System Automation for z/OS
Version 4.Release 1

Programmer's Reference

SC34-2748-01

Note

Before using this information and the product it supports, read the information in Appendix A, "Notices," on page 269.

Edition Notes

This edition applies to IBM® System Automation for z/OS (5698-SA4) Version 4 Release 1, an IBM licensed program, and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC34-2748-00.

Contents

Figures

Tables

Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully. System Automation for z/OS supports several user interfaces. Product functionality and accessibility features vary according to the interface.

The major accessibility features in this product enable users in the following ways:

- Use assistive technologies such as screen reader software and digital speech synthesizer, to hear what is displayed on screen. Consult the product documentation of the assistive technology for details on using those technologies with this product and screen magnifier software
- Operate specific or equivalent features using only the keyboard
- Magnify what is displayed on screen.

The product documentation includes the following features to aid accessibility:

- All documentation is available to both HTML and convertible PDF formats to give the maximum opportunity for users to apply screen-reader software
- All images in the documentation are provided with alternative text so that users with vision impairments can understand the contents of the images.

Using assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in z/OS®. Consult the assistive technology documentation for specific information when using such products to access z/OS interfaces.

Keyboard navigation of the user interface

Users can access z/OS user interfaces using TSO/E or ISPF. Refer to *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Vol 1* for information about accessing TSO/E and ISPF interfaces. These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

About this publication

This publication describes the programming interfaces of IBM System Automation for z/OS (SA z/OS). It provides detailed reference material you need to operate, maintain and program for SA z/OS.

Throughout this publication references to MVS™ refer either to MVS/ESA, or to the MVS element of z/OS.

Who Should Use This Publication

This information is primarily for system programmers and automation administrators, but may also be useful for others, for example, help desk personnel and customer engineers.

Where to Find More Information

The System Automation for z/OS Library

Table 1 on page xiii shows the information units in the System Automation for z/OS library. These manuals can be downloaded from IBM Documentation.

Table 1. System Automation for z/OS library

Title	Form Number	Description
Get Started Guide	SC27-9532	This book is intended for SA z/OS beginners. It contains the information about early planning, configuring the product, making it secure, customizing your automation environment, and the basic operational tasks that you perform on a daily basis.
Planning and Installation	SC34-2716	Describes SA z/OS new capabilities and how to plan, install, configure, and migrate SA z/OS.
Customizing and Programming	SC34-2715	Describes how to adapt the standard installation, add new applications to automation, write your own automation procedures, and add new messages for automated applications.
Defining Automation Policy	SC34-2717	Describes how to define and maintain the automation policy.
User's Guide	SC34-2718	Describes SA z/OS functions and how to use SA z/OS to monitor and control systems.
Messages and Codes	SC34-2719	Describes the problem determination information of SA z/OS, including messages, return codes, reason codes, and status codes.
Operator's Commands	SC34-2720	Describes the operator commands available with SA z/OS, including their purpose, format, and specifics of how to use them.
Programmer's Reference	SC34-2748	Describes the programming interfaces of SA z/OS and the definitions for the status display facility (SDF).

Table 1. *System Automation for z/OS library (continued)*

Title	Form Number	Description
End-to-End Automation	SC34-2750	Describes the end-to-end automation adapter for z/OS and how it enables end-to-end automation and how it connects to Service Management Unite Automation.
Service Management Unite Automation Installation and Configuration Guide	SC27-8747	Describes how to plan, install, set up, configure, and troubleshoot Service Management Unite Automation.
Product Automation Programmer's Reference and Operator's Guide	SC34-2714	Describes how to customize and operate product automation components (CICS, Db2, and IMS automation) with SA z/OS to provide a simple and consistent way to monitor and control all of the CICS, Db2, and IMS regions, both local and remote, within your organization.
TWS Automation Programmer's and Operator's Reference Guide	SC34-2749	Describes how to customize and operate TWS Automation.

Related Product Information

For information that supports System Automation for z/OS, visit the z/OS library in IBM Documentation (https://www.ibm.com/docs/en/zos).

Summary of Changes for SC34-2748-01

This document contains information previously presented in System Automation for z/OS V3R5.0 Programmer's Reference, SC34-2748-00.

You may notice changes in the style and structure of some content in this document—for example, headings that use uppercase for the first letter of initial words only, and procedures that have a different look and format. The changes are ongoing improvements to the consistency and retrievability of information in our documents.

This document contains terminology, maintenance, and editorial changes.

New Information

(OA60964) The INGUSS command is updated to add the considerations if you want to switch the start of your USS related subsystems from a BPXBATCH based started task to an INGUSS command call.

INGDVMAP routine is added to respond to messages that are issued by the z/OS Communications Server and that contain a DVIPA.

INGDVMON routine is added to determine the existence of a dynamic virtual IP address (DVIPA) on the local system.

MAXTREEDSPSZ parameter is added into the SDF initialization parameters.

Calculating the Data Space Size is added.

SUBSSUSPEND is added to the AOCQRY subsystem task global variables. This SUBSSUSPEND variable indicates whether the application or parent is suspended or not.

SDFQTR command is added to view the current allocation units and data space usage.

Changed Information

In ACFCMD command, SUBxSUSPEND variable is added to alter commands that are entered in the automation policy; SU2xSUSPEND is added to the valid symbols for provider runtime variables.

AOCUPDT command is updated to include the USER parameter, which specifies the user data that is associated with the resource

Suspend flag value is added to the returned data of INGDATA command.

Suspend attribute is added to INGRRY command and ING$QRY command.

The INGJLM command is updated largely.

Start_ofs and end_ofs parameters are added into CELL command.

&USER or &USR variable is added for the PFKnn and DPFKnn parameters in the PFKnn entry.

In STATUSFIELD command, start_ofs and end_ofs parameters are added into the syntax; and maximum length is added to status_descriptor_no parameter.

Moved Information

INGSHCMD (INGRYSHU) command is moved from *Customizing and Programming* to *Programmer's Reference*.

Deleted Information

SA z/OS I/O Operations Commands are removed.

INGPOST, INGRTCMD and AOFNCMON commands are deleted due to NetView Management Console (NMC) removal. Information relevant to NMC is deleted as well.

Part 1. Introduction

Chapter 1. Introduction

Overview of Commands

Table 2 on page 3 gives a brief overview of the System Automation for z/OS commands. This overview lists the various types of commands, their functions and where they can be entered.

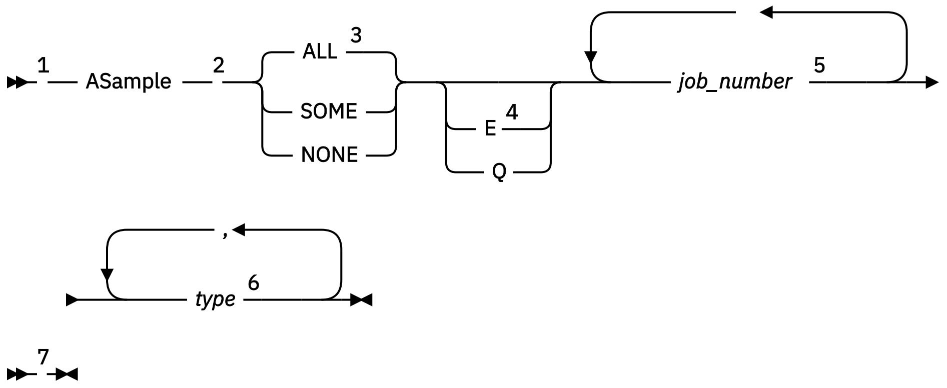
Table 2. Overview of Commands

Type of command	Function	Where entered
System operations commands	Control and maintain resources in the enterprise from a single point of control	NetView console
Processor operations commands	Common commands for automation	API, NetView console **Note:** Precede with ISQCCMD command
	Control hardware processors	NetView console

Format of Syntax Diagrams

The description of each command and routine includes the format of the command in a syntax diagram. The diagram shows the operands for the commands. Use blanks to separate the operands, unless otherwise stated or diagrammed.

To construct a command from the diagram, follow the diagram from left to right, choosing the path that suits your needs. The following is a sample syntax diagram with notes that explain how to use it to construct a command. This command is for illustration only. Do not attempt to enter it.



Notes:

[1] Start here. ►►— indicates the start of the diagram.
[2] Type ASAMPLE, or abbreviate it to AS. The uppercase characters are the abbreviation. Operands on the main line are required.
[3] Choose one of the options. The default is always above the main line. In this case, ALL is the default. If the option includes punctuation marks, include them too, for example: = ( ) . ,
[4] Choose E, Q, or neither. Operands below the main line are optional.
[5] Repeat *job_number* any number of times. Variables are shown in italics. Replace them with a real name or value.
[6] Repeat *type* any number of times, separated with a comma. Variables are shown in italics. Replace them with a real name or value.

[7] End here. ─►◄ indicates the end of the command.

If a command continues to the next line, you see ─► and ►─.

├and┤ indicates a fragment for a specific condition or option.

The following examples show commands that you might enter, based on the sample syntax diagram:

```
asample none q DAF00821 DAF00832 ELD00824

as some DLR01445
```

Part 2. SA z/OS System Operations Commands and Routines

This part describes System Automation for z/OS commands and routines, including specifics of how to enter them and their format.

See *IBM System Automation for z/OS User's Guide* for general information about SA z/OS commands.

Chapter 2. SA z/OS System Operations Commands

Using System Operations Commands for Programming

SA z/OS supplies commands that provide your automation procedures with a simple, standard way of interfacing with the automation control file, the automation status file, and the NetView log file.

It is strongly recommended that you use these commands wherever possible in your own code.

These commands are provided either as building blocks that you must incorporate into your script, or as complete routines that you can call from Network Communications Control Facility (NCCF), the NetView automation table (AT), from timers, or from other automation procedures without further programming. If a command can be used as a complete routine, this is specified in the usage notes.

Using these commands in automation procedures provides you with the following advantages:

- Reduced development time: Less code has to be written.
- Portable code: Automation policy information that is unique to an enterprise can be kept in the automation control file rather than distributed among many automation procedures. The automation procedures implement a number of different rules for handling a situation and the automation control file is used to select which rules are applicable to the current situation.
- A consistent, documented interface.

The commands that are described here may be used while automating any SA z/OS application. In the context of SA z/OS, an *application* is defined as:

- An MVS subsystem
- An MVS job
- A non-MVS resource, that is, a resource that is not a z/OS address space, or that does not respond to the usual MVS startup and shutdown commands
- Your own applications

Occasionally, you may see the term *subsystem* used to refer to applications in general.

ACFCMD

Purpose

The ACFCMD command allows an automation procedure to issue commands defined in the automation policy. It searches the automation control file for the specified entries, performs variable substitution for predefined variables, then issues the commands.

ACFCMD can also issue commands that are built dynamically by the calling automation procedure and passed to ACFCMD through a special task global variable named EHKCMD.

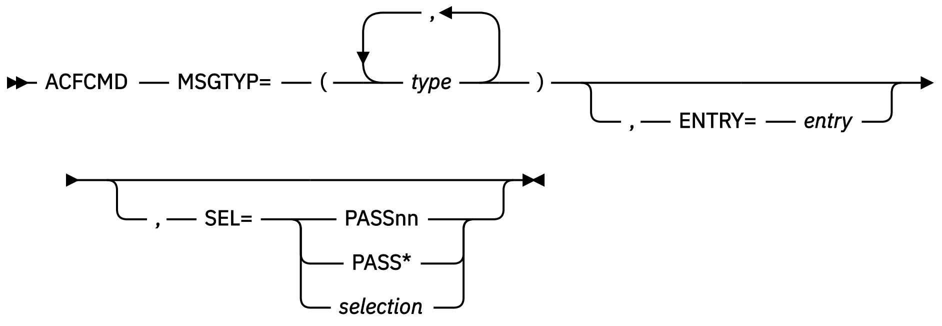
In general you should consider using ISSUECMD or ISSUEACT from the automation table, rather than calling ACFCMD directly. This has the following advantages:

- It checks the automation flags for you, to ensure that automation is allowed.
- It checks that the job that issued the message is known to SA z/OS.

Syntax

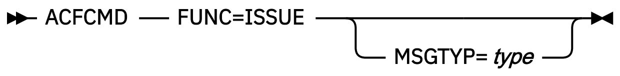
To issue commands that are directly defined in the automation control file use the following syntax:

1. Syntax for directly defined commands



To issue commands built dynamically by the calling automation procedure use the following syntax:

2. Syntax for dynamically built commands



Parameters

MSGTYP=*type*

This value is the message ID in the MESSAGES/USER DATA policy item where the commands to be issued by ACFCMD are defined. The value of MSGTYP is typically coded with the message ID or with a generic name such as SPOOLSHORT or SPOOLFULL. The specified *type* values are searched in the order specified until an entry with the given entry and type value can be found.

ENTRY=*entry*

This value is the entry in the automation MESSAGES/USER DATA policy item where the commands to be issued are defined. The default is the subsystem name, if the commands are issued for applications.

This parameter is mutually exclusive with the FUNC=ISSUE parameter.

SEL=

This parameter provides the criteria for the first field in the command entry. This field gives detailed criteria to select a command or commands from the automation control file. Based on the MSGTYP, ENTRY and SEL fields, any specific command can be retrieved from a group of commands associated with a message entry. This parameter is mutually exclusive with the FUNC=ISSUE parameter.

The commands associated with the specific pass selection value defined in the automation policy are issued, along with all commands defined without a selection value. For selection values beginning with PASS, additionally those commands with the pass selection value of PASS* are issued.

IF no SEL parameter is coded, all commands are selected without respect to any pass selection value in the first field of the command entry.

PASS*nn*

PASS*nn* values can range from 1 through 99 and must be coded without leading zeros, such as PASS1, PASS2, and PASS3.

When SEL=PASS*nn* is specified, commands associated with the PASS*nn* selection value defined in the automation policy are issued, along with all commands defined with a selection value of PASS* or with no selection value.

PASS*

When SEL=PASS* is specified, commands associated with the PASS* selection value defined in the automation policy are issued, along with all commands defined with a selection value beginning with the prefix PASS or with no selection value.

selection
When SEL=*selection* is specified, the commands associated with the specific selection value defined in the automation policy are issued, along with all commands defined without a selection value.

FUNC=ISSUE
The command to be issued is taken from the task global variable EHKCMD.

This parameter is mutually exclusive with the ENTRY and SEL parameters.

Restrictions and Limitations

The ACFCMD command should be called by an automation procedure or by a command processor. The AOCQRY command must be invoked first to set the SUBSAPPL and SUBSTYPE task global variables.

The ACF COLD command temporarily disables automation. ACFCMD will not work while the automation control file is being reloaded. This is necessary to ensure that the SA z/OS environment, as defined by the reloaded automation control file, is established correctly. Full automation resumes when the `AOF540I - INITIALIZATION RELATED PROCESSING HAS BEEN COMPLETED` message has been received.

Return Codes

0
At least one command was found and issued.

1
No commands meeting the selection criteria were found.

2
The issued command returned a non-zero return code and return code checking was enabled through the customization dialogs.

4
Invalid parameters were used in the call.

6
SA z/OS initialization incomplete, unable to process command request.

Usage

- If the command that is issued uses symbols you should call AOCQRY to substitute or translate the symbols. Refer to the tables in "Task Global Variables" on page 39 for AOCQRY.
- ACFCMD can issue multiple commands during a single instance of processing. Commands can be defined to one ENTRY and MSGTYP combination but with different or duplicate selection fields. During processing all selection fields are located that match the selection criteria and their associated commands are issued in the same sequence that they have been defined in the automation policy.
- When FUNC=ISSUE is used the ACFCMD command can issue only one command during a single instance of processing.
- SA z/OS variable CMDCNTHI is returned to the calling automation procedure as a task global variable value. ACFCMD retrieves all command entries for a given ENTRY/MSGTYP and searches for the highest PASS*nn* number. The highest PASS*nn* number is returned in CMDCNTHI. You can use this number to determine whether all available commands are issued and an appropriate error message should be issued to the operator. If PASS*nn* is not coded, CMDCNTHI is zero.
- Variables are available to change the command entered in the automation control file. Variables &EHKVAR0 through &EHKVAR9 and &EHKVART must be defined as task global variables in the calling automation procedure and must be initialized with the data to change the commands. These variables are passed to ACFCMD. Whenever ACFCMD finds a detail command entry in the automation control file it scans the command entry looking for &EHKVAR*n*. If an &EHKVAR*n* variable is found, the value stored in the automation procedure variable replaces the &EHKVAR*n* in the command entry. Multiple &EHKVAR*n* variables can be coded in a single command entry. Delimiters are unnecessary, and the variables can be coded between any other text.

Task Global Variables

The following runtime variables are used by ACFCMD for different purposes:

CMDCNTHI
This variable contains the number of the highest PASS*nn* selection for defined commands to the specified entry and type in the automation policy.

EHKCMD
When ACFCMD is called with FUNC=ISSUE, this variable must provide the command that is to be issued.

EHKCMDTEXT
Text for confirmation message AOF570I, after having issued the command.

EHKVAR0 through EHKVAR9 and EHKVART
These variables can be used to alter command definitions in the automation policy. If included in the defined commands with a leading &, the variables are substituted by their values before the commands are issued. The values of these variables must be provided by the calling automation routine.

&APPLPARMS
This variable provides the value that is entered in the APPLPARMS parameter of the INGREQ command when starting or stopping the resource related to the specified entry. The value of this variable is only available during startup or shutdown processing of a resource under the control of SA z/OS and can be used to alter commands entered in the automation policy.

If the AOCQRY command has been invoked in the calling automation routine, it sets all the SUBS and SUBP task global variables in Table 4 on page 40 and Table 5 on page 42, when the appropriate information is applicable.

The same applies to all the valid SU2S and SU2P task global variables for provider runtime variables.

Common Global Variables

Common global variable AOFJESPREFX is substituted in the command to be issued when found.

Examples

Example 1

This example shows the relationship between ACFCMD and the automation control file. The message to automate, $HASP607, is produced by the JES2 subsystem and indicates that JES2 is not dormant. The automation procedure responds to this by calling ACFCMD to issue a command to stop the JES2 initiators, (**`MVS $PI`**).

The command is defined in the automation policy through the customization dialog panels.

If you enter `DISPACF JES2 $HASP607`, a panel with information similar to the following panel is displayed.

```
Command = ACF ENTRY=JES2,TYPE=$HASP607,REQ=DISP
SYSTEM = KEY3      AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
-------------------------------------------------------------------------------
AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
 TYPE IS $HASP607
 CMD             = (,,'MVS $PI')
END OF MULTI-LINE MESSAGE GROUP
```

The automation procedure to issue this command is:

```
/* REXX CLIST to automate $HASP607                                 */
/* Check whether automation allowed and set TGLOBALs               */
'AOCQRY ...'
  :
'ACFCMD MSGTYP=$HASP607,ENTRY=JES2'
```

```
Select
  When rc = 0 Then Nop    /* Command issued OK                     */
  When rc = 1 Then Do     /* No commands issued; warn if required  */
   :
  End
  Otherwise Do            /* Error; perform warning action         */
   :
  End
End
Exit
```

ACFCMD uses the parameters passed to it to find the corresponding values in the automation policy. Because no SEL parameter is coded, no selection restriction is made with respect to the first field of the command entry.

Upon return to the automation procedure, the `rc` special variable is checked to ensure a command was found in the automation control file. The automation procedure takes appropriate action if a command is not found or a processing error occurs in the ACFCMD command.

Example 2

This example uses the same scenario as Example 1, but shows how you can use defaults to minimize coding. The message to automate, $HASP607, is produced by the JES2 subsystem and indicates that JES2 is not dormant. The automation procedure responds by calling ACFCMD to issue a command to stop the JES2 initiators ($PI).

The command is defined in the automation policy as in Example 1.

The automation procedure to issue this command is:

```
/* REXX CLIST to automate $HASP607                                 */
/* Check whether automation allowed and set TGLOBALs               */
'AOCQRY ...'
  :
'ACFCMD MSGTYP='Msgid()
Select
  When rc = 0 Then Nop    /* Command issued OK                     */
  When rc = 1 Then Do     /* No commands issued; warn if required  */
   :
  End
  Otherwise Do            /* Error; perform warning action         */
   :
  End
End
Exit
```

This example differs from Example 1 in the following ways:

- ACFCMD uses a NetView REXX function for the MSGTYP field, assumes defaults for the ENTRY and SEL fields and uses task global variables set up by AOCQRY for the ENTRY default.
- The ENTRY field defaults to JES2 because the job name on the message was the job name for the JES2 subsystem, so the SUBSAPPL task global (which is the default entry type) currently contains JES2. The AOCQRY command must be called before ACFCMD for the ENTRY default to work correctly.
- The MSGTYP field uses the NetView REXX function `Msgid()`, which contains the message identifier for the message that called the automation procedure. This message identifier is supplied only to an automation procedure called from the NetView automation table. This value can be used when calling ACFCMD.

Note: If your code issues a WAIT command before it issues the ACFCMD you must store the msgid() value in a temporary global as the NetView MSGREAD command overwrites the data from the message that invoked the procedure.

Assuming that AOCQRY is invoked to check the Terminate flag, both of the above examples are equivalent to invoking the following from the NetView automation table for $HASP607:

```
ISSUECMD AUTOTYP=TERMINATE
```

Example 3

This example shows the use of PASS*nn* logic in an automation procedure. The message to automate, $HASP607, is produced by the JES2 subsystem and indicates that JES2 is not dormant. The automation procedure responds the first time by stopping the JES2 initiators ($PI command), and the second time by abending JES2 ($P JES2,ABEND).

The commands are defined in the automation policy through the customization dialogs. The data is stored in the automation control file in the following way:

```
AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
 TYPE IS $HASP607
 CMD             = (PASS1,,'MVS $PI')
 CMD             = (PASS2,,'MVS $P JES2,ABEND')
END OF MULTI-LINE MESSAGE GROUP
```

The automation procedure to issue the commands is:

```
/* REXX CLIST to automate $HASP607                                  */
/* Check whether automation allowed and set TGLOBALs                */
'AOCQRY ...'
  :
/* Increase the counter unique to this automation procedure         */
'GLOBALV GETC HASP607_CNT'
If hasp607_cnt = '' Then hasp607_cnt = 1
Else hasp607_cnt = hasp607_cnt + 1
'GLOBALV PUTC HASP607_CNT'
/* Issue the ACF command for the pass number as determined          */
'ACFCMD MSGTYP='Msgid()',SEL=PASS'hasp607_cnt
Select
  When rc = 0 Then Nop    /* Command issued OK                      */
  When rc = 1 Then Do     /* No commands issued; warn if required   */
   :
  End
  Otherwise Do            /* Error; perform warning action          */
   :
  End
End
Exit
```

This example differs from the previous examples in the following ways:

- The automation procedure uses a unique common global variable, in this case HASP607_CNT, to maintain a PASS counter. The automation procedure adds 1 to this counter each time it is processed, then appends the counter to the SEL=PASS field. During processing, the counter is translated, and PASS1 or PASS2 is processed. Note that a null test is required to set the counter to 1 if it has not been set before. If the counter exceeds 2 then the ACFCMD will set a return code of 1 since there is no matching entry in the automation control file.

  Note: This example assumes you are using one JES subsystem. If you are using multiple JES subsystems, you must use a different counter variable for each.
- Another automation procedure that resets the counter is necessary to complete the logic flow. For this example, the automation procedure runs when the final JES2 message or a startup message is received. Note that the counter is cleared rather than set to zero. This saves an entry in the NetView global dictionary unless the message $HASP607 has occurred.

  The automation procedure to reset the counter is:

  ```
  /* REXX CLIST to reset the counter                                    */
  hasp607_cnt = ''
  'GLOBALV PUTC HASP607_CNT'
  Exit
  ```

Notes:

1. To ensure serialization of access to the NetView global dictionary and the correct ordering of the commands issued, the NetView automation table entry should route the command to a specific operator if the message may occur more than once in quick succession.

2. If AOCQRY is checking the Terminate flag this example could be coded as:

   ```
   ISSUECMD AUTOTYP=TERMINATE,PASSES=YES
   ```

The pass count will be reset when the application final termination message is processed.

Example 4

This example shows the use of EHKVAR*n* variables. It also shows the use of duplicate selection fields because two entries are coded, each with PASS1. The message to automate is given in response to the JES2 $DU command, which displays all JES2 devices. The message ID produced by JES2 is $HASP628. The example assumes the full text of the message is passed to the automation procedure. The automation procedure checks the resource type, and if the resource is a line, stops the line using the $P LINE*nn* command, then stops current activity with a restart command, $E LINE*nn*.

The commands are defined in the automation policy through the customization dialog panels. The data is stored in the automation control file in the following way:

```
AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
 TYPE IS $HASP628
 CMD            = (PASS1,,'MVS $P &EHKVAR1')
 CMD            = (PASS1,,'MVS $E &EHKVAR1')
END OF MULTI-LINE MESSAGE GROUP
```

The automation procedure to issue the commands is:

```
/* REXX CLIST to automate $HASP628                                    */
/* Check whether automation allowed and set TGLOBALs                  */
'AOCQRY ...'
  :
/* Assign EHKVAR1 to parameter 2 (resource name on $HASP628 msg)
then determine whether the first characters are LINE, if not, exit    */
ehkvar1 = Msgvar(2)
If Left(ehkvar1,4) <> 'LINE' Then Exit
'GLOBALV PUTT EHKVAR1'
'ACFCMD MSGTYP='Msgid()',SEL=PASS1'
Select
  When rc = 0 Then Nop    /* Command issued OK                        */
  When rc = 1 Then Do     /* No commands issued; warn if required     */
   :
  End
  Otherwise Do            /* Error; perform warning action            */
   :
  End
End
Exit
```

Following are the processing steps the automation procedure performs:

1. The EHKVAR1 variable is assigned the value in the second parameter sent to the automation procedure, which for the $HASP628 message is the resource type
2. The automation procedure verifies that the resource type is a LINE, then sets the variable to a task global variable and calls ACFCMD
3. Assuming the second parameter is LINE21, two commands are issued from this automation procedure:

   ```
   $P LINE21
   $E LINE21.
   ```

ACFFQRY

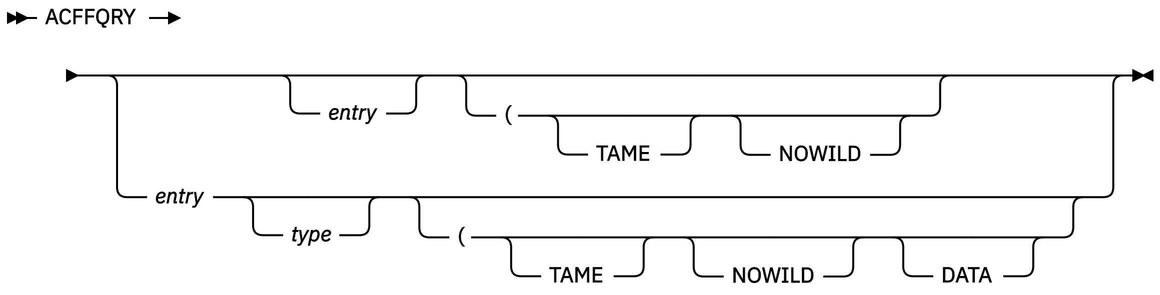
Purpose

The ACFFQRY command provides a fast, pipeable means of accessing the SA z/OS automation control file from your automation procedures.

See also the related command ACF in *IBM System Automation for z/OS Operator's Commands*.

Syntax

The following syntax diagram shows how to use the ACFFQRY command to query the automation control file.



Parameters

entry
This is the *entry* value to be used to search the automation control file. The entry value may take the following forms:

*****
The entry value is or ends with the wildcard character, unless TAME is specified.

entry
A specific entry value is entered. You must enter a specific entry value if you want to specify a type value.

type
This is the *type* value to be used to search the automation control file. A type value can be specified *only* when a specific entry value is entered. The type value may take the following forms:

*****
The type value is or ends with the wildcard character, unless TAME or NOWILD is specified.

type
A specific type value is entered.

TAME
Wildcards in the entry and type name in the automation control file database are to be matched against the entry and type specified on the search. TAME allows for wildcards *in the database* that you are searching. For example, with a constant query string, such as `AAA 123` you can match on multiple entries in the automation control file, such as `AAA 12*`.

This means that if user entries and types have been set up in the automation control file with an asterisk for the last character they are taming candidates. This may be particularly useful for situations where generic rather than specific data is maintained and used in automation procedures.

NOWILD
The asterisk (*) character in the query string is to be treated as a literal.

DATA
The keyword=value data that is related to the entry/type pair is to be returned.

Restrictions and Limitations

A type value can be specified only if a specific entry value is specified.

Usage

It is most efficient if it is called within a PIPE, but may also be called within a TRAP/WAIT/MSGREAD.

Task Global Variables

None.

Messages

Output from ACFFQRY takes the form of a correlated multiline message, with one or two list items and data elements on each line of the message. There are no surrounding message IDs or details.

The first line of the multiline message is always the literal `ACFFQRY:`, followed by the return code from ACFFQRY. If output is present it begins on line two. This means that output returned in a stem must be processed from element two.

If keyword=data is returned, the entry and type will precede it. Your routines can differentiate entry/type output from data output by the presence of an equals (=) sign. For example:

```
If Pos('=',data.n) = 0 then Do
/* data line is an ENTRY TYPE    */
End
Else Do
/* data line is an KEYWORD=VALUE */
End
```

- If both entry and type parameters are omitted, a list of all the entries is returned.
- If an entry is specified and the type is omitted, a list of the entry and all the types for that entry is returned.
- If both entry and type are specified, all the data for that entry/type combination is returned.
- If the parameters indicate an area where there is no data, a null list is returned.

Table 3 on page 15 shows the result for various parameter combinations. An "-" means that an option is irrelevant to the output produced. An asterisk in the DATA column indicates that the keyword=value data is returned.

Table 3. Output from ACFFQRY

Entry	Type	TAME	NOWILD	DATA	Result
		-	-		List of all entries
en* or *		No	No		List of entries starting with "en".
en* or *		Yes	No		List of all entries starting with en or taming en*.
entry		Yes	-	-	List of entries taming entry
entry		No	-	-	List of types for entry
entry	ty*	No	No	*	List of types for entry starting with ty
entry	ty*	Yes	No	*	List of types for entry starting with ty or taming ty*
entry	ty*	No	Yes	*	All data for entry entry and type ty*
entry	ty*	Yes	Yes	*	List of all types for entry taming ty*

Table 3. Output from ACFFQRY (continued)

Entry	Type	TAME	NOWILD	DATA	Result
entry	type	No	-	-	All data for entry entry and type type
entry	type	Yes	-	*	List of all types for entry taming type

Return Codes

These return codes appear on the first line of the returned data, after the literal `ACFFQRY:`.

0
Data returned.

1
There is no data for the specified parameters or SA z/OS is not fully initialized.

2
Too many parameters before the opening parentheses. You can specify at most one entry and one type, each of which is a single word.

3
Entry/Type combination not allowed. If you have specified an entry including an *, you may not specify a type.

5
The SA z/OS global variables containing internal automation control file information have been corrupted.

6
You have specified an invalid option.

7
You have specified an option more than once.

Examples

Example 1

An ACFFQRY specifying a full ENTRY value only:

```
ACFFQRY SUBSYSTEM
```

This returns all TYPE matches for that ENTRY:

```
ACFFQRY:0
SUBSYSTEM SYSVSSI
SUBSYSTEM SYSVIEW
SUBSYSTEM VLF
SUBSYSTEM LLA
SUBSYSTEM JES
SUBSYSTEM VTAM
SUBSYSTEM TSO
SUBSYSTEM RMF
```

Example 2

An ACFFQRY specifying a full ENTRY value and a full TYPE value:

```
ACFFQRY SUBSYSTEM TSO
```

This returns all keyword=value data that is associated with the ENTRY/TYPE pair:

```
ACFFQRY:0
SUBSYSTEM TSO
```

```
JOB=TSO
DESC='Time Sharing Option'
SHUTDLY=00:01:30
```

Example 3

An ACFFQRY specifying a full ENTRY and a wild TYPE:

```
ACFFQRY SUBSYSTEM V*
```

This returns a list of all matching TYPES:

```
ACFFQRY:0
SUBSYSTEM VLF
SUBSYSTEM VTAM
```

Example 4

This example shows how to access automation control file data about monitor resources specifying a full ENTRY and a wild TYPE:

`ACFFQRY MONITOR J*`

This returns a list of matching TYPES:

```
ACFFQRY:0
MONITOR JES2MON
MONITOR JES2SPOOL
```

Example 5

This example is the same as Example 3, except that the DATA option is specified:

```
ACFFQRY SUBSYSTEM V* (DATA
```

The keyword=value data that is values for all matches are returned:

```
ACFFQRY:0
SUBSYSTEM VLF
DESC='Virt Lib DEF'
SCHEDSUB=MSTR
JOBTYPE=MVS
IPLOPTIONS=START
RECYCLEOPT=START
RESTARTOPT=ALWAYS
PARMS=',SUB=MSTR,NN=00'
SHUTDLY=00:03:00
STRTDLY=00:02:00
TERMDLY=00:00:15
JOB=VLF
SUBSYSTEM VTAM
DESC='VTAM V4.1'
PARMS=',,,(LIST=FP)'
SHUTDLY=00:01:00
JOB=VTMN24E
```

Example 6

This example shows the use of the TAME option:

```
ACFFQRY CONTROLLER QLN37A07 (TAME
```

All ENTRY/TYPES that include a wildcard that matches the search string are returned:

```
ACFFQRY:0
CONTROLLER QLN*
CONTROLLER QLN37*
CONTROLLER Q*
```

Example 7

This example is the same as example 6 except that the DATA option is specified:

```
ACFFQRY CONTROLLER QLN37A07 (TAME DATA
```

All keyword=value data for the ENTRY/TYPE list is returned:

```
ACFFQRY:0
CONTROLLER QLN*
LOCATION=NEW_YORK
TYPE=LOCAL
OWNER='FRED SMITH'
CONTROLLER QLN37*
LOCATION='Episode 1, Level 3, Oil Refinery'
TYPE=LOCAL
START='MVS VARY 04AE,ONLINE'
OWNER='JIM SMITH'
CONTROLLER Q*
LOCATION=USA
TYPE=GLOBAL
OWNER='BILL SMITH'
```

Example 8

This example shows the result of the following NOWILD option:

```
ACFFQRY CONTROLLER QLN37* (NOWILD
```

The asterisk (*) is treated as a literal in the search pattern:

```
ACFFQRY:0
CONTROLLER QLN37*
LOCATION='Episode 1, Level 3, Oil Refinery'
TYPE=LOCAL
START='MVS VARY 04AE,ONLINE'
OWNER='JIM SMITH'
```

Example 9

The following example shows how to find the job name for a subsystem from a REXX routine, using the NetView PIPE facility:

```
Get_Jobname:
Arg subsystem .
'PIPE NETVIEW ACFFQRY SUBSYSTEM' subsystem '| STEM ALL_DATA.',
'| SEPARATE | LOCATE 1.4 /JOB=/ | TAKE 1 | STEM JOBNAME.'
If all_data.0 < 1 Then
  Say 'PIPE 1 Failed'
If all_data.1 <> 'ACFFQRY:0' Then
  Return
If jobname.0 = 0 Then
  Return subsystem
Parse var jobname.1 'JOB=' jobname .
Return jobname
```

Example 10

This example takes the name of a failing device and finds the appropriate person to notify. It makes use of the TAME option. The data being searched is:

```
DEVFAIL DEV1230,
CONTACT=MIK
DEVFAIL DEV12*,
CONTACT=JB
DEVFAIL DEV34*,
CONTACT=JAQUES
DEVFAIL DEV*,
CONTACT=MIK
CONTACT MIK,
page=00230936473
CONTACT JB,
page=00234628164
CONTACT JAQUES,
page=00237564815
```

The following code fragment takes the number of a failing device and returns the paging number for the person to be notified. Note the use of subroutines that make it easy to write similar queries and could replace the previous example.

```
Get_Page_Num:
Procedure
Arg device_number .
match = Get_Best_Match('DEVFAIL',device_number)
If match = '' Then
  Return
contact = Get_Key('CONTACT=','DEVFAIL',match)
If contact = '' Then
  Return
Return Get_Key('page=','CONTACT',contact)

Get_Best_Match:
Procedure
Arg entry ., type .
'PIPE NETVIEW ACFFQRY' entry type '( TAME | STEM DATA.'
If data.0 < 1 Then
  Say 'Get_Best_Match PIPE Failed'
If data.0 <> 'ACFFQRY:0' Then
  Return
match = ''                /* Longest match = best match */
match_len = 0
Do i = 2 to data.0
  If words(data.i) = 2 Then Do
    data_val = word(data.i,2)
    If Length(data_val) > match_len The Do
      match = data_val
      match_len = Length(match)
    End
  End
End
Return match

Get_Key:
Procedure
Arg key . , entry ., type .
'PIPE NETVIEW ACFFQRY' entry type '(NOWILD | STEM ALL_DATA.',
'| SEPARATE | LOCATE 1.'||length(key) '/'||key||'/',
'| TAKE 1 | STEM DATA.'
If all_data.0 < 1 Then
  Call Terminal_Error 'Get_Key PIPE Failed'
If all_data.1 <> 'ACFFQRY:0' Then
  Return
parse var data.1 .'=' data_val
Return data_val
```

ACFREP

Purpose

The ACFREP command allows an automation procedure to issue replies defined in the automation policy. It searches the automation control file for the specified entries, performs variable substitution for predefined variables, then issues the reply.

ACFREP can also issue replies that are built dynamically by the calling automation procedure and passed to ACFREP through a special task global variable named EHKRPY.

ACFREP issues replies to the resource that is identified by the task global variables SUBSAPPL and SUBSTYPE, which are set by the AOCQRY command.

In general you should consider using ISSUEREP or ISSUEACT from the NetView automation table, rather than calling ACFREP directly. This has the following advantages:

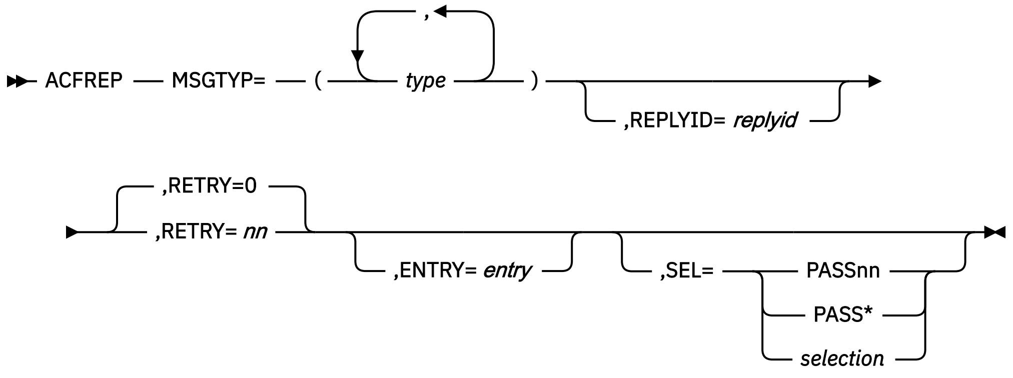
- It checks the automation flags for you, to ensure that automation is allowed.
- It checks that the job that issued the message is known to SA z/OS.

If the application responds with a new WTOR after your automation routine issued the ACFREP call, then your automation routine must be invoked again to give SA an opportunity to store new WTOR details. Multiple consecutive ACFREP calls in your automation routine will not find the new outstanding reply and will result in return code 2.

Syntax

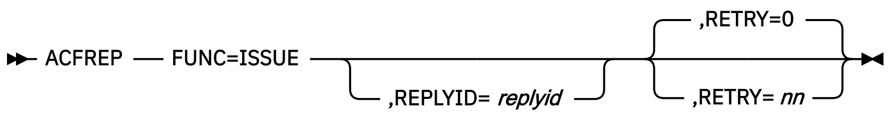
To issue replies directly defined in the automation control file use the following syntax:

1. Syntax for directly defined replies



To issue replies built dynamically by the calling automation procedure use the following syntax:

2. Syntax for dynamically built replies



Parameters

MSGTYP

This value is the message ID in the MESSAGES/USER DATA policy item where the replies to be issued by ACFREP are defined. The value of MSGTYP is typically coded with the message ID or with a generic name such as SPOOLSHORT or SPOOLFULL. The specified type values are searched in the order specified until an entry with the given *entry* and *type* value can be found.

REPLYID

The MVS reply identifier associated with this reply.

This parameter is optional. If it is not specified, the outstanding reply value is retrieved and used, regardless of the specified MSGTYP value.

RETRY

nn specifies the retry count if an outstanding reply is not available. The first time after 1 second and then every two seconds, ACFREP attempts to retrieve an outstanding reply until the retry count is exhausted. When an outstanding reply ID is retrieved, the reply is issued. If no RETRY value is coded, ACFREP defaults to RETRY=0.

ENTRY

This value is the entry in the automation MESSAGES/USER DATA policy item where the replies to be issued are defined. The default is the name of the subsystem that issued the WTOR.

This parameter is mutually exclusive with the FUNC=ISSUE parameter.

SEL

This parameter provides the criteria for the first field in the reply entry. This field gives detailed criteria to select a reply or replies from the automation control file. Based on the MSGTYP, ENTRY and SEL fields, any specific reply can be retrieved from a group of replies associated with a message entry. This parameter is mutually exclusive with the FUNC=ISSUE parameter.

The replies associated with the specified pass selection value defined in the automation policy are issued, along with all replies defined without a selection value. For selection values beginning with PASS, those replies to the pass selection value of PASS* are additionally issued.

If no SEL parameter is coded all replies are selected without respect to any pass selection value in the first field of the reply entry.

PASS*nn*

PASS*nn* values can range from 1 through 99 and must be coded without leading zeros, such as PASS1, PASS2, and PASS3.

When SEL=PASS*nn* is specified, replies associated with the PASS*nn* selection value defined in the automation policy are issued, along with all replies defined with the selection value of PASS* or with no selection value.

PASS*

When SEL=PASS* is specified, replies associated with the PASS* selection value defined in the automation policy are issued, along with all replies defined without a selection value and all replies defined with a selection value beginning with the prefix PASS.

selection

When SEL=*selection* is specified, the replies associated with the specific selection value defined in the automation policy are issued, along with all replies defined without a selection value.

FUNC=ISSUE

The reply to be issued in response to the incoming WTOR is taken from the task global variable EHKRPY.

This parameter is mutually exclusive with the ENTRY and SEL parameters.

Restrictions and Limitations

The ACFREP command should be called only by an automation procedure or by a command processor. The AOCQRY command must be invoked first to set the SUBSAPPL and SUBSTYPE task global variables.

For serialization reasons, ACFREP must run on:

- The work operator of the subsystem that issued the WTOR if no REPLYID was specified
- The SYSOPER task, if the WTOR was not issued by a subsystem known to SA z/OS

Return Codes

0

A reply was found and issued.

1

No reply meeting the selection criteria was found.

2

No outstanding reply ID was found.

3

ACFREP successfully responded to only part of the defined replies.

4

Incorrect parameters were used in the call.

5

Timeout or other error occurred.

6
SA z/OS initialization incomplete, unable to process command request.

Usage

- Consider using ISSUEACT or ISSUEREP from the NetView automation table rather than using ACFREP directly.
- Multiple replies may exist for a given ENTRY, MSGTYP, or SEL field. These replies are processed in the same sequence as they are defined. For the second and subsequent replies, ACFREP always retrieves the outstanding reply number of a subsystem before issuing the reply. If an outstanding reply number does not exist when the reply should be issued, ACFREP attempts a retry if so defined.

  Retries may be defined either through the RETRY keyword of ACFREP or through the retry value specified in the policy entry. The retry value that you specified in the RETRY keyword takes precedence over that in your policy if both are specified. There is a 2-second delay between retry attempts.
- SA z/OS variable EHKRPYHI is returned to the calling automation procedure as a task global variable value. ACFREP retrieves all reply entries for a given ENTRY or MSGTYP value, searches for the highest PASS*nn* number, and returns it in the variable EHKRPYHI. You can use this number to determine whether all available commands are issued and an appropriate error message is issued to the operator. If PASS*nn* is not coded, EHKRPYHI is zero.
- Variables are available to change the reply entered in the automation control file. Variables EHKVAR0 through EHKVAR9 and EHKVART must be defined as task global variables in the calling automation procedure and must be initialized with the data to change the replies. These variables are passed to the ACFREP command. Whenever ACFREP finds a detail reply entry in the automation control file, it scans the reply entry looking for &EHKVAR*n*. If an EHKVAR*n* variable is found, the value stored in the variable replaces the &EHKVAR*n* in the reply entry. You can code multiple &EHKVAR*n* variables in a single reply entry. Delimiters are unnecessary, and you can code the variables between any other text.
- If your automation procedure issues a TRAP command, you must save the message variables upon entry, because this information is lost whenever message processing is started.

Task Global Variables

The following runtime variables are used by ACFREP for different purposes:

EHKRPY
When ACFREP is called with FUNC=ISSUE, this variable must provide the reply that is to be issued.

EHKRPYHI
This variable contains the number of the highest PASS*nn* selection for defined replies to the specified entry and type in the automation policy.

EHKRPYTEXT
The text for the AOF570I confirmation message, after having issued the reply.

EHKVAR0 through EHKVAR9 and EHKVART
These variables can be used to alter reply definitions in the automation policy. If included in the defined replies with a leading &, the variables are substituted by their values before the replies are issued. The values of these variables must be provided by the calling automation routine.

&APPLPARMS
This variable provides the value that is entered in the APPLPARMS parameter of the INGREQ command when starting or stopping the resource related to the specified entry. The value of this variable is only available during startup or shutdown processing of a resource under the control of SA z/OS and can be used to alter replies entered in the automation policy.

If the AOCQRY command has been invoked in the calling automation routine, it sets all the SUBS and SUBP task global variables in Table 4 on page 40 and Table 5 on page 42, when the appropriate information is applicable.

The same applies to all the valid SU2S and SU2P task global variables for provider runtime variables.

Common Global Variables

Common global variable AOFJESPREFX is substituted in the reply to be issued when found.

Examples

Example 1

This example shows the relationship between ACFREP and automation policy. The message to automate, $HASP426, is produced by the JES2 subsystem, requesting the JES2 startup specifications. The automation procedure responds to this by calling ACFREP to issue a reply of `WARM,NOREQ` from the automation control file.

The data is stored in the automation control file in the following way:

```
AOFK3D0X              SA z/OS - Command Response      Line  1    of 4
Domain ID   = IPSNO   ---------- DISPACF  ----------  Date = 06/06/00
Operator ID = NETOP1                                  Time = 13:30:53

Command = ACF ENTRY=JES2,TYPE=$HASP426,REQ=DISP
SYSTEM = KEY3      AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
--------------------------------------------------------------------------------
AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
 TYPE IS $HASP426
 REPLY           = (,,'WARM,NOREQ')
END OF MULTI-LINE MESSAGE GROUP
```

The automation procedure to issue this reply is:

```
/* REXX CLIST to automate the reply to $HASP426                       */
/* Check whether automation allowed and set TGLOBALs                  */
'AOCQRY ...'
  :
'ACFREP MSGTYP=$HASP426,REPLYID='Replyid()',ENTRY=JES2'
Select
  When rc = 0 Then Nop      /* Reply issued OK                       */
  When rc = 1 Then Do       /* No reply issued; warn if required     */
   :
  End
  Otherwise Do              /* Error; perform warning action         */
   :
  End
End
Exit
```

ACFREP uses the parameters that are passed to the routine to find corresponding entries in the automation control file. Because no SEL parameter is coded, no selection restriction is made concerning the first field of the command entry.

Note that the function `Replyid()` is used for the REPLYID parameter. This function is a standard NetView REXX function that will only return a value to an automation procedure called from the NetView automation table, and only if a reply is required. You can use this value when calling ACFREP.

Upon return to the automation procedure, the `rc` special variable is checked to ensure that a reply was found in the automation control file. The automation procedure takes appropriate action if a reply is not found or a processing error occurs in ACFREP.

Note: Assuming that AOCQRY was checking the Start automation flag, this example routine could be replaced by coding:

```
ISSUEREP AUTOTYP=START
```

Example 2

This example uses the same scenario as Example 1, but shows how you can use the defaults to minimize coding. The message to automate, $HASP426, is produced by the JES2 subsystem and requests the JES2 startup specifications. The automation procedure responds to this by calling ACFREP to issue a reply of `WARM,NOREQ` from the automation control file.

The reply is defined in the automation policy in the same way as Example 1.

The automation procedure to issue the reply is:

```
/* REXX CLIST to automate the reply to $HASP426                         */
/* Check whether automation allowed and set TGLOBALs                    */
'AOCQRY ...'
  :
'ACFREP MSGTYP='Msgid()',REPLYID='Replyid()
Select
  When rc = 0 Then Nop    /* Reply issued OK                            */
  When rc = 1 Then Do     /* No reply issued; warn if required          */
   :
  End
  Otherwise Do            /* Error; perform warning action              */
   :
  End
End
Exit
```

This example differs from Example 1 in the following ways:

- ACFREP uses a NetView REXX function for the MSGTYP field and assumes the defaults for the ENTRY and SEL fields.

  The ENTRY field defaults to the value of SUBSAPPL. AOCQRY will set this value to the name of the application that AOCQRY was invoked with. In this case the value is JES2.
- The MSGTYP field uses the NetView REXX function `Msgid()`, which contains the message identifier for the message that called the automation procedure. This message identifier is supplied only to an automation procedure called from the NetView automation table. Use this value when calling ACFREP. Note that calling WAIT will replace the value of Msgid().

Note: Assuming AOCQRY was checking the Start flag, this example could be replaced with:

```
ISSUEREP AUTOTYP=START
```

Example 3

This example shows the use of PASS*nn* logic in an automation procedure. The message to automate, $HASP098, is produced by the JES2 subsystem and requests the JES2 shutdown options. The automation procedure responds to this, the first Reply time, by calling ACFREP to issue a REPLY of DUMP from the automation control file, and the second time by issuing a reply of PURG.

