greater than 32767.

28 LENGTH or INPUTMSGLEN is greater than the length of the data area specified in the COMAREA or INPUTMSG options, and while that data was being copied, a destructive overlap occurred because of the incorrect length.

Default action: terminate the task abnormally.

70 NOTAUTH
RESP2 values:

101 A resource security check has failed on PROGRAM(name).

Default action: terminate the task abnormally.

27 PGMIDERR
RESP2 values:

1 A program has no installed resource definition and either program autoinstall was switched off, or the program autoinstall control program indicated that the program should not be autoinstalled.

2 The program is disabled.
A program could not be loaded for one of the following reasons:

- This was the first load of the program and the program load failed, usually because the load module could not be found.
- This was a subsequent load of the program, but the first load failed.

To reset the load status, the load module must be in the DFHRPL or dynamic LIBRARY concatenation, and a SET PROGRAM NEWCOPY will be required.

The installed program definition is for a remote program.

The program autoinstall control program failed, either because the program autoinstall control program is incorrect or incorrectly defined, or as a result of an abend in the program autoinstall control program. Program autoinstall is disabled and message DFHPG0202 or DFHPG0203 written to the CSPL.

The model returned by the program autoinstall control program was not defined to CICS, or was not enabled.

The program autoinstall control program returned invalid data.

Define for the program failed because autoinstall returned an invalid program name or definition.

Default action: terminate the task abnormally.

Examples

The following example shows how to request a transfer of control to an application program called PROG2:

```
EXEC CICS XCTL PROGRAM('PROG2')
```
Chapter 3. Threadsafe commands

The commands that are threadsafe, or threadsafe in certain conditions, are listed.

Not all EXEC CICS commands are threadsafe, and issuing any of the non-threadsafe commands causes CICS to use the QR TCB to ensure serialization. See Threadsafe programs for information about writing threadsafe application programs.

In the following list of threadsafe commands, an asterisk (*) indicates commands that are threadsafe only in certain conditions:

• These program link, file control, temporary storage, and transient data commands are threadsafe in the following circumstances:
  – The program, file, or queue to which the command refers is defined as local.
  – The program, file, or queue to which the command refers is defined as remote, and the resource is accessed by distributed program link or function shipping to a remote CICS region over an IPIC connection.
  – For file control commands, the file to which the command refers is a VSAM RLS file or a coupling facility data table.

• These commands are not threadsafe in the following circumstances:
  – The resource is accessed by distributed program link or function shipping to a remote CICS region over another type of connection.
  – For file control commands, the file to which the command refers is a shared data table or BDAM file.

• The WRITE OPERATOR command is threadsafe, but cannot be used from a key 9 TCB if the REPLY option is specified. In this case CICS will switch to the QR TCB to process the command.

Invoking DL/I by using the applicable language interface, for example the COBOL statement CALL CBLTDLI, is threadsafe when used with IMS Version 12 or later.

Threadsafe command list

• ABEND
• ADDRESS
• ASKTIME
• ASSIGN
• BIF DEEDIT
• BIF DIGEST
• CHANGE PASSWORD
• CHANGE PHRASE
• CHANGE TASK
• CONVERTTIME
• DEFINE COUNTER and DEFINE DCOUNTER
• DELETE *
• DELETE CHANNEL
• DELETE CONTAINER (CHANNEL)
• DELETE COUNTER and DELETE DCOUNTER
• DELETESQ TD *
• DELETESQ TS *
- **DEQ** (This command is threadsafe if it is defined as LOCAL. It is non-threadsafe if it is defined as GLOBAL.)

- **DOCUMENT CREATE**
- **DOCUMENT DELETE**
- **DOCUMENT INSERT**
- **DOCUMENT RETRIEVE**
- **DOCUMENT SET**
- **ENDBR**
- **ENQ** (This command is threadsafe if it is defined as LOCAL. It is non-threadsafe if it is defined as GLOBAL.)

- **ENTER TRACENUM**
- **EXEC DLI**
- **EXTRACT CERTIFICATE**
- **EXTRACT TCPIP**
- **EXTRACT WEB**
- **FETCH ANY**
- **FETCH CHILD**
- **FORMATTIME**
- **FREEMAIN**
- **FREEMAIN64**
- **FREE CHILD**

- **GET CONTAINER (CHANNEL)**
- **GET COUNTER and GET DCOUNTER**
- **GETMAIN**
- **GETMAIN64**
- **GET64 CONTAINER**
- **HANDLE ABEND**
- **HANDLE AID**
- **HANDLE CONDITION**
- **IGNORE CONDITION**
- **INVOKE APPLICATION**
- **INVOKE SERVICE**
- **INVOKE WEBSERVICE**
- **LINK**
- **LOAD**
- **MONITOR**

- **MOVE CONTAINER (CHANNEL)**
- **POP HANDLE**
- **PUSH HANDLE**
- **PUT CONTAINER (CHANNEL)**
- **PUT64 CONTAINER**
- **QUERY CHANNEL**
- **QUERY COUNTER and QUERY DCOUNTER**
- **QUERY SECURITY**
• READ
• READNEXT
• READPREV
• READQ TD
• READQ TS
• RELEASE
• REQUEST ENCRYPTPTKT
• REQUEST PASSTICKET
• RESETBR
• RETURN
• REWIND COUNTER and REWIND D-counter
• REWRITE
• RUN TRANSID
• SIGNAL EVENT
• SIGNOFF
• SIGNON
• SIGNON TOKEN
• SOAPFAULT ADD
• SOAPFAULT CREATE
• SOAPFAULT DELETE
• STARTBR
• SUSPEND
• SYNCPOINT (The Recovery Manager processes this command on an open TCB wherever possible to minimize TCB switching.)
• SYNCPOINT ROLLBACK (The Recovery Manager processes this command on an open TCB wherever possible to minimize TCB switching.)
• TRANSFORM DATATOJSON
• TRANSFORM DATATOTXML
• TRANSFORM JSONTODATA
• TRANSFORM XMLTODATA
• UNLOCK
• UPDATE COUNTER and UPDATE D-counter
• VERIFY PASSWORD
• VERIFY PHRASE
• VERIFY TOKEN
• WAIT EXTERNAL
• WAIT JOURNALNAME
• WAIT JOURNALNUM
• WEB CLOSE
• WEB CONVERSE
• WEB ENDBROWSE FORMFIELD
• WEB ENDBROWSE HTTPHEADER
• WEB ENDBROWSE QUERYPARM
• WEB EXTRACT
* WEB OPEN
* WEB PARSE URL
* WEB READ FORMFIELD
* WEB READ HTTPHEADER
* WEB READNEXT FORMFIELD
* WEB READNEXT HTTPHEADER
* WEB READ QUERYPARM
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* WEB WRITE HTTPHEADER
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* WRITE OPERATOR`
* WRITEQ TD`
* WRITEQ TS`
* WSACONTEXT BUILD
* WSACONTEXT DELETE
* WSACONTEXT GET
* WSAEPR CREATE
* XCTL
Chapter 4. CICS-value data areas used by all commands

The CICS-value data-area (CVDA) values and their numeric equivalents for all of the EXEC CICS commands.

CVDAs are described in CICS-value data areas (CVDAs).

### CVDAs and numeric values in alphabetic sequence

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Chapter 4. CICS-value data areas used by all commands 735
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**Note:** VTAM is now z/OS Communications Server.

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**Note:** VTAM is now z/OS Communications Server.
Chapter 5. National language codes for application development

Language codes are held as one character for NATLANG and NATLANGINUSE options, and three characters for LANGUAGECODE and LANGINUSE options in API commands.

<table>
<thead>
<tr>
<th>Suffix</th>
<th>IBM Code</th>
<th>Language name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ENG</td>
<td>UK English</td>
</tr>
<tr>
<td>B</td>
<td>PTB</td>
<td>Brazilian Portuguese</td>
</tr>
<tr>
<td>C</td>
<td>CHS</td>
<td>Simplified Chinese</td>
</tr>
<tr>
<td>D</td>
<td>DAN</td>
<td>Danish</td>
</tr>
<tr>
<td>E</td>
<td>ENU</td>
<td>US English</td>
</tr>
<tr>
<td>F</td>
<td>FRA</td>
<td>French</td>
</tr>
<tr>
<td>G</td>
<td>DEU</td>
<td>German</td>
</tr>
<tr>
<td>H</td>
<td>KOR</td>
<td>Korean</td>
</tr>
<tr>
<td>I</td>
<td>ITA</td>
<td>Italian</td>
</tr>
<tr>
<td>J</td>
<td>ISL</td>
<td>Icelandic</td>
</tr>
<tr>
<td>K</td>
<td>JPN</td>
<td>Japanese</td>
</tr>
<tr>
<td>L</td>
<td>BGR</td>
<td>Bulgarian</td>
</tr>
<tr>
<td>M</td>
<td>MKD</td>
<td>Macedonian</td>
</tr>
<tr>
<td>N</td>
<td>NOR</td>
<td>Norwegian</td>
</tr>
<tr>
<td>O</td>
<td>ELL</td>
<td>Greek</td>
</tr>
<tr>
<td>P</td>
<td>PTG</td>
<td>Portuguese</td>
</tr>
<tr>
<td>Q</td>
<td>ARA</td>
<td>Arabic</td>
</tr>
<tr>
<td>R</td>
<td>RUS</td>
<td>Russian</td>
</tr>
<tr>
<td>S</td>
<td>ESP</td>
<td>Spanish</td>
</tr>
<tr>
<td>T</td>
<td>CHT</td>
<td>Traditional Chinese</td>
</tr>
<tr>
<td>U</td>
<td>UKR</td>
<td>Ukrainian</td>
</tr>
<tr>
<td>V</td>
<td>SVE</td>
<td>Swedish</td>
</tr>
<tr>
<td>W</td>
<td>FIN</td>
<td>Finnish</td>
</tr>
<tr>
<td>X</td>
<td>HEB</td>
<td>Hebrew</td>
</tr>
<tr>
<td>Y</td>
<td>SHC</td>
<td>Serbo-Croatian (Cyrillic)</td>
</tr>
<tr>
<td>Z</td>
<td>THA</td>
<td>Thai</td>
</tr>
<tr>
<td>1</td>
<td>BEL</td>
<td>Byelorussian</td>
</tr>
<tr>
<td>2</td>
<td>CSY</td>
<td>Czech</td>
</tr>
<tr>
<td>3</td>
<td>HRV</td>
<td>Croatian</td>
</tr>
</tbody>
</table>

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### Table 18. CICS language suffixes (continued)

<table>
<thead>
<tr>
<th>Suffix</th>
<th>IBM Code</th>
<th>Language name</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>HUN</td>
<td>Hungarian</td>
</tr>
<tr>
<td>5</td>
<td>PLK</td>
<td>Polish</td>
</tr>
<tr>
<td>6</td>
<td>ROM</td>
<td>Romanian</td>
</tr>
<tr>
<td>7</td>
<td>SHL</td>
<td>Serbo-Croatian (Latin)</td>
</tr>
<tr>
<td>8</td>
<td>TRK</td>
<td>Turkish</td>
</tr>
<tr>
<td>9</td>
<td>NLD</td>
<td>Dutch</td>
</tr>
</tbody>
</table>

There are other IBM codes not supported by CICS.

### Table 19. Other IBM language codes

<table>
<thead>
<tr>
<th>IBM Code</th>
<th>Language name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>Afrikaans</td>
</tr>
<tr>
<td>CAT</td>
<td>Catalan</td>
</tr>
<tr>
<td>DES</td>
<td>Swiss German</td>
</tr>
<tr>
<td>ENA</td>
<td>Australian English</td>
</tr>
<tr>
<td>ENP</td>
<td>English Upper Case</td>
</tr>
<tr>
<td>FRB</td>
<td>Belgian French</td>
</tr>
<tr>
<td>FRC</td>
<td>Canadian French</td>
</tr>
<tr>
<td>FRS</td>
<td>Swiss French</td>
</tr>
<tr>
<td>GAE</td>
<td>Irish Gaelic</td>
</tr>
<tr>
<td>ITS</td>
<td>Swiss Italian</td>
</tr>
<tr>
<td>NLB</td>
<td>Belgian Dutch - Flemish</td>
</tr>
<tr>
<td>NON</td>
<td>Norwegian - Nynorsk</td>
</tr>
<tr>
<td>RMS</td>
<td>Rhaeto-Romanic</td>
</tr>
<tr>
<td>SKY</td>
<td>Slovakian</td>
</tr>
<tr>
<td>SLO</td>
<td>Slovenian</td>
</tr>
<tr>
<td>SRL</td>
<td>Serbian (Latin)</td>
</tr>
<tr>
<td>SRB</td>
<td>Serbian (Cyrillic)</td>
</tr>
<tr>
<td>SQI</td>
<td>Albanian</td>
</tr>
<tr>
<td>URD</td>
<td>Urdu</td>
</tr>
</tbody>
</table>
Chapter 6. Terminal control

This reference information applies to all terminals and logical units. For more detail, see the command descriptions.

Commands and options for terminals and logical units

This section describes the commands and options that apply to terminals and logical units.

Fullword lengths

For all terminal control commands, fullword length options can be used instead of halfword length options. In particular, where the following options are used in CONVERSE, RECEIVE, or SEND, the corresponding alternative can be specified instead (except for those noted):

<table>
<thead>
<tr>
<th>Option</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH</td>
<td>FLENGTH</td>
</tr>
<tr>
<td>TOLENGTH</td>
<td>TOFLENGTH</td>
</tr>
<tr>
<td>FROMLENGTH</td>
<td>FROMFLENGTH</td>
</tr>
<tr>
<td>MAXLENGTH</td>
<td>MAXFLENGTH</td>
</tr>
</tbody>
</table>

Application programs must be consistent in their use of fullword and halfword options on terminal control commands. The maximum value that can be specified as a parameter on any length keyword is 32 767.

Read from terminal or logical unit (RECEIVE)

The RECEIVE command is used to read data from a terminal or logical unit. The INTO option is used to specify the area into which the data is to be placed. Alternatively, a pointer reference can be specified in the SET option. CICS acquires an area large enough to hold the data and sets the pointer reference to the address of that data.

The contents of this area are available to the task until the next terminal I/O command. However, the area does not belong to the task and is released by CICS while processing the next request. Therefore, this area cannot be passed back to CICS for further processing.

The application can use MAXLENGTH to specify the maximum length of data that the program accepts. If the MAXLENGTH option is omitted on a RECEIVE command for which the INTO option is specified, the maximum length of data the program accepts can be specified in the LENGTH option. If the MAXLENGTH option is omitted on a RECEIVE command for which the SET option is specified, CICS acquires enough storage to hold all the available data.

If the data exceeds the specified maximum length and the NOTRUNCATE option is specified, the remaining data is made available to satisfy subsequent RECEIVE commands. If NOTRUNCATE is not specified, the data is truncated and the LENGERR condition occurs. In this event, if the LENGTH option is specified, the named data area is set to the actual data length (before truncation occurs) when data has been received. The first RECEIVE command in a task started by a terminal does not issue a terminal control read but copies the input buffer, even if the data length is zero. A second RECEIVE command must be issued to cause a terminal control read.

When a PA key is defined as a print key by the system initialization parameter PRINT, and that key is pressed in response to a RECEIVE command, it has no effect on the application program. The RECEIVE command is satisfied, and the application allowed to continue, when another attention (that is, one of the other PA keys, any of the PF keys, the ENTER key, or the light pen) is made at the keyboard.
Write to terminal or logical unit (SEND)

The SEND command is used to write data to a terminal or logical unit. The options FROM and LENGTH specify the data area from which the data is to be taken and the length (in bytes) of the data. For a transaction started by automatic transaction initiation (ATI), a SEND command should always precede the first RECEIVE in a transaction.

Unless the WAIT option of the SEND command is specified also, the transmission of the data associated with the SEND command is deferred until a later event, such as a sync point, occurs. This deferred transmission reduces the flows of data by allowing data flow controls to be transmitted with the data.

Transmission is not deferred for distributed transaction processing when interregion communication (IRC) is in use.

Synchronize terminal I/O for a transaction (WAIT TERMINAL)

This command is used to ensure that a terminal operation has completed before further processing occurs in a task under which more than one terminal or logical unit operation is performed. Alternatively, the WAIT option can be specified in a SEND command. (A wait is always carried out for a RECEIVE command.) Either method may cause execution of a task to be suspended. If suspension is necessary, control is returned to CICS. Execution of the task is resumed when the operation is completed.

Even if the WAIT option is not specified in a SEND command, the EXEC interface program ensures that the operation is completed before issuing a subsequent RECEIVE or SEND command.

Converse with terminal or logical unit (CONVERSE)

For most terminals or logical unit types, a conversational mode of communication can be used. The CONVERSE command is used for this purpose and means that the 3650 application program communicates with the host processor. If this option is not specified, the 3650 application program cannot communicate with the host processor. In general, the CONVERSE command can be considered as a combination of a SEND command followed immediately by a WAIT TERMINAL command and then by a RECEIVE command. However, not all options of the SEND and RECEIVE commands are valid for the CONVERSE command; specific rules are given in the syntax descriptions for different devices. The TOLENGTH option is equivalent to the LENGTH option of the RECEIVE command, and the FROMLENGTH option is equivalent to the LENGTH option of the SEND command.

Send an asynchronous interrupt (ISSUE SIGNAL)

This command is used, in a transaction in receive mode, to signal to the sending transaction that a mode change is needed. The execution of the command raises the SIGNAL condition on the next SEND or RECEIVE command executed in the sending transaction, and a previously executed HANDLE CONDITION command for this condition can be used either to action the request or to ignore it.

Disconnect a switched line (ISSUE DISCONNECT)

This command is used to break a line connection between a terminal and the processor, or to break a session between SNA logical units (LUs), when the transaction is completed. If the terminal is a buffered device, the data in the buffers is lost.

When used with an SNA LU, ISSUE DISCONNECT, which does not become effective until the task completes, signs off the terminal, frees the COMMAREA, clears the next TRANID, stops any BMS paging, and, if autoinstall is in effect, deletes the terminal definition.

Teletypewriter programming

The Teletypewriter (World Trade only) uses two different control characters for print formatting. These control characters are as follows:
Use the character < first; otherwise following characters (data) can be printed while the type bar is moving to the left.

**Message format**

To begin a new message on a new line at the left margin, start the message text with X'1517' (EBCDIC). CICS recognizes the X'17' and changes it to X'25' (X'17' is an IDLE character).

In the message body, to write several lines with a single transmission, the lines must be separated by X'1525', or if multiple blank lines are required, by X'152525...25'.

To allow input of the next message on a new line at the left margin, the preceding message must end with X'1517'. CICS recognizes X'15' and changes the character following it to X'25'.

If two or more successive output messages have “message begin” and “message end” which look the same, to make the “message end” of the preceding message distinguishable from the “message begin” of the next message, the next to last character of the “message end” must not be X'15'.

**Message length**

For messages for teletypewriter terminals do not exceed a length of about 3000 bytes or approximately 300 words.

**Connection through z/OS Communications Server**

Both the TWX Model 33/35 Common Carrier Teletypewriter Exchange and the WTTY Teletypewriter (World Trade only) can be connected to CICS through z/OS Communications Server using NTO.

If a device is connected through z/OS Communications Server using NTO, the protocols used are the same as for the 3767 logical unit, and the application program can use these protocols (for example, HANDLE CONDITION SIGNAL). However, the data stream is not translated to a 3767 data stream but remains as that for a TWX/WTTY.

**Display device operations**

In addition to the standard terminal control commands for sending and receiving data, several commands and lists are provided for use with display devices such as the 3270.

The commands are:

- Print displayed information (ISSUE PRINT)
- Copy displayed information (ISSUE COPY)
- Erase all unprotected fields (ISSUE ERASEAUP)
- Handle input without data (RECEIVE)
- Handle attention identifiers (HANDLE AID)

The lists are:

- Standard attention identifier list (DFHAID)
- Standard attribute and printer control character list (DFHBMSCA)
For devices with switchable screen sizes, the size of the screen that can be used, and the size to be used for a given transaction, are defined by CICS table generation. These values can be obtained with the ASSIGN command, described in “ASSIGN” on page 39.

Always include the ERASE option in the first SEND command, to clear the screen and format it according to the transmitted data. This first SEND with ERASE also selects the screen size to be used, as specified using the RDO option SCRNSIZE, or in the TCT. If ERASE is omitted, the screen size is the same as its previous setting, which can be incorrect.

Use the CLEAR key outside of a transaction to set the screen to its default size.

**Print displayed information (ISSUE PRINT)**

ISSUE PRINT prints displayed data on the first available printer that is eligible to respond to a print request.

For a 3270 logical unit or a 3650 host-conversational (3270) logical unit, it is a printer defined by the RDO TERMINAL options PRINTER and ALTPRINTER, or by a printer supplied by the autoinstall user program.

For a 3270-display logical unit with the printer adapter feature (PRINTADAPTER(YES) option on RDO TYPETERM), used with a 3274 or 3276, it is a printer allocated by the printer authorization matrix. See *An Introduction to the IBM 3270 Information Display System*.

For a 3790 (3270-display) logical unit, it is a printer allocated by the 3790.

For a printer to be available, it must be in service and not currently attached to a task.

For a 3270 logical unit to be eligible, it must have been specified by RDO TERMINAL options PRINTER and ALTPRINTER or by a printer supplied by the autoinstall user program, and it must have the correct buffer capacity. If the copy feature is also specified (COPY(YES) on RDO TYPETERM definition the printer must be on the same control unit.

If an ISSUE PRINT command is executed, the printer involved must be owned by the same CICS system that owns the terminal that is running the transaction.

For some 3270 displays, it is possible also to print the displayed information without using CICS.

**Copy displayed information (ISSUE COPY)**

The ISSUE COPY command is used to copy the format and data contained in the buffer of a specified terminal into the buffer of the terminal that started the transaction.

This command cannot be used for an LUTYPE2 connection. Both terminals must be attached to the same remote control unit. The terminal whose buffer is to be copied is identified in the TERMID option. If the terminal identifier is not valid, that is, it does not exist in the TCT, then the TERMIDERR condition occurs. The copy function to be performed is defined by the copy control character (CCC) specified in the CTLCHAR option of the ISSUE COPY command.

The WAIT option of the ISSUE COPY command ensures that the operation has been completed before control is returned to the application program.

**Erase all unprotected fields (ISSUE ERASEAUP)**

The ISSUE ERASEAUP command is used to erase all unprotected fields of a 3270 buffer.

It achieves this using the following actions:

1. All unprotected fields are cleared to nulls (X’00’).
2. The modified data tags (MDTs) in each unprotected field are reset to zero.
3. The cursor is positioned to the first unprotected field.
4. The keyboard is restored.

The WAIT option of the ISSUE ERASEAUP command ensures that the operation has been completed before control is returned to the application program.
Handle input without data (RECEIVE)

The RECEIVE command with no options causes input to take place and the EIB to be updated. Data received by CICS is not passed on to the application program and is lost. A wait is implied. Two of the fields in the EIB that are updated are EIBCPOSN and EIBAID.

Cursor position (EIBCPOSN)

For every terminal control (or BMS) input operation associated with a display device, the screen cursor address (position) is placed in the EIBCPOSN field in the EIB. The cursor address is in the form of a halfword binary value and remains until updated by a new input operation.

Attention identifier (EIBAID)

For every terminal control (or BMS) input operation associated with a display device, an attention identifier (AID) is placed in field EIBAID in the EIB.

The AID indicates which method the terminal operator has used to initiate the transfer of information from the device to CICS; for example, the ENTER key, a program function key, the light pen, and so on. The field contents remain unaltered until updated by a new input operation.

Field EIBAID can be tested after each terminal control (or BMS) input operation to determine further processing, and a standard attention identifier list (DFHAID) is provided for this purpose. Alternatively, the HANDLE AID command can be used to pass control to specified labels when the AIDs are received.

EIBAID and EIBCPOSN are also updated at task initiation for non-ATI tasks and after each terminal control and BMS input.
Chapter 7. Common Programming Interface Communications (CPI Communications)

Common Programming Interface Communications (CPI Communications) is the communication element of the Systems Applications Architecture (SAA) Common Programming Interface (CPI).

CPI Communications in CICS provides an alternative application programming interface (API) to existing CICS Advanced Program-to-Program Communications (APPC) support. CPI Communications provides distributed transaction processing (DTP) on APPC sessions and can be used in assembler language, COBOL, PL/I, or C.

CPI Communications defines an API that can be used in APPC networks that include multiple system platforms, where the consistency of a common API is of benefit.

The CPI Communications interface can converse with applications on any system that provides an APPC API. This includes applications on CICS platforms. You can use APPC API commands on one end of a conversation and CPI Communications commands on the other. CPI Communications requires specific information (side information) to begin a conversation with a partner program. CICS implementation of side information is achieved using the partner resource, which your system programmer is responsible for maintaining.

Calls from the application to the CPI Communications interface are resolved by link-editing it with the CICS CPI Communications stub (DFHCPLC). For information abut how to do this, see Including the CICS-supplied interface modules.

The CPI Communications API is defined as a general call interface. The interface is described in the Common Programming Interface Communications (CPI-C) Reference.

SAA Resource Recovery

SAA Resource Recovery is the recovery element of the Systems Application Architecture® (SAA) Common Programming Interface (CPI).

SAA Resource Recovery provides that architecture's alternative application programming interface (API) to EXEC CICS SYNCPOINT and EXEC CICS SYNCPOINT ROLLBACK functions in CICS. For details, see Systems Application Architecture Common Programming Interface Resource Recovery Reference.

CICS supports only those SAA Resource Recovery return codes that match existing EXEC CICS commands. This leaves only two return codes: RR_OK and RR_BACKED_OUT.

SRRCMT

The SAA Resource Recovery commit call SRRCMT (equivalent to EXEC CICS SYNCPOINT) has the following return codes:

- RR_OK
- RR_COMMITTED_OUTCOME_PENDING
- RR_COMMITTED_OUTCOME_MIXED
- RR_PROGRAM_STATE_CHECK
- RR_BACKED_OUT
- RR_BACKED_OUT_OUTCOME_PENDING
- RR_BACKED_OUT_OUTCOME_MIXED

Because of the restriction, these are replaced by:

- RR_COMMITTED_OUTCOME_PENDING, RR_OK
• RR_COMMITTED_OUTCOME_MIXED, RR_OK
• RR_PROGRAM_STATE_CHECK, shown as abend code ASP2
• RR_BACKED_OUT_OUTCOME_PENDING, RR_BACKED_OUT
• RR_BACKED_OUT_OUTCOME_MIXED, RR_BACKED_OUT

SRRBACK
The SAA Resource Recovery backout call SRRBACK (equivalent to EXEC CICS SYNCPOINT ROLLBACK) has the following return codes:
• RR_OK
• RR_COMMITTED_OUTCOME_PENDING
• RR_COMMITTED_OUTCOME_MIXED

Because of the restriction, all these are replaced by RR_OK.
Chapter 8. BMS-related constants

This information describes the BMS-related standard attribute and printer control characters, a bitmap for attributes, MSR control value constants, and attention identifier constants.

The standard list DFHBMSCA makes it simpler to provide field attributes and printer control characters. Table 20 on page 781 lists the symbolic names for the various combinations of attributes and control characters. If you need combinations other than the ones shown, you must generate them separately. To help you do this, see Table 21 on page 783 for a bitmap of attributes. To find the value of an attribute constant, see the 3274 Control Unit Reference Summary GA27-2827.

You can get the standard attribute and printer character control list by copying copybook DFHBMSCA into your application.

- For COBOL users, it consists of a set of 01 statements that can be copied into the working storage section.
- For C users, it is included in applications as follows:

```
#include "dfhbmsca.h"
```

- For PL/I users, it consists of DECLARE statements defining elementary character variables.
- For Assembler language users, the list consists of a set of EQU statements.