Reply information is defined in the automation policy through the customization dialogs. The data is stored in the automation control file in the following way:

```
AOFK3D0X              SA z/OS - Command Response      Line  1    of 5
Domain ID   = IPSNO   ---------- DISPACF  ----------  Date = 06/06/00
Operator ID = AFRANCK                                 Time = 13:36:31

Command = ACF ENTRY=JES2,TYPE=$HASP098,REQ=DISP
SYSTEM = KEY3      AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
------------------------------------------------------------------------------
AUTOMATION CONFIGURATION DISPLAY - ENTRY= JES2
 TYPE IS $HASP098
 REPLY           = (PASS1,,'DUMP')
 REPLY           = (PASS2,,'PURG')
END OF MULTI-LINE MESSAGE GROUP
```

The automation procedure to issue these replies is:

```
/* REXX CLIST to automate $HASP098                                      */
/* Check whether automation allowed and set TGLOBALs                    */
'AOCQRY ...'
  :
/* Increase the counter unique to this automation procedure             */
```

```
'GLOBALV GETC HASP098_CNT'
If hasp098_cnt = " Then hasp098_cnt = 1
Else hasp098_cnt = hasp098_cnt + 1
'GLOBALV PUTC HASP098_CNT'
/* Issue the ACF reply for the pass number as determined              */
'ACFREP MSGTYP='Msgid()',REPLYID='Replyid()',SEL=PASS'hasp098_cnt
Select
  When rc = 0 Then Nop    /* Reply issued OK                          */
  When rc = 1 Then Do     /* No reply issued; warn if required        */
   :
  End
  Otherwise Do            /* Error; perform warning action            */
   :
  End
End
Exit
```

This example differs from the previous examples in the following ways:

- The automation procedure uses a unique common global variable, in this case HASP098_CNT, to maintain a PASS counter. The automation procedure adds 1 to this counter each time it is processed, then appends the counter to the SEL=PASS field. During processing, the counter is translated, and PASS1 or PASS2 is run. Note that a null test is required to set the counter to 1 if it has not been set before. If the counter exceeds 2 then the ACFREP will set a return code of 1 since there is no matching entry in the automation control file.
- Another automation procedure that resets the counter is necessary to complete the logic flow. In this example, this automation procedure is processed when the final JES2 message or a startup message is received.

  The automation procedure to reset the counter is:

  ```
  /* REXX CLIST to reset the counter                                   */
  hasp098_cnt = ''
  'GLOBALV PUTC HASP098_CNT'
  Exit
  ```

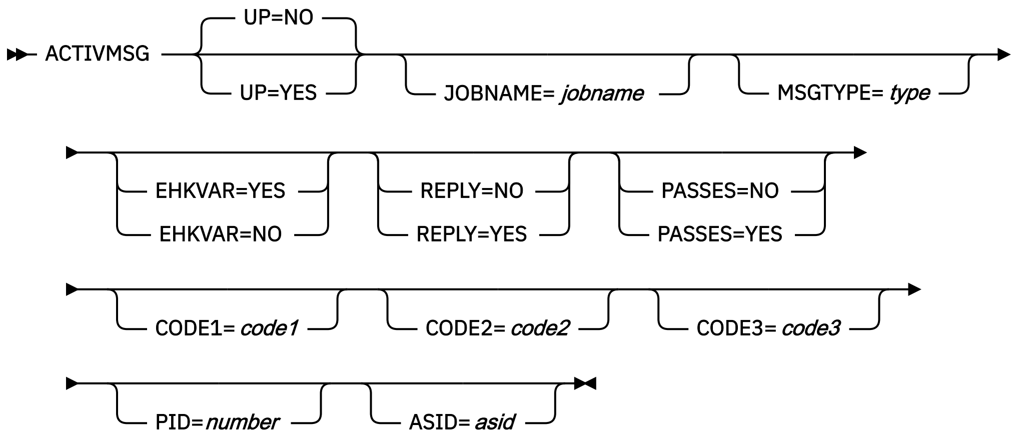
Note: To ensure serialization of access to the NetView global dictionary and the correct ordering of the replies issued, the NetView automation table entry should route the command to a specific operator if the message may occur more than once in quick succession.

ACTIVMSG

Purpose

You can use the ACTIVMSG command to respond to ACTIVE and UP messages from an application by changing the SA z/OS status of the application. ACTIVMSG calls the ISSUEACT command to also issue commands and replies that are defined in the automation policy for both the ID of the ACTIVE or UP message and for the new status of the application. Typically, ACTIVMSG is called from the NetView automation table.

Syntax



Parameters

UP

This parameter is used to distinguish between ACTIVE messages and UP messages. ACTIVE messages indicate that the job associated with an application is working but is not yet available for use. UP messages indicate that the job associated with an application is available for use.

NO

NO should be used if you are responding to an application ACTIVE message. The application is placed in ACTIVE status if it is not there already. UP=NO is the default.

YES

YES should be used if you are responding to an application UP message. The application is placed in UP status if it is not there already. If the application is a transient job then it is placed in RUNNING status.

JOBNAME

The name of the job that the message is for. If not specified, the job name is taken from the message's job name field. You must supply a value for the job name if you are calling ACTIVMSG from a CLIST.

MSGTYPE

This parameter is used to search for command and reply entries to *subsystem*/*msgtype*-pairs in the automation control file, where *subsystem* is the subsystem name derived from the job name.

When a match occurs, the commands that are associated with the entries are issued. This is in addition to the entries that are associated with the ENTRY-TYPE pair *subsystem*/ACTIVE if UP=NO and *subsystem*/UP if UP=YES.

If parameter MSGTYPE is not specified, the message identifier of the message that ACTIVMSG is called for is taken as the default.

EHKVAR

This parameter determines whether the tokens of the parsed message text are to be stored in task global variables EHKVAR0 through EHKVAR9 and EHKVART.

YES

The tokens of the triggering message are to be assigned to the task global variables EHKVAR*n*.

NO

No values are to be assigned to the task global variables EHKVAR*n*.

REPLY

This parameter determines whether a defined reply is issued for a message that ACTIVMSG has been called for.

YES
A defined reply in the automation policy for the message that is being handled by ACTIVMSG is issued. REPLY=YES is assumed as the default if the message is a WTOR, otherwise the default is REPLY=NO.

NO
A defined reply for a WTOR that is being handled by ACTIVMSG is not issued.

PASSES
Specifies whether passes are used to issue commands or replies (or both) that have been defined in the automation policy.

YES
PASSES=YES is passed to the ISSUEACT command.

NO
PASSES=NO is passed to the ISSUEACT command.

CODE1=*code1* CODE2=*code2* CODE3=*code3*
These parameters are passed to the ISSUEACT command, where they are used to select defined commands and replies via code entries.

PID
The process ID of the resource. Together with the ASID, it uniquely identifies the resource.

ASID
The ASID that is associated with the resource. Together with the PID, it uniquely identifies the resource.

Restrictions and Limitations

- If ACTIVMSG is driven by a delete operator message, no action is taken in response to this message.
- Defined commands and replies are only issued in response to a message or a status change if the start flag of the related minor resources of the application allows automation.
- The triggering message is automatically captured with a default severity of NORMAL. The default severity can be overridden using the code definitions under pseudo-message ID CAPMSGS. Under CODE2, specify MVSESA for messages with SYSTEMMSG=YES, or otherwise, the subsystem's jobname. The severity used is the content of Value Returned of the first row that matches in the code definitions table. CODE3 is not considered. To avoid message capturing, set Value Returned to *IGNORE*.

Usage

You should typically call the ACTIVMSG command from the NetView automation table.

It is recommended that you use ACTIVMSG for all IEF403I (job started) messages.

If ACTIVMSG is called for a WTOR and it is not replied to, OUTREP is called to track the WTOR.

If you are invoking ACTIVMSG for a generic message you should use the ING$QRY NetView automation table function to screen the message before invoking ACTIVMSG. See "ING$QRY" on page 197 for more information.

ACTIVMSG should run on the working operator of the subsystem that issued the message. Otherwise, the ACTIVMSG command will run asynchronously to the calling procedure. This means that when the calling procedure regains control, the status of the affected subsystem may not yet have changed.

All commands and replies that are triggered through ACTIVMSG have access to the SAFE, called AOFMSAFE, that stores the message that caused the ACTIVMSG call.

Task Global Variables

EHKVAR0 through EHKVAR9 and EHKVART
When defining the commands in the automation control file to be issued by command ACTIVMSG, the variables &EHKVAR0 through &EHKVAR9 and &EHKVART can be used to be substituted by the tokens

of the parsed message that has driven ACTIVMSG. &EHKVAR0 will be substituted by the message ID, &EHKVAR1 by the first token of the message text after the message ID, &EHKVAR2 with the second token and so forth. &EHKVART will be substituted by the trailing message text after the 9th token.

Examples

The following example shows how ACTIVMSG is called from the NetView automation table:

```
IF MSGID = 'IEF403I' & TOKEN(2) = SVJOB & DOMAINID = %AOFDOM%
   & ATF('ING$QRY APPL,,JOB='VALUE(SVJOB)) ^= ''
THEN
EXEC(CMD('ACTIVMSG JOBNAME=' SVJOB)
ROUTE(ONE %AOFOPGSSOPER%));
```

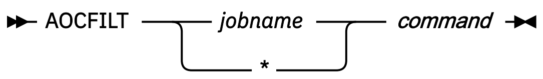
AOCFILT

Purpose

The AOCFILT command is used to screen messages that invoke other commands. Although it adds to the overhead of a useful invocation of a command, it greatly reduces CPU used to detect an unnecessary invocation.

Note: For performance reasons consider using ING$QRY instead, see "ING$QRY" on page 197.

Syntax



Parameters

jobname
This is the name of the job that the message refers to. If an * is specified the default job name for the message, retrieved with the NetView jobname() function, is checked.

command
This command is issued (in a PIPE) if the *jobname* parameter is the name of a job known to SA z/OS. If the job name is not the name of a job of a SA z/OS-controlled application, the command is not issued.

Restrictions and Limitations

- The command should be invoked only when there is a message in the default safe. Normally this will be from the NetView automation table (AT).
- You must obtain the job name before you invoke AOCFILT.

Return Codes

AOCFILT produces a return code of 0.

Usage

You should code the AOCFILT command in the NetView automation table (AT) where you are using a generic message (such as IEF403I) to invoke one of the SA z/OS commands (such as ACTIVMSG).

AOCFILT routes the command that is passed to it to the auto operator that is responsible for that particular subsystem.

AOCFILT is not as efficient as explicitly screening for the message in the AT, but may be more efficient than negative screening. AOCFILT also makes the automation statement more portable, in that you do not have to update it if you define a new application to SA z/OS.

Examples

In the following example, the NetView automation table is used to block out all IEF403I messages concerning jobs starting with the letters BAT, and AOCFILT is used to screen the other IEF403I messages:

```
IF MSGID = 'IEF' . & DOMAINID = %AOFDOM% THEN BEGIN;
...
  IF MSGID = 'IEF403I' THEN BEGIN;

    IF TOKEN(2) = 'BAT' . THEN DISPLAY(N) NETLOG(Y);

    IF TOKEN(2) = SVJOB THEN
    EXEC(CMD('AOCFILT ' SVJOB ' ACTIVMSG JOBNAME=' SVJOB)
    ROUTE(ONE %AOFOPGSSOPER%));
  END;
...
  ALWAYS;
END;
```

Related Commands

- “ACTIVMSG” on page 25
- “HALTMSG” on page 70
- “ISSUEACT (ISSUECMD, ISSUEREP)” on page 170
- “TERMMSG” on page 180

AOCGETCN

Purpose

The AOCGETCN command obtains an extended MCS console with a unique name for an operator or autotask issuing the command. If an MVS console is already associated with that task, it is released.

The default console name is the character A, followed by the last 5 characters of the task name concatenated with the last two characters of the system name.

Syntax

```
►► AOCGETCN ── parameters ►◄
```

Parameters

Optionally, you may supply one or more parameters that are valid for NetView GETCONID, for example, ALERTPCT, MIGRATE, QLIMIT, QRESUME, or STORAGE.

If you specify more than one parameter, you can either separate them by blank or by comma, for example:

```
AOCGETCN MIGRATE=YES,STORAGE=1000
```

For further information and a list of valid GETCONID parameters and their descriptions, refer to the NetView documentation.

Restrictions and Limitations

The previous console will be released even if AOCGETCN fails to obtain the new console.

The GETCONID parameters CONSOLE=*xxxxxxxx* and AUTH=*yyyyyyy* are not supported. If you enter them, they will be ignored.

Usage

Console names within a sysplex must be unique. The task name is used if the console name is not specified. To avoid possible naming conflicts due to common task names AOCGETCN should be used to obtain a console with a unique name. The characters that are used in determining the unique console name can be tailored by updating the common global variable AOFCNMASK. Refer to *IBM System Automation for z/OS Customizing and Programming* for further information.

Example

Issue AOCGETCN, for example, in the initial clist of an operator or autotask. As soon as an MVS command is issued by the task, a console is allocated with the console name that has been set by AOCGETCN.

The default name for the console is the character A, followed by the last 5 characters of the task name concatenated with the last two characters of the system name.

Thus, task OPER1 on system FOC1 obtains the default extended console name OPER1. When the AOCGETCN command is issued, the console AOPER1C1 is now associated with OPER1.

AOCMSG

Purpose

The AOCMSG command displays and logs messages by using the NetView message handling facilities, specifically NetView macros DSIMDS and DSIMBS. AOCMSG merges variable data specified as parameter values in the AOCMSG call with fixed message text to produce an SA z/OS message. You can display the resulting message on a NetView console and log it in the NetView log.

The message format depends on the message ID and variable data placed in the message.

If you specify one or more message classes in the message, AOCMSG also performs message class matching and sends the message as a notification message to one or more notification operators defined to receive those classes of notification messages.

The parsing within AOFMSG has been rewritten with an SA z/OS parsing routine used instead of DSIPRS. This allows SA z/OS to be more flexible in the handling of parameters. The parsing rules are:

- The only delimiter recognized in parsing the command is the comma.
- Tokens surrounded by single quotation marks will be stored without the quotation marks.
- A token containing two consecutive single quotation marks will be stored with only one of the quotation marks.
- Leading and trailing spaces are removed except that spaces inside quotation marks are not removed.
- Instead of rejecting a command with mismatched quotation marks an attempt is made to break the command into tokens.

The rules are illustrated by the following examples:

```
COMMAND              TOKENS
A,BCDEF,  G          (A) (BCDEF) (G)
'A B C' , ' EF GH'   (A B C) ( EF GH)
ABC,,DEF             (ABC) () (DEF)
'ABC,DEF,GHI         (ABC,DEF,GHI)
'ABC''DEF'           (ABC'DEF)
'ABC,DEF             ('ABC) (DEF)
ABC'DEF              (ABC'DEF)
ABC'DEF'             (ABC'DEF')
'ABC'DEF             (ABC) (DEF)
'ABC'DEF'            (ABC) (DEF')
'ABC''DEF            (ABC) ('DEF)
ABC''                (ABC')
```

Note: AOCMSG has the facility to use MVS descriptor codes to control the message flow at the master console. Refer to *IBM System Automation for z/OS Messages and Codes* for a table of message types and descriptor codes used by AOCMSG.

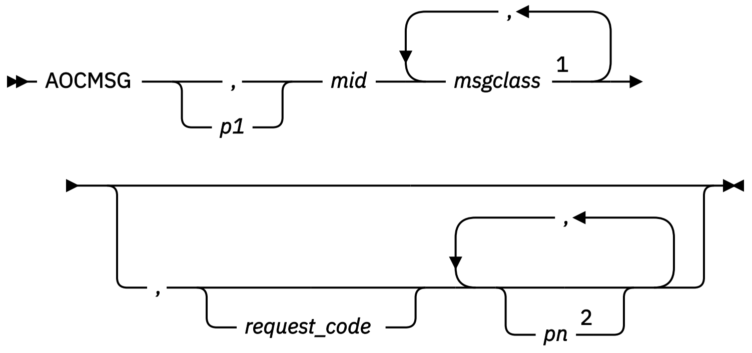
Prerequisite

Before you can use AOCMSG to call user messages, you must have completed defining the messages in either of the following locations. Defining the messages in a DSIMSG data set is recommended.

- Define the messages in a DSIMSG member. For the naming rules of a DSIMSG member, see the *mid* parameter description. For samples of how to build the DSIMSG members, see the Examples section.
- Code a message definition module named AOFM*aaa*, where *aaa* is the message prefix. Refer to *IBM Z NetView Programming: Assembler* for the coding.

Syntax

Parameters are positional.



Notes:

[1] Up to 10 optional message classes can be specified with the *mid* parameter. If used, message classes should be separated from the mid value and each other by at least **one** blank.
[2] Parameters 2–9 may be specified here. Parameters are positional, so non-specified parameters must be represented by a comma.

Parameters

p1–p9
These are parameter values that are substituted into the message text (located in a NetView DSIMSG member) in place of NetView message variables &1 through &9, respectively. These parameter values are all optional. However, because parameters are positional, if you do not specify *p1*, you must code a comma for that parameter position, for example:

```
aocmsg ,abc123,,date(),time()
```

mid
The message ID to be issued. This parameter is required. The message ID must be a valid message installed in the NetView message library, that is, in data set members identified in DSIMSG. The message ID can be specified in the following ways:

- A 3-digit number, which is assumed to have a prefix of AOF.

  This message ID value relates to a message in DSIMSG member DSIAOF*nn*. For example, a message ID value of 203 is for SA z/OS message AOF203I, which is in DSIMSG member DSIAOF20.
- A 6-digit ID consisting of a 3-character prefix followed by a 3-digit message ID number. The first character of the prefix must be alphabetic.

This message ID value relates to a message in DSIMSG member DSI*xxxnn*, where *xxx* is the prefix value and *nn* is the first two digits of the message ID number. For example, a message ID value of ABC123 is for message ABC123I, which is in DSIMSG member DSIABC12.

- A 7-character ID consisting of a 4-character prefix followed by a 3-digit message ID number. The first character of the prefix must be alphabetic.

  The primary use for this type of message ID format is when coding a message ID for a message that has a 4-digit prefix.

  When this type of message ID value is specified, AOCMSG drops the third of the four prefix characters to create the string used for searching DSIMSG members and retrieving the desired message. The actual message issued uses all four prefix characters.

  For example, a message ID value of ABCD123 is used to retrieve message ABCD123I, which is in DSIMSG member DSIABD12 (note that the C is dropped in the DSIABD12 member name).

The message ID value can be up to 7 characters long.

Up to 10 optional dynamic message classes can be specified through the mid field. If specified, optional message classes will be merged with the message classes defined in the message member (if there are any) up to a maximum of 10 message classes. If the total number of message classes exceeds 10, those specified on the AOCMSG call will take precedence over those specified in the message member.

The rules for dynamic message classes are the same as for those defined in the message member.

Message classes specified on the AOCMSG call are taken into consideration for the following *request_codes*:

blank
LOG
MIM

When NOMID is used, any message classes specified on the AOCMSG call will be ignored. However, any message classes defined in the message member will continue to appear in the resulting message text.

request_code
This parameter specifies the type of message processing request the AOCMSG command performs. The value for this parameter can be one of the following:

blank
If you leave this parameter position blank, or enter any text other than the values listed below, AOCMSG will generate the message for display. This is the default.

LOG
AOCMSG generates the message and logs the message in the NetView log instead of displaying it on the issuer's console.

MIM (Message in Message)
AOCMSG generates the message and strips the message ID value (*mid*) from the generated message, leaving only the message text. The first word in the message is treated as a valid message ID value (*mid*), and processing continues as if that word were the original *mid*. That is, AOCMSG performs message class matching and notification. See the AOCMSG examples for an example of how this parameter value affects the issued message.

NOMID (No Message ID)
AOCMSG generates the message and strips the message ID value (*mid*) from the generated message, leaving only the message text. AOCMSG does not perform message class matching and notification. See "Example 2" on page 34 for an example of how this parameter value affects the issued message.

Note: With the exception of the NOMID *request_code* value, forwarding of notification messages to notification operators occurs regardless of the value specified for this parameter.

Restrictions and Limitations

Each variable parameter value besides the message ID value (mid) can be up to 80 characters long, but the total maximum message length is 470 characters.

An operator can call the AOCMSG command from an automation procedure or command processor, or issue it directly from a display station.

Return Codes

0
AOCMSG processed normally.

>0 and <60
An error occurred while processing the NetView DSIPSS macro. The return code is actually from DSIPSS.

60
An error occurred while processing the NetView DSIGET macro to request storage. No storage space is available.

>60
An error occurred while processing the NetView DSIPRS macro.

Note: If you receive return codes other than 0 and 60, refer to *NetView Customization: Using Assembler* for information on resolving the NetView macro problems.

Error messages returned by AOCMSG are:

```
AOF262E MESSAGE ID mid INVALID, MUST BE "NNN", "ABCNNN", OR "ABCDNNN".

AOF263I MESSAGE ID NUMERIC "nnn" IS NOT NUMERIC.

AOF264I TOO FEW PARAMETERS ON AOCMSG COMMAND,  2 IS MINIMUM.

abc000I USER MESSAGE mid ISSUED BUT DOES NOT EXIST IN MESSAGE TABLE
DSIabcnn - CALL IGNORED.
```

Note: In message *abc*000I, the variable *abc* represents the product identifier portion of the message ID.

Usage

- Parameter values passed to AOCMSG depend on the format of the message entry as coded in the DSIMSG member DSI*xxxnn*.
- AOCMSG uses NetView message handling facilities, DSIMDS and DSIMBS in particular. Refer to *NetView Customization* for details about using DSIMDS to create your own messages.
- AOCMSG implements the SA z/OS notification message function to allow you to forward messages to notification operators. This aspect of AOCMSG processing can be useful if you develop new messages and want notification operators to receive them.

  The notification message function is implemented by assigning message classes to your messages. Message classes are assigned within the text of the messages in the DSIMSG member (DSI*xxxnn*). In the text for the message, specify the class or classes (up to five) after the message ID number and before the message text. For example, the following entry for a message assigns message classes 10 and 40 to the message. The message will be issued as a notification message to any notification operators defined to receive class 10 or 40 messages.

  ```
  123I 10 40 THE EAGLE HAS &1
  ```

Examples

Example 1

Entries for messages in DSIMSG member DSIABC12 are as follows:

```
*********************************************************
120I ...
121I ...
122I &1 &2 ON THE &3
123I 10 40 THE EAGLE HAS &1
124I ...
*********************************************************
```

An automation procedure contains the following AOCMSG calls referencing messages ABC122 and ABC123.

```
<other automation procedure code>
:
AOCMSG HELP,ABC122,,IS,WAY
AOCMSG LANDED,ABC123
:
<other automation procedure code>
```

When AOCMSG is called as specified in the automation procedure, DSIMSG member DSIABC12 is searched for messages ABC122I and ABC123I. Variable substitution for the variables in the message entries occurs, resulting in the following messages being generated:

```
ABC122I HELP IS ON THE WAY
ABC123I THE EAGLE HAS LANDED
```

Note: Because the DSIMSG member entry for ABC122I does not specify message class information, only the issuer of the automation procedure receives the message, not any notification operators. Because the DSIMSG member entry for message ABC123I specifies message classes 10 and 40, notification operators defined to receive message classes 10 and 40 also receive message ABC123I.

Example 2

Use of the AOCMSG *request_code* parameter value NOMID has the following effect on the messages generated.

The same entries in DSIMSG member DSIABC12 are used.

The AOCMSG calls using the NOMID *request_code* parameter value are as follows:

```
<other automation procedure code>
:
AOCMSG HELP,ABC122,NOMID,IS,WAY
AOCMSG LANDED,ABC123,NOMID
:
<other automation procedure code>
```

These calls and the DSIABC12 entries result in the following messages:

```
HELP IS ON THE WAY
10 40 THE EAGLE HAS LANDED
```

Note: In message ABC123I, the message classes 10 and 40 have not been processed as message classes and appear in the message text. No notification operators receive either message. This is an error for message ABC123. The message is not implemented to use the NOMID parameter value effectively.

Use of the AOCMSG *request_code* parameter value MIM has the following effect on the messages generated.

The same entries in DSIMSG member DSIABC12 are used.

The AOCMSG calls using the MIM request_code are as follows:

```
<other automation procedure code>
:
AOCMSG HELP,ABC122,MIM,IS,WAY
AOCMSG 'HELP 40',ABC122,MIM,IS,WAY
AOCMSG LANDED,ABC123,MIM
:
<other automation procedure code>
```

These calls and the DSIABC12 entries result in the following three messages:

`HELP IS ON THE WAY`
The text HELP is considered to be the new message ID. Because no message classes are in the AOCMSG call, no notification operators receive the message.

`HELP IS ON THE WAY`
In this case, the value 40 is processed as a message class. This processing causes notification operators defined to receive class 40 messages to also receive this message.

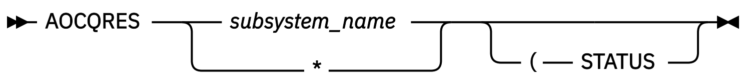
`10 THE EAGLE HAS LANDED`
The value 40 is processed as a message class, as in previous AOCMSG examples. In contrast, the value 10 is processed as the message ID, not a message class. Message ABC123 is not implemented to effectively use the MIM parameter value.

AOCQRES

Purpose

The AOCQRES command examines and returns information about where a resource resides in a sysplex. Optionally, AOCQRES also tries to obtain status information on resources.

Syntax



Parameters

subsystem_name
Specifies the name of the subsystem.

*****
This causes the command to return information about all subsystems within the sysplex.

STATUS
If you specify STATUS, another column will be added to the output. This column contains the current automation status of each subsystem.

Return Codes

0
The AOCQRES command completed successfully.

1
An error occurred while processing the AOCQRES command. See the accompanying message for the cause of the error.

2
The specified subsystem is either unknown or currently not registered.

Usage

The command is to be used within a NetView PIPE statement.

Examples

When you issue the command:

```
PIPE NETV AOCQRES TSO (STATUS | STEM ABC.
```

within a REXX procedure and the system where this command is issued is in a sysplex with four systems, the stem variable ABC. will be assigned something similar to the following:

```
ABC.0 = 4
ABC.1 = TSO         TSO      KEY3     UP
ABC.2 = TSO         TSO      KEY4     AUTODOWN
ABC.3 = TSO         TSO      KEY5     STARTED
ABC.4 = TSO         TSO      KEY6     RESTART
```

The first token of the data is the subsystem name, the second token is the subsystem's job name, the third token is the system name and the last token is the subsystem's status.

AOCQRY

Purpose

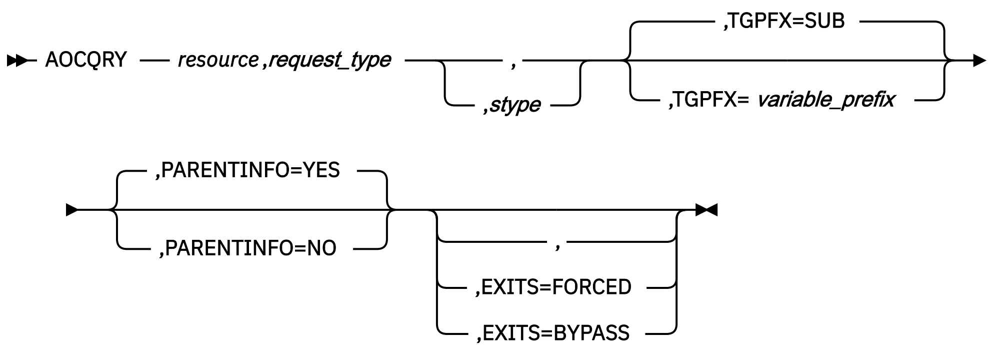
The AOCQRY command verifies that automation is allowed for a specific resource. AOCQRY does the following:

- Searches the automation policy to verify that the resource is defined to SA z/OS
- Checks that the automation flags for that resource allow automation
- Initializes certain control variables for use by the calling automation procedure
- Drives automation flag exits
- Initializes AOCQRY task global variables with application information

A call to AOCQRY is intended to be a standard component of most automation procedures. AOCQRY should be called whenever resource automation is required to verify whether automation should continue.

AOCQRY only works for applications that have been defined to automation using the application policy object of the customization dialogs.

Syntax



Parameters

resource

The resource name that automation should be checked for. This value can be a:

- Job name
- Subsystem name

- Subsystem minor resource, such as CICS.TRAN.APPL1, where the first qualifier can be the job name of the subsystem
- MVS component minor resource, such as MVSESA.SMF
- SUBSYSTEM
- DEFAULTS

If *stype* is coded, the resource is assumed to be a minor resource and, if the specified resource name does not already begin with the value of *stype*, it is prefixed with the value of *stype*, separated by a period.

If *stype* does not specify the name of a subsystem or MVSESA (the value of the AOFSYSTEM common global variable), the resource name is prefixed with MVSESA. When, for example, calling AOCQRY SMF RECOVERY MVSESA or AOCQRY MVSESA.SMF RECOVERY MVSESA, MVSESA.SMF is assumed as the resource name in both cases.

This parameter is required.

request_type
The type of automation checks and information retrieval functions AOCQRY performs. *request_type* is required and must be one of the following:

AUTOMATION
Only the Automation flag is checked to determine whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

INITSTART
The Automation flag and the Initstart flag are checked in determining whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

START
The Automation flag and the Start flag are checked in determining whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

RECOVERY
The Automation flag and the Recovery flag are checked in determining whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

TERMINATE
The Automation flag and Terminate flag are checked in determining whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

RESTART
The Automation flag and the Restart flag are checked in determining whether automation is allowed. Data retrieval from the automation policy occurs as described for the CFGINFO option. If the *stype* parameter is coded data retrieval does not occur.

CFGINFO or STATUS
Selected information about the specified resource is retrieved from the automation policy and provided in predefined task global variables. Regardless of whether the resource is a subsystem name or a minor resource to a subsystem, information retrieval is performed for the subsystem and its parent. This parameter is mutually exclusive with the *stype* parameter and is not supported for the specified resources DEFAULTS, SUBSYSTEM or MVSESA (the value of the AOFSYSTEM common global variable) and its minor resources. Supported task global variables are described in "Task Global Variables" on page 39.

CFGONLY or CFG-ONLY or STATUS-ONLY
Selected information is provided as described for the CFGINFO option, but without information to the subsystem parent.

stype

If *stype* is coded, the specified resource parameter is assumed to be a minor resource and, if the specified resource name does not already begin with the value of *stype*, it is prefixed with the value of *stype*, separated by a period.

The stype values SUBSYSTEM and DEFAULTS are silently ignored.

This parameter is mutually exclusive with the resource values DEFAULTS and SUBSYSTEM and with the *request_type* values CFGINFO, CFGONLY, CFG-ONLY, STATUS and STATUS-ONLY. Data retrieval does not occur for any other combination of the *request_type* and *stype* parameters.

TGPFX=*variable_prefix*

Specifies the variable prefix that is used to create the names of the task global variables that AOCQRY provides the retrieved information in.

The value of *variable_prefix* must be 3 characters long and defaults to SUB.

If you call AOCQRY from a routine that is driven from the automation control file you must specify a variable prefix for TGPFX= that is something other than SUB or you will corrupt the task global variables that are used by the routine that is driving your routine. This can lead to unpredictable behavior.

PARENTINFO

Specifies whether parent task global variable information is retrieved. Specifies whether information about the parent of the resource is retrieved and provided in task global variables.

The following values can be specified:

YES

Parent information is retrieved and provided in task global variables. If the dependency has a sequence number, PARENTINFO defaults to YES. Otherwise, PARENTINFO=NO applies.

Note: If the subsystem has multiple dependencies with sequence numbering, information is obtained for the first parent resource in the parent list that is recognized by the local System Automation Agent. If information is required for all the supporting resources, AOCQRY must be issued for each of them. A list of the supporting resources can be obtained from the SUBSPARENT task global variable. If no parent is available the variables providing the parent information are cleared.

NO

Parent information is not obtained.

This value is enforced for *request_type* values CFGONLY, CFG-ONLY and STATUS-ONLY.

Note: The variables providing the parent information are NOT cleared. Thus these task global variables may contain data from an earlier AOCQRY call that was for a different subsystem.

EXITS

This parameter determines how automation flag exits are invoked. The following values can be specified:

FORCED

When FORCED is specified, automation flag exits are invoked during flag evaluation regardless of the automation flag setting.

BYPASS

When BYPASS is specified, defined exits to an automation flag of a resource are executed, when this automation flag is checked during flag evaluation and when the flag value is E.

This is the default value.

Return Codes

0

The function completed successfully. If checking an automation flag, automation is allowed.

1
: The global automation flag is off or the resource is suspended.

2
: The specific automation flag is turned off.

3
: A valid resource was not found in the automation control file. This is not used if the *stype* parameter is coded.

4
: Incorrect parameters were used in the call.

6
: SA z/OS initialization is incomplete. Unable to process command request.

Note: If AOCQRY processes with a return code greater than 2, no task global variables are updated.

Usage

- AOCQRY accesses the automation flag settings as they are defined via the customization dialog or dynamically changed via the INGAUTO command to determine whether automation should continue.
- Return codes 1 and 2, which specify that automation is turned off, are set when automation flags are set to NO, the automation flags are disabled for a certain time, or when the resource is suspended (only return code 1). If you want to distinguish whether the automation flag is set to NO or the resource is suspended, please use INGDATA or the task global variable *SUBSSUSPEND*.
- Return code 3 indicates that this application is not defined to SA z/OS and therefore no automation should be done for it.
- The AOCQRY command searches through the automation flags in a predefined sequence to decide whether automation should continue. The first Automation flag entry defined in the automation policy governs whether automation is allowed. The search order is:
  1. The flags that are associated with the fully-qualified resource name as derived from the input parameters.
  2. If the resource name consists of several qualifiers, the flags associated with the resource name, which has been truncated by one qualifier.
  3. If the last remaining resource qualifier is the name of a subsystem, the flags associated with SUBSYSTEM.
  4. The flags associated with DEFAULTS.
- If the *request_type* is coded as Initstart, Start, Recovery, Terminate or Restart, a two-level search is performed. The predefined search sequence described above is performed twice: first for the Automation flag, and then for the specific automation flag. If the Automation flag turns off automation, the second search is not performed and AOCQRY processing terminates.

Task Global Variables

There are three main groups of task global variables that are provided by AOCQRY:

- Application information task global variables (SUBS*xxxxx*)
- Parent information task global variables (SUBP*xxxxx*)
- Automation flag task global variables

If *stype* is not coded in the AOCQRY call, the following apply:

- All task global variables are modified unless parent information is not requested or parent information is not valid.
- If an application entry is not found, the task global variables are not altered from previous settings.

If *stype* is coded in the AOCQRY call, only SUBSAPPL, SUBSTYPE and AUTOTYPE are modified. All other task global variables retain their previous value.

Table 4 on page 40 lists AOCQRY application task global variables (SUBS*xxxxx* task global variables).

If more than 1 value is available a blank delimited list is returned.

Table 4. AOCQRY Subsystem Task Global Variables

Task Global Variable	**Description**
SUBSAPPL	The application name from the automation control file. If *stype* was coded, this task global variable contains the resource name.
SUBSARMNAME	The ARM element name of the application.
SUBSASID	The address space ID of the application. This is only available when SA z/OS process monitoring is used for this resource.
SUBSCATEGORY	The subsystem category (for example, JES2, DB2®, IMS, USS, and so forth). For compatibility reasons SUBSSUBTYPE is still accepted.
SUBSCMDPFX	The application command prefix from the automation control file. If more than 1 value is available a blank delimited list is presented.
SUBSDESC	The application description from the automation control file.
SUBSEXTSTART	Contains the 'External Start' information.
SUBSEXTSTOP	Contains the 'External Stop' information.
SUBSFILE	Contains the information whose file this resource represents.
SUBSFILTER	Contains the filter information that is associated with the path specification of the USS resource.
SUBSINFOLINK	The application INFOLINK from the automation control file.
SUBSIPLCOMP	Contains the IPL complete indication.
SUBSIPLOPT	The application IPL option from the automation control file.
SUBSIPSTACK	Contains the name of the IP stack to be used for port monitoring of USS resources.
SUBSJOB	The application job name from the automation control file.
SUBSJOBLOG	Contains the job log monitoring interval.
SUBSJOBTYPE	The subsystem jobtype from the automation control file (MVS/NONMVS/TRANSIENT).
SUBSMDATE	The date the last monitor cycle checked the subsystem.
SUBSMTIME	The time the last monitor cycle checked the subsystem.
SUBSMSGPREFIX	The application message prefix from the automation control file. If more than 1 value is available, a blank delimited list is presented.
SUBSOPER	The work operator assigned to the subsystem.
SUBSOWNER	The owner of the subsystem, whom to contact in case of error.
SUBSPARENT	A list of the application parent names from the automation control file. The parent names are separated by blanks. This is only provided if dependencies with a sequence number were specified in the dialog.
SUBSPATH	Contains the information whose z/OS UNIX process this resource represents.
SUBSPID	The ID for the USS process.
SUBSPLEX	The name of the plex that is associated with the subsystem.

Table 4. AOCQRY Subsystem Task Global Variables (continued)

Task Global Variable	**Description**
SUBSPORT	Contains the information whose TCP port this resource represents.
SUBSPROC	Contains the subsystem's PROCNAME.
SUBSPROCESS	Contains the current process (START, STOP, or null).
SUBSRSTOPT	The application restart information from the automation control file.
SUBSSCHEDSS	The application scheduling subsystem from the automation control file. If not specified, it defaults to the primary scheduling subsystem.
SUBSSDATE	The date the status of the subsystem was last updated.
SUBSSESS	The subsystem name from the automation control file.
SUBSSKIPACTIV E	Contains the 'Skip ACTIVE status' indication.
SUBSSHUTDLY	The application shutdown delay value from the automation control file.
SUBSSPARM	The application parameter data from the automation control file.
SUBSSTARTTYP E	The application start type. This value is only available if the application is currently in a start phase.
SUBSSTAT	The application status from the automation status file.
SUBSSTIME	The time the status of the subsystem was last updated.
SUBSSTOPTYPE	The application stop type. This value is only available if the application is currently in a stop phase.
SUBSSTRTCYC	Contains the number of start cycles.
SUBSSTRTDLY	Contains the start delay time.
SUBSSUBCAT	The subsystem subcategory (for example, tracker, TOR, AOR, and so forth).
SUBSSUBID	The subsystem ID of the application as defined in the customization dialog.
SUBSSUSPEND	This task global variable returns DIRECT or INDIRECT if the resource is suspended.
SUBSSYMBOL*n*	The application symbol defined for the subsystem (*n*=1–9).
SUBSTERMDLY	The application termination delay from the automation control file.
SUBSTRANTY	Used by transient subsystems to indicate whether they can be rerun.
SUBSTYPE	This task global variable indicates the resource that automation flag checking is performed for. For an application, the value for this task global variable is SUBSYSTEM. For resources other than applications, the value for this task global variable is the value coded for *stype* on the AOCQRY call. If an application entry was not found, the task global variable value is NONE.
SUBSUPDLY	Contains the UP status delay time.
SUBSUSER	Contains the information whose z/OS UNIX user ID this resource belongs to.
SUBSUSSJOB	The real job name of the application. This is only available when SA z/OS process monitoring is used for this resource.
SUBSWLMNAME	A list of the workload manager names from the automation control file.
SUBSWTOR	The list of reply IDs of primary outstanding WTORs of the application.

Table 5 on page 42 lists AOCQRY parent task global variables (SUBP*xxxxx* task global variables).

If more than 1 value is available a blank delimited list is available.

Table 5. AOCQRY Parent Task Global Variables

Task Global Variable	Description
SUBPAPPL	The parent application name.
SUBPARMNAME	The parent ARM element name.
SUBPASID	The parent address space ID. This is only available when SA z/OS process monitoring is used for this resource.
SUBPCATEGORY	The parent subsystem category (for example, JES2, DB2, IMS, USS, and so forth). For compatibility reasons SUBPSUBTYPE is still accepted.
SUBPCMDPFX	The parent command prefix from the automation control file. If more than 1 value is available, a blank delimited list is presented.
SUBPDESC	The parent description
SUBPEXTSTART	Contains the 'External Start' information.
SUBPEXTSTOP	Contains the 'External Stop' information.
SUBPFILE	Contains the information whose file the parent represents.
SUBPFILTER	Contains the filter information that is associated with the path specification of the USS resource.
SUBPINFOLINK	The parent INFOLINK from the automation control file.
SUBPIPSTACK	Contains the name of the IP stack of the parent subsystem.
SUBPIPLCOMP	Contains the IPL complete indication.
SUBPIPLOPT	The parent IPL option from the automation control file.
SUBPJOB	The parent job name.
SUBPJOBLOG	Contains the job log monitoring interval.
SUBPJOBTYPE	The parent subsystem jobtype from the automation control file (MVS/NONMVS/ TRANSIENT).
SUBPMDATE	The date the last monitor cycle checked the parent subsystem.
SUBPMTIME	The time the last monitor cycle checked the parent subsystem.
SUBPMSGPREFI X	The parent message prefix from the automation control file. If more than 1 value is available, a blank delimited list is presented.
SUBPOPER	The work operator assigned to the parent.
SUBPOWNER	The owner of the parent subsystem, whom to contact in case of error.
SUBPPARENT	A list of the parent names from the automation control file. This is only provided if dependencies with a sequence number were specified in the dialog.
SUBPPATH	Contains the information whose z/OS UNIX process the parent represents.
SUBPPID	The ID for the USS process of the parent.
SUBPPLEX	The name of the plex that is associated with the subsystem.
SUBPPORT	Contains the information whose TCP port the parent represents.

Table 5. AOCQRY Parent Task Global Variables (continued)

Task Global Variable	Description
SUBPPROC	Contains the subsystem's PROCNAME.
SUBPPROCESS	Contains the current process (START, STOP, or null).
SUBPSKIPACTIVE	Contains the 'Skip ACTIVE status' indication.
SUBPRSTOPT	The parent restart information
SUBPSCHEDSS	The scheduling subsystem for the parent, from the automation control file. If not specified, it defaults to the primary scheduling parent.
SUBPSDATE	The date the status of the parent system was last updated.
SUBPSESS	The parent subsystem name from the automation control file.
SUBPSHUTDLY	The parent shutdown delay value
SUBPSPARM	The parent parameter data
SUBPSTAT	The parent status
SUBPSTARTTYPE	The parent start type. This value is only available if the application is currently in a start phase.
SUBPSTIME	The time the status of the parent system was last updated.
SUBPSTOPTYPE	The parent stop type. This value is only available if the application is currently in a stop phase.
SUBPSTRTCYC	Contains the number of start cycles.
SUBPSTRTDLY	Contains the start delay time.
SUBPSUBCAT	The parent subsystem subcategory (for example, tracker, TOR, AOR, and so on).
SUBPSUBID	The subsystem ID of the application as defined in the customization dialog.
SUBPSUSPEND	This task global variable returns DIRECT or INDIRECT if the parent is suspended.
SUBPSYMBOL*n*	The application symbol defined for the parent (*n*=1–9).
SUBPTERMDLY	The parent termination delay from the automation control file.
SUBPTRANTY	If the parent subsystem is a transient, this indicates whether it can be rerun.
SUBPTYPE	This task global variable indicates the resource that automation flag checking is performed for. For an application, the value for this task global variable is SUBSYSTEM. For resources other than applications, the value for this task global variable is the value coded for *stype* on the AOCQRY call. If an application entry was not found, the task global variable value is NONE.
SUBPUPDLY	Contains the UP status delay time.
SUBPUSER	Contains the information whose z/OS UNIX user ID the parent belongs to.
SUBPUSSJOB	The real parent job name. This is only available when SA z/OS process monitoring is used for this resource.
SUBPWLMNAME	A list of the workload manager names from the automation control file.
SUBPWTOR	A list of reply IDs of primary outstanding WTORs of the application.

Note: The SUBP variables are only available if a relationship with a sequence number was specified in the customization dialog.

Table 6 on page 44 lists AOCQRY automation flag task global variables.

Table 6. AOCQRY Automation Flag Task Global Variables

Task Global Variable	Description
AUTOTYPE	The AUTOTYPE task global variable contains the value of the automation mode that is turned off. Depending on certain conditions, AUTOTYPE has the following values: **Value** Condition **Null** Automation is allowed. **Null** *request_type* does not check automation flags. **GLOBAL** The Automation (global) automation flag is off. **INITSTART** Initstart automation flag is off. **RECOVERY** Recovery automation flag is off. **RESTART** Restart automation flag is off. **START** Start automation flag is off. **TERMINATE** Shutdown automation flag is off.
EHKEXITRSN	The return code from the exit if a nonzero return code.
EHKEXITNME	The name of the exit supplying the nonzero return code.
SUBSASSIST	The Assist Mode setting for the automation flag.

Examples

Example 1

This example shows how AOCQRY can be used in an automation procedure to check whether automation is allowed for an application, before invoking automation actions.

Assume that the CICST subsystem issues a message during termination that invokes this automation procedure via a NetView automation table statement. Assume also that the message identifier is not considered for the automation decision.

The automation procedure to call AOCQRY is:

```
/* REXX CLIST to check if termination automation is allowed for CICST    */
'AOCQRY CICST,TERMINATE'
Select
  When rc = 0 Then Do           /* Automation on; perform actions req'd. */
   :
  End
  When rc = 1 | rc = 2 Then Do  /* Automation off; If applicable log a
                                   message indicating unable to take
                                   action for message.                   */
   :
```

```
  End
  When rc = 3 Then Exit         /* Subsystem not automated              */
  Otherwise Do                  /* Error; log error message             */
   :
  End
End
Exit
```

The automation procedure performs the following processing steps:

1. The automation procedure calls AOCQRY, supplying CICST as the subsystem name and TERMINATE as the *request_type*. AOCQRY retrieves the appropriate subsystem information, and then searches for the automation flags.
2. After returning from AOCQRY, the automation procedure determines what the return code was, then takes the appropriate action.

Supposing that the subsystem CICST has a HasParent relationship to VTAM, AOCQRY accesses both the definitions of CICST and VTAM to fill in the task global variables. All the SUBS*xxxx* task global variables are filled with the CICST subsystem information, and the SUBP*xxxx* task global variables are filled with the VTAM® information.

Example 2

The automation procedure from Example 1 can be coded in a more generic way by using the NetView REXX function jobname() as the resource option of AOCQRY.

The automation procedure to call AOCQRY is:

```
/* REXX CLIST to check if termination automation is allowed for a job
- generic check dependant on Jobname                                    */
'AOCQRY 'Jobname()',TERMINATE'
Select
  When rc = 0 Then Do       /* Automation on; perform actions req'd.    */
   :
  End
  When rc = 1 | rc = 2 Then Do /* Automation off; If applicable log a
                                  message indicating unable to take
                                  action for message.                   */
   :
  End
  When rc = 3 Then Exit     /* Subsystem not automated                  */
  Otherwise Do              /* Error; log error message                 */
   :
  End
End
Exit
```

The jobname() function returns the name of the job that has issued the message. Using this function, the automation procedure supports any job that can issue the message that invokes this automation procedure via the NetView automation table. This allows portability of the automation procedure to different systems without requiring changes to it. The job name is supplied only to an automation procedure that is called from the NetView automation table.

If your automation procedure issues MSGREAD commands, you must issue the jobname() function upon entry because the returned value resets whenever the MSGREAD command is issued.

Example 3

This example shows how AOCQRY can be used in an automation procedure to check whether automation is allowed for an MVS component, before invoking automation actions.

The message to automate is issued by MVS indicating that an SMF dump data set is full. The automation procedure verifies that automation is allowed by calling AOCQRY.

The automation procedure to call AOCQRY is:

```
/* REXX CLIST to check if recovery automation is allowed for SMF      */
'GLOBALV GETC AOFSYSTEM'
```

```
'AOCQRY SMFDUMP,RECOVERY,'aofsystem
Select
  When rc = 0 Then Do      /* Automation on; perform actions req'd.    */
   :
  End
  When rc = 1 | rc = 2 Then Do /* Automation off; If applicable log a
                                  message indicating unable to take
                                  action for message.                  */
   :
  End
  Otherwise Do             /* Error; log error message                 */
   :
  End
End
Exit
```

This example differs from the previous examples as follows:

- When automating an MVS component, use a generic component as the resource name when calling AOCQRY instead of a message identifier. Thus several messages can be related to a single MVS component to be automated.
- The third parameter *stype* is coded. Coding *stype* tells AOCQRY to skip the process of finding subsystem entries. The example uses the AOFSYSTEM common global variable as the *stype* parameter. The value of the variable is MVSESA.
- Return Code 3 is not valid because the application entries in the automation control file are not checked.

AOCUPDT

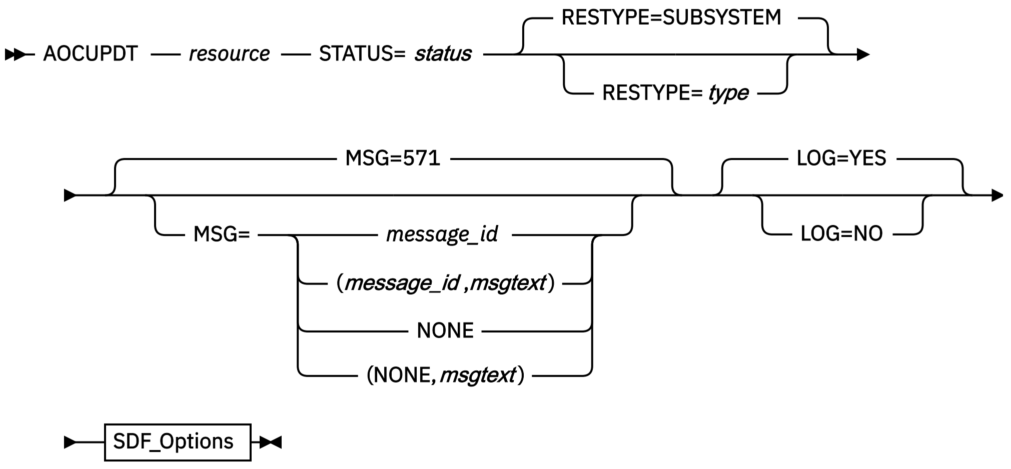
Purpose

AOCUPDT performs several status update functions, including:

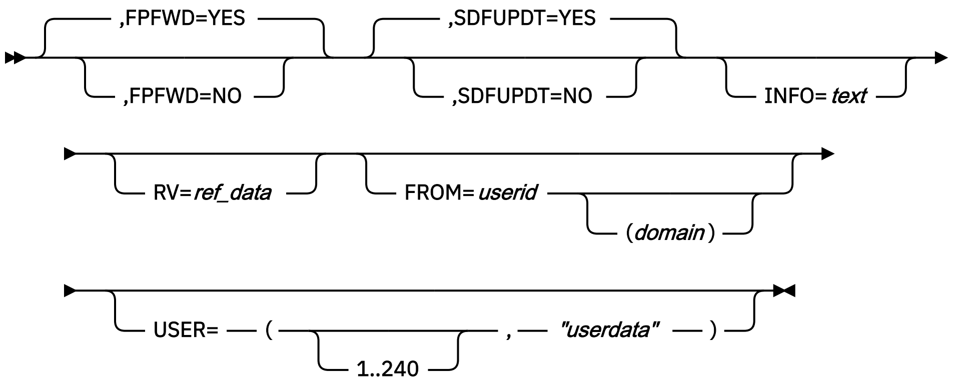
- Updating the automation agent status for the resource
- Identifying any messages associated with the automation agent status change and processing options performed for these messages:
  - Whether a message is issued and logged in the NetView log
  - Which message is issued
  - Whether the message is sent as a notification message to notification operators on a local system (distinct from forwarding to a focal-point system)
  - Whether the message is forwarded to a focal-point system

  AOCUPDT calls the AOCMSG command to handle processing of log and notification messages.
- Updating SDF status displays with the resource status change
- Updating the automation manager OBSERVED status

Syntax



SDF_Options



Parameters

resource

The name of the resource that status or information updates specified by other AOCUPDT parameters are performed for. This value is required and must be specified first on an AOCUPDT call. You can use the following formats for *resource*.