You must use the symbolic name DFHDFT in the application structure to override a map attribute with the default. You can use a high value, such as X’FF’, to reset the COLOR, HILIGHT, OUTLINE, PS, SOSI, or VALIDN attributes to their default values. To specify default values in a set attribute (SA) sequence in text build, use the symbolic names DFHDFCOL, DFHBASE, or DFHDFFHI.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFHBMPERM</td>
<td>Printer end-of-message</td>
</tr>
<tr>
<td>DFHBMPNL</td>
<td>Printer new-line</td>
</tr>
<tr>
<td>DFHBMPFF</td>
<td>Printer form feed</td>
</tr>
<tr>
<td>DFHBMPCR</td>
<td>Printer carriage return</td>
</tr>
<tr>
<td>DFHBMASK</td>
<td>Autoskip</td>
</tr>
<tr>
<td>DFHBMPNP</td>
<td>Unprotected</td>
</tr>
<tr>
<td>DFHBMPNN</td>
<td>Unprotected and numeric</td>
</tr>
<tr>
<td>DFHBMPRO</td>
<td>Protected</td>
</tr>
<tr>
<td>DFHBMBRY</td>
<td>Bright</td>
</tr>
<tr>
<td>DFHBMDAR</td>
<td>Dark</td>
</tr>
<tr>
<td>DFHBMDSE</td>
<td>MDT set</td>
</tr>
<tr>
<td>DFHBMPRF</td>
<td>Protected and MDT set</td>
</tr>
<tr>
<td>DFHBMASF</td>
<td>Autoskip and MDT set</td>
</tr>
<tr>
<td>DFHBASB</td>
<td>Autoskip and bright</td>
</tr>
<tr>
<td>DFHBMPSO</td>
<td>shift-out value X’0E’.</td>
</tr>
<tr>
<td>DFHBMPSI</td>
<td>shift-in value X’0F’.</td>
</tr>
<tr>
<td>Constant</td>
<td>Meaning</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------------------</td>
</tr>
<tr>
<td>DFHBMEOF</td>
<td>Field erased</td>
</tr>
<tr>
<td>DFHBMCUR</td>
<td>Field containing cursor flagged</td>
</tr>
<tr>
<td>DFHBMEC</td>
<td>Erased field containing cursor (COBOL only)</td>
</tr>
<tr>
<td>DFHBMFLG</td>
<td>Flags (COBOL only)</td>
</tr>
<tr>
<td>DFHBMDET</td>
<td>Field detected</td>
</tr>
<tr>
<td>DFHSA</td>
<td>Set attribute (SA) order</td>
</tr>
<tr>
<td>DFHERRORE</td>
<td>Error code</td>
</tr>
<tr>
<td>DFHPS</td>
<td>Programmed symbols</td>
</tr>
<tr>
<td>DFHHLT</td>
<td>Highlight</td>
</tr>
<tr>
<td>DFH3270</td>
<td>Base 3270 field attribute</td>
</tr>
<tr>
<td>DFHVAL</td>
<td>Validation</td>
</tr>
<tr>
<td>DFHOUTLN</td>
<td>Field outlining attribute code</td>
</tr>
<tr>
<td>DFHBKTRN</td>
<td>Background transparency attribute code</td>
</tr>
<tr>
<td>DFHALL</td>
<td>Reset all to defaults</td>
</tr>
<tr>
<td>DFHDFT</td>
<td>Default</td>
</tr>
<tr>
<td>DFHDFCOL</td>
<td>Default color</td>
</tr>
<tr>
<td>DFHBLUE</td>
<td>Blue</td>
</tr>
<tr>
<td>DFHRED</td>
<td>Red</td>
</tr>
<tr>
<td>DFHPINK</td>
<td>Pink</td>
</tr>
<tr>
<td>DFHGREEN</td>
<td>Green</td>
</tr>
<tr>
<td>DFHTURQ</td>
<td>Turquoise</td>
</tr>
<tr>
<td>DFHYELLO</td>
<td>Yellow</td>
</tr>
<tr>
<td>DFHNEUTR</td>
<td>Neutral</td>
</tr>
<tr>
<td>DFHBASE</td>
<td>Base programmed symbols</td>
</tr>
<tr>
<td>DFHDFHI</td>
<td>Normal</td>
</tr>
<tr>
<td>DFHBLINK</td>
<td>Blink</td>
</tr>
<tr>
<td>DFHREVRS</td>
<td>Reverse video</td>
</tr>
<tr>
<td>DFHUNDLN</td>
<td>Underscore</td>
</tr>
<tr>
<td>DFHMFIL</td>
<td>Mandatory fill</td>
</tr>
<tr>
<td>DFHMENT</td>
<td>Mandatory enter</td>
</tr>
<tr>
<td>DFHMFE</td>
<td>Mandatory fill and mandatory enter</td>
</tr>
<tr>
<td>DFHMT</td>
<td>Trigger</td>
</tr>
<tr>
<td>DFHMFT</td>
<td>Mandatory fill and trigger</td>
</tr>
<tr>
<td>DFHMET</td>
<td>Mandatory enter and trigger</td>
</tr>
<tr>
<td>DFHMFET</td>
<td>Mandatory fill and mandatory enter and trigger</td>
</tr>
</tbody>
</table>
Table 20. Standard attribute and printer control character list, DFHBMSCA (continued)

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFHUNNOD</td>
<td>Unprotected, nondisplay, nonprint, nondetectable, MDT</td>
</tr>
<tr>
<td>DFHUNIMD</td>
<td>Unprotected, intensify, light-pen detectable, MDT</td>
</tr>
<tr>
<td>DFHUNNUM</td>
<td>Unprotected, numeric, MDT</td>
</tr>
<tr>
<td>DFHUNNUB</td>
<td>Unprotected, numeric, intensify, intensify, light-pen detectable</td>
</tr>
<tr>
<td>DFHUNINT</td>
<td>Unprotected, numeric, intensify, intensify, light-pen detectable, MDT</td>
</tr>
<tr>
<td>DFHUNNON</td>
<td>Unprotected, numeric, nondisplay, nonprint, nondetectable, MDT</td>
</tr>
<tr>
<td>DFHPROTI</td>
<td>Protected, intensify, light-pen detectable</td>
</tr>
<tr>
<td>DFHPROTN</td>
<td>Protected, nondisplay, nonprint, nondetectable</td>
</tr>
<tr>
<td>DFHDFFR</td>
<td>Default outline</td>
</tr>
<tr>
<td>DFHU</td>
<td>Underline</td>
</tr>
<tr>
<td>DFHRIGHT</td>
<td>Right vertical line</td>
</tr>
<tr>
<td>DFHÜVER</td>
<td>Overline</td>
</tr>
<tr>
<td>DFHLEFT</td>
<td>Left vertical line</td>
</tr>
<tr>
<td>DFHBOX</td>
<td>Underline and right vertical and overline and left vertical</td>
</tr>
<tr>
<td>DFHSOSI</td>
<td>SOSI=yes</td>
</tr>
<tr>
<td>DFHTRANS</td>
<td>Background transparency</td>
</tr>
<tr>
<td>DFHOPAQ</td>
<td>No background transparency</td>
</tr>
</tbody>
</table>

Notes:

1 For text processing only. Use for constructing embedded set attribute orders in user text.
2 Cannot be used in set attribute orders.

Table 21. Bitmap for attributes

<table>
<thead>
<tr>
<th>prot</th>
<th>a/n</th>
<th>hi</th>
<th>spd</th>
<th>ndp</th>
<th>mdt</th>
<th>ebcd</th>
<th>asci</th>
<th>char</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td>20</td>
<td>b (blank)</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>Y</td>
<td>C1</td>
<td></td>
<td></td>
<td>41</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>Y</td>
<td>C4</td>
<td></td>
<td></td>
<td>44</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>Y</td>
<td>C5</td>
<td></td>
<td></td>
<td>45</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>H</td>
<td>Y</td>
<td>C8</td>
<td></td>
<td></td>
<td>48</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>H</td>
<td>Y</td>
<td>C9</td>
<td></td>
<td></td>
<td>49</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>Y</td>
<td>4C</td>
<td>3C</td>
<td>&lt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td></td>
<td>Y</td>
<td>4D</td>
<td>28</td>
<td>(</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td></td>
<td>50</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>Y</td>
<td>D1</td>
<td>4A</td>
<td>J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>Y</td>
<td>D4</td>
<td>4D</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>Y</td>
<td>D5</td>
<td>4E</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>H</td>
<td>Y</td>
<td>D8</td>
<td>51</td>
<td>Q</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 21. Bitmap for attributes (continued)

<table>
<thead>
<tr>
<th>prot</th>
<th>a/n</th>
<th>hi</th>
<th>spd</th>
<th>ndp</th>
<th>mdt</th>
<th>ebcd</th>
<th>asci</th>
<th>char</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>N</td>
<td>H</td>
<td>Y</td>
<td>Y</td>
<td>D9</td>
<td>52</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>Y</td>
<td></td>
<td></td>
<td>5C</td>
<td>2A</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td>5D</td>
<td>29</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60</td>
<td>2D</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Y</td>
<td>E4</td>
<td>55</td>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Y</td>
<td>Y</td>
<td>E5</td>
<td>56</td>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>H</td>
<td>Y</td>
<td>E8</td>
<td>59</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>H</td>
<td>Y</td>
<td>E9</td>
<td>5A</td>
<td>Z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Y</td>
<td>6C</td>
<td>25</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Y</td>
<td>Y</td>
<td>6D</td>
<td>5F</td>
<td>_</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>F0</td>
<td>30</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>Y</td>
<td>F1</td>
<td>31</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>Y</td>
<td>F4</td>
<td>34</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>Y</td>
<td>F5</td>
<td>35</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>H</td>
<td>Y</td>
<td>F8</td>
<td>38</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>H</td>
<td>Y</td>
<td>F9</td>
<td>39</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>Y</td>
<td>7C</td>
<td>40</td>
<td>@</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>7D</td>
<td>27</td>
<td>'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 22. Key to attributes and settings in bitmap

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a/n</td>
<td>Automatic skip or numeric</td>
</tr>
<tr>
<td>asci</td>
<td>American National Standard Code for Information Interchange</td>
</tr>
<tr>
<td>char</td>
<td>Graphic character equivalent to hex code</td>
</tr>
<tr>
<td>ebcd</td>
<td>Extended binary coded decimal interchange code</td>
</tr>
<tr>
<td>hi</td>
<td>High intensity</td>
</tr>
<tr>
<td>H</td>
<td>High</td>
</tr>
<tr>
<td>mdt</td>
<td>modified data tag</td>
</tr>
<tr>
<td>ndp</td>
<td>nondisplay print</td>
</tr>
<tr>
<td>N</td>
<td>Numeric</td>
</tr>
<tr>
<td>prot</td>
<td>Protected</td>
</tr>
<tr>
<td>P</td>
<td>Protected</td>
</tr>
<tr>
<td>spd</td>
<td>Selector pen detectable</td>
</tr>
<tr>
<td>S</td>
<td>Automatic skip</td>
</tr>
<tr>
<td>U</td>
<td>Unprotected</td>
</tr>
</tbody>
</table>
### Table 22. Key to attributes and settings in bitmap (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Yes</td>
</tr>
</tbody>
</table>

---

### Magnetic slot reader (MSR) control value constants, DFHMSRCA

A selection of MSR control value constants has been created for CICS and stored in copybook DFHMSRCA. The patterns are stored as named constants that can be loaded by simple application program commands. Provision of such constants saves the programmer from having to build a commonly used bit pattern whenever it is required.

### MSR control byte values

A selection of MSR control byte values has been created for CICS and stored in the copybook DFHMSRCA. The following table shows you the meaning of each bit.

The constants supplied in DFHMSRCA are listed in Table 23 on page 785.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFHMSRST</td>
<td>MSR reset. All lights and buzzers off. MSR available for input.</td>
</tr>
<tr>
<td>DFHMSCON</td>
<td>Transaction ready for more input. Green and yellow on; emit short buzz; IN PROCESS (user) mode set.</td>
</tr>
<tr>
<td>DFHMSFIN</td>
<td>Input complete. Green on; emit short buzz; IN PROCESS mode reset.</td>
</tr>
<tr>
<td>DFHMSALR</td>
<td>Operator alert. Green, yellow, and red on; emit long buzz; IN PROCESS mode reset.</td>
</tr>
<tr>
<td>DFHMSALS</td>
<td>Operator alert. Green, yellow, and red on; emit long buzz; IN PROCESS mode set.</td>
</tr>
<tr>
<td>DFHMSIPY</td>
<td>IN PROCESS state set. Yellow on.</td>
</tr>
<tr>
<td>DFHMSIPN</td>
<td>IN PROCESS state reset.</td>
</tr>
<tr>
<td>DFHMSLKY</td>
<td>MSR operation inhibited. Yellow on.</td>
</tr>
<tr>
<td>DFHMSLKN</td>
<td>MSR input allowed. Green on. Yellow on.</td>
</tr>
<tr>
<td>DFHMSAEY</td>
<td>MSR autoenter on. Yellow on.</td>
</tr>
<tr>
<td>DFHSAEN</td>
<td>MSR autoenter off. Yellow on.</td>
</tr>
<tr>
<td>DFHMSLBN</td>
<td>Long buzzer suppressed. Yellow on.</td>
</tr>
<tr>
<td>DFHMSLBY</td>
<td>Long buzzer permitted. Yellow on.</td>
</tr>
<tr>
<td>DFHMSSSBN</td>
<td>Short buzzer suppressed. Yellow on.</td>
</tr>
<tr>
<td>DFHMSSSBY</td>
<td>Short buzzer permitted. Yellow on.</td>
</tr>
<tr>
<td>DFHMSNOP</td>
<td>Leave all MSR settings unchanged.</td>
</tr>
</tbody>
</table>

### STATE MASK

If a bit is on in the STATE MASK byte, the state it represents is adopted by the device if the corresponding bit is also on in the STATE VALUE byte.
0 USER
User mode. Turn on the yellow light if the same bit is on in STATE VALUE.

1 LOCK
Locked/Unlocked. If locked, MSR input is inhibited.

2 AUTO
Autoenter on/off. If set on, any card read by the MSR causes an ENTER operation. If off, only a secure card causes an ENTER.

3 Ai1S
Suppress audible alarm 1.

4 Ai2S
Suppress audible alarm 2.

STATE VALUE
Modifies state to on or off if the corresponding bit is set on in STATE MASK.

INDICATOR MASK
Performs a similar function to STATE MASK, but for indicators.

0
Light 1 (Green)

1
Light 1 (Green)

2
Light2 (Yellow)

3
Audible alarm 1 (Long buzz)

4
Audible alarm 2 (Short buzz)

INDICATOR VALUE
Performs a similar function to STATE VALUE.

Attention identifier constants, DFHAID

The standard attention identifier list, DFHAID, simplifies testing the contents of the EIBAID field. The following table shows you the symbolic name for the attention identifier (AID) and the corresponding 3270 function.

You can get a copy of the list by copying DFHAID into your application program. For COBOL users, it consists of a set of 01 statements that must be copied into the working-storage section. For C users, it consists of a series of defined constants. For PL/I users, it consists of DECLARE statements defining elementary character variables.

Here is the table showing the names for the AID.

<table>
<thead>
<tr>
<th>Table 1. Standard list DFHAID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant</strong></td>
</tr>
<tr>
<td>DFHENTER</td>
</tr>
<tr>
<td>DFHCLEAR</td>
</tr>
</tbody>
</table>
Table 1. Standard list DFHAID
(continued)

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFHPA1–DFHPA3</td>
<td>PA1–PA3 keys.</td>
</tr>
<tr>
<td>DFHPF1–DFHPF24</td>
<td>PF1–PF24 keys.</td>
</tr>
<tr>
<td>DFHOVIP</td>
<td>OPERID or MSR.</td>
</tr>
<tr>
<td>DFHMSRE</td>
<td>Extended (standard) MSR.</td>
</tr>
<tr>
<td>DFHTRIG</td>
<td>Trigger field.</td>
</tr>
<tr>
<td>DFHPEN</td>
<td>SELECTOR PEN or CURSOR SELECT key.</td>
</tr>
<tr>
<td>DFHCLRP“1” on</td>
<td>CLEAR PARTITION key.</td>
</tr>
<tr>
<td>page 787</td>
<td></td>
</tr>
<tr>
<td>DFHSTTF“1” on</td>
<td>Structured field pseudo-AID.</td>
</tr>
<tr>
<td>page 787</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. DFHCLRP and DFHSTTF do not apply to minimum function BMS.
Chapter 9. BMS macros

The syntax of each BMS macro is defined, separating the various operands and options into those appropriate to minimum, standard, and full BMS.

When coding, have the title in column 1, the macro in column 10, continuation lines should have * in column 72 and continue on column 16 on the next line.

For more information about BMS, see Basic mapping support.

Map set, map, and field definition

Ensure that the names of maps, and names of fields within a map set (or within multiple map sets that are copied into one application program) are unique. However, a map can have the same name as a map set.

Before CICS can load a physical map, it requires an installed resource definition for the map object. You can either use program autoinstall to create the definition when the map set is first used, or define a map set in the CSD using the DEFINE MAPSET resource definition.

You assemble a BMS map set definition to generate either a symbolic description map or a physical map. The physical map is a structured data area used at execution time to build the data stream for the terminal. The symbolic map is a series of data structures which you copy into your program at compile time so you can refer to the fields in the map by name.

For programming information about the autoinstall user program, see Writing a program to control autoinstall of LUs.

DFHMSD

The DFHMSD macro defines a map set.

DFHMDI

The DFHMDI macro defines a map within the map set defined by the previous DFHMSD macro. A map contains zero or more fields.

DFHMDF

The DFHMDF macro defines a field within a map defined by the previous DFHMDI macro.

Ending a mapset definition

A mapset definition ends with a macro of the form:

```
mapset DFHMSD TYPE = FINAL
```

“mapset” is optional, but if used it must be the same as that on the DFHMSD macro that began the mapset definition.

ADS descriptor

Physical maps produced by CICS Transaction Server for z/OS also include an ADS descriptor in the output load module. This is provided to allow interpretation of the BMS Application Data Structure (the structure used by the application program for the data in SEND and RECEIVE MAP requests), without requiring your program to include the relevant DSECT or copybook at compile time.

The ADS descriptor contains a header with general information about the map, and a field descriptor for every field that appears in the ADS (corresponding to every named field in the map definition macro).
The ADS descriptor is generated for all maps. You can use the DSECT option to select the long form of the ADS, where all fields are aligned on 4 byte boundaries. The long form of the ADS is required by the 3270 bridge when an interface to IBM MQ is used.

### Partition set definition

Partitions are defined by coding the macros DFHPSD (partition set definition) and DFHPDI (partition definition). Each partition definition must be part of a partition set definition.

**DFHPSD**

Each partition set definition contains a single DFHPSD macro followed by one or more DFHPDI macros, and ending with a partition set definition TYPE=FINAL.

Before CICS can load a physical map, you must define a physical map using an RDO transaction with the MAPSET attribute.

An alternative to defining maps using RDO is to use the program autoinstall exit to create the definition when the map set is first used. (For programming information about the autoinstall user program, see Writing a program to control autoinstall of LUs.)

**DFHPDI**

A partition set contains one or more partitions. Each partition is defined by coding a partition definition macro.

### Ending a partition set definition

A partition set definition ends with a macro of the form:

```plaintext
DFHPSD TYPE = FINAL
```

The PARTNSET name (if specified) must match that specified on the DFHPSD macro that started the partition set definition.

### Field groups

Very often, an output data display field has to contain several subfields, all sharing the same display attributes, and each of which might have to be modified separately.

At output, subfields that have not been modified by the program can adopt default data values from the output map. For example, a display can include a date field of a “day” subfield, “month” subfield, and “year” subfield. The contents of the year subfield remain constant over a relatively long period; its value can safely be taken from a map. However, the day value and month value must be updated regularly.

Similarly, on input the terminal operator can enter data in each subfield separately.

You use the GRPNAME operand to define a group of subfields that combine to produce a field. The start of the group is indicated by a DFHMDF macro with the GRPNAME operand. This operand defines the first subfield, and specifies the attributes and name of the group. It is followed by other DFHMDF macros, one for each of the other subfields. Each of these must specify the group name, but cannot specify attribute values. The definition of the group is terminated by a DFHMDF macro that specifies a different group name, by one that specifies no group name, or by a DFHMDI or DFHMSD macro.

Briefly, a group of fields in a map would appear as follows in the map definition:

```plaintext
MAPSET DFHMSD....
  .
MAP DFHMDI....
  .
```
The POS operand specifies the position of the attribute byte of the field even though subfields of a group, other than the first, do not have attributes. If the subfields are positioned contiguously with no intervening blanks, the POS of the second and succeeding subfields must specify the position of the last character of the previous subfield.
The DFHMDF macro defines a field within a map defined by the previous DFHMDI macro.

Notes:

1 DBCS characters start with a shift-out character X'0E' and end with a shift-in character X'0F'.
Description
A map contains zero or more fields.

`fld` is the name (1–30 characters) of the field. Refer to your compiler manual to ensure that there are no other restrictions on the length.

For more information about defining field names, see Creating the map. If `fld` is omitted, application programs cannot access the field to change its attributes or alter its contents. For an output map, omitting the field name might be appropriate when the INITIAL operand is used to specify the contents of a field. If a field name is specified and the map that includes the field is used in a mapping operation, data supplied by the user overlays data supplied by initialization (unless default data only is being written).

The performance of input mapping operations is optimized if DFHMDF macros are arranged in numeric order of the POS operand.

You cannot define more than 1023 named fields for a COBOL, C, or PL/I input/output map.

You must ensure that the names of maps, and names of fields within a mapset (or within multiple mapsets that are copied into one application program) are unique. However, a map can have the same name as a mapset.

Before CICS can load a physical map, you must define a physical map using an RDO transaction with the MAPSET attribute.

Operands

**ATTRB**
This operand applies only to 3270 data stream devices; it is ignored for other devices, except that ATTRB=DRK is honored for the SCS Printer Logical Unit. It is also ignored (except for ATTRB=DRK) if the NLEOM option is specified on the SEND MAP command for transmission to a 3270 printer. In particular, ATTRB=DRK must not be used as a method of protecting secure data on output on non-3270, non-SCS printer terminals.
If ATTRB is specified within a group of fields, it must be specified in the first field entry. A group of fields appears as one field to the 3270. Therefore, the ATTRB specification refers to all the fields in a group as one field rather than as individual fields. It specifies device-dependent characteristics and attributes, such as the capability of a field to receive data, or the intensity to be used when the field is output. It could however, be used for making an input field nondisplay for secure entry of a password from a screen. For input map fields, DET and NUM are the only valid options; all others are ignored.

**ASKIP**

is the default and specifies that data cannot be keyed into the field and causes the cursor to skip over the field.

**BRT**

specifies that a high-intensity display of the field is required. Because of the 3270 attribute character bit assignments, a field specified as BRT is also potentially detectable. However, for the field to be recognized as detectable by BMS, DET must also be specified.

**DET**

specifies that the field is potentially detectable.

The first character of a 3270 detectable field must be one of the following:

| ? | > | & | blank |

If ? or >, the field is a selection field; if & or blank, the field is an attention field. (See *An Introduction to the IBM 3270 Information Display System, GA27-2739* for further details about detectable fields.)

A field for which BRT is specified is potentially detectable to the 3270, because of the 3270 attribute character bit assignments, but is not recognized as such by BMS unless DET is also specified.

DET and DRK are mutually exclusive.

If DET is specified for a field on a map with MODE=IN, only one data byte is reserved for each input field. This byte is set to X'00', and remains unchanged if the field is not selected. If the field is selected, the byte is set to X'FF'.

No other data is supplied, even if the field is a selection field and the ENTER key has been pressed.

If the data in a detectable field is required, all the following conditions must be fulfilled:

1. The field must begin with one of the following characters:

| ? | > | & | blank |

and DET must be specified in the output map.

2. The ENTER key (or some other attention key) must be pressed after the field has been selected, although the ENTER key is not required for detectable fields beginning with & or a blank.

3. DET must not be specified for the field in the input map. DET must, however, be specified in the output map. For more information about BMS support of the light pen, see the *CICS Application Programming Guide*.

**DRK**

specifies that the field is nonprint/nondisplay. DRK cannot be specified if DET is specified.

**FSET**

specifies that the modified data tag (MDT) for this field must be set when the field is sent to a terminal.

Specification of FSET causes the 3270 to treat the field as though it has been modified. On a subsequent read from the terminal, this field is read, whether it has been modified. The MDT remains set until the field is rewritten without ATTRB=FSET, or until an output mapping request causes the MDT to be reset.
Either of two sets of defaults can apply when a field to be displayed on a 3270 is being defined but not all parameters are specified. If no ATTRB parameters are specified, ASKIP and NORM are assumed. If any parameter is specified, UNPROT and NORM are assumed for that field unless overridden by a specified parameter.

**IC**

specifies that the cursor is to be placed in the first position of the field. The IC attribute for the last field for which it is specified in a map is the one that takes effect. If not specified for any fields in a map, the default location is zero. Specifying IC with ASKIP or PROT causes the cursor to be placed in an unkeyable field.

This option can be overridden by the CURSOR option of the SEND MAP command that causes the write operation.

**NORM**

specifies that the field intensity is to be normal.

**NUM**

ensures that the data entry keyboard is set to numeric shift for this field unless the operator presses the alpha shift key, and prevents entry of nonnumeric data if the Keyboard Numeric Lock feature is installed.

**PROT**

specifies that data cannot be keyed into the field.

If data is to be copied from one device to another attached to the same 3270 control unit, the first position (address 0) in the buffer of the device to be copied from must not contain an attribute byte for a protected field. Therefore, when preparing maps for 3270s, ensure that the first map of any page does not contain a protected field starting at position 0.

**UNPROT**

specifies that data can be keyed into the field.

**CASE**

specifies that the field contains both uppercase and lowercase data that is to be converted to uppercase if the terminal definition specifies katakana support (KATAKANA(YES) option on RDO TYPETERM definition).

This must be specified if a field is known to contain lowercase Latin characters but can be displayed on a katakana display. It must not be specified if the field can contain valid katakana characters.

**COLOR**

indicates the individual color, or the default color for the mapset (where applicable).

The valid colors are blue, red, pink, green, turquoise, yellow, and neutral.

The COLOR operand is ignored unless the terminal supports color, as indicated by the RDO option COLOR.

**GINIT**

specifies constant or default data for an output field. GINIT is used to specify data in DBCS character strings, which must be enclosed by SO (shift out, X'0E') and SI (shift in, X'0F') characters. When GINIT is specified, the length must be even and is the number of bytes in the string (that is, not the number of DBCS characters). If a graphic data type (PS=X'F8') is used, and the language is stated as COBOL2 (Enterprise COBOL or VS COBOL II), a PIC G is generated. Only one of GINIT, INITIAL, or XINIT can be specified.

**GRPNNAME**

is the name used to generate symbolic storage definitions and to combine specific fields under one group name. The same group name must be specified for each field that is to belong to the group. The length of the name is up to 30 characters, refer to your compiler manual to ensure that there are no other restrictions on the length.

The rules for defining group names are the same as for defining field names. See Creating the map for details.
If this operand is specified, the OCCURS operand cannot be specified.

The fields in a group must follow on; there can be gaps between them, but not other fields from outside the group. A field name must be specified for every field that belongs to the group, and the POS operand must also be specified to ensure that the fields follow each other. All the DFHMDF macros defining the fields of a group must be placed together, and in the correct order (ascending numeric order of the POS value).

For example, the first 20 columns of the first six lines of a map can be defined as a group of six fields, as long as the remaining columns on the first five lines are not defined as fields.

The ATTRB operand specified on the first field of the group applies to all of the fields within the group.

**HILIGHT**

specifies the default highlighting attribute for all fields in all maps in a mapset.

**OFF**

is the default and indicates that no highlighting is used.

**BLINK**

 specifies that the field must flash.

**REVERSE**

specifies that the character or field is displayed in reverse video, for example, on a 3278, black characters on a green background.

**UNDERLINE**

specifies that a field is underlined.

The HILIGHT operand is ignored unless the terminal supports highlighting, as indicated by the RDO TYPETERM option HILIGHT(YES).

**INITIAL (or XINIT)**

specifies constant or default data for an output field. INITIAL is used to specify data in character form; XINIT is used to specify data in hexadecimal form.

For fields with the DET attribute, initial data that begins with one of the following characters must be supplied:

| ? | > | & | blank |

The number of characters that can be specified in the INITIAL operand is restricted to the continuation limitation of the assembler to be used or to the value specified in the LENGTH operand (whichever is the smaller).

Hexadecimal data is written as an even number of hexadecimal digits, for example, XINIT=C1C2. If the number of valid characters is smaller than the field length, the data is padded on the right with blanks. For example, if LENGTH=3, XINIT=C1C2 results in an initial field of 'AB'.

If hexadecimal data is specified that corresponds with line or format control characters, the results are unpredictable. The XINIT operand must therefore be used with care. Only one of GINIT, INITIAL, or XINIT can be specified.

**JUSTIFY**

specifies the field justifications for input operations. This operand is ignored for VTAM-supported 3600, 3650, and 3790 terminals, because input mapping is not available.

**LEFT**

specifies that data in the input field is left-adjusted.

**RIGHT**

specifies that data in the input field is right-adjusted.

**BLANK**

specifies that blanks are to be inserted in any unfilled positions in an input field.

**ZERO**

specifies that zeros are to be inserted in any unfilled positions in an input field.
LEFT and RIGHT are mutually exclusive, as are BLANK and ZERO. If certain arguments are supplied but others are not, assumptions are made as follows:

<table>
<thead>
<tr>
<th>Specified</th>
<th>Assumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEFT</td>
<td>BLANK</td>
</tr>
<tr>
<td>RIGHT</td>
<td>ZERO</td>
</tr>
<tr>
<td>BLANK</td>
<td>LEFT</td>
</tr>
<tr>
<td>ZERO</td>
<td>RIGHT</td>
</tr>
</tbody>
</table>

If JUSTIFY is omitted, but the NUM attribute is specified, RIGHT and ZERO are assumed. If JUSTIFY is omitted, but attributes other than NUM are specified, LEFT and BLANK are assumed.

**Note:** If a field is initialized by an output map or contains data from any other source, data that is typed as input overwrites only the equivalent length of the existing data; surplus existing data remains in the field and could cause unexpected interpretation of the new data.

**LENGTH**

specifies the length (1–256 bytes) of the field or group of fields. This length is the maximum length required for application program data to be entered into the field; it does not include the 1 byte attribute indicator appended to the field by CICS for use in subsequent processing. The length of each individual subfield within a group must not exceed 256 bytes.

In general LENGTH can be omitted if PICIN or PICOUT is specified, unless PICOUT defines a COBOL picture containing a currency symbol that replaces a currency sign of length greater than 1. LENGTH is required otherwise. You can specify a length of zero only if you omit the label (field name) from the DFHMDF macro. That is, the field is not part of the application data structure and the application program cannot modify the attributes of the field. You can use a field with zero length to delimit an input field on a map.

The map dimensions specified in the SIZE operand of the DFHMIDI macro defining a map can be smaller than the actual page size or screen size defined for the terminal.

If the LENGTH specification in a DFHMDIF macro causes the map-defined boundary on the same line to be exceeded, the field on the output screen is continued by wrapping.

**OCCURS**

specifies that the indicated number of entries for the field are to be generated in a map, and that the map definition is to be generated in such a way that the fields are addressable as entries in a matrix or an array. This permits several data fields to be addressed by the same name (subscripted) without generating a unique name for each field.

OCCURS and GRPNAME are mutually exclusive; that is, OCCURS cannot be used when fields have been defined under a group name. If this operand is omitted, a value of OCCURS=1 is assumed.

**OUTLINE**

allows lines to be included above, below, to the left, or to the right of a field. You can use these lines in any combination to construct boxes around fields or groups of fields.

**PICIN (COBOL and PL/I only)**

specifies a picture to be applied to an input field in an IN or INOUT map; this picture serves as an editing specification that is passed to the application program, thus permitting the user to use the editing capabilities of COBOL or PL/I. BMS checks that the specified characters are valid picture specifications for the language of the map.

However, the validity of the input data is not checked by BMS or the high-level language when the map is used, so any wanted checking must be performed by the application program. The length of the data associated with “value” must be the same as that specified in the LENGTH operand if LENGTH is specified. If both PICIN and PICOUT are used, an error message is produced if their calculated lengths do not agree; the shorter of the two lengths is used. If PICIN or PICOUT is not coded for the field definition, a character definition of the field is automatically generated regardless of other operands that are coded, such as ATTRB=NUM.