Format	**Example**
system_name.resource	`PROD.TSO` or `PROD.VTAM`
system_name.resource/component	`PROD.TSO/SUBSYS`
system_name.resource /major_component.component	`SYSPLEX.SYSTEM/SAPLEX.CONFIG`
resource	`TSO` or `VTAM`

The *system_name* variable defaults to AOFSYSNAME.

The *component* needs to be specified if the resource name is not defined in the tree. This occurs when using BODY/CELL statements in an SDF panel. In case the *component* itself is not uniquely defined in a tree *major_component* must be specified for identifying the desired *component*. Refer to Part 3, "Status Display Facility Definitions," on page 201 for more details about *component* and *major_component*.

STATUS

Specifies the new value of the automation agent status for the resource.

When you use this parameter to change status, some other AOCUPDT parameters perform default actions, unless otherwise coded. These parameters include:

- MSG
- FPFWD
- SDFUPDT

If you specify STATUS to change status, but do not specify any of the parameters listed above (thereby using parameter defaults), the following occurs:

- SA z/OS issues the message `AOF571I` *`resource_name`* `SUBSYSTEM STATUS FOR JOB` *`jobname`* `IS` *`status - text`* and also logs the message in the NetView log.
- The specified status change is reflected in SDF status panels.

To change the values or actions performed by the MSG, FPFWD, and SDFUPDT parameters, or to preclude their use, you must specify those parameters and desired values.

If a status value that has a length greater than eight characters is used, the status value is truncated to a length of eight characters.

RESTYPE
Identifies the type of resource for the *resource* parameter. You can specify a resource type of your own choice, with the exception of SYSTEM, which is reserved for internal use only. The default is SUBSYSTEM.

type
A resource type of your own choice.

SUBSYSTEM
A resource type of SUBSYSTEM.

FPFWD
Determines whether the specified status is sent from a local system (the system that AOCUPDT is issued on) to a focal-point system.

YES
The status is sent. This is the default.

NO
The status is not sent.

Note: For status forwarding to a focal-point system to occur, you must already have configured an automation network and defined the automation network to SA z/OS. Refer to *IBM System Automation for z/OS User's Guide* for details.

SDFUPDT
Determines whether the specified status change is also reflected in SDF status displays.

YES
The status change is reflected in SDF status displays. This is the default if STATUS is specified.

NO
The status change is not reflected in SDF status displays. This is the default if STATUS is not specified.

MSG
This parameter identifies the message associated with the status change specified with the STATUS parameter. This message is issued to make a note of when the status change occurs. This parameter is applicable only if the STATUS parameter is also specified.

The default is 571, the message ID for SA z/OS status change message AOF571I, *resource_name* SUBSYSTEM STATUS FOR JOB *jobname* IS *status—text*.

This parameter value can be specified using the following formats:

message_id
: Identifies the numeric part of a message ID. For example, 571 specifies SA z/OS message AOF571I.

(message_id)
: The complete message ID, including message prefix and message number, enclosed in parentheses, for example, (AOF123).

(message_id,msgtext)
: The complete message ID, including message prefix and message number, plus message text to be substituted for message variables in the message text. This entire specification is enclosed in parentheses, for example, (123,AA,BB,CC). Quotation marks are not allowed in the message text.

The AOCMSG command substitutes the message text values into message variables &1 through &9 in the fixed message text that is located in the NetView message library. See "AOCMSG" on page 30 for details of how this command works. Some message variables are preset to certain values depending on the message ID and message text that are specified on the AOCUPDT call:

- Variable &1 is always set to AOFRUPDT, which is the name of the automation procedure that the AOCUPDT command processor resides in.
- If the message text is omitted, the following message variables are preset:

Var	Setting
&1	AOFRUPDT
&2	Time
&3	*system_name.resource*
&4	Resource type
&5	Subsystem name
&6	Subsystem job name
&7	Status

- If the message text is provided and the *message_id* number is 571, the following message variables are preset:

Var	Setting
&1	AOFRUPDT
&2	Time
&3	*system_name.resource*
&4	Resource type
&5	Subsystem name
&6	Subsystem job name

&7
Status

Variables &8 and &9 can be assigned values from the *msgtext* portion of this parameter.

- If the message text is provided and the *message_id* number is not 571, the following message variables are preset:

Var	Setting
&1	AOFRUPDT
&2	Time
&3	*system_name.resource*
&4	Resource type

Variables &5 through &9 can be assigned values from the *msgtext* portion of this parameter.

NONE
The operator is not notified that the update has taken place. The text string "RESOURCE *resource_name* STATUS UPDATED TO *status_value*" is written to SDF.

(NONE,*msgtext)*
The operator is not notified that the update has taken place. The text string "*msgtext*" is written to SDF.

LOG
Specifies whether a trace message is written to the NetView log. The message has the following format: AOFRUPDT: system_name resource_name resource_type, STATUS=status. This specification can be overruled by the global variable AOF_AAO_AOCUPDT_LOGGING. A default can be specified by the same global variable. If nothing specified the default is YES. For more information, see the appendix "Global Variables" in *IBM System Automation for z/OS Customizing and Programming*.

INFO
The SDF INFO attribute shown in the detail panel of an SDF status descriptor. Can be any alphanumeric character up to a length of 80 characters.

RV
The reference value of the SDF status descriptor. The maximum length is 40 characters.

FROM
The user id (operator task) and optionally the domain id of the originator of the status update. The default is the issuing task and local domain id.

USER
The user data that is associated with the resource. The data is stored in a 240-byte area initialized with blanks. The parameter accepts two values:

1. The offset which defaults to 1 specifies the location in the area where the subsequent data is stored.
2. The user data enclosed by delimiters. The delimiter can be any printable character greater than x'40' that does not occur in the data.

SDF truncates the data when the offset plus the length of the data exceed the maximum size.

Restrictions and Limitations

AOCUPDT has the following restrictions and limitations:

- AOCUPDT should only be issued from an automation procedure.
- Parentheses appearing within message text must be properly paired and balanced.

- Using AOCUPDT to change a resource status *only* changes the status. It does not initiate any associated status change processing that occurs if the status change is processed through a command such as ACTIVMSG or TERMMSG. Also, the automation status remains unchanged. For example, if the resource is involved in a STARTUP, and the resource's status is changed to UP via AOCUPDT, this process will not be affected because the automation status will not be changed to IDLE.
- The triggering message is automatically captured with a default severity of NORMAL. The default severity can be overridden using the code definitions under pseudo-message ID CAPMSGS. Under CODE2, specify MVSESA for messages with SYSTEMMSG=YES, or otherwise, the subsystem's jobname. The severity used is the content of Value Returned of the first row that matches in the code definitions table. CODE3 is not considered. To avoid message capturing, set Value Returned to *IGNORE*.

Return Codes

0
AOCUPDT processed normally.

4
All requested actions were performed. However, the system detected that some of the data to be changed was the same as the modified data specified on the AOCUPDT call.

8
Incorrect keyword specifications were detected and ignored. All other keywords processed normally.

12
No function keyword was specified on the AOCUPDT call. A resource was identified, but no action to perform on the resource was specified.

16
The specified *resource* was not found, when the specified resource type (RESTYPE value) is SUBSYSTEM and the system name is the system that AOCUPDT is running on.

20
The *resource* name length was longer than allowed. When the specified RESTYPE value is SUBSYSTEM, the resource name cannot be longer than 11 characters.

99
A timeout or another error occurred.

Usage

When you use AOCUPDT to change resource status, the status change message is sent to notification operators defined to receive the message. Notification of a status change occurs whether automation flags for the resource are enabled or disabled (set to Yes or No). To suppress sending a message when a status change occurs, specify MSG=NONE along with the STATUS parameter.

Examples

Example 1

This example shows how to use AOCUPDT to change the status of the TSO subsystem to UP.

```
AOCUPDT TSO,STATUS=UP
```

Note: This will not cause any TSO UP commands to be issued.

Example 2

This example shows how to use AOCUPDT to:

- Change the status of subsystem IMSPROD to DOWN
- Issue a customer-defined message, ABC123

- Ensure that the status change is *not* reflected in SDF

```
AOCUPDT IMSPROD,STATUS=DOWN,MSG=ABC123,SDFUPDT=NO
```

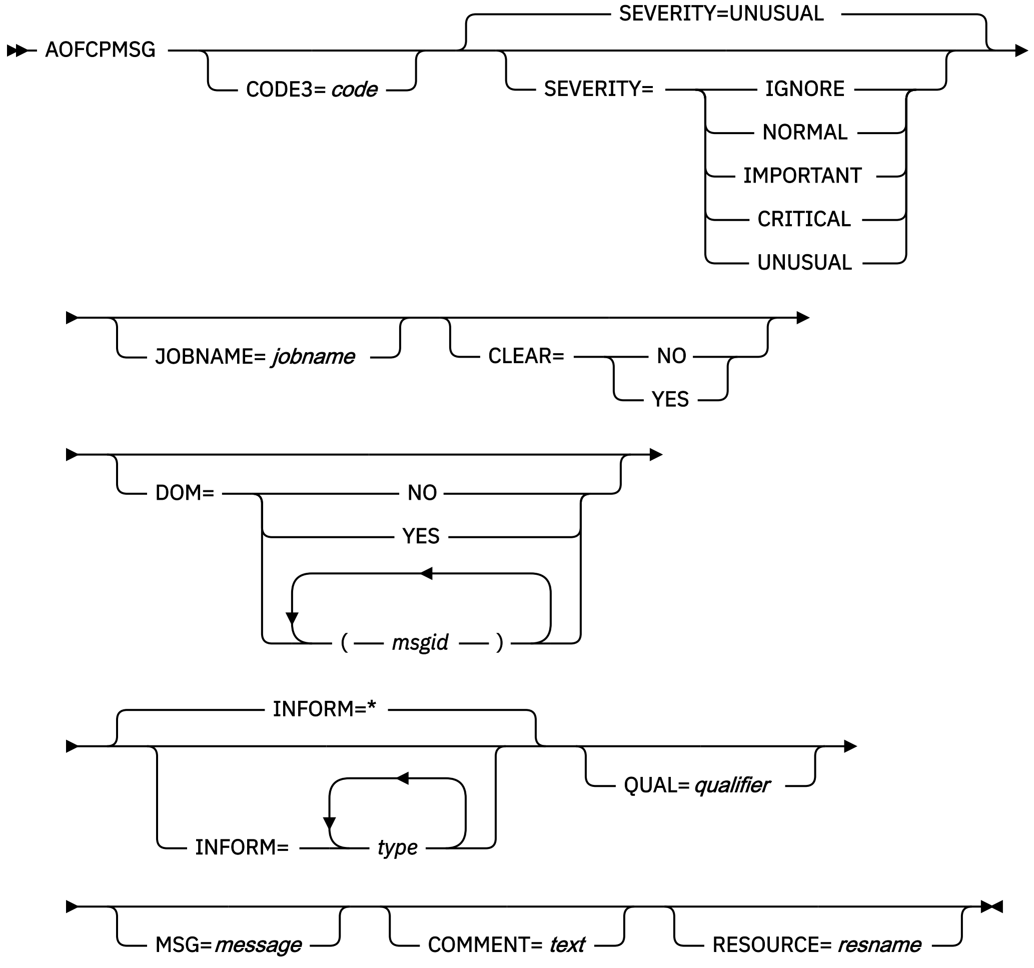
AOFCPMSG

Purpose

The AOFCPMSG command lets you:

- Capture messages and save them in common global variables for subsequent display by DISPINFO
- Add the message to SDF for display in the Messages panels

Syntax



Parameters

CODE3

code
This is the optional CODE3 value used by CDEMATCH to specify the severity of the message.

SEVERITY
This parameter allows you to directly specify a severity and bypass the code matching process. To change the severity classification of a message you need to change the NetView automation table (AT).

The severity is always overwritten by a policy entry. That is, if a policy entry exists, the severity is taken from there.

The severity of a message can also be specified in a CDEMATCH against the subsystem. If no match is found against the subsystem, a match is attempted against the system issuing the message. The message ID for the code match is CAPMSGS.

CODE1 is set to the message ID of the message being captured. CODE2 is set to the job name (you can alternatively set this to the subsystem name) of the subsystem that issued the message. CODE3 is set to the value specified in the *code* parameter.

The severity code that is defined as the value to be returned to the command list can be one of the following:

IMPORTANT
The message is captured and its color is set to PINK.

IGNORE
The message is not captured.

NORMAL
The message is captured and its color is set to GREEN, but not forwarded to SDF status component CPMSGS.

UNUSUAL
The message is captured and its color is set to YELLOW.

CRITICAL
The message is captured and its color is set to RED.

JOBNAME
The JOBNAME is optional and specifies the job name of the subsystem that issued or is assigned to the message. This parameter overrides the value as determined from the jobname() function against the message.

CLEAR
Specifies whether the existing messages that are recorded for the subsystem should be erased and SDF resources should be removed for the subsystem. This may be specified without a message being issued. The default is NO.

DOM
Specify YES to cause AOFCPMSG to delete a previously captured message instance that matches the current message ID (that is, the message ID that is passed to AOFCPMSG from the AT, unless it is overridden by the MSG parameter).

Note: This will not capture the latest copy of the message being deleted.

See The MSG Parameter for details of how to override the message ID that is passed from the AT.

You can also specify one or more IDs of messages to be deleted. This allows you to capture a message and thereby delete other messages that become obsolete in one step. The message IDs must be separated by a blank character and enclosed in parenthesis or quotes if more than one message ID is specified. The message ID can contain wildcards.

The default is NO unless the message is detected as a DOM, in which case the default is YES.

Note: Messages that have been DOMed by an operator are still displayed on SDF and TEP. To remove the message explicitly, you must use the INGMSGS command or its equivalent in SDF and TEP. See INGMSGS in *IBM System Automation for z/OS Operator's Commands*.

INFORM
Specifies the target destination where the message should be sent to. If omitted, the inform list definition in the automation policy that is associated with the resource is used.

QUAL
Specifies a qualifier that is used to identify the message in the absence of the message arrival time (MAT) when deleting the message. The qualifier consists of two elements, separated by a slash (/):

1. The first element is the subcomponent that is associated with the resource, for example, CICSSOS for a CICS short on storage condition.
2. The second element identifies the message uniquely within the subcomponent and resource. This parameter is optional.

MSG
Specify a message to override the message that is passed from the AT. This may be an entire message including a message ID followed by message text or just a message ID. This parameter can also be used in conjunction with the DOM parameter to DOM any previously captured message. When used in conjunction with the DOM parameter only a message ID is needed.

If *message* contains blanks or special characters it must be delimited with single quotation marks, double quotation marks, or parentheses.

COMMENT
If specified, this text will be appended to the message for SDF.

The comment text must be delimited with single quotation marks, double quotation marks, or parentheses if it contains blanks or special characters.

RESOURCE
The name of the resource that is to be associated with the message. This is typically specified in automation manager notation but can also be the subsystem name or any other name.

The RESOURCE parameter takes precedence over the JOBNAME parameter if it is also specified.

Restrictions and Limitations

To use the AOFCPMSG command SA z/OS must be initialized.

AOFCPMSG should only be executed as a NetView automation table command.

Excessive use of AOFCPMSG will reduce NetView storage because messages are stored in common global variables.

It is recommended that you restrict the use of AOFCPMSG to exception condition messages.

Return Codes

0
The AOFCPMSG command completed successfully.

1
Incorrect parameters were used.

2
The job name could not be resolved to a subsystem and is not MVSESA. System messages are only cleared if the job name is specified as MVSESA.

3
The AOFCPMSG command was called without a message in its default safe. This is only valid if CLEAR=YES is specified.

6
Automation is not initialized.

Usage

You should add the AOFCPMSG command to your NetView automation table (AT). However, you can also call AOFCPMSG outside of the AT when specifying the MSG parameter.

The severity of the message can be specified in a CDEMATCH against the subsystem or, if not found there, against the system that the subsystem or resource belongs to. The following settings apply:

CODE1
The message ID.

CODE2
The job name of the subsystem.

Note: In earlier releases, this was the subsystem name.

CODE3
User-defined (optional).

Value Returned
The severity (message ID p_1 p_2 ... p_n).

Optionally, a message ID, followed by one or more message parameters, can be specified. If present, the resulting text is appended to the message for SDF.

Examples

The following example shows how AOFCPMSG is called from the NetView automation table to change the severity of message HSAM1050E to CRITICAL:

```
IF MSGID = 'HSAM1050E'
THEN
EXEC(CMD('AOFCPMSG SEVERITY=CRITICAL')ROUTE(ONE * %AOFOPGSSOPER%));
```

AOFEXCMD

Purpose

AOFEXCMD is used to execute a command on a specified autotask. If the autotask is not active, AOFEXCMD will try to execute the command on a backup autotask. This process is repeated until the command is successfully scheduled for execution, or the list of available backup autotasks is exhausted.

AOFEXCMD will attempt to execute the command on the following autotasks:

1. The primary autotask for the specified automated function
2. The secondary autotask for the specified automated function
3. The primary autotask for SYSOPER
4. The secondary autotask for SYSOPER
5. The primary autotask for BASEOPER
6. The primary autotask for INITOPR1

If the command cannot execute on any of these autotasks, an AOF572I or AOF763I message is issued.

SA z/OS automation will attempt to restart any inactive autotasks that are called by AOFEXCMD.

Syntax

```
►► AOFEXCMD ── autofunc,command ►◄
```

Parameters

autofunc
The automated function that the autotask name is defined under. Automated functions are established in the customization dialogs, and are assigned at SA z/OS initialization.

If the specified value is not defined as an automated function, it is considered to be an operator ID or task name.

If the automated function name is not supplied the procedure will attempt to issue the command on one of the backup automated functions (SYSOPER, BASEOPER, or INITOPR1).

Note: If the automated function name is not supplied, a comma must be used as a placeholder for parsing so that the command is identifiable as the second operand.

command
The command that is to be scheduled to run on the autotask associated with the automated function.

Restrictions and Limitations

If the command cannot be routed to one of the following automated functions, command execution is not attempted on a backup autotask:

- GATOPER
- GEO*xxxx*
- PLEXOPR2
- PLEXOPR3

Issuing operators must be authorized to issue the command using EXCMD.

Messages

The following message is issued by AOFEXCMD when it has failed to execute on any of the available autotasks. This may occur if AOFEXCMD is issued before SA z/OS initialization is complete.

```
AOF572I CGLOBALS NOT INITIALIZED FOR AUTOMATED FUNCTION autofunc -
UNABLE TO ROUTE COMMAND command, operand_1, operand_2, operand_3
```

Example

The following command schedules a message to be sent from autotask AUTNET1 to operator OPER1. In this example, AUTNET1 is defined under the automated function NETOPER.

```
AOFEXCMD NETOPER,MSG OPER1 Logoff in 5 mins
```

AOFRACON

Purpose

Use the AOFRACON command to assign an autotask to each MCS console that is not already served by a NetView operator.

If the console *ANY* is assigned to a NetView operator, AOFRACON does not perform console assignments and terminates with RC=1.

If the console *MASTER* is assigned to a NetView operator, the master console gets an autotask assigned anyway, because a switch of the master console would result in this console not having access to NetView.

Syntax

```
►► AOFRACON ►◄
```

Parameters

None.

Return Codes

0
: Processing successful.

1
: Processing not required (*ANY* assignment).

4
: Processing failed.

Restrictions and Limitations

SA z/OS must be fully initialized prior to running AOFRACON.

A suitable exit to run AOFRACON from would be AOFEXINT.

System message CNZ4100I should be available to automation.

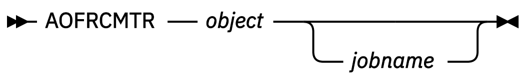
AOFRCMTR

Purpose

The AOFRCMTR command can be used to update the health status of monitor resources by issuing the monitor commands that have been defined for these monitor resources.

The monitor commands that are issued for those monitor resources are those that are defined for a given object and job name.

Syntax



Parameters

object
: Specifies the object that the monitor resource is associated with.

jobname
: Specifies the job name that the monitor resource is associated with. If AOFRCMTR is called from the NetView automation table, the issuing job of the automated message is taken as the default value.

Usage

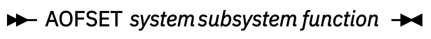
You should normally call the AOFRCMTR command from the NetView automation table.

AOFSET

Purpose

The AOFSET command is used to set the agent resource attributes to ABENDING or BREAKING for a given subsystem on the specified system.

Syntax



Parameters

system
The system that the agent resource parameters are to be changed on.

subsystem
The subsystem that the agent resource parameters are to be changed for.

function
The agent resource parameters that are to be changed. The following values can be specified:

ABENDING
Set the next stop of the subsystem to ABENDING.

BREAKING
Set the next stop of the subsystem to BREAKING.

Restrictions and Limitations

ABENDING and BREAKING can only be used for active subsystems.

Return Codes

0
OK.

1
An error occurred. The cause of the error is described in the error message.

6
Environment not initialized.

AOFTREE

Purpose

The AOFTREE command is used to extract information about an application and its dependent applications. The information returned for each application in the parent-child hierarchy is:

- Name
- Job name
- Type of the resource (can be application group or subsystem)
- Position in the tree

The relationship of an application to its dependent applications can be illustrated using a tree structure as in Figure 1 on page 58.

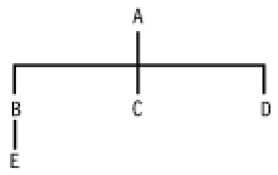


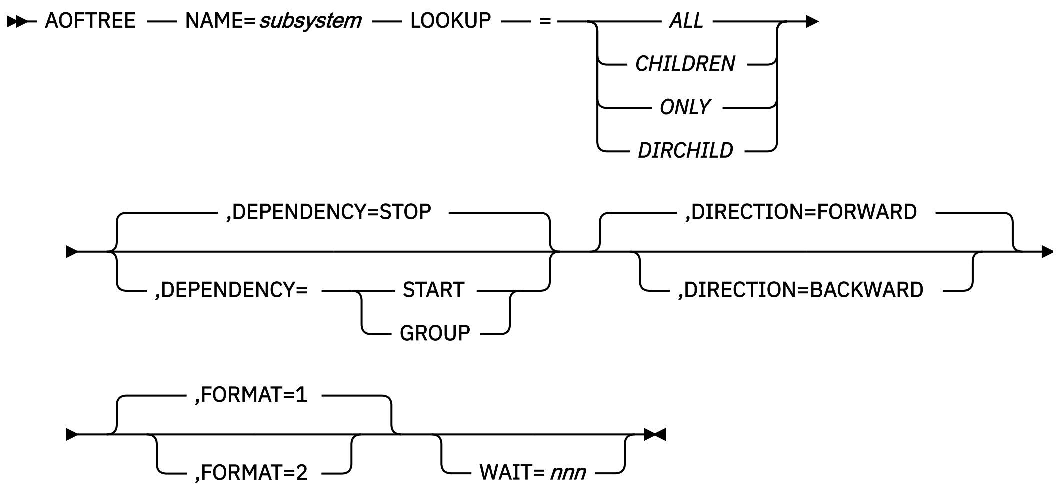
Figure 1. Subsystem Dependent Tree

Where:

- A, B, C, D, and E are all applications.
- A is the root of the tree. All applications below A are its dependants.
- B, C, and D are direct children of A, that is, dependent on A.
- B, C, D, and E are all dependants of A.

- A is the parent of B, C, and D. B is the parent of E.
- A is on level 1, B, C, and D are on level 2, and E is on level 3.
- E, C, and D have a position in the tree referred to as *LOWEST*. A and B have a position in the tree referred to as *UPPER*.

Syntax



Parameters

NAME

subsystem
The name of the application that you want to extract dependent applications for.

LOOKUP
The scope of the tree to be returned. The following values can be specified for lookup:

ALL
Returns details about the application and all its children.

CHILDREN
Returns details about all the children of the application.

ONLY
Returns details about the application only.

DIRCHILD
Returns details about the application and its direct children.

DEPENDENCY
Specifies the type of dependency (as defined in the Policy database) that the parent-child data should be returned for. The following options are available:

STOP
Returns all resources that are a child of the specified resource or that the resource has a stop dependency on. This is the default.

START
Returns all resources that are a parent of the specified resource or that the resource has a start dependency on.

GROUP
Returns all members that the specified resource consists of.

DIRECTION
Specifies the direction for returning the tree data. The following options are available:

FORWARD
This means progressing from the top level of the tree towards the bottom. This is the default.

BACKWARD
This means progressing from the bottom of the tree towards the top.

FORMAT
Specifies the output format that the information is returned in. The following options are available:

1
The data is returned in NetView task global variables (AOFPCHILD.*n*). This is the default.

2
The data is returned in a multiline message.

WAIT
Specifies the number of seconds to wait before reporting that a timeout occurred if the automation manager does not provide the requested data. The maximum time interval is 999 seconds.

If omitted, the time interval is 30 seconds.

Restrictions and Limitations

This command can only be issued for a local system.

Return Codes

0
The command successfully executed. The results are in the task global variable array, AOFPCHILD.

1
An invalid application name was used.

4
Invalid parameters were used.

5
Timeout or other error occurred.

Usage

When control is returned to the calling automation procedure, if the return code is not zero the AOFPCHILD array is set to null.

Note: The AOFPCHILD array is *not* sorted in hierarchical order.

If you use the AOFTREE command within a PIPE and no parameters are passed, the contents of the default safe is taken and treated as input parameters. The output format is set to 2 (FORMAT=2).

Task Global Variables

AOFPCHILD.0
The number of elements in the array.

AOFPCHILD.n
The nth element in the AOFPCHILD array. This element contains the following details for a subsystem, separated by blanks:

- Name
- Job name
- Position in the tree

Examples

Figure 2 on page 61 and the following examples show how the application dependency relationships are expressed using the AOFTREE command. The DIRECTION parameter setting is shown on the left hand side of the chart for an application tree structure.

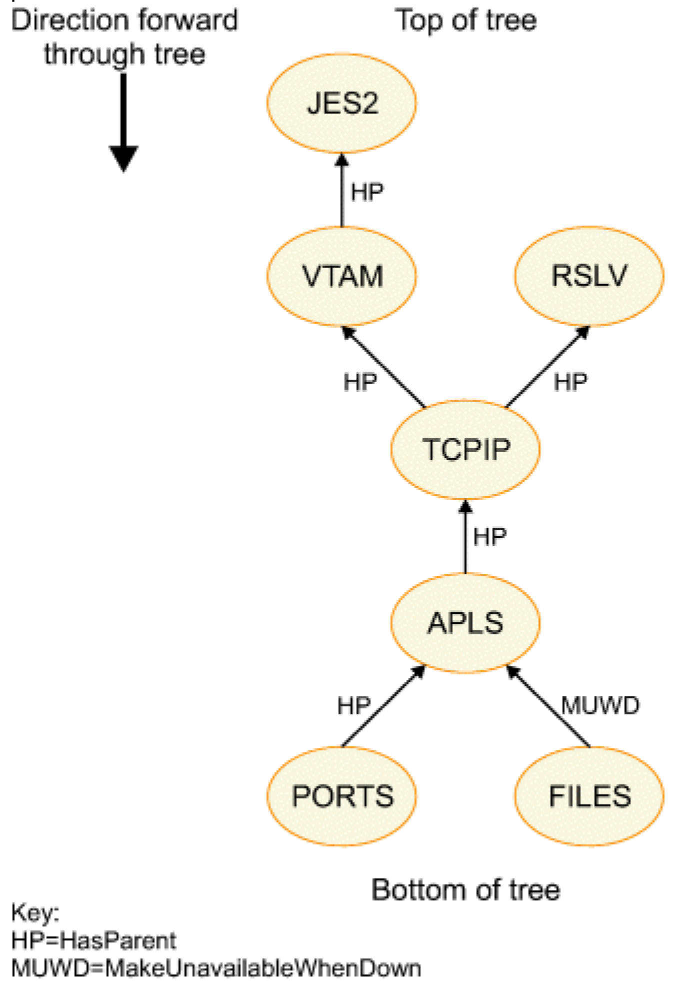


Figure 2. Application Tree

The following results are obtained when calling AOFTREE with the following parameters, and the relationships between A, B, C, D, and E are as described in Figure 1 on page 58.

AOFTREE NAME=A,LOOKUP=ALL

AOFPCHILD.0
= 5

AOFPCHILD.1
= E Ejobname 0 LOWEST

AOFPCHILD.2
= B Bjobname 0 UPPER

AOFPCHILD.3
= C Cjobname 0 LOWEST

AOFPCHILD.4
= D Djobname 0 LOWEST

AOFPCHILD.5
= A Ajobname 0 UPPER

AOFTREE NAME=A,LOOKUP=ONLY

AOFPCHILD.0
= 1

AOFPCHILD.1
= A Ajobname 0 LOWEST

AOFTREE NAME=A,LOOKUP=DIRCHILD

AOFPCHILD.0
= 4

AOFPCHILD.1
= A Ajobname 0 UPPER

AOFPCHILD.2
= B Bjobname 0 UPPER

AOFPCHILD.3
= C Cjobname 0 LOWEST

AOFPCHILD.4
= D Djobname 0 LOWEST

AOFTREE NAME=B,LOOKUP=ALL

AOFPCHILD.0
= 2

AOFPCHILD.1
= E Ejobname 0 LOWEST

AOFPCHILD.2
= B Bjobname 0 UPPER

Examples

Example 1

Return all "children" from TCPIP using the STOP graph.

```
>>> AOFTREE NAME=TCPIP DEPENDENCY=STOP LOOKUP=ALL FORMAT=2
TCPIP/APL/AOC8 TCPIPS APL UPPER
APLS/APL/AOC8/ USSAPLS APL UPPER
PORTS/APL/AOC8 USSPORTS APL LOWEST
```

Example 2

Return all "parents" from TCPIP using the STOP graph.

```
>>> AOFTREE NAME=TCPIP DEPENDENCY=STOP LOOKUP=ALL DIRECTION=BACKWARD FORMAT=2
JES2/APL/AOC8 JES2 APL UPPER
RSLV/APL/AOC8 RESOLVRS APL UPPER
TCPIP/APL/AOC8 TCPIPS APL LOWEST
VTAM/APL/AOC8 VTAMS APL UPPER
```

Example 3

Return all STOP dependencies for FILES.

```
>>> AOFTREE NAME=FILES LOOKUP=ALL FORMAT=2
APLS/APL/AOC8 USSAPLS APL UPPER
FILES/APL/AOC8/ USSFILES APL LOWEST
PORTS/APL/AOC8 USSPORTS APL LOWEST
```

Example 4

Return all direct children from APLS using the STOP graph.

```
>>> AOFTREE LOOKUP=CHILDREN DIRECTION=FORWARD FORMAT=2
PORTS/APL/AOC8 USSPORTS APL LOWEST
```

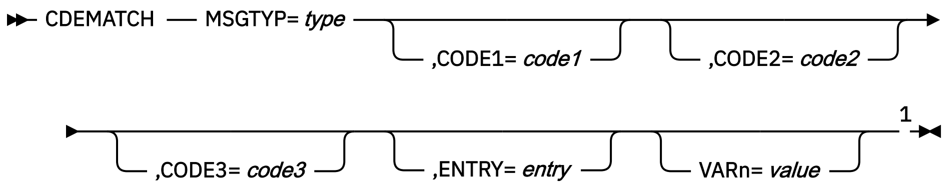
CDEMATCH

Purpose

The CDEMATCH command performs a function similar to a table search. It uses code values that are specified in the automation policy to create a table. You define the table match criteria and a control keyword or result field. Results from the search are returned to the automation procedure and are typically used to alter the automation procedure logic flow or an automation procedure command or reply.

A typical use is to extract feedback and return codes from the message you are automating, and then perform a search in the automation control file using those codes. The result of that search alters the action the automation procedure takes.

Syntax



Notes:

[1] You can define VAR1 - VAR9.

Parameters

MSGTYP=*type*
: This is the value that is entered in the **Message id** field for the MESSAGES/USER DATA policy item of the automation policy. This policy item is used to define the codes that are to be searched through for a match. MSGTYP is typically coded with the message ID of an automated message, but can also be a pseudo message ID such as CAPMSGS or INGALERT.

CODE1=*code1* CODE2=*code2* CODE3=*code3*
: These code parameter values are used to search the code entries of the specified message ID for a matching code definition. You must supply at least one code parameter but you can supply all three code parameters, if desired. The code parameters can be specified in any order.

The values for the code parameters may have been extracted as variable values from an automated message but can also be any other values that a matching code definition is searched for. The code parameter values correspond to the related Code fields in the Code Processing panel of the MESSAGES/USER DATA policy item.

ENTRY=*entry*
: This value is:

- For APLs - the Subsystem Name
- For MTR - the Monitor Entry Name, prefixed with 0
- For APG - the Automation Name, prefixed with 1
- For MVC - MVSESA

The default value for this parameter is determined by the task global variables SUBSTYPE and SUBSAPPL. If the value of SUBSTYPE is SUBSYSTEM, the value of SUBSAPPL is taken as the default value for the ENTRY parameter. Otherwise, the value of SUBSTYPE is taken as the default value. You must call the AOCQRY command before CDEMATCH for the defaults to work.

VARn
Variables to substitute '&n' placeholders in the value returned. n can be 1 - 9.

Restrictions and Limitations

The CDEMATCH command can be called only by another automation procedure or a command processor.

Return Codes

0
A match was found. The resulting Value Returned of the matching code definition is provided in the task global variable EHKACTION.

1
No match was found.

4
Incorrect parameters were passed to the command.

6
SA z/OS initialization incomplete, unable to process command request.

Usage

- When a matching code definition is found in the automation policy for the passed parameters and control is returned to the calling automation procedure, task global variable EHKACTION contains the data from the Value Returned field in the Code Processing panel of the customization dialog. If no matching code definition is found, the value of the task global variable EHKACTION is null.
- Code matching specifications in the automation policy are order-dependent. The first matching code definition is used.
- Any code parameters (CODE1, CODE2, or CODE3) that are not specified when calling CDEMATCH are considered as matching regardless of what exists in the automation policy.
- The format of code matching specifications in the automation policy allows the use of the wildcard characters * and % and the use of comparison operators. For more details about the format of code definitions in the customization dialog see *IBM System Automation for z/OS Defining Automation Policy*.

Task Global Variables

EHKACTION
This variable provides the returned value of the matching code definition as specified in the Value Returned field in the Code Processing panel of the customization dialog.

When the return code for CDEMATCH is greater than zero, the value of this variable is null.

Example

This example shows the relationship between CDEMATCH and the automation control file. The message to automate, $HASP095, is produced by the JES2 subsystem and indicates that a catastrophic-level problem has occurred. This example assumes the full message text is passed to the automation procedure. The automation procedure breaks the message apart, calls CDEMATCH to determine whether the error codes are in the automation control file.

The code matching information is specified in the automation policy as follows.

Select the MESSAGES/USER DATA policy item for the JES2 Application object. On the Message Processing panel for the JES2 subsystem enter `COD` as the action for the message $HASP095.

The Code Processing panel for message $HASP095 is displayed, as shown in Figure 3 on page 65.

Code 1	Code 2	Code 3	Value Returned
*	$PJ*		OPERCANCEL
ERROR*	$K03		IPLREQ
ERROR*	$K08		IPLREQ
ERROR*	$K15		IPLREQ
ABEND*	SA22		OPERCANCEL

Figure 3. Code Processing Sample Panel

The automation procedure is as follows:

```
/* REXX CLIST to respond to $HASP095                          */
/* Check whether automation is allowed and set TGLOBALs       */
‘AOCQRY JES2 RECOVERY’
:
/* Get text of triggering message and save it in msg.1        */
’PIPE SAFE * | STEM msg.’

If msg.0 > 0 Then Do
  /* Parse the input message:                                 */
  /* $HASP095 JES2 CATASTROPHIC type.  CODE = cde RC=rc       */
  Parse Var msg.1 ’CATASTROPHIC’ code1 . ’CODE =’ code2 .
  /* Look for a match                                         */
  ’CDEMATCH MSGTYP=$HASP095,CODE1=’code1’,CODE2=’code2
  Select
    When rc = 0 Then Do /* Match found: check the action field */
      ’GLOBALV GETT EHKACTION’
      If ehkaction = ’IPLREQ’ Then Do
        :
      End
    End
    When rc = 1 Then Do /* No match found: warn if required    */
      :
    End
    Otherwise           /* Error: perform warning action       */
      :
  End
End
```

This is how the automation procedure proceeds:

1. The automation procedure gets the triggering message $HASP095 from the PIPE default SAFE and stores the only message text line in stem variable *msg.1*.
2. The message text is parsed using literal string patterns to extract the error type and the error code in variables *code1* and *code2*. Both values are passed to CDEMATCH as parameters.
3. According to the code specifications in the automation policy, CDEMATCH first checks the passed error code (*code2*) for $PJ in the first three characters. This checking traps both $PJ2 and $PJF, which indicate that command $PJES2,ABEND or $PJES2,ABEND,FORCE has been issued.
4. In the case of a match, CDEMATCH returns the value OPERCANCEL in the task global variable EHKACTION.
5. If no match occurs for the first code definition, CDEMATCH checks for the error codes $K03, $K08, or $K15 and returns the value IPLREQ if there is a match.
6. If no match has occurred yet, CDEMATCH checks for the abend code SA22 and returns the value OPERCANCEL if there is a match.
7. Further processing in the automation procedure depends on whether a matching code definition has been found and, if so, on the returned value of the matching code definition.

When calling CDEMATCH, the ENTRY parameter is not coded and defaults to JES2. This default occurs only if AOCQRY was previously called and task global variable SUBSTYPE is properly filled in. Refer to “AOCQRY” on page 36 for more information.

CHKTHRES

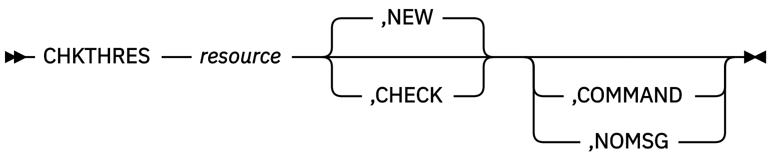
Purpose

The CHKTHRES command checks the number of errors recorded in the automation status file against a preset error threshold. It also supports recording of the error date and time in the automation status file.

CHKTHRES searches the automation control file for the applicable threshold for a specific resource. It then obtains the error status information from the automation status file and determines, based on the thresholds, whether any of the three definable thresholds are exceeded. If a threshold is exceeded, an error message is issued and an appropriate return code is generated.

Syntax

Parameters are positional.



Parameters

resource
The name of the resource that thresholds should be checked for. This value can be a subsystem name, a subsystem minor resource such as CICS.TRAN.APPL1, a generic MVS component name such as MVSESA.SMFDUMP, or any name. If the first qualifier of the specified resource name is not the name of a defined subsystem or MVSESA, the resource name is prefixed with MVSESA.

The resource name, including any prefix that might be added, is limited to a length of 64 characters.

This parameter is required.

NEW
If thresholds are defined for the specified resource name, an error timestamp is added to the error status information and then thresholds are checked.

CHECK
Thresholds are checked based on the existing error information.

COMMAND
This parameter determines the messages that CHKTHRES issues when the infrequent, frequent, and critical error thresholds are exceeded.

Specify this parameter if the automation procedure that uses CHKTHRES issues commands when an error threshold is exceeded.

NOMSG
This parameter determines that no messages are to be issued when the infrequent, frequent, and critical error thresholds are exceeded.

Restrictions and Limitations

None.

Return Codes

0
No threshold is exceeded

1
: Infrequent threshold is reached

2
: Frequent threshold is reached

3
: Critical threshold is reached

4
: Incorrect parameters were used in the call

5
: Timeout or other error occurred

Messages

If CHKTHRES determines that a defined threshold level has been exceeded, it issues an appropriate message that depends on:

- The exceeded threshold level
- The type of resource that the threshold has been checked for
- The COMMAND parameter

If the COMMAND parameter was specified when calling CHKTHRES, message AOF589I, AOF588I, or AOF587I is issued.

Otherwise, if the COMMAND parameter is not specified and CHKTHRES is called to check the threshold for a subsystem, message AOF579I, AOF578I, or AOF577E is issued.

In all other cases (that is, when it is the threshold for anything other than a subsystem), CHKTHRES issues message AOF503I, AOF502I, or AOF501E.

All of these messages are captured with a severity that correlates to the exceeded threshold level, as follows:

Threshold exceeded	Severity
Infrequent	UNUSUAL
Frequent	IMPORTANT
Critical	CRITICAL

If necessary, you can change the assigned severity with a code definition for the message ID CAPMSGS as follows:

Code 1
: Message ID

Code 2
: Job name of subsystem

Code 3
: *

Value Returned
: Severity (This is required.)

Usage

- CHKTHRES accesses the automation policy to check the threshold definitions, and the automation status file to check the current error status information of the resource.
- CHKTHRES is used primarily to track error conditions that can be repetitive. By tracking the errors, operators can be notified of the repetitive error situation before it causes problems.

SA z/OS tracks a minimal number of situations, such as application abends, SPOOL shortages, and problems that cause full LOGREC conditions. It only tracks specific error messages when there are threshold definitions for the related minor resource, such as *subsystem.msgid* or MVSESA.*component*, and when commands are defined for those error messages.

- If no thresholds are defined for the resource itself, CHKTHRES searches in a predefined sequence to find the appropriate default threshold definitions. The search sequence depends on whether the resource name specifies a major resource, such as TSO, or a minor resource, such as TSO.IKT010D or MVSESA.SMFDUMP.

  For major resources that are defined as subsystems, the default threshold definitions for applications or the system apply.

  For the following minor resources, the default threshold definitions for MVS components or the system apply:

  – MVSESA.MVSDUMP

  – MVSESA.SMFDUMP

  – MVSESA.LOGREC

  – MVSESA.SYSLOG

  – MVSESA.LOG

  When searching for default threshold definitions for any other minor resources, the resource name is consecutively truncated up to the first two name qualifiers. For example, if no thresholds are defined for the minor resource CICS®.TRAN.APPL1, defined thresholds for the truncated resource name CICS.TRAN are checked.

Example

This example shows the relationship between a CHKTHRES call in an automation procedure and thresholds defined in the automation policy database. The example involves thresholds set for the TSO subsystem. The automation procedure checks the thresholds by calling CHKTHRES.

The thresholds are defined in the automation policy database on the Thresholds Definition panel of the customization dialogs for the TSO subsystem.

The automation procedure to call CHKTHRES is:

```
/* REXX CLIST to check thresholds when a TSO error occurs              */
/* Check whether automation allowed and set TGLOBALs                   */
'AOCQRY TSO AUTOMATION'
  :
'CHKTHRES TSO NEW'
Select
  When rc = 0 Then Do
/*   perform actions required if no thresholds are exceeded           */
   :
  End
  When rc = 1 Then Do
/*   perform actions required if infrequent thresholds are exceeded   */
   :
  End
  When rc = 2 Then Do
/*   perform actions required if frequent thresholds are exceeded     */
   :
   End
  When rc = 3 Then Do
/*   perform actions required if critical thresholds are exceeded.    */
  :
  End
  Otherwise Do
/*   otherwise, an error occurred, RC=4/5, log error message          */
  :
  End
End
Exit
```

If, for example, the following thresholds settings are in effect for TSO:

- A critical threshold is defined as 8 errors occurring in 2 hours
- A frequent threshold is defined as 4 errors in 4 hours
- An infrequent threshold is defined as 4 errors in 8 hours

The example automation procedure performs the following processing steps:

1. If the automation procedure contains `'CHKTHRES TSO NEW'` the time stamp when the error occurred is added to the automation status file, and the thresholds are checked.
2. Upon return to the automation procedure, the `rc` special variable is checked. If the value indicates that the critical threshold has been exceeded, the automation procedure should stop recovery to be consistent with the message that is issued by CHKTHRES.

FWDMSG

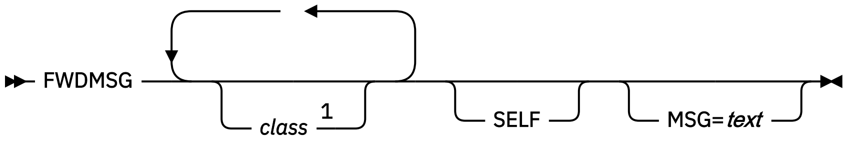
Purpose

You can invoke the FWDMSG command from the NetView automation table (AT) to forward messages from a remote system to a focal point system. By defining entries in the remote AT that invoke FWDMSG you can:

- Trap messages that you are interested in
- Assign specific message classes to those messages
- Forward the messages to the focal point system

Messages are received by focal point notification operators who are defined to receive messages of the assigned classes.

Syntax



Notes:

[1] Up to 10 classes may be specified. Classes should be separated by blanks.

Parameters

class

The message notification classes that are to be assigned to the message. You should specify at least one message class. If you do not specify a class, the message is sent to the authorized receiver of the GATOPER autotask. You can specify up to ten blank-delimited message classes. There are no default message classes.

SA z/OS message notification classes are described in *IBM System Automation for z/OS Messages and Codes*. You can define your own message classes using the USER MSG CLASSES policy item of entry type ENT (Enterprise) in the customization dialogs.

Note: The classes that you assign here must match those that you specify using the NOTIFY OPERATORS policy item of entry type NFY (Notify Operators) in the customization dialogs.

SELF

This parameter sends the message to the appropriate notification operators on the issuing system if FWDMSG is invoked on a system that does not have a defined focal point. If FWDMSG is invoked on a system that does have a defined focal point, SELF is ignored.

MSG
The message text used for this message. If not coded, the messages in the message buffer are used. This parameter is valid for single-line messages only.

Restrictions and Limitations

- A triggering delete operator message will not be forwarded to the focal point.
- Do not use the MSG parameter for multiline messages.
- When FWDMSG is called from the NetView automation table, the message to be processed is in the message buffer. When FWDMSG is called from a command processor or other automation routine, the message text from the MSG parameter is treated as the entire message to be forwarded, including the message ID.
- If invoked with a pipe, all messages in the pipe are forwarded to the focal point as separate messages.

Return Codes

0
Automation procedure processed correctly.

1
Processing error was encountered.

When the MSG parameter is used for a multiline message, the following message is issued:

```
AOF013I SPECIFIED OPERAND MSG= INVALID FOR msgid MLWTO
```

Usage

You can call the FWDMSG command from the NetView automation table.

Examples

Example 1

The following example sends individual messages for each line in the multiline response:

```
IF MSGID='IST075I' & DOMAINID = %AOFDOM%
THEN EXEC(CMD('FWDMSG A1')ROUTE(ONE *));
```

Example 2

The following example sends all RACF® messages to ensure notification of security violations:

```
IF MSGID='ICH' . & DOMAINID = %AOFDOM%
THEN EXEC(CMD('FWDMSG A2')ROUTE(ONE *));
```

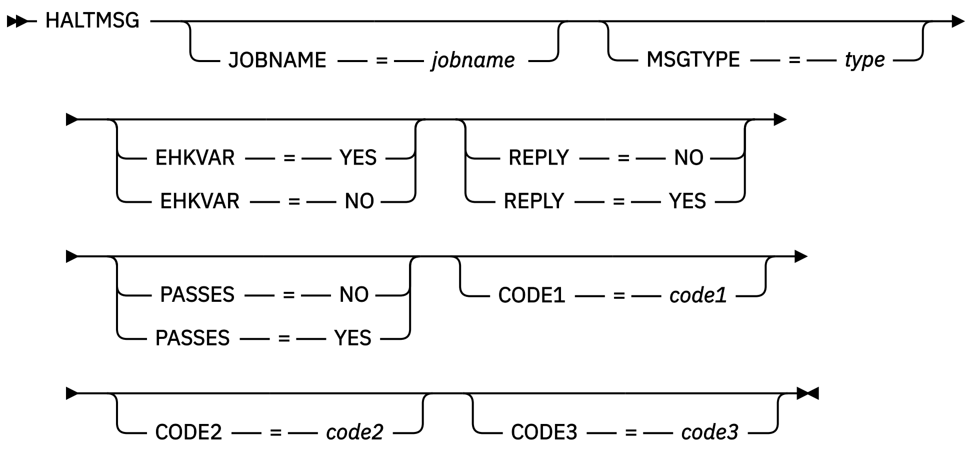
HALTMSG

Purpose

You can use the HALTMSG command to respond to a message by changing the status of an application to HALTED. HALTMSG calls the ISSUEACT command to also issue commands and replies that are defined in the automation policy for the ID of the processed message and for the HALTED status.

Typically, HALTMSG is called from the NetView automation table.

Syntax



Parameters

JOBNAME
The name of the job that the message is for. If not specified, the job name is taken from the message's job name field. You must supply a value for the job name if you are calling HALTMSG from a CLIST.

MSGTYPE
This parameter is used to search for command and reply entries to *subsystem*/*msgtype*-pairs in the automation control file, where *subsystem* is the subsystem name derived from the job name.

When a match occurs, the commands that are associated with the entries are issued. This is in addition to the command entries that are associated with the ENTRY-TYPE pair *subsystem*/HALTED.

If parameter MSGTYPE is not specified, the message identifier of the message that HALTMSG is called for is taken as the default.

EHKVAR
This parameter determines whether the tokens of the parsed message text are to be stored in task global variables EHKVAR0 through EHKVAR9 and EHKVART.

YES
The tokens of the triggering message are to be assigned to the task global variables EHKVAR*n*.

NO
No values are to be assigned to the task global variables EHKVAR*n*.

REPLY
This parameter determines whether a defined reply is issued for a message that HALTMSG has been called for.

YES
A defined reply in the automation policy for the message that is being handled by HALTMSG is issued. REPLY=YES is assumed as the default if the message is a WTOR, otherwise the default is REPLY=NO.

NO
A defined reply for a WTOR being handled by HALTMSG is not issued.

PASSES
Specifies whether passes are used to issue commands or replies (or both) that have been defined in the automation policy.

YES
PASSES=YES is passed to the ISSUEACT command.

NO
PASSES=NO is passed to the ISSUEACT command.

CODE1=*code1*
CODE2=*code2*
CODE3=*code3*
These parameters are passed to the ISSUEACT command, where they are used to select defined commands and replies via code entries.

Restrictions and Limitations

- If HALTMSG is driven by a delete operator message, no action is taken in response to this message.
- HALTMSG will not affect an application that is being shut down.
- HALTMSG will not affect an application that is not in UP status.
- The application status is updated and the relevant commands are issued each time HALTMSG is run.
- Defined commands and replies are only issued in response to a message or a status change, if the recovery flag of the related minor resources of the application allows automation.
- If this command is called on a task other than the AOFWRK*nn* auto operator that is responsible for the subsystem, HALTMSG will schedule itself to that AOFWRK*nn* auto operator. The HALTMSG command will run asynchronously to the calling procedure. This means that when the calling procedure regains control, the status of the subsystem may not yet have changed.
- Only messages for applications with known address space IDs are processed by HALTMSG.