As an example, assume that the following map definition is created for reference by a COBOL application program:
This generates the following DSECT:

```cobol
  01  MAPI.
     02  F1L    PIC S9(4) COMP.
     02  F1A    PIC X.
     02  FILLER REDEFINES F1A.
     03  F1F    PIC X.
     02  F1I    PIC X(30).
     02  FILLER PIC X.
     02  F2L    PIC S9(4) COMP.
     02  F2A    PIC X.
     02  FILLER REDEFINES F2A.
     03  F2F    PIC X.
     02  F2I    PIC X(10).
     02  FILLER PIC X.
     02  F3L    PIC S9(4) COMP.
     02  F3A    PIC X.
     02  FILLER REDEFINES F3A.
     03  F3F    PIC X.
     02  F3I    PIC 9999V99.
     02  FILLER PIC X.
```

Valid picture values for COBOL input maps are:

```
A P S V X 9 / and ( 
```

Valid picture values for PL/I input maps are:

```
A B E F G H I K M P R S T V
X Y and Z
1 2 3 6 7 8 9 / + - , *
$ and ( 
```

Refer to the appropriate language reference manual for the correct syntax of the PICTURE attribute.

**Note:** PL/I supports multiple currency signs and multi-character currency signs in PICTURE specifications.

The default currency picture symbol is the dollar sign ($), which represents the national currency symbol; for example the dollar ($), the pound (£), or the yen (¥).

The default currency picture symbol can be replaced by a currency string enclosed by less than (<) and greater than (>) symbols. For example:

```cobol
DECLARE
  USPRICE PICTURE '$99.99',
  UKPRICE PICTURE '<£>99.99',
  EUPRICE PICTURE '<EUR>99.99';
```
PICOUT (COBOL and PL/I only)
is like PICIN, except that a picture to be applied to an output field in the OUT or INOUT map is generated.

Valid picture values for COBOL output maps are:

```
A B E P S V X Z 0 9 , . + - $
CR DB / and ( 
```

Valid picture values for PL/I output maps are:

```
A B E F G H I K M P R S T V
X Y and Z
1 2 3 6 7 8 9 / + - , . * $
CR DB and ( 
```

Refer to the appropriate language reference manual for the correct syntax of the PICTURE attribute.

**Note:** PL/I supports multiple currency signs and multi-character currency signs in PICTURE specifications.

The default currency picture symbol is the dollar sign ($), which represents the national currency symbol; for example the dollar ($), the pound (£), or the yen (¥).

The default currency picture symbol can be replaced by a currency string enclosed by less than (<) and greater than (>) symbols. For example:

```
DECLARE
  USPRICE PICTURE '$99.99',
  UKPRICE PICTURE '<£>99.99',
  EUPRICE PICTURE '<EUR>99.99';
```

**Note:** COBOL supports multiple currency signs and multi-character currency signs in PICTURE specifications.

The default currency picture symbol is the dollar sign ($), which represents the national currency symbol; for example the dollar ($), the pound (£), or the yen (¥).

The default currency picture symbol can be replaced by a different currency picture symbol that is defined in the SPECIAL NAMES clause. The currency sign represented by the picture symbol is defined in the same clause. For example:

```
SPECIAL NAMES.
  CURRENCY SIGN IS '$' WITH PICTURE SYMBOL '$'.
  CURRENCY SIGN IS '£' WITH PICTURE SYMBOL '£'.
  CURRENCY SIGN IS 'EUR' WITH PICTURE SYMBOL '#'.
WORKING STORAGE SECTION.
  01 USPRICE PIC $99.99.
  01 UKPRICE PIC £99.99.
  01 ECPRICE PIC #99.99.
```

LENGTH must be specified when PICOUT specifies a COBOL picture containing a currency symbol that replaces a currency sign of length greater than 1.

**POS** specifies the location of a field. This operand specifies the individually addressable character location in a map at which the attribute byte that precedes the field is positioned.

**number** specifies the displacement (relative to zero) from the beginning of the map being defined.

**line,column** specify lines and columns (relative to one) within the map being defined.

The location of data on the output medium is also dependent on DFHMDI operands.
The first position of a field is reserved for an attribute byte. When supplying data for input mapping from non-3270 devices, the input data must allow space for this attribute byte. Input data must not start in column 1 but can start in column 2.

The POS operand always contains the location of the first position in a field, which is normally the attribute byte when communicating with the 3270. For the second and subsequent fields of a group, the POS operand points to an assumed attribute-byte position, ahead of the start of the data, even though no actual attribute byte is necessary. If the fields follow on immediately from one another, the POS operand points to the last character position in the previous field in the group.

When a position number is specified that represents the last character position in the 3270, 2 special rules apply:

- **ATTRIB=IC** must not be coded. The cursor can be set to location zero by using the CURSOR option of a SEND MAP, SEND CONTROL, or SEND TEXT command.
- If the field is to be used in an output mapping operation with MAP=DATAONLY on the SEND MAP command, an attribute byte for that field must be supplied in the symbolic map data structure by the application program.

**PS**

specifies that programmed symbols are to be used. This overrides any PS operand set by the DFHMDI macro or the DFHMSD macro.

**BASE**

is the default and specifies that the base symbol set is to be used.

**psid**

specifies a single EBCDIC character, or a hexadecimal code of the form X'nn', that identifies the set of programmed symbols to be used.

The PS operand is ignored unless the terminal supports programmed symbols, as indicated by PROGSYMBOLS(YES) on the RDO TYPETERM definition.

**SOSI**

indicates that the field can contain a mixture of EBCDIC and DBCS data. The DBCS subfields within an EBCDIC field are delimited by SO (shift out) and SI (shift in) characters. SO and SI both occupy a single screen position (normally displayed as a blank). They can be included in any non-DBCS field on output, if they are correctly paired. The terminal user can transmit them inbound if they are already present in the field, but can add them to an EBCDIC field only if the field has the SOSI attribute.

**TRANSP**

determines whether the background of an alphanumeric field is transparent or opaque, that is, whether an underlying (graphic) presentation space is visible between the characters.

**VALIDN**

specifies that:

- validation is to be used on an 8775 terminal
- this field can be processed by the BMS global user exits

This overrides any VALIDN operand on the DFHMDI macro or the DFHMSD macro.

**MUSTFILL**

specifies that the field must be filled completely with data. An attempt to move the cursor from the field before it has been filled, or to transmit data from an incomplete field, raises the INHIBIT INPUT condition.

**MUSTENTER**

specifies that data must be entered into the field, though need not fill it. An attempt to move the cursor from an empty field raises the INHIBIT INPUT condition.

**TRIGGER**

specifies that this field is a trigger field. Trigger fields are discussed in Trigger field support.
**USEREXIT**

specifies that this field is to be processed by the BMS global user exits, XBMIN and XBMOUT, if this field is received or transmitted in a 3270 datastream when the respective exit is enabled.

The MUSTFILL, MUSTENTER, and TRIGGER specifications are valid only for terminals that support the field validation extended attribute, otherwise they are ignored. The USEREXIT specification applies to all 3270 devices.

**Note:** The USEREXIT specification is unconnected with the field validation extended attribute as defined in the 3270 datastream architecture.

**XINIT**

see INITIAL, earlier in the list. Only one of GINIT, INITIAL, or XINIT can be specified.

---

**DFHMDI**

The DFHMDI macro defines a map within the mapset defined by a previous DFHMSD macro.
DFHMDI Minimum BMS

Map - DFHMDI

SIZE = (line, column)

TERM = type

CTRL = (PRINT, length, FREEKB, ALARM, FRSET)

EXTATT = MAPONLY, YES

COLOR = DEFAULT, color

CURSLOC = OFF, YES

HIGHLIGHT = BLINK, REVERSE, UNDERLINE

EXTATT = MAPONLY

COLOR = DEFAULT

CURSLOC = NO

HIGHLIGHT = OFF

BLINK

REVERSE

UNDERLINE

PS = BASE

VALIDN = MUSTFILL, MUSTENTER, TRIGGER, USEREXIT

COLUMN = number

LINE = number

FIELDS = NO

MAPATTS = (attr)

DSATTS = (attr)

OUTLINE = BOX

LEFT

RIGHT

OVER

UNDER

NO

YES

TRANS = YES

NO

JUSTIFY = BOTTOM

SOSI = NO

TRANSP = YES

NO
A map contains zero or more fields.
“map” is the name (1–7 characters) of the map.

Operands

COLOR
indicates the individual color, or the default color for the mapset (where applicable). This is overridden by the COLOR operand of the DFHMDI macro.
The valid colors are blue, red, pink, green, turquoise, yellow, and neutral.

The COLOR operand is ignored unless the terminal supports color, as indicated by the RDO TYPETERM definition option COLOR(YES).

**COLUMN**
specifies the column in a line at which the map is to be placed, that is, it establishes the left or right map margin. The JUSTIFY operand of the DFHMDI macro controls whether map and page margin selection and column counting are to be from the left or right side of the page. The columns between the specified map margin and the page margin are not available for subsequent use on the page for any lines included in the map.

**NUMBER**
is the column from the left or right page margin where the left or right map margin is to be established.

**NEXT**
indicates that the left or right map margin is to be placed in the next available column from the left or right on the current line.

**SAME**
indicates that the left or right map margin is to be established in the same column as the last nonheader or nontrailer map used that specified COLUMN=number and the same JUSTIFY operands as this macro.

For input operations, the map is positioned at the extreme left or right side, depending on whether JUSTIFY=LEFT or JUSTIFY=RIGHT has been specified.

**CTRL**
defines characteristics of IBM 3270 terminals. Use of any of the control options in the SEND MAP command overrides all control options in the DFHMDI macro, which in turn overrides all control options in the DFHMSD macro.

If CTRL is used with cumulative BMS paging (that is, the ACCUM option is used on the BMS SEND MAP commands), it must be specified on the last (or only) map of a page, unless it is overridden by the ALARM, FREEKB, and so on, options on the SEND MAP or accumulated SEND CONTROL command.

**PRINT**
must be specified if the printer is to be started; if omitted, the data is sent to the printer buffer but is not printed. This operand is ignored if the mapset is used with 3270 displays without the Printer Adapter feature.

**LENGTH**
indicates the line length on the printer; length can be specified as L40, L64, L80, or HONEOM. L40, L64, and L80 force a new line after 40, 64, or 80 characters. HONEOM causes the default printer line length to be used. If this option is omitted, BMS sets the line length from the TCT page size.

**FREEKB**
causes the keyboard to be unlocked after the map is written. If FREEKB is not specified, the keyboard remains locked; data entry from the keyboard is inhibited until this status is changed.

**ALARM**
activates the 3270 audible alarm. For non-3270 VTAM terminals it sets the alarm flag in the FMH. (This feature is not supported by interactive and batch logical units.)

**FRSET**
specifies that the modified data tags (MDTs) of all fields currently in the 3270 buffer are to be reset to an unmodified condition (that is, field reset) before map data is written to the buffer. This allows the DFHMDF macro with the ATTRB operand to control the final status of any fields written or rewritten in response to a BMS command.

**Note:** CTRL cannot be specified in the DFHMDI and DFHMSD macros in the same mapset.

**CURSLOC**
indicates that for all RECEIVE MAP operations using this map on 3270 terminals, BMS sets a flag in the application data structure element for the field where the cursor is located.
The flag might be tested by DFHBMCUR (see copybook DFHBMSCA in Chapter 8, “BMS-related constants,” on page 781).

To test the flag (COBOL example):

```cobol
(DFHBMSCA)
... 02 DFHBMEOF PIC X VALUE X'80'.
  02 DFHBMCUR PIC X VALUE X'02'.
  02 DFHBMEC PIC X VALUE X'82'.
  02 DFHBMFNG PIC X.
    88 DFHERASE VALUES ARE X'80', X'82'.
    88 DFHCURSR VALUES ARE X'02', X'82'.
  MOVE FLD1F TO DFHBMFLG.
  IF DFHERASE THEN ... ELSE ...
  IF DFHCURSR THEN ... ELSE ...```

**Note:**

1. If CURSLOC=YES is specified for the MAP definitions, and there is no data for any field of the application data structure, but the cursor lies within a field known to the application data structure, BMS sets the cursor flag for the appropriate field, but the data for all fields in the application data structure is null, and the MAPFAIL condition does not occur. The unmapped data stream is not available to the application program unless it is a RECEIVE DATA FROM request.

2. A valid CURSLOC definition in DFHMDI overrides the definition in DFHMSD.

**DATA**

specifies the format of the data.

**FIELD**

specifies that the data is passed as contiguous fields, each field having the format:

```
  LL  A  data field
```

“LL” is two bytes specifying the length of the data as input from the terminal (ignored in output processing). “A” is a byte into which the programmer can place an attribute to override that specified in the map used to process this data (see copybook DFHBMSCA in Chapter 8, “BMS-related constants,” on page 781).

**BLOCK**

specifies that the data is passed as a continuous stream in the following format:

```
  A  data field  space
```

This stream is processed as line segments of the length specified in the map used to process the data. The data is in the form in which it appears at the terminal; that is, it contains data fields and interspersed blanks corresponding to any spaces that are to appear between the fields on output. You cannot use DSATTS=YES if you specify DATA=BLOCK.

Block data is further discussed in [Block data](#).

**DSATTS**

specifies the attribute types to be included in the symbolic description map. These types can be one or more of the following: COLOR, HILIGHT, OUTLINE, PS, SOSI, TRANSP, and VALIDN. Any type included in DSATTS should also be included in MAPATTS.

**EXTATT**

this operand is supported for compatibility with previous releases. Each of the extended attributes can be defined individually. For new maps, the operands DSATTS and MAPATTS must be used instead.

**NO**

is equivalent to not specifying the DSATTS operand or the MAPATTS operand.
YES
is equivalent to:

MAPATTS=(COLOR,HILIGHT,PS,VALIDN)
DSATTTS=(COLOR,HILIGHT,PS,VALIDN)

MAPONLY
is equivalent to:

MAPATTS=(COLOR,HILIGHT,PS,VALIDN)

FIELDS
specifies whether the map contains fields. If you specify FIELDS=NO, you create a null map that defines a “hole” in BMS’s view of the screen. BMS cannot change the contents of such a hole after it has created it by sending a null map.

FLDSEP
specifies the field separator sequence (1–4 characters) for input from non-3270 devices. Input from non-3270 devices can be entered as a single string of data with the field separator sequence delimiting fields. The data between the field separators is moved to the input fields in the map in order.

HEADER
allows the map to be used during page building without terminating the OVERFLOW condition. This operand can be specified for more than one map in a map set.

HILIGHT
specifies the default highlighting attribute for all fields in all maps in a mapset. This is overridden by the HILIGHT operand of the DFHMDF.

OFF
is the default and indicates that no highlighting is used.

BLINK
specifies that the field must flash.

REVERSE
specifies that the character or field is displayed in reverse video, for example, on a 3278, black characters on a green background.

UNDERLINE
specifies that a field is underlined.

The HILIGHT operand is ignored unless the terminal supports highlighting, as indicated by HILIGHT(YES) on the RDO TYPETERM definition,

JUSTIFY
specifies the position of the map on the page.

LEFT
specifies that the map is to be positioned starting at the specified column from the left margin on the specified line.

RIGHT
specifies that the map is to be positioned starting at the specified column from the right margin on the specified line.

FIRST
specifies that the map is to be positioned as the first map on a new page. Any partially formatted page from preceding BMS commands is considered to be complete. This operand can be specified for only one map per page.

LAST
indicates that the map is to be positioned at the foot of the current page. This operand can be specified for multiple maps to be placed on one page. However, maps other than the first map for which it is specified must be able to be positioned horizontally without requiring that more lines be used.
**BOTTOM**

For a SEND MAP ACCUM command has the same effect as LAST. For a SEND MAP command (without ACCUM) and a RECEIVE MAP command, JUSTIFY=BOTTOM positions the map at the foot of the screen if the number of lines in the map is specified in the SIZE operand. No account is taken of trailer maps in the mapset. JUSTIFY=BOTTOM is equivalent to specifying

\[
\text{LINE}=\left(\text{screen}\text{depth}-\text{mapdepth}+1\right)
\]

on the map definition, but it allows the same map to be used for different screen sizes. JUSTIFY=BOTTOM is ignored if the number of lines is not also specified. If JUSTIFY=BOTTOM and LINE are both specified, the value specified in LINE is ignored.

LEFT and RIGHT are mutually exclusive, as are FIRST and LAST. If FIRST or LAST are not specified, the data is mapped at the next available position as determined by other parameters of the map definition and the current mapping operation. FIRST or LAST is ignored unless ACCUM is specified on SEND MAP commands; otherwise only one map is placed on each page.

**Note:** If a field is initialized by an output map or contains data from any other source, data that is keyed as input overwrites only the equivalent length of the existing data; surplus existing data remains in the field and could cause unexpected interpretation of the new data.

**LINE**

specifies the starting line on a page in which data for a map is to be formatted.

**NUMBER**

is a value in the range 1–240, specifying a starting line number. A request to map, on a line and column, data that has been formatted in response to a preceding BMS command, causes the current page to be treated as though complete. The new data is formatted at the requested line and column on a new page.

**NEXT**

specifies that formatting of data is to begin on the next available empty line. If LINE=NEXT is specified in the DFHMDI macro, it is ignored for input operations and LINE=1 is assumed.

**SAME**

specifies that formatting of data is to begin on the same line as that used for a preceding BMS command. If COLUMN=NEXT is specified, it is ignored for input operations and COLUMN=1 is assumed. If the data does not fit on the same line, it is placed on the next available line that is empty.

**MAPATTS**

specifies the attribute types to be included in the physical map. These types can be one or more of the following: COLOR, HILIGHT, OUTLINE, PS, SOSI, TRANSP, and VALIDN. This list must include all the attribute types to be specified for individual fields in the map (DFHMDF macro).

Where possible these values are deduced from operands already specified in the DFHMDI and DFHMSD macros. For example, if COLOR=BLUE has been specified, MAPATTS=COLOR is assumed.

**OBFMT**

specifies whether outboard formatting is to be used. This operand is available only for 3650 logical units, or for an 8100 series processor running DPS Release 2 and defined to CICS as an LUTYPE2 logical unit. For more information, see Outboard formatting.

The OBFMT operand overrides the OBFMT operand on the DFHMSD macro.

**YES**

specifies that this map definition can be used in outboard formatting.

**NO**

specifies that this map definition cannot be used in outboard formatting.

**OUTLINE**

allows lines to be included above, below, to the left, or to the right of a field. You can use these lines in any combination to construct boxes around fields or groups of fields.
**PARTN**

specifies the default partition to be associated with maps in this mapset. If the ACTIVATE option is specified, the specified partition is also activated when maps in this mapset are output to a terminal that supports partitions.

This option overrides the PARTN option of the DFHMSD macro and is overridden by any OUTPARTN or ACTPARTN option on the SEND MAP command, or the INPARTN option on a RECEIVE MAP command.

The PARTN option is ignored if the target terminal does not support partitions, or if there is no partition set associated with the transaction.

**PS**

specifies that programmed symbols are to be used. This overrides the PS operand of the DFHMSD macro and is overridden by the PS operand of the DFHMDF macro.

**BASE**

specifies that the base symbol set is to be used.

**psid**

specifies a single EBCDIC character, or a hexadecimal code of the form X'nn', that identifies the set of programmed symbols to be used.

The PS operand is ignored unless the terminal supports programmed symbols, as indicated by the PROGSYMBOLS(YES) on the RDO TYPETERM definition.

**SIZE**

specifies the size of a map.

**line**

is a value in the range 1–240, specifying the depth of a map as a number of lines.

**column**

is a value in the range 1–240, specifying the width of a map as a number of columns.

This operand is required in the following cases:

- An associated DFHMDF macro with the POS operand is used.
- The map is to be referred to in a SEND MAP command with the ACCUM option.
- The map is to be used when referring to input data from other than a 3270 terminal in a RECEIVE MAP command.
- The map is to be used to send or receive data by way of the CICS 3270 Web Bridge.

**SOSI**

indicates that the field can contain a mixture of EBCDIC and DBCS data. The DBCS subfields within an EBCDIC field are delimited by SO (shift out) and SI (shift in) characters. SO and SI both occupy a single screen position (normally displayed as a blank). They can be included in any non-DBCS field on output, if they are correctly paired. The terminal user can transmit them inbound if they are already present in the field, but can add them to an EBCDIC field only if the field has the SOSI attribute.

**TERM**

kept for compatibility with previous releases.

**TIOAPFX**

specifies whether BMS should include a filler in the symbolic description maps to allow for the unused TIOA prefix. This operand overrides the TIOAPFX operand specified or defaulted for the DFHMSD macro. If it is not specified, the value specified or defaulted on the DFHMSD macro is used.

**YES**

specifies that the filler should be included in the symbolic description maps. Always use TIOAPFX=YES for command-level application programs.

**NO**

specifies that the filler is not to be included.
TRAILER
allows the map to be used during page building without terminating the OVERFLOW condition. This operand can be specified for more than one map in a mapset. If a trailer map is used other than in the overflow environment, the space normally reserved for overflow trailer maps is not reserved while mapping the trailer map.

TRANSP
determines whether the background of an alphanumeric field is transparent or opaque, that is, whether an underlying (graphic) presentation space is visible between the characters.

VALIDN
specifies that:
  • validation is to be used on an 8775 terminal
  • this field can be processed by the BMS global user exits
This is overridden by the VALIDN operand of the DFHMDF macro, and overrides the VALIDN operand of the DFHMSD macro.

MUSTFILL
specifies that the field must be filled completely with data. An attempt to move the cursor from the field before it has been filled, or to transmit data from an incomplete field, raises the INHIBIT INPUT condition.

MUSTENTER
specifies that data must be entered into the field, though need not fill it. An attempt to move the cursor from an empty field raises the INHIBIT INPUT condition.

TRIGGER
specifies that this field is a trigger field. Trigger fields are discussed in Trigger field support.

USEREXIT
specifies that this field is to be processed by the BMS global user exits, XBMIN and XBMOUT, if this field is received or transmitted in a 3270 datastream when the respective exit is enabled.

The MUSTFILL, MUSTENTER and TRIGGER specifications are valid only for terminals that support the field validation extended attribute, otherwise they are ignored. The USEREXIT specification applies to all 3270 devices.

Note: The USEREXIT specification is totally unconnected with the field validation extended attribute as defined in the 3270 datastream architecture.
DFHMSD

The DFHMSD macro defines a mapset.
Chapter 9. BMS macros 811
A DFHMSD macro defines a mapset. It begins with the following code:

```
DFHMSD TYPE=MAP   (or TYPE=DSECT)
```

It ends with the following code:

```
DFHMSD TYPE=FINAL
```

`mapset` is the name of the mapset. Normally, the name is up to 7 characters in length. However, if the mapset is used to generate HTML templates, and contains more than 36 maps, the name must not exceed 6 characters in length.

A DFHMSD macro contains one or more map definition macros, each of which contains one or more field definition macros.

Ensure that the names of maps, and names of fields in a mapset (or in multiple mapsets that are copied into one application program) are unique. However, a map can have the same name as a mapset.

Before CICS can load a physical map, you must define a physical map using an RDO `DEFINE MAPSET` command.

You assemble a BMS mapset definition to generate either a symbolic description map or a physical map. For information about assembling and cataloging the maps, see .

**Operands**

**BASE**

Specifies that the same storage base is used for the symbolic description maps from more than one mapset. The same name is specified for each mapset that is to share the same storage base. Because
all mapsets with the same base describe the same storage, data related to a previously used mapset might be overwritten when a new mapset is used. Different maps in the same mapset also overlay one another.

This operand is not valid for assembler language programs, and cannot be used when STORAGE=AUTO has been specified.

**COLOR**

Indicates the individual color, or the default color for the mapset (where applicable). This is overridden by the COLOR operand of the DFHMDI macro, which is in turn overridden by the COLOR operand of the DFHMDF macro.

The valid colors are blue, red, pink, green, turquoise, yellow, and neutral.

The COLOR operand is ignored unless the terminal supports color, as indicated by the RDO TYPETERM definition COLOR(YES) option.

**CTRL**

Defines characteristics of IBM 3270 terminals. Use of **any** of the control options in the SEND MAP command overrides all control options in the DFHMDI macro, which in turn overrides all control options in the DFHMSD macro.

If CTRL is used with cumulative BMS paging (that is, the ACCUM option is used on the BMS SEND MAP commands), it must be specified on the last (or only) map of a page, unless it is overridden by the ALARM, FREEKB, and so on, options on the SEND MAP or accumulated SEND CONTROL command.

**PRINT**

Must be specified if the printer is to be started; if omitted, the data is sent to the printer buffer but is not printed. This operand is ignored if the mapset is used with 3270 displays without the Printer Adapter feature.

**LENGTH**

Indicates the line length on the printer; length can be specified as L40, L64, L80, or HONEYOM. L40, L64, and L80 force a new line after 40, 64, or 80 characters, respectively. HONEYOM causes the default printer line length to be used. If this option is omitted, BMS sets the line length from the TCT page size.

**FREEKB**

Causes the keyboard to be unlocked after the map is written. If FREEKB is not specified, the keyboard remains locked; data entry from the keyboard is inhibited until this status is changed.

**ALARM**

Activates the 3270 audible alarm. For non-3270 VTAM terminals, it sets the alarm flag in the FMH. (This feature is not supported by interactive and batch logical units.)

**FRSET**

Specifies that the modified data tags (MDTs) of all fields currently in the 3270 buffer are to be reset to a not-modified condition (that is, field reset) before map data is written to the buffer. This allows the DFHMDF macro with the ATTRB operand to control the final status of any fields written or rewritten in response to a BMS command.

**CURSLOC**

Indicates that for all RECEIVE MAP operations using this map on 3270 terminals, BMS sets a flag in the application data structure element for the field where the cursor is located.

The flag can be tested by DFHBMCUR (see copybook DFHBMSCA in Chapter 8, “BMS-related constants,” on page 781).

To test the flag (COBOL example):

```
(DFHBMSCA)
  02  DFHBMEOF PIC X VALUE X'80'.
  02  DFHBMCUR PIC X VALUE X'02'.
  02  DFHBMEC PIC X VALUE X'82'.
  02  DFHMFLG PIC X.
  88  DFHERASE VALUES ARE X'80', X'82'.
  88  DFHCURSR VALUES ARE X'02', X'82'.
```
MOVE FLD1F TO DFHBMFLG.
IF DFHERASE THEN ...
ELSE ...
IF DFHCURSR THEN ...
ELSE ...

Note:

1. If CURSLOC=YES is specified for the MAP definitions, and there is no data for any field of the application data structure, but the cursor lies in a field known to the application data structure, BMS sets the cursor flag for the appropriate field, but the data for all fields in the application data structure is null, and the MAPFAIL condition does not occur. The unmapped data stream is not available to the application program unless it is a RECEIVE DATA FROM request.

2. A valid CURSLOC definition in DFHMDI overrides the definition in DFHMSD.

DATA
Specifies the format of the data.

FIELD
Specifies that the data is passed as contiguous fields, each field having the format:

```
| LL | A | data field |
```

LL is two bytes that specify the length of the data as input from the terminal (these two bytes are ignored in output processing). A is a byte into which the programmer can place an attribute to override that specified in the map used to process this data (see copybook DFHBMSCA in Chapter 8, "BMS-related constants," on page 781).

BLOCK
Specifies that the data is passed as a continuous stream in the following format:

```
| A | data field | space |
```

This stream is processed as line segments of the length specified in the map used to process the data. The data is in the form that it appears on the terminal; that is, it contains data fields and interspersed blanks corresponding to any spaces that are to appear between the fields on output. You cannot use DSATTS=YES, if you specify DATA=BLOCK.

Block data is further discussed in .

DSATTS
Specifies the attribute types to be included in the symbolic description map. These types can be one or more of the following: COLOR, HILIGHT, OUTLINE, PS, SOSI, TRANSP, and VALIDN. Any type included in DSATTS should also be included in MAPATTS.

DSECT
Specifies whether the copybook generated supports the normal or long form of the application data structure (ADS).

ADS
Requests mapping of the normal form of the ADS (default).

ADSL
Requests mapping of the long form of the ADS, where all fields are aligned on four-byte boundaries. This form is required by the 3270 Bridge interface to IBM MQ.

This option requires LANG=C.

EXTATT
This operand is supported for compatibility with previous releases. Each extended attribute can be defined individually. For new maps, use the operands DSATTS and MAPATTS instead.

NO
Is equivalent to specifying neither the DSATTS operand nor the MAPATTS operand.
YES
Is equivalent to specifying the following operands:

MAPATTS=(COLOR,HILIGHT,PS,VALIDN)
DSATT= (COLOR,HILIGHT,PS,VALIDN)

MAPONLY
Is equivalent to specifying the following operand:

MAPATTS=(COLOR,HILIGHT,PS,VALIDN)

FLDSEP
Specifies the field separator sequence (1–4 characters) for input from non-3270 devices. Input from non-3270 devices can be entered as a single string of data with the field separator sequence delimiting fields. The data between the field separators is moved to the input fields in the map in order.

FOLD
Specifies whether to generate lowercase or uppercase characters in C language programs.

FOLD is only available for programs written in C.

HILIGHT
Specifies the default highlighting attribute for all fields in all maps in a mapset. This is overridden by the HILIGHT operand of the DFHMDI, which in turn is overridden by the HILIGHT operand of the DFHMDF.

OFF
Indicates that no highlighting is used (the default).

BLINK
Specifies that the field must flash.

REVERSE
Specifies that the character or field is displayed in reverse video, for example, on a 3278, black characters on a green background.

UNDERLINE
Specifies that a field is underlined.

The HILIGHT operand is ignored unless the terminal supports highlighting, as indicated by HILIGHT(YES) on the RDO TYPETERM definition.

HTAB
Specifies one or more tab positions for use with interactive and batch logical units and SCS printers with horizontal forms control.

LANG
Specifies the source language of the application programs into which the symbolic description maps in the mapset are copied. COBOL is OS/VS COBOL, which cannot run under this CICS version, and COBOL2 is either Enterprise COBOL or VS COBOL II. This option need only be coded for DFHMSD TYPE=DSECT. If a mapset is to be used by more than one program, and the programs are not all written in the same source language, a separate version of the mapset must be defined for each programming language.

LDC
Specifies the code to be used by CICS to determine the logical device mnemonic to be used for a BMS output operation. If no LDC operand has been specified on any previous BMS output in the logical message, this LDC will be transmitted in the function management header to the logical unit. This operand is used only for VTAM-supported 3600 terminals, and batch logical units.

MAPATTS
Specifies the attribute types to be included in the physical map. These types can be one or more of the following: COLOR, HILIGHT, OUTLINE, PS, SOSI, TRANSP, and VALIDN. This list must include all the attribute types to be specified for individual fields in the map (DFHMDF macro).
Where possible these values are deduced from operands already specified in the DFHMDI and DFHMSD macros. For example, if COLOR=BLUE has been specified, MAPATTS=COLOR is assumed.

**MODE**
Specifies whether the mapset is to be used for input, output, or both.

**OBFMT**
Specifies whether outboard formatting is to be used. This operand is available only for 3650 logical units, or for an 8100 series processor running DPS Release 2 and defined to CICS as an LUTYPE2 logical unit. For more information, see .

The OBFMT operand on DFHMSD is overridden by the OBFMT operand on DFHMDI.

**YES**
Specifies that all maps in this mapset can be used in outboard formatting, except those for which OBFMT=NO is specified in the DFHMDI macro.

**NO**
Specifies that no maps in this mapset can be used in outboard formatting, except those for which OBFMT=YES is specified in DFHMDI.

**OUTLINE**
Allows lines to be included above, below, to the left, or to the right of a field. You can use these lines in any combination to construct boxes around fields or groups of fields.

**PARTN**
Specifies the default partition to be associated with maps in this mapset. If the ACTIVATE option is specified, the specified partition is also activated when maps in this mapset are output to a terminal that supports partitions. This option is overridden by the PARTN operand of the DFHMDI macro, which is in turn overridden by any OUTPARTN or ACTPARTN option on the SEND MAP command, or the INPARTN option on a RECEIVE MAP command.

The PARTN operand is ignored if the target terminal does not support partitions, or if there is no partition set associated with the transaction.

**PS**
Specifies that programmed symbols are to be used. This is overridden by the PS operand of the DFHMDI macro, which is in turn overridden by the PS operand of the DFHMDF macro.

**BASE**
Specifies that the base symbol set is to be used.

**psid**
Specifies a single EBCDIC character, or a hexadecimal code of the form X'nn', that identifies the set of programmed symbols to be used.

The PS operand is ignored unless the terminal supports programmed symbols, as indicated by PROGSYMBOLS(YES) on the RDO TYPETERM definition.

**SOSI**
Indicates that the field can contain a mixture of EBCDIC and DBCS data. The DBCS subfields in an EBCDIC field are delimited by SO (shift out) and SI (shift in) characters. SO and SI both occupy a single screen position (normally displayed as a blank). They can be included in any non-DBCS field on output provided they are correctly paired. The terminal user can transmit them inbound if they are already present in the field, but can add them to an EBCDIC field only if the field has the SOSI attribute.

**STORAGE**
The meaning of this operand depends upon the language in which application programs are written, as follows:

For a **COBOL** program, STORAGE=AUTO specifies that the symbolic description maps in the mapset are to occupy separate (that is, not redefined) areas of storage. This operand is used when the symbolic description maps are copied into the working-storage section and the storage for the separate maps in the mapset is to be used concurrently.
For a **C** program, STORAGE=AUTO specifies that the symbolic description maps are to be defined as having the automatic storage class. If STORAGE=AUTO is not specified, they are declared as pointers.

For a **PL/I** program, STORAGE=AUTO specifies that the symbolic description maps are to be declared as having the AUTOMATIC storage class. If STORAGE=AUTO is not specified, they are declared as BASED.

For an **assembler language** program, STORAGE=AUTO specifies that individual maps in a mapset are to occupy separate areas of storage instead of overlaying one another.

For all languages:

- You cannot specify both BASE=name and STORAGE=AUTO for the same mapset.
- If STORAGE=AUTO is specified and TIOAPFX is not, TIOAPFX=YES is assumed.

**SUFFIX**

Specifies a one-character, user-defined, device-dependent suffix for this mapset, as an alternative to a suffix generated by the TERM operand. The suffix specified by this operand should match the value of a transaction defined on the ALTSUFFIX attribute of a TYPETERM definition, or ALTSFX in the terminal control table TYPE=TERMINAL. Use a numeric value to avoid conflict with suffixes generated by the TERM operand.

**TERM**

Specifies the type of terminal or logical unit (LU) associated with the mapset. If no terminal type or LU is specified, 3270 is assumed. The terminal types and LUs you can specify, together with their generated suffixes, are shown in Table 24 on page 817.

In addition, you should note the following:

If ALL is specified, ensure that device-dependent characters are not included in the mapset and that format characteristics such as page size are suitable for all input/output operations (and all terminals) in which the mapset is applied. For example, some terminals are limited to 480 bytes, others to 1920 bytes; the 3604 is limited to six lines of 40 characters each. Within these guidelines, use of ALL can offer important advantages. Because an assembly run is required for each map generation, the use of ALL, indicating that one map is to be used for more than one terminal, can result in significant time and storage savings.

However, better run-time performance for maps used by single terminal types is achieved if the terminal type (rather than ALL) is specified. Alternatively, BMS support for device-dependent mapsets can be bypassed by specifying NODDS in the BMS operand of the system initialization parameters.

<table>
<thead>
<tr>
<th>Type</th>
<th>Suffix</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRLP</td>
<td>A</td>
<td>Card-reader-in/line-printer-out</td>
</tr>
<tr>
<td>TAPE</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>DISK</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>TWX</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>1050</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>2740</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>2741</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>2770</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>2780</td>
<td>J</td>
<td></td>
</tr>
<tr>
<td>3780</td>
<td>K</td>
<td></td>
</tr>
<tr>
<td>3270-1 (40-column)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>3270-2 (80-column)</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>
Table 24. BMS terminal types (continued)

<table>
<thead>
<tr>
<th>Type</th>
<th>Suffix</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTLU/3767/3770I/SCS</td>
<td>p</td>
<td>All interactive LUs including 3790 full-function LU and SCS printer LUs (3270 and 3790).</td>
</tr>
<tr>
<td>2980</td>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>2980-4</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>3270</td>
<td>blank</td>
<td>Default if TERM omitted. Same as ALL; used when no need to distinguish between models.</td>
</tr>
<tr>
<td>3601</td>
<td>U</td>
<td></td>
</tr>
<tr>
<td>3653</td>
<td>V</td>
<td>Plus host-conv (3653) LU.</td>
</tr>
<tr>
<td>3650UP</td>
<td>W</td>
<td>Plus interpreter LU.</td>
</tr>
<tr>
<td>3650/3270</td>
<td>X</td>
<td>Plus host-conv (32700 LU).</td>
</tr>
<tr>
<td>BCHLU/3770B</td>
<td>Y</td>
<td>Plus all batch and BDI LUs.</td>
</tr>
<tr>
<td>ALL (all of the above)</td>
<td>blank</td>
<td></td>
</tr>
</tbody>
</table>

TIOAPFX
Specifies whether BMS should include a filler in the symbolic description maps to allow for the unused TIOA prefix.

YES
Specifies that the filler should be included in the symbolic description maps. If TIOAPFX=YES is specified, all maps in the mapset have the filler, except when TIOAPFX=NO is specified on the DFHMDI macro. TIOAPFX=YES is the default if STORAGE=AUTO is specified. TIOAPFX=YES should always be used for command-level application programs.

NO
Is the default, unless STORAGE=AUTO is specified, and specifies that the filler is not to be included. The filler can still be included for a map if TIOAPFX=YES is specified on DFHMDI.

TRANSP
Determines whether the background of an alphanumeric field is transparent or opaque, that is, whether an underlying (graphic) presentation space is visible between the characters.

TRIGRAPH
Specifies trigraph sequences to be used in C language symbolic description maps.

When TRIGRAPH=YES, trigraph sequences are produced:

```c
{  
    prints as ??<

}  
prints as ??>

[  
    prints as ??(  
]
prints as ??)
```

This option is available only for programs written in C.

TYPE
Specifies the type of map to be generated using the definition. Both types of map must be generated before the mapset can be used by an application program. If aligned symbolic description maps are required, you should ensure that you specify SYSPARM=ADSECT and SYSPARM=AMAP when you assemble the symbolic and physical maps respectively.
DSECT
   Specifies that a symbolic description map is to be generated. Symbolic description maps must be
   copied into the source program before it is translated and compiled.

MAP
   Specifies that a physical map is to be generated. Physical maps must be assembled or compiled,
   link-edited, and cataloged in the CICS program library before an application program can use
   them.

   If both map and DSECT are to be generated in the same job, the SYSPARM option can be used in the
   assembler job execution step.

VALIDN
   Specifies that:
      • Validation is to be used on an 8775 terminal
      • This field can be processed by the BMS global user exits

   This is overridden by the VALIDN operand of the DFHMDI macro, which is in turn overridden by the
   VALIDN of the DFHMDF macro.

MUSTFILL
   Specifies that the field must be filled completely with data. An attempt to move the cursor from
   the field before it has been filled, or to transmit data from an incomplete field, raises the INHIBIT
   INPUT condition.

MUSTENTER
   Specifies that data must be entered into the field, though need not fill it. An attempt to move the
   cursor from an empty field raises the INHIBIT INPUT condition.

TRIGGER
   Specifies that this field is a trigger field. Trigger fields are discussed in .

USEREXIT
   Specifies that this field is to be processed by the BMS global user exits, XBMIN and XBMOUT, if
   this field is received or transmitted in a 3270 datastream when the respective exit is enabled.

   The MUSTFILL, MUSTENTER, and TRIGGER specifications are valid only for terminals that support the
   field validation extended attribute, otherwise they are ignored. The USEREXIT specification applies to
   all 3270 devices.

   Note: The USEREXIT specification is unconnected with the field validation extended attribute as
   defined in the 3270 datastream architecture.

VTAB
   Specifies one or more tab positions for use with interactive and batch logical units and SCS printers
   having vertical forms control.

DFHPDI
   A partition set contains one or more partitions. Each partition is defined by coding a partition definition
   macro.
“partn” is a partition name (1–2 characters). It allows you to refer to the partition in your application programs.

Every partition in a partition set must have a different name. Only the error partition can be unnamed (see `ATTRB=ERROR` operand).

Partitions are defined by coding the macros DFHPSD (partition set definition) and DFHPDI (partition definition). Each partition definition must be part of a partition set definition.

**Operands**

**ATTRB**

specifies that error messages are to be directed to this partition whenever possible. The partition is cleared before an error message is displayed. The RDO TYPETERM option ERRHILIGHT is honored, but the LASTLINE option is ignored.

**BUFSZE(lines,columns)**

specifies the size of the presentation space for the partition. Device limitations mean that the “columns” value must be equal to the “columns” value specified by the VIEWSZE operand. The “lines” value can be greater than or, by default, equal to the value specified by the VIEWSZE operand. A greater lines value implies that the target terminal supports vertical scrolling.

**CHARSZE(vpels,hpels)**

specifies the size of the character cell to be reserved for each character displayed in a partition. You specify the size as numbers of vertical picture elements (vpels) and numbers of horizontal picture elements (hpels). You can specify this operand on either the DFHPSD macro only, or on both the DFHPSD and DFHPDI macros. The values specified in the DFHPSD become the defaults for all partitions in the partition set. You can override these defaults for individual partitions by coding CHARSZ in the DFHPDI macro.

**MAPSFX(mapset-suffix)**

specifies the partition’s 1-character mapset suffix. BMS uses the suffix to select mapset versions in the same way as for the RDO option ALTSUFFIX. If this operand is omitted, a suffix L is assumed if the “columns” value of the BUFSZE operand is less than or equal to 40; otherwise M is assumed.

**VIEWPOS(lines,columns)**

specifies the position of the top left-hand corner of this partition's viewport. You specify the position in numbers of lines and numbers of columns.

The DFHPDI macro checks that viewports do not overlap. If you have coded the RDO TYPETERM ALTSCREEN option, or the ALTSCRN operand of the DFHPSD macro, DFHPDI also checks that all viewports fit within the usable area of the terminal screen.
Note: The information given here on positioning viewports is necessarily brief. For more information you should consult the component description for the device you are using.

**VIEWSZE(lines,columns)**

specifies the size, in lines and columns, of the partition's viewport. The DFHPDI macro checks that viewports do not overlap. If you code the RDO TYPETERM ALTSCREEN option, or the ALTSCRN operand of the DFHPSD macro partition set definition macro, DFHPDI checks that the partitions all fit within the usable area of the display screen.

**DFHPSD**

Each partition set definition contains a single DFHPSD macro followed by one or more DFHPDI macros, and ending with a DFHPSD TYPE=FINAL partition set definition macro.

```
DFHPSD

partnset DFHPSD

  SUFFIX user-suffix
  ALTSCRN (lines,columns)
  CHARSZE (vpels,hpels)

```

“partnset” is a partition set name (1–6 characters).

Partitions are defined by coding the macros DFHPSD (partition set definition) and DFHPDI (partition definition). Each partition definition must be part of a partition set definition.

**Operands**

**ALTSCRN(lines,columns)**

specifies the size, in characters, of the usable area of the target terminal. This is normally the same as the RDO TYPETERM option ALTSCREEN. You use ALTSCRN to ensure that the viewports of partitions within a partition set fit into the usable area of the screen.

**CHARSZE(vpels,hpels)**

specifies the size of the character cell to be reserved for each character displayed in a partition. You specify the size as numbers of vertical picture elements (vpels) and numbers of horizontal picture elements (hpels). You can specify this operand on either the DFHPSD macro only, or on both the DFHPSD and DFHPDI macros. The values specified in this operand become the defaults for all partitions in the partition set. You can override this default for individual partitions by coding CHARSZE in the DFHPDI macro.

**SUFFIX(user-suffix)**

specifies a 1-character user suffix for this version of the partition set. It allows different versions of a partition set to be associated with different terminals. When the partition set is to be loaded, CICS looks for a version whose suffix matches the RDO TYPETERM option ALTSUFFIX. If it cannot find the correct partition set version, it loads a version with a default suffix (M or L). If it cannot find a suffixed version either, it loads an unsuffixed one. If it cannot find this, it abends with APCT.

**Ending DFHPSD**

```
[partnset] DFHPSD TYPE=FINAL
```
The PARTNSET name (if specified) must match that specified on the DFHPSD macro that started the partition set definition.
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- Developing applications
- Developing system programs
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- Developing for external interfaces
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Index

Special Characters

> 32K COMMAREAs (channels)
  ASSIGN command 44
  CHANNEL option of RETURN command 427
  CHANNEL option of XCTL command 701
  DELETE CHANNEL command 122
  DELETE CONTAINER (CHANNEL) command 125
  GET CONTAINER (CHANNEL) command 221
  MOVE CONTAINER (CHANNEL) command 323
  PUT CONTAINER (CHANNEL) command 334
  QUERY CHANNEL command 341
  START CHANNEL command 536

Numerics

2260 Display Station
  CONVERSE command 93
  RECEIVE command 394
  SEND command 460

2265 Display Station
  CONVERSE command 93
  RECEIVE command 394
  SEND command 460

2980 General Banking Terminal System
  RECEIVE/SEND commands 461

2980 General Banking Terminal System
  DFH2980 structure 396
  output control 395
  output to common buffer 396
  passbook control 395
  RECEIVE/SEND commands 394

3270 Information Display System
  logical unit 449

3270 Information Display System
  logical unit 81, 275, 386

3600 finance communication system
  3614 logical unit 451

3600 Finance Communication System
  3601 logical unit 81, 82, 387, 450, 451
  3614 logical unit 82, 388
  pipeline logical units 450

3630 Plant Communication System
  RECEIVE command 387
  SEND command 451

3650 Host Command Processor
  CONVERSE command 85

3650 Logical Units
  RECEIVE command 388

3650 Store System
  host conversational
    LU 3270 452
    LU 3653 453
  interpreter logical unit 83, 281, 286, 388, 452

3650/3680 Full-function Logical Unit
  RECEIVE command 390
  SEND command 455

3650/3680 Store System
  host command processor LU 453

3680 Host Command Processor
  CONVERSE command 85

3680 Programmable Store System
  host command processor LU 453

3740 Data Entry System 280

3767 communication terminal
  interactive logical unit 453

3767 Communication Terminal
  interactive logical unit 85, 389

3770 data communication system
  batch logical unit 454

3770 Data Communication System
  batch logical unit 86, 389

3770 Full Function Logical Unit
  RECEIVE command 390
  SEND command 455

3770 interactive logical unit
  RECEIVE command 389

3770 Interactive Logical Unit
  SEND command 454

3790 communication system
  3270-display logical unit 455
  full-function logical unit 454
  SCS printer logical unit 455

3790 Communication System
  3270-display logical unit 86, 397
  Full Function Logical Unit 86
  full-function logical unit 390

A

ABCODE option
  ABEND command 25
  ASSIGN command 41
  CHECK ACQPROCESS command 70
  CHECK ACTIVITY command 72
  FETCH CHILD command 181, 183
  INQUIRE ACTIVITYID command 253

ABDUMP option
  ASSIGN command 41

ABEND command 25
ABEND exit, reactivating 247
abend support commands 15
abnormal termination, task 247
ABOFFSET option
  ASSIGN command 41

ABPROGRAM option
  ASSIGN command 41
  CHECK ACQPROCESS command 70
  CHECK ACTIVITY command 72
  INQUIRE ACTIVITYID command 253

absolute expressions 7

ABSTIME option
  ASKTIME command 38
  CONVERTTIME command 98
ABSTIME option (continued)
  FORMATTIME command 186
  INQUIRE TIMER command 260
access to system information
  ADDRESS command 30
  ADDRESS SET command 31
  CICS storage areas 30, 31
ACCR option
  SEND CONTROL command 465
  SEND MAP command 470
  SEND TEXT command 483
ACEE option
  ADDRESS command 30
ACQACTIVITY option
  CANCEL (BTS) command 64
  CHECK ACTIVITY command 72
  DELETE CONTAINER (BTS) command 124
  FORCE TIMER command 184
  GET CONTAINER (BTS) command 218
  LINK ACTIVITY command 314
  PUT CONTAINER (BTS) command 332
  RESUME command 421
  RUN command 443
  SUSPEND (BTS) command 554
ACQPROCESS option
  CANCEL (BTS) command 64
  CHECK ACQPROCESS command 70
  DELETE CONTAINER (BTS) command 124
  FORCE TIMER command 184
  GET CONTAINER (BTS) command 218
  LINK ACQPROCESS command 311
  PUT CONTAINER (BTS) command 332
  RESET ACQPROCESS command 414
  RESUME command 421
  RUN command 443
  SUSPEND (BTS) command 554
ACQUIRE command 26
ACTION option
  WEB CONVERSE command 598
  WEB SEND command (Client) 656
  WEB SEND command (Server) 647
  WRITE OPERATOR command 682
ACTIVE mode, of an activity 254
  destruction of 121
  modes 254
  processing states 254
ACTIVITY option
  ASSIGN command 41
  CANCEL (BTS) command 64
  CHECK ACTIVITY command 72
  DEFINE ACTIVITY command 99
  DELETE ACTIVITY command 122
  DELETE CONTAINER (BTS) command 124
  GET CONTAINER (BTS) command 219
  GETNEXT ACTIVITY command 236
  INQUIRE ACTIVITYID command 253
  LINK ACTIVITY command 314
  PUT CONTAINER (BTS) command 332
  RESET ACTIVITY command 415
  RESUME command 421
  RUN command 444
  SUSPEND (BTS) command 554
activity-related commands (continued)
  ACQUIRE 26
  CANCEL (BTS) 64
  CHECK ACQPROCESS 70
  CHECK ACTIVITY 71
  DEFINE ACTIVITY 99
  DEFINE PROCESS 106
  DELETE ACTIVITY 121
  INQUIRE ACTIVITYID 252
  INQUIRE PROCESS 258
  LINK ACQPROCESS 311
  LINK ACTIVITY 313
  RESET ACQPROCESS 413
  RESET ACTIVITY 415
  RESUME 420
  RUN 441
  STARTBROWSE ACTIVITY 546
  SUSPEND (BTS) 553
ACTIVITYBUSY condition
  ACQUIRE command 27
  CANCEL (BTS) command 64
  CHECK ACTIVITY command 73
  DEFINE ACTIVITY command 99
  DELETE ACTIVITY command 122
  DELETE CONTAINER (BTS) command 124
  GET CONTAINER (BTS) command 219
  GETNEXT ACTIVITY command 236
  INQUIRE ACTIVITYID command 254
  INQUIRE CONTAINER command 256
  INQUIRE EVENT command 258
  INQUIRE TIMER command 260
  LINK ACTIVITY command 315
  MOVE CONTAINER (BTS) command 323
  PUT CONTAINER (BTS) command 332
  RESET ACTIVITY command 415
  RESUME command 421
  RUN command 444
  SUSPEND (BTS) command 554
ACTIVITYERR condition
  ACQUIRE command 27
  CANCEL (BTS) command 64
  CHECK ACTIVITY command 73
  DEFINE ACTIVITY command 99
  DELETE ACTIVITY command 122
  DELETE CONTAINER (BTS) command 124
  GET CONTAINER (BTS) command 219
  GETNEXT ACTIVITY command 236
  INQUIRE ACTIVITYID command 254
  INQUIRE CONTAINER command 256
  INQUIRE EVENT command 258
  INQUIRE TIMER command 260
  LINK ACTIVITY command 315
  MOVE CONTAINER (BTS) command 323
  PUT CONTAINER (BTS) command 332
  RESET ACTIVITY command 415
  RESUME command 421
  RUN command 444
  SUSPEND (BTS) command 554
ACTIVITYID option
  ACQUIRE command 27
  ASSIGN command 41
  DEFINE ACTIVITY command 99
  GETNEXT ACTIVITY command 236
  GETNEXT PROCESS command 241
  INQUIRE ACTIVITYID command 253
  INQUIRE CONTAINER command 255
  INQUIRE EVENT command 257
  INQUIRE PROCESS command 259
  INQUIRE TIMER command 260
  SUSPEND (BTS) command 554
ACTIVITYWARNING condition
  ACQUIRE command 27
  ASSIGN command 41
  DEFINE ACTIVITY command 99
  GETNEXT ACTIVITY command 236
  GETNEXT PROCESS command 241
  INQUIRE ACTIVITYID command 253
  INQUIRE CONTAINER command 255
  INQUIRE EVENT command 257
  INQUIRE PROCESS command 259
  INQUIRE TIMER command 260
  SUSPEND (BTS) command 554
activity-related commands
ACTIVITYID option (continued)
STARTBROWSE EVENT command 550
ACTPARTN option
SEND CONTROL command 465
SEND MAP command 470
SEND TEXT command 483
ADD SUBEVENT command 28
ADDRESS command 30
ADDRESS SET command 31
address, cursor 787
ADS descriptor 789
ADS value
DFHMSD 810
ADSL value
DFHMSD 810
ADW1 25
AFTER option
POST command 328
ROUTE command 438
START command 528
AID option
RECEIVE MAP MAPPINGDEV command 404
ALARM option
SEND CONTROL command 465
SEND MAP command 470
SEND MAP MAPPINGDEV command 475
SEND TEXT command 483
SEND TEXT NOEDIT command 490
ALARM value
DFHMDI 801
DFHMSD 810
ALIGNED attribute
PL/I 7
ALL option
SEND PAGE command 478
ALLOCATE (APPC) command 32
ALLOCATE (LUTYPE6.1) command 35
ALLOCATE (MRO) command 36
ALLOCERR condition
SPOOLCLOSE command 510
SPOOLOPEN INPUT command 512
SPOOLOPEN OUTPUT command 516
SPOOLREAD command 519
SPOOLWRITE command 521
ALTER option
QUERY SECURITY command 345
ALTERNATE option
CONVERSE (non-z/OS Communications Server) command 93
CONVERSE (z/OS Communications Server) command 87
SEND (non-z/OS Communications Server) command 461
SEND (z/OS Communications Server) command 456
SEND CONTROL command 465
SEND MAP command 470
SEND TEXT command 483
SEND TEXT NOEDIT command 490
ALTSCRN operand
DFHPDS 821
ALTSCRNHT option
ASSIGN command 41
ALTSCRNWDD option
ASSIGN command 42
AND option
DEFINE COMPOSITE EVENT command 101
ANY option
FETCH CHILD command 181
ANYKEY option
HANDLE AID command 249
APLKYBD option
ASSIGN command 42
APLTEXT option
ASSIGN command 42
APPC basic conversations commands 15
APPC logical unit acquiring session to 32
initiating conversation with 75
returning mapped sessions to CICS 189
sending and receiving 78
APPC mapped conversations
abending 269
commands 15
ensuring transmission of accumulated data 582
extracting attributes of 164
informing partner of error 284
issuing a positive response 274
receiving data 384
requesting change of direction 299
retrieving values from attach header 170
returning sessions to CICS 189
sending data 447
APPEND option
PUT CONTAINER (CHANNEL) command 334
PUT64 CONTAINER command 338
APPLICATION option
INVOKE APPLICATION command 261
application performance, monitoring 319
APPLID option
ASSIGN command 42
APPNOTFOUND condition
INVOKE APPLICATION command 263
argument values
assembler language 7
C 4
COBOL 3
PL/I 5
AS option
MOVE CONTAINER (BTS) command 322
MOVE CONTAINER (CHANNEL) command 324
ASA option
SPOOLOPEN OUTPUT command 514
ASIS option
CONVERSE (non-z/OS Communications Server) command 93
CONVERSE (z/OS Communications Server) command 87
receive (non-z/OS Communications Server) command 397
RECEIVE (z/OS Communications Server) command 390
RECEIVE MAP command 401
RECEIVE PARTN command 406
SEND (nonPTN command 406
SEND (non-z/OS Communications Server) command 461
ASKIP value
DFHMDF 792
ASKTIME command 38
ASRAINTRPT option
ASSIGN command 42
ASRAKEY option
ASSIGN command 42
ASRAPSW option
ASSIGN command 42
ASRAPSW16 option
ASSIGN command 42
ASRAREG option
ASSIGN command 43
ASRAREGS option
ASSIGN command 43
ASRAREGS64 option
ASSIGN command 43
ASRASPC option
ASSIGN command 43
ASRASTG option
ASSIGN command 43
assembler language
argument values 7
LENGTH option default 8
register contents 12
translated code 12
assembly language
program exit 12
ASSIGN command 42, 47–49
Asynchronous API commands 16
asynchronous interrupt 773
ASYNCHRONOUS option
RUN command 443
AT option
DEFINE TIMER command 110
DOCUMENT INSERT command 138
POST command 328
ROUTE command 438
START command 528
attach
start a task 532
ATTACHID option
BUILD ATTACH (LUTYPE6.1) command 58
BUILD ATTACH (MRO) command 60
CONVERSE (non-z/OS Communications Server) command 93
CONVERSE (z/OS Communications Server) command 87
EXTRACT ATTACH (LUTYPE6.1) command 160
EXTRACT ATTACH (MRO) command 162
SEND (non-z/OS Communications Server) command 461
SEND (z/OS Communications Server) command 457
attention identifier (AID) 249
ATTRB operand
DFHMDF 792
DFHPDI 819
attributes
control character list, DFHBMSCA 781
AUTHENTICATE option
EXTRACT TCP/IP command 172
WEB CONVERSE command (Client) 598
WEB SEND command (Client) 656
authentication commands 16
AUTOPAGE option
SEND PAGE command 478
AUXILIARY option
WRITEQ TS command 686
B
back out to a syncpoint 556
BASE operand
DFHMSD 810
BASE value
DFHMDF 792
DFHMDI 801
DFHMSD 810
basic mapping support (BMS)
ADS descriptor 789
commands 16
completing a logical message 478
deleting a logical message 330
determining input partition 405
field definition macro 789, 792
full BMS
RECEIVE MAP command 400
RECEIVE PARTN command 405
SEND CONTROL command 464
SEND MAP command 468
SEND PAGE 478
SEND PARTNSET 481
SEND TEXT command 481
SEND TEXT MAPPED 487
SEND TEXT NOEDIT 489
full-function BMS
PURGE MESSAGE 330
map definition macro 789, 810
mapping input data 400
mapping input data with MAPPINGDEV 403
mapset definition macro 789, 810
minimum BMS
RECEIVE MAP command 400
RECEIVE MAP MAPPINGDEV command 403
SEND CONTROL command 464
SEND MAP command 468
SEND MAP MAPPINGDEV command 475
partition definition macro 790, 819
partition set definition macro 790, 821
related constants 781
routing a logical message 438
sending previously mapped data 487
sending user-defined data stream 489
standard BMS
RECEIVE MAP command 400
RECEIVE PARTN command 405
SEND CONTROL command 464
SEND MAP command 468
SEND PARTNSET 481
SEND TEXT command 481
batch data interchange (BDI)
add record to data set 272
commands 16
conditions 288
delete a record from data set 282
read record from data set 293
request next record number 287
send data to output device 297
terminate data set 270, 278
update a record in data set 295
wait for function completion 301
batch logical unit, 3770 86, 389, 454
BELOW option
**BELOW option (continued)**
- GETMAIN command 231
- BIF DEEDIT command 55
- BIF DIGEST command 56
- big COMMAREAs (channels)
  - ASSIGN command 44
  - DELETE CHANNEL command 122
  - DELETE CONTAINER (CHANNEL) command 125
  - QUERY CHANNEL command 341
- big COMMAREAs, channels 122, 125, 221, 323, 334, 341, 427, 536, 701

**BINARY option**
- DOCUMENT INSERT command 138
- BLANK value
  - DFHMDI 792
- BLINK value
  - DFHMDF 792
  - DFHMDI 801
  - DFHMSD 810
- BLOCK value
  - DFHMDI 801
  - DFHMSD 810

**BODYCHARSET option**
- WEB CONVERSE command 602
- WEB RECEIVE command (Client) 640
- WEB RECEIVE command (Server) 634

**BOOKMARK option**
- DOCUMENT INSERT command 139

**BOTTOM value**
- DFHMDI 801

**BRDATA option**
- START BREXIT command 534

**BREXIT option**
- START BREXIT command 534

**bridge (3270)**
- start a task 534

**BRIDGE option**
- ASSIGN command 44

**browse operation**
- ending 149
- read next record 359
- read previous record 369
- reset starting point 416
- starting 541

**BROWSETOKEN option**
- ENDBROWSE ACTIVITY command 151
- ENDBROWSE CONTAINER (CHANNEL) command 153
- ENDBROWSE CONTAINER command 152
- ENDBROWSE EVENT command 153
- ENDBROWSE PROCESS command 154
- GETNEXT ACTIVITY command 236
- GETNEXT CONTAINER (CHANNEL) command 238
- GETNEXT CONTAINER command 237
- GETNEXT EVENT command 239
- GETNEXT PROCESS command 241
- STARTBROWSE ACTIVITY command 547
- STARTBROWSE CONTAINER command 548, 550
- STARTBROWSE EVENT command 550
- STARTBROWSE PROCESS command 551

**browsing commands (continued)**
- ENDBROWSE CONTAINER (CHANNEL) 152
- ENDBROWSE PROCESS 153
- ENDBROWSE TIMER 154
- GETNEXT ACTIVITY 236
- GETNEXT CONTAINER 237
- GETNEXT CONTAINER (CHANNEL) 238
- GETNEXT EVENT 239
- GETNEXT PROCESS 240
- GETNEXT TIMER 241
- INQUIRE ACTIVITYID 252
- INQUIRE CONTAINER 255
- INQUIRE EVENT 257
- INQUIRE PROCESS 258
- INQUIRE TIMER 259
- STARTBROWSE ACTIVITY 546
- STARTBROWSE CONTAINER 548
- STARTBROWSE CONTAINER (CHANNEL) 549
- STARTBROWSE PROCESS 551
- STARTBROWSE TIMER 552

**BRT value**
- DFHMDF 792

**BTRANS option**
- ASSIGN command 44

**BTS commands**
- ACQUIRE 26
- ADD SUBEVENT 28
- CANCEL (BTS) 64
- CHECK ACQPROCESS 70
- CHECK ACTIVITY 71
- CHECK TIMER 74
- DEFINE ACTIVITY 98
- DEFINE COMPOSITE EVENT 100
- DEFINE INPUT EVENT 106
- DEFINE PROCESS 106
- DEFINE TIMER 109
- DELETE ACTIVITY 121
- DELETE CONTAINER (BTS) 123
- DELETE EVENT 128
- DELETE TIMER 129
- ENDBROWSE ACTIVITY 151
- ENDBROWSE CONTAINER 152
- ENDBROWSE EVENT 153
- ENDBROWSE PROCESS 153
- ENDBROWSE TIMER 154
- FORCE TIMER 184
- GET CONTAINER (BTS) 218
- GETNEXT ACTIVITY 236
- GETNEXT CONTAINER 237
- GETNEXT EVENT 239
- GETNEXT PROCESS 240
- GETNEXT TIMER 241
- INQUIRE ACTIVITYID 252
- INQUIRE CONTAINER 255
- INQUIRE EVENT 257
- INQUIRE PROCESS 258
- INQUIRE TIMER 259
- LINK ACQPROCESS 311
- LINK ACTIVITY 313
- MOVE CONTAINER (BTS) 321
- PUT CONTAINER (BTS) 331
- REMOVE SUBEVENT 409
- RESET ACQPROCESS 413
- RESET ACTIVITY 415
BTS commands (continued)
RESUME 420
RETRIEVE REATTACH EVENT 424
RETRIEVE SUBEVENT 426
RUN 441
STARTBROWSE ACTIVITY 546
STARTBROWSE CONTAINER 548
STARTBROWSE EVENT 550
STARTBROWSE PROCESS 551
STARTBROWSE TIMER 552
SUSPEND (BTS) 553
TEST EVENT 557
BUFSEZ operand
DFHPD1 819
BUILD ATTACH (LUTYPE6.1) command 58
BUILD ATTACH (MRO) command 60
built-in functions commands 17
BUSY condition
DELETE COUNTER command 126
BYTEOFFSET option
GET CONTAINER (CHANNEL) command 221
GET64 CONTAINER command 244

C

C language
ADDRESS COMMAREA 30
ADDRESS EIB 31
argument values 4
LENGTH option default 5
translated code 12
CADDRLENGTH option
EXTRACT TCP/IP command 172
CANCEL (BTS) command 64
CANCEL command 62
CANCEL option
ABEND command 25
HANDLE ABEND command 248
CANCELLING mode, of an activity 254
CARD option
ISSUE ABORT command 271
ISSUE END command 279
ISSUE SEND command 297
ISSUE WAIT command 302
CASE operand
DFHMDF 792
CBIDERR condition
ALLOCATE (APPC) command 34
ALLOCATE (LUTYPE6.1) command 35
CONVERSE (non-z/OS Communications Server) command 96
CONVERSE (z/OS Communications Server) command 90
EXTRACT ATTACH (LUTYPE6.1) command 161
EXTRACT ATTACH (MRO) command 164
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 459
CBUFF option
SEND (non-z/OS Communications Server) command 462

CCSID option
GET CONTAINER (CHANNEL) command 221
GET64 CONTAINER command 244
CCSIDERR condition
GET CONTAINER (CHANNEL) command 223
GET64 CONTAINER command 246
PUT CONTAINER (CHANNEL) command 336
PUT64 CONTAINER command 339
SOAPFAULT CREATE command 508
WSACONTEXT BUILD command 692
CEE3250C 25
CEEMSG 25
CERTIFICATE option
EXTRACT CERTIFICATE command 167
WEB OPEN command 617
CHANGE PASSWORD command 68
CHANGE PHRASE command 66
CHANGE TASK command 69
CHANGED condition
DELETE command 115
REWRITE command 434
CHANGETIME option
VERIFY PASSWORD command 574
VERIFY PHRASE command 577
channel commands
CHANNEL option of RETURN command 427
CHANNEL option of XCTL command 701
DELETE CHANNEL 122
DELETE CONTAINER (CHANNEL) 125
ENDBROWSE CONTAINER (CHANNEL) 152
GET CONTAINER (CHANNEL) 221
GET64 CONTAINER 243
GETNEXT CONTAINER (CHANNEL) 238
MOVE CONTAINER (CHANNEL) 323
PUT CONTAINER (CHANNEL) 334
PUT64 CONTAINER command 337
QUERY CHANNEL 341
START CHANNEL 536
STARTBROWSE CONTAINER (CHANNEL) 549
Channel commands 18
CHANNEL option
ASSIGN command 44
DELETE CHANNEL command 123
DELETE CONTAINER (CHANNEL) command 126
FETCH CHILD command 181, 183
GET CONTAINER (CHANNEL) command 221
GET64 CONTAINER command 244
INVOKING APPLICATION command 262
LINK command 305
MOVE CONTAINER (CHANNEL) command 324
PUT CONTAINER (CHANNEL) command 334
PUT64 CONTAINER command 337
QUERY CHANNEL command 341
RETURN command 428
RUN TRANSID command 445
START TRANSID (CHANNEL) command 536
TRANSFORM XMLTODATA command 564
WEB CONVERSE command 599
WEB SEND command (Client) 656
WEB SEND command (Server) 647
XCTL command 701
CHANNELERR condition
DELETE CHANNEL command 123
DELETE CONTAINER (CHANNEL) command 126
GET CONTAINER (CHANNEL) command 224
GET64 CONTAINER command 246
INVOKE APPLICATION command 263
LINK command 307
MOVE CONTAINER (CHANNEL) command 325
PUT CONTAINER (CHANNEL) command 336
PUT64 CONTAINER command 339
QUERY CHANNEL command 341
RETURN command 429
SIGNAL EVENT command 493
SOAPFAULT ADD command 504
SOAPFAULT CREATE command 508
SOAPFAULT DELETE command 509
START TRANSID (CHANNEL) command 536
WEB CONVERSE command 606
WEB RECEIVE command (Client) 643
WEB RECEIVE command (Server) 638
WEB SEND command (Client) 661
WEB SEND command (Server) 651
WSACONTEXT BUILD command 692
XCTL command 702

channels
ASSIGN command 44
channels as large COMMAREA 122, 125, 221, 323, 334, 341, 427, 536, 701

CHARACTERS option
DOCUMENT RETRIEVE command 142
WEB CONVERSE command 599
WEB READ FORMFIELD command 623
WEB RECEIVE command (Server) 635
WEB SEND command (Client) 656
WEB SEND command (Server) 647
WEB STARTBROWSE FORMFIELD command 664

CHARSZE operand
DFHPDI 819
DFHPSD 821

CHECK ACQPROCESS command 70
CHECK ACTIVITY command 71
CHECK TIMER command 74

CHILD option
FETCH CHILD command 183
RUN TRANSID command 446

CHUNKING option
WEB SEND command (Client) 656
WEB SEND command (Server) 648

CICS business transaction services (BTS) commands 17

CICS Event processing commands
SIGNAL EVENT 492

CICS Web Interface (CWI) commands
DOCUMENT CREATE 134
DOCUMENT DELETE 137
DOCUMENT INSERT 138
DOCUMENT RETRIEVE 141
DOCUMENT SET 143
EXTRACT CERTIFICATE 167

CICS Web support commands
CONVERSE WEB 596
EXTRACT WEB 176
WEB CLOSE 594
WEB CONVERSE 596

CICS Web support commands (continued)
WEB ENDBROWSE FORMFIELD 608
WEB ENDBROWSE HTTPHEADER 609
WEB ENDBROWSE QUERYPARAM 610
WEB EXTRACT 611
WEB OPEN 616
WEB PARSE URL 621
WEB READ FORMFIELD 623
WEB READ HTTPHEADER 625
WEB READ QUERYPARAM 627
WEB READNEXT FORMFIELD 629
WEB READNEXT HTTPHEADER 630
WEB READNEXT QUERYPARAM 632
WEB RECEIVE 633
WEB RECEIVE (Client) 639
WEB RETRIEVE 645
WEB SEND (Client) 654
WEB SEND (Server) 646
WEB STARTBROWSE FORMFIELD 664
WEB STARTBROWSE HTTPHEADER 666
WEB STARTBROWSE QUERYPARAM 667
WEB WRITE HTTPHEADER 668

CICSDATAKEY option
GETMAIN command 231
GETMAIN64 command 234

CIPHERS option
WEB OPEN command 617

CLASS option
SPOOLOPEN INPUT command 511
SPOOLOPEN OUTPUT command 515

CLEAR option
HANDLE AID command 249

client requests
extracting information 167

CLIENTADDR option
EXTRACT TCPIP command 173

CLIENTADDRNU option
EXTRACT TCPIP command 173

CLIENTCONV option
WEB CONVERSE command 604
WEB RECEIVE command (Client) 641
WEB SEND command (Client) 657

CLIENTNAME option
EXTRACT TCPIP command 173

CLNTADDR6NU option
EXTRACT TCPIP command 173

CLNTCODEPAGE option
WEB CONVERSE command 604
WEB RECEIVE command (Client) 641
WEB SEND command (Client) 657

CLNTIPFAMILY option
EXTRACT TCPIP command 173

CLOSETASK option
DOCUMENT RETRIEVE command 142
WEB READ FORMFIELD command 623
WEB RECEIVE command (Server) 635
WEB SEND command (Server) 648
WEB STARTBROWSE FORMFIELD command 664

CNAMELENGTH option
EXTRACT TCPIP command 173

CMDSEC option
ASSIGN command 44

INDEX option
EXTRACT TCPIP command 173

Index 833
CNOTCOMPL option
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457

COBOL
argument values 3
translated code 11

CODEPAGE option
WEB OPEN command 617

COLOR operand
DFHMDF 792
DFHMDI 801
DFHMSD 810

COLOR option
 ASSIGN command 44

COLUMN operand
DFHMDI 801
column value
DFHMDI 801

command language translator
translated code 12

commands
format, arguments 1
security 20
spool 20
TCP/IP 21
temporary storage control 21

COMMAREA option
ADDRESS command 30
INVOKE APPLICATION command 262
LINK command 305
RETURN command 428
XCTL command 702

COMMONNAME option
EXTRACT CERTIFICATE command 168

COMMONNAMLEN option
EXTRACT CERTIFICATE command 168

COMPAREMAX option
GET COUNTER command 225
GET DCOUNTER command 225
UPDATE COUNTER command 570
UPDATE DCOUNTER command 570

COMPAREMIN option
GET COUNTER command 225
GET DCOUNTER command 225
UPDATE COUNTER command 570
UPDATE DCOUNTER command 570

COMPLETE mode, of an activity 254

CONNECT PROCESS command 75

CONFIRM option
GDS SEND command 215
SEND (z/OS Communications Server) command 457

CONNECT PROCESS command 75

CONSTANT option
READ command 350
READNEXT command 361
READPREV command 371

CONFENSE option
ISSUE ABORT command 271
ISSUE END command 279
ISSUE SEND command 297
ISSUE WAIT command 302

console support commands 18

constants
AID values, DFHAID 786
attribute values, DFHBMSCA 781
for 3270 attributes 781
for examining EIBAID field 786
for MSR control values 785
for printer format controls 781
MSR control, DFHtex read 785
printer control values, DFHBMSCA 781

container commands
DELETE CHANNEL 122
DELETE CONTAINER (BTS) 123
DELETE CONTAINER (CHANNEL) 125
ENDBROWSE CONTAINER 152
ENDBROWSE CONTAINER (CHANNEL) 152
GET CONTAINER (BTS) 218
GET CONTAINER (CHANNEL) 221
GET64 CONTAINER 243
GETNEXT CONTAINER 237
GETNEXT CONTAINER (CHANNEL) 238
INQUIRE CONTAINER 255
INQUIRE CONTAINER (CHANNEL) 238
INQUIRE CONTAINER command 256
INQUIRE CONTAINER (CHANNEL) 238

CONTAINER option
DELETE CONTAINER (BTS) command 124
DELETE CONTAINER (CHANNEL) command 126
GET CONTAINER (BTS) command 219
GET CONTAINER (CHANNEL) command 222
GET64 CONTAINER command 244
GETNEXT CONTAINER command 238
GETNEXT CONTAINER (CHANNEL) command 238
INQUIRE CONTAINER command 256
MOVE CONTAINER (BTS) command 322
MOVE CONTAINER (CHANNEL) command 324
MOVE CONTAINER (CHANNEL) command 324
PUT CONTAINER (BTS) command 332
PUT CONTAINER (CHANNEL) command 335
PUT64 CONTAINER command 338
WEB CONVERSE command 599
WEB SEND command (Client) 658
WEB SEND command (Server) 649
CTLCHAR option (continued)
SEND (z/OS Communications Server) command 457
CTRL operand
   DFHMDI 801
   DFHMSD 810
CURRENT option
SEND PAGE command 479
CURSLOC operand
   DFHMDI 801
   DFHMSD 810
cursor address 777
CURSOR option
   RECEIVE MAP MAPPINGDEV command 404
   SEND CONTROL command 465
   SEND MAP command 470
   SEND MAP MAPPINGDEV command 475
   SEND TEXT command 483
cursor position
   terminal control 777
CVDA (CICS-value data area)
   command format 3
   listed in numerical and alphabetical order 709
CVDA options
   ACTION
      WRITE OPERATOR command 682
   ALTER
      QUERY SECURITY command 345
   ASRAKEY
      ASSIGN command 42
   ASRASPC
      ASSIGN command 43
   CONTROL
      QUERY SECURITY command 345
   LOGMESSAGE
      QUERY SECURITY command 345
   MAXLIFETIME
      DEQ 133
      ENQ 156
   PURGEABILITY
      WAIT EXTERNAL 585
      WAITCICS 592
READ
   QUERY SECURITY command 345
STATE
   ALLOCATE (APPC) 34
   ALLOCATE (MRO) 37
   CONNECT PROCESS 76
   EXTRACT ATTRIBUTES (APPC) 165
   EXTRACT ATTRIBUTES (MRO) 166
   FREE (APPC) 190
   FREE (MRO) 192
   GDS ALLOCATE 198
   GDS CONNECT PROCESS 202
   GDS EXTRACT ATTRIBUTES 203
   GDS FREE 206
   GDS ISSUE ABEND 207
   GDS ISSUE CONFIRMATION 208
   GDS ISSUE ERROR 285
   GDS ISSUE PREPARE 290
   GDS ISSUE SIGNAL 211
   GDS RECEIVE 214
   GDS SEND 216
   GDS WAIT 217
   ISSUE ABEND command 269
CVDA options (continued)
STATE (continued)
   ISSUE CONFIRMATION 274
   ISSUE ERROR 285
   ISSUE PREPARE 290
   ISSUE SIGNAL (APPC) 299
   WAIT CONVID 582
UPDATE
   QUERY SECURITY command 346
CVDA values
   ALLOCATED
      ALLOCATE (APPC) 34
      ALLOCATE (MRO) 37
      CONNECT PROCESS 76
      EXTRACT ATTRIBUTES (APPC) 165
      EXTRACT ATTRIBUTES (MRO) 166
      FREE (APPC) 190
      FREE (MRO) 192
      GDS ALLOCATE 198
      GDS CONNECT PROCESS 202
      GDS EXTRACT ATTRIBUTES 203
      GDS FREE 206
      GDS ISSUE ABEND 207
      GDS ISSUE CONFIRMATION 208
      GDS ISSUE ERROR 285
      GDS ISSUE PREPARE 290
      GDS ISSUE SIGNAL 299
      RECEIVE (MRO) command 399
      RECEIVE (z/OS Communications Server) command 463
      SEND (non-z/OS Communications Server) command 458
      SEND (z/OS Communications Server) command 458
      WAIT CONVID 582
   ASSERTED
      EXTRACT TCPIP command 172
   ATTLSAWARE
      EXTRACT TCPIP command 172, 174
   AUTOAUTH
      EXTRACT TCPIP command 172
   AUTOREGISTER
      EXTRACT TCPIP command 172
   BASE64
      BIF DIGEST command 56
   BASESPACE
      ASSIGN command 43
   BASICAUTH
      EXTRACT TCPIP command 172
   WEB CONVERSE command (Client) 599
   WEB SEND command (Client) 656
   BINARY
      BIF DIGEST command 56
   CERTIFICAUTH
      EXTRACT TCPIP command 172
   CHUNKEND
      WEB SEND command (Client) 657
CVDA values (continued)

CHUNKEND (continued)
WEB SEND command (Server) 648
CHUNKNO
WEB SEND command (Client) 657
WEB SEND command (Server) 648
CHUNKYES
WEB SEND command (Client) 657
WEB SEND command (Server) 648
CICSEXECKEY
ASSIGN command 42
CLICONVERT
WEB CONVERSE command 605
WEB RECEIVE command (Client) 641
WEB SEND command (Client) 658
CLIENTAUTH
EXTRACT TCPIP command 174
CLOSE
WEB CONVERSE command 599
WEB SEND command (Client) 657
WEB SEND command (Server) 649
CONFFREE
CONNECT PROCESS 76
EXTRACT ATTRIBUTES (APPC) 165
FREE (APPC) 190
GDS ALLOCATE 198
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 209
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (z/OS Communications Server) command 392
SEND (z/OS Communications Server) command 458
WAIT CONVID 582
CONFRECEIVE
CONNECT PROCESS 76
EXTRACT ATTRIBUTES (APPC) 165
FREE (APPC) 190
GDS ALLOCATE 198