  The address space ID is not checked if HALTMSG is called from an automation procedure (CLIST), or if HALTMSG has been triggered by message BPXF024I.
- The triggering message is automatically captured with a default severity of NORMAL. The default severity can be overridden using the code definitions under pseudo-message ID CAPMSGS. Under CODE2, specify MVSESA for messages with SYSTEMMSG=YES, or otherwise, the subsystem's jobname. The severity used is the content of Value Returned of the first row that matches in the code definitions table. CODE3 is not considered. To avoid message capturing, set Value Returned to *IGNORE*.

Usage

You should normally call the HALTMSG command from the NetView automation table.

Applications can be put into HALTED status when something occurs that leaves them running with reduced function. Use HALTMSG to put an application into HALTED status, and ACTIVMSG (or the SETSTATE command dialog) to change the status.

If HALTMSG is called for a WTOR and it is not replied to, OUTREP is called to process the WTOR.

HALTMSG should run on the working operator of the subsystem that issued the message. Otherwise, the HALTMSG command will run asynchronously to the calling procedure. This means that when the calling procedure regains control, the status of the affected subsystem may not yet have changed.

All commands and replies that are triggered through HALTMSG have access to the SAFE called AOFMSAFE, which stores the message that caused the HALTMSG call.

Task Global Variables

EHKVAR0 through EHKVAR9 and EHKVART
When defining the commands in the automation control file to be issued by command HALTMSG, the variables &EHKVAR0 through &EHKVAR9 and &EHKVART can be used to be substituted by the tokens of the parsed message that has driven HALTMSG. &EHKVAR0 will be substituted by the message ID, &EHKVAR1 by the first token of the message text after the message ID, &EHKVAR2 with the second token and so forth. &EHKVART will be substituted by the trailing message text after the 9th token.

Examples

The following example shows how HALTMSG is called from the NetView automation table:

```
* IKT008I TCAS NOT ACCEPTING LOGONS
IF MSGID = 'IKT008I' & DOMAINID = %AOFDOM% THEN
  EXEC( CMD('HALTMSG')
  ROUTE(ONE %AOFOPGSSOPER%));
```

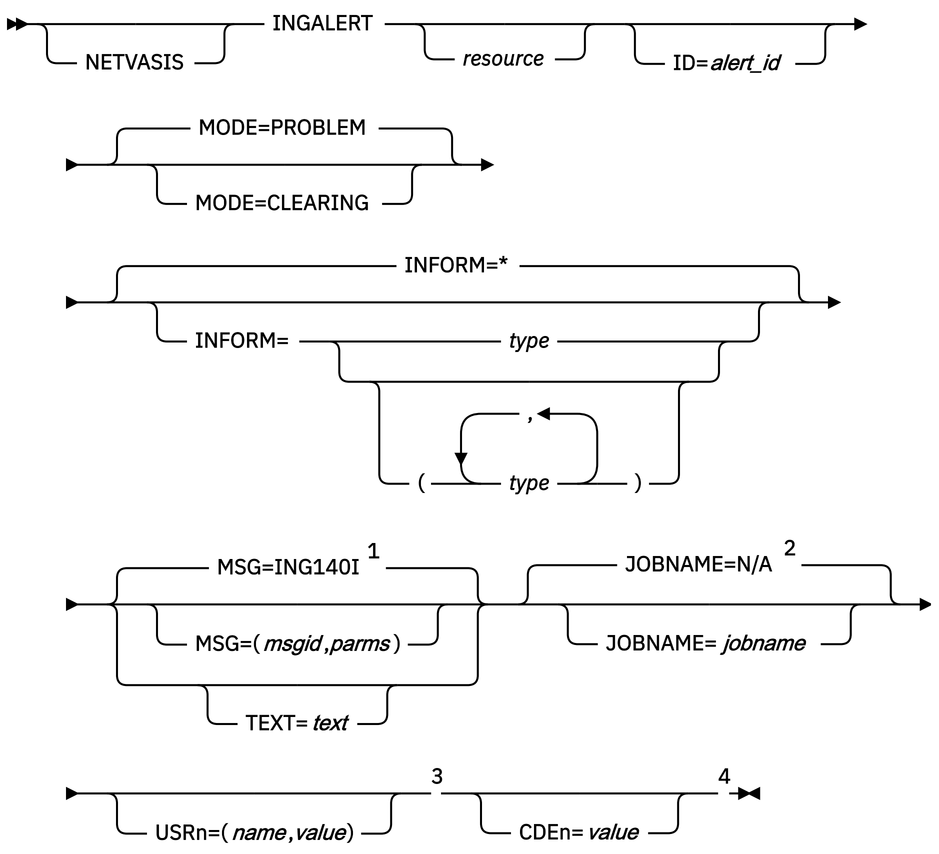
INGALERT

Purpose

The INGALERT command allows you to send alerts to event notification targets such as:

- System Automation for Integrated Operations Management (SA IOM)
- Tivoli Enterprise Console (TEC)
- Tivoli® Netcool/OMNIbus
- Tivoli Service Request Manager®
- A user-defined alert handler.

Syntax



Notes:

[1] This is the default if INGALERT is not called from the NetView automation table.
[2] This is the default if INGALERT is not called from the NetView automation table.
[3] You can define USR1 - USR9.
[4] You can define CDE1 - CDE9.

Parameters

NETVASIS
Prefix the INGALERT command with NETVASIS if you want to pass USRn information in lower or mixed case.

resource
This can be:

- A fully-qualified resource name, in the form *name*/*type*/*sys* (where *type* is APL, APG or MTR)
- The text MVSESA (that is, the content of the AOFSYSTEM variable)
- A job or subsystem name

The subsystem name takes precedence over the job name.

If there is more than one resource with the given subsystem or job name, the corresponding local system resource is used. If there is no such resource on the local system, the first resource found is used.

If the resource name is not specified as a parameter, the value of the JOBNAME parameter is used to determine the resource name. If the JOBNAME parameter is not specified either, and INGALERT is called from the automation table, the job name is taken from the message's job name field. If no job name can be determined, MVSESA is used as the resource name.

ID
This is the alert identifier for the resource. Refer to the "Enable Alerting" section in *IBM System Automation for z/OS Customizing and Programming* for further details on the pre-defined alerts for SA z/OS. If INGALERT is called from the NetView automation table (AT), *alert_id* can be omitted, in which case the message ID of the triggering message is used.

When you create clearing events by specifying MODE=CLEARING, you can set the ID=* to clear all outstanding events for the specified resource.

MODE
This specifies the type of created event.

PROBLEM
Creates a problem event. This is the default value.

CLEARING
Creates a clearing event only if the event is addressed to the EIF or USR target. For other targets, no event is created.

INFORM
This specifies the notification target for the created event to be sent to. An event is only sent to a specified target, if the event notification for this target is enabled and if the target is included in the inform policy list of the resource.

The value for the INFORM parameter can be specified as:

- The name of a supported event notification target. Supported targets are IOM, EIF, TTT or USR
- A list of supported event notification targets, enclosed in parentheses.
- An asterisk, *, which means the list of all supported event notification targets.

MSG
This is the ID of a message defined in the NetView message catalog.

Note that if you enter an invalid message ID, the message AOF000I is sent to the specified event notification targets.

The message can have variables &1 through &9 that are filled with parameters that are specified after *msgid*. If a message parameter is omitted the following defaults are used:

&1
INGALERT

&2
The date and time stamp when the message was generated

&3
The alert ID that was specified or the default that was used

&4
The resource that was specified or the default that was used

&5
The system that INGALERT was called on

MSG cannot be used together with TEXT.

TEXT
This is a text string that is to be used for the alert.

TEXT cannot be used together with MSG.

JOBNAME
This specifies the name of the job that caused the alert. If not specified, the job name is taken from the message's job name field if INGALERT is called from the automation table. Otherwise N/A is used as the default value.

USRn
Specifies the name and the value of a user field. n can be 1-9. User fields are passed on to notification targets EIF, TTT, and USR. For EIF events, the value is limited to 255 characters.

CDEn
Specifies the value to replace '&n' placeholders in the CDEMATCH data. n can be 1-9.

If neither MSG nor TEXT are specified and INGALERT is called from the automation table, the text of the triggering message is first obtained from the default SAFE and if not found from the named AOFMSAFE safe. If there is still no message text, MSG=ING140I is used.

Note that the text or message text may be truncated by SA IOM.

Return Codes

0
All alerts were sent successfully. In addition, there might be alerts that have been ignored.

1
All alerts were ignored.

3
Besides alerts that were successfully sent, at least one alert could not be sent. In addition, there might be alerts that have been ignored.

4
Parameter error.

6
Environment check failed.

8
No alert could be sent. In addition, there might be alerts that have been ignored.

Restrictions and Limitations

SA z/OS must be fully initialized.

Usage

Alert transmission can be controlled as follows:

- Alerting can be enabled and disabled system-wide with the INGCNTL command.

- If an event notification target is specified in the Inform List field of the resource's policy, alerting is enabled; otherwise it is disabled.
- Alerting is disabled for a resource if code processing for it is unsuccessful or returns a value of IGNORE.

An event is only sent to the specified target if event notification for this target is not prevented by one of these control mechanisms.

SA z/OS does not keep track of alerts that have been sent. Once the data has been successfully delivered to the event notification target, responsibility for delivering the event is passed on to this target as follows:

- For IOM, the event is passed on to SA IOM via the peer-to-peer connection
- For EIF, the event is passed on to the message adapter service or the confirmed message adapter service of the NetView event/automation service

  Note: With the INGCNTL command you can specify, whether EIF events are sent via the confirmed or unconfirmed message adapter. Refer to "INGCNTL" on page 78 for further details on setting up the confirmation mode of EIF events.
- For TTT, the event is passed on to the Tivoli Directory Integrator server
- For USR, the event is passed on to the user defined alert handler

If an alert cannot be sent to the target a message is written to the netlog. No further attempts are made to deliver the alert.

Examples

Example 1

The following can be used from the NetView automation table to send an alert whenever message ABC123I is issued:

```
IF MSGID='ABC123I'
THEN
EXEC(CMD('INGALERT'));
```

This example uses alert ID ABC123I and the complete message text of ABC123I as the alert text and sends the alert to all the targets on the inform list definition in the automation policy.

Example 2

The following can be used from the command line or a CLIST:

```
INGALERT MYGRP/APG/SYS1 ID=MYALERT TEXT=(MYGRP HAS A PROBLEM) INFORM=IOM
```

This example uses alert ID MYALERT and the specified alert text and sends an alert to IOM only.

INGCLEAN

Purpose

The INGCLEAN command can be used to clean up the in-storage data model of the local system. The data model is compared to the currently loaded configuration files. Entries within the data model that have no corresponding entries in the configuration files are deleted. For entries that have a hard-coded default provided by System Automation, this default value is restored.

Syntax

```
►► INGCLEAN ►◄
```

Parameters

There are no parameters. Any specified parameters will be ignored without notification.

Return Codes

0
: Cleanup was successful.

4
: Parameter Error.

6
: Environment check failed.

8
: An error occurred.

Restrictions and Limitations

In order to run INGCLEAN the configuration must be loaded and the configuration files must be accessible from disk.

INGCLEAN does not affect data for subsystems, subsystem defaults, application groups and monitor resources because they are cleaned up by the main configuration loader process.

INGCLEAN does not affect data for automation operators because work could be scheduled there and a cleanup would cause an immediate log off from the corresponding task.

For all other elements, INGCLEAN will remove all data if the element is not present in the currently loaded configuration files. This means especially that all data that has been added via ACF REQ=REPL is deleted. Note that INGCLEAN does not restore the values from the configuration files for data that has been modified via ACF REQ=REPL.

INGCLEAN always runs on the local system where it is invoked.

Security Considerations

The INGCLEAN command supports resource level security. If turned on, the following profiles in class SYSAUTO are checked:

Profile	**Authority**	**Condition**
AGT.*sysplex.xcfgrp*.RES._CONFIG	UPDATE	Always

For further details, refer to *IBM System Automation for z/OS Planning and Installation*.

Usage

You can run INGCLEAN from the policy, the automation table, an automation script or directly from the command line. It is recommended to run INGCLEAN as an environment setup exit if you want it to run everytime you load or refresh your configuration from the command line for an instantaneous regular cleanup timer.

Examples

If you want to run INGCLEAN on every configuration refresh, specify it as the first environment setup exit.

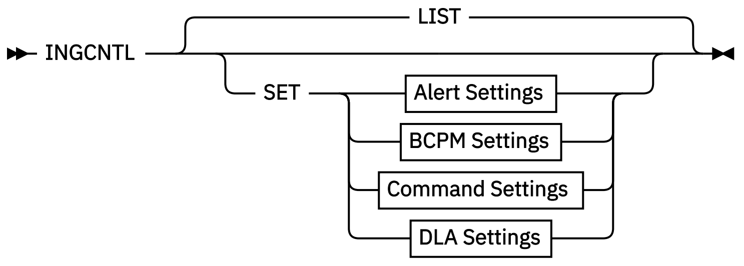
```
COMMANDS  HELP
------------------------------------------------------------------------------
                              System Information                  Top of data
Command ===> _________________________________________________________________

Entry Type : System                 PolicyDB Name    : USER_PBD
Entry Name : SYS3                   Enterprise Name  : USER_ENTERPRISE
                                                                  More:     +
Operating system . . . : MVS
Image/System name. . . . SYS3____

The following specifications are for MVS systems only:
Primary JES. . . . . . . JES2_____  Primary JES2/JES3 subsystem name
System Monitor Time. . . 00:59      Time between monitor cycles (hh:mm or NONE)
Gateway Monitor Time . . 00:15      Time between monitor cycles (hh:mm or NONE)
Automation Table(s). . . INGMSG01_________________________________________
_______________________________________________________________________________
                                    NetView automation table members
SDF Root Name. . . . . . _________  Root of system's SDF tree
Exit name(s) . . . . . . INGCLEAN MYEXIT__________________________________
                                    Environment setup user exit names

USS automation path. . .
/usr/lpp/ing/
ussauto/lib_____


                                    NetView automation table members
SDF Root Name. . . . . . ________   Root of system's SDF tree
Exit name(s) . . . . . . _____________________________________________________
                                    Environment setup user exit names

USS automation path. . .
_/usr/lpp/ing/ussauto/lib_____________________________________________________
_______________________________________________________________________________
                                    System Automation UNIX installation
SA NetView Domain. . . . ________   NetView domain ID of SA z/OS
Network NetView Domain . ________  NetView domain ID of network automation


 F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=RFIND     F6=RCHANGE
 F7=UP        F8=DOWN      F9=SWAP     F10=LEFT     F11=RIGHT    F12=RETRIEVE
```

INGCNTL

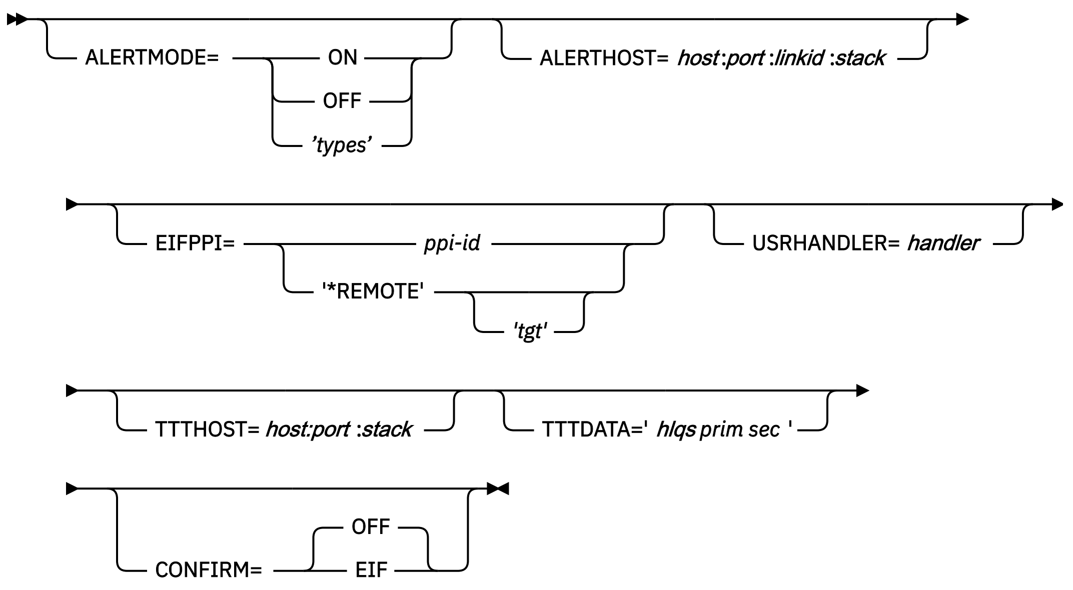
Purpose

The INGCNTL command is used to control various SA z/OS settings.

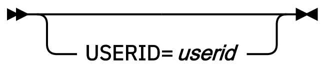
Syntax



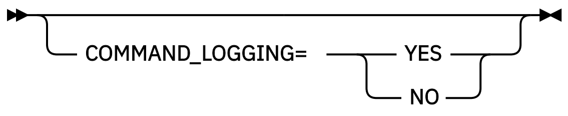
Alert Settings



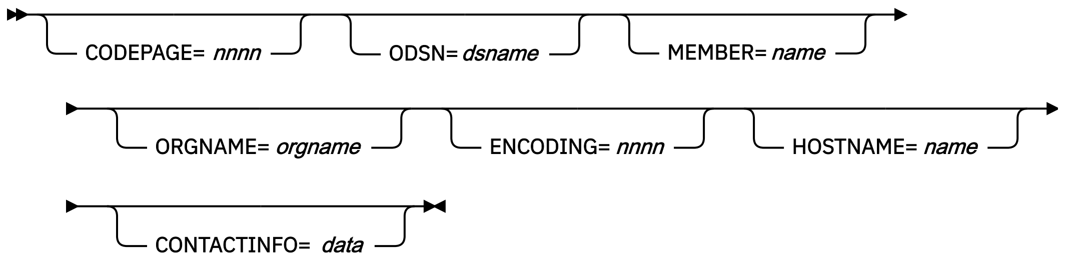
BCPM Settings



Command Settings



DLA Settings



Parameters

LIST
This lists all of the supported settings. This is the default.

SET
This allows you to overwrite one or more settings.

You can use `''` to delete the value of any of the INGCNTL settings, for example, `INGCNTL SET ORGNAME=''`

ALERTMODE
This sets the alerting mode:

ON
Enables alerting for all event notification targets.

OFF
Disables alerting for all event notification targets.

'types'
Enables alerting for the specified event notification targets. The value of *types* must be a blank-separated list of the supported event notification targets IOM, EIF, TTT, or USR.

ALERTHOST
This sets the properties of the connection to the SA IOM server.

host
The host name or IP address of the SA IOM server to be used for the notification.

Note: IPv6 addresses must be enclosed in square brackets (`[…]`).

port
The port of the SA IOM server to be used for the notification.

linkid
The link ID to be used for the connection to the SA IOM server. It can be up to 8 characters long.

stack
IP stack name to be used. If not specified, the default of the SOCKET command is used.

Note that omitting the colon separators restores the original settings for the connection.

EIFPPI
Specifies the PPI receiver name of the NetView Event/Automation Service (E/AS) message adapter service, which forwards alerts to an EIF target such as the Tivoli Enterprise Console or Tivoli Netcool/OMNIbus. Alternatively, "*REMOTE" can be specified to forward the EIF alert to a remote system (outside the local sysplex) for passing the event to the E/AS service.

tgt
is the name of the system or its domain id used as a hub. If omitted, the current focal point is used. The target must be visible either within the local plex or remotely using the gateways.

Note: If *tgt* is specified you must use single quotes, for example INGCNTL...EIFPPI='*REMOTE SYS1'

USRHANDLER
Specifies the name of the automation procedure to be executed to handle events destined for the target USR. See the AOFEXALT member in ING.SINGSAMP for an example.

TTTHOST
Specifies the properties for the connection to the Tivoli Directory Integrator (TDI) server.

host
The host name or IP address of the TDI server that is to be used as the destination for trouble tickets.

port
The port of the TDI server that is to be used as the destination for trouble tickets.

stack
IP stack name to be used. If not specified, the default of the SOCKET command is used.

Note: IPv6 addresses must be enclosed in square brackets (`[…]`).

TTTDATA
Specifies the data set characteristics for the trouble ticket detail data, where:

hlqs
The prefix for the data set name, consisting of one or more qualifiers, with a maximum length of 16 characters. This value must follow the naming conventions for a valid data set name. The name of the data set will be `*hlqs*.*domainid*.D*date*.T*time*.C*counter*`.

prim
The number of cylinders for the primary allocation.

sec
The number of cylinders for the secondary allocation.

CONFIRM
Enables the confirmed message adapter of E/AS for specified notification targets:

OFF
Disables the confirmed message adapter for all notification targets. E/AS does not expect the target server to send a reply (Default setting).

EIF
Enables the confirmed message adapter for EIF events. In this case E/AS expects the server to send a reply confirming or rejecting the EIF event.

USERID
Specifies the MAXIMO user ID for BPCM Web Service authentication.

COMMAND_LOGGING
This sets command logging via message AOF705I for several SA z/OS commands. Message AOF705I lists all the parameters that have been specified together with the user ID of the person or autotask that issued the command.

YES
Enables command logging.

NO
Disables command logging.

CODEPAGE
Specifies the encoding codepage — it is the one that NetView uses. The default is 1047.

You must specify this parameter if you are running with a different codepage. Failure to do so will result in the generation and downloading of a corrupt Identity Markup Language (IdML) book that Tivoli Application Discovery Dependency Manager (TADDM) cannot load.

ODSN
Specifies the name of the output data set. The data set must be a pre-allocated (catalogued) PDS with attribute VB=3000. The name must be fully qualified, with or without surrounding quotation marks. The user ID that NetView is running under must have UPDATE access to it.

MEMBER
Specifies the name of the member that will contain the IdML data. The default is INGBOOK.

Reserved member name is @CHCKSUM.

ORGNAME
Specifies the name of the organization. The default is to take the default name from the IBM Tivoli Change and Configuration Management Database (CCMDB).

ENCODING
Specifies the encoding option. Valid values are EBCDIC, ASCII and UTF-8. The default is UTF-8.

HOSTNAME
Specifies the name of the host of the management software system (that is, SA z/OS). It is used to address SA z/OS. If specified, it takes precedence over a discovered host name.

CONTACTINFO
Provides details of ports and security keys that are needed to establish a session with NetView over TCP/IP when used in conjunction with the host name.

Return Codes

0
Normal completion. Settings have been applied.

4
Invalid parameters were specified.

8
Command failed.

Usage

INGCNTL behaves like an operator command. The output from INGCNTL LIST command takes the form of a correlated multiline message ING149I.

The first line of the multiline message is a header text. Output of the settings begins on line two. Each setting is in a separate line and in the format keyword: value.

Use INGCNTL in a PIPE to capture and analyze (or suppress) the generated message or as an operator NCCF command.

Examples

To list the current settings specify:

```
INGCNTL LIST
```

The output produced is similar to the following:

```
ING149I LIST CONTROL SETTINGS
         ALERTMODE: OFF
          CODEPAGE: 1047
           ORGNAME: My Organization
              ODSN: USER.DLA
```

Note that unset values that have no defaults are not listed.

To enable alerting for IOM and EIF, specify:

```
INGCNTL SET ALERTMODE='IOM EIF'
```

To set the connection properties for IOM specify, for example:

```
INGCNTL SET ALERTHOST=MYIOMSRVR:4711:SA2IOM
```

To set the connection properties for IOM using an *IPv4* address, specify, for example:

```
INGCNTL SET ALERTHOST=10.0.0.3:4711:SA2IOM
```

To set the connection properties for IOM using an *IPv6* address, specify, for example:

```
INGCNTL SET ALERTHOST=[::0AFF:7F01]:4711:SA2IOM
```

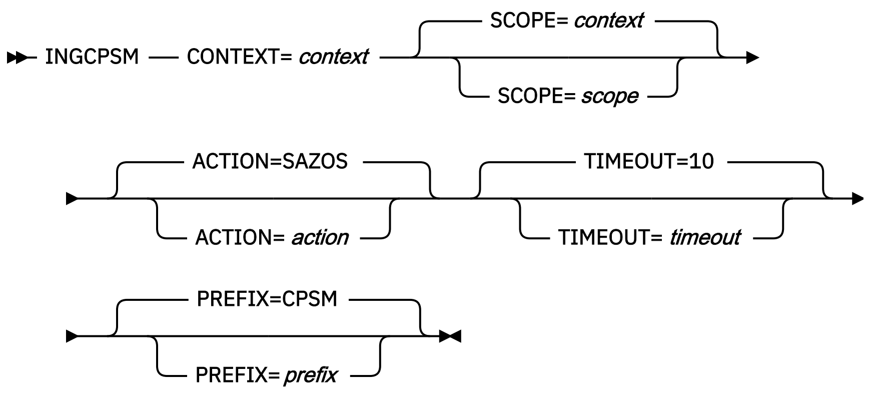
Note: You can invalidate the ALERTHOST settings for an instance by removing the colons. This makes it easy to restore to the original settings.

INGCPSM

Purpose

The INGCPSM command returns status information for a CICSPlex® System Manager (CICSPlex SM) object. This data is returned in ING150I messages. INGCPSM should be run in a virtual operator station task (VOST).

Syntax



Parameters

CONTEXT
This identifies the context for the command. *context* must be the name of a CICSplex and can be 1–8 characters long. This parameter is required.

Note that a CICSPlex SM address space (CMAS) name is not allowed.

SCOPE
This qualifies the CONTEXT option. *scope* can be:

- The 1- to 8-character name of the CICSPlex itself
- A CICS system or CICS system group within the CICSPlex
- A logical scope, as defined in a CICSPlex SM resource description (RESDESC)

If *scope* is not specified the same value that is defined for the context is used.

ACTION
This limits the events that INGCPSM handles to those that are defined with a certain ACTION DEFINITION name.

If *action* is not specified SAZOS is used as the default.

TIMEOUT
This is the number of seconds to wait and collect events before ING150I messages are produced. This is also the interval during which monitor resources that require initial monitoring are determined. The valid range is 1–30 seconds.

If *timeout* is not specified 10 seconds is used as the default.

PREFIX
This is the 1-4 character string that prefixes a monitored CPSM object in the monitor resource. This is used to identify CPSM-related MTRs for initial monitoring.

If *prefix* is not specified CPSM is used as the default.

Return Codes

None.

Restrictions and Limitations

SA z/OS must be fully initialized.

INGCPSM requires CICSPlex SM to be installed and ready to use. Appropriate definitions must have been made within CPSM. See the step "Installing CICSPlex SM REXX API" in the chapter "Installing SA z/OS on Host Systems" in *IBM System Automation for z/OS Planning and Installation*.

Usage

Use the INGVSTRT command to run INGCPSM in a VOST, see "INGVSTRT" on page 167.

Examples

To start INGCPSM and monitor CICSplex CICPLX1, enter the following as a start command in the VOST management APL:

```
INGVSTRT SYNC,INGCPSM CONTEXT=CICSPLX1
```

To override the defaults for ACTION and TIMEOUT specify:

```
INGVSTRT SYNC,INGCPSM CONTEXT=CICSPLX1,ACTION=MYACT,TIMEOUT=30
```

INGDATA

Purpose

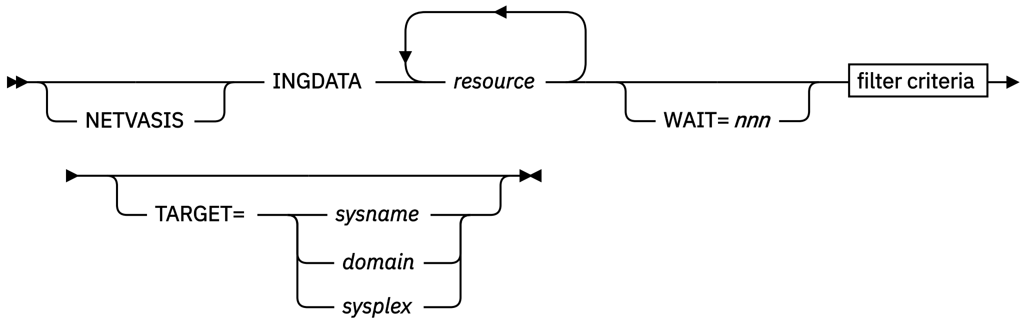
The INGDATA command returns detailed information that the automation manager maintains for the specified resources. The data is returned as a multiline message, one line for each resource.

The format is as follows:

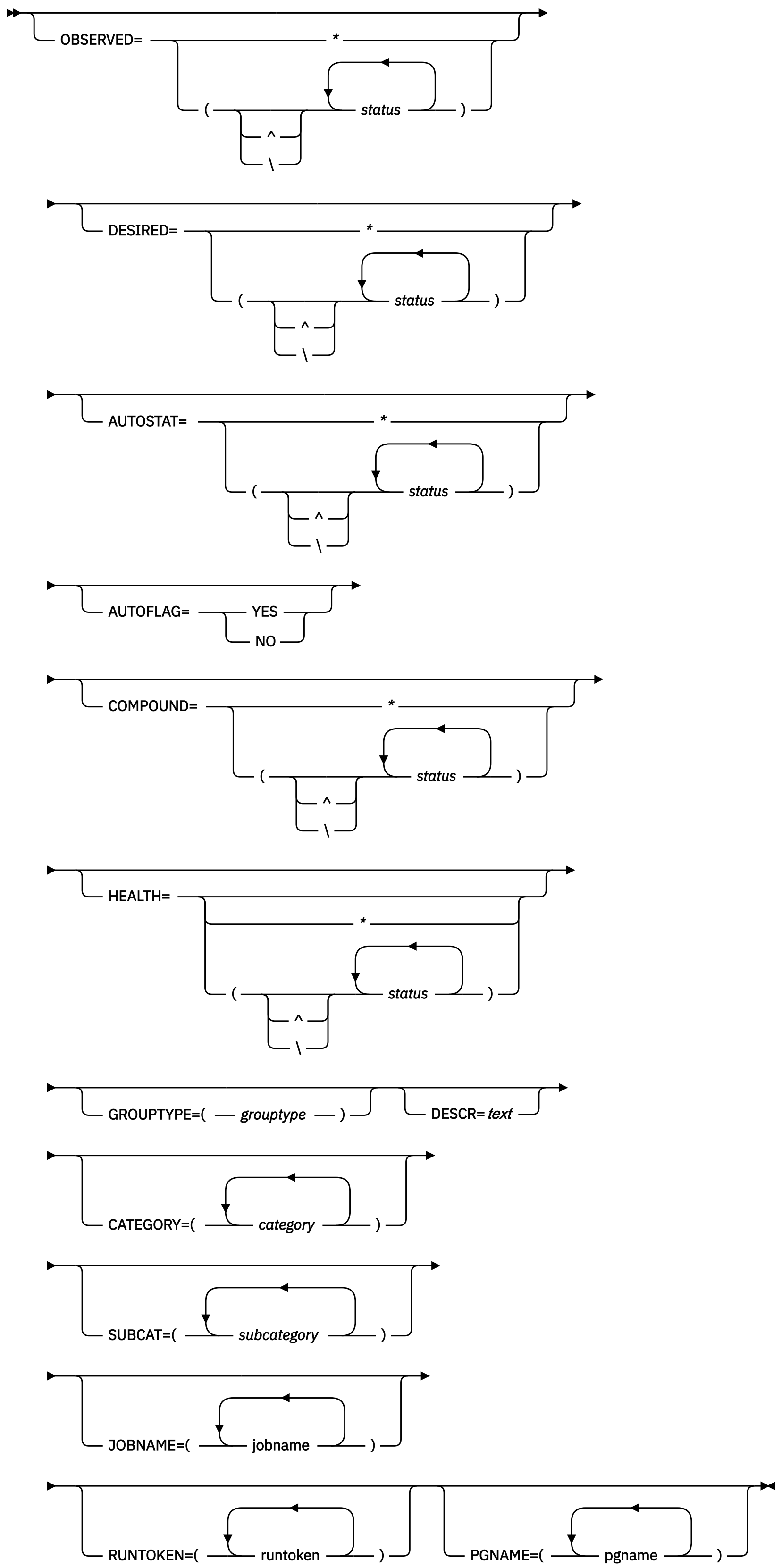
Byte	Length	Description
1	11	Name of resource
14	3	Resource type, for example, APG or APL
19	8	Name of system hosting resource
29	11	Observed status
41	12	Desired status
54	10	Automation status
65	4	Automation flag
70	4	Hold flag
75	48	Description
125	10	Start type
137	8	Stop type
147	8	Service period name
157	8	Trigger name
167	12	Compound status
181	10	Startability status
193	8	Resource nature (group type)
203	10	Category
213	10	Subcategory
224	12	Health status
237	8	Jobname
246	40	Inform list

Byte	Length	Description
287	3	Runmode qualification
291	8	Desired default status
300	20	Pacing gate
321	13	Pacing status
335	3	Suspend flag value

Syntax



filter criteria


OBSERVED=
*
(
^
\
status
)
DESIRED=
*
(
^
\
status
)
AUTOSTAT=
*
(
^
\
status
)
AUTOFLAG=
YES
NO
COMPOUND=
*
(
^
\
status
)
HEALTH=
*
(
^
\
status
)
GROUPTYPE=(
grouptype
)
DESCR= text
CATEGORY=(
category
)
SUBCAT=(
subcategory
)
JOBNAME=(
jobname
)
RUNTOKEN=(
runtoken
)
PGNAME=(
pgname
)

Parameters

NETVASIS
Prefix the INGDATA command with NETVASIS if you want to pass the description text in lower or mixed case.

resource
Specifies the name of the resource (or resources) to be displayed. The format is name/type<[</system>]>. It can be a list of names.

The resource names must be separated by a blank. Asterisks (*) and a percentage sign (%) can be used as wildcard characters.

WAIT
Specifies the number of seconds to wait before reporting that a timeout occurred if the automation manager does not provide the requested data. The maximum time interval is 999 seconds.

If omitted, the time interval is 30 seconds.

filter criteria
The filter criteria to be applied prior to displaying the data. The following values can occur:

OBSERVED
Specifies the observed statuses to be displayed. The statuses must be separated by a blank. It can be abbreviated, for example, to AV for available.

If '^' or '\' is used, all statuses except the ones you specify are displayed. Here is a list of possible Observed Status values and their shortest possible abbreviations: AVAILABLE (A), UNKNOWN (U), SYSGONE (SY), SOFTDOWN (SO), HARDDOWN (H), STARTING (STAR), DEGRADED (D), STOPPING (STO), PROBLEM (P), WASAVAILABLE (W), and STANDBY (STAN).

DESIRED
Specifies the desired statuses to be displayed. The statuses must be separated by a blank. It can be abbreviated, for example, to AV for available.

If '^' or '\' is used, all statuses except the ones you specify are displayed. Here is a list of possible Desired Status values and their shortest possible abbreviations: AVAILABLE (A), UNAVAILABLE (U), and UNKNOWN (UNK).

AUTOSTAT
Specifies the automation status to be displayed. The statuses must be separated by a blank. It can be abbreviated, for example, to ID for idle.

If '^' or '\' is used, all statuses except the ones you specify are displayed. Here is a list of possible Autostat Status values and their shortest possible abbreviations: UNKNOWN (U), IDLE (ID), ORDERED (O), BUSY (B), DENIED (D), PROBLEM (P), and INTERNAL (IN).

AUTOFLAG
Specifies the automation flag to be displayed. It can be either YES or NO and can be abbreviated.

COMPOUND
Specifies the compound status. The statuses must be separated by a blank. It can be abbreviated, for example, to SA for satisfactory.

If '^' or '\' is used, all statuses except the ones you specify are displayed. Here is a list of possible Compound Status values and their shortest possible abbreviations: PROBLEM (P), DENIED (DEN), INHIBITED (INH), AWAITING (AW), INAUTO (INA), DEGRADED (DEG), and SATISFACTORY (S).

CATEGORY
Specifies the IBM-defined or user-defined category that the resource belongs to. More than one value can be specified.

SUBCAT
Specifies the IBM-defined or user-defined subcategory of the resource. More than one value can be specified. For compatibility reasons keyword SUBTYPE is still accepted.

DESCR
Specifies the text string that is used as a filter. The text can contain wildcards. An asterisk (*) matches a string of arbitrary length and a percentage sign (%) matches a single character. The DESCR parameter is case-sensitive. The text string must be enclosed in single or double quotation marks or parentheses() to maintain the case-sensitivity of the entry.

GROUPTYPE
Specifies the type (nature) of the resource group. More than one value can be specified.

HEALTH
Specifies the desired health statuses to be displayed. The statuses must be separated by a blank. It can be abbreviated, for example, to NO for normal. You can also specify an asterisk (*) to reset the current filter setting, for example, INGFILT HEALTH=*.

If '^' or '\' is used, all statuses except the ones you specify are displayed. Here is a list of possible Health Status values and their shortest possible abbreviations: SYSGONE (S), UNKNOWN (U), NORMAL (N), WARNING (W), MINOR (M), CRITICAL (C), and FATAL (F).

JOBNAME
The jobname that is assigned to the resource. More than one jobname can be specified. Wildcards are supported.

RUNTOKEN
The runtoken that is assigned to the resource. More than one runtoken can be specified. Wildcards are supported.

PGNAME
The pacing gate that is assigned to the resource. More than one pacing gate can be specified. Wildcards are supported. You can also specify an asterisk (*) to reset the current filter setting.

TARGET
For information on the TARGET parameter, refer to *IBM System Automation for z/OS Operator's Commands*.

Return Codes

0
Okay.

1
An error occurred.

2
SA z/OS has not fully initialized.

Restrictions and Limitations

SA z/OS must be fully initialized.

Usage

The INGDATA command should be used in a NetView PIPE statement.

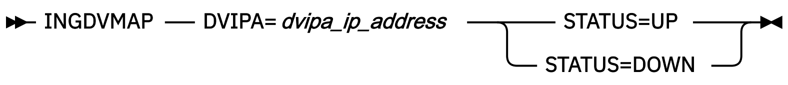
INGDVMAP

Purpose

The INGDVMAP routine is called from the automation table. It is used to respond to messages that are issued by the z/OS Communications Server and that contain a DVIPA. Depending on the triggering message in combination with the STATUS parameter, the routine calls ACTIVMSG or TERMMSG to set the status of an SA z/OS policy defined application that represents a DVIPA accordingly.

Note: It is required that the parameter `DVIPA=`*`dvipa_ip_address`* is defined in the 'Startup Parameters' field in the APPLICATION INFO policy of the DVIPA application.

Syntax



Parameters

DVIPA
The dynamic virtual IP address.

STATUS
The agent status that must be set for the DVIPA application.

Return Codes

0
Status changed successfully.

8
The subsystem representing the specified DVIPA could be not found.

12
Parameter error. DVIPA specification or valid STATUS specification are not present.

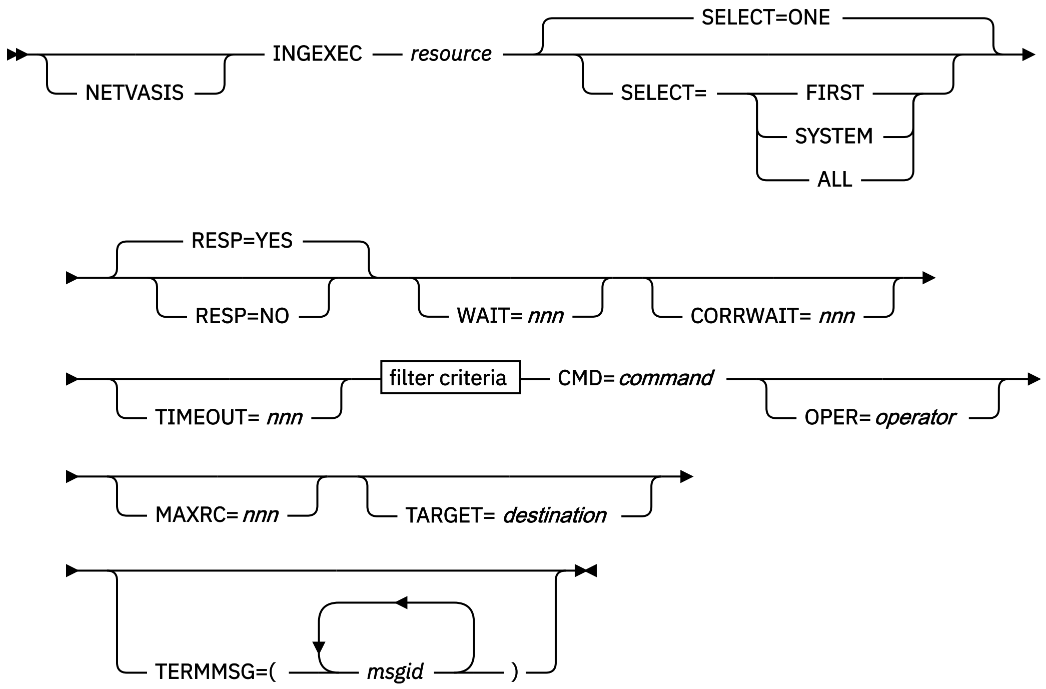
INGEXEC

Purpose

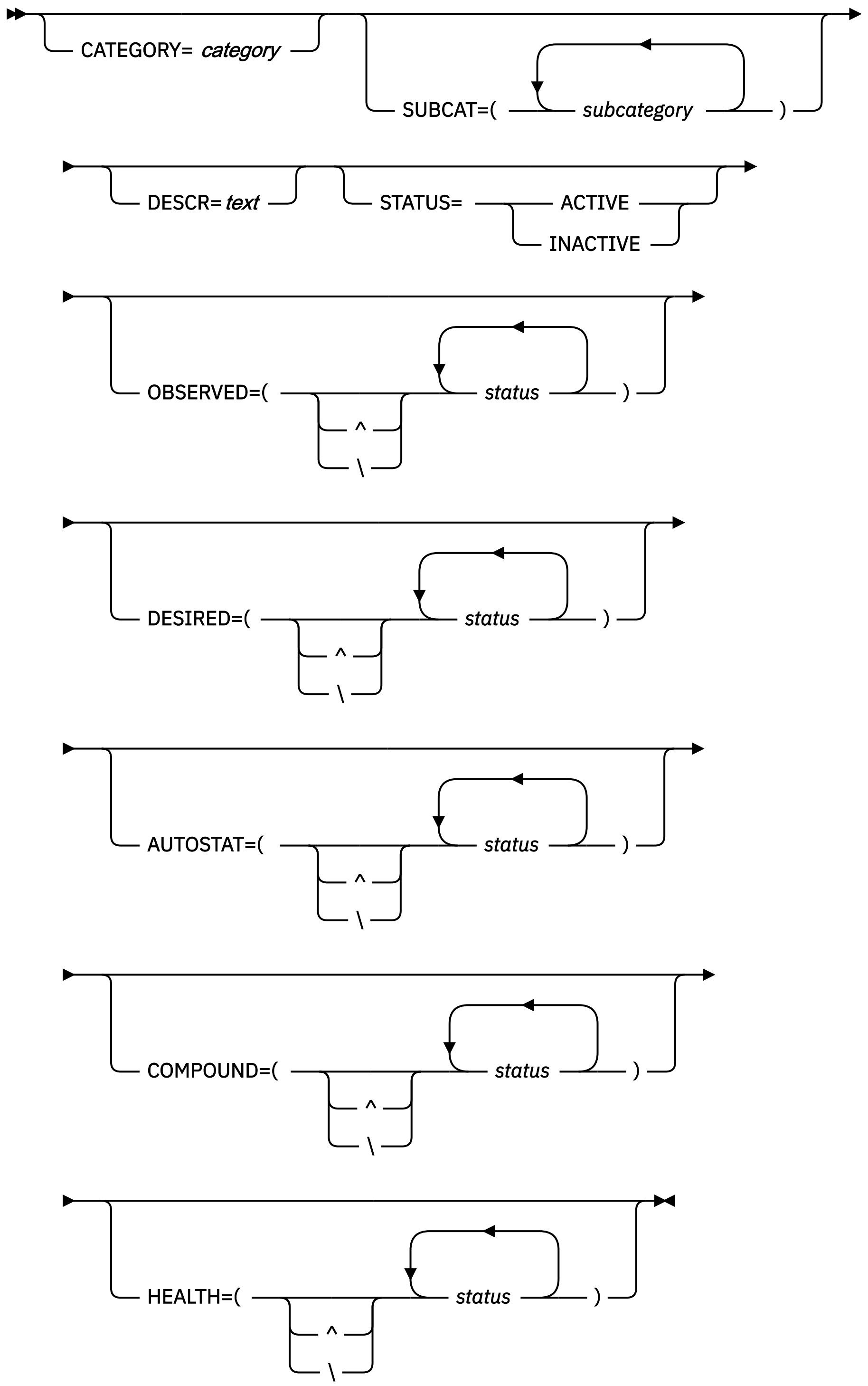
The INGEXEC command can be used to process the specified command on the system where the specified resource resides. The output of the command execution is collected and can be automatically returned to the caller.

The INGEXEC command operates sysplex-wide. The INGEXEC command interrogates the automation manager to determine the list of resources affected.

Syntax



filter criteria



Parameters

NETVASIS

Prefix the INGEXEC command with NETVASIS if you want to pass either the command or the description text in lower or mixed case as well.

resource

The resource name that is used to determine the system that the command should be routed to. It can be one of the following:

- The resource name in automation manager format. If an application group is specified its group members are taken. Note that a resource name in automation manager notation has the format `resname/type[/system]`. The resource name can contain wildcards, such as TSO*/APL/* or CICS%%G/APG.
- The subsystem name. If the name that is specified for a resource does not contain a slash (/) it is considered to be a subsystem name. The subsystem name can contain wildcards, such as TSO* or *DB2.

Notes:

1. When the INGEXEC command is specified in the policy database, the subsystem symbols are resolved at the time the INGEXEC command is executed and *not* when the command specified in INGEXEC is processed. To ensure that the substitution is done when the command specified in INGEXEC is executed, prefix the variable name with a number sign character (#) instead of the standard ampersand character (&), for example, `#SUBSJOB`.
2. ONLY resources where the SA z/OS automation agent is up and running are considered.
3. Resources of type REF or DMN are not supported. If you explicitly issue an INGEXEC command for a resource of one of those types, you receive an error message. If you use a wildcard and resources of those types are affected, all REFs and DMNs are filtered out and not considered further on.

SELECT
Specifies which resource is used when determining where to send the command:

ALL
All resources that match the filter criteria.

FIRST
The first resource in the list of eligible resources. The resource list is sorted in alphabetical order.

ONE
Only one resource is allowed to match the filter criteria. This is the default. If more than one resource matches the criteria, the command is rejected.

SYSTEM
One resource per system is allowed to match the filter criteria.

RESP
Specifies how to handle the command output:

YES
The output of the command is returned to the caller.

NO
The output of the command is queued with the NetView CMD LOW command on the target systems.

WAIT
Specifies the number of seconds to wait before reporting that a timeout occurred if the automation manager does not provide the requested data. The maximum time interval is 999 seconds. If omitted, the time interval is 30 seconds.

CORRWAIT
Specifies the CORRWAIT value (in seconds) to be used when INGEXEC uses the NetView PIPE command to submit the command to be executed. The CORRWAIT PIPE stage is necessary to trap asynchronous command output. The maximum value is 999 seconds.

TIMEOUT
Specifies the maximum number of seconds the INGEXEC command waits for responses from the remote system where the command was sent to. The maximum is 999 seconds. The default is 30 seconds.

filter criteria
The following filter criteria can be optionally specified:

CATEGORY
The category of the resource.

SUBCAT
Specifies the IBM-defined or user-defined subcategory of the resource. More than one value can be specified. For compatibility reasons keyword SUBTYPE is still accepted.

DESCR
Specifies the text string as a filter. The text can contain wildcards. An asterisk (*) matches a string of arbitrary length and a percentage sign (%) matches a single character. The DESCR parameter is case-sensitive. The text string must be enclosed in single or double quotation marks or parenthesis to maintain the case-sensitivity of the entry.

STATUS
The status that the resource must be in to be considered. It can be one of the following:

ACTIVE
The observed status of the resource must be AVAILABLE.

INACTIVE
The observed status of the resource must be either SOFTDOWN, HARDDOWN, SYSGONE, or UNKNOWN.

OBSERVED
Specifies the observed statuses that the resource must be in to be eligible. The statuses must be separated by a blank. It can be abbreviated, for example, to AV for available.

If '^', or '\' is used, all statuses except the ones you specify make the resource eligible. Here is a list of possible Observed Status values and their shortest possible abbreviations: AVAILABLE (A), UNKNOWN (U), SYSGONE (SY), SOFTDOWN (SO), HARDDOWN (H), STARTING (STAR), DEGRADED (D), STOPPING (STO), PROBLEM (P), WASAVAILABLE (W), and STANDBY (STAN).

DESIRED
Specifies the desired statuses that the resource must be in to be eligible. The statuses must be separated by a blank. It can be abbreviated, for example, to AV for available.

If '^', or '\' is used, all statuses except the ones you specify make the resource eligible. Here is a list of possible Desired Status values and their shortest possible abbreviations: AVAILABLE (A), UNAVAILABLE (U), and UNKNOWN (UNK).

COMPOUND
Specifies the compound statuses that the resource must be in to be eligible. The statuses must be separated by a blank. It can be abbreviated, for example, to SA for satisfactory.

If '^', or '\' is used, all statuses except the ones you specify make the resource eligible. Here is a list of possible Compound Status values and their shortest possible abbreviations: PROBLEM (P), DENIED (DEN), INHIBITED (INH), AWAITING (AW), INAUTO (INA), DEGRADED (DEG), and SATISFACTORY (S).

AUTOSTAT
Specifies the automation statuses that the resource must be in to be eligible. The statuses must be separated by a blank. It can be abbreviated, for example, to ID for idle.

If '^', or '\' is used, all statuses except the ones you specify make the resource eligible. Here is a list of possible Autostat Status values and their shortest possible abbreviations: UNKNOWN (U), IDLE (ID), ORDERED (O), BUSY (B), DENIED (D), PROBLEM (P), and INTERNAL (IN).

HEALTH
Specifies the health statuses that the resource must be in to be eligible. The statuses must be separated by a blank. It can be abbreviated, for example, to MI for minor.

If '^', or '\' is used, all statuses except the ones you specify make the resource eligible. Here is a list of possible Health Status values and their shortest possible abbreviations: SYSGONE (S), UNKNOWN (U), NORMAL (N), WARNING (W), MINOR (M), CRITICAL (C), and FATAL (F).

CMD
The command to be executed. It can contain &SUB*xxxxx* variables that are resolved using the appropriate settings of the subsystem on the target system.

OPER
The automated operator on the target system where the command is to be processed.