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 209
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (z/OS Communications Server) command 392
SEND (z/OS Communications Server) command 458
WAIT CONVID 582
CRITICAL
WRITE OPERATOR command 682
DELETE
WEB CONVERSE command 601, 660
DOCDDELETE
WEB CONVERSE command 599
WEB SEND command (Client) 658
WEB SEND command (Server) 649
EVENTUAL
WEB SEND command (Server) 647
WRITE OPERATOR command 682
EXPECT
WEB CONVERSE command 598
WEB SEND command (Client) 656
FREE
CONNECT PROCESS 76
EXTRACT ATTRIBUTES (APPC) 165
EXTRACT ATTRIBUTES (MRO) 166
FREE (APPC) 190
FREE (MRO) 192
GDS ALLOCATE 198
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 209
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
CVDA values (continued)
FREE (continued)
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (MRO) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONVID 582
GET
WEB CONVERSE command 601
WEB SEND command (Client) 659
HEAD
WEB CONVERSE command 601
WEB SEND command (Client) 659
HEX
BIF DIGEST command 56
HOSTNAME
WEB EXTRACT or EXTRACT WEB command 178, 612
WEB PARSE URL command 622
HTTP
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB OPEN command 619
HTTPNO
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB RECEIVE command (Server) 638
HTTPS
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB OPEN command 619
HTTPYES
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB PARSE URL command 622
IMMEDIATE
WEB SEND command (Server) 647
WRITE OPERATOR command 682
IPV4
EXTRACT TCPIP command 173, 174
WEB EXTRACT or EXTRACT WEB command 178, 612
WEB PARSE URL command 622
IPV6
EXTRACT TCPIP command 173, 174
WEB EXTRACT or EXTRACT WEB command 178, 612
WEB PARSE URL command 622
NOAUTHENTIC
EXTRACT TCPIP command 172
NOCLICONVERT
WEB CONVERSE command 605
WEB RECEIVE command (Client) 641
WEB SEND command (Client) 658
NOCLOSE
CVDA values (continued)
PENDFREE (continued)
  RECEIVE (z/OS Communications Server) command 392
  SEND (non-z/OS Communications Server) command 463
  SEND (z/OS Communications Server) command 458
  WAIT CONVID 582
PENDRECEIVE
  CONNECT PROCESS 76
  EXTRACT ATTRIBUTES (APPC) 165
  FREE (APPC) 190
  GDS ALLOCATE 198
  GDS CONNECT PROCESS 202
  GDS EXTRACT ATTRIBUTES 203
  GDS FREE 206
  GDS ISSUE ABEND 207
  GDS ISSUE CONFIRMATION 208
  GDS ISSUE ERROR 210
  GDS ISSUE PREPARE 211
  GDS ISSUE SIGNAL 212
  GDS RECEIVE 214
  GDS SEND 216
  GDS WAIT 217
  ISSUE ABEND command 270
  ISSUE CONFIRMATION 274
  ISSUE ERROR 285
  ISSUE PREPARE 290
  ISSUE SIGNAL (APPC) 299
  RECEIVE (z/OS Communications Server) command 392
  SEND (non-z/OS Communications Server) command 463
  SEND (z/OS Communications Server) command 458
  WAIT CONVID 582
PURGEABLE
  WAIT EXTERNAL 585
  WAITCICS 592
PUT
  WEB CONVERSE command 601
  WEB SEND command (Client) 659
RECEIVE
  CONNECT PROCESS 76
  CONVERSE command (non-z/OS Communications Server) 95
  EXTRACT ATTRIBUTES (APPC) 165
  EXTRACT ATTRIBUTES (MRO) 166
  FREE (APPC) 190
  FREE (MRO) 192
  GDS ALLOCATE 198
  GDS CONNECT PROCESS 202
  GDS EXTRACT ATTRIBUTES 203
  GDS FREE 206
  GDS ISSUE ABEND 207
  GDS ISSUE CONFIRMATION 208
  GDS ISSUE ERROR 210
  GDS ISSUE PREPARE 211
  GDS ISSUE SIGNAL 212
  GDS RECEIVE 214
  GDS SEND 216
  GDS WAIT 217
  ISSUE ABEND command 270
  ISSUE CONFIRMATION 274
  ISSUE ERROR 285
  ISSUE PREPARE 290
  ISSUE SIGNAL (APPC) 299
  RECEIVE (MZ/OS Communications Server) command 392
  SEND (non-z/OS Communications Server) command 463
  SEND (z/OS Communications Server) command 458
  WAIT CONVID 582
SEND
  CONNECT PROCESS 76
  CONVERSE command (non-z/OS Communications Server) 95
  EXTRACT ATTRIBUTES (APPC) 165
  EXTRACT ATTRIBUTES (MRO) 166
  FREE (APPC) 190
  FREE (MRO) 192
  GDS ALLOCATE 198
  GDS CONNECT PROCESS 202
  GDS EXTRACT ATTRIBUTES 203
  GDS FREE 206
  GDS ISSUE ABEND 207
  GDS ISSUE CONFIRMATION 208
  GDS ISSUE ERROR 210
  GDS ISSUE PREPARE 211
  GDS ISSUE SIGNAL 212
CVDA values (continued)

SEND (continued)
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (MRO) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONVID 582

SRVCONVERT
WEB RECEIVE command (Server) 636
WEB SEND command (Server) 650

SSL
EXTRACT TCPIP command 174

SUBSPACE
ASSIGN command 43

SUPPORTED
EXTRACT TCPIP command 173

SYNCFREE
CONNECT PROCESS 76
CONVERSE command (non-z/OS Communications Server) 95
EXTRACT ATTRIBUTES (APPC) 165
EXTRACT ATTRIBUTES (MRO) 166
FREE (APPC) 190
FREE (MRO) 192
GDS ALLOCATE 199
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 210
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (MRO) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONVID 582

SYNCRECEIVE
CONNECT PROCESS 76
CONVERSE command (non-z/OS Communications Server) 95
EXTRACT ATTRIBUTES (APPC) 165
EXTRACT ATTRIBUTES (MRO) 166
FREE (APPC) 190
FREE (MRO) 192
GDS ALLOCATE 199
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 210
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (MRO) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONVID 583

SYNCSEND
CONNECT PROCESS 76
CONVERSE command (non-z/OS Communications Server) 95
EXTRACT ATTRIBUTES (APPC) 165
EXTRACT ATTRIBUTES (MRO) 166
FREE (APPC) 190
FREE (MRO) 192
GDS ALLOCATE 199
GDS CONNECT PROCESS 202
GDS EXTRACT ATTRIBUTES 203
GDS FREE 206
GDS ISSUE ABEND 207
GDS ISSUE CONFIRMATION 208
GDS ISSUE ERROR 210
GDS ISSUE PREPARE 211
GDS ISSUE SIGNAL 212
GDS RECEIVE 214
GDS SEND 216
GDS WAIT 217
ISSUE ABEND command 270
ISSUE CONFIRMATION 274
ISSUE ERROR 285
ISSUE PREPARE 290
ISSUE SIGNAL (APPC) 299
RECEIVE (MRO) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONVID 583

TASK
DEQ 133
ENQ 156
TRACE
DATAONLY option (continued)
  DOCUMENT RETRIEVE command 142
  SEND MAP command 470
  SEND MAP MAPPINGDEV command 476
DATAPointer option
  FREEMAIN command 194
  FREEMAIN64 command 197
DATAsTr option
  BUILD ATTACH (LUTYPE6.1) command 58
  BUILD ATTACH (MRO) command 60
  EXTRACT ATTACH (LUTYPE6.1) command 160
  EXTRACT ATTACH (MRO) command 162
DATATyPE option
  PUT CONTAINER (CHANNEL) command 335
  PUT64 CONTAINER command 338
DATACONTAINEROption
  TRANSFORM XMLTODATA command 564
DATE option
  FORMATTIME command 186
DATERepORT option
  FORMATTIME command 186
DATESEP option
  FORMATTIME command 186
DATESTrING option
  CONVERTTIME command 97
  FORMATTIME command 186
DAYCOUNt option
  FORMATTIME command 187
DAYOFMONTH option
  DEFINE TIMER command 110
  FORMATTIME command 187
DAYOFWEEk option
  DEFINE TIMER command 110
DAYOFYEAR option
  DEFINE TIMER command 110
DAYS option
  DEFINE TIMER command 110
DAYSleft option
  VERIFY PASSWORD command 574
  VERIFY PHRASE command 577
DCOUNTER option
  DELETE DCOUNTER command 126
  GET DCOUNTER command 225
  QUERY DCOUNTER command 341
  REWIND DCOUNTER command 430
  UPDATE DCOUNTER command 570
DDMYY option
  FORMATTIME command 187
DMMYYYY option
  FORMATTIME command 187
DEBKey option
  READ command 350
  STARTBR command 542
DEBREC option
  READ command 350
  STARTBR command 542
DEFAULT option
  CONVERSE (non-z/OS Communications Server) command 94
  CONVERSE (z/OS Communications Server) command 88
  SEND (non-z/OS Communications Server) command 462
  SEND (z/OS Communications Server) command 457
  SEND CONTROL command 465
DEFAULT option (continued)
  SEND MAP command 470
  SEND TEXT command 483
  SEND TEXT NOEDIT command 490
DEFINE ACTIVITY command 98
DEFINE COMPOSITE EVENT command 100
DEFINE COUNTER command 103
DEFINE DCOUNTER command 103
DEFINE INPUT EVENT command 106
DEFINE PROCESS command 106
DEFINE TIMER command 109

DEFRESP option
  CONVERSE (non-z/OS Communications Server) command 94
  CONVERSE (z/OS Communications Server) command 88
ISSUE ADD command 273
ISSUE ERASE command 282
ISSUE REPLACE command 295
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457
DEFSCRNHT option
  ASSIGN command 44
DEFSCRNWD option
  ASSIGN command 44
DELAY command 112
delay processing, task 112
DELETE ACTIVITY command 121
DELETE CHANNEL command 122
DELETE command 115
DELETE CONTAINER (BTS) command 123
DELETE CONTAINER (CHANNEL) command 125
DELETE COUNTER command 126
DELETE DCOUNTER command 126
DELETE EVENT command 128
delete loaded program 407
DELETE option
  SPOOLCLOSE command 510
delete records
    batch data interchange records 282
DELETE TIMER command 129
DELETEQ TD command 130
DELETEQ TS command 131
deleting data
  named counter 126
temporary storage queues 131
transient data queues 130
DELIMITER option
  ASSIGN command 44
DEQ command 133
dequeue from resource 133
DESTCOUNT option
  ASSIGN command 44
DESTID option
  ASSIGN command 45
ISSUE ABORT command 271
ISSUE ADD command 273
ISSUE END command 279
ISSUE ERASE command 282
ISSUE NOTE command 287
ISSUE QUERY command 292
ISSUE REPLACE command 295
ISSUE SEND command 298
DESTID option (continued)
  ISSUE WAIT command 302
DESTIDLENGTH option
  ASSIGN command 45
  ISSUE ABORT command 271
  ISSUE ADD command 273
  ISSUE END command 279
  ISSUE ERASE command 282
  ISSUE NOTE command 287
  ISSUE QUERY command 292
  ISSUE REPLACE command 295
  ISSUE SEND command 298
  ISSUE WAIT command 302
destruction of activities 121

disconnect a switched line 773
display-device operations
  attention identifier (AID) 777
  attention identifier list, DFHAID 786
  copy displayed information 776
  cursor address 777
  erase all unprotected fields 776
  input operation without data 777
  pass control on receipt of an AID 249
  print displayed information 776
  standard attribute and printer control character list, DFHBMSCA 781
  terminal 775

DOCSIZE option
  DOCUMENT INSERT command 139
DOCSTATUS option
E

ECADDR option
WAIT EVENT command 583

ECBLIST option
WAIT EXTERNAL command 585
WAITCICS command 592
EDF, execution diagnostic facility 523, 536
EIB option
ADDRESS command 31
EIBAID
examining contents of field 786

ELENAME option
TRANSFORM XMLTODATA command 564

ELENAMELEN option
TRANSFORM XMLTODATA command 565

ELENS option
TRANSFORM XMLTODATA command 565

ELENSLEN option
TRANSFORM XMLTODATA command 565

END condition
GETNEXT ACTIVITY command 237
GETNEXT CONTAINER (CHANNEL) command 239
GETNEXT CONTAINER command 238
GETNEXT EVENT command 240
GETNEXT PROCESS command 241
RETRIEVE REATTACH EVENT command 425
RETRIEVE SUBEVENT command 427

ENDACTIVITY option
RETURN command 428

ENDBR command 149

ENDBUS activity command 151

ENDBUS CONTAINER (CHANNEL) command 152

ENDBUS CONTAINER command 152

ENDBUS EVENT command 153

ENDBUS PROCESS command 153

ENDBUS TIMER command 154, 552

ENDDATA condition
RETRIEVE command 423

ENDFILE condition
READNEXT command 365
REAPREV command 375

SPoolREAD command 519

WEB READNEXT FORMFIELD command 629
WEB READNEXT HTTPHEADER command 631
WEB READNEXT QUERYPARM command 632

ENDFILE option
ISSUE ENDFILE command 280

ENDINPT condition
RECEIVE (non-z/OS Communications Server) command 399

ENDOUTPUT option
ISSUE ENDFILE command 280

ENQ command 155

ENQBUSY condition
ENQ command 157

ensuring terminal operation has completed 590

ENTRY option
HANDLE AID command 249

ENTER TRACEID command
monitoring aspects replaced by MONITOR command 319

tracing aspects replaced by ENTER TRACENUM command 158

ENTER TRACENUM command 157

ENTRY option
MONITOR command 320

Index 843
ENVDEFERR condition
RETREIVE command 424
environment services
commands 19
EOC condition
ALLOCATE (LUTYPE6.1) command 35
CONVERSE (non-z/OS Communications Server) command 96
CONVERSE (z/OS Communications Server) command 90
ISSUE RECEIVE command 294
RECEIVE (non-z/OS Communications Server) command 399
RECEIVE (z/OS Communications Server) command 392
RECEIVE MAP command 402
RECEIVE PARTN command 407
WAIT TERMINAL command 590
EODS condition
CONVERSE (z/OS Communications Server) command 90
ISSUE RECEIVE command 294
RECEIVE (z/OS Communications Server) command 392
RECEIVE MAP command 402
RECEIVE PARTN command 407
EOF condition
CONVERSE (non-z/OS Communications Server) command 96
RECEIVE (non-z/OS Communications Server) command 399
EQUAL option
READ command 350
RESETBR command 417
STARTBR command 542
equated symbols 7
erase all unprotected fields 776
ERASE option
CONVERSE (non-z/OS Communications Server) command 94
CONVERSE (z/OS Communications Server) command 88
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457
SEND CONTROL command 466
SEND MAP command 470
SEND MAP MAPPINGDEV command 476
SEND TEXT command 483
SEND TEXT NOEDIT command 490
ERASEAUP option
SEND CONTROL command 466
SEND MAP command 470
SEND MAP MAPPINGDEV command 476
ERRORMSG option
ASSIGN command 45
ERRORMSGELN option
ASSIGN command 45
ERRTERM option
ROUTE command 439
ESDS (entry-sequenced data set)
DELETE command 115
READ 352, 354
READNEXT 365
READPREV 374
RESETBR 418
STARTBR 543
STARTBR command 543
WRITE command 671
ESM
ACEE pointer 30
QUERY SECURITY command, NOTFND condition 347
QUERY SECURITY command, RESCLASS option 345
USERNAME 92
ESM, external security manager 523, 536
ESMAPPNAME option
REQUEST PASTTICKET 411, 412
ESMREASON option
CHANGE PASSWORD command 68
CHANGE PHRASE command 66
SIGNON command 495
SIGNON TOKEN command 500
VERIFY PASSWORD command 574
VERIFY PHRASE command 577
VERIFY TOKEN command 580
ESMRESP option
CHANGE PASSWORD command 68
CHANGE PHRASE command 66
REQUEST PASTTICKET 411, 413
SIGNON command 495
SIGNON TOKEN command 500
VERIFY PASSWORD command 574
VERIFY PHRASE command 577
VERIFY TOKEN command 580
EVENT option
ADD SUBEVENT command 29
DEFINE ACTIVITY command 99
DEFINE COMPOSITE EVENT command 102
DEFINE INPUT EVENT command 106
DEFINE TIMER command 110
DELETE EVENT command 129
GETNEXT EVENT command 239
INQUIRE ACTIVITYID command 254
INQUIRE EVENT command 257
INQUIRE TIMER command 260
REMOVE SUBEVENT command 409
RETRIEVE REATTACH EVENT command 425
RETRIEVE SUBEVENT command 426
SIGNAL EVENT command 492
TEST EVENT command 557
EVENTERR condition
ADD SUBEVENT command 29
EVENTERR condition (continued)
  DEFINE ACTIVITY command 100
  DEFINE COMPOSITE EVENT command 102
  DEFINE INPUT EVENT command 106
  DEFINE TIMER command 111
  DELETE EVENT command 129
  INQUIRE EVENT command 258
  LINK ACQPROCESS command 312
  LINK ACTIVITY command 315
  REMOVE SUBEVENT command 409
  RETRIEVE SUBEVENT command 427
  RUN command 444
  SIGNAL EVENT command 493
  TEST EVENT command 557

events, timer
  control area, timer 327
  monitoring point 319
  waiting for 583

EVENTTYPE option
  GETNEXT EVENT command 239
  INQUIRE EVENT command 257
  RETRIEVE REATTACH EVENT command 425
  RETRIEVE SUBEVENT command 426

EWASUPP option
  ASSIGN command 45

EXACTMATCH option
  INVOKE APPLICATION command 262

examples
  using the ADDRESS SET command 32
  using the ASKTIME command 38
  using the BIF DEEDIT command 55
  using the CANCEL command 25
  using the DELAY command 112
  using the DELETE command 115
  using the DEQ command 134
  using the DUMP TRANSACTION command 145
  using the ENQ command 157
  using the ENTER TRACENUM command 159
  using the FORMATTIME command 189
  using the FREEMAIN command 195
  using the GETMAIN command 232, 236
  using the HANDLE ABEND command 248
  using the HANDLE AID command 250
  using the LINK command 310
  using the LOAD command 319
  using the MONITOR command 320
  using the POST command 329
  using the READ command 358
  using the READQ TD command 380
  using the READQ TS command 383
  using the RELEASE command 409
  using the RETRIEVE command 424
  using the REWRITE command 437
  using the START ATTACH command 532
  using the START BREXIT command 534
  using the START command 523
  using the WAIT EVENT command 584
  using the WAIT EXTERNAL command 586
  using the WAIT JOURNALNAME command 589
  using the WAITTCICS command 591
  using the WRITE command 677
  using the WRITE JOURNALNAME command 680
  using the XCTL command 704

EXCEPTION option (continued)
  ENTER TRACENUM command 158
  exception support commands 19
  exclusive control release, UNLOCK command 567
  EXEC CICS command format 1
  execution diagnostic facility (EDF) 523, 536
  exit from ASM program 12
  exit, abnormal termination recovery 247
  expiration time, notification when reached 327
  EXPIRED condition
    DELAY command 112
    POST command 329
    WRITE OPERATOR command 683

EXPIRYTIME option
  VERIFY PASSWORD command 575
  VERIFY PHRASE command 577

EXTATT operand
  DFHMDI 801
  DFHMSD 810

EXTDS option
  ASSIGN command 45
  extended relative byte address (XRBA) 115
  external security manager (ESM) 345, 523, 536
  EXTRACT ATTACH (LUTYPE6.1) command 159
  EXTRACT ATTACH (MRO) command 162
  EXTRACT ATTRIBUTES (APPC) command 164
  EXTRACT ATTRIBUTES (MRO) command 165
  EXTRACT CERTIFICATE command 167
  EXTRACT LOGONMSG command 169
  EXTRACT PROCESS command 170
  EXTRACT TCPIP command 172
  EXTRACT TCT command 175
  EXTRACT WEB command 176

F

FACILITY option
  ASSIGN command 45
  FACILITYTKON option
    RUN command 443
  FCI option
    ASSIGN command 46, 55
  FCT option
    DUMP TRANSACTION command 146
  field
    extracting information 623
    field definition macro, BMS 789
  FIELD option
    BIF DEEDIT command 55
  FIELD separator operand 801, 810
  FIELD value
    DFHMDI 801
    DFHMSD 810
  FIELDS operand
    DFHMDI 801
  file control
    commands 19
    deleting VSAM records 115
    end browse operation 149
    read next record 359
    read previous record 369
    release exclusive control 567
    specify start for browse 541
    update a record 433
FILE control (continued)
writing new record 671

FILE option
DELE command 115
ENDBR command 150
READ command 350
READNEXT command 361
READPREV command 372
RESETBR command 417
REWRITE command 434
STARTBR command 542
UNLOCK command 568
WRITE command 672

filename
definition 4–7, 9
filename argument, CICS command format 3

FILENOTFOUND condition
DELE command 115
ENDBR command 150
READ command 354
READNEXT command 365
READPREV command 375
RESETBR command 418
REWRITE command 435
STARTBR command 544
UNLOCK command 568
WRITE command 673

FIRESTATUS option
GETNEXT EVENT command 240
INQUIRE EVENT command 257
TEST EVENT command 557

FIRST value
DFHMDI 801
FLDSEP operand
DFHMDI 801
DFHMSD 810

FLENGTH option
DUMP TRANSACTION command 146
fullword alternative to LENGTH 773
GDS RECEIVE command 213
GDS SEND command 215
GET CONTAINER (BTS) command 219
GET CONTAINER (CHANNEL) command 222
GET64 CONTAINER command 244
GETMAIN command 231
GETMAIN64 command 234
LOAD command 317
PUT CONTAINER (BTS) command 332
PUT CONTAINER (CHANNEL) command 335
PUT64 CONTAINER command 339
RECEIVE (non-z/OS Communications Server) command 397
RECEIVE (z/OS Communications Server) command 391
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457
SIGN EVENT command 493
SPOOLWRITE command 521
WRITE JOURNALNAME command 678

FMH option (continued)
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457
START command 526

FMHPARM option
SEND MAP command 470
SEND PAGE command 479
SEND TEXT command 483

FOLD operand
DFHMSD 810

FOR option
DELAY command 112
FORCE TIMER command 184

FORMFEED option
SEND CONTROL command 466
SEND MAP command 471
SEND MAP MAPPINGDEV command 476
SEND TEXT command 483

FORMFIELD option
WEB READ FORMFIELD command 623
WEB READNEXT FORMFIELD command 629
WEB STARTBROWSE FORMFIELD command 664

FREE (APPC) command 189
FREE (LUTYPE6.1) command 191
FREE (MRO) command 191
FREE command 189
free main storage 193, 196

FREEMKB option
SEND CONTROL command 466
SEND MAP command 471
SEND MAP MAPPINGDEV command 476
SEND TEXT command 483
SEND TEXT NOEDIT command 490

FREEMKB value
DFHMDI 801
DFHMSD 810

FREEMAIN command 193
FREEMAIN64 command 196

FROM option
CONVERSE (non-z/OS Communications Server) command 94
CONVERSE (z/OS Communications Server) command 88
DUMP TRANSACTION command 146
ENTER TRACENUM command 158
GDS SEND command 215
ISSUE ADD command 273
ISSUE PASS command 289
ISSUE REPLACE command 295
ISSUE SEND command 298
PUT CONTAINER (BTS) command 332
PUT CONTAINER (CHANNEL) command 335
PUT64 CONTAINER command 339
RECEIVE MAP command 401
RECEIVE MAP MAPPINGDEV command 404
REWRITE command 434
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 457
SEND MAP command 471
SEND MAP MAPPINGDEV command 476
FROM option (continued)
SEND TEXT command 484
SEND TEXT MAPPED command 488
SEND TEXT NOEDIT command 490
SIGNAL EVENT command 493
SPOOLWRITE command 521
START ATTACH command 532
START command 528
WEB CONVERSE command 600
WEB SEND command (Client) 658
WEB SEND command (Server) 649
WRITE command 672
WRITE JOURNALNAME command 678
WRITEQ TD command 684
WRITEQ TS command 687
FROMACTIVITY option
MOVE CONTAINER (BTS) command 322
FROMCCSID option
PUT CONTAINER (CHANNEL) command 335
PUT64 CONTAINER command 339
FROMCHANNEL option
SIGNAL EVENT command 493
FROMCODEPAGE option
GET CONTAINER (CHANNEL) command 335, 339
FROMDOC option
DOCUMENT INSERT command 139
FROMLENGTH option
CONVERSE (non-z/OS Communications Server) command 94
CONVERSE (z/OS Communications Server) command 88
fullword alternative to FROMLENGTH 773
FROMPROCESS option
MOVE CONTAINER (BTS) command 322
FRSET option
SEND CONTROL command 466
SEND MAP command 471
SEND MAP MAPPINGDEV command 476
FRSET value
DFHMDI 801
DFHMSD 810
FSET value
DFHMDF 792
Full Function Logical Unit, 3790 86, 390, 454
FULLDATE option
FORMATTIME 187
fullword length option 773
FUNCERR condition
ISSUE ABORT command 272
ISSUE ADD command 273
ISSUE END command 279
ISSUE ERASE command 283
ISSUE NOTE command 288
ISSUE QUERY command 293
ISSUE REPLACE command 296
ISSUE SEND command 298
FUNCERR condition (continued)
ISSUE WAIT command 302
G
GCHARS option
ASSIGN command 46
GCODES option
ASSIGN command 46
GDS (generalized data stream) 15
GDS ALLOCATE command 197
GDS ASSIGN command 200
GDS CONNECT PROCESS command 201
GDS EXTRACT ATTRIBUTES command 203
GDS EXTRACT PROCESS command 204
GDS FREE command 205
GDS ISSUE ABEND command 206
GDS ISSUE CONFIRMATION command 208
GDS ISSUE ERROR command 209
GDS ISSUE PREPARE command 210
GDS ISSUE SIGNAL command 211
GDS RECEIVE command 213
GDS SEND command 215
GDS WAIT command 217
General Banking Terminal System (2980 General Banking Terminal System) 394
generalized data stream (GDS) 15
generic applid, XRF 42
GENERIC option
DELETE command 115
READ command 350
RESETBR command 417
STARTBR command 542
GET CONTAINER (BTS) command 218
GET CONTAINER (CHANNEL) command 221
GET COUNTER command 225
GET D COUNTER command 225
get main 64-bit storage 233
get main storage 229
GETMAIN command 229
GETMAIN64 command 233
GETNEXT ACTIVITY command 236
GETNEXT CONTAINER (CHANNEL) command 238
GETNEXT CONTAINER command 237
GETNEXT EVENT command 239
GETNEXT PROCESS command 240
GETNEXT TIMER command 241
GINIT operand
DFHMDF 792
GMMI option
ASSIGN command 46
GROUPID option
SIGNON command 495
SIGNON TOKEN command 500
GRPN NAME operand
DFHMDF 792
GTEQ option
READ command 351
RESETBR command 417
STARTBR command 542
HANDLE ABEND command 247
HANDLE AID command 249
header
  browsing 608, 664
  retrieve next 629
HEADER operand
  DFHMDI 801
HEADER option
  SEND TEXT command 484
hhmmss argument, CICS command format 3
HILIGHT operand
  DFHMDF 792
  DFHMDI 801
  DFHMSD 810
HILIGHT option
  ASSIGN command 46
  LOAD command 317
HONEM option
  SEND CONTROL command 466
  SEND MAP command 471
  SEND TEXT command 484
  SEND TEXT NOEDIT command 490
host command processor LU, 3650/3680 453
host conversational LU 3650
(3270) 84, 452
(3653) 84, 453
HOST option
  WEB EXTRACT or EXTRACT WEB command 177, 612
  WEB OPEN command 617
  WEB PARSE URL command 621
HOSTCODEPAGE option
  WEB READ FORMFIELD command 623
  WEB READ QUERY command 627
  WEB RECEIVE command (Server) 635
  WEB SEND command (Server) 650
  WEB STARTBROWSE FORMFIELD command 664
  WEB STARTBROWSE QUERY command 667
HOSTLENGTH option
  WEB EXTRACT or EXTRACT WEB command 177, 612
  WEB OPEN command 618
  WEB PARSE URL command 621
HOSTTYPE option
  WEB EXTRACT or EXTRACT WEB command 177, 612
  WEB PARSE URL command 621
HOURS option
  DEFINE TIMER command 110
  DELAY command 112
  POST command 328
  ROUTE command 439
  START command 528
HTAB operand
  DFHMSD 810
HTTPHEADER option
  WEB READ HTTPHEADER command 625
  WEB READNEXT HTTPHEADER command 630
  WEB WRITE HTTPHEADER command 670
HTTPMETHOD option
  WEB EXTRACT or EXTRACT WEB command 178, 612
HTTPPRNUM option
  WEB OPEN command 618
HTTPVERSION option
  WEB EXTRACT or EXTRACT WEB command 178, 612
HTTPVNUM option
  WEB OPEN command 618
IC value
  DFHMDF 792
IGNORE CONDITION command 252
IGREQCD condition
  CONVERSE (z/OS Communications Server) command 90
  ISSUE SEND command 298
  SEND (z/OS Communications Server) command 459
  SEND CONTROL command 467
  SEND MAP command 473
  SEND PAGE command 480
  SEND TEXT command 486
  SEND TEXT MAPPED command 488
  SEND TEXT NOEDIT command 491
IGREQID condition
  ROUTE command 440
  SEND CONTROL command 467
  SEND MAP command 474
  SEND PAGE command 480
  SEND TEXT command 486
  SEND TEXT MAPPED command 488
  SEND TEXT NOEDIT command 491
ILLOGIC condition
  DELETE command 115
  ENDBR command 150
  ENDBROWSE ACTIVITY command 151
  ENDBROWSE CONTAINER (CHANNEL) command 153
  ENDBROWSE CONTAINER command 152
  ENDBROWSE PROCESS command 154
  GET NEXT ACTIVITY command 237
  GET NEXT CONTAINER (CHANNEL) command 239
  GET NEXT CONTAINER command 238
  GET NEXT PROCESS command 241
  INQUIRE PROCESS command 259
  READ command 354
  READNEXT command 365
  READPREV command 375
  RESETBR command 418
  REWRITE command 435
  SPOOL OPEN INPUT command 512
  SPOOL OPEN OUTPUT command 516
  SPOOL READ command 519
  STARTBR command 544
  UNLOCK command 568
  WEB STARTBROWSE FORMFIELD command 665
  WEB STARTBROWSE HTTPHEADER command 666
  WEB STARTBROWSE QUERY command 667
  WRITE command 674
IMMEDIATE option
  RETURN command 429
implicit SPOOL CLOSE 511
INBFMH condition
  CONVERSE (non-z/OS Communications Server) command 96
  CONVERSE (z/OS Communications Server) command 90
  RECEIVE (non-z/OS Communications Server) command 399
  RECEIVE (z/OS Communications Server) command 392
INCREMENT option
INCREMENT option (continued)
  GET COUNTER command 225
  GET DCOUNTER command 225
  REWIND COUNTER command 430
  REWIND DCOUNTER command 430
INITIAL mode, of an activity 254
INITIAL operand
  DFHMDF 792
initialize main 64-bit storage 233
initialize main storage 229
initiate a task 523
INITIMG option
  GET MAIN command 231
INITPARM option
  ASSIGN command 46
INITPARMLEN option
  ASSIGN command 46
INPARTN option
  ASSIGN command 46
  RECEIVE MAP command 402
input operation without data 777
INPUEVENT option
  LINK ACQPROCESS command 311
  LINK ACTIVITY command 314
  RUN command 443
INPUTMSG option
  LINK command 305
  RETURN command 429
  XCTL command 702
INPUTMSGLEN option
  ASSIGN command 46
  LINK command 305
  RETURN command 429
  XCTL command 702
INQUIRE ACTIVITYID command 252
INQUIRE CONTAINER command 255
INQUIRE EVENT command 257
INQUIRE PROCESS command 258
INQUIRE TIMER command 259
interactive logical units 85, 389, 453
interface processor DFHEAI 12
interpreter logical unit, 3650
INTERVAL option (continued)
  ROUTE command 439
  START command 528
INTO option
  CONVERSE (non-z/OS Communications Server) command 94
  CONVERSE (z/OS Communications Server) command 88
  DOCUMENT RETRIEVE command 142
  EXTRACT LOGONMSG command 169
  GDS RECEIVE command 213
  GET CONTAINER (BTS) command 219
  GET CONTAINER (CHANNEL) command 222
  GET64 CONTAINER command 244
  ISSUE RECEIVE command 293
  READ command 351
  READNEXT command 361
  READPREV command 372
  READQ TD command 378
  READQ TS command 381
  RECEIVE (non-z/OS Communications Server) command 398
  RECEIVE (z/OS Communications Server) command 391
  RECEIVE MAP command 402
  RECEIVE MAP MAPPINGDEV command 404
  RECEIVE PARTN command 406
  RETRIEVE command 422
  SPOOLREAD command 518
  WEB CONVERSE command 602
  WEB RECEIVE command (Client) 641
  WEB RECEIVE command (Server) 635
INTOCCSID option
  GET CONTAINER (CHANNEL) command 222
  GET64 CONTAINER command 245
INTOCODEPAGE option
  GET CONTAINER (CHANNEL) command 223
  GET64 CONTAINER command 245
INVALIDCOUNT option
  VERIFY PASSWORD command 575
  VERIFY PHRASE command 577
INVERRTERM condition
  ROUTE command 440
INVITE option
  GDS SEND command 215
  SEND (non-z/OS Communications Server) command 462
  SEND (z/OS Communications Server) command 458
INVLDLC condition
  ROUTE command 440
  SEND CONTROL command 467
  SEND MAP command 474
  SEND TEXT command 486
INVMPSZ condition
  RECEIVE MAP command 402
  RECEIVE MAP MAPPINGDEV command 405
  SEND MAP command 474
  SEND MAP MAPPINGDEV command 477
INVOKE APPLICATION command 261
INVOKE SERVICE command 264
INVOKE WEBSERVICE command 264, 269
INVOKEPROG option
  ASSIGN command 46
INVPARTN condition
  RECEIVE MAP command 403
  RECEIVE PARTN command 407
INVPARTN condition (continued)
SEND CONTROL command 468
SEND MAP command 474
SEND TEXT command 486
SEND TEXT NOEDIT command 491

INVPARTNSET condition
SEND PARTNSET command 481

INVREQ condition
ACQUIRE command 27
ADD SUBEVENT command 29
ALLOCATE (APPC) command 34
ALLOCATE (LUTYPE6.1) command 36
ALLOCATE (MRO) command 37
ASSIGN command 52
BIF DIGEST command 56
CANCEL (BTS) command 64
CHANGE PASSWORD command 69
CHANGE PHRASE command 67
CHANGE TASK command 70
CHECK ACQPROCESS command 71
CHECK ACTIVITY command 74
CHECK TIMER command 75
CONNECT PROCESS command 77
CONVERSE (z/OS Communications Server) command 90
CONVERTTIME command 98
DEFINE ACTIVITY command 100
DEFINE COMPOSITE EVENT command 102
DEFINE EVENT command 129
DEFINE PROCESS command 108
DEFINE TIME command 111
DELAY command 112
DELETE ACTIVITY command 122
DELETE command 115
DELETE CONTAINER (BTS) command 125
DELETE CONTAINER (CHANNEL) command 126
DELETE COUNTER command 103, 126, 341
DELETE DCOUNTER command 103
DELETE EVENT command 129
DELETE TIMER command 129
DELETEQ TD command 130
DELETEQ TS command 132
DEQ command 134
DUMP TRANSACTION command 148
ENDBR command 150
ENQ command 157
ENTER TRACENUM command 158
EXTRACT ATTACH (LUTYPE6.1) command 161
EXTRACT ATTACH (MRO) command 164
EXTRACT ATTRIBUTES (APPC) command 165
EXTRACT CERTIFICATE command 169
EXTRACT PROCESS command 170
EXTRACT TCPIP command 175
EXTRACT TCT command 176
FORCE TIMER command 184
FORMATTIME command 189
FREE (APPC) command 190
FREE (LUTYPE6.1) command 191
FREE (MRO) command 192
FREEMAIN command 194, 197
GET CONTAINER (BTS) command 219
GET CONTAINER (CHANNEL) command 224
GET64 CONTAINER command 246
GETMAIN64 command 235
HANDLE AID command 250

INVREQ condition (continued)
INQUIRE EVENT command 258
INQUIRE TIMER command 260
INVOKETASK command 263
ISSUE ABEND command 270
ISSUE ABORT command 272
ISSUE ADD command 273
ISSUE CONFIRMATION command 275
ISSUE END command 279
ISSUE ENDFILE command 280
ISSUE ENDOUTPUT command 281
ISSUE EODS command 281
ISSUE ERASE command 283
ISSUE ERASEAUP command 284
ISSUE ERROR command 285
ISSUE NOTE command 288
ISSUE PASS command 289
ISSUE PREPARE command 290
ISSUE PRINT command 291
ISSUE QUERY command 293
ISSUE RECEIVE command 294
ISSUE REPLACE command 296
ISSUE SEND command 298
ISSUE SIGNAL (APPC) command 300
ISSUE WAIT command 302
LINK ACQPROCESS command 312
LINK ACTIVITY command 315
LINK command 307
LOAD command 317
MONITOR command 320
MOVE CONTAINER (BTS) command 323
MOVE CONTAINER (CHANNEL) command 325
POP HANDLE command 326
POST command 329
PURGE MESSAGE command 330
PUT CONTAINER (BTS) command 332
PUT CONTAINER (CHANNEL) command 336
PUT64 CONTAINER command 340
QUERY SECURITY command 347
READ command 354
READNEXT command 365
READPREV command 375
READQ TD command 379
READQ TS command 382
RECEIVE (non-z/OS Communications Server) command 400
RECEIVE MAP command 403
RECEIVE MAP MAPPINGDEV command 405
RECEIVE PARTN command 407
RELEASE command 408
REMOVE SUBEVENT command 409
REQUEST PASSTICKET command 411, 413
RESET ACQPROCESS command 414
RESET ACTIVITY command 415
RESETBR command 419
RESUME command 421
RETRIEVE command 424
RETRIEVE REATTACH EVENT command 425
RETRIEVE SUBEVENT command 427
RETURN command 430
REWRITE command 435
ROUTE command 441
RUN command 444
INVREQ condition (continued)
  SEND (non-z/OS Communications Server) command 463
  FORCE command 468
  MAP command 474
  MAP MAPPINGDEV command 477
  PAGE command 480
  PARTSET command 481
  TEXT command 486
  TEXT MAPPED command 488
  TEXT NOEDIT command 491
  NOEDIT command 494
  SIGNOFF command 497
  SOAPFAULT ADD command 501
  SOAPFAULT CREATE command 504
  SOAPFAULT DELETE command 507
  SPOOLCLOSE command 510
  SPOOL OPEN INPUT command 513
  SPOOL OPEN OUTPUT command 516
  SPOOL READ command 519
  SPOOL WRITE command 522
  START ATTACH command 532
  START BROWSER command 534
  START command 523
  START TRANSID (CHANNEL) command 536
  STARTBROWSER EVENT command 551
  SUSPEND (BTS) command 554
  SYNCPOINT command 555
  SYNCPOINT ROLLBACK command 557
  TEST EVENT command 557
  UNLOCK command 569
  VERIFY PASSWORD command 575
  VERIFY TOKEN command 578
  WAIT CONVID command 583
  WAIT EVENT command 584
  WAIT EXTERNAL command 586
  WAIT TERMINAL command 591
  WAITCICS command 592
  WEB CONVERSE command 606
  WEB END BROWSER FORMFIELD command 609
  WEB END BROWSER HTTPHEADER command 609
  WEB END BROWSER QUERY PARM command 610
  WEB EXTRACT or EXTRACT WEB command 180, 614
  WEB OPEN command 620
  WEB PARSE URL command 622
  WEB READ FORMFIELD command 624
  WEB READ HTTPHEADER command 626
  WEB READ QUERY PARM command 628
  WEB READ NEXT FORMFIELD command 629
  WEB READ NEXT HTTPHEADER command 631
  WEB READ NEXT QUERY PARM command 632
  WEB RECEIVE command 644
  WEB RECEIVE command (Client) 638
  WEB RETRIEVE command 646
  WEB SEND command 661
  WEB SEND command (Server) 651
  WEB START BROWSER FORMFIELD command 665
  WEB START BROWSER HTTPHEADER command 666
  WEB START BROWSER QUERY PARM command 668
  WEB WRITE HTTPHEADER command 670
  WRITE command 674
  WRITE JOURNALNAME command 679
  WRITE OPERATOR command 683

INVREQ condition (continued)
  WRITEQ TD command 684
  WRITEQ TS command 688
  WSA CONTEXT BUILD command 693
  XCTL command 702

INVREQ option
  DOCUMENT RETRIEVE command 142

IOERR condition
  ACQUIRE command 27
  CANCEL (BTS) command 65
  CHECK ACTIVITY command 74
  CHECK TIMER command 75
  DEFINE ACTIVITY command 100
  DEFINE PROCESS command 108
  DELETE ACTIVITY command 122
  DELETE command 115
  DELETE CONTAINER (BTS) command 125
  DUMP TRANSACTION command 148
  ENDBR command 150
  GET CONTAINER (BTS) command 220
  GET NEXT ACTIVITY command 237
  GET NEXT PROCESS command 241
  INQUIRE CONTAINER command 256
  INQUIRE EVENT command 258
  INQUIRE TIMER command 260
  LINK ACQPROCESS command 312
  LINK ACTIVITY command 315
  MOVE CONTAINER (BTS) command 323
  PUT CONTAINER (BTS) command 333
  READ command 355
  READ NEXT command 366
  READ PREV command 376
  READQ TD command 379
  READQ TS command 382
  RESET ACQPROCESS command 414
  RESET ACTIVITY command 416
  RESET BR command 419
  RESUME command 421
  RETRIEVE command 424
  REWRITE command 435
  RUN command 444
  START command 523
  START BR command 544
  START BROWSER CONTAINER command 549
  START BROWSER EVENT command 551
  START BROWSER PROCESS command 552
  SUSPEND (BTS) command 555
  UNLOCK command 569
  WEB CONVERSE command 608
  WEB EXTRACT or EXTRACT WEB command (Client) 180, 614
  WEB OPEN command 619
  WEB RECEIVE command (Client) 645
  WEB SEND command (Client) 663
  WEB SEND command (Server) 653
  WRITE command 674
  WRITE JOURNALNAME command 679
  WRITEQ TD command 684
  WRITEQ TS command 688

IOERR option
  WAIT JOURNALNAME command 588

ISC INVREQ condition
  CANCEL command 63
  DELETE command 115
ISCINVREQ condition (continued)
DELETEQ TD command 130
DELETEQ TS command 132
ENDBR command 151
READ command 356
READNEXT command 366
READPREV command 376
READQ TD command 379
READQ TS command 382
RESETBR command 419
REWRITE command 436
START command 523
START TRANSID (CHANNEL) command 536
UNLOCK command 569
WRITE command 675
WRITEQ TD command 684
WRITEQ TS command 688

ISSUE ABEND command 269
ISSUE ABORT command 270
ISSUE ADD command 272
ISSUE CONFIRMATION command 274
ISSUE COPY (3270 logical) command 275
ISSUE COPY command
    general information 776
ISSUE DISCONNECT (default) command 276
ISSUE DISCONNECT (LUTYPE6.1) command 277
ISSUE DISCONNECT command
    general information 773
ISSUE END command 278
ISSUE ENDFILE command 280
ISSUE ENDOUTPUT command 280
ISSUE EODS command 281
ISSUE ERASE command 282
ISSUE ERASEAUP command
    general information 776
ISSUE ERROR command 284
ISSUE LOAD command 286
ISSUE NOTE command 287
ISSUE PASS command 288
ISSUE PREPARE command 290
ISSUE PRINT command
    general information 776
ISSUE QUERY command 292
ISSUE RECEIVE command 293
ISSUE REPLACE command 295
ISSUE RESET command 297
ISSUE SEND command 297
ISSUE SIGNAL (APPC) command 299
ISSUE SIGNAL (LUTYPE6.1) command 300
ISSUE SIGNAL command
    general information 773
ISSUE WAIT command 301
ISSUE option
    EXTRACT CERTIFICATE command 168
ISSUSERID option
    VERIFY TOKEN command 580
ITEM option
    READQ TS command 381
    WRITEQ TS command 687
ITEMERR condition
    READQ TS command 383
    WRITEQ TS command 688
IUTYPE option (continued)
    BUILD ATTACH (LUTYPE6.1) command 58
    BUILD ATTACH (MRO) command 61
    EXTRACT ATTACH (LUTYPE6.1) command 160
    EXTRACT ATTACH (MRO) command 163

J

JIDERR condition
    WRITE JOURNALNAME command 679
JIDERR option
    WAIT JOURNALNAME command 588
JOURNAL command 303
    journal control
        create a journal record 303
        journal record, creating 677
        journaling commands 20
JOURNALNAME option
    WAIT JOURNALNAME command 588
    WRITE JOURNALNAME command 678
JTYPEID option
    WRITE JOURNALNAME command 679
JUSFIRST option
    SEND TEXT command 484
JUSLAST option
    SEND TEXT command 484
JUSTIFY operand
    DFHMDI 792
    DFHMDI 801
JUSTIFY option
    SEND TEXT command 484

K

katakana and English characters, mixed 406
Katakana and English characters, mixed 93
KATAKANA option
    ASSIGN command 47
katakana terminals
    RECEIVE (non-z/OS Communications Server) command 397
    RECEIVE (z/OS Communications Server) command 390
    RECEIVE MAP command 401
    RECEIVE PARTN command 406
    SEND (non-z/OS Communications Server) command 461
Katakana terminals
    CONVERSE (3270 logical) command 87
    CONVERSE (LUTYPE2/LUTYPE3) command 87
    CONVERSE command (3270 display) 93
    CONVERSE command (3600 BTAM) 93
    CONVERSE command (3735) 93
    CONVERSE command (3740) 93
    CONVERSE command (System/3) 93
    CONVERSE command (System/7) 93
KEEP option
    SPOOLCLOSE command 510
KEYLENGTH option
    DELETE command 115
    ISSUE ERASE command 282
    ISSUE REPLACE command 295
    READ command 351
    READNEXT command 362

852 CICS TS for z/OS: API Reference
KEYLENGTH option (continued)
READPREV command 372
RESETBR command 417
STARTBR command 542
WRITE command 672

KEYNUMBER option
ISSUE ERASE command 282
ISSUE REPLACE command 295

keyword length 773

L

L40, L64, or L80 options
SEND CONTROL command 466
SEND MAP command 472
SEND TEXT command 485
SEND TEXT NOEDIT command 490

label argument, CICS command format 3

LABEL option
HANDLE ABEND command 248

LANG operand
DFHMSD 810

LANGINUSE option
ASSIGN 47
SIGNON command 495
SIGNON TOKEN command 500

language codes 771

LANGUAGECODE option
SIGNON command 495
SIGNON TOKEN command 500

large COMMAREA, channels 122, 125, 221, 323, 334, 341, 427, 536, 701

LAST option
GDS SEND command 216
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 458
SEND CONTROL command 466
SEND MAP command 471
SEND PAGE command 479
SEND TEXT command 484
SEND TEXT MAPPED command 488
SEND TEXT NOEDIT command 490

LAST value
DFHMDI 801

LASTUSETIME option
VERIFY PASSWORD command 575
VERIFY PHRASE command 578

LDC operand
DFHMSD 810

LDC option
CONVERSE (z/OS Communications Server) command 88
ROUTE command 439
SEND (z/OS Communications Server) command 458
SEND CONTROL command 466
SEND MAP command 471
SEND TEXT command 484

LDCMNEM option
ASSIGN command 47

LDCNUM option
ASSIGN command 47

LEAVEKB option (continued)
RECEIVE (non-z/OS Communications Server) command 398
SEND (non-z/OS Communications Server) command 462

LEFT value
DFHMDF 792
DFHMDI 801

LENGERR condition
BIF DEEDIT command 55
BIF DIGEST command 56
CHANGE PHRASE command 67
CONNECT PROCESS command 77
CONVERSE (non-z/OS Communications Server) command 96
CONVERSE (z/OS Communications Server) command 91
DEQ command 134
ENQ command 157
ENTER TRACENUM command 159
EXTRACT PROCESS command 170
EXTRACT TCPIP command 175
GET CONTAINER (BTS) command 220
GET CONTAINER (CHANNEL) command 224
GET64 CONTAINER command 247
GETMAIN command 232
GETMAIN64 command 235
INVOKE APPLICATION command 264
ISSUE COPY (3270 logical) command 276
ISSUE PASS command 289
ISSUE RECEIVE command 294
LINK command 308
LOAD command 318
PUT CONTAINER (CHANNEL) command 337
PUT64 CONTAINER command 340
QUERY SECURITY command 347
READ command 356
READNEXT command 367
READPREV command 376
READQ TD command 379
READQ TS command 383
RECEIVE (non-z/OS Communications Server) command 400
RECEIVE (z/OS Communications Server) command 403
RECEIVE PARTN command 407
RETRIEVE command 424
RETURN command 430
REWRITE command 436
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 459
SEND TEXT command 487
SIGNAL EVENT command 493
SIGNON command 497, 502
SOAPFAULT CREATE command 505, 508
SPOOLOPEN OUTPUT command 517
SPOOLREAD command 519
SPOOLWRITE command 522
START ATTACH command 532
START BREXIT command 534
START command 523
VERIFY PHRASE command 578
VERIFY Token command 581
WEB CONVERSE command 607
WEB EXTRACT or EXTRACT WEB command 180, 615
LOCKED condition
ACQUIRE command 28
CANCEL (BTS) command 65
CHECK ACTIVITY command 74
DELETE ACTIVITY command 122
DELETE command 115
DELETE CONTAINER (BTS) command 125
DELETEQ TD command 130
DELETEQ TS command 132
GET CONTAINER (BTS) command 220
LINK ACTIVITY command 315
MOVE CONTAINER (BTS) command 323
PUT CONTAINER (BTS) command 333
READ command 357
READNEXT command 367
READPREV command 376
READQ TD command 379
RESET ACQPROCESS command 414
RESET ACTIVITY command 416
RESUME command 421
REWRITE command 436
RUN command 445
SUSPEND (BTS) command 555
WRITE command 675
WRITEQ TD command 685
WRITEQ TS command 688
logical device code (LDC) 82
logical messages, BMS
completing a logical message 478
full BMS
ROUTE command 438
purging a logical message 330
routing a logical message 438
LOGMESSAGE option
QUERY SECURITY command 345
LOGMODE option
ISSUE PASS command 289
LU (logical unit)
3270 Information Display System 81, 275, 386, 449
3270 SCS Printer 80, 449
3270-Display, LUTYPE2 79, 385, 448
3270-Display, LUTYPE3 385, 448
3600 (3601) 81, 387, 450
3600 (3614) 82, 388, 451
3600 pipeline 387, 450
3650 host conversational (3270) 84, 452
3650 host conversational (3653) 84, 453
3650 interpreter 83, 281, 286, 388, 452
3650/3680 host command processor 453
3770 batch 86, 389, 454
3790 (3270-display) 86, 397, 455
3790 (3270-printer) 456
3790 full-function 390, 454
3790 full-function or inquiry 86
3790 SCS printer 455
batch 86, 389, 454
conversing with (CONVERSE) 773
interactive 85
reading data from 293, 773
writing data to 272, 773
LUNAME option
ISSUE PASS command 289
LUTYPE2, 3270-Display LU 79, 385, 448
LUTYPE3, 3270-Display LU 385, 448
LUTYPE4
logical unit 79, 385, 448
LUTYPE6.1 logical unit
acquiring a session 35
communicating on LUTYPE6.1 session 80
converting 8-character names to 4 characters 175
disconnecting 277
getting information about 325
receiving data 386
requesting change of direction 300
retrieving values from an LUTYPE6.1 header 159
sending data 448
specifying values for an MRO attach header 60
specifying values for LUTYPE6.1 attach header 58
M
magnetic slot reader (MSR) 785
main 64-bit storage 233
MAIN option
WRITEQ TS command 687
main storage 229
MAJORVERSION option
INVOKE APPLICATION command 262
map definition, BMS 789, 801
MAP option
RECEIVE MAP command 402
RECEIVE MAP MAPPINGDEV command 405
SEND MAP command 472
SEND MAP MAPPINGDEV command 476
MAP value
DFHMSD 810
MAPATTS operand
DFHMDI 801
MAPCOLUMNS option
ASSIGN command 47
MAPFAIL condition
RECEIVE MAP command 403
RECEIVE MAP MAPPINGDEV command 405
MAPHEIGHT option
ASSIGN command 47
MAPLINE option
ASSIGN command 47
MAPONLY option
ASSIGN command 47
MAPPINGDEV option
RECEIVE MAP MAPPINGDEV command 405
SEND MAP MAPPINGDEV command 477
maps, loading 316
mapset definition macro (DFHMSD) 789, 810
MAPSET option
RECEIVE MAP command 402
RECEIVE MAP MAPPINGDEV command 405
SEND MAP command 472
SEND MAP MAPPINGDEV command 477
MAPSFX operand
DFHPDI 819
Index 855
MAPWIDTH option
ASSIGN command 47
MASSINSERT option
WRITE command 672
MAXDATALEN option
EXTRACT TCPIP command 173
MAXFLENGTH option
CONVERSE (non-z/OS Communications Server) command 94
CONVERSE (z/OS Communications Server) command 88
fullword alternative to MAXLENGTH 773
GDS RECEIVE command 213
RECEIVE (non-z/OS Communications Server) command 398
RECEIVE (z/OS Communications Server) command 391
SPOOLREAD command 518
MAXIMUM option
DEFINE COUNTER command 103
DEFINE DCOUNTER command 103
QUERY COUNTER command 341
QUERY DCOUNTER command 341
MAXLENGTH option
CONVERSE (non-z/OS Communications Server) command 94
CONVERSE (z/OS Communications Server) command 88
DOCUMENT RETRIEVE command 142
fullword length alternative (MAXFLENGTH) 773
GDS RECEIVE command 213
RECEIVE (non-z/OS Communications Server) command 398
RECEIVE (z/OS Communications Server) command 391
SPOOLREAD command 518
MAXLIFETIME option
DEQ command 133
ENQ command 156
MAXPROCLEN option
EXTRACT PROCESS command 170
GDS EXTRACT PROCESS command 204
MCC option
SPOOLOPEN OUTPUT command 515
MEDIATYPE option
WEB CONVERSE command 600, 603
WEB RECEIVE (Client) 642
WEB RECEIVE (Server) 636
WEB SEND (Client) 659
WEB SEND (Server) 650
METHOD option
WEB CONVERSE command 600
WEB SEND (Client) 659
METHODLENGTH option
WEB EXTRACT or EXTRACT WEB command 178, 613
MICROVERSION option 47
MILLISECONDS option
FORMATTIME command 187
MINIMUM option
DEFINE COUNTER command 103
DEFINE DCOUNTER command 103
INVOKE APPLICATION command 262
QUERY COUNTER command 341
QUERY DCOUNTER command 341
MINORVERSION option
INVOKE APPLICATION command 263
MINUTES option
DEFINE TIMER command 110
DELAY command 112
POST command 328
ROUTE command 439
START command 529
MMDDYYYY option
FORMATTIME command 187
MODE operand
DFHMSD 810
MODE option
CHECK ACQPROCESS command 71
CHECK ACTIVITY command 73
INQUIRE ACTIVITYID command 254
model codes (terminal) 53
MODENAME option
GDS ALLOCATE command 198
modes, of an activity
ACTIVE 254
CANCELLING 254
COMPLETE 254
DORMANT 254
INITIAL 254
MONITOR command 319
monitoring application performance 319
monitoring commands 20
MONTH option
DEFINE TIMER command 110
MONTHOFYEAR option
FORMATTIME command 187
MOVE CONTAINER (BTS) command 321
MOVE CONTAINER (CHANNEL) command 323
MSR (magnetic slot reader)
control byte values and constants 785
DFHMSRCA, 785
MSR option
SEND CONTROL command 466
SEND MAP command 472
SEND TEXT command 485
MSRCONTROL option
ASSIGN command 47
multi region operation (MRO) commands
ALLOCATE 36
BUILD ATTACH 60
CONVERSE command 92
EXTRACT ATTACH 162
EXTRACT ATTRIBUTES 165
FREE 191
RECEIVE 394
SEND 460
MUSTENTER value
DFHMDF 792
DFHMDI 801
DFHMSD 810
MUSTFILL value
DFHMDF 792
DFHMDI 801
DFHMSD 810

name argument, CICS command format 3
NAME option
   WAIT EVENT command 584
   WAIT EXTERNAL command 585
   WAITCICS command 592
named counter
   define named counter 103
   delete named counter 126
   query named counter 341
named counter server commands 20
named counter server, GET command 225
named counter server, REWIND command 430
named counter server, UPDATE command 570
NAMELENGTH option
   WEB READ FORMFIELD command 624
   WEB READ HTTPHEADER command 625
   WEB READ QUERYPARM command 628
   WEB READNEXT FORMFIELD command 629
   WEB READNEXT HTTPHEADER command 630
   WEB READNEXT QUERYPARM command 632
   WEB STARTBROWSE FORMFIELD command 665
   WEB STARTBROWSE QUERYPARM command 667
   WEB WRITE HTTPHEADER command 670
national language codes 771
NATLANG option
   SIGNON command 496
   SIGNON TOKEN command 500
NATLANGINUSE option
   ASSIGN command 48
   SIGNON command 496
   SIGNON TOKEN command 501
NETNAME option
   ASSIGN command 48
   EXTRACT TCT command 175
NETNAMEIDERR condition
   ALLOCATE (APPC) command 34
new tasks, passing data to 523
NEWPASSWORD option
   CHANGE PASSWORD command 68
   SIGNON command 496
NEWPHRASE option
   CHANGE PHRASE command 66
   SIGNON command 496
NEWPHRASELEN option
   CHANGE PHRASE command 67
   SIGNON command 496
NEXT option
   READQ TS command 382
NEXT value
   DFHMDI 801
NEXTTRANSID option
   ASSIGN command 48
NLEOM option
   ROUTE command 440
   SEND MAP command 472
   SEND TEXT command 485
NO value
   DFHMDI 801
   DFHMSD 810
NOAUTOPAGE option
   SEND PAGE command 479
NOCC option
   SPOOLOPEN OUTPUT command 515
NOCHECK option
   DEFINE PROCESS command 107

NOCHECK option (continued)
   START command 529
NODATA option
   GET CONTAINER (BTS) command 219
   GET CONTAINER (CHANNEL) command 223
   GET64 CONTAINER command 245
NODE option
   SPOOLOPEN OUTPUT command 515
NODEIDERR condition
   SPOOLOPEN OUTPUT command 517
NODUMP option
   ABEND command 25
NOFLUSH option
   SEND MAP command 472
NOHANDLE option
   option 10
   overriding HANDLE AID 11
NO3BUFSP condition
   WRITE JOURNALNAME command 680
NONVAL condition
   ISSUE LOAD command 286
NOPASSBKRD condition
   RECEIVE (non-z/OS Communications Server) command 400
NOPASSBKWR condition
   SEND (non-z/OS Communications Server) command 463
NOQUEUE option
   ALLOCATE (APPC) command 33
   ALLOCATE (LUTYPE6.1) command 35
   ALLOCATE (MRO) command 37
   GDS ALLOCATE command 198
NOQUIESCE
   ISSUE PASS command 289
NORM value
   DFHMDF 792
NOSPHERE condition
   DUMP TRANSACTION command 148
   REWRITE command 436
   WRITE command 675
   WRITEQ TD command 685
   WRITEQ TS command 689
NOSPPOOL condition
   SPOOLCLOSE command 510
   SPOOLOPEN INPUT command 512
   SPOOLOPEN OUTPUT command 517
   SPOOLREAD command 520
   SPOOLWRITE command 522
NOSTART condition
   ISSUE LOAD command 287
NOSTG condition
   DUMP TRANSACTION command 148
   GETMAIN command 232
   GETMAIN64 command 235
   SPOOLCLOSE command 510
   SPOOLOPEN INPUT command 512
   SPOOLOPEN OUTPUT command 517
   SPOOLREAD command 520
   SPOOLWRITE command 522
NOSUSPEND option
   ALLOCATE (APPC) 32
   ALLOCATE (LUTYPE6.1) command 35
   DEFINE COUNTER command 103
   DEFINE DCOUNTER command 103

Index 857
NOSUSPEND option (continued)
DELETE 115
DELETE COUNTER command 126
DELETE DCOUNTER command 126
ENQ command 156
FETCH CHILD command 182, 183
GET COUNTER command 225
GET DCOUNTER command 225
GETMAIN command 231
GETMAIN64 command 235
QUERY COUNTER command 341
READ command 352
READNEXT command 363
READPREV command 372
READQ TD command 378
REWRITE command 434
UPDATE COUNTER command 570
UPDATE DCOUNTER command 570
WRITE command 672
WRITE JOURNALNAME command 679
WRITEQ TS command 687

NOTALLOC condition
CONNECT PROCESS command 77
CONVERSE (non-z/OS Communications Server) command 96
CONVERSE (z/OS Communications Server) command 91
EXTRACT ATTACH (LUTYPE6.1) command 162
EXTRACT ATTACH (MRO) command 164
EXTRACT ATTRIBUTES (APPC) command 165
EXTRACT ATTRIBUTES (MRO) command 166
EXTRACT LOGONMSG command 170
EXTRACT PROCESS command 170
EXTRACT TCT command 176
FREE (APPC) command 191
FREE (LUTYPE6.1) command 191
FREE (MRO) command 192
FREE command 189
ISSUE ABEND command 270
ISSUE CONFIRMATION command 275
ISSUE COPY (3270 logical) command 276
ISSUE DISCONNECT (LUTYPE6.1) command 278
ISSUE ENDFILE command 280
ISSUE ENDOUTPUT command 281
ISSUE EODS command 281
ISSUE ERASEAUP command 284
ISSUE ERROR command 286
ISSUE LOAD command 287
ISSUE PASS command 289
ISSUE PREPARE command 291
ISSUE PRINT command 292
ISSUE SIGNAL (APPC) command 300
ISSUE SIGNAL (LUTYPE6.1) command 301
POINT command 326
RECEIVE (non-z/OS Communications Server) command 400
RECEIVE (z/OS Communications Server) command 393
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 459
WAIT CONVID command 583
WAIT SIGNAL command 590
WAIT TERMINAL command 591

NOTAUTH condition
ACQUIRE command 28
CANCEL (BTS) command 65
CANCEL command 63
CHANGE PASSWORD command 67, 69
DEFINE ACTIVITY command 100
DEFINE PROCESS command 108
DELETE command 115
DELETEQ TD command 131
DELETEQ TS command 132
ENDBR command 151
HANDLE ABEND command 248
INQUIRE ACTIVITY1D command 255
INQUIRE CONTAINER command 256
INQUIRE EVENT command 258
INQUIRE PROCESS command 259
INQUIRE TIMER command 260
INVOKE APPLICATION command 264
LINK ACQPROCESS command 312
LINK ACTIVITY command 316
LINK command 308
LOAD command 318
READ command 357
READNEXT command 367
READPREV command 372
READQ TD command 378
REWRITE command 437
RUN command 445
SIGNON command 498, 502
SPOOLOPEN INPUT command 512
START ATTACH command 532
START BREXIT command 534
START command 523
START TRANSID (CHANNEL) command 536
STARTBR command 545
STARTBROWSE ACTIVITY command 547
STARTBROWSE CONTAINER command 549
STARTBROWSE EVENT command 551
STARTBROWSE PROCESS command 552
UNLOCK command 569
VERIFY PASSWORD command 575
VERIFY PHRASE command 578
VERIFY Token command 582
WEB CONVERSE command 608
WEB OPEN command 620
WEB SEND command (Client) 663
WRITE command 676
WRITE JOURNALNAME command 680
WRITEQ TD command 685
WRITEQ TS command 689
XCTL command 703

NOTFND condition
CANCEL command 63
DELETE command 115
DELETE COUNTER command 225, 430, 570
QUERY SECURITY command 347
READ command 357
READNEXT command 367
READPREV command 376
NOTFND condition (continued)
  RESETBR command 419
  REWRITE 436
  SOAPFAULT DELETE command 509
  SPOOLCLOSE command 510
  SPOOLOPEN INPUT command 513
  SPOOLOPEN OUTPUT command 517
  SPOOLREAD command 520
  STARTBR command 545
  WEB CONVERSE command 608
  WEB EXTRACT or EXTRACT WEB command 180, 615
  WEB OPEN command 620
  WEB READ FORMFIELD command 625
  WEB READ HTTPHEADER command 626
  WEB READ QUERYPARAM command 628
  WEB RECEIVE command (Server) 639
  WEB RETRIEVE command 646
  WEB SEND command (Client) 663
  WEB SEND command (Server) 653
  WEB STARTBROWSE FORMFIELD command 665
  WEB STARTBROWSE HTTPHEADER command 666
  WEB STARTBROWSE QUERYPARAM command 668
NOWAIT option
  DOCUMENT RETRIEVE command 142
  ISSUE REPLACE command 296
  ISSUE SEND command 298
  NOWAIT option (continued)
  ISSUE REPLACE command 296
  ISSUE SEND command 298
  NSCONTAINER option
  TRANSFORM XMLTODATA command 565
  NUM value
  DFHMDI 792
  NUMBER value
  DFHMDI 792
  NUMCIPHERS option
  WEB OPEN command 618
  NUMEVENTS option
  WAIT EXTERNAL command 585
  WAITCICS command 592
  NUMITEMS option
  READQ TS command 382
  WRITEQ TS command 687
  NUMREC option
  DELETE command 115
  ISSUE ADD command 273
  ISSUE ERASE command 282
  ISSUE REPLACE command 296
  NUMROUTES option
  WRITE OPERATOR command 682
  NUMSEGMENTS option
  DUMP TRANSACTION command 146
  NUMTAB option
  ASSIGN command 48
  O
  OBFMT operand
  DFHMDI 801
  DFHMSD 810
  OCCURS operand
  DFHMDI 792
  OFF value
  DFHMDI 792
  DFSMD 810
  OIDCARD option
  SIGNON command 496
  ON option
  DEFINE TIMER command 110
  OPCLASS option
  ASSIGN command 48
  ROUTE command 440
  OPENERR condition
  DUMP TRANSACTION command 149
  SPOOLOPEN INPUT command 513
  SPOOLOPEN OUTPUT command 517
  OPERATION option
  INVOKE APPLICATION command 263
  OPERID option
  HANDLE AID command 249
  OPERKEYS option
  ASSIGN command 48
  OPERPURGE option
  SEND PAGE command 479
  OPCODE option
  ASSIGN command 48
  OPSECURITY option
OPSECURITY option (continued)
  ASSIGN command 48
options
    BMS 401, 404, 482
    length 773
OPTIONS(MAIN)
in PL/I 12
OR option
  DEFINE COMPOSITE EVENT command 102
ORGABCODE option
  ASSIGN command 48
ORGANIZATION option
  EXTRACT CERTIFICATE command 168
ORGANIZATLEN option
  EXTRACT CERTIFICATE command 168
ORGUNIT option
  EXTRACT CERTIFICATE command 168
ORGUNITLEN option
  EXTRACT CERTIFICATE command 168
OUTDESCR option
  SPOOLOPEN OUTPUT command 515
OUTDESCRERR condition
  SPOOLOPEN OUTPUT command 518
OUTLINE operand
  DFHMDF 792
  DFHMDI 801
  DFHMSD 810
OUTLINE option
  ASSIGN command 48
OUTPARTN option
  SEND CONTROL command 467
  SEND MAP command 473
  SEND TEXT command 485
  SEND TEXT NOEDIT command 491