MAXRC
The maximum return code accepted for command processing. If the command return code is higher processing is aborted. For multiple resources, the processes run sequentially and a process is terminated if a return code is greater than the value specified here.

TERMMSG
Specifies the message IDs that terminate the message collection. More than 1 message ID can be specified separated by a blank character. If more than 1 message ID is specified, they must be enclosed in parenthesis or quotes.

TARGET
The systems where the INGEXEC command should run. The INGEXEC command is a sysplex-wide command. Therefore you do not need to specify the TARGET parameter when you want processing within the local sysplex. Specify only one system for each remote sysplex. Specify **FP* when the command should be routed to the focal point.

Return Codes

0
Command processed successfully.

1
An error occurred.

2
Parsing Error.

Restrictions and Limitations

SA z/OS must be fully initialized.

Any color attribute that is associated with the output messages of the command that is being executed are ignored. This also applies to any screen manipulation actions.

Examples

Consider a setup with three basic DB2 application groups that each have three DB2 applications: DB2MSTR, DB2IRLM, and DB2DIST. All three applications in DB2GRP/APG/SYS1 are active, DB2DIST in DB2GRP/APG/SYS2, and all three applications in DB2GRP/APG/SYS3 are inactive. On all systems (SYS1-SYS3) the SA z/OS automation agent is running.

Now consider the result of the following:

1. `INGEXEC DB2GRP/APG/* STATUS=ACTIVE SUBCAT=MSTR SELECT=ONE CMD='...'`

   In this example, both DB2MSTR/APL/SYS1 and DB2MSTR/APL/SYS2 are selected. However, because SELECT=ONE is specified the command is denied.
2. `INGEXEC DB2/APG STATUS=ACTIVE SUBCAT=DIST SELECT=ALL RESP=NO CMD='...'`

   In this example, DB2DIST/APL/SYS1 is selected. It is the only resource with subcategory = DIST that is active. The command is routed to SYS1. Subsystem symbol (&SUBxxxxx) substitution takes place using the subsystem settings of DB2DIST on SYS1. Because RESP=NO is specified, SA z/OS does not wait for command completion.
3. `INGEXEC DB2MSTR SELECT=ALL CMD='...'`

   In this example, the resources DB2MSTR/APL/SYS1, DB2MSTR/APL/SYS2 and DB2MSTR/APL/SYS3 are selected. The command is routed to SYS1, SYS2 and SYS3. Subsystem symbol (&SUBxxxxx) substitution takes place using the corresponding subsystem settings.

To issue a command on all active systems in the SAplex (which means the SA z/OS automation agent is running), specify */SYS/* as the resource name, for example:

```
ingexec */sys/* cmd='mvs d t' select=all
```

The command output is collected and returned to the caller in one or more multi-line messages. There is one multi-line message for each command invocation on the target systems. The first line of the multi-line message describes:

- The name of the system where the command executed
- The name of the resource for which the command was executed
- The return code of the command execution
- The command itself

Consider the following command running in an SAplex with SYS1, SYS2 and SYS3, but on SYS1 the SA z/OS automation agent is not active:

```
INGEXEC TSO SELECT=FIRST,CMD='RES'
```

The following is an example of the output:

```
| ING02
SYSTEM=SYS2 TSO/APL/SYS2 RC=0 CMD='RES'
DSI386I NETVIEW RESOURCE UTILIZATION 14:38:37
        TOTAL CPU %                 =         1.06
        NETAROLI CPU %              =         0.00
        NETAROLI CPU TIME USED      =       306.32 SEC.
        REAL STORAGE IN USE         =        66948K
        PRIVATE ALLOCATED < 16M     =          980K
        PRIVATE ALLOCATED > 16M     =        66392K
        PRIVATE REGION    < 16M     =         9192K
        PRIVATE REGION    > 16M     =       307200K
END OF DISPLAY
```

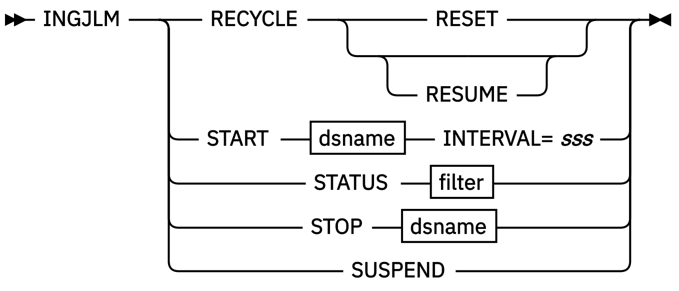
INGJLM

Purpose

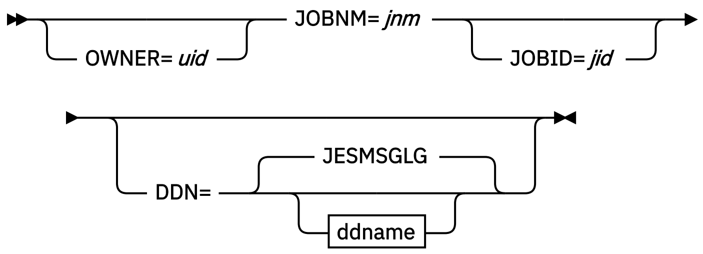
The INGJLM command is used to start, stop, suspend or query Job Log Monitoring when the spooling subsystem is JES2 or JES3.

Syntax

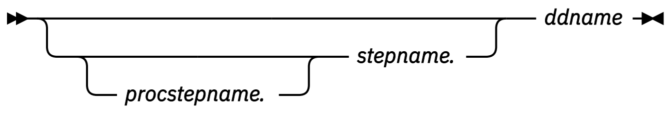
INGJLM



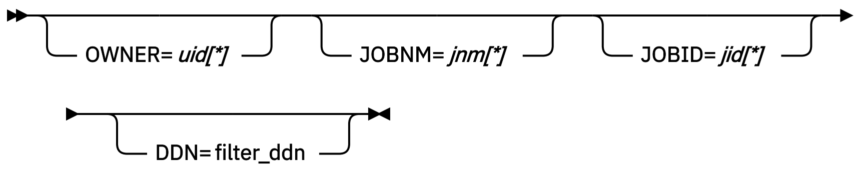
dsname



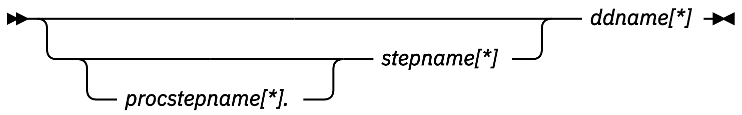
ddname



filter



filter_ddn



Parameters

DDN
Defines the ddname of a valid JES spool output data set:

JESMSGLG
JES message log. This is the default.

ddname
The ddname of any other spooled output data set.

procstepname
The step name of the "EXEC [PROC=]" statement.

stepname
The step name of the "EXEC PGM=" statement.

INTERVAL
Defines the monitoring interval for the indicated ddname in seconds. The minimum interval is 1 second, the maximum is 3600 seconds.

JOBID
Defines the job identifier, for example, JOB08450. The value can be up to 8 characters long.

Note: The command is rejected when the parameter is omitted and multiple job ids are found for the particular job name.

JOBNM
Defines the name of the job. The value can be up to 8 characters long.

OWNER
Defines the owner of the job. The value can be up to 8 characters long.

Note: The command is rejected when the parameter is omitted and multiple jobs are found for the particular job name with different owner ids.

RECYCLE
Instructs the monitoring task how to behave after a NetView recycle. The command needs only to be issued once for all future NetView recycles.

RESET
Instructs the monitoring task to ignore any former monitoring after a NetView recycle.

RESUME
Instructs the monitoring task to continue its monitoring after a NetView recycle.

The behavior is similar as when you would suspend and restart the task except that the task is not suspended and a NetView recycle takes place between task termination and restart.

START
Starts the monitoring of the ddname.

STATUS
Shows the status of the monitoring task and its monitored resources.

The column 'Status' shows the following:

`E........`
The data set is marked "in error" and is not monitored any longer.

`.A.......`
The data set is allocated.

`..O......`
The data set has been opened successfully.

`...U.....`
The user is not allowed to read the data set.

`....S....`
The monitoring of the data set is ACF-based.

`.....M...`
All messages are passed to automation.

`......J..`
The corresponding job has not been found on the chain of active address spaces.

`.......I.`
The spool data set is not initialized. The allocation of the data set is retried at the next monitoring interval. This repeats until the data set has been initialized.

`........N`
The ddname has defined the SPIN attribute. That means the corresponding spool data set can be spun off during processing.

STOP
Stops the monitoring of the ddname.

SUSPEND
Suspends the monitoring. All opened data sets are closed and deallocated. Finally, the task is terminated. However, all information to continue the preceding monitoring is kept. When the task is restarted it reopens each data set, positions to the last record read, and processes each new accumulated message.

Note: When you are no longer interested in monitoring at all use the NetView command STOP to terminate the task. All data sets are closed and all storage is released.

Restrictions and Limitations

Dynamically allocated spool output data sets are not supported.

The command is available to the primary subsystems JES2 and JES3 only.

When the monitoring task is restarted after it was suspended the Job Log Monitoring continues with the following limitations:

- The output of jobs that have finished before the monitoring task has been restarted is lost unless the output is still held on the output queue.
- A job is not monitored when it has been started between the time frame of the suspension of the task and its restart.

For manually monitored jobs you cannot specify any filter criteria to limit the data that is passed to automation. This means any line of data except an empty line which is generally excluded is forwarded to the message automation. The automation is always performed by the autotask LOGOPER.

Usage

The Start and Stop commands should be used only for jobs which are not controlled by SA z/OS.

The Suspend command is used to suspend Job Log Monitoring. The accumulated output of all monitored jobs is not processed before the task has been restarted. To restart the task use the NetView command `START TASK=INGTJLM`.

The Query command is used to determine the current status of all monitored jobs. You can specify filter criteria to reduce the amount of status information returned. This command can be issued in a NetView PIPE.

The command INGJLM RECYCLE needs only to be issued once for all future NetView recycles until the next IPL.

Examples

The following sample shows you how to monitor a spooled data set other than the default data set of a job which is not controlled by SA z/OS and which was started prior to the command

```
INGJLM START JOBNM=HIRZJLMS INTERVAL=10 DDN=AAAZOUT
```

However, the application opened the monitored data set first after the query command was issued the first time. The second query command shows you that some records have been read and passed since the last monitoring interval. The last query command shows you that no more data was processed and that the job has ended. The monitoring of the job is automatically stopped after the interval has expired twice.

```
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMS JOB09337 AAAZOUT  -----M-I  0:10      n/a       0       0
                                                                  0       0
*** Status complete ***
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMS JOB09337 AAAZOUT  -AO--M--  0:10 10:38:20       3       2
                                                                  3       2
*** Status complete ***
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMS JOB09337 AAAZOUT  -AO--MJ-  0:10 10:38:51       3       2
                                                                  0       0
*** Status complete ***
:
+ IPSFP INGY1306I Job Log Monitoring has been stopped for
HIR-HIRZJLMS-JOB09337-AAAZOUT.
-------------------------------------------------------------------------------
```

Figure 4. Monitoring a non-SA z/OS controlled job

For a detailed description of the status fields refer to "Status Information".

The next sample shows you how to monitor two spooled data sets of a non-SA z/OS controlled multi-step job that have the same ddname. The job was started prior to the commands:

```
INGJLM START JOBNM=HIRZJLMM INTERVAL=10 DDN=STEP1.AAAZOUT

INGJLM START JOBNM=HIRZJLMM INTERVAL=10 DDN=STEP2.AAAZOUT
```

Like the first example the application opened the monitored data set first after the query command was issued the first time. The second query command shows you that some records have been read and passed since the last monitoring interval while the first step was executed. The next query command shows you similar information while the second step was executed. The last query command shows you that no more data was processed and that the job has ended.

```
:
+ IPSFP    INGY1305I Job Log Monitoring has been started for
           HIR-HIRZJLMM-JOB02059-STEP1.AAAZOUT.
+ IPSFP    INGY1305I Job Log Monitoring has been started for
           HIR-HIRZJLMM-JOB02059-STEP2.AAAZOUT.
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMM JOB02059 AAAZOUT  -----M-I  0:10      n/a       0       0
                  STEP1                                           0       0
HIR      HIRZJLMM JOB02059 AAAZOUT  -----M-I  0:10      n/a       0       0
                  STEP2                                           0       0
*** Status complete ***
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMM JOB02059 AAAZOUT  -AO--M--  0:10 12:56:05       3       2
                  STEP1                                           3       2
HIR      HIRZJLMM JOB02059 AAAZOUT  -----M-I  0:10      n/a       0       0
                  STEP2                                           0       0
*** Status complete ***
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMM JOB02059 AAAZOUT  -AO--M--  0:10 12:56:47       3       2
                  STEP1                                           0       0
HIR      HIRZJLMM JOB02059 AAAZOUT  -AO--M--  0:10 12:56:53       3       2
                  STEP2                                           3       2
*** Status complete ***
:
" IPSFP
Status of task INGTJLM: ACTIVE
Monitoring on recycle : RESET
Owner    Jobname  Jobid    DDname   Status   Freq. Last        Read  Passed
         Procstep Step                                        LRead LPassed
HIR      HIRZJLMM JOB02059 AAAZOUT  -AO--MJ-  0:10 12:58:11       3       2
                  STEP1                                           0       0
HIR      HIRZJLMM JOB02059 AAAZOUT  -AO--MJ-  0:10 12:58:06       3       2
                  STEP2                                           0       0
*** Status complete ***
:
+ IPSFP    INGY1306I Job Log Monitoring has been stopped for
           HIR-HIRZJLMM-JOB02059-STEP2.AAAZOUT.
+ IPSFP    INGY1306I Job Log Monitoring has been stopped for
           HIR-HIRZJLMM-JOB02059-STEP1.AAAZOUT.
-------------------------------------------------------------------------------
```

Figure 5. Monitoring a non-SA z/OS controlled multi-step job.

INGLINK

Purpose

The INGLINK command lets you:

- Activate and deactivate a link between a consumer and a provider application that is defined as a dynamic link in the automation policy
- Query the status of a link between a consumer and a provider application as defined in the automation policy

A *consumer* application executes commands based on the UP_, DN_, ISUP_, or ISDN_ prefixed messages defined in the MESSAGES/DATA policy item for the application. These messages contain pre-defined commands to be taken by the consumer application depending on the status of the provider application.

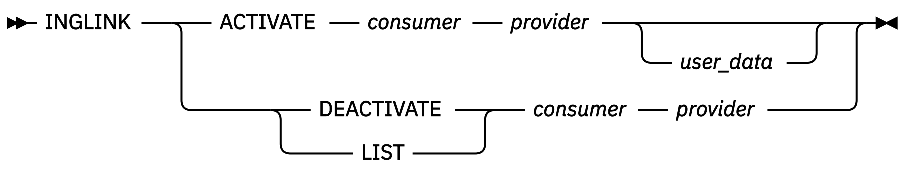
A *provider* application and its subsystem name form part of the UP_, DN_, ISUP_, or ISDN_ message suffix. These messages notify the consumer application of the provider status and trigger the predefined commands to be executed by the consumer application.

The messages defined in the consumer application MESSAGE/DATA policy item are as follows (subsys is the provider subsystem name):

- UP_subsys - actions taken by the consumer, when the provider changes to an UP status,
- DN_subsys - actions taken by the consumer, when the provider changes to DOWN status,
- ISUP_subsys - actions taken by the consumer, when it comes UP and the provider status is UP,
- ISDN_subsys - actions taken by the consumer, when it comes UP and the provider status is DOWN.

Note that there are no messages for when the consumer application goes down.

Syntax



Parameters

A(CTIVATE)
: Activates a link between a consumer and a provider application that is defined as a dynamic link in the automation policy. The link state changes to ACTIVE.

  This function requires a fully-qualified consumer and provider name, that is, the name cannot contain any wildcards. You do not need to specify the full resource name.

  Subsystem or job names are accepted. Subsystem names have preference.

D(EACTIVATE)
: Deactivates a link between a consumer and a provider application that is defined as a dynamic link in the automation policy. The link state changes to INACTIVE.

  This function requires a fully-qualified consumer name. The provider name can be either fully-qualified (that is, the name cannot contain any wildcards) or an asterisk '*' to refer to all providers.

  Subsystem or job names are accepted. Subsystem names have preference.

L(IST)
: Displays links between consumer and provider applications and their current state.

  The state can be A (active) or I (Inactive) for dynamic links whereas for static links it is always S.

This function supports wildcard names for consumers and providers. The consumer and provider names must be subsystem names.

consumer
The subsystem name of an application that uses services provided by another application.

provider
The subsystem name of an application that provides services used by another application.

user_data
User data can be set when you use the ACTIVATE function. The data is stored as additional information that is related to the activated link.

The data is provided in variables &EHKVAR1 through &EHKVAR9 and &EHKVART when a provider status change is processed by the ACTIVMSG or TERMMSG command. These variables can be used when defining commands for the UP_provider, DN_provider, ISDN_provider, ISUP_provider message ID of the consumer.

Return Codes

0
Normal completion.

4
Incorrect parameter.

5
Other error.

6
Initialization of the automation environment is not complete.

8
The link is not defined in the policy.

Restrictions and Limitations

Static and dynamic links can be defined in the policy between consumer and provider applications that are running on the same system.

The ACTIVATE function requires fully-qualified consumer and provider names, that is, the names cannot contain any wildcards.

The DEACTIVATE function requires a fully-qualified consumer name (that is, the name cannot contain any wildcards) and a fully-qualified provider name or an asterisk to refer to all providers.

Instead of using subsystem names, job names can also be used for the ACTIVATE and DEACTIVATE actions. INGLINK looks for a matching subsystem name first. If no matching subsystem name is found, it looks for a job name.

The LIST function allows wildcard names as consumer or provider names. Job names cannot be used.

INGLINK maintains the status of links based on common global variables. Access to these variables is made through the consumer's work operator in order to guarantee serialized exclusive access.

Usage

Static and dynamic links can be defined in the SA z/OS customization dialog. There you can define pseudo-messages in the MESSAGES/USER DATA policy of the consumer application with the prefix UP_ , DN_, ISUP_, or ISDN_ followed by the provider subsystem name (for example, UP_TCPIP). You can define a command action for these messages that is executed when the provider enters an UP or DOWN state (UP_, DN_) or if the consumer application comes up and the provider is in an UP or DOWN state (ISUP_, ISDN_). No additional definitions are required for the provider application.

For static links, no further definitions are required for the consumer application. Using INGLINK LIST you can list any static or dynamic links. Static links are always active links. Thus INGLINK ACTIVATE or INGLINK DEACTIVATE cannot be used for static links.

For dynamic links, a USER action must be applied to the pseudo-messages in the MESSAGES/USER DATA policy by setting the keyword to DYNAMIC and the value to YES. Dynamic links are initially inactive. These links can be activated with INGLINK ACTIVATE and deactivated with INGLINK DEACTIVATE. Dynamic links have the advantage that they can be activated and deactivated at runtime. This may be necessary if a consumer requires services that can only be determined at runtime.

Typically a user routine is required to identify the current provider. After the provider has been determined, INGLINK ACTIVATE can be called from the user routine to activate the link to that provider. A configured action can be taken by the consumer if a provider starts or terminates only when a link is active.

The user routine is typically started along with the consumer application.

Examples

Example 1

Activating a dynamic link that is in an 'inactive' state:

```
INGLINK   ACT   MQ   TCPIP1    optional user data
```

Console Output: `ING004I REQUEST >INGLINK ACTIVATE< SUBMITTED`

Log Output: `AOF367I LINK ACTIVATED BETWEEN MQ AND TCPIP1`

Example 2

Deactivating a dynamic link that is in an 'active' state:

```
INGLINK    DEACT    MQ    TCPIP1
```

Console Output: `ING004I REQUEST >INGLINK DEACTIVATE< SUBMITTED`

Log Output: `AOF368I LINK DEACTIVATED BETWEEN MQ AND TCPIP1`

Example 3

You can list all links with the following command:

```
INGLINK LIST * *
```

The output lists all dynamic and static links that are defined in the automation policy.

```
  NV54 SA34 NM          Tivoli NetView  IPUFA NETOP1  12/20/10 14:06:48
  ! IPUFA
  Consumer    Provider    UP DN ISUP ISDN User Parameters
  ----------- ----------- -- -- ---- ---- --------------
  CS1TRANS    PS1TRANS     -  -    S    S
  CS2         PS2A         -  -    S    S
  CS2         PS2B         -  -    S    S
  CS2         PS2C         -  -    S    S
  CS2A        PS2          -  -    S    S
  CS2B        PS2          -  -    S    S
  CS2C        PS2          -  -    S    S
  CS2TRANS    PS2TRANS     -  -    S    S
  CS3         PCS3         -  -    S    S
  CS4         CS4          -  -    S    S
  CS5         PS5          -  -    S    S
  C1          P1REN        -  -    S    S
  GFG2        PD2          S  S    I    I
  PCD3        PD3          -  -    I    I
  PCS3        PS3          -  -    S    S
  -------------------------------------------------------------------------------
```

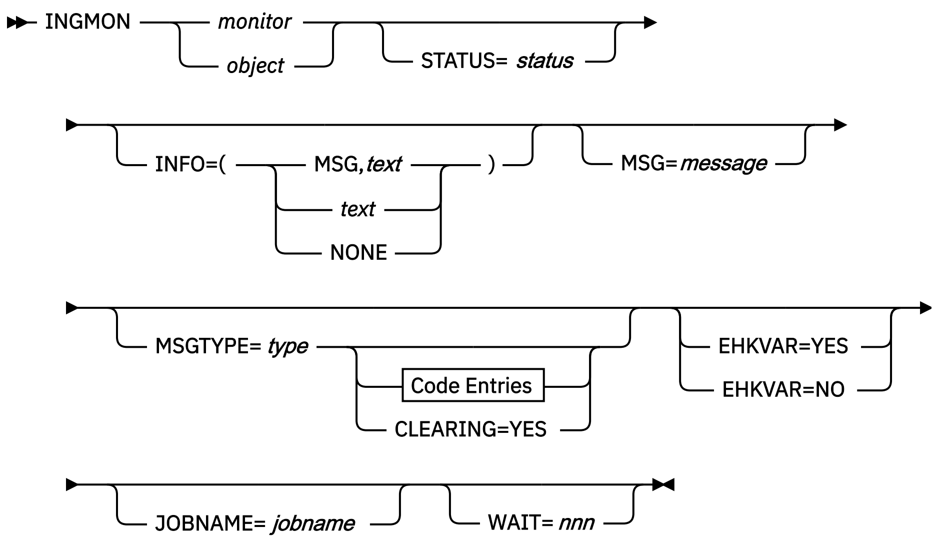
```
CS1          PS1            -  -    S    S
CS1OTHER     PS1OTHER       -  -    S    S
```

INGMON

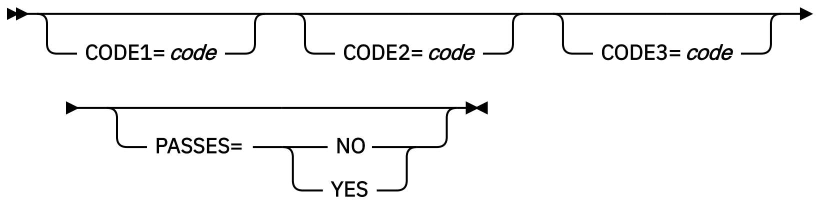
Purpose

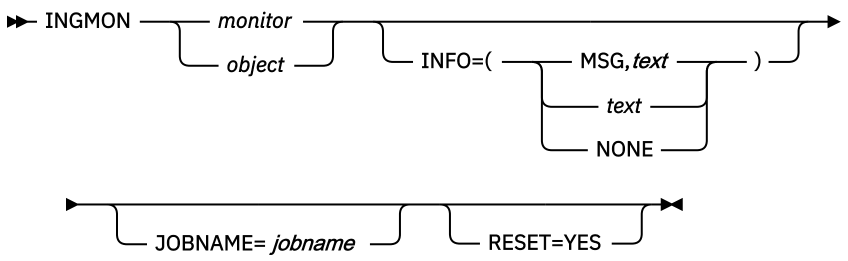
INGMON is a command that can be called from the NetView automation table. You use it to inform SA z/OS of the status of a monitoring resource and to issue commands in response to a message or an OMEGAMON® exception.

Syntax



Code Entries





Parameters

monitor

This is the name of a monitor resource. It can be specified in automation manager notation (for example, SAPMON/MTR/AOC8) or in agent notation.

Note: If you specify *monitor* in automation manager notation (that is, *xxx*/MTR/*yyy*) and such a resource does not exist on the local system, no search for a monitored object is performed. An error message is issued instead.

object

This is the name of a monitored object as defined in the MTR policy in the customization dialog. INGMON automatically finds the corresponding monitor resources and operates on them.

Note that a monitor resource with that name is searched first. Then, if it is not found, a search for a monitored object is performed.

Notes:

1. Be careful not to specify objects that have the same name as an existing monitor resource, otherwise INGMON will only find the entry for the monitor resource and not for the object. For example, if you have a monitor resource, ABC, and you define a second monitor resource, XYZ, with a monitored object called ABC, the call INGMON ABC will always find the monitor resource ABC and never the object ABC that has been defined for XYZ.
2. If you specify *object* in automation manager notation (that is, *xxx*/MTR/*yyy*) and such a resource does not exist on the local system, no search for a monitored object is performed. An error message is issued instead.

STATUS

This is the new state that the monitor has determined. The state represents either the health status of the objects that the monitor is watching, or the state that the monitor is in. The latter can be one of the following:

FAILED

The monitor has failed. Recovery may be in progress. No acceptable health status was provided.

BROKEN

Both the monitor and recovery failed. This is a permanent condition. The monitor will not be re-invoked.

The health status of the object, or objects, that the monitor is watching are as follows, from the least to the most serious:

UNKNOWN

The health status is not yet available.

NORMAL

The monitor has obtained good results from the object, or objects, that it is watching.

WARNING

The monitor detected a certain degree of degradation in the operation of the monitored object.

MINOR

The same as WARNING, but more severe.

CRITICAL

The same as MINOR, but more severe.

FATAL

The same as CRITICAL, but more severe.

INFO

This defines the message that is associated with the new health status. The parameter value must be enclosed in parentheses, or single or double quotation marks. If not present, the value of the MSG parameter will be used instead. If neither parameter is present, text will be constructed from whatever is in the default safe.

MSG,*text*

The specified text is associated with the new health status.

In SDF, when displaying the new health status via message AOF550I, the text is shortened to "MESSAGE *message_ID* RECEIVED", where *message_ID* is the first token of the given text.

text
The specified text is associated with the new health status.

NONE
No message is associated with the status.

MSG
This defines the text of the message that commands or replies are defined for in the MESSAGES/USER DATA policy item of the policy database.

message
The message must be enclosed in parentheses, or single or double quotation marks. If not present, the content of the default safe will be taken instead.

MSGTYPE
This is the value entered in the **Message ID** field in the customization dialog for the MESSAGES/USER DATA policy item (the entry type field in the automation control file entry for the command). MSGTYPE is typically coded with the message ID or the OMEGAMON exception identifier, such as XCHN or SWPC. If not present, the first token of the value of MSG parameter will be used instead. If neither parameter is present, the message ID will be extracted from the message in the default safe.

The task global variables EHKVAR*n* contain the parsed message from either the MSG parameter or, if not present, the message in the default safe.

CODE*n*
When specified, the passed codes are used to search the code entries for a particular Message ID or exception that is specified in the policy item MESSAGES/USER DATA. The first token of the value returned is used as an option to select the commands to be issued from the automation control file (the value gives a set of commands). If no match occurs for the specified codes, or if no codes are specified, the value ALWAYS is used to select the commands to be issued.

As a selection you must specify one of the following:

#
Perform pass processing and execute all commands with a selection matching the current pass or blank.

Note that this overrides the PASSES keyword with YES.

#type
Interpret *type* as a message type. Perform pass processing for this message and execute all commands with a selection matching the current pass or blank.

Note that this overrides the PASSES keyword with YES.

This is like calling INGMON with MSGTYPE=*type*.

Others
Execute all commands with the given selection, or blank.

The second token of the value returned is used to determine the health status to be set. If specified it must denote on of the values listed under the STATUS keyword. If no match occurs, or the second token is omitted, the value given on the STATUS keyword is used.

The CODE parameters are mutually exclusive to the PASSES=YES parameter.

PASSES
Specifies whether passes are used to issue the commands. The INGMON command interrogates the automation control file to see if passes are specified in the command entries. If so, PASSES=YES is defaulted unless PASSES=NO was specified when calling INGMON.

NO
Passes are not used to issue the commands.

YES
Passes are used to issue the commands. The pass count is incremented every time INGMON is called. The pass count is keyed by monitor name and by message type or exception (that is, the

OM exception). The count is automatically reset when the monitor resource is deactivated, or when INGMON is invoked with the CLEARING option.

CLEARING
Indicates that this is a clearing event. The situation that caused the message or exception is no longer present. It resets the pass count and removes the mask (DISABLETIME) for this message or exception.

EHKVAR
This parameter determines whether the tokens of the parsed message text are to be stored in task global variables EHKVAR0 through EHKVAR9 and EHKVART.

YES
The tokens of the triggering message are to be assigned to the task global variables EHKVAR*n*.

NO
No values are to be assigned to the task global variables EHKVAR*n*.

JOBNAME
Indicates that the job name that is given is to be used rather than the one obtained by the jobname() function to match a monitored object to the corresponding monitor resources.

If the monitor resource contains a value in the monitored job name field it is only considered a match when both the monitored object and the given job name match.

If JOBNAME is omitted the jobname() function is used to determine the name of the job that issued the triggering message. If a job name cannot be determined the value N/A is used.

JOBNAME is required when INGMON is not message driven.

WAIT
Specifies the number of seconds to wait before reporting that a timeout occurred if the automation manager does not provide the requested data. The maximum time interval is 999 seconds.

If omitted, the time interval is 30 seconds.

RESET=YES
Specifies that the status is to be reset. When the monitor status is BROKEN, it is reset to INACTIVE. When the monitor status is INACTIVE, it remains INACTIVE. Any other monitor status is changed to NORMAL. Additional parameter specifications other than INFO and JOBNAME are ignored.

Return Codes

0
Okay.

1
An error occurred.

2
A monitor resource or monitored object with the specified name does not exist.

Restrictions and Limitations

Status cannot be changed via STATUS=option while the monitor is in status BROKEN. Consider the RESET=YES option.

Usage

You should normally call the INGMON command from the NetView automation table.

For more details about the task global variables that can be used with INGMON see "Task Global Variables" in *IBM System Automation for z/OS Customizing and Programming*.

The message that caused the INGMON call is stored in the SAFE named AOFMSAFE. All commands and replies that are triggered through INGMON have access to this SAFE.

Examples

Example 1

This example demonstrates a call pager routine when channel path 26 is not operational. The MESSAGE/USER DATA policy definition contains an entry for "+ XCHN" as follows:

CMD entry

```
PAGER &SUBSAPPL,&EHKVAR0,&EHKVAR4
```

Where:

- PAGER is the name of the clist that handles the paging
- &SUBSAPPL contains the monitor name
- &EHKVAR0 contains the exception ID
- &EHKVAR4 contains the CHPID

Note that the "+ " prefix, written as a '+' followed by a blank in front of the exception identifier, is used to distinguish a normal message from an OMEGAMON exception.

CODE entry

Code 1	Code 2	Code 3	Value Returned
26	*		ALWAYS
*	*		IGNORE

OVR entry

The standard AT entry pattern is generated by SA z/OS. You can change the condition statement to assign TOKEN(10), which contains the missing channel number to a variable, for example, MISSCHAN.

The pattern of the action statement would be changed to pass that variable to INGMON, that is:

```
EXEC (CMD('INGMON monitor CODE1='MISSCHAN))
```

It is assumed that token 10 in message ING080I contains the channel path. The command fragment up to the monitor name is automatically generated by the customization dialog. The message type (that is, exception ID) is available to INGMON indirectly through the default SAFE.

You can append additional parameters through such an OVR entry.

Example 2

Suppose the installation fixed the problem with the missing channel path as shown in the previous example. To indicate that the situation that caused the exception no longer exists and that the recovery action has been successfully processed, use:

```
INGMON monitor MSGTYPE=XCHN CLEARING=YES
```

Example 3

This example shows how to send an alert when CICS Link LNKA2B is not operational. The MONITOR INFO policy definition contains the following information:

Monitored Object
CPSM.CICSA.CONNECT.LNKA2B

Inform List
IOM

The MESSAGE/USER DATA policy definition contains an entry for ING150I as follows:

CODE entry

Code 1	Code 2	Code 3	Value Returned
L*	*	*	NOP WARNING
HW	*	*	NOP MINOR
*HS	*	*	#MSGCRIT CRITICAL
*	*	*	NOP NORMAL

Because no commands should be issued for the health statuses WARNING, MINOR, and NORMAL, use an arbitrary selection (NOP). A selection is required because the health status must be the second token.

For the CRITICAL case we have INGMON jump to message type MSGCRIT and execute the commands listed there. In our example this would probably be an INGALERT command.

We want the pass counts to be reset as soon as the health status returns to NORMAL, so we specify in the HEALTHSTATE policy definition:

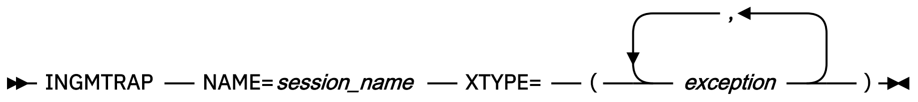
```
INGMON monitor MSGTYPE=MSGCRIT CLEARING=YES
```

INGMTRAP

Purpose

The INGMTRAP command facilitates the use of INGOMX for OMEGAMON exception monitoring using Monitor Resources. It traps one or more OMEGAMON exceptions of interest and generates ING080I messages exposed to automation for each exception that is found, in order to set the Monitor Resource's health state and to issue commands to react to such exceptional conditions.

Syntax



Parameters

NAME=*session_name*
: This is the name of the OMEGAMON session as defined in the automation policy that exceptions should be monitored from.

XTYPE=*exception_list* | *exception*
: A list of one or more OMEGAMON exceptions. If the list consists of more than one exception, it must be put in quotation marks or parentheses, and either commas or blanks must be used to separate the exceptions.

Return Codes

1 BROKEN
: INGMTRAP failed to communicate with the OMEGAMON monitor denoted by the *session_name*. Either SA z/OS was unable to create the session, or the session was prematurely terminated for other reasons and could not be re-established. In general, whenever the state of a session is neither INACTIVE nor ACTIVE, the health status BROKEN indicates that operator intervention is required.

2 FAILED
: INGOMX detected that the session denoted by *session_name* exists but no output was received by OMEGAMON, for example due to a timeout. This situation may go before the monitor runs the next time. In general, whenever the state of a session is ACTIVE, the health status FAILED indicates a temporary problem that is likely solved the next time the monitor runs.

3 NORMAL
No exceptions have tripped. The health state of this Monitor Resource is therefore normal. Message ING081I was built and added to the Monitor Resource's history to indicate that no exception was found. ING081I will not be exposed to automation.

8 DEFER
Exceptions have tripped and message ING080I was built for each. The health state of the Monitor Resource will be set on behalf of message automation for ING080I when the message is processed by the automation table. An existing health state remains in effect until a new health state is set during message automation.

Usage

To monitor OMEGAMON exceptions with a Monitor Resource, specify INGMTRAP as the monitor command in the customization dialog when defining the Monitor Resource. INGMTRAP will generate an ING080I message for each exception that tripped and that was specified with XTYPE and exposes the message to automation.

In order to react to such exceptions, use the MESSAGES/USER DATA policy item for that Monitor Resource to specify the health status and optionally the recovery activities for each exception. As indicated by the return code DEFER, the health status of the Monitor Resource will only be updated if an ING080I message was correctly processed.

Example

To monitor the existence of a LOGN exception that is issued by OMEGAMON for DB2 whenever the number of primary active logs falls below the installation-specified threshold, enter the following as a monitor command in the MTR policy:

```
INGMTRAP NAME=OMSY4DB XTYPE=LOGN
```

INGOMX

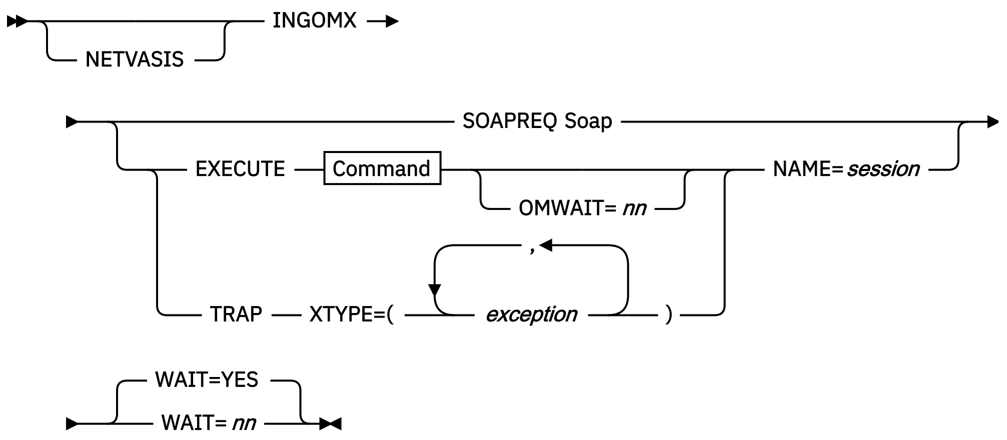
Purpose

INGOMX is a programming interface that provides interaction capabilities with OMEGAMON. It allows a program or command list to invoke OMEGAMON exception analysis in order to trap one or more exceptions of interest or to issue one or more OMEGAMON commands. The response generated by OMEGAMON on behalf of a request is written to the console but not exposed to automation.

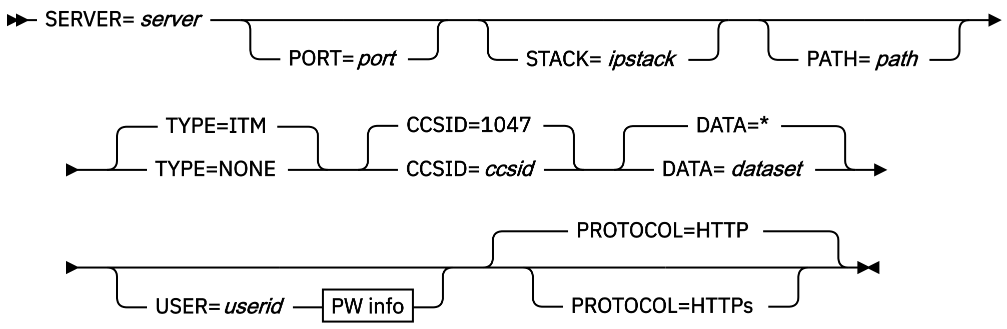
Additionally, it provides an interface to communicate with an IBM Tivoli Monitoring SOAP server to issue SOAP messages and to process the response from the SOAP server. While INGOMX handles the communication and the envelope of the SOAP message, it is the responsibility of the caller to provide an appropriate body either dynamically or in a data set of choice. The body consists of specific elements in XML notation that denote the particular request, the target application for this request, user ID and password, and other request-specific information.

See Example 10 for the usage of placeholders for user ID and password in the body.

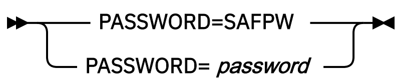
Syntax



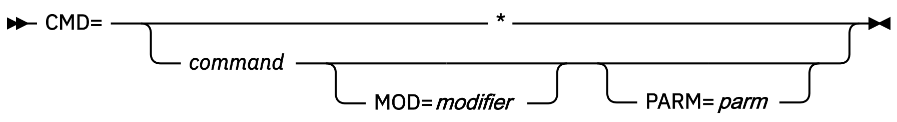
Soap



PW info



Command



Parameters

NETVASIS
Prefix the INGOMX command with NETVASIS if you want to pass the user ID, password, or path in lower or mixed case.

ATTACHSESSION
This is the function code to request that an OMEGAMON session with a named set of attributes is established and a user (according to these attributes) is logged on.

DETACHSESSION
This is the function code to request that the user that is currently logged on to the OMEGAMON session is logged off and that the OMEGAMON session specified by *session_name* is destroyed.

TERMSESSION
This is the function code to end the OMEGAMON session. The function is similar to the DETACHSESSION request but, in addition, the session is locked and ATTACHSESSION is not allowed. This function code is used only by SA z/OS initialization and only SA z/OS initialization can unlock the session.

SOAPREQ
The function code to send a SOAP message to the SOAP server designated by *server*. The SOAP message to be sent can be built dynamically and passed to INGOMX through the default safe or it can be in a user-defined data set.

SERVER=*server*
server refers to the SOAP server defined in the SOAP SERVER policy of the NETWORK (NTW) entry in the automation policy.

Alternatively, *server* can be the IP-address (if it starts with a digit or contains ':') or the symbolic host name. If a SOAP SERVER policy is found for *server*, it will be used preferably.

PORT=*port*
port refers to the port number that the SOAP server is listening to. This is optional and only required if *server* does not denote a definition in the SOAP SERVER policy.

STACK=*ipstack*
ipstack refers to the IP stack to be used to connect to the SOAP server. The jobname of the TCP/IP indicates the corresponding IP stack.

Specify this field only if your system is configured for multiple IP stacks. If nothing is specified, the first active TCP/IP is used.

PATH=*path*
path refers to the absolute path that, together with the host address and the port number, forms the address of the SOAP service. An absolute path must start with a slash ('/'). This is optional and only required if *server* does not denote a definition in the SOAP SERVER policy.

The PATH parameter is case-sensitive. To maintain its case-sensitivity, you must enclose *path* in single or double quotation marks.

TYPE={ITM|NONE}
The type refers to the kind of SOAP request that is being issued. For ITM type SOAP requests, the response document is transformed into messages that can be processed further using NetView PIPEs. For other SOAP requests, the response is returned in XML format instead.

CCSID=*ccsid*
ccsid refers to the character set identifier used to encode the XML source and target documents. The SOAP request is translated from *ccsid* to UTF-8 before it is sent to the SOAP server and it is translated back to *ccsid* upon receipt.

DATA={*|*dataset*}
If * is specified, the SOAP message is located in the default SAFE. This assumes that the caller has either created the SOAP message dynamically or obtained it from some other source and passed it to INGOMX via a PIPE input stream. See also Example 3.

dataset refers to the name of either a sequential data set or a partitioned data set, including the member name where INGOMX finds the SOAP message.

See paragraph "Using INGOMX Directives" on page 114, "Example 8: Using INGOMX Directives for defining SOAP Data" on page 119, and "Example 9: Using Ingomx_SOAP_Envelope Directive for SOAP12" on page 119 for the usage of the alternate definition of SOAP Body, SOAP Envelope, and HTTP header records using directives.

USERID=*userid*
The userid required for authentication to the SOAP server, if security is enabled at the SOAP server. If specified this overrides any userid specified on the server definition, you must also then specify a password on the INGOMX call. If not specified, the userid and password from the SOAP server definition are used.

PASSWORD=SAFPW|*password*

The password required for authentication, specified either in plain text, or deposited in the SA z/OS Password Data Set under the domain name SOAP. In this case, the real password must be specified under NetView using the following SA z/OS command:

```
INGPW userid SOAP,INIT=password
```

If you are using the userid and password from the SOAP server definition, you should not specify the password parameter.

PROTOCOL

The protocol for the socket connection type. TLS/SSL security is selected with HTTPS, and the default is HTTP. It is flagged as an error if you define it in addition to a server object.

EXECUTE

The function code to issue a command to the OMEGAMON session that is specified by *session_name*. The command and its parameters are specified by the CMD, MOD, and PARM keywords. The output of this command corresponds to the output produced by the OMEGAMON monitor on a 3270 screen.

CMD={*command*|*}

This is the pure 1 to 4 character OMEGAMON command that is issued on the OMEGAMON session without parameters.

If an asterisk ('*') is passed instead of a command, INGOMX expects a list of up to 22 OMEGAMON commands in the default SAFE. This allows a programmer to issue multiple commands at once, in particular, minor commands that require the presence of an appropriate major command.

When commands are passed within the default SAFE, the same syntax rules apply as denoted in the syntax diagram above, that is, each command is specified with the CMD keyword followed by an optional modifier and optional parameter string.

The command that is specified or the first command in the default SAFE will be logged in the NetView log with message ING083I.

MOD=*modifier*

modifier is an optional additional character that will be inserted by SA z/OS in front of a command to modify the behavior of that command. For example, a '<' modifies the command `ALLJ` such that instead of one line of address spaces, all address spaces are returned at once. Refer to the OMEGAMON command manual for a reference of modifiers allowed for each particular command. The default modifier is a blank character.

PARM=*parm*

parm is an optional parameter string of up to 74 characters. The parameter string will be appended by SA z/OS to the command, if specified. The default parameter is a NULL-string.

OMWAIT=*nn*

Several OMEGAMON commands begin a process that accumulates data over a small period of time. For example, the OMEGAMON for MVS command MCPU accumulates data about CPU status, and then displays this data. To mimic this functionality, OMWAIT can be used, where *nn* is the optional time during which data is accumulated before the command is issued again, and can be between 0 and 59 seconds. The default wait time is 0.

TRAP

This is the function code to filter exceptions that are reported by the OMEGAMON session specified by *session*. The exceptions that should be filtered are specified by the XTYPE keyword. The output of this command corresponds to filtered output produced by the OMEGAMON monitor exception analysis on a 3270 screen, where only the selected exceptions are included.

XTYPE={*exception_list*|*exception*}

A list of one or more OMEGAMON exceptions. If the list consists of more than one exception, it must be put in quotation marks or parentheses, and either commas or blanks used to separate the exceptions.

NAME=*session*

This is the name of the OMEGAMON session as defined in the automation policy.

WAIT={YES|*nnn*}
This parameter determines the interval after which a request is terminated with a timeout condition.

If WAIT=YES is specified (default), either the default wait time is used as a timeout value (WAITTIME) or, for OMEGAMON sessions, the timeout that is specified in the OMEGAMON SESSION policy. The parameter default variable INGOMX_WAIT can be used to override the default value in WAITTIME.

If WAIT=*nnn* is specified, *nnn* denotes a positive number in units of seconds.

Return Codes

0
Normal completion. The filtered output of the exception analysis or the response of the OMEGAMON command or the SOAP request, respectively, is written to the console.

-3
The operator invoking INGOMX is not authorized to issue this request for any of the following reasons::

- The caller is not allowed to access the session indicated by *session_name*
- The caller is not allowed to issue the OMEGAMON command (or commands) specified by CMD
- The caller is not allowed to send the SOAP message to the SOAP server indicated by *server_name*

Update the NetView command authorization table or the RACF definitions, or both, for the named session, the named SOAP server, and command (or commands).

NetView issues BNH236E and BNH237E with detailed error information.

1
INGOMX failed to communicate with the session whose *session_name* was passed as input. The *session_name* is unknown or does not refer to a valid OMEGAMON session. In case of an invalid OMEGAMON session, message ING084I is written to the netlog.

For reason ATTACHSESSION *session_name*, ensure that the session that is referenced in the reason is defined in the policy and also linked to this system. See the "OMEGAMON Policy Item" topic in *IBM System Automation for z/OS Defining Automation Policy* for details of how to define a session.

If the target was a SOAP server, the *server_name* is unknown or does not refer to a host that can be reached through the IP network. Refer to message ING164I for further diagnostic details in the netlog.

2
A session request was not executed as the session is already in the desired state.

3
An internal error occurred. Message ING084I is written to the netlog and provides more detailed error information.

4
Syntax error. Invalid parameters were passed to INGOMX. Refer to the netlog for additional error information.

5
Timeout occurred. The requested operation was interrupted due to a timeout as specified for this session in the customization dialog. The timeout value might be too low or more session operators might be required.

6
The command environment for INGOMX was not appropriately initialized at the time this command was issued. Possible reasons are that the agent is currently being initialized or a cold start of the automation control file is being done.

7
Creation of the NetView Terminal Access Facility (TAF) session failed or VTAM is not available. Message ING084I is written to the netlog and provides more detailed error information.

A common reason for this return code is that an invalid or non-existent logmode is used for the TAF session or that the logmode refers to a Class-of-Service (COS) that is unknown to this VTAM. Examine the netlog and syslog for further VTAM messages (IST*).

8

The user ID that is specified in the session definition for *session_name* cannot log on to OMEGAMON. Session creation failed.

Message ING001I is written to the netlog. Examine the preceding messages in the netlog and the syslog for further diagnosis. Typical reasons are:

- The user ID (=which indicates the issuing user) under which an attempt is made to create a session is not allowed to issue the INGPW command to retrieve the password from the password data set. See the security considerations in the "INGPW" topic of *IBM System Automation for z/OS Operator's Commands* and ensure that the issuing user is authorized to use the INGPW command to retrieve and set passwords in the password data set. You might need to define class SYSAUTO, if you use another security product rather than IBM Resource Access Control Facility (RACF).
- The user ID (=which indicates the logged on user) defined for this session does not exist or has no permission to log on to OMEGAMON, or the password defined in the password data set is invalid or not set at all but required.

9

The requested function is not allowed within the current session state. Refer to the INGSESS command (in *IBM System Automation for z/OS Operator's Commands*) for the current state and available options.

10

A SOAP request could be delivered, but the SOAP server failed to interpret the request correctly. Messages ING162I and ING163I are returned to the caller for further information about this failure.

11

A SOAP request could not be delivered to the SOAP server because the service has been moved to a new location. Message ING167I is returned to the caller indicating the new location that must be used instead.

12

The specified data set containing the SOAP request could not be allocated or read. Message ING164I is written to the netlog indicating the code returned from PIPE QSAM.

13

The specified CCSID does not exist. Specify a valid CCSID.

Usage

Invoke INGOMX in a PIPE to capture and further analyze the output produced by OMEGAMON. Alternatively, INGOMX can also be called directly from the operator console, but note that INGOMX does not issue any confirmation messages and that output is only written to the console when INGOMX returned with code 0.

Refer to "Controlling Access to IBM Tivoli Monitoring Products" in *IBM System Automation for z/OS Planning and Installation* for Command Authorization Table identifiers supported by INGOMX.

Using INGOMX Directives

The SOAP message specified in parameter DATA is a section of XML used as a SOAP body, which is enclosed in a SOAP 1.1 Envelope and prefixed with HTTP 1.1 records. If these data are not sufficient for the requested webservice, for example, if there is a missing SOAPAction, it is possible to redefine or define additional SOAP and HTTP fields using the alternative INGOMX directives.

If the SOAP message in DATA starts with a Ingomx_Directives tag, the whole DATA parameter is expected to be a Directive XML using the following tags to describe the user data:

<Ingomx_SoapAction>
This field replaces the default SOAPAction field.

<Ingomx_SOAP_Body>
This field contains the SOAP Body parameter to INGOMX. If this directive is specified, the default SOAP envelope is added.

<Ingomx_SOAP_Envelope>
This field contains the complete SOAP message, for example, the SOAP envelope and the SOAP Body WITHOUT the one line XML declaration. The default XML declaration `<?xml version ="1.0" encoding="utf-8"?>` will be inserted by INGOMX automatically. Use this tag, when you need full control of the SOAP envelope content.

Note: Ingomx_SOAP_Envelope and Ingomx_SOAP_Body tags are mutually exclusive.

<Ingomx_ContentType>
This field replaces the default Content-Type record.

<Ingomx_Host>
This field replaces the default HTTP HOST header record.

<Ingomx_POST>
This field completely replaces the default HTTP POST request record. It contains complete HTTP POST request to be sent to the SOAP server. If Ingomx_POST directive is used, all other directives and the DATA parameter are ignored.

<Ingomx_HTTP_Addon>
This field may specify an additional HTTP header record.

If a tag is specified without data, like <Ingomx_Host/>, the whole record is removed from the SOAP request.

INGOMX supports two substitution placeholders in XML. These are '&ing_userid.' and '&ing_password.'. They will be replaced with the user ID and password that are being used to issue the query.

Example 1: Use of INGOMX in a User-Written Monitor Command Routine

The following command list is specified as the monitor command that is periodically invoked to find out the usage of CSA and SQA below 16MB monitored by OMEGAMON for MVS. The session was defined under the session name OMSY4MVS. The OMEGAMON command for this purpose is "CSAA." The monitor command will return the following health states:

- NORMAL (3) when the utilization of both CSA and SQA is below 50%
- WARNING (4) when the utilization is below 70%
- MINOR (5) if below 80%
- CRITICAL (6) if below 90%
- FATAL (7) otherwise

```
/*-------------------------------------------------------------------*/
/* Constants and variables                                           */
/*-------------------------------------------------------------------*/
Rc_Unknown  = 0
Rc_Failed   = 2
Rc_Normal   = 3
Rc_Warning  = 4
Rc_Minor    = 5
Rc_Critical = 6
Rc_Fatal    = 7

health_state = Rc_Unknown
lrc = 0

ss='ff'x
ec='fe'x
dc='fd'x
/*-------------------------------------------------------------------*/
/* Use PIPE to call INGOMX                                           */
/*-------------------------------------------------------------------*/
```

```
"PIPE (STAGESEP "||ss||" END "||ec||" NAME API)",
  "   NETV (MOE) INGOMX EX,NAME=OMSY4MVS,CMD=CSAA",
  ss||"A: LOCATE 1.8 /DWO369I /",
  ss||"   VAR dwo369",
  ec||"A: ",
  ss||"   STEM output."

/*-----------------------------------------------------------------*/
/* Monitor failed if INGOMX return code was not zero               */
/*-----------------------------------------------------------------*/
if symbol('dwo369') = 'VAR' then
  do
    parse var dwo369 . 'RETURN CODE' lrc '.'
    monmsg = 'INGOMX return code was RC='lrc+0
    health_state = Rc_Failed
  end
else
/*-----------------------------------------------------------------*/
/* Filter CSA and SQA percentages to derive health state           */
/*-----------------------------------------------------------------*/
  do
    csa = 0; sqa = 0
    do i=1 to output.0
      if pos('+    CSA',output.i) > 0 then
        parse var output.i . 'CSA' . . . . csa '%' .
      if pos('+    SQA',output.i) > 0 then
        parse var output.i . 'SQA' . . . . sqa '%' .
    end i
    select
      when csa < 50 & sqa < 50 then health_state = Rc_Normal
      when csa < 70 & sqa < 70 then health_state = Rc_Warning
      when csa < 80 & sqa < 80 then health_state = Rc_Minor
      when csa < 90 & sqa < 90 then health_state = Rc_Critical
      otherwise
        health_state = Rc_Fatal
    end
    monmsg = 'CSA usage is 'csa+0'%, SQA usage is 'sqa+0'%.'
  end

'PIPE VAR monmsg | CONSOLE ONLY'

Return
health_state
```

Example 2: Use of INGOMX to Display Jobs of Interest

The following command list can be entered from the console to show a list of jobs that have fixed storage occupancy greater than 1 MB. The command list traps the FXFR exception that is reported by OMEGAMON for MVS with the session name OMSY4MVS. From the list of exception lines that is returned by OMEGAMON, the command list selects those jobs that obtain more than 1 MB of fixed storage.

```
/*-----------------------------------------------------------------*/
/* Constants and variables                                         */
/*-----------------------------------------------------------------*/
OneMB   = 1024 * 1024
fframes = 0                         /* Number of fixed frames        */
fstor   = 0                         /* Fixed storage [Bytes]         */
out. = 0                            /* Jobs with >1MB fixed frames   */
j    = 0                            /* Miscellaneous counter         */
lrc  = 0                            /* Local return code             */
ss   = 'ff'x
ec   = 'fe'x

/*-----------------------------------------------------------------*/
/* Use PIPE to call INGOMX                                         */
/*-----------------------------------------------------------------*/
"PIPE (STAGESEP "||ss||" END "||ec||" NAME API)",
  "   NETV (MOE) INGOMX TRAP,NAME=OMSY4MVS,XTYPE=FXFR",
  ss||"A: LOCATE 1.8 /DWO369I /",
  ss||"   VAR dwo369",
  ec||"A: ",
  ss||"   STEM output."
/*-----------------------------------------------------------------*/
/* Command failed if INGOMX return code was not zero               */
/*-----------------------------------------------------------------*/
if symbol('dwo369') = 'VAR' then
  do
```

```
    parse var dwo369 . 'RETURN CODE' lrc '.'
    'MESSAGE DSI072 FXSHOW INGOMX 'lrc+0
  end
else
/*-----------------------------------------------------------------*/
/* Produce list of address spaces with >1MB fixed frames           */
/* + FXFR STC NETVBDOW    | Fixed Frames in use = 414              */
/*-----------------------------------------------------------------*/
  do
    out.1 = 'FXMON: Jobs with fixed storage > 1MB'
    out.0 = 1
    do i=2 to output.0
      parse var output.i '+ FXFR' . job . 'Frames in use = 'fframes .
      fstor = fframes * 4096
      if fstor > OneMB then
        do
          j = out.0 + 1
          out.j = left(job,8) format(fstor/OneMB,4,2)||'MB'
          out.0 = j
        end
    end i

    'PIPE STEM out. | CONSOLE ONLY'
  end

Exit 0
```

Example 3: Send SOAP Message Using the Default Safe

This example assumes that the SOAP server SOAPHUB was defined in the SA z/OS customization dialog SOAP SERVER policy. To request a list of address spaces starting with TEST and analyze their CPU utilization, you can construct and send a SOAP message like the one below to SOAPHUB in the following way:

```
smsg.1 = '<CT_Get>'
smsg.2 = '  <userid>&ing_userid.</userid>'
smsg.3 = '  <password>&ing_password.</password>'
smsg.4 = '  <object>Address_Space_CPU_Utilization</object>'
smsg.5 = '  <attribute>job_name</attribute>'
smsg.6 = '  <attribute>asid</attribute>'
smsg.7 = '  <attribute>tcb_percent</attribute>'
smsg.8 = '  <afilter>Job_Name;LIKE;TEST*</afilter>'
smsg.9 = '</CT_Get>'
smsg.0 = 9

'PIPE (NAME SOAPREQ)',
'| STEM smgs.',
'| COLLECT',
'| SAFE *',
'| NETV INGOMX SOAPREQ SERVER=SOAPHUB DATA=*'
```

Example 4: Send SOAP Message Using a Data Set

As an alternative, the XML source in Example 3 can also be stored in a data set. The invocation of INGOMX would then be:

```
'PIPE (END % NAME SOAPREQ)',
'| NETV (MOE) INGOMX SOAPREQ SERVER=SOAPHUB DATA=USER.SOAP.DATA(GET)',
'| L: LOC 1.8 'del||'DWO369I '||del,
'| EDIT SKIPTO 'del||'RETURN CODE'||del,
'       UPTO 'del||'.'||del,
'       WORD 3 1',
'| VAR my_retcode',
'% L:',
'| CON ONLY'
```

The variable *del* is a delimiter character that does not appear in the data stream that is returned, for example, X'0D'.

Example 5: Explicit Specification of SOAP Server

Here an example is shown where the SOAP server is not defined in a SOAP server policy but directly in the invocation of INGOMX:

```
Server = 'boekeya.boeblingen.de.ibm.com'
Path = '///cms/soap'

Address Netvasis 'PIPE (END % NAME SOAPREQ)',
'| NETVASIS NETV (MOE) INGOMX SOAPREQ SERVER='Server,
'PORT=1920 PATH="'Path'" DATA=USER.SOAP.DATA(GET)',
'| L: LOC 1.8 'del||'DWO369I '||del,
'| EDIT SKIPTO 'del||'RETURN CODE'||del,
'       UPTO 'del||'.'||del,
'       WORD 3 1',
'| VAR my_retcode',
'% L:',
'| CON ONLY'
```

Note that the path is passed in double-quotation marks to preserve its case.

Example 6: Explicit Specification of SOAP Server, User ID, and Password

The following is an example where the SOAP server, user ID, and password are specified at the invocation of INGOMX:

```
Server = ’boekeya.boeblingen.de.ibm.com’
Userid = ’SoapUser’
Path = ’///cms/soap’
Address Netvasis ’PIPE (END % NAME SOAPREQ)’,
 ’| NETVASIS NETV (MOE) INGOMX SOAPREQ SERVER=’Server,
 ’USERID="’Userid’" PASSWORD="SAFPW"’,
 ’PORT=1920 PATH="’Path’" DATA=USER.SOAP.DATA(GET)’,
 ’| L: LOC 1.8 ’del||’DWO369I ’||del,
 ’| EDIT SKIPTO ’del||’RETURN CODE’||del,
 ’       UPTO ’del||’.’||del,
 ’       WORD 3 1’,
 ’| VAR my_retcode’,
 ’% L:’,
 ’| CON ONLY’
```

Note that the path, user ID and password are passed in double quotation marks to preserve their case. If the specified password is “SAFPW”, the actual password is taken from the SA z/OS Password Data Set. The password must be stored in the Password Data Set before it is used by using the following command:

```
INGPW SoapUser SOAP,INIT=password
```

Example 7: Secure Socket Connection

This example shows usage of secure port 3661 and prerequisites in z/OS.

```
Address Netvasis 'PIPE (END %NAME SOAPTLS)',
'|NETVASIS NETV (MOE)INGOMX SOAPREQ SERVER=<ip_addr of TEMS>',
'PORT=3661 PATH=///cms/soap PROTOCOL=HTTPS DATA=USER.SOAP.DATA(GET)',
'|L:LOC 1.8 'del||'DWO369I'||del,
'|EDIT SKIPTO 'del||'RETURN CODE'||del,
'UPTO'del||'.'||del,
'WORD 3 1 ',
'|VAR my_retcode',
'% L:',
'| CON ONLY'
```

The following steps are required to exploit secure sockets:

- Policy Agent Setup
- Please refer to the *z/OS Communication Server* documentation for details. Be aware that the TCP/IP profile has to contain the statement "TCPCONFIG TTLS" to result in the activation of the processed policy definitions.

Example 8: Using INGOMX Directives for defining SOAP Data

The following is an example that demonstrates the use of a SOAPAction header.

```
server = 'www.mywebservice.com'
port   = 80
path   = '"/stockprice.asmx"'
data =,
 '<Ingomx_Directives>'||,
,
  '<Ingomx_SoapAction>'||,
   'SOAPAction: "http://www.mywebservice.com/GetPrice"'||,
  '<Ingomx_SoapAction>'||,
,
  '<Ingomx_SOAP_Body>'||,
,
'    <GetPrice xmlns="http://www.mywebservice.com/">'||,
'      <symbol>IBM</symbol>'||,
'    </GetPrice>'||,
,
  '<Ingomx_SOAP_Body>'||,
,
 '</Ingomx_Directives>'

address NetVAsIs 'PIPE VAR DATA | COLLECT'
 '|NETV INGOMX SOAP SERVER='server 'PORT='port,
  'PATH='path 'DATA=* TYPE=NONE PROTOCOL=HTTP',
 '|CONSOLE ONLY'
```

Example 9: Using Ingomx_SOAP_Envelope Directive for SOAP12

```
server = 'www.mywebservice.com'
port   = 80
path   = '"/weather.asmx"'
data   =,
 '<Ingomx_Directives>'||,
,
 '<Ingomx_Host>'||,
  'Host: www.mywebservice.com'||,
 '<Ingomx_Host>'||,
,
 '<Ingomx_SoapAction>'||,
  'SOAPAction: "http://www.mywebservice.com/GetWeather"'||,
 '</Ingomx_SoapAction>'||,
,
 '<Ingomx_ContentType>'||,
  'Content-Type: application/soap+xml; charset=utf-8'||,
 '</Ingomx_ContentType>'||,
,
 '<Ingomx_SOAP_Envelope>'||,
,
  '<soap12:Envelope'||,
'xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"'||,
'xmlns:xsd="http://www.w3.org/2001/XMLSchema"'||,
'xmlns:soap12="http://www.w3.org/2003/05/soap-envelope">'||,
   '<soap12:Body>'||,
    '<GetWeather xmlns="http://www.mywebservice.com">'||,
      '<City>Stuttgart</City>'||,
      '<Country>Germany</Country>'||,
    '</GetWeather>'||,
   '</soap12:Body>'||,
  '</soap12:Envelope'||,
,
 '</Ingomx_SOAP_Envelope>'||,
,
'</Ingomx_Directives>'

address NetVAsIs 'PIPE VAR DATA | COLLECT'
 '|NETV INGOMX SOAP SERVER='server 'PORT='port,
  'PATH='path 'DATA=* TYPE=NONE PROTOCOL=HTTP',
 '|CONSOLE ONLY'
```

Example 10: Send SOAP message with placeholder substitution

Applications, which require user ID and password in the payload (as is the case with ITM SOAP server requests), may specify these credentials either in the SOAP SERVER policy or explicitly as call parameters of INGOMX, if no policy is defined. If the password equals SAFPW, INGPW is called to get the real password at runtime. All occurrences of the placeholder '&ing_userid.' are replaced by the actual user ID and all occurrences of the placeholder '&ing_password.' are replaced by the actual password. The invocation of INGOMX could then be:

```
smsg.1='<CT_Get>'
smsg.2=' <userid>&ing_userid.</userid>'
smsg.3=' <password>&ing_password.</password>'
smsg.4=' <object>ManagedSystem</object>'
smsg.5=' <target>ManagedSystemName</target>'
smsg.6='</CT_Get>'
smsg.0=6
'PIPE (NAME SOAPREQ)',
'| STEM smsg.',
'| COLLECT',
'| SAFE *',
'| NETV INGOMX SOAPREQ SERVER=SOAPHUB TYPE=ITM DATA=*',
'| CONSOLE ONLY'
```

In case the password contains illegal characters for embedding in XML, the password definition should be coded like this:

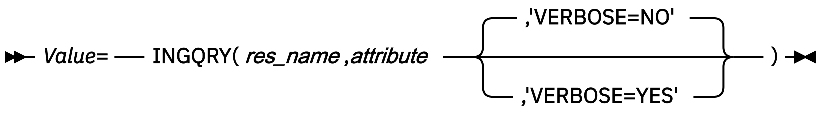
```
smsg.3=' <password><![CDATA[&ing_password.]]></password>'
```

INGQRY

Purpose

The INGQRY REXX function returns the value of the specified attribute for a particular resource.

Syntax



Parameters

res_name
The name of the resource. This value can be a subsystem name or job name. The search sequence is:

1. Subsystem name
2. Job name

attribute
The name of the attribute. It is one of the following (note that, for different resources, not all of these may be available):

APPL
Returns the subsystem name of the resource. This assumes that the specified resource name is a job name.

ASID
Returns the address space ID of the resource.

CATEGORY
Returns the category of the resource (for example, JES2, DB2, IMS, USS and so forth).

CMDPFX
Returns the command prefix of the resource.

FILE
Returns the file information that represents the resource.

FILTER
Returns information about the command parameters that are specified to make the process unique.

IPSTACK
Returns the IP stack name of the resource.

IPLCOMP
Returns the IPL complete indication of the resource.

JOB
Returns the job name of the resource.

JOBLOG
Returns the job log monitoring interval of the resource.

JOBTYPE
Returns the job type of the resource (MVS, NONMVS or TRANSIENT).

OPER
Returns the work operator that is associated with the resource.

OWNER
Returns the owner information of the resource.

PARENT
Returns the parent information for the resource. Parent information is derived from each relationship that has a sequence number assigned to it.

PATH
Returns the information about what UNIX process the resource represents.

PID
Returns the USS Process ID (PID) that is associated with the resource.

PLEX
Returns the name of the plex that is associated with the resource. Currently, this attribute is only used for the IMSplex name as specified in the IMS CONTROL Policy Item.

PORT
Returns the TCPIP port that is represented by the resource.

PROCESS
Contains START or STOP if the resource is in the startup or shutdown phase.

SKIPACTIVE
Returns the 'Skip ACTIVE status' indication of the resource.

STAT
Returns the agent status of the resource.

STRTCYC
Returns the number of start cycles of the resource.

STRTDLY
Returns the start delay time of the resource.

SUBCAT
Returns the subcategory of the resource, for example, AOR or TOR for CICS.

SUBID
Returns the MVS subsystem identifier of the resource.

SUSPEND
Returns DIRECT or INDIRECT if the resource is suspended.

SYMBOL*n*
Returns the requested application symbol, where *n* is 1–9.

UPDLY
Returns the UP status delay time of the resource.

USER
Returns the USS user ID that is associated with the resource.

WLMNAME
Returns the WLM resource name that is associated with the resource.

WTOR
Returns the outstanding reply IDs.

A null value is returned if an unknown subsystem name, job name or variable name is given, or a syntax error is encountered.

VERBOSE

NO
This is the default. The returned value is null.

YES
Causes an error message to be issued if an unknown subsystem name, job name or variable name is given, or a syntax error encountered.

Usage

INGQRY can only be used in the REXX environment.

Examples

The following example obtains the status of resource TSO:

```
stat  = INGQRY(‘TSO’,’STAT’)
```

The following example obtains the subcategory of resource TDBDB001 and a message is issued if *resname* is unknown or a syntax error is encountered.

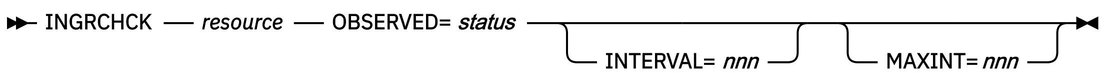
```
resname = 'TDBDB001'
subcat  = INGQRY(resname,'SUBCAT','VERBOSE=YES')
```

INGRCHCK

Purpose

The INGRCHCK command checks whether a particular resource is in a specific state by checking the observed status of the resource. If the resource is not in the expected state, INGRCHCK waits until the resource reaches this status.

Syntax



Parameters

resource
This is the name of the resource. It can be either a subsystem name or a resource name in automation manager notation.

OBSERVED
This is the observed status that the resource should be in. You can specify more than one status. If you specify more than one status, they must be separated by a blank character and enclosed in parentheses. The observed status can be abbreviated, for example, SO for softdown. Here is a list of possible Observed Status values and their shortest possible abbreviations: AVAILABLE (A), UNKNOWN (U), SYSGONE (SY), SOFTDOWN (SO), HARDDOWN (H), STARTING (STAR), DEGRADED (D), STOPPING (STO), PROBLEM (P), WASAVAILABLE (W), and STANDBY (STAN).

INTERVAL
This specifies the time interval that the routine uses to periodically check whether the resource is in the expected state. The default is 5 seconds. The maximum is 999 seconds.

MAXINT (APAR OA55386)
This specifies the maximum number of retry intervals allowed. The default for MAXINT is 0 (zero) which means infinite retries.

Examples

```
INGRCHCK AM2/APL/AOC8 OBSERVED=(SO HA)
```

Return Codes

0
OK.

1
Error occurred.

2
Retry limit reached.

6
Automation not initialized.

Usage

The INGRCHCK command is primarily used in shutdown scenarios. It is potentially task blocking, unless you use the MAXINT parameter to avoid infinite times of resource status check.

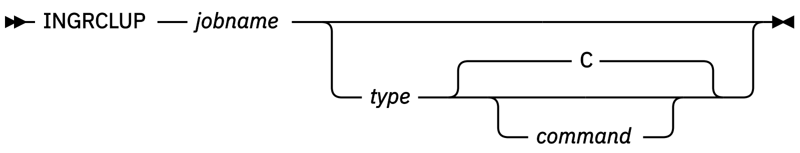
To use it outside of shutdown scenarios, it's recommended to run it in a user owned autotask rather than in standard SA z/OS autotasks.

INGRCLUP

Purpose

The INGRCLUP command is used to cancel address spaces that may be left over by a resource that did not properly shut down. Multiple address spaces with the same name can be cancelled.

Syntax



Parameters

jobname

The job name of one or more address spaces that must be canceled. The job name can contain wildcard characters except for the first character. An asterisk (*) matches a string of arbitrary length and a percentage sign (%) matches a single character.

type

An optional parameter that indicates the type of address space. It can be one of the following:

A

ATX

J

Job

M

Mount

S

Started task

*****

System address space

Not specifying a type includes all types of address spaces.

command

This is the command to be issued. The default is Cancel (C).

Any optional command is issued as an MVS command, by prefixing it with "MVS". When specifying a command, the type parameter must also be specified.

Restrictions and Limitations

Primarily INGRCLUP is meant to be called from within the automation policy (that is, the SHUTDOWN policies).

The percentage sign (%) cannot be used as a wildcard in the first character of *jobname*.

Return Codes

0

Processing was successful.

4

Parameters are invalid.

Examples

The following example cancels all REXX system address spaces:

```
INGRCLUP AXR0* *
```

INGRDS

Purpose

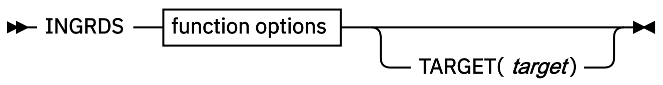
The INGRDS command provides Relational Data Services (RDS) exclusively for the System Automation environment.

System Automation offers basic access methods for relational data services (RDS). The corresponding command interface is similar to the API of SQL but without the full SQL language parser. However, RDS is not a full SQL and does not support all concepts of SQL.

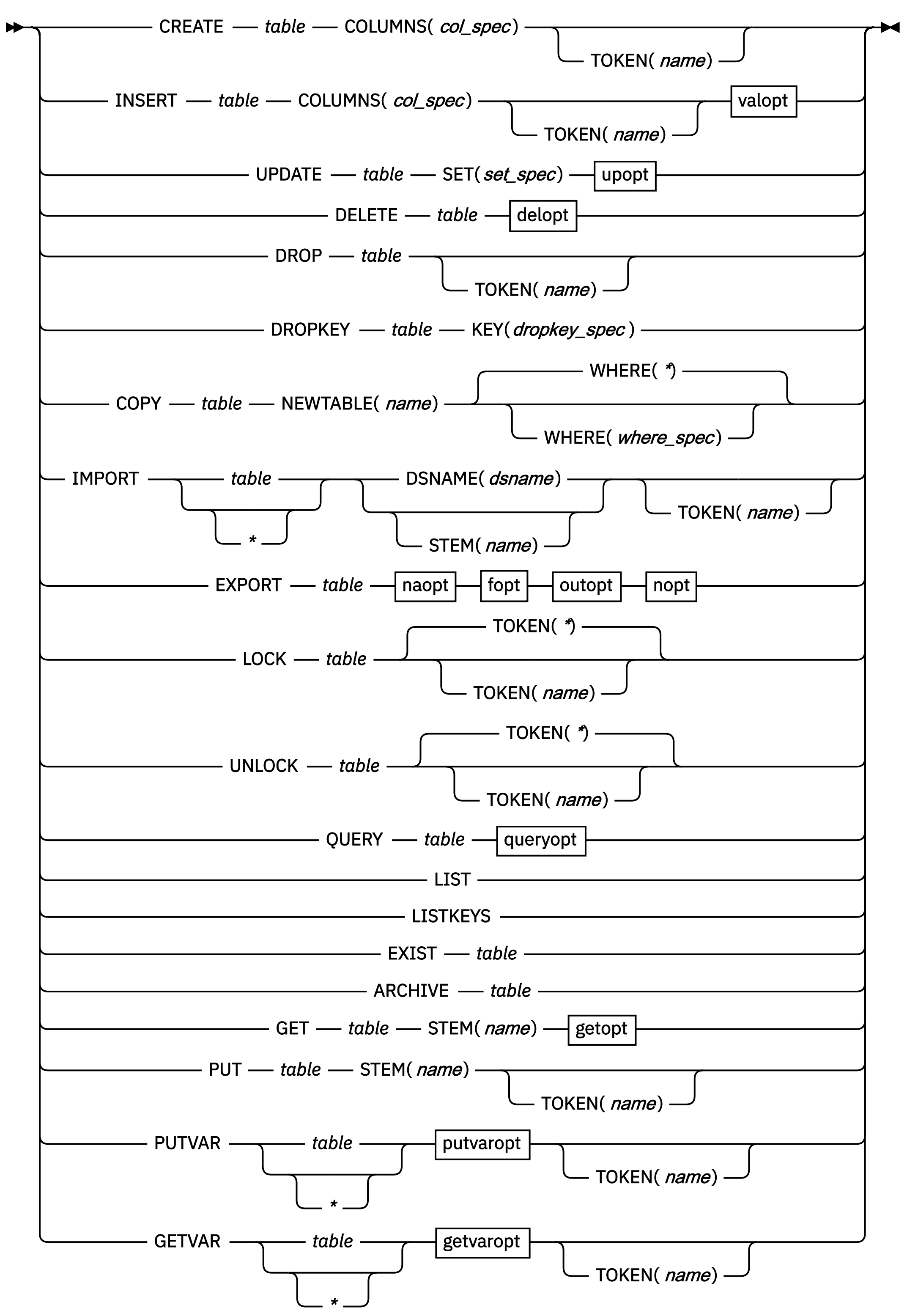
The supporting System Automation command is INGRDS. The entity maintained by INGRDS is a relational data service table, short RDS table or relational data table. With PTF UA54030, the relational data service tables are held in 64-bit storage. Only the control data is still stored in 31-bit storage of the NetView address space. This increases the capacity of user data stored into the RDS tables.

The RDS table is kept persistent via a VSAM file. The VSAM file is unique per System Automation agent. An external database, such as DB2®, cannot be attached. Persistence is achieved by a separate task (see the chapter "Enabling Relational Data Services (RDS)" in *IBM System Automation for z/OS Customizing and Programming*). For example, the tables will be periodically saved every 30 seconds into a VSAM KSDS file (see DD INGEMUGL). The tables will be restored during System Automation initialization when NetView and System Automation is started.

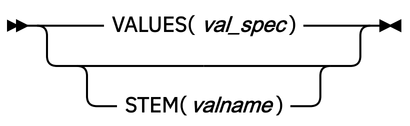
Syntax



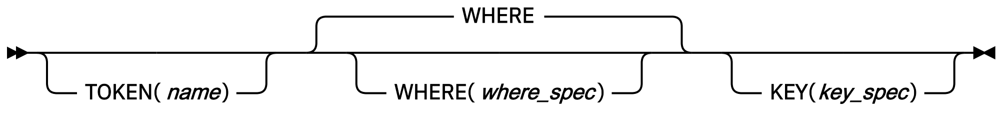
function options



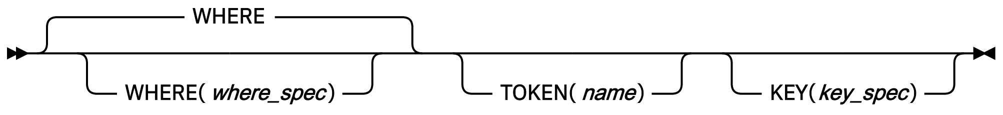
valopt



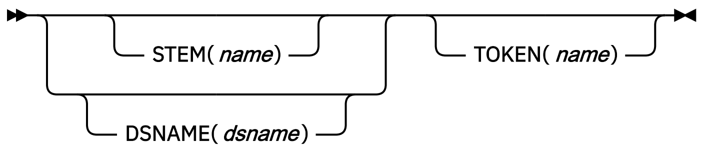
upopt



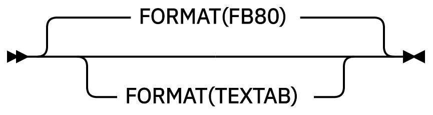
delopt



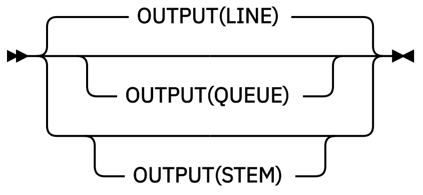
naopt



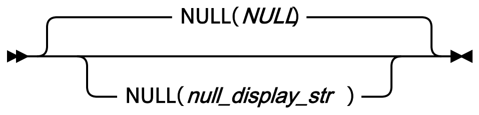
fopt



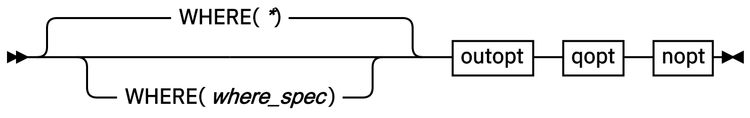
outopt



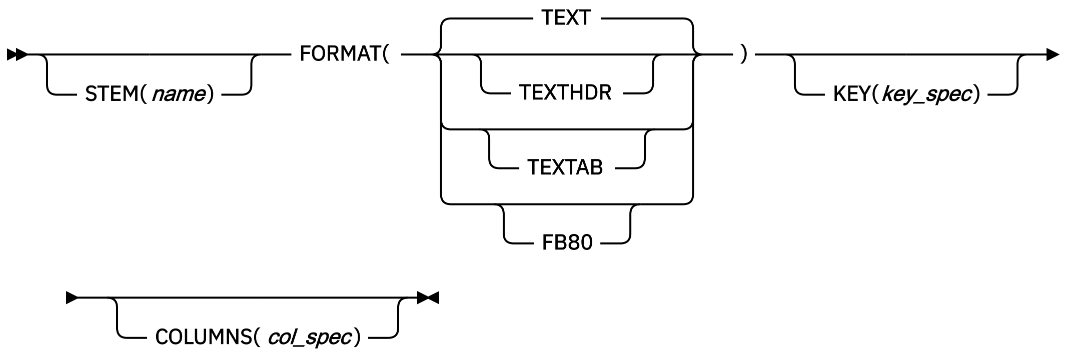
nopt



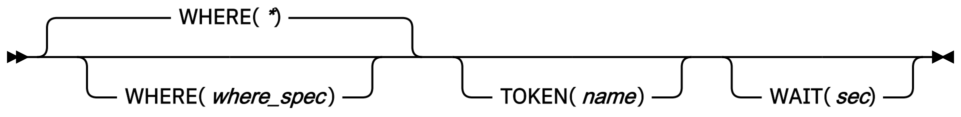
queryopt



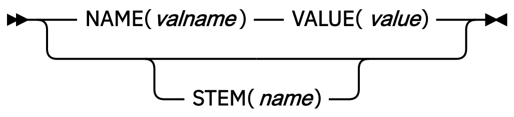
qopt



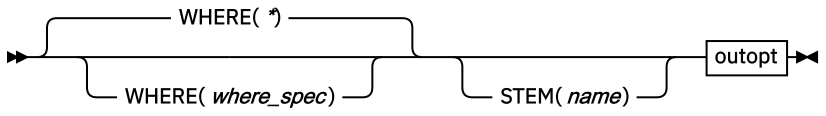
getopt



putvaropt



getvaropt



Parameters

Function/Command

Available functions are:

CREATE
Creates a relational data table and defines the column definition.

INSERT
Inserts a row into the table. If a column is not specified, it will be NULL.

UPDATE
Update existing row(s). The WHERE clause is a filter and SET overwrites the columns.

DELETE
Delete row(s) from the table. The WHERE clause is a filter for rows to be deleted.

DROP
Deletes the entire table and all data of this table.

DROPKEY
Deletes the index of the specified key for the table. If no key is specified, it drops all keys for this table.

COPY
Copies an existing table into a non-existent new table.

IMPORT
Imports a table from a backup data format.

EXPORT
Exports a table into a backup data format.

LOCK
Locks a table in order to protect it against changes.

UNLOCK
Removes the lock.

QUERY
Displays a table with specified columns. Default is columns(*).

LIST
Shows a list of existing tables.

LISTKEYS
List all RDS tables associated with a KEY.

EXIST
Checks if a table already exists. Returns rc=0 or rc=104.

ARCHIVE

Sends an archive command to the archive task AOFRDSAR. The specified RDS table is archived into DD INGEMUGL. Archiving is performed in AOFRDSAR asynchronously.

GET/PUT

GET and PUT belong together in order to perform a mass update function.

The GET command extracts all table values according to the WHERE clause and stores everything in the stem that is specified by the parameter STEM. The stem.0, stem.i.0, and stem.i.j provide the related information.

Before calling PUT, you can modify the table values to your needs. Finally, all values will be updated via a single PUT. If rows.0=0 then the PUT command does not update anything and just closes the previous GET.

The PUT command must not be called without the GET command. The stem must not be dropped between GET and PUT. Be aware that each RDS command such as INSERT, UPDATE, or PUT is atomic and guarantees integrity of the table. However, for a GET-PUT-Sequence the integrity of the table can only be ensured when the WAIT parameter together with the TOKEN parameter is used for command GET. Only if you know that different tasks update mutually exclusive disjointed subsets of rows with the table, then you may call GET without WAIT and TOKEN.

GETVAR

GETVAR and PUTVAR support access of name-value pairs that can be used to share name-value pairs between NetView, TSO batch jobs, and TSO sessions.

The function GETVAR queries the table for all or specific set of name-value pairs. The output format is simplified for retrieval of name-value pairs. In particular, the lengths of characters are returned without padded blanks.

The table name must be specified. If you want to use the default table for name-value pairs, you can specify an asterisk instead of the table name. In this case, the `cglobal AOF_AAO_RDS_DFLTVARS` must be set up correctly.

The *where_spec* has the same syntax as for parameter QUERY. The parameter STEM in combination with the parameter OUTPUT(STEM) is used to write the name-value pairs into the specified stem. The output lines might be one or multiple lines or no output at all if there is no match. Each line represents a name-value pair. The first word is the name of the name-value pair. All data followed by the first blank is treated as value. Blanks within the value are preserved. However, padding blanks will not be added.

PUTVAR

GETVAR and PUTVAR support access of name-value pairs which can be used in order to share name-value pairs between NetView, TSO batch jobs, and TSO sessions.

The function PUTVAR updates an existing name-value pair or inserts a new name-value pair if it does not yet exist. The table is searched by table cell NAME and compared with *valname*. For the selected row, the table cell VALUE is updated with the value. The operations of the function PUTVAR is atomic.

The table name *table* must be specified. If you want to use the default table, you can specify an asterisk for the table name. In this case, the `cglobal AOF_AAO_RDS_DFLTVARS` must be set up correctly.

valname is the name of the name-value pair. The name is case-sensitive and must not have embedded blanks.

value might or might not have surrounding quotes. If it has no surrounding quotes, data is treated as char string and quotes are added automatically. If the value contains a single quote, you must specify two single quotes instead. You can specify a hex string in notation such as 'C1C2'X. In general, the same rules apply for the SET() parameter that is used by the UPDATE function. If you omit the VALUE() parameter, a name-value pair will be created with value as empty string.

The STEM parameter is used to store multiple name-value pairs at once. `stem.0` must hold the number of name-value pairs and `stem.i i=1,2,...` must hold the name-value pairs in a format such that the first word is the name of the name-value pair. All data followed by the first blank is treated as value. For the data portion, the same rules apply as for the VALUE() parameter.

table
The table name is a string of up to 30 characters. Alphanumeric characters are allowed plus $#._

col_spec
For function CREATE the syntax is : `COLUMNS (Colname1 Char(n1), Colname2 Char(n2),...)` where `colname` is an alphanumeric string with some special characters but without blanks. `n1, n2 ..` is a number that defines the maximum length of the characters. Only data type Char is supported. For function INSERT and QUERY syntax is : `COLUMNS (Colname1, Colname2,...)`

For QUERY the order of the columns in the output is always as previously defined in the function CREATE. This is independent from the order you specified in COLUMNS for the QUERY.

val_spec
For function INSERT syntax is: `VALUES ('string1','string2',.....)`. The sequence of string correlates to the sequence of columns specified in col_spec. Omitted values are replaced by NULL if denoted by two commas.

If the parameter STEM(value.) is specified with VALUES() then the stem with name value may contain one or multiple value specifications. You may then insert many new rows with a single insert command.

set_spec
For function UPDATE syntax is: SET `(Colname1='string1',Colname2='string2',...)`

key_spec
For functions QUERY, UPDATE and DELETE, syntax is:
`KEY(Colname1='string1',Colname2='string2',...)`

dropkey_spec
For function DROPKEY, syntax is: KEY`(Colname1,Colname2,...)`

where_spec
The where-specification is similar to the SQL where-specification. However there are restrictions. For details, see the "Syntax of WHERE clause" on page 139.

WHERE
Specifies which table row to act upon. WHERE(*) is supported for QUERY and COPY.

OUTPUT
Defines how the output of the function QUERY will be returned.

QUEUE
Writes the output lines into the external data queue.

STEM
Writes the output lines into stem specified with parameter STEM('out.'). Default stem name is 'rdsout'.

LINE
Writes the output lines to CONS ONLY. This is useful for PIPE. LINE is default.

FORMAT
Defines the data format of the output lines.

TEXT
Writes the query output in text format padded with blanks until maximum column length is reached.

TEXTHDR
Like TEXT, but with two additional headlines.

TEXTAB
Like TEXTHDR, but with one additional descriptor.

FB80
Fixed Block 80 format (FB80) should be specified only for INGRDS EXPORT and not INGRDS QUERY.

STEM
Defines the name of the stem when needed in conjunction with function QUERY, INSERT and EXPORT/IMPORT.

DSNAME
Defines the name of a data set when needed in conjunction with function IMPORT/EXPORT.

NEWTABLE
Defines the name of the new table used by function COPY.

TOKEN
Defines the Lock token.

NULL
The null display string may be specified for this table via parameter NULL for command QUERY with FORMAT(TEXTAB|TEXTHDR|TEXT) and EXPORT with FORMAT(TEXTAB).

WAIT
Specifies number of seconds.

May be used for command GET in order to wait to access the table while another GET-PUT-Sequence is currently processed.

TARGET
The TARGET parameter is supported only by selected functions. It is used to route the INGRDS command to the target systems, execute it on all of them, collect all output, and finally return the response to the caller.

The TARGET parameter is accepted by the CREATE, DROP, INSERT, UPDATE, DELETE, COPY, EXIST, QUERY, and LIST INGRDS functions.

If INSERT specifies STEM, then all insert values are read on the local system and sent to the target system or systems for remote execution.

If QUERY specifies OUTPUT other then LINE, then the result of the remote query is written to the local output destination.

The TARGET parameter is also accepted by EXPORT and IMPORT. The semantic of TARGET for IMPORT/EXPORT is different:

EXPORT
Exports the table on the local system and sends an import command to all target systems. Resulting output messages from the remote import command are routed back to the caller on the local system. If you specify DSNAME, then the data set must be shared between the systems because it is used to exchange the table. Otherwise, the table is sent over the network. The STEM, FORMAT, and OUTPUT parameters are restricted.

IMPORT
Sends an export command to the remote target system. Only one target system is allowed. If execution was successful, the exported table is imported on the local system. Resulting error messages from either the remote export command or the local import command is provided to the caller on the local system. If you specify DSNAME, then the data set must be shared between the systems because it is used to exchange the table. Otherwise, the table is sent over the network. The STEM parameter is restricted.

Messages ING370I, ING371I and ING372I are introduced in order to return the execution result:

- Success:

  If the INGRDS command is executed successfully on all TARGET systems, then only messages ING370I are returned if there is any command response.

- Failure:

If the INGRDS command fails on at least one target system, then message ING371I is returned for all target systems. Remote error messages that are produced by remote command execution on the various target systems might be returned via message ING370I. In addition, the error messages ING338I and ING372I are provided. You can also find other System Automation and/or NetView messages.

KEY

The KEY parameter is supported only by specific functions. When it is used, an index will be created for the specified key. It is used to select only those rows that match the specified key. This parameter may be combined with WHERE parameter, which will be applied after the KEY parameter has already reduced the number of rows to be processed by the WHERE-condition. Therefore, the KEY parameter increases the performance of a search operation in many cases. Normally, direct key access is faster than a standard WHERE-condition if the table size is round about or larger than 500 rows.

Persistent and Volatile Relational Data

If the archive function RDSARCH does not run periodically every nn seconds on the task AOFRDSAR, then RDS tables are not automatically archived into the VSAM file INGEMUGL.

During SA initialization, the global variable AOF_EMU_INIT_STATUS is set depending on the load status of the VSAM file INGEMUGL.

If the status is not OK, then old RDS tables were not loaded.

However, you can create and work with the RDS tables because they reside in memory. When you recycle NetView all tables are lost that were not archived automatically or archived manually via command `INGRDS ARCHIVE table`.

Examples

Using the command INGRDS

```
   INGRDS CREATE mytable COLUMNS(NAME Char(30),FIRST_NAME Char(20),
                         CITY Char(10))
   INGRDS INSERT mytable COLUMNS(NAME, FIRST_NAME, CITY)
                         VALUES('Smith', 'John', 'New York')
   INGRDS QUERY  mytable COLUMNS(NAME, FIRST_NAME, CITY) WHERE(*)
   INGRDS DROP   mytable
   INGRDS DELETE mytable WHERE(NAME='Smith')
   INGRDS UPDATE mytable WHERE(NAME='Smith') SET(CITY='Los Angeles')

   INGRDS EXPORT mytable DSNAME(my.data.set)
   INGRDS EXPORT mytable STEM(out.) OUTPUT(STEM)
   INGRDS IMPORT *       DSNAME(my.data.set)
   INGRDS IMPORT newtabl STEM(out.)

   INGRDS INSERT mytable COLUMNS(NAME,FIRST_NAME,CITY)
                         STEM(values.)
   INGRDS QUERY  mytable COLUMNS(NAME, FIRST_NAME, CITY)
                         WHERE(*) NULL('00'x)

   INGRDS QUERY  mytable COLUMNS(NAME, FIRST_NAME, CITY)
                         KEY(NAME='Bond',CITY='London')
   INGRDS QUERY  mytable COLUMNS(NAME, FIRST_NAME, CITY)
                         KEY(NAME='Bond',CITY='London')
                         WHERE(FIRST_NAME='James')
   INGRDS DELETE mytable KEY(CITY='London')
   INGRDS DELETE mytable KEY(CITY='London') WHERE(NAME='Smith')
   INGRDS UPDATE mytable KEY(CITY='London') WHERE(NAME='Smith')
                         SET(CITY='Los Angeles')
   INGRDS DROPKEY mytable KEY(NAME)
   INGRDS DROPKEY mytable KEY(NAME,CITY)

   INGRDS PUTVAR table NAME(var1) VALUE(AB)
   INGRDS PUTVAR table NAME(var2) VALUE('AB')
   INGRDS PUTVAR table NAME(var3) VALUE('C1C2'X)
   INGRDS PUTVAR table STEM(var.)
   INGRDS GETVAR table WHERE(NAME='var1')
   INGRDS GETVAR table WHERE(NAME LIKE 'var%') STEM(var.)
   INGRDS GETVAR table WHERE(NAME IN('var1','var2')) STEM(var.)

   INGRDS EXIST  table TARGET(system1 system2)
```

```
  INGRDS UPDATE table TARGET(system1 system2)
                      WHERE(NAME='Smith') SET(CITY='Los Angeles')
  INGRDS EXPORT table TARGET(system1 system2)
  INGRDS IMPORT table TARGET(system1)
```

Restrictions and Limitations of KEY Access

The implementation of RDS has some restrictions:

- the number of RDS tables is no longer limited. However, be careful with the number of tables you create because archiving a large number of tables may take more time than archiving less but larger tables. Check for the optimal ratio between the number of tables and the number of rows per table.
- only the data type CHAR is supported (which is stored as variable string internally).
- maximum length of a table row is restricted to 32000 bytes.
- less complex WHERE-clause(s) are supported (see “Syntax of WHERE clause” on page 139).
- primary key is not supported. Therefore a table row could be inserted twice. No checking for unique key is done.
- keywords such as WHERE, SET, VALUE, COLUMNS and so on, must immediately be followed by a parenthesis. A blank between a keyword and a parenthesis is not allowed. For example, COLUMNS(name char(10)).
- blanks must be between operators, such as = or <>, and functions, such as LOWER or UPPER. For example, name='aa' AND city = UPPER ('London').
- rows are not sorted since INGRDS does not support a primary key. Therefore function DELETE, UPDATE and QUERY processes all matching rows.
- inserting a row will fail if a value was truncated because it is longer than defined in the CREATE command.
- performance for RDS table processing depends on the number of rows and columns. It is not recommended to have more than 100 columns otherwise performance is impacted in a non-linear manner. The more rows and columns exist the slower the processing of the table is. Note that a where-clause must always compare all rows. Insert and update must always parse all columns.
- command INGRDS cannot be used with NETVIEW PIPE when you specify parameter STEM. However, you can use PIPE stage STEM instead of the INGRDS parameter STEM for INSERT and IMPORT, for example:

  ```
  PIPE STEM in. | COLLECT | NETV INGRDS INSERT table
  PIPE STEM in. | COLLECT | NETV INGRDS IMPORT table
  ```

- When using the KEY parameter, the total length of the key is restricted to 256 characters. If longer, it will be truncated. The key can be constructed by multiple columns. But only the 1-32 columns are supported, and the columns beyond the 32th column are ignored.
- 64 bit storage is required. Therefore, do not specify MEMLIMIT=0. Normally, z/OS sets the default to 2GB which is more than sufficient for RDS. For your system definitions, see z/OS parmlib member SMFPRMxx.

Hints and Tips

1. Within VALUES() and SET() you may set a hex string such as '00'X or '01020A0B'X.
2. Within WHERE() you may search for a hex string such as '00'X or '01020A0B'X.
3. Command INGRDS makes a difference between the empty string and NULL.

   A table cell is empty when the value has length zero.

   A table cell is NULL when the value is one byte hex zero, REXX '00'X.

   An un-initialized table cell has value NULL.

4. Inserting or updating a row with a string which should contain a single quote can be done by specifying two single quotes like 'a''b', for example,

   ```
   INGRDS INSERT tab1 COLUMNS(name city) values('a''a','bb')
   ```

   Also in the where-clause you can specify double quotes in order to select a table cell that contains single quotes. For example,

   ```
   INGRDS QUERY tab1 WHERE (name='a"a')
   ```

   Single quotes and double quotes can be mixed. For example,

   ```
   INGRDS UPDATE tab1 SET (name='a''a"a')
   ```

5. The default table for name-value pairs can be defined via `AOF_AAO_RDS_DFLTVARS=(ING_DFLTVARS,50,1000)`

   You can customize the parameters of the AAO to your needs:

   - First name of the table
   - Second maximum length of a name
   - Third maximum length of a value

   If one of the parameters is omitted or invalid, the default is used and the AAO is overwritten with the composed parameters.

Usage

CREATE a Table

This example creates a table with name TAB1 (the table name is translated to uppercase). A pair for column name and char(nn) is required separated by a comma. The data of a column is always mixed case and can also be hex data. Maximum data length is 10 bytes in this case for all columns.

`INGRDS CREATE tab1 COLUMNS (col1 char(10), col3 char (10))`

INSERT Row into a Table

Examples 1 and 2 insert a new row with col1='c11',col2='00'X and col3='c13'.

Example 3 inserts a new row with col1='c11', col2='c12' and col3='c13'

Example 4 inserts a new row with col1='c11', col2='00'X and col3='c13'

1. `INGRDS INSERT tab1 COLUMNS(col1 col3) VALUES('c11','c13')`
2. `INGRDS INSERT tab1 COLUMNS(col1 col2 col3) VALUES('c11','c13')`
3. `INGRDS INSERT tab1 COLUMNS(col1 col2 col3) VALUES('c11','c12','c13')`
4. `INGRDS INSERT tab1 COLUMNS(col1 col2 col3) VALUES('c11','00'X,'c13')`

DELETE Row from a Table

Example 1 deletes **all rows** where col3 has the specified value.

Example 2 deletes rows where col3 is the empty string.

Example 3 deletes rows where col2 is the NULL string.

1. `INGRDS DELETE tab1 WHERE(col3='c13')`
2. `INGRDS DELETE tab1 WHERE(col3=' ')`
3. `INGRDS DELETE tab1 WHERE(col2='00'X)`

UPDATE Row of a Table

The examples update all rows where col1 has the specified value.

Example 1 updates col2 to c22 at all rows where col1 is the c21.

Example 2 updates col2 to '00'X (NULL) at all rows where col1 is the c21.

1. `INGRDS UPDATE tab1 SET(col2='c22') WHERE(col1='c21')`
2. `INGRDS UPDATE tab1 SET(col2='00'X) WHERE(col1='c21')`

DROP a Table

Dropping a table removes all data from the GETMAIN storage immediately. Since normally the archive command is scheduled periodically every 30 seconds (see resource RDSARCH in *IBM System Automation for z/OS Customizing and Programming*) the data that is related to the dropped table will also be removed from the VSAM file at this time.

Note: If you recycle NetView after dropping a table and before the archive command, running the DROP command may have no permanent effect and the table might be restored again during SA initialization.

A table might have a lock. In this case you cannot drop the table (example 1) and you must specify the token associated to the lock. Use command "INGRDS LIST" to find the tables and the associated name of the locks. Example 2 drops table TAB1 with lock NET$BDOW.

1. `INGRDS DROP tab1`
2. `INGRDS DROP tab1 TOKEN(NET$BDOW)`

COPY a Table

You can copy an existing table to a new table with a different name. The new table must not exist. If the table has a lock, the lock will be copied as well.

1. `INGRDS COPY tab1 NEWTABLE(tab2)`

LOCK and UNLOCK a Table

You can create a table and assign it a lock, see example 1.

The lock protects the table from modification. It does not protect the table being unlocked by another user if the user knows the token. Note, the default token is JOB$userid (TSO) or NET$userid (NetView®).

Example 1 shows how to assign a lock to an existing table.

Examples 2 and 3 create a table with lock and removes the lock from it.

1. `INGRDS LOCK tab1 TOKEN(mylock1)`
2. `INGRDS CREATE tab2 TOKEN(mylock2) COLUMNS(...)`
3. `INGRDS UNLOCK tab2 TOKEN(mylock2)`

Check Existence of a Table

The following invocation of command INGRDS checks if a table exists.

```
INGRDS EXIST table
```

Return code 0 means the table exists and return code 104 means the table does not exist.

ARCHIVE a specific Table

Command INGRDS supports archive to disk for the named table. This function allows you to trigger the archive process when needed in addition or instead of archiving all table changes every *nn* minutes.