output control, 2980 General Banking Terminal System 395
output to common buffer, 2980 396
OVERFLOW condition
  SEND MAP command 474
OWNER option
  EXTRACT CERTIFICATE command 168

PARTNER option (continued)
  CONNECT PROCESS command 76
  GDS ALLOCATE command 198
  GDS CONNECT PROCESS command 201
PARTNERIDERR condition
  ALLOCATE (APPC) command 34
  CONNECT PROCESS command 77
PARTNFLAIL condition
  RECEIVE MAP command 403
PARTNPAGE option
  ASSIGN command 49
PARTNS option
  ASSIGN command 49
PARTNSET option
  ASSIGN command 49
PASSBK option
  RECEIVE (non-z/OS Communications Server) command 398
  SEND (non-z/OS Communications Server) command 462
passbook control, 2980 395
passing a session 288
passing control
  on receipt of an AID (HANDLE AID command) 249
  without return (XCTL) 701
passing data to new tasks 523
PASSTICKET option
  REQUEST PASSTICKET 413
PASSWORD option
  CHANGE PASSWORD command 68
  SIGNON command 496
  VERIFY PASSWORD command 575
  WEB CONVERSE command 601
  WEB SEND command (Client) 660
password phrase
  WEB CONVERSE command 601
PASSWORDLEN option
  WEB CONVERSE command 601
  WEB SEND command (Client) 660
PATH option
  WEB CONVERSE command 601
  WEB EXTRACT or EXTRACT WEB command 178, 613
  WEB PARSE URL command 622
  WEB SEND command (Client) 660
PATHLENGTH option
  WEB CONVERSE command 601
  WEB EXTRACT or EXTRACT WEB command 178, 613
  WEB PARSE URL command 622
  WEB SEND command (Client) 660
PCT option
  DUMP TRANSACTION command 146
performance, application, monitoring 319
PF1–24 option
  HANDLE AID command 249
PFXLENG option
  WRITE JOURNALNAME command 679
PGMIDERR condition
  HANDLE ABEND command 248
  INVOKE APPLICATION command 264
  LINK ACQPROCESS command 312
  LINK ACTIVITY command 316
  LINK command 308
  LOAD command 318
  RELEASE command 408
PROCESSBUSY condition (continued)
- DELETE CONTAINER (BTS) command 125
- GET CONTAINER (BTS) command 220
- LINK ACQPROCESS command 313
- PUT CONTAINER (BTS) command 333
- RESET ACQPROCESS command 414
- RUN command 445

PROCESSERR condition
- ACQUIRE command 28
- CANCEL (BTS) command 65
- DEFINE PROCESS command 108
- GETNEXT PROCESS command 241
- INQUIRE CONTAINER command 256
- INQUIRE PROCESS command 259
- LINK ACQPROCESS command 313
- RESUME command 421
- RUN command 445
- STARTBROWSE ACTIVITY command 547
- STARTBROWSE CONTAINER command 548
- STARTBROWSE PROCESS command 551
- SUSPEND (BTS) command 555

processing state, of an activity
- ACTIVE 254
- CANCELLING 254
- COMPLETE 254
- DORMANT 254
- INITIAL 254

processing task, control delay of 112

PROCESSTYPE option
- ACQUIRE command 27
- ASSIGN command 49
- DEFINE PROCESS command 107
- INQUIRE ACTIVITYID command 254
- INQUIRE CONTAINER command 256
- INQUIRE PROCESS command 259
- STARTBROWSE ACTIVITY command 547
- STARTBROWSE CONTAINER command 548
- STARTBROWSE PROCESS command 551

PROCLENGTH option
- CONNECT PROCESS command 76
- EXTRACT PROCESS command 170
- GDS CONNECT PROCESS command 201
- GDS EXTRACT PROCESS command 205

PROCNAME option
- CONNECT PROCESS command 76
- EXTRACT PROCESS command 170
- GDS CONNECT PROCESS command 201
- GDS EXTRACT PROCESS command 205

PROFILE option
- ALLOCATE (APPC) command 34
- ALLOCATE (LUTYPE6.1) command 35
- ALLOCATE (MRO) command 37

program control
- commands 20
- deleting loaded program 407
- LINK command options 304
- load a program, table, or map 316
- returning program control 427
- transfer program control 701

PROGRAM option
- ASSIGN command 49
- DEFINE ACTIVITY command 99
- DEFINE PROCESS command 108

PROGRAM option (continued)
- DUMP TRANSACTION command 146
- HANDLE ABEND command 248
- INQUIRE ACTIVITYID command 254
- ISSUE LOAD command 286
- LINK command 306
- LOAD command 317
- RELEASE command 408
- XCTL command 702

PROT value
- DFHMDF 792

PROTECT option
- START command 529

PS operand
- DFHMDF 792
- DFHMDI 801
- DFHMSD 810

PS option
- ASSIGN command 49
- PSEUDOBIN option
- CONVERSE (non-z/OS Communications Server) command 95
- RECEIVE (non-z/OS Communications Server) command 398
- SEND (non-z/OS Communications Server) command 462

psid value
- DFHMDF 792
- DFHMDI 801
- DFHMSD 810

ptr-ref64
- command format 3

ptr-value64
- command format 3

PUNCH option
- SPOOLOPEN OUTPUT command 515
- PURGE MESSAGE command 330

PURGEABILITY option
- WAIT EXTERNAL command 585
- WAITCICS command 592

PUSH HANDLE command 330

PUT CONTAINER (BTS) command 331

PUT CONTAINER (CHANNEL) command 334

PUT64 CONTAINER command 337

Q

QBUSY condition
- READQ TD command 380

QIDERR condition
- DELETQ TD command 131
- DELETQ TS command 132
- QUERY SECURITY command 348
- READQ TD command 380
- READQ TS command 383
- WRITEQ TD command 685
- WRITEQ TS command 689

QNAME option
- ASSIGN command 49
- DELETQ TS command 131
- READQ TS command 382
- WRITEQ TS command 687

QUERY CHANNEL command 341

QUERY COUNTER command 341
REPEATABLE option (continued)
  READ command 352
  READNEXT command 363
  READPREV command 373
REPLY option
  WRITE OPERATOR command 682
REPLYLENGTH option
  WRITE OPERATOR command 682
REQID option
  CANCEL command 63
  DELAY command 112
  ENDBR command 150
  POST command 329
  READNEXT command 363
  READPREV command 373
  RESETBR command 418
  ROUTE command 440
  SEND CONTROL command 467
  SEND JOURNALNAME command 679
  REQUEST ENCRYPTPTKT command 410
  REQUEST PASSTICKET command 412
  REQUESTTYPE option
    WEB EXTRACT or EXTRACT WEB command 179, 613
RESCLASS option
  QUERY SECURITY command 345
RESET ACQPROCESS command 413
RESET ACTIVITY command 415
RESET option
  HANDLE ABEND command 248
reset start for browse 416
RESETBR command 416
RESID option
  QUERY SECURITY command 345
  RESIDLENGTH option
    QUERY SECURITY command 345
RESOURCE option
  BUILD ATTACH (LUTYPE6.1) command 59
  BUILD ATTACH (MRO) command 62
  DEQ command 134
  ENQ command 156
  ENTER TRACENUM command 158
  EXTRACT ATTACH (LUTYPE6.1) command 161
  EXTRACT ATTACH (MRO) command 164
  resource scheduling 133
RESQ option 10
RESQ2 option 10
RESP
  EXPIRED in messages to console operators 683
  INVREQ in messages to console operators 683
  INVREQ in SIGNOFF command (Security control) 494
  INVREQ in SIGNON (Security control) 497, 501
  INVREQ in WAIT EXTERNAL 586
  INVREQ on WAITCICS 593
  LENGERR in messages to console operators 683
  NOTAUTH in SIGNON (Security control) 498
  option 10
  USERIDERR in SIGNON (Security control) 498
  RETURN command 427
  return program control 427
  RETURNPROG option
    ASSIGN command 50
REVERSE value
  ASSIGNED 792
  ASSIGNED 801
  ASSIGNED 810
REWIND COUNTER command 430
REWIND DCOUNTER command 430
REWRITE command 433
REWRITE option
  WRITEQ TS command 688
RIDFLD option
  DELETE command 115
  ISSUE ADD command 273
  ISSUE ERASE command 283
  ISSUE NOTE command 287
  ISSUE REPLACE command 296
  READ command 352
  READNEXT command 364
  READPREV command 373
  RESETBR command 418
  STARTBR command 543
RIDFLD option (continued) WRITE command 673

RIGHT value
  DFHMDF 792
  DFHMDI 801

ROLLBACK option
  SYNCPOINT ROLLBACK command 556

ROLLEDBACK condition
  LINK command 309
  SYNCPOINT command 556

ROUTE command 438
ROUTECODES option
  WRITE OPERATOR command 682

RPROCESS option
  BUILD ATTACH (LUTYPE6.1) command 60
  BUILD ATTACH (MRO) command 62
  EXTRACT ATTACH (LUTYPE6.1) command 161
  EXTRACT ATTACH (MRO) command 164

RRESOURCE option
  BUILD ATTACH (LUTYPE6.1) command 60
  BUILD ATTACH (MRO) command 62
  EXTRACT ATTACH (LUTYPE6.1) command 161
  EXTRACT ATTACH (MRO) command 164

RRN option
  DELETE command 115
  ISSUE ADD command 273
  ISSUE ERASE command 283
  ISSUE NOTE command 287
  ISSUE REPLACE command 296
  READ command 352
  READNEXT command 364
  READPREV command 373
  RESETBR command 418
  STARTBR command 543
  WRITE command 673

RTEFAIL condition
  ROUTE command 441

RTERMID option
  RETRIEVE command 423
  START command 529

RTESOME condition
  ROUTE command 441

RTRANSID option
  RETRIEVE command 423
  START command 529

RUN command 441

S

SAA (Systems Application Architecture) communications (CPI) 779
  Resource Recovery 779

SADDRLENGTH option
  EXTRACT TCPIP command 174

SAME value
  DFHMDI 801

schedule use of resource by task 133, 155
scheduling commands 20

SCHEME option
  WEB EXTRACT or EXTRACT WEB command 179, 614
  WEB OPEN command 618

SCHEMENAME option
  WEB PARSE URL command 622

SCRNHT option (continued)
  ASSIGN command 50

SCRNWD option
  ASSIGN command 50

SCS (SNA character string)
  CONVERSE command 81
  SEND (z/OS Communications Server) command 455
  SEND command 449

SCS printer logical unit, 3790 455
SECONDS option
  DEFINE TIMER command 110
  DELAY command 112
  POST command 329
  ROUTE command 440
  START command 529

security commands 20

SEGMENTLIST option
  DUMP TRANSACTION command 147

SELNERR condition
  ISSUE ABORT command 272
  ISSUE ADD command 274
  ISSUE END command 279
  ISSUE ERASE command 283
  ISSUE NOTE command 288
  ISSUE QUERY command 293
  ISSUE REPLACE command 296
  ISSUE SEND command 298
  ISSUE WAIT command 302
  SEND (2260) command 460
  SEND (2980) command 461
  SEND (3270 logical) command 449
  SEND (3600 pipeline) command 450
  SEND (3600-3601) command 450
  SEND (3600-3614) command 451
  SEND (3650 interpreter) command 452
  SEND (3650-3270) command 452
  SEND (3650-3653) command 453
  SEND (3650-3680) command 453
  SEND (3767) command 453
  SEND (3770) command 454
  SEND (3790 3270-display) command 455
  SEND (3790 3270-printer) command 456
  SEND (3790 full-function or inquiry) command 454
  SEND (3790 SCS) command 455
  SEND (APPC) command 447
  SEND (LUTYPE2/LUTYPE3) command 448
  SEND (LUTYPE4) command 448
  SEND (LUTYPE6.1) command 448
  SEND (MRO) command 460
  SEND (non-z/OS Communications Server default) command 460
  SEND (SCS) command 449
  SEND (z/OS Communications Server default) command 447

send asynchronous interrupt 773
SEND command
  write to terminal 773
SEND CONTROL command 464
SEND MAP command 468
SEND MAP MAPPINGDEV command 475
SEND PAGE command 478
SEND PARTNSET command 481
SEND TEXT command 481
SEND TEXT MAPPED command 487
SEND TEXT NOEDIT command 489
sending data to output device 297
sequential retrieval, browsing
reading records 348
SERIALNUM option
EXTRACT CERTIFICATE command 168
SERIALNUMLEN option
EXTRACT CERTIFICATE command 168
SERVADDRNU option
EXTRACT TCPIP command 174
SERVERADDR option
EXTRACT TCPIP command 174
SERVERCONV option
WEB RECEIVE command (Server) 636
WEB SEND command (Server) 650
SERVERNAME option
EXTRACT TCPIP command 174
SESSBUSY condition
ALLOCATE (LUTYPE6.1) command 36
SESSION option
ALLOCATE (LUTYPE6.1) command 35
CONNECT PROCESS command 76
CONVERSE (non-z/OS Communications Server) command 95
CONVERSE (z/OS Communications Server) command 89
EXTRACT ATTACH (LUTYPE6.1) command 161
EXTRACT ATTACH (MRO) command 164
EXTRACT ATTRIBUTES (MRO) command 166
FREE (LUTYPE6.1) command 191
FREE (MRO) command 192
ISSUE DISCONNECT (LUTYPE6.1) command 278
ISSUE SIGNAL (LUTYPE6.1) command 301
POINT command 326
RECEIVE (non-z/OS Communications Server) command 398
RECEIVE (z/OS Communications Server) command 391
SEND (non-z/OS Communications Server) command 462
SEND (z/OS Communications Server) command 458
WAIT TERMINAL command 590
session, passing 288
SESSIONERR condition
ALLOCATE (LUTYPE6.1) command 36
SESTOKEN option
WEB CLOSE command 595
WEB CONVERSE command 602
WEB EBDENDREAD HTTPHEADER command 609
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB OPEN command 619
WEB READ HTTPHEADER command 625
WEB READNEXT HTTPHEADER command 631
WEB RECEIVE command (Client) 642
WEB SEND command (Client) 660
WEB STARTREAD HTTPHEADER command 666
WEB WRITE HTTPHEADER command 670
SET option
ADDRESS SET command 31
CONVERSE (non-z/OS Communications Server) command 95
CONVERSE (z/OS Communications Server) command 89
EXTRACT LOGONMSG command 169
GDS RECEIVE command 214
GET CONTAINER (BTS) command 219
GET CONTAINER (CHANNEL) command 223
GET64 CONTAINER command 245
Set option (continued)
GETMAIN command 232
GETMAIN64 command 235
INQUIRE CONTAINER command 256
ISSUE RECEIVE command 294
LOAD command 317
POST command 326
READ command 353
READNEXT command 364
READPREV command 373
READQ TD command 378
READQ TS command 382
RECEIVE (non-z/OS Communications Server) command 399
RECEIVE (z/OS Communications Server) command 391
RECEIVE MAP command 402
RECEIVE MAP MAPPINGDEV command 405
RECEIVE PARTN command 406
RETRIEVE command 423
SEND CONTROL command 467
SEND MAP command 473
SEND MAP MAPPINGDEV command 477
SEND PAGE command 479
SEND TEXT command 485
WEB CONVERSE command 603
WEB READ FORMFIELD command 624
WEB READ QUERYPARM command 628
WEB RECEIVE command (Client) 642
WEB RECEIVE command (Server) 637
SHARED option
GETMAIN command 232
GETMAIN64 command 235
SIGDATA option
ASSIGN command 50
SIGNAL condition
CONVERSE (z/OS Communications Server) command 91
ISSUE CONFIRMATION command 275
ISSUE DISCONNECT (default) command 277
ISSUE ERROR command 286
RECEIVE (z/OS Communications Server) command 393
SEND (z/OS Communications Server) command 459
WAIT SIGNAL command 590
WAIT TERMINAL command 591
SIGNAL EVENT command 492
SIGNOFF command 493
SIGNON command 494
SIGNON TOKEN command 498
single thread used with JES 511
SIT option
DUMP TRANSACTION command 147
SIZE operand
DFHMDI 801
SNAMELENGTH option
EXTRACT TCPIP command 174
SOAPFAULT ADD command 503
SOAPFAULT CREATE command 505
SOAPFAULT DELETE command 508
SOSI operand
DFHMDF 792
DFHMDI 801
DFHMSD 810
SOSI option
ASSIGN command 50
SPCOMMAND
SPCOMMAND (continued)
RESID value not valid 347
SPOLBUSY condition
SPOOLOPEN INPUT command 513
SPOOLOPEN OUTPUT command 518
SPOLE condition
SPOOLOPEN INPUT command 513
SPOOLREAD command 520
SPOOLWRITE command 523
SPOOL commands 20
SPOOLCLOSE command 509
SPOOLCLOSE, implicit 511
SPOOLOPEN INPUT command 511
SPOOLOPEN OUTPUT 514
SPOOLREAD command 518
SPOOLWRITE command 521
SRVADDR6NU option
EXTRACT TCPIP command 174
SRVRIPE option
EXTRACT TCPIP command 174
SSLTYPE option
EXTRACT TCPIP command 174
STAE option, PL/I 25
standard attribute and printer control character list, BMS (DFHBMSCA) 781
START ATTACH command 532
START CHANNEL command 536
START command 523, 534
STARTBR command 541
STARTBROWSE ACTIVITY command 546
STARTBROWSE CONTAINER (CHANNEL) command 549
STARTBROWSE CONTAINER command 548
STARTBROWSE EVENT command 550
STARTBROWSE PROCESS command 551
STARTCODE option
ASSIGN command 50
STATE option
ALLOCATE (APPC) command 34
ALLOCATE (MRO) command 37
CONNECT PROCESS command 76
CONVERSE (non-z/OS Communications Server) command 95
CONVERSE (z/OS Communications Server) command 89
EXTRACT ATTRIBUTES (APPC) command 165
EXTRACT ATTRIBUTES (MRO) command 166
EXTRACT CERTIFICATE command 168
FREE (APPC) command 190
FREE (MRO) command 192
GDS ALLOCATE command 198
GDS CONNECT PROCESS command 202
GDS EXTRACT ATTRIBUTES command 203
GDS FREE command 206
GDS ISSUE ABEND command 207
GDS ISSUE CONFIRMATION command 208
GDS ISSUE ERROR command 209
GDS ISSUE PREPARE command 211
GDS ISSUE SIGNAL command 212
GDS RECEIVE command 214
GDS SEND command 216
GDS WAIT command 217
ISSUE ABEND command 269
ISSUE CONFIRMATION command 274
ISSUE ERROR command 285
ISSUE PREPARE command 290
STATE option (continued)
ISSUE SIGNAL (APPC) command 299
RECEIVE (non-z/OS Communications Server) command 399
RECEIVE (z/OS Communications Server) command 392
SEND (non-z/OS Communications Server) command 463
SEND (z/OS Communications Server) command 458
WAIT CONNECT command 582
STATELEN option
EXTRACT CERTIFICATE command 168
STATIONID option
ASSIGN command 51
STATUS option
CHECK TIMER command 74
INQUIRE TIMER command 260
STATUSCODE option
WEB CONVERSE command 603
WEB RECEIVE command (Client) 642
WEB SEND command (Server) 651
STATUSLEN option
WEB CONVERSE command 603
WEB RECEIVE command (Client) 643
WEB SEND command (Server) 651
storage control commands 21
STORAGE operand
DFHMSD 810
STORAGE option
DUMP TRANSACTION command 147
STRELE option
SPOOLCLOSE command 511
SPOOLOPEN INPUT command 513
SPOOLOPEN OUTPUT command 518
SPOOLREAD command 520
SPOOLWRITE command 523
STRINGFORMAT option
FORMATTIME command 187
STRINGZONE option
FORMATTIME command 188
stub, program 12
SUBADDR option
ISSUE ABORT command 271
ISSUE END command 279
ISSUE SEND command 298
ISSUE WAIT command 302
SUBEVENT option
ADD SUBEVENT command 29
DEFINE COMPOSITE EVENT command 102
REMOVE SUBEVENT command 409
RETRIEVE SUBEVENT command 426
SUFFIX operand
DFHMSD 810
DFHPSD 821

Index 867
SUPPRESSED condition
DUMP TRANSACTION command 149
GET COUNTER command 225
REWIND COUNTER command 430
UPDATE COUNTER command 570
WRITE command 676
SUSPEND (BTS) command 553
SUSPEND command 553
SUSPSTATUS option
CHECK ACQPROCESS command 71
CHECK ACTIVITY command 73
INQUIRE ACTIVITYID command 254
switched line disconnection 773
SYMBOL option
DOCUMENT INSERT command 139
DOCUMENT SET command 143
SYMBOLERR condition
DOCUMENT SET command 144
SYMBOLLIST option
DOCUMENT SET command 136
synchronization levels
basic conversations 205
synchronize, action
journal output (WAIT JOURNALNAME) 587
terminal input/output 773
SYNCHRONOUS option
RUN command 444
SYNCELEVEL option
CONNECT PROCESS command 76
EXTRACT PROCESS command 170
GDS CONNECT PROCESS command 202
GDS EXTRACT PROCESS command 205
SYNCONRETURN option
LINK command 306
syncpoint
backing out 556
commands 21
establishing 555
SYNCPPOINT command 555
SYNCPPOINT ROLLBACK command 556
syntax notation 1
SYSBUSY condition
ALLOCATE (APPC) command 34
ALLOCATE (LUTYPE6.1) command 36
ALLOCATE (MRO) command 37
SYSID option
ALLOCATE (APPC) command 34
ALLOCATE (LUTYPE6.1) command 35
ALLOCATE (MRO) command 37
ASSIGN command 51
CANCEL command 63
DELETE command 115
DELETEQ TD command 130
DELETEQ TS command 132, 688
ENDBR command 150
EXTRACT TCT command 175
GDS ALLOCATE command 199
LINK command 306
READ command 353
READNEXT command 364
READPREV command 374
READQ TD command 379
READQ TS command 382
RESETBR command 418
SYSID option (continued)
REWRITE command 434
START command 529
START TRANSID (CHANNEL) command 536
STARTBR command 543
UNLOCK command 568
WRITE command 673
WRITEQ TD command 684
SYSIDERR condition
ALLOCATE (APPC) command 34
ALLOCATE (LUTYPE6.1) command 36
ALLOCATE (MRO) command 37
CANCEL command 64
DELETE command 115
DELETEQ TD command 131
DELETEQ TS command 132
ENDBR command 151
LINK command 310
READ command 358
READNEXT command 368
READPREV command 377
READQ TD command 380
READQ TS command 383
RESETBR command 420
REWRITE command 437
START command 523
START TRANSID (CHANNEL) command 536
STARTBR command 546
UNLOCK command 570
WRITE command 677
WRITEQ TD command 685
WRITEQ TS command 689
systemname
definition 4–7, 9
systemname argument, CICS command format 3

T

TABLES option
DUMP TRANSACTION command 147
tables, loading 316
task
initiation 523
task control commands 21
TASK option
DUMP TRANSACTION command 147
task, abnormal termination 247
task, delay processing of 112
TASKDATALOC resource definition option 31
TASKPRIORITY option
ASSIGN command 51
TCP/IP services 21
TCPIPSERVICE option
EXTRACT TCPIP command 174
TCT option
DUMP TRANSACTION command 147
TCTUA option
ADDRESS command 31
TCTUALENG option
ASSIGN command 51
tele typewriter
messages 774
programming 774
TELLERID option
TOFLENGTH option (continued)
CONVERSE (non-z/OS Communications Server) command 95
CONVERSE (z/OS Communications Server) command 90
fullword alternative to TOLENGTH 773
SPOOLREAD command 519

TOKEN option
DELETE command 115
READ command 353
READNEXT 364
READPREV command 374
REWRITE command 434
SIGNON TOKEN command 501
SPOOLCLOSE command 510
SPOOLOPEN INPUT command 512
SPOOLOPEN OUTPUT command 516
SPOOLREAD command 519
SPOOLWRITE command 521
UNLOCK command 568
VERIFY TOKEN command 581

TOKENERR condition
ENDBROWSE ACTIVITY command 152
ENDBROWSE CONTAINER (CHANNEL) command 153
ENDBROWSE CONTAINER command 152
ENDBROWSE EVENT command 153
ENDBROWSE PROCESS command 154
GETNEXT ACTIVITY command 237
GETNEXT CONTAINER (CHANNEL) command 239
GETNEXT CONTAINER command 238
GETNEXT EVENT command 240
GETNEXT PROCESS command 241
WEB CONVERSE command 608
WEB SEND command (Client) 664

TOKENLEN option
SIGNON TOKEN command 501
VERIFY TOKEN command 581

TOKENETYPE option
SIGNON TOKEN command 501
VERIFY TOKEN command 581

TOLENGTH option
CONVERSE (non-z/OS Communications Server) command 95
CONVERSE (z/OS Communications Server) command 90
fullword length alternative (TOFLENGTH) 773
WEB CONVERSE command 604

TOPROCESS option
MOVE CONTAINER (BTS) command 322

TRACENUM option
ENTER TRACENUM command 158

TRAILER operand
DFHMDI 801

TRAILER option
SEND PAGE command 479
SEND TEXT command 486

TRANPRIORITY option
ASSIGN command 52
transfer program control 701
TRANSFORM DATATOXML command 559
TRANSFORM XMLTODATA command 564
TRANSID option
CANCEL command 63
DEFINE ACTIVITY command 99
DEFINE PROCESS command 108
INQUIRE ACTIVITYID command 254

TRANSID option (continued)
LINK command 307
RETURN command 429
RUN TRANSID command 446
SEND PAGE command 480
START ATTACH command 532
START BREXIT command 534
START command 523
START TRANSID (CHANNEL) command 536
TRANSIDERR condition
DEFINE ACTIVITY command 100
DEFINE PROCESS command 109
START ATTACH command 532
START BREXIT command 534
START command 523
START TRANSID (CHANNEL) command 536
transient data commands 24

TSIOERR condition
PURGE MESSAGE command 330
SEND CONTROL command 468
SEND MAP command 474
SEND PAGE command 480
SEND TEXT command 487
SEND TEXT MAPPED command 489
SEND TEXT NOEDIT command 492

TWA option
ADDRESS command 31

TWALENG option
ASSIGN command 52
type codes (terminal) 53

TYPE operand
DFHMSD 810

TYPE option
WEB RECEIVE command (Server) 637

TYPENAME option
TRANSFORM XMLTODATA command 565

TYPENAMELEN option
TRANSFORM XMLTODATA command 565

TYPENS option
TRANSFORM XMLTODATA command 565

TYPENSLEN option
TRANSFORM XMLTODATA command 565

U

UNATTEND option
UNATTEND option (continued)
ASSIGN command 52
UNCOMMITTED
READ command 353
UNCOMMITTED option
READNEXT 364
READPREV command 374
UNDERLINE value
DFHMDF 792
DFHMDI 801
DFHMSD 810
UNEXPIN condition
ISSUE ABORT command 272
ISSUE ADD command 274
ISSUE END command 280
ISSUE ERASE command 283
ISSUE NOTE command 288
ISSUE QUERY command 293
ISSUE RECEIVE command 294
ISSUE REPLACE command 296
ISSUE SEND command 299
ISSUE WAIT command 302
RECEIVE MAP command 403
UNLOCK command 567
UNPROT value
DFHMDF 792
UNTIL option
DELAY command 112
UPDATE COUNTER command 570
UPDATE DCOUNTER command 570
UPDATE option
QUERY SECURITY command 346
READ command 353
READNEXT 365
READPREV command 374
updating records
batch data interchange 295
file control 433
URIMAP option
WEB EXTRACT or EXTRACT WEB command 179, 614
WEB OPEN command 602, 619, 660
URL option
WEB PARSE URL command 622
URLLENGTH option
WEB PARSE URL command 622
USERDATAKEY option
GETMAIN command 232
GETMAIN64 command 235
USEREXIT value
DFHMDF 792
DFHMDI 801
DFHMSD 810
USERID option
ASSIGN command 52
CHANGE PASSWORD command 68
CHANGE PHRASE command 67
DEFINE ACTIVITY command 99
DEFINE PROCESS command 108
EXTRACT CERTIFICATE command 168
INQUIRE ACTIVITYID command 254
SIGNON command 497
SPOOLOPEN INPUT command 512
SPOOLOPEN OUTPUT command 516
START BREXIT command 534
USERID option (continued)
START command 523
START TRANSID (CHANNEL) command 536
VERIFY PASSWORD command 575
VERIFY PHRASE command 578
USERIDERR condition
CHANGE PASSWORD command 68, 69
SIGNON command 498
START BREXIT command 534
START command 523
START TRANSID (CHANNEL) command 536
VERIFY PASSWORD command 576
VERIFY PHRASE command 579
USERNAME option
ASSIGN command 52
WEB CONVERSE command 602
WEB SEND command (Client) 661
USERNAMELEN option
WEB CONVERSE command 602
WEB SEND command (Client) 661
USERPRIORITY option
ASSIGN command 52
USING option
ADDRESS SET command 32
UTC 188
V
VALIDATION option
ASSIGN command 52
VALIDN operand
DFHMDF 792
DFHMDI 801
DFHMSD 810
VALUE option
DEFINE COUNTER command 103
DEFINE DCOUNTER command 103
DOCUMENT SET command 144
GET COUNTER command 225
GET DCOUNTER command 225
QUERY COUNTER command 341
QUERY DCOUNTER command 341
UPDATE COUNTER command 570
UPDATE DCOUNTER command 570
WEB READ FORMFIELD command 624
WEB READ HTTPHEADER command 626
WEB READ QUERYPARM command 628
WEB READNEXT FORMFIELD command 629
WEB READNEXT HTTPHEADER command 631
WEB READNEXT QUERYPARM command 632
WEB WRITE HTTPHEADER command 670
VALUELENGTH option
WEB READ FORMFIELD command 624
WEB READ HTTPHEADER command 626
WEB READ QUERYPARM command 628
WEB READNEXT FORMFIELD command 629
WEB READNEXT HTTPHEADER command 631
WEB READNEXT QUERYPARM command 632
WEB WRITE HTTPHEADER command 670
VERIFY PASSWORD command 573
VERIFY PHRASE command 576
VERIFY TOKEN command 579
VERSIONLEN option
WEB EXTRACT or EXTRACT WEB command 179, 614
VIEWPOS operand
   DFHPDI 819
VIEWSZ operand
   DFHPDI 819

VOLUME option
   ISSUE ABORT command 271
   ISSUE ADD command 273
   ISSUE END command 279
   ISSUE ERASE command 283
   ISSUE NOTE command 287
   ISSUE QUERY command 292
   ISSUE REPLACE command 296
   ISSUE SEND command 298
   ISSUE WAIT command 302

VOLUMELENG option
   ISSUE ABORT command 271
   ISSUE ADD command 273
   ISSUE END command 279
   ISSUE ERASE command 283
   ISSUE NOTE command 288
   ISSUE QUERY command 292
   ISSUE REPLACE command 296
   ISSUE SEND command 298
   ISSUE WAIT command 302

VSAM WRITE MASSINSERT
   DISABLED cannot occur 568
   NOTOPEN cannot occur 570
   terminate operation 568

VTAB operand
   DFHMSD 810

WEB CICS command 591
   fails
   batch data interchange 301
   for event to occur 583
   terminal control operation 773
   WEB CLOSE command 594
   WEB CONVERSE command 596

WEB END BROWSE FORMFIELD command 608
WEB END BROWSE HTTPHEADER command 609
WEB END BROWSE QUERYPARM command 610
WEB EXTRACT command 611
WEB OPEN command 616
WEB PARSE URL command 621
WEB READ FORMFIELD command 623
WEB READ HTTPHEADER command 625
WEB READ QUERYPARM command 627
WEB READNEXT FORMFIELD command 629
WEB READNEXT HTTPHEADER command 630
WEB READNEXT QUERYPARM command 632
WEB RECEIVE command (Client) 639
WEB RECEIVE command (Server) 633
WEB RETRIEVE command 645
WEB SEND command (Client) 654
WEB SEND command (Server) 646
WEB services commands 24
WEB START BROWSE FORMFIELD command 664
WEB START BROWSE HTTPHEADER command 666
WEB START BROWSE QUERYPARM command 667
web support 24
WEB WRITE HTTPHEADER command 668

WP MEDIA option
   ISSUE ABORT command 272
   ISSUE END command 279
   ISSUE SEND command 298
   ISSUE WAIT command 302

WRAP option
   GET COUNTER command 225
   GET DCOUNTER command 225

WRBRK condition
   CONVERSE (non-z/OS Communications Server) command 97
   SEND (non-z/OS Communications Server) command 464
   SEND CONTROL command 468
   SEND MAP command 475
   SEND PAGE command 480
   SEND TEXT command 487
   SEND TEXT MAPPED command 489
   SEND TEXT NOEDIT command 492

WRITE command 671
WRITE JOURNAL NAME command 677
WRITE JOURNAL NUM command 680
WRITE OPERATOR command
   critical action 682
   eventual action 682
   immediate action 682
WRITEQ TD command 683
WRITEQ TS command 686
writing data
   to temporary storage queue 686
   to terminal or logical unit 773
   to transient data queue 683
writing records to data sets
   batch data interchange 272
   file control 671
WSA CON Texture BUILD command 690
WSA CON Texture DELETE command 694
WSA CON Texture GET command 694
WSA EPR CREATE command 698
X
XCTL command 701
XINIT operand 701
DFHMDF 792
XMLCONTAINER option
TRANSFORM XMLTODATA command 565
XMLTRANSFORM option
TRANSFORM XMLTODATA command 565
XRBA option
DELETE command 115
READ command 354
READNEXT command 365
READPREV command 374
RESETBR command 418
STARTBR command 543
WRITE command 673
XRF, generic applid 42

Y
YEAR option
DEFINE TIMER command 110
FORMATTIME command 188
YES value
DFHMDI 801
DFHMSD 810
YYDDD option
FORMATTIME command 188
YYDDMM option
FORMATTIME command 188
YYMMDD option
FORMATTIME command 188
YYYYDDD option
FORMATTIME command 188
YYYYDDMM option
FORMATTIME command 188
YYYYYMMDD option
FORMATTIME command 188

Z
z/OS Communications Server 78
z/OS Communications Server logon data, access to 169
ZERO value
DFHMDF 792