The command below schedules an archive request for a specific RDS table on the task AOFRDSAR asynchronously:

```
INGRDS ARCHIVE table
```

Return code 229 will returned be if the pre-check for the archive action fails. This is either because the table does not exist or AOFEXCMD fails.

Error messages may be asynchronously issued.

You may find in the NETLOG error messages, such as ING344 or ING388, reporting errors. Message 344I is unique for ARCHIVE/RESTORE and can be trapped via AT.

How to Display a NULL-Cell

A NULL-cell is a table cell that has never been set or was set to hex zero. By default QUERY displays the null-cell via the fix character string 'NULL'. If this is a valid customer string then it cannot be distinguished from NULL-cell.

Therefore this null-display-string can be specified via parameter NULL for commands:

```
INGRDS QUERY table NULL(null-display-string) FORMAT(TEXTAB|TEXTHDR|TEXT)
INGRDS EXPORT table NULL(null-display-string) FORMAT(TEXTAB)
```

If the null-display-string is specified via parameter NULL then any null-cell will be displayed with the specified null-display-string.

The null-display-string can be any string, for example:

- 'My_Null_String'
- 'NULL'
- '00'x

The null-display-string must not contain a blank.

The default null-display-string is 'NULL'.

The parameter NULL() will be ignored for any other command.

Invoking from TSO

You can run all functions from command INGRDS on TSO.

For that purpose, the command INGRCRDX serves as the client API to the remote NetView server. It sends the corresponding INGRDS command to NetView and receives the response. Output is written to the TSO terminal:

General Syntax: INGRCRDX `function table list_of_keywords`

For example:

```
INGRCRDX QUERY tab1
```

```
INGRCRDX CREATE tab1 COLUMNS(col1 char(1), col2 char(20))
```

INGRDS Supports Direct KEY Access

The INGRDS command supports direct KEY access for RDS tables.

The direct key access improves the search performance significantly. For example, for a table with 10000 rows and 3 columns, a query with direct key access is 10 to 100 times faster than with a standard query.

To support direct key access, INGRDS introduces the KEY parameter. You define a key by specifying one or multiple column names. Hence, the key consists of the concatenation of the specified column names. The order of the column names in the KEY parameter doesn't matter since they will be automatically ordered the way it was originally defined in the CREATE function.

The syntax of KEY parameter for the QUERY function is:

```
INGRDS QUERY table KEY( Colname1='string1', Colname2='string2', ... )
```

Colname1, Colname2, .. are the column names of the RDS table. The string assigned to the column name is used to construct the key for this specific QUERY. The specific search key 'string1 + string2 + ...' will be used to look up into an index to have fast access. INGRDS creates implicitly the index on the fly as needed. The index is unique per RDS table and per key.

Below is an example of a RDS table with name "tab1":

```
NAME                           FIRST_NAME           CITY
------------------------------ -------------------- -----------
Bond                           James                London
Monroe                         Marilyn              Los Angeles
Kennedy                        John                 Washington
Picasso                        Pablo                Malaga
Bond                           Susan                London
```

This RDS table is created by command:

```
INGRDS CREATE tab1 COLUMNS(NAME Char(30),FIRST_NAME Char(20), CITY Char(11))
```

Here is an example for a query with KEY:

```
INGRDS QUERY tab1 KEY(NAME='Bond', CITY='London')
```

The key in this example is 'NAME + CITY'. The example returns all rows with search key = 'Bond'+ 'London'. That means where name is 'Bond' and city is 'London':

- Jame Bond
- Susan Bond

Creating and Deleting a KEY

When you specify the KEY parameter in a QUERY, an index for this key is automatically created for this table if the index is not already available. This index is used for fast access to the rows that match the key.

You may have multiple keys for the same RDS table. For example, for the table above:

- This example uses the key 'NAME + CITY', and returns two rows:

  ```
  INGRDS QUERY tab1 KEY(NAME='Bond', CITY='London')
  ```

- The next example uses the key 'NAME + FIRST_NAME', and returns one row since this key is unique in the table above:

  ```
  INGRDS QUERY tab1 KEY(NAME='Bond', FIRST_NAME='James')
  ```

But you can only use one key at a time for a QUERY.

You can delete a key and hence delete the corresponding index via command:

```
INGRDS DROPKEY table KEY(Colname1, Colname2,...)
```

For example: `INGRDS DROPKEY tab1 KEY(NAME,CITY)`

Listing All Tables Associated with a KEY

You can list all RDS tables associated with a KEY by **INGRDS LISTKEYS** command.

For displaying purpose, the table name is truncated to maximum 30 characters. You cannot display the keys for a specific table name, since always all tables will be displayed. The displayed KEY column has varying length. The displayed INFO column is reserved for future use.

Using Direct KEY Access for UPDATE and DELETE

You can use the KEY parameter also for updating or deleting a row of a table. Of course, the RDS index will be invalidated for DELETE and for UPDATE only if a key-column has been updated. Next time a query, an update, or a delete operation is performed, a new RDS index will be implicitly created.

Examples:

```
INGRDS DELETE tab1 KEY(NAME='Bond', CITY='London')
INGRDS UPDATE tab1 KEY(NAME='Bond', CITY='London')
                   SET(FIRST_NAME='James')
```

Combining KEY and WHERE

You can combine KEY and WHERE parameters to refine the output of a direct key access. This is useful if the key is not unique, which is the case in the example above.

For example, the following query returns only one match for 'James Bond' in comparison to the direct key access that return two matches for 'James Bond and Susan Bond'.

```
INGRDS QUERY tab1 KEY(NAME='Bond', CITY='London')
                  WHERE( FIRST_NAME='James' )
```

Considerations Using a KEY

Using a key adds an overhead to the INGRDS command processing.

You benefit from the key when the table has a large number of rows and/or many columns. This is because a normal query must parse all rows and columns of a table. Using a key will significantly reduce the rows and columns to be parsed. If the key is unique, no parsing is needed at all.

You get best performance if you do not delete or insert rows after an index has been created. However, you can delete, update, or insert rows. The next query with key will create a new index and hence the performance of this query will be reduced a little bit because of the overhead. But all subsequent queries will again perform fast.

The performance table shows that a QUERY even with the overhead of implicit creation of an RDS index is much faster than the standard QUERY if the table has more than 500 rows.

Larger memory to store RDS Tables

INGRDS stores with UA54030 the user data of a RDS table in 64-bit memory. This eliminates memory problems that occasionally occur due to too many and too large RDS tables stored in the NetView 31-bit address space. The RDS index is also stored in 64-bit memory.

Limitations and Requirements of KEY Access

The usage of KEY access has the following implementation limitations and requirements:

- The maximum length of a constructed key is 256 characters. If longer, it will be truncated.
- The key can be constructed only by column names within column 1,2,...,32.
- Do not set MEMLIMIT to zero, because INGRDS uses 64-bit memory. Normally, z/OS sets the default to 2GB which is more than sufficient for RDS. If needed, you can overwrite this limit via MEMLIMIT parameter in the JCL of the NetView startup job.

For your system definitions, see z/OS parmlib member SMFPRMxx.

Syntax of WHERE clause

The command INGRDS has some restrictions with the WHERE clause in comparison to full SQL.

Restrictions

- Join, subquery and aggregate functions are not supported.
- Host variables are not supported.
- Only a limited set of functions are supported.
- REXX rules apply for expressions.

REXX Where-Clause Expression

The finally parsed and resolved WHERE-clause, `resolved_where_clause`, is treated as a string that will be executed by the REXX interpreter via the following REXX instruction:

```
if (resolved_where_clause) then
    bool=1
else
    bool=0
```

The REXX rules for expressions and operators apply

For example the operator AND has higher priority than OR. Also the rules for how parentheses are handled is defined by the REXX rules. Restrictions that apply due to the usage of this technique can never be resolved!

Restricted Syntax Checking

The syntax parser finds that a column name is invalid/not known, for example, "xxx='abc'":

```
ING338I Function or command INGRCRDS failed, RC=116 REASON=QUERY
TABLE MYTAB Invalid column name xxx
```

In many cases the syntax parser detects that a quote is missing, for example, 'xxx='abc ":

```
ING338I Function or command INGRCRDS failed, RC=115 REASON=QUERY
TABLE MYTAB WHERE/SET=clause parser error 46
```

But for many other invalid WHERE-clauses the SA syntax parser is less restrictive.

For example, if the operator is not valid or not specified at all such as "name 'abc'"(rather than " name='abc'") or "name like %abc%" (rather than "name like '%abc%'") the final expression results in a REXX error.

If such a REXX error occurs in `resolved_where_clause` then the message ING338I reports the error.

Error Message examples:

- "'1'/2" results in:

  ```
  ING338I Function or command INGRCRDS failed, RC=116 REASON=QUERY TABLE MYTAB
  No match due to bad WHERE-clause: Logical value not 0 or 1
  ```

- "name like %aa%" results in:

  ```
  ING338I Function or command INGRCRDS failed, RC=116 REASON=QUERY TABLE MYTAB
  No match due to bad WHERE-clause: Invalid expression
  ```

- "name like abc" results in:

  ```
  ING338I Function or command INGRCRDS failed, RC=116 REASON=QUERY TABLE MYTAB
  No match due to bad WHERE-clause, error near: abc
  ```

Supported Syntax

```
▶▶─ WHERE( [NOT]{predicate} [AND|OR [NOT] predicate] ) ─▶◀
```

Examples:

`WHERE(NAME='Bond' AND CITY='London')`

The following list of expressions can be used to construct the WHERE clause:

1. **Predicate** is an expression that can be true or false and can contain either uppercase or lower case characters. You can specify the following types of predicates:
   - Comparison predicates
   - IN predicate
   - LIKE predicate
2. **Character function** such as substring function. The substring function allows you to retrieve parts of character strings that are to be used as search criteria. The substring function and the lower/upper function may be used in conjunction with the predicates previously mentioned.
3. You can combine predicates and the character functions into compound **Boolean Expressions**. For example, you can create a WHERE clause like the following:

```
(NAME = 'BOND' and CITY <>BIRTHCITY) OR FIRST_NAME = 'James'
AND STREET IN('Central Avenue','Lincoln Road','Catwalk')
```

Comparison Predicate

A comparison predicate uses the syntax: colname **relationaloperator** value

The **relationaloperator** can be any of the following:

Table 7. Relational Operator Listing

Relational Operator	**Description**
=	equal
<>	not equal
>	greater than
>=	greater than or equal to
<	less than
<=	less than or equal to

Example: DESIRED_STATE <> 'down'

IN Predicate

An IN predicate compares the column name to one or more strings. The maximum number of strings is not limited. Use the following syntax to specify an IN predicate: `colname IN (string1,string2,...,string20)`

For example, `NAME IN('Ashton','Bond','Connory','Jones','Tong')`

LIKE Predicate

A LIKE predicate compares a column to a wildcard value you specify and selects columns conforming to the wildcard value. Use this syntax for a LIKE predicate: `colname LIKE 'wildcard'`

You must enclose the wildcard value in single quotes. A wildcard can include any combination of characters and either the percentage sign (%) or the underscore(_).

The percentage sign denotes any set of characters, including blanks.

For example, the following clause: `NAME LIKE '%on%'` selects from the NAME column all of the following values: Ashton,Bond,Connory,Jones,Tong

The **underscore sign** denotes only one character in a specific position. For each character of column data you do not want to match, the wildcard must include an underscore. For example, the following clause: `NAME LIKE '_on_'` selects from the NAME column that contains all of the following values: Bond, Tong

Restrictions for ESCAPE keyword

- ESCAPE character cannot be specified. It is always backslash (\)
- The ESCAPE keyword can be specified but will be ignored.

When the percentage sign (%) or underscore character is part of the column data, use the ESCAPE character backslash \. The ESCAPE character prevents INGRDS from interpreting the percentage sign (%) and underscore characters in column text as wildcards. For example, to find the columns containing the characters I_MS1 and I_MS2, use the following predicate: `NAME LIKE 'I\_MS_'`

Character Functions

The operands of a character string function can be literal character strings or column names. The following character functions are supported:

- SUBSTR (*argument* FROM n FOR m)
- UPPER (*argument*)
- LOWER (*argument*)

The *argument* may be either a column name or a literal.

Examples:

`SUBSTR (NAME FROM 3 for 2) = 'nd'`

`UPPER (NAME)= UPPER('bond')`

The **SUBSTR** clause takes from the column name argument starting at position n as many characters as specified with m. For example SUBSTR (CITY FROM 5 FOR 4) returns the string 'York' if the CITY is 'New York'.

The **LOWER** function translates a character string literal or column value to all lower case characters.

The **UPPER** function translates a character string literal or column value to all upper case characters.

Example of a Complex WHERE-clause

The purpose of this WHERE-clause is simply to show how to combine predicates. It shows an example of combinations of comparison predicates, IN and LIKE predicates and character functions SUBSTR and UPPER.

```
table = 'sample'

/*define query*/
where_clause =,
"(NAME='Bond' AND CITY <> 'London')",
"OR ('James' <> FIRST_NAME)"
"OR NOT (CITY='Berlin')",
"AND CITY IN ('Paris','London','New York')",
"AND FIRST_NAME LIKE '%ame%'",
"AND SUBSTR (CITY FROM 4 FOR 3)='don'",
"AND UPPER (NAME)=UPPER('james')",
"AND LOWER (NAME)='james'"

/*execute query*/
'INGRDS QUERY' table 'WHERE('where_clause ') OUTPUT(STEM) STEM(out.) FORMAT(TEXT)'

/*show query output*/
if(rc=0) then do
  do i=1 to out.0
```

```
    say out.i
  end
```

The RDS Table Output

A RDS table can be retrieved via the subcommand QUERY. The parameter OUTPUT defines the output destination and the parameter FORMAT defines the data format. For example, a table can be displayed on the NetView console via command:

```
INGRDS QUERY tab1 WHERE(*) OUTPUT(LINE) FORMAT(TEXTHDR)
```

TEXT FORMAT

Here you see an example of FORMAT(TEXTHDR). The first two lines are the headline followed by the table rows.

The first line defines the column names as specified in the subcommand CREATE.

The second line defines the maximum length of a column. However if the column name is longer than the maximum length, then the length of the column name is used.

The table row lines display the cell data padded with blanks up to the maximum column length.

```
NAME                            FIRST_NAME              CITY
_______________________________________________________________
Bond                            James                   London
Smith                           John                    New York
Schulz                          Emma                    Berlin
Metzger                         NULL                    München
Wagner                                                  Frankfurt
```

Note that INGRDS makes a difference between "empty string" and "NULL".

An empty string is a character string with length 0, for example the FIRST_NAME of Wagner is the empty string. But the FIRST _NAME of Metzger is NULL.

Viewing a RDS Table within NetView

You may want to use the NetView window command in order to display a RDS table using the following command:

```
WINDOW INGRDS QUERY MYTAB FORMAT(TEXTHDR)
```

List of Existing Tables

You can get a listing of all existing tables via command:

```
INGRDS LIST
```

- 1st column of the listing is the table name
- 2nd column of the listing is the internally used pool name
- 3rd and 4th column of the listing is the number of rows and columns of the table
- The last column is the list of column name.

The command output looks like following (list of column names is truncated):

```
TABLE NAME                    POOL     ROW   COL    LOCK              COLUMNS
____________________________  ________ _____ ______ _________________ ________
TA1                           !RD!TA1  124   015    JOB$BDOW          RES JOB OWN TY
TA2                           !RD!TA2  005   015    UNLOCKED          RES JOB OWN TY
JOBINFO                       !RD!JI08 005   007    UNLOCKED          CICSID VS DS C
MYAUDIT                       !RD!MUT1 073   023    UNLOCKED          DSN CDT CNT VO
SYSTASKS                      !RD!SAS8 127   011    UNLOCKED          JOBNAME TASK_S
WINDOWS                       !RD!WDS7 162   007    UNLOCKED          JOBNAME STATUS
X1                            !RD!X1   000   002    NET$BDOW          COL1 COL2
```

Obtain and Release Table Lock

The command INGRDS allows you to obtain and release a lock for a specific table. A lock is a token with a maximum length of 16 bytes. A lock token must not contain blanks. A lock token cannot be the empty string.

The token 'UNLOCKED' is reserved and should not be used as lock token.

The purpose of the table lock is to protect a table from modification while another user has access to it. For example if you edit the table on TSO via command 'INGRCRDX EDIT table' the table will be locked with the corresponding TSO user id.

If a table already has a lock the following subcommands are rejected with return code 102 if the lock does not match the token specified via parameter TOKEN:

```
DROP, INSERT, UPDATE, DELETE, IMPORT
```

For example, the following command deletes the table if the table has the lock 'JOB$ABC':

```
INGRDS DROP table TOKEN(JOB$ABC)
```

Note: The lock token associated with a table is much less restrictive than, for example, an ENQ lock. The lock token is not associated with a task or an address space. It is like an attribute of the table that can be set or removed. Any NetView operator or TSO user (that is allowed to use INGRCRDX) can set or remove the lock token. Therefore it might be possible (but not recommended) by a NetView operator or a TSO user userid to set manually the lock token to JOB$userid2, where userid2 is a foreign TSO userid. Of course, in this case, the TSO user userid2 is able to access and overwrite the table although it was locked by userid1. Also it is recommended that you do not use a lock token that starts with NETV$ or JOB$ yourself.

Obtaining a Lock

You can obtain a lock for an existing table via the following commands:

```
INGRDS LOCK table [TOKEN(*|token)]
INGRDS CREATE table [TOKEN(*|token)]...
INGRDS EXPORT table [TOKEN(*|token)]...
INGRDS IMPORT table [TOKEN(*|token)]...
```

Release a Lock

You can remove the table lock via following command:

```
INGRDS UNLOCK table TOKEN(*|token)
```

When importing a table from a data set it is also possible to remove the lock via command:

```
INGRDS IMPORT table TOKEN(UNLOCKED)...
```

Default Lock

The default lock token is:

- for NetView NETV$xxxx

- for TSO JOB$xxxx

where xxxx is the NetView task id or TSO user id.

If you omit the parameter TOKEN for subcommand LOCK or UNLOCK the default is assumed.

If the parameter TOKEN is not specified for any other subcommand then no default token is assumed. In this case you must specify parameter TOKEN if needed.

If you specify the parameter TOKEN with value * then the default token is used.

Import/Export SQL Tables

With the command INGRDS you may backup a specific RDS table and restore it later on.

One of the following data formats is supported:

1. FB80 format - may be used to backup an RDS table into a data set with fixed block 80 format.
2. TEXTAB format - may be used to import easily external data into an RDS table. Data layout is the same as used for 'INGRDS QUERY table FORMAT(TEXTAB)'. Refer also to 'SA TSO Table Editor INGRCRDX' section in the "Enabling Relational Data Services (RDS)" chapter of *IBM System Automation for z/OS Customizing and Programming*.

Note: The import/export data set must exist already before invoking the command INGRDS.

Import Function

The command syntax that imports a SQL table is as follows:

```
INGRDS IMPORT table | * DSNAME(dataset)
```

The data set name might be in quotes but also no quotes are accepted. It must be a fully qualified data set name.

The command INGRDS reads the data format identifier from the first record of the data set. If the format checking is successful then INGRDS reads the data from the data set and extracts the table name, the column names and the size of the columns. It creates the table and inserts each row. If the table already exists it will be deleted first.

If the table name is specified then the import data is used to create a table with the name specified in the INGRDS command. If the table name * is specified then the table name from the import data is used.

Export Function

System Automation exports a table into a data set with the same data layout as required by the import function.

The command syntax that exports a SQL table is as follows:

```
INGRDS EXPORT table DSNAME(dataset) FORMAT(FB80|TEXTAB)
```

The logical length of the data set or member of the PDS must be large enough to hold the maximum length of an output record. This is 80 byte for FORMAT(FB80) but could be much larger for FORMAT(TEXTAB).

Exporting/Importing a Stem rather than a Data Set

You may export a table into a stem and import it from a stem into another table. As a result, you are able to insert large amount of data with a better performance instead of iterating over a large number of INSERT commands.

The command INGRDS EXPORT writes the exported data into one of the following destinations rather than writing it only into a data set:

- a stem
- external data queue
- to console

You can achieve this when you omit the parameter DSNAME().

Usage Example

```
INGRDS EXPORT table OUTPUT(STEM) STEM(data.)
INGRDS EXPORT table OUTPUT(QUEUE)
INGRDS EXPORT table
```

The command INGRDS IMPORT reads the data from a stem:

```
INGRDS IMPORT table|* STEM(input.)
```

The input data to be passed via STEM must have the same format as generated by the command `INGRDS EXPORT table FORMAT(format)`, where the format TEXTAB is the simplest way to generate a table.

See the example below, to see the first 3 lines contain header lines.

Import.1 contains the keyword `@SA_RDS_TABLE:` followed by the table name followed by an enumeration specifying the length of column1, length of column 2 and so on.

Import.2 contains a list of words specifying the column names. Each name is padded with blanks to the maximum column length.

Import.3 contains the minus characters according to the length of the columns.

Import.n, n=4,5... contain the rows. There must be one blank between each column. Each column is padded with blanks to the maximum column length.

Usage Example

```
/*generate the import header lines*/
import.1 = '@SA_RDS_TABLE:' table '(30,20,11)'
import.2 = Left('NAME',30) Left('FIRST_NAME',20)Left('CITY',lenCol3)
import.3 = Left('-',30,'-')Left('-',20,'-') Left('-',11,'-')
import.0 = 3
/* generate the import data*/
imax = 100
do i=1 to imax
 j = i + import.0
 import.j = Left('Bond'||i,30)Left('James'||i,20) Left('London'||i,11)
end
import.0 = imax + import.0
/*import the stem*/
"INGRDS IMPORT" table "FORMAT(TEXTAB) STEM(import.)*
```

Mass Insert

You may want to have a faster alternative for populating a RDS table instead of calling the 'INSERT' function a large number of times. Specifying an input stem results in a much better performance since only one external call is done for a large number of table rows rather than doing a large number of external command invocations.

The command `INGRDS  INSERT` accepts the parameter STEM in order to read in large number of value-clauses. For example,

```
INGRDS INSERT table COLUMNS('NAME','FIRST_NAME', 'CITY') STEM(values.)
```

The parameter STEM specifies the name of the REXX stem that holds a set of value-clauses. Each value-clause within values. i=1,2,3... has the same syntax as you would normally use for parameter VALUES().

This allows you to insert many rows with one command invocation.

Parameter STEM is ignored if parameter VALUES is specified.

Usage Example

Note that the value string must specified with quotes. The quoted strings are separated by comma.

```
/* generate the value-clauses*/
value 0=1000
do i=1 to values.0
   values.i = "'LastName_"i"','FirstName_"i"','BB_"i"'"
end
/*insert all rows with one INSERT command*/
'INGRDS INSERT' table 'STEM(value.) COLUMNS(name, first_name,city)'
```

Mass Update

Best performance of mass update is achieved if one invocation of INGRDS updates a large number of rows instead of iterating over a large number of update commands.

The GET and PUT command defines a sequence in order to perform a mass update of a table.

```
INGRDS GET table STEM(rows.) WHERE(like-query) TOKEN (*) WAIT(sec)
INGRDS PUT table STEM(rows.) TOKEN(*)
```

WHERE
: where-clause is the same as for QUERY.

TOKEN
: Locks the table so that no other INGRDS command can update the table between a GET-PUT sequence. TOKEN(*) sets a default token that uses the operator id as qualifier.

WAIT()
: Specifies the maximum number of seconds to wait until the table is locked by a different token. This parameter might be used if you want to perform a GET-PUT-Sequence concurrently by multiple operator tasks. A return code 102 indicates that the different token has not been removed and therefore GET cannot access the table within the specified period of time. If the different token has been removed within a time shorter than seconds, then the GET command will fetch the table and return it immediately.

GET and PUT belong together and defines a sequence where GET must be called first. The GET command extracts all table values according to the where-clause and stores everything in the stem specified by parameter STEM.

Before calling PUT you may modify the table values to your needs. Finally all values will be updated via a single PUT. If rows.0=0 then the PUT command does not update anything and just closes the previous GET.

The PUT command must not be called without GET command.

The stem must not be dropped between GET and PUT.

Be aware that each RDS command such as INSERT, UPDATE, or PUT is atomic and guarantees the integrity of the table. However for a GET-PUT-Sequence the integrity of the table can only be ensured when the WAIT parameter together with the TOKEN parameter is used for command GET. Only if you know that different tasks update mutually exclusive disjoint subset of rows within the table then you may call GET without WAIT and TOKEN.

Data structure of STEM:

STEM Data structure	Description
rows.0table	internal, table name

STEM Data structure	Description
rows.0key.0,1,2,.	internal key, must never be changed
rows.0col.0,1,2,..	internal column names, must never be changed
rows.0	external, number of rows
rows.i.0	external, number of columns per row
rows.i.j	external, value of table cell for i-th row and j-th column

Return Codes

102
Table LOCK does not match (if WAIT parameter is used then this indicates also timeout)

104
Table does not exist

105
Bad validation of TCR (corrupted row)

117
Update of row failed

120
INGRCVAL syntax error

230
INGPCREX(PUT) failed

231
INGPCREX(GET) failed

232
PUT/GET sequence violation

Usage Example

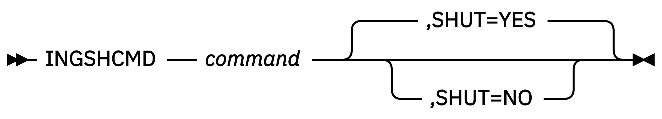
```
table = 'TAB1'

/*Extract all rows and lock the table using the default lock*/
'INGRDS GET' table 'STEM(rows.) TOKEN(*)

/*Change the rows to your needs*/
do i=1 to rows.0
   do j=1 to rows.i.0
       rows.i.j = 'update' i '-th row at ' j '-th column'
   end
end

/*Store the modified rows back to the table and unlock the table*/
'INGRDS PUT' table 'STEM(rows.) TOKEN(*)
```

INGSHCMD (INGRYSHU)

Purpose

You can use the INGSHCMD to logically control if commands are issued based on whether there is, or is not, a current ongoing system shutdown. The system shutdown can be initiated through GDPS or by the INGREQ ALL command.

Syntax



Parameters

command
The command that should be issued.

SHUT
Indicates when the command should be issued. It can be:

YES
To have the defined command issued only if there is an ongoing system shutdown.

NO
To have the defined command issued only if there is not an ongoing system shutdown.

Default is YES.

Return Codes

0
Normal end with command being issued.

1
Normal end but command has not been issued, because

- Either no system shutdown is in progress and SHUT=YES has been specified;
- Or a system shutdown is in progress and SHUT=NO has been specified.

Restrictions and Limitations

Before the command is issued, INGSHCMD verifies:

- Either if a system shutdown is in progress and SHUT=YES has been specified.
- Or if no system shutdown is in progress and SHUT=NO has been specified.

Usage

INGSHCMD can be invoked from the SHUTDOWN policy but is not restricted to that usage.

If INGSHCMD is triggered from the NetView automation table, the triggering message is stored in the SAFE named AOFMSAFE. All commands and replies triggered from INGSHCMD have access to this SAFE.

If you use the SHUT parameter, you must place a comma directly in front of it.

Examples

This example shows the SHUTINIT policy entry that could be used during JES3 shutdown and the command should be issued only when a system shutdown is in progress:

```
INGSHCMD MVS F BPXOINIT,SHUTDOWN=FORKS
```

This example shows the SHUTFINAL policy entry that could be used during JES3 shutdown and the command should be issued only when a system shutdown is in progress:

```
INGSHCMD MVS F BPXOINIT,SHUTDOWN=FILESYS
```

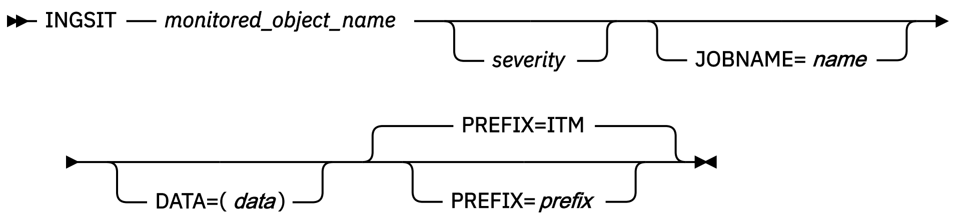
INGSIT

Purpose

The INGSIT command allows you to report an event to SA z/OS. To allow SA z/OS to react to that event, it must be associated with one or more Monitor Resources through the monitored object name and optionally a job name. Refer to *IBM System Automation for z/OS Customizing and Programming* for a description of Monitor Resources and the concept of a monitored object.

The event information consists of the monitored object name, an optional event severity, an optional job name, and optional related data. INGSIT transforms the event into a well-formed ING150I message that can subsequently be automated on behalf of the monitored object according to the definitions in the automation policy.

Syntax



Parameters

monitored_object_name

This is the name of the monitored object without the prefix associated with one or more Monitor Resources. To report IBM Tivoli Monitoring situations to SA z/OS (for example, from IBM OMEGAMON for z/OS, formerly IBM Tivoli OMEGAMON XE on z/OS) use the situation as the monitored object and specify its name *in uppercase* with a prefix of ITM in the MONITOR INFO policy when defining the Monitor Resource.

The monitored object name, including the prefix, can be up to 50 characters long and consist of any character except any of the following characters: `'` `"` `,` `(` `)` = ? * and blanks. The monitored object name is case-sensitive.

severity

This is the severity associated with the event. If it is omitted, the text string WARNING is used as the default severity. To report IBM Tivoli Monitoring situations to SA z/OS (for example, from IBM OMEGAMON for z/OS, formerly IBM Tivoli OMEGAMON XE on z/OS) you can use the alert severity that was optionally assigned to the situation or any other severity string if the default does not meet your requirements.

When processing message ING150I via the NetView Automation Table, the severity string is passed as the CODE1 parameter to the INGMON generic monitoring command. If you want to map this severity to a health status, you have to ensure that there is a matching CODE entry in the MESSAGES/USER DATA policy for message ING150I. The health status, if any, is specified as the second word in the value returned for that CODE.

If there are several different severities for the same monitored object and you want to react in different ways to such an event, you also have to ensure that there is a matching CODE entry in the MESSAGES/USER DATA policy for message ING150I. The first word in the value returned is then treated as the command selection. Alternatively, return a # to perform PASS processing for ING150I, or `#usermsg` to perform independent PASS processing for the message entry, `usermsg`.

Refer to *IBM System Automation for z/OS Customizing and Programming* for examples of how to set up your automation policy to react to message ING150I as described.

JOBNAME=*name*
This is an optional job name. If it is specified, it is compared with the job name specified for a monitored object to match this situation to a particular monitor resource. If a job name is not passed, the event reported through this invocation of INGSIT may only match monitor resources that are defined without a job name.

DATA=(*data*)
This is an optional string of additional information that is related to the event. The parentheses are required if you want to pass a string that contains blanks or commas. For a single word, the parentheses can be omitted. *data* is appended to message ING150I without further analysis to be used for any optional user-specified purposes by the automation.

PREFIX=*prefix*
This is the prefix followed by a period that precedes the specified *monitored_object_name*. The default prefix is ITM. The monitored object name appear in message ING150I as:
prefix.monitored_object_name

Return Codes

0
Normal completion.

1
Syntax error. Invalid parameters were passed to INGSIT. Refer to the netlog for additional error information.

2
The command environment for INGSIT was not appropriately initialized at the time that this command was issued. Possible reasons are that the agent is currently being initialized or a cold start of the automation control file is being performed.

Restrictions and Limitations

For situations, monitored object names *cannot* be distinguished by case. The situation *must* be specified as monitored object in uppercase in the MONITOR INFO policy.

Usage

The ING150I message that is generated as a result of the event transformation may or may not cause an automated response. If a monitored object was specified but a Monitor Resource was not found for it, no automation is triggered.

The health status of a Monitor Resource that matches the monitored object name is not changed unless you map the severity (either your own input or the default of WARNING) explicitly to a health status using a CODE entry in the MESSAGES/USER DATA policy for message ING150I.

Examples

Example 1: Using the Default Severity

The following example reports the situation OS390_Local_PageDS_PctFull_Warn to SA z/OS. A default severity of WARNING is used and the related data passed to SA z/OS is substituted from the page data set utilization attribute, which here is 25%.

```
INGSIT OS390_LOCAL_PAGEDS_PCTFULL_WARN DATA=(25)
```

This yields:

```
ING150I 09:34:37 08/01/2007 : ITM.OS390_LOCAL_PAGEDS_PCTFULL_WARN
WARNING N/A DATA= 25
```

Example 2: Using an Explicit Severity

The following example reports the situation OS390_PageDSNotOperational_Warn to SA z/OS. The severity, although it indicates a warning-level situation, is reported as minor and the count of non-operational data sets is passed as the related data, which here is 1.

```
INGSIT OS390_PAGEDSNOTOPERATIONAL_WARN Minor Data=1
```

This yields:

```
ING150I 09:35:42 08/01/2007 : ITM.OS390_PAGEDSNOTOPERATIONAL_WARN
MINOR N/A DATA= 1
```

INGSTOBS

Purpose

The INGSTOBS command lets you subscribe as a status observer for one or more resources. Whenever a status change occurs, the automation manager sends you a notification. The following statuses are applicable:

Observed
Is the current status of the resource monitored by the automation manager.

Desired
Is the status the resource should be in. The automation manager attempts to put the resource into this state. This is also called the 'goal' of the resource.

Automation
Is the current status of the resource within the automation process of SA z/OS.

Compound
Is the summary of all statuses and a few other indicators.

Startability
Indicates whether the resource is ready to be started when a start command is issued.

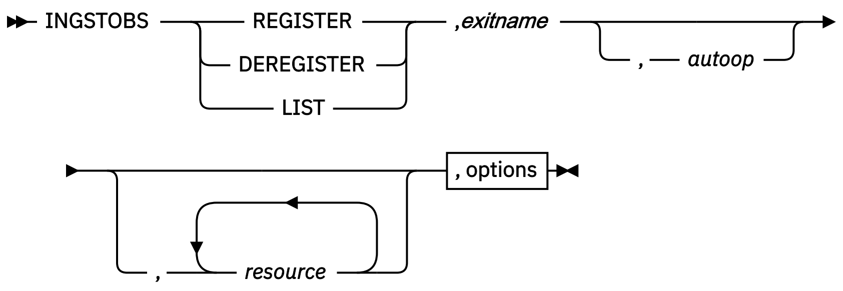
Health
Application-specific performance and health monitoring provides a separate status to inform you about the application's health.

To register as a status observer, specify the name of a REXX exit. SA z/OS invokes this exit for each status change. The following parameters are passed to the exit:

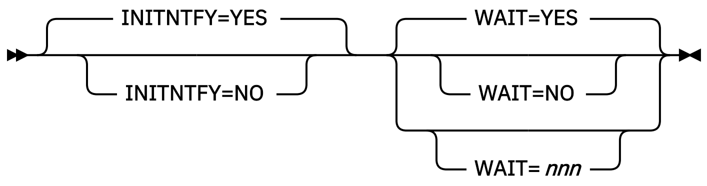
- The name of the resource, for example, TSO/APL/SYS1
- The observed status
- The automation status
- The desired status
- The compound status
- The startability status
- The health status

The parameters are separated by a comma.

Syntax



options



Parameters

REGISTER
: Performs the subscription by linking the specified exit to each resource specified.

  Each subsequent status change of the resource triggers the exit to be invoked.

DEREGISTER
: Breaks the link between the exit and the resource. The exit is no longer invoked if a status change of the resource occurs.

LIST
: Displays the resources that are subscribed and linked to the specified exit.

exitname
: Specifies the name of the REXX exit to be invoked when a status change of the resource occurred.

autoop
: The automated function that the autotask name is defined from. The exit is scheduled to run on the autotask associated with the automated function. If omitted, the exit runs on the SA z/OS task responsible for communicating with the automation manager. It is recommended to use a different task.

resource
: Specifies the name of the resource or family of resources, via wildcard, for example, TSO/APL/*. The resource names must be separated by a blank. Alternatively, the list of resources can be passed to the command with a NetView default Pipe Safe.

  The parameters must be separated by a comma.

INITNTFY
: Specifies whether the automation manager sends the status change immediately:

  YES
  : The automation manager sends the status change immediately. This causes a call to the user exit immediately.

  NO
  : This causes the automation manager to send the status change with the next subsequent status change.

WAIT
: Specifies whether to wait until the automation manager has processed the request.

YES
Wait for completion. This is the default.

NO
This causes the subscription request to be sent to the automation manager *without* waiting for its completion.

nnn
This is the number of seconds to wait before giving up and reporting that a timeout has occurred. The maximum time interval is 999 seconds. If omitted, the time interval is 30 seconds.

Restrictions and Limitations

The INGSTOBS command can only be issued for a local system.

Examples

To register TEST2 as a status observer exit for all resources starting with CICS, specify:

```
INGSTOBS REGISTER,TEST2,MSG2OPER,CICS*/APL/AOC8
```

When the exit is invoked it runs on the autotask that is associated with the MSG2OPER automated function.

To display the resources that are associated with the status observer exit TEST2, specify:

```
INGSTOBS LIST,TEST2
```

Figure 6 on page 153 shows exits and associated resources:

```
Resource                  Exits...
------------------------- -----------------
AMSINGLE/APG/AOC1         INGRYSOS/MSGOPER
FEATEMUL/APG/AOC1         INGRYSOS/MSGOPER
MOVSYSTM/APG/AOC1         INGRYSOS/MSGOPER
PARCHILD/APG/AOC1         INGRYSOS/MSGOPER
PBBB1/APG/AOC1            INGRYSOS/MSGOPER
PBBC1/APG/AOC1            INGRYSOS/MSGOPER
PBMA1/APG/AOC1            INGRYSOS/MSGOPER
SYSSRV1/APG/AOC1          INGRYSOS/MSGOPER
SYSSRV2/APG/AOC1          INGRYSOS/MSGOPER
*** End of Display ***
```

Figure 6. Exits and Associated Resources

INGSTX

Purpose

INGSTX controls user-defined status items. Status items can be defined, updated, queried, and deleted. They are stored in the status item repository within the SA z/OS automation manager.

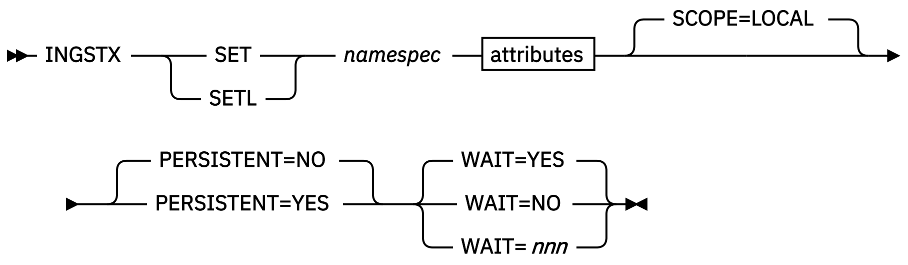
Each status item has the following attributes that are either set or modified through INGSTX:

- STIORIGN — Status item originator. This field contains the name of the system that the status item is collected from. This field cannot be updated.
- STISTGRP — Status item group. If the status item was defined in the form of two subfields separated by a period, this is the first subfield. Otherwise, the field is empty (null string). This field cannot be updated.
- STISTNAM — Status item name. If the status item was defined in the form of two subfields separated by a period, this is the second subfield. Otherwise, this is the complete name that was specified when the status item was created. This field cannot be updated.

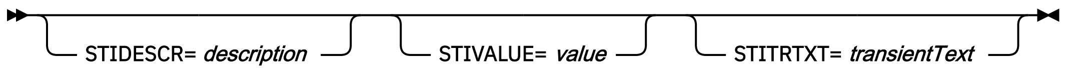
- STIVALUE — Status item's current value. An arbitrary positive or 0 integer value expressing the status item's current condition. This field can be updated.
- STIDESCR — Status item description. A textual description of the status. This field can be updated.
- STITRTXT — Status item transient user text. This field can be used to store transient user data. This field can be updated.
- STITCHNG — Status item change time. The format of this field is: CYYMMDDHHMMSSmmm. This field is updated by SA z/OS when a status time was set the last time. Format = GMT.
- STIPERST — Status item persistency. This field is set upon first mention of this status item. A value of 1 means it is persistent; 0 means it is non-persistent.

Syntax

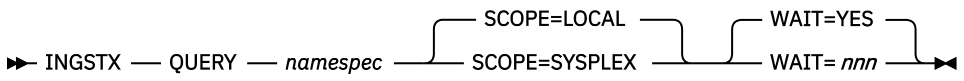
To define or update a status item, use the following syntax:



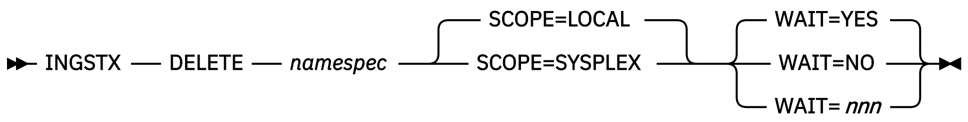
attributes



To query a status item, use the following syntax:



To delete a status item, use the following syntax:



Parameters

SET/SETL

This is the function code to define or update a status item. A status item is defined implicitly upon the first mention of the item name. At definition time, you can determine whether the status item should be persistent across SA z/OS sessions or even across IPLs. The PERSISTENT keyword is ignored on subsequent updates of the same status item.

With function code SET the change time in the STITCHNG field is in GMT. If you want to use the local time, use the alternate function code SETL.

QUERY

This is the function code to query one or more status items that match the pattern denoted by *namespec*. The status item attribute values are positional and are returned in the following format (all on one line):

```
STIORIGN<del>STISTGRP<del>STISTNAM<del>STIVALUE<del>STIDESCR
<del>STITRTXT<del>STITCHNG<del>STEPERST<del>
```

where `<del>` is a non-ambiguous delimiter character. For an attribute that has not been specified, a null string is returned, that is, `<del><del>`. STISTGRP is the first substring, if any, of the status item name, and STISTNAM is the remainder, if any, excluding the period.

`<del>` is the character ☐, which represents X'FF'.

DELETE
This is the function code to delete one or more status items that match the pattern denoted by *namespec*.

namespec
This is either the complete specification of a status item or a specification pattern using the asterisk (*) wildcard character.

Each status item has a system scope. To enable grouping of status items, the name can be divided into two substrings separated by a period (.). For each substring, only alphanumeric characters and the national characters $, &, and # are allowed. The second substring can contain additional periods for readability purposes. The first character must not be a period or a numeric character. Its maximum length cannot exceed 32 characters.

When a wildcard is used, it can be specified at the beginning or at the end of each substring. The following are examples of valid *namespecs*:

- CICSREGA.MAXTASKS
- CICS*.MAX*
- *.MAX*
- JOB*

Status item names are case-sensitive.

Avoiding the '.' for Status Items with Group names: If a Take Action command on the Tivoli Enterprise Portal (TEP) refers to a *namespec* of type Group.Name, it is difficult to generate a one word argument with a dot as a separator. You can therefore use a colon (:) as a separator instead, resulting in a *namespec* of type Group:Name. The corresponding notation in the Take Action command is therefore:

```
&Status_Items.Group:&Status_Items.Name
```

attributes
Each status item has a set of optional attributes. They are specified in *attribute=value* pairs. If the value is a string that contains blanks, or you want to preserve the case of the characters, enclose value in single or double quotation marks.

Valid attributes are:

STIDESCR=*description*
A textual description of the status item. The maximum length is 32 characters. Basically, all readable characters are allowed.

STITRTXT=*transientText*
User-specific text that provides further details about the status item's value. The maximum length is 128 characters. Basically, all readable characters are allowed.

STIVALUE=*value*
An arbitrary 4-byte positive or 0 (zero) integer value of the status item, up to 2,147,483,647. If not specified, the default is set to 0.

SCOPE
This keyword indicates whether the request that is specified addresses status items from the local system only or from all systems in the sysplex (more specifically, all systems connected to the automation manager's XCF group).

SCOPE=LOCAL
Only status items bound to the local system are addressed. This is the default.

SCOPE=SYSPLEX
Status items from all systems in the same sysplex are addressed. This scope is not allowed for SET requests.

WAIT
This keyword indicates whether the request is executed synchronously or asynchronously and, if synchronously, how long the caller is willing to wait for an answer. A request will be discarded if the default or user-specified wait time expires.

Note: This parameter is always either YES or a time period for QUERY requests.

WAIT=YES
The request is executed synchronously, that is, the caller regains control only when the request has been processed by the automation manager, either completely or after waiting for more than 30 seconds. If the request could not be processed within this time, it is discarded. This is the default option.

WAIT=NO
The request is executed asynchronously, that is, the caller regains control immediately after the request was accepted by the automation manager. The automation manager executes the request in the background.

WAIT=*nnn*
This option is similar to WAIT=YES with the difference that the maximum time the caller waits for the request to complete is specified as *nnn* seconds. Specify any value between 1 and 999 seconds.

PERSISTENT
A status item can be defined as persistent to live across SA z/OS sessions or IPLs. Non-persistent status items are implicitly removed from the status item repository in the SA z/OS automation manager upon disconnecting a system from the sysplex XCF group.

PERSISTENT=NO
Status item is non-persistent. This is the default.

PERSISTENT=YES
Status item is persistent.

Return Codes

The following return codes are passed back upon completion of INGSTX:

0
Normal completion.

–3
The operator that invoked INGSTX is not authorized to set, query, or delete a status item.

1
Keyword PERSISTENT was specified for an update request of an existing status item. It is ignored.

2
Function QUERY or DELETE was specified but no status item was found in the status item repository that matches the given *namespec*.

3
The request could not be processed successfully by the automation manager. Refer to the NETLOG for additional error information.

4
Syntax error. Invalid parameters where passed to INGSTX. Refer to the NETLOG for additional error information.

6
The command environment for INGSTX was not appropriately initialized at the time this command was issued. Possible reasons are that the SA z/OS agent is currently being initialized or a cold start of the automation control file is being done.

7
INGSTX failed to create a system resource list for requests with SCOPE=SYSPLEX. Refer to the NETLOG for additional error information.

Examples

Example 1

To define two new non-persistent status items called CSA and ECSA, specify:

```
INGSTX SET CSA stidescr="CSA Below" stivalue=0
               stitrtxt="Utilization 10%"

INGSTX SET ECSA stidescr="CSA Above" stivalue=0
               stitrtxt="Utilization 12%"
```

Example 2

To update the status item CSA that was defined in the previous example, specify:

```
INGSTX SET CSA stivalue=10 stitrtxt="Utilization 31%"
```

Example 3

To query all status items on the local system that end with the three letters CSA, specify:

```
INGSTX QUERY *CSA
```

For the status items defined in examples 1 and 2, this query returns output similar to:

```
SYS1□□CSA□10□CSA Below□Utilization 31%□1060203100659000□0
SYS1□□ECSA□0□CSA Above□Utilization 12%□1060203100105000□0
```

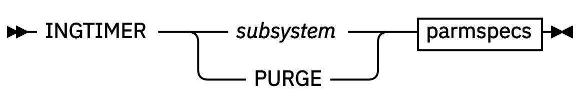
Where □ represents X'FF'.

INGTIMER

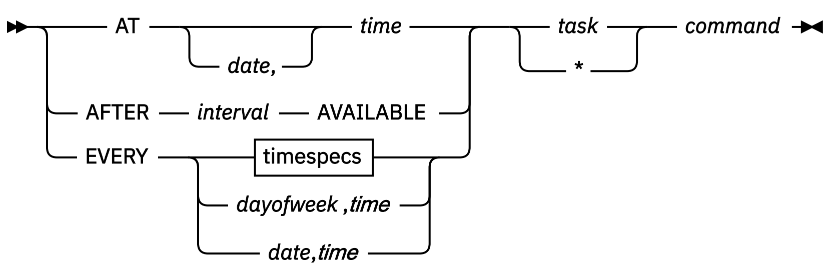
Purpose

The INGTIMER command links NetView timer commands to subsystems. This means that the timer is only active when the subsystem is active. When the subsystem terminates, the timer commands are automatically purged. To deactivate the timers at SHUTINIT time, you can specify the INGTIMER subsystem PURGE command as a SHUTINIT command.

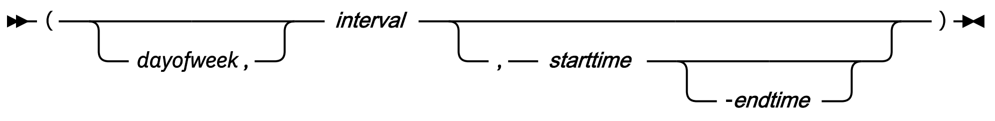
Syntax



parmspecs



timespecs



Parameters

subsystem
Specifies the name of the subsystem.

AT
Specifies the start time of the command.

AFTER
Specifies the time interval that must elapse after the subsystem became active. When this time interval has elapsed, the command runs. For example, if the subsystem becomes active at 12:00 am and you specify 2 hours, the command runs at 2:00 pm.

EVERY
Specifies the times when the command is to be repeated between the start time and end time.

PURGE
Specifies that all timers associated with the subsystem are purged.

date
Specifies the date, in mm/dd/yy format, that the command should run on. You can specify one or more Xs for the year or both the year and month. The command will then run at the next month or year increment. For example:

```
mm/dd/XX07
mm/dd/XXX8
Xm/dd/XXXX
XX/dd/XXXX
```

time
Specifies the time that the command is to run at. The format is hh[:mm[:ss]]. Instead of entering digits, you can specify one or more Xs at the beginning. If the time begins with an X or multiple Xs instead of a number, the command is set to begin at the next increment of time.

interval
Specifies the time interval that is to elapse before the command runs. The format is hh[:mm[:ss]]. Minutes and seconds are optional values.

starttime
Specifies the start time of the command, which is when it is to be run for the first time. The format is hh[:mm[:ss]]. Minutes and seconds are optional values.

The specified time can be earlier than the current time. The command is then run at the next regular interval after the current time, with intervals calculated based on the start time.

If the time begins with an X or multiple Xs instead of a number, the command is set to begin at the next time increment.

endtime
Specifies the time when the interval is to end. The format is hh[:mm[:ss]]. Minutes and seconds are optional values. Applies only when the interval is shorter than 24 hours.

dayofweek
Specifies the day of the week when the timer command should run. Specify MON through SUN, WEEKDAY, WEEKEND, or ALL.

AVAILABLE
This is an optional parameter that when specified causes the status to be checked for the subsystem to be UP or ENDED. If not set to one of these values then the command is rejected.

task
Specifies the user ID of the operator that the command is to be executed from. It can also be an automated function. The default is the work operator that is associated with the subsystem. The timer itself runs on the PPT task.

****
This is a placeholder that indicates that the default is used. The default is the work operator that is associated with the subsystem.

command
Specifies the command to be issued when the timer expires.

All timers are converted to the NetView CHRON command format. Thus, daylight-saving-time switching is supported. The timer runs on the PPT task.

Note: Storing the timer in the NetView save/restore database is unnecessary because the timer is only active while the subsystem is in an UP state.

Restrictions and Limitations

None.

Usage

To link a timer to a subsystem, you must register the NetView timer command as follows:

Note: The timer commands are automatically purged when the subsystem terminates. However, the timer commands are only activated via ANYSTART or POSTSTART definitions when the subsystem start occurs under the control of SA z/OS.

- At subsystem POSTSTART phase (use STARTUP policy of the customization dialog). This associates the timer command with the subsystem and activates the timer.
- Whenever NetView is restarted at the subsystem REFRESHSTART phase (use STARTUP policy of the customization dialog). This activates the timer command again.
- The timer commands can also be defined at subsystem ANYSTART phase (use STARTUP policy of the customization dialog). In this case they do not need to be specified in the subsystem's POSTSTART and REFRESHSTART definitions.

The timers are only in effect when the subsystem that they are defined for is active. This is useful for applications that can be moved within the sysplex.

REFRESHSTART and ANYSTART commands are executed after an INGAMS REFRESH which caused data changes in the subsystem. To avoid duplicate timers, the timer commands are automatically purged by SA z/OS in this situation.

Examples

To issue a command that should run every 30 minutes between 10:00 am and 2:00 pm, specify the following:

```
INGTIMER TSO EVERY (00:30,10:00-14:00) * F MVS &SUBSJOB,GETLSEQ
```

To issue a command that should run 10 minutes after a certain subsystem became available, specify the following:

```
INGTIMER &SUBSAPPL AFTER 00:10 * MSG,ALL Subsystem is now active
```

To issue a command that should run each Friday at 5:00 pm, specify the following:

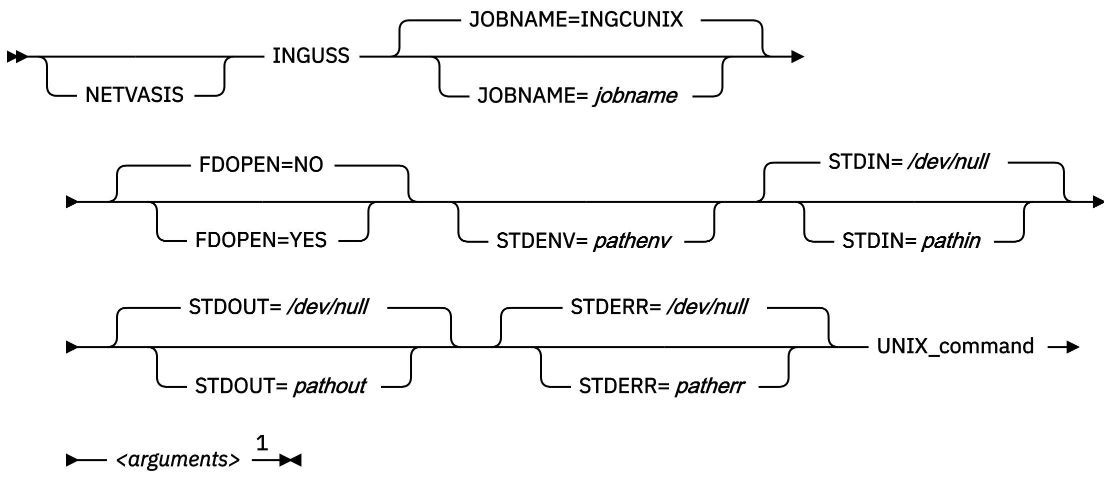
```
INGTIMER &SUBSSYS EVERY FRI,17:00 PPT MVS D T
```

INGUSS

Purpose

The INGUSS command allows an automation procedure to send commands to z/OS UNIX System Services.

Syntax



Notes:

[1] *<arguments>* may include redirection (see "Examples" on page 163). Redirection arguments are passed to, and processed by, the specified UNIX command and not by INGUSS. By default the standard streams (fd0, fd1 and fd2) are set to /dev/null. This may cause problems for commands that expect fd0, fd1 and fd2 to be assigned stdin, stdout and stderr (for example, cron). Redirection can be used to bypass this problem (see Examples).

Parameters

NETVASIS
Prefix the INGUSS command with NETVASIS if you want to pass the command text or the various path specifications (STDIN,STDOUT,STDERR, STDENV) in lower or mixed case.

JOBNAME=*jobname*
This is the MVS job name used for the newly created address space that runs the specified command. If you do not specify a job name, INGCUNIX is the default.

FDOPEN
This parameter is used to determine whether INGUSS opens STDOUT and STDERR before invoking the specified UNIX command.

NO (DEFAULT)
STDIN, STDOUT and STDERR are not opened.

YES
STDOUT and STDERR are assigned to `/dev/console` and opened, unless otherwise specified.

STDENV
This optional parameter is used to specify a path for STDENV.

pathenv
The path name to be assigned to STDENV. It must point to a file that contains the environment variable definitions. Data lines starting with a blank or # will be ignored respectively and not used for setting environment variables. A variable definition must be placed in one line and cannot be continued in the next line.

STDIN
This optional parameter is used to specify a path for STDIN.

pathin
The path name that is to be assigned to STDIN. If you do not specify a path name, `/dev/null` is the default.

STDOUT
This optional parameter is used to specify a path for STDOUT.

pathout
The path name that is to be assigned to STDOUT. If you do not specify a path name, `/dev/null` is the default.

STDERR
This optional parameter is used to specify a path for STDERR.

patherr
The path name that is to be assigned to STDERR. If you do not specify a path name, `/dev/null` is the default.

UNIX_command
This is the z/OS UNIX command that is issued under the user ID of the resource that this command belongs to. It is not possible to issue commands for other user IDs. It can be any z/OS UNIX command or the name of a shell script (both fully qualified). The resource that issues this command must have an application type USS.

Return Codes

0
Command Issued

4
Resource is not type USS

8
OMVS is inactive

12
Command not issued; failure in INGPYXSR

16
Command not issued; parameter(s) wrong/missing

1nnn
Command not issued; failure in USS INGCCMD routine, where nnn is the RC received from INGCCMD.

Restrictions and Limitations

The INGUSS command can be called only by another automation procedure or by a command processor. The AOCQRY command must be invoked first to set the necessary task global variables.

Note: The INGUSS command can only be used if the primary JES is available. Therefore, z/OS UNIX resources that use INGUSS need a HASPARENT dependency to JES. Most z/OS UNIX applications have this dependency. If you want to issue prestart commands, an additional PREPAVAILABLE dependency is necessary. This is because SA z/OS does not create an address space without JES.

Usage

The following list provides details of some of the variables that can be used to obtain resource data if INGUSS is issued from the automation policy (see *IBM System Automation for z/OS Programmer's Reference* for a complete list of task global variables that are provided by AOCQRY):

&SUBSPATH
The path statement of the resource. The resource must be a process.

&SUBSFILE
The filename of the resource. The resource must be a file.

&SUBSPID
The ID for the USS process. See also %PID%. &SUBSPID is the process ID returned from the host service BPX1SPN while %PID% is the process ID that is returned from the USS call getpsent().

IBM recommends the use of &SUBSPID in preference to %PID% because problems can arise retrieving the PID in an environment where there are multiple uid 0 users active.

&SUBSPORT
The port number of the resource. The resource must be a port.

&SUBSUSSJOB
The job name assigned to a process. The resource must be a process.

&SUBSAPPL
The application name.

&SUBSASID
The address space ID of the address space the process runs in. The resource must be a process.

The information for &SUBSUSSJOB and &SUBSASID is refreshed with each monitoring cycle. If a process forks and gets a new job name (normally a digit is appended at the end of the original job name), SA z/OS will detect the new job name after the next scheduled monitoring. This works only if SA z/OS internal process monitoring is used.

When the resource becomes inactive, the values of &SUBSUSSJOB and &SUBSASID are cleared.

In addition, for process resources %PID% can be used to get the PID of a process. The command `INGUSS /bin/kill %PID%` results in determining the PID of the process defined by the path of the resource and replacing %PID% by the real value of the process ID.

When issuing a command, SA z/OS switches to the user's home directory and sets the following environment variables for the user that the resource belongs to:

- HOME
- USER
- SHELL

The login shell uses these environment variables to detect which UNIX profiles to execute. If the started program should get the whole environment of the user as if this user was logged on, you must use a login shell as the start command.

Recommendation: When using INGUSS to start applications, IBM recommends that you use the JOBNAME parameter in order to get a unique job name. For example:

```
INGUSS JOBNAME=&SUBSJOB UNIX_start_command
```

Otherwise, all applications started by SA z/OS without this parameter will have the same job name of INGCUNIX (if the application itself does not change the job name).

If the job name is not unique, specify job type MVS.

BPXBATCH related considerations

If you want to switch the start of your USS related subsystems from a BPXBATCH based started task to an INGUSS command call, then consider the following cases:

- The BPXBATCH PARM='PGM ...' invocation does not execute the USS /etc/profile script (except the specified UNIX_command is a login shell)
  - The appropriate INGUSS command pattern is:

    ```
    INGUSS [JOBNAME=jobname] UNIX_command <arguments>
    ```
  - If you need a shell environment in addition, then the appropriate INGUSS command pattern is:

    ```
    INGUSS [JOBNAME=jobname] /bin/sh -c 'UNIX_command <arguments>'
    ```
- The BPXBATCH PARM='SH ...' invocation does execute the USS /etc/profile script
  - The appropriate INGUSS command pattern is:

    ```
    INGUSS [JOBNAME=jobname] /bin/sh -L -c 'UNIX_command <arguments>'
    ```

Examples

1. To start inetd through a login shell, issue the following command:

   ```
   INGUSS JOBNAME=INETD /bin/sh -L -c '/usr/sbin/inetd /etc/inetd.conf'
   ```

   where:

   JOBNAME=INETD
   This is optional. It assigns the MVS job name 'INETD' to the started process.

   /bin/sh
   The shell.

   -L
   The option for the login shell.

   -c
   The option to the shell to execute the following command.

   '/usr/sbin/inetd /etc/inetd.conf'
   This is the command that is executed by the login shell
2. To start inetd through a login shell, issue the following command:

   ```
   INGUSS JOBNAME=INETD /bin/sh -L -c '/usr/sbin/inetd /etc/inetd.conf
   >/tmp/inetd.out 2>/tmp/inetd.err'
   ```

   where:

   >/tmp/inetd.out
   This redirects the command output to /tmp/inetd.out rather than /dev/null.

   2>/tmp/inetd.err
   This redirects the error output to /tmp/inetd.err rather than /dev/null.
3. To start cron through a login shell, issue the following command:

   ```
   INGUSS JOBNAME=CRON /bin/sh -L -c '/usr/sbin/cron </tmp/cron.in
   >/tmp/cron.out 2>/tmp/cron.err'
   ```

   where:

   </tmp/cron.in
   This redirects the command input to /tmp/cron.in rather than /dev/null.

   >/tmp/cron.out
   This redirects the command output to /tmp/cron.out rather than /dev/null.

   2>/tmp/cron.err
   This redirects the error output to /tmp/cron.err rather than /dev/null.

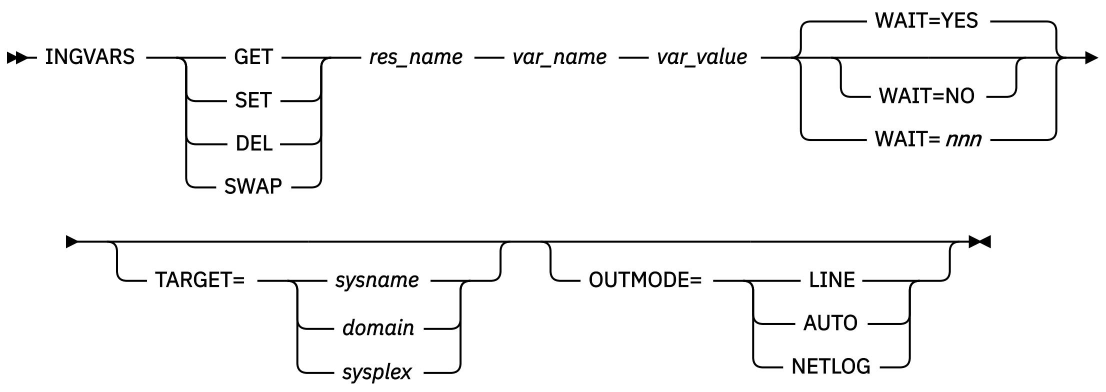
In the example above the redirection is necessary. If not specified, cron will not hold the pid lock file, and thus multiple pid processes could be started.

INGVARS

Purpose

The INGVARS command is the interface for you to either get or set a shared variable. The shared variable can be associated with an application resource, a system or the sysplex itself.

Syntax



Parameters

GET
Obtains the shared variables.

SET
Sets the shared variable. Passing a null string resets the variable.

DEL
Deletes the variable.

SWAP
Replaces the current setting of the user variable only if the "old" value matches the current setting.

In this case, the specified variable value must consist of two pieces separated by a delimiter. The first piece represents the "old" value while the 2nd piece is the "new" value.

The first character of the variable value is considered to be the delimiter. It can be any printable character, for example `/value1/value2`.

Note: The following restrictions apply when using the SWAP function:

1. Although the specified resource name can contain a wildcard, only 1 resource is allowed.
2. Although the specified variable name can contain a wildcard, only 1 variable name can be specified.
3. Before making the comparison, leading and trailing blanks will be removed.

res_name
The name of the resource in automation manager format, for example, `TSO/APL/AOC8`. A wildcard can be specified.

var_name
The name of the variable. Maximum length is 32 bytes. Can be a wildcard, for example, `abc*`, `*abc` or `*abc*` The variable name cannot contain a comma.

var_value
The value of the variable. Only applicable for the SET function. The value can contain embedded blanks or a keyword/value pair. The value is stored in character format.

WAIT
Specifies whether to wait until the automation manager has processed the request.

YES
Wait for completion. This is the default.

NO
This causes the subscription request to be sent to the automation manager *without* waiting for its completion.

nnn
This is the number of seconds to wait before giving up and reporting that a timeout has occurred. The maximum time interval is 999 seconds. If omitted, the time interval is 30 seconds.

TARGET
For information on the TARGET parameter, refer to *IBM System Automation for z/OS Operator's Commands*.

OUTMODE
For information on the OUTMODE parameter, refer to *IBM System Automation for z/OS Operator's Commands*.

Assigning shared variables to resources provides an automatic cleanup of the shared variables. If the resource that the shared variable is associated with is removed (for example, due to an INGAMS refresh), the shared variables are automatically removed as well.

The automation manager provides the following "anchor points" for a shared variable:

Application resource
`TSO/APL/sysname` - this can also be a group resource, for example, `CICS/APG`

System
Resource `sysname/SYS/sysname`

Sysplex
Resource SYSPLEX/GRP

Return Codes

0
OK, continue.

1
An error occurred.

16
The "old" value does not match the current value of the user variable.

Restrictions and Limitations

Undisplayable characters are accepted for variable names and values. However, both the name and the value are truncated at the first '00'x.

Usage

Because the automation manager has knowledge of all resources in the sysplex and the automation manager object structures are maintained in a persistent manner, it provides an excellent base for shared variable support.

The automation manager is thus used to manage shared variables. These variables are persistent across automation manager sessions and takeovers and are stored in the takeover file (VSAM). Only when doing a cold start are the shared variables wiped out.

Likewise, when the shared variables are associated with an application group and the nature of the group is changed, the shared variables are lost.

Example

LINE-MODE OUTPUT: The following example shows the result of the GET function. The first column is the resource name, the second column is the variable name and the third column is the value of the shared variable.

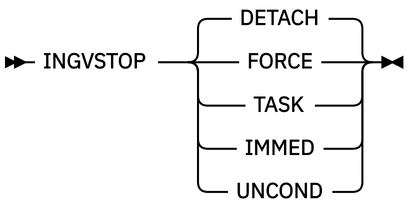
```
>> ingvars get child* don* outmode=line
 CHILD11/APL/AOC8               DONALD                     BOEBLINGEN
 CHILD31/APL/AOC8               DONALD                     SMITH
 CHILD31/APL/AOC8               DON                        STUTTGARTERSTR
 *** End of Display ***
```

INGVSTOP

Purpose

The INGVSTOP command allows an automation procedure to stop a virtual operator station task (VOST).

Syntax



Parameters

DETACH
Specifies that the VOST is to be stopped with the DETACH command.

FORCE
Specifies that the VOST is to be stopped with the STOP FORCE command.

TASK
Specifies that the VOST is to be stopped with the STOP TASK command.

IMMED
Specifies that the VOST is to be stopped with the STOP IMMED command.

UNCOND
Specifies that the VOST is to be stopped with the STOP UNCOND command.

Restrictions and Limitations

The INGVSTOP command can be called only by another automation procedure or by a command processor. The AOCQRY command must be invoked first to set the necessary task global variables. In particular, the SUBSJOB variable must be set. Its content is used as the attach name of the VOST.

Note that the VOST may be still active for a certain time after INGVSTOP has ended with RC=0.

Return Codes

0
Stopping of the VOST was initiated successfully.

4
Invalid parameters were specified.

6
: Environment check failed.

8
: DETACH or STOP command failed.

Messages

The following messages are issued by INGVSTOP:

```
AOF010I WRONG NUMBER OF PARAMETERS ENTERED
ING153I command OF name SUCCESSFUL
ING154I command OF name FAILED WITH RC=rc
ING155I ENVIRONMENT CHECK FAILED FOR command. REASON=rs
```

Usage

Use INGVSTOP as a stop command of a NONMVS type APL.

Consider using INGVSTRT as a start command and INGVMON as a monitor routine. (See "INGVSTRT" on page 167 and "INGVMON" on page 193).

Note: It is not recommended to use STOP IMMED because the target task may lose storage or other resources.

You are strongly urged never to use STOP UNCOND because it destroys important task control information in NetView. You might not be able to restart NetView until the next IPL of MVS.

Examples

To stop a VOST using the DETACH command, enter the following as a stop command in the VOST management APL:

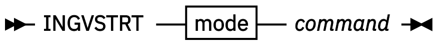
```
INGVSTOP DETACH
```

INGVSTRT

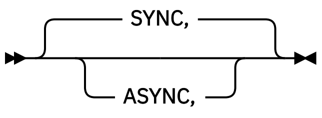
Purpose

The INGVSTRT command allows an automation procedure to start a virtual operator station task (VOST).

Syntax



mode



Parameters

mode
: This is a positional parameter that defines the mode that *command* operates in. It is required only if *command* starts with SYNC or ASYNC. It clarifies whether *command* operates synchronously (the default) or asynchronously (it terminates but leaves the VOST active).

  It has the following values, which must be followed by a comma:

SYNC
Use SYNC as a *positional parameter* if *command* operates synchronously. This is the default.

ASYNC
Use ASYNC if *command* operates asynchronously, that is, it terminates and leaves the VOST active. This prevents message ING156I from being issued.

command
The command, including all parameters, to be executed in the VOST. This can be mixed-case and can also be a REXX CLIST.

Restrictions and Limitations

The INGVSTRT command can be called only by another automation procedure or by a command processor. The AOCQRY command must be invoked first to set the necessary task global variables. In particular, the SUBSJOB variable must be set. Its content is used as the attach name of the VOST.

The ATTACH command is used to start the VOST and therefore the restrictions of the attach command also apply to the command that is specified with INGVSTRT.

Return Codes

0
VOST started successfully.

4
Invalid parameters were specified.

6
Environment check failed.

8
ATTACH command failed.

Messages

The following messages are issued by INGVSTRT:

```
AOF010I WRONG NUMBER OF PARAMETERS ENTERED
ING151I ATTACH OF name SUCCESSFUL
ING152I ATTACH OF name FAILED WITH RC=rc
ING155I ENVIRONMENT CHECK FAILED FOR command. REASON=rs
```

Usage

Use INGVSTRT as the start command for an APL of type NONMVS.

Consider using INGVSTOP as a stop command and INGVMON as a monitor routine. (See “INGVSTOP” on page 166 and “INGVMON” on page 193).

Examples

To start the CLIST myclist in a VOST, create an APL of type NONMVS and enter, for example, the following as a start command:

```
INGVSTRT MYCLIST PARM1,2ND,THIRD
```

Note that parameters can be in mixed case.

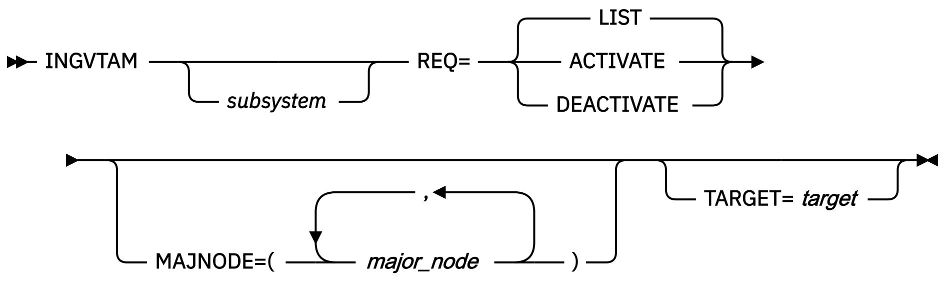
INGVTAM

Purpose

The INGVTAM command lets you:

- Register an application with VTAM application node recovery.
- Issue recovery commands for all applications registered with VTAM application node recovery when VTAM has restarted.
- List applications that are registered for application node recovery.
- List major nodes that are in use by applications. When the subsystem terminates, the major nodes are automatically purged.

Syntax



Parameters

subsystem
: The subsystem parameter specifies the name of the subsystem that is registering with SA z/OS VTAM application recovery. This parameter is required with REQ=ACTIVATE to register a subsystem. If it is omitted with REQ=ACTIVATE, all subsystems currently registered will have the VTAMUP message command policy driven to allow them to take actions when VTAM is restored to active service. This parameter is required with REQ=DEACTIVATE.

REQ
: Specifies the request. It can be one of the following:

LIST
: If no subsystem is specified, it lists all subsystems registered for VTAM application node recovery. If a subsystem is specified, it lists all the major nodes registered for that subsystem.

ACTIVATE
: If the subsystem parameter is specified, it registers the list of major nodes as specified in the `MAJNODE=` parameter and issues VTAM ACTIVATE commands for them. If the subsystem parameter is not specified, REQ=ACTIVATE issues the commands in the messages policy VTAMUP for every subsystem that is registered for application node recovery.

DEACTIVATE
: A subsystem must be specified for this request. This request issues VTAM INACT commands for the major nodes that were previously registered. INACT commands are not issued for any major node that contains model resources or is in use by another registered application.

MAJNODE
: This defines a list of VTAM application major nodes that will be acted on.

TARGET
: For information on the TARGET parameter, refer to *IBM System Automation for z/OS Operator's Commands*.

Return Codes

0
: Normal End.

4
: Warning (Vary command failed).

8
: Error.

Restrictions and Limitations

To use the INGVTAM command SA z/OS must be fully initialized.

Usage

It is recommended that you issue the REQ=ACTIVATE and REQ=DEACTIVATE commands on the same system as the subsystems concerned. It is recommended that you place REQ=ACTIVATE in the application's PRESTART and REFRESHSTART phase (use STARTUP policy in the customization dialog). However, REQ=DEACTIVATE should be placed in the application's SHUTFINAL phase (use policy SHUTDOWN policy of the customization dialog). For the VTAM subsystem, the INGVTAM REQ=ACTIVATE command should be defined as a command in the application's 'status' message UP (use MESSAGES/ USER DATA policy of the customization dialog).

Examples

If you enter `INGVTAM REQ=LIST` the output is similar to Figure 7 on page 170.

```
List of subsystems registered with VTAM
Subsystem      Subsystem      Subsystem      Subsystem
EYUCMS1A
*** End of Display ***
```

Figure 7. INGVTAM REQ=LIST Output

If you enter `INGVTAM` *`subsystem`* `REQ=LIST` the output is similar to Figure 8 on page 170.

```
List of major nodes registered with subsystem subsys
Major Node          Type         Major Node          Type
KEY1BCPA            APPL
*** End of Display ***
```

Figure 8. INGVTAM subsys REQ=LIST Output

To register a subsystem for application node recovery, specify, for example:

```
INGVTAM &SUBSAPPL REQ=ACTIVATE MAJNODE=(IPSMBC)
```

To deregister a subsystem for application node recovery, specify, for example:

```
INGVTAM &SUBSAPPL REQ=DEACTIVATE
```

ISSUEACT (ISSUECMD, ISSUEREP)

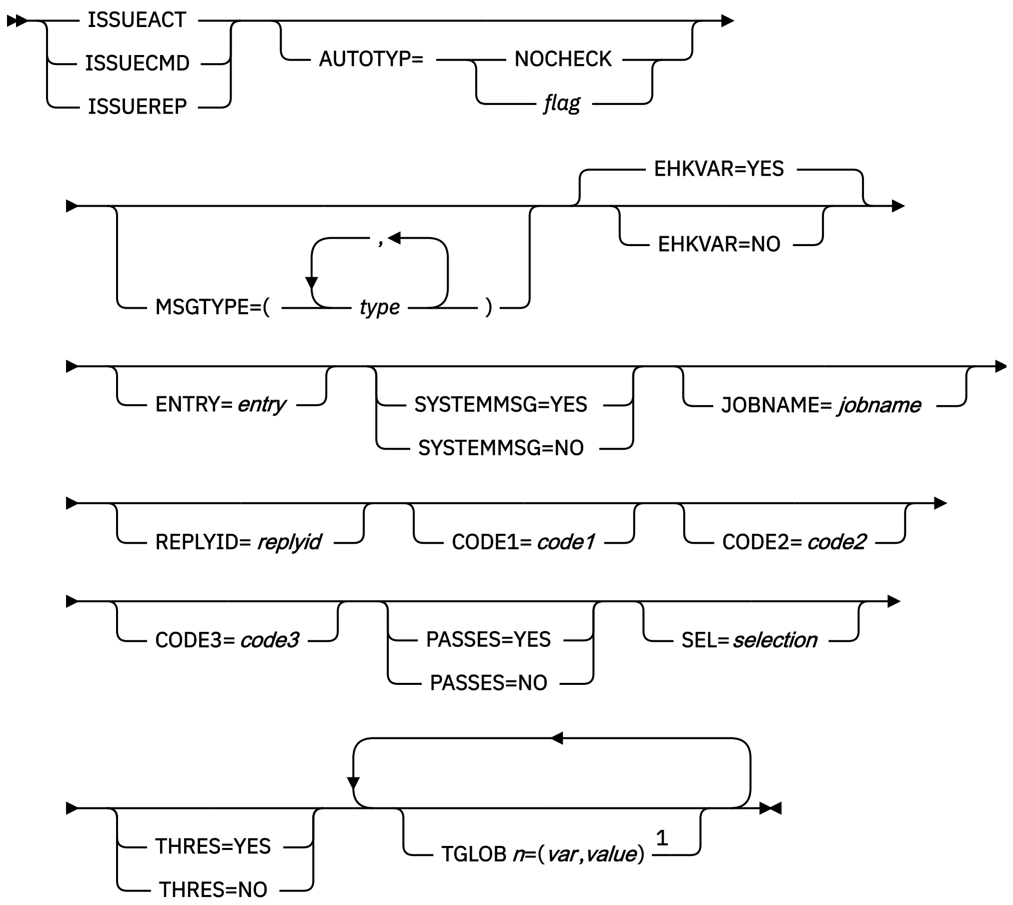
Purpose

ISSUEACT, ISSUECMD, and ISSUEREP are defined as synonyms for the same command that can be used to trigger your own commands, replies, or both, from messages that are defined in the automation policy item MESSAGES/USER DATA under consideration of the automation flags.

If the command is called as ISSUECMD, only commands are issued, whereas if it is called as ISSUEREP, only replies are issued. When called as ISSUEACT, it issues commands and replies according to the given selection criteria that are passed as parameters.

In addition, the ISSUEACT command includes special message processing for some critical DB2 messages and for JES2 message $HASP099. For further details see the sections "Critical Event Monitoring" and "JES2 Shutdown Processing" in *IBM System Automation for z/OS Customizing and Programming*.

Syntax



Notes:

[1] The variable *n* can be 1–10 (that is, TGLOB1,TGLOB2,...,TGLOB10)

Parameters

AUTOTYP

The automation flag that is to be checked. If the flag is turned off no commands or replies are issued.

NOCHECK

If NOCHECK is specified, the RECOVERY flag is checked, but the commands or replies (or both) are issued regardless of its setting.

flag

This must be one of the following values:

- AUTOMATION
- INITSTART
- RECOVERY
- RESTART

- START
- TERMINATE

If SYSTEMMSG=YES is specified, NOCHECK, AUTOMATION, and RECOVERY are the only valid values for AUTOTYP.

If no AUTOTYP value is coded and SYSTEMMSG=YES, AUTOTYP defaults to RECOVERY.

If no AUTOTYP value is coded and SYSTEMMSG=NO, the default value is determined according to the following steps:

1. If startup of the application is in progress, AUTOTYP=START
2. If shutdown of the application is in progress, AUTOTYP=TERMINATE
3. If neither a startup nor a shutdown is in progress, a value for AUTOTYP is taken that corresponds to the actual status of the application:

AUTOTYP	Actual Status
START	ACTIVE, ENDING, EXTSTART, RESTART, RUNNING, STARTED, STARTED2
TERMINATE	ABENDING, AUTOTERM, BREAKING, HALFDOWN, STOPPING, STUCK, ZOMBIE
RECOVERY	AUTODOWN, BROKEN, CTLDOWN, DOWN, ENDED, FALLBACK, HALTED, INACTIVE, MOVED, STOPPED, UP

4. If no actual status information is available, RECOVERY is taken as the default value for AUTOTYP

MSGTYPE
This value is a list of the message IDs in the MESSAGES/USER DATA policy item where the commands or replies (or both) to be issued are defined. It defaults to the ID of the message that initiated ISSUEACT, ISSUECMD or ISSUEREP, if the command is called from the NetView automation table. If the command is not driven by a message, you must supply this parameter.

The embedding brackets are not needed if only one message ID is specified.

EHKVAR
This parameter determines whether the tokens of the parsed message text are to be stored in task global variables EHKVAR0 through EHKVAR9 and EHKVART.

YES
The tokens of the triggering message are to be assigned to the task global variables EHKVAR*n*.

NO
No values are to be assigned to the task global variables EHKVAR*n*. The values in EHKVAR*n* remain unchanged.

ENTRY
This value is the entry name of the definition in the automation policy where the commands or replies (or both) to be issued are defined.

- If ISSUEACT, ISSUECMD or ISSUEREP is called from the NetView automation table, *entry* defaults to:
  - The application name, as determined from the job name, for application messages
  - The system type (MVSESA) for system messages

  Otherwise you must supply this parameter.

JOBNAME
This parameter is used to pass the job name when ISSUEACT, ISSUECMD or ISSUEREP is not called from the NetView automation table.

REPLYID
This parameter is used to pass the reply ID when the command has to reply to a WTOR, but has not been called from the NetView automation table.

Note: This parameter is not valid if the command is called as ISSUECMD.

SYSTEMMSG
Indicates whether the message is a system message or an application message.

YES
The message was issued by a system rather than an application. SYSTEMMSG defaults to YES if no job name can be obtained from the message details, and neither the JOBNAME nor the ENTRY parameter is specified. Furthermore it defaults to YES, if the job name that is obtained is not defined to SA z/OS and if, in addition, no ENTRY parameter is specified or its value is the system type (MVSESA).

NO
The message was issued by an application that must be defined to SA z/OS.

CODE1=*code1* CODE2=*code2* CODE3=*code3*
When specified, the codes that are passed are used to search for code entries for a particular message ID that is specified in the automation policy MESSAGES/USER DATA.

If the command is called as ISSUEACT or ISSUEREP, and if there are no command or reply entries besides the code definition to the given message ID, the response to the matching entry is used as the reply to a WTOR.

Otherwise the response to the matching entry is used as the option to select the commands or replies (or both) to be issued from the automation control file. If no code match occurs for the specified codes, the value ALWAYS is used to select the commands or replies (or both) to be issued.

A selection string of "*IGNORE*" that is returned from the code match function is treated as a no-operation instruction. This can help make the CODE definitions in the automation policy simpler because you can filter out the entries that no processing should be done for by SA z/OS.

The CODE parameters are mutually exclusive to the PASSES=YES and SEL parameters.

MSG
This parameter is used to pass an alternate message text when ISSUEREP or ISSUEACT is triggered by a WTOR. The value of this parameter is used as the message text instead of the message text of the triggering message to be forwarded to SDF.

This parameter is rejected if the command is called as ISSUECMD.

PASSES
Specifies whether passes are used to issue the commands or replies.

YES
Passes are used to issue the commands or replies. The pass count is incremented only if the automation flag is turned on. The pass count is keyed by message ID, and for normal messages the count is reset when the application is shut down. For system messages, the pass count is reset when NetView is recycled.

This value is mutually exclusive to the CODE parameters.

NO
Passes are not used to issue the commands or replies.

If PASSES is not coded, it defaults to YES if the AUTOTYP parameter has a value other than START or TERMINATE, and the command or reply entries of the specified ENTRY and MSGTYPE in the automation control file use pass selection options. When START or TERMINATE is the value for the AUTOTYP parameter, YES is only assumed as the default value for the PASSES parameter if there are no command or reply entries defined with a selection name other than PASS*nn*. In all other cases, the default value to PASSES is set to NO.

SEL
Specifies a selection string that is to be used to determine the commands or replies that are to be issued, along with all commands or replies defined without a selection value.

This parameter is mutually exclusive to the CODE parameters.

THRES

Specifies whether defined thresholds for the minor resource *entry.type* are checked before issuing commands or replies.

YES

Thresholds are checked before issuing commands or replies.

An error record for minor resource *entry.type* is written to the automation status file and the frequency of the written error records is compared with the defined threshold levels for this resource.

As long as no option has been derived from other criteria (such as the start or stop type, the PASSES parameter or CODE parameters), the name of the exceeded threshold level (ALWAYS, INFR, FREQ, or CRIT) is used to select defined commands or replies with these selection options. If no commands or replies with these selection options are defined, all commands or replies defined for the given entry and type are issued if the critical threshold has not been exceeded.

If a selection option has already been provided by other criteria to select commands and replies, these commands or replies are only issued if the critical threshold has not been exceeded.

NO

Thresholds are not checked before issuing commands or replies.

If THRES is not coded, its value defaults to YES if there are thresholds defined for the minor resource *entry.type*. Otherwise the value of THRES is assumed to be NO.

TGLOB*n*

This parameter instructs ISSUEACT to store a certain value in a given task global variable. You can specify up to 10 variables.

var

The name of the task global variable that is to be set.

value

The value that is to be stored in the task global variable

Note: Be careful not to specify the names of other task global variables (for example, EHKVAR*n*) because they will be overwritten.

Restrictions and Limitations

- ISSUEACT, ISSUECMD and ISSUEREP will only work when SA z/OS is fully initialized.
- SYSTEMMSG=YES is only accepted if no job name is provided by the JOBNAME parameter and no ENTRY parameter is specified or the value of the common global variable AOFSYSTEM is passed as the value for it.
- SYSTEMMSG=YES is only valid in combination with the AUTOTYP values NOCHECK, RECOVERY, or AUTOMATION.
- If ISSUEACT, ISSUECMD or ISSUEREP is driven by a delete operator message, no commands or replies are issued that are driven by such a message.
- The command must run on the working operator task of the application.
- The triggering message is automatically captured with a default severity of NORMAL. The default severity can be overridden using the code definitions under pseudo-message ID CAPMSGS. Under CODE2, specify MVSESA for messages with SYSTEMMSG=YES, or otherwise, the subsystem's jobname. The severity used is the content of Value Returned of the first row that matches in the code definitions table. CODE3 is not considered. To avoid message capturing, set Value Returned to *IGNORE*.

Usage

You should normally call the ISSUEACT command from the NetView automation table.

The triggering message of the ISSUEACT command is stored in the SAFE called AOFMSAFE. All commands that are triggered through ISSUEACT and that are executed on the task that is currently executing ISSUEACT have access to this SAFE.

Do not call OUTREP in addition to the ISSUEACT command for a triggering WTOR. If the triggering WTOR is not replied to in ISSUEACT (or ISSUECMD or ISSUEREP), OUTREP is automatically called to record the WTOR.

If AUTOTYP=START is flagged and you specify PASSES=NO and no CODE parameters, the current start type is taken as the selection for the commands or replies to be issued. If no start type is provided, NORM is assumed as the default start type.

If AUTOTYP=TERMINATE is flagged and you specify PASSES=NO and no CODE parameters, the current stop type will be taken as the selection for the commands or replies to be issued. If no stop type is provided, NORM is assumed as the default stop type.

If no selection option has been derived from criteria such as start or stop type, PASSES parameter, CODE parameters or the result of threshold checking, ALWAYS is assumed as the default option for selecting defined commands or replies to be issued.

If the value of the advanced automation option AOFSTATUSCMDSEL is set to zero, all defined commands or replies for a specified status as message ID are issued, regardless of any defined selection option. That is, no option from criteria such as start or stop type, PASSES parameter, CODE parameters or the results of threshold checking is used to select defined commands or replies. No minor resource threshold checking is done in this case.

Task Global Variables

EHKVAR0 through EHKVAR9 and EHKVART

When defining the commands or replies in the automation policy that are to be issued by this command, the variables &EHKVAR0 through &EHKVAR9 and &EHKVART can be used to be substituted by the tokens of the parsed message that has driven this command. &EHKVAR0 will be substituted by the message ID, &EHKVAR1 by the first token of the message text after the message ID, &EHKVAR2 with the second token and so forth. &EHKVART will be substituted by the trailing message text after the 9th token.

Examples

Example 1

This example shows an automation procedure that calls the ISSUEACT command to handle the HSM subsystem message, ARC0027I.

The automation policy is as follows:

```
AOFK3D0X                 SA z/OS - Command Response      Line  1    of 4
Domain ID   = IPSNO     ---------- DISPACF  ----------    Date = 07/19/00
Operator ID = SAUSER                                      Time = 18:20:45

Command = ACF ENTRY=HSM,TYPE=ARC0027I,REQ=DISP
SYSTEM = KEY3      AUTOMATION CONFIGURATION DISPLAY - ENTRY= HSM
---------------------------------------------------------------------------
AUTOMATION CONFIGURATION DISPLAY - ENTRY= HSM
 TYPE IS ARC0027I
 CMD             = (,,'MVS S HSMPLOGB')
END OF MULTI-LINE MESSAGE GROUP
```

Figure 9. DISPACF Sample Panel

The NetView automation table entry to call ISSUEACT is:

```
IF MSGID = ’ARC0027I’ THEN
EXEC(CMD(’ISSUEACT’) ROUTE(ONE %AOFOPGSSOPER%));
```

The automation flag to check depends on the phase in the life cycle of the HSM subsystem. If no start up or shutdown is in progress for the application, ISSUEACT checks the recovery flag to validate that automation is allowed before issuing the command. If automation is allowed and message ARC0027I is received for job DFHSM, relating to the HSM subsystem, a command is issued that saves the HSM data set. If message ARC0027I is received for any job other than DFHSM, the message is not automated.

If you specify a clist named MYCLIST instead of an MVS command for the message ARC0027I in the message policy of the customization dialog, this clist can access the original message that triggered ISSUEACT via the named safe AOFMSAFE. Thus you are able to access the message attributes and all lines of a multiline message. The code to access this safe should look similar to the following:

```
/* MYCLIST */

...

/* Get the message from the SAFE called AOFMSAFE */
"PIPE (STAGESEP | NAME GETMSG)" ,
  "SAFE AOFMSAFE" ,
  "| STEM orig_msg."

...

Exit
```

Example 2

This example shows how ISSUEACT can be used to automatically respond to WTOR AHL125A, which is issued by GTF during initialization and which allows SA z/OS to accept or reject the trace options that GTF will use.

To enable SA z/OS to automatically accept the trace options, define value U as the reply to message AHL125A. To do this, select the MESSAGES/USER DATA policy item from the Policy Selection panel for the GTF subsystem in the customization dialog. In the Message Processing panel, specify AHL125A as the message ID and call action REP to get the related Reply Processing panel. Specify U in the **Reply Text** field.

Return to the Message Processing panel.

When you call action OVR, you can see that the automation table entry that will be created during the build process for the automation policy:

```
IF MSGID = 'AHL125A' THEN
EXEC(CMD('ISSUEACT') ROUTE(ONE %AOFOPGSSOPER%));
```

ISSUEACT is called without parameters. Therefore the automation flag to be checked depends on the phase in the lifecycle of the GTF subsystem. Because message AHL125A is issued during the initialization of GTF, ISSUEACT checks the start flag to validate that automation is allowed before issuing the reply.

If automation is allowed and message AHL125A is received for job GTFPROD that is related to the GTF subsystem, ISSUEACT replies with value U to accept the trace options and to continue its initialization. If message AHL125A is received for any job other than GTFPROD, the message is not automated.

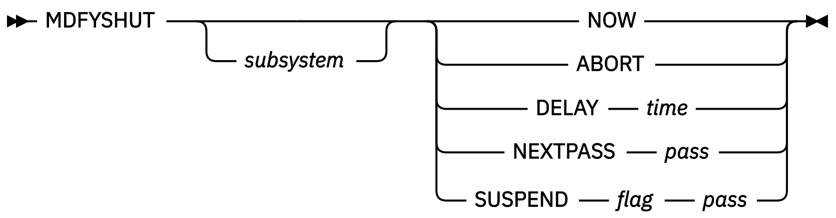
MDFYSHUT

Purpose

The MDFYSHUT command sets an internal variable to whatever value is contained in the MDFYSHUT parameter string. The AOFSHUTMOD value is then used by the shutdown program.

MDFYSHUT also provides support for a SUSPEND function.

Syntax



Parameters

Subsystem
Specifies the subsystem involved in the shutdown. If omitted, the SUBSAPPL task global variable is used to identify the subsystem. Be aware that the SUBSAPPL task global variable is subject to change when your shutdown pass commands include any additional commands for other subsystems.

NOW
The next shutdown pass will occur as soon as possible.

ABORT
Stops the shutdown process bringing the subsystem in HALFDOWN status.

DELAY
The next shutdown pass that will occur after time instead of the shut delay defined for the subsystem. Time must be in the hh:mm:ss format. If only a 2-digit value is specified for time, SA z/OS assumes it to be a value for minutes. If only a 2-digit value preceded by a colon is specified for time, SA z/OS assumes it to be a value for seconds.

NEXTPASS
The next shutdown pass that will be processed (after the subsystem shut delay) is the pass value (2nd parameter), not the current pass plus one.

SUSPEND
Determines how the shutdown is suspended, where:

flag
Is the name of a common global variable that is used to determine how the shutdown is suspended. If the flag is set off (meaning its value is 0), the shutdown will be stopped and the flag will be checked again on the next pass. If the flag is set on (meaning its value is 1) the shutdown will continue, that is, it is no longer suspended. After stopping, the value of the common global variable is set back to 0.

pass
Is the number of the pass that the MDFYSHUT SUSPEND command is coded on. It must be included so that MDFYSHUT can return to this pass and recheck the flag.

Note: The SUSPEND parameter can only be used in the Shutdown definitions of the automation policy.

Restrictions and Limitations

The MDFYSHUT command can be used on any pass of the shutdown. However, there should be only one MDFYSHUT command coded on the same pass. Since there is only one global holding the MDFYSHUT parameter provided, the different parameter values given interfere with each other and the result is likely not to be as expected. Keep in mind that commands on the same pass are always issued as a group. For instance the specification,

```
PASS1,,'MDFYSHUT$NONMVS NEXTPASS 4'
PASS1,,'MDFYSHUT $NONMVS NOW'
```

does not result in the execution of the Shutdown PASS4 now (as soon as possible). Since parameter NEXTPASS 4 is overwritten by 'NOW', PASS2 is executed as soon as possible.

The routine that contains MDFYSHUT must run on the default task, that is, leave the task field blank.

The routine that contains MDFYSHUT cannot be rescheduled with a CMD LOW.

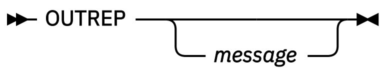
OUTREP

Purpose

The OUTREP command captures and saves MVS reply identifiers for applications that issue outstanding replies. Some applications issue an outstanding reply when they start, and that reply is used for critical operator communication or shutdown commands. This command captures these reply IDs and their message text and saves them in case the automation code needs them for recovery or shutdown.

Typically, OUTREP is called from the NetView automation table.

Syntax



Parameters

message
The message text for the outstanding reply. If not specified it will be picked up from the default safe.

Restrictions and Limitations

If another command such as ISSUEACT/ISSUEREP/ISSUECMD, ACTIVMSG, HALTMSG, TERMMSG or INGMON is called for the WTOR, you should not code an additional call to OUTREP for the same WTOR. If the command cannot find a value to reply to the WTOR with, it automatically calls OUTREP to record the WTOR. This also happens if the command is called and finds that the automation for the message is turned off.

Usage

You should normally call the OUTREP command from the NetView automation table.

The OUTREP command attempts to determine the application name from the job name that is associated with the message. It then calls CDEMATCH with:

```
CODE1=msgid
CODE2=jobname
```

to determine what is to be done with the outstanding WTOR.

If an application is found, CDEMATCH searches the Automation Control File for CODE entries that are associated with ENTRY-TYPE pairs of *application*-WTORS where *application* is the application name as determined from the job name.

If an application cannot be found, or there is no match from the first search, CDEMATCH searches CODE entries that are associated with ENTRY-TYPE keys of MVSESA-WTORS.

If a successful match occurs, CDEMATCH returns a value consisting of two words that instruct OUTREP what to do with the WTOR:

- **First word:** Assigns the severity that determines the color of the WTOR in SDF.
- **Second word:** Assigns the priority. WTORs with a priority of PRIMARY are used by SA z/OS as outstanding WTORs but those with a priority of SECONDARY are not.

The following table shows the valid values for the severity with the resulting status in SDF and the colors of the WTORs in SDF.

Severity	Status in SDF	Default Color in SDF
NORMAL	NWTOR	Green
UNUSUAL	UWTOR	Yellow
IMPORTANT	IWTOR	Pink
CRITICAL	CWTOR	Red
IGNORE	–	–

Any definite abbreviation can be used to specify the severity.

By default an incoming WTOR is considered to be of priority PRIMARY with a severity of UNUSUAL. This also means that any code definitions where you have entered incorrect data in the **Value Returned** field default to UNUSUAL PRI.

The codes that CDEMATCH is to search on are entered against a message ID of WTORS in the Code Processing panels of the customization dialogs. Figure 10 on page 179 shows an example of code definitions to the message ID WTORS that are specified at the entry of the NetView application with job name NETVAPPL.

```
Code 1          Code 2          Code 3            Value Returned
DSI802A         *                                 NORMAL PRI
DSI803A         *                                 NORMAL PRI
TEST001         *                                 NORMAL SEC
```

Figure 10. Code Processing Panel for an Application Resource

Figure 11 on page 179 shows an example of code entries for the MVSESA resource.

```
Code 1          Code 2          Code 3          Value Returned
IEA793A         *                               IMPORTANT SEC
IEC507D         *                               NORMAL SEC
IEF235D         *                               NORMAL SEC
IEF238D         *                               IMPORTANT SEC
IEF455D         *                               NORMAL SEC
IEF458D         *                               NORMAL SEC
```

Figure 11. Code Processing Panel for the MVSESA Resource

These code entries result in the following behavior:

- If the job NETVAPPL issues one of the messages DSI802A or DSI803A, it is assigned a severity of NORMAL and is displayed in the related color in SDF. SA z/OS can use this outstanding reply, for example, to shut down job NETVAPPL.
- If any Clist running in NetView application with job name NETVAPPL issues a WTOR with message ID TEST001, it is also assigned a severity of NORMAL and is displayed in the relating color in SDF, but it cannot be used to shut down this NetView.
- If one of the messages defined in the code entries to the MVSESA resource in Figure 11 on page 179 is issued by any application or MVS component, and no replies are defined in SA z/OS to be issued in response to them, these messages are stored as secondary WTORs and are displayed in SDF with the specified severity.

Task Global Variables

None.

Examples

The following is an example of calling the OUTREP command directly from the NetView automation table:

```
IF MSGID='DSI802A' & DOMAINID = %AOFDOM%
THEN
EXEC(CMD('OUTREP') ROUTE(ONE %AOFOPSYSOPER%));
```

In this example, OUTREP is called for the NetView outstanding reply message, DSI802A. %AOFDOM% is a synonym defined to be the current domain. %AOFOPSYSOPER% is a cascade for processing WTORs. Both are defined in AOFMSGSY.

TERMMSG

Purpose

You can use the TERMMSG command to respond to the termination message of an application by changing the SA z/OS status of the application. TERMMSG calls the ISSUEACT command to also issue commands and replies that are defined in the automation policy for the ID of the termination message and for the new status. Typically, TERMMSG is called from the NetView automation table.

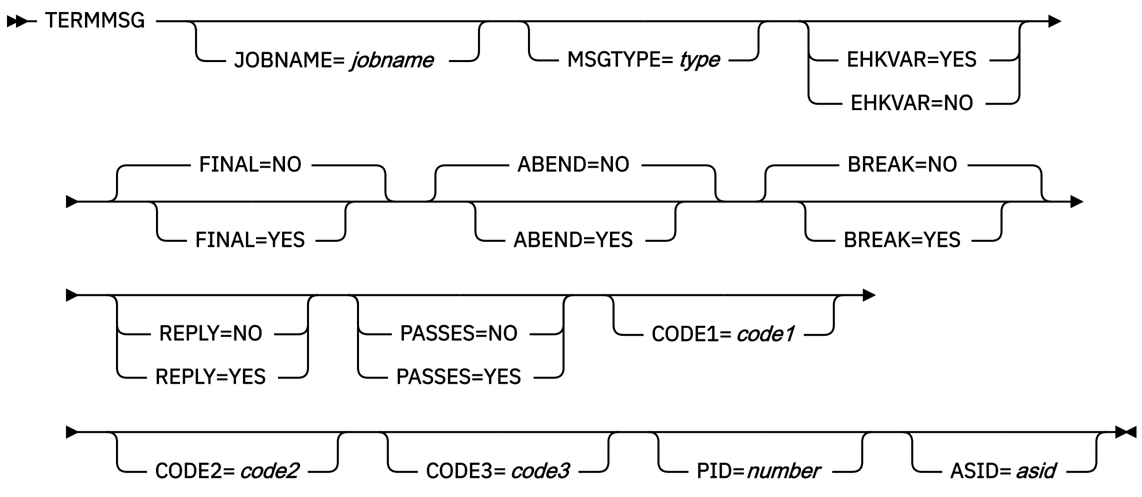
The status that the application is placed in by TERMMSG depends on a number of conditions, including the values of the FINAL, ABEND, and BREAK parameters. The values of the FINAL, ABEND and BREAK parameters may in turn depend on the values of the CODE parameters. The following table shows the statuses that TERMMSG may place an application in.

Table 8. TERMMSG Status Transitions

Status	Description	Final	Abend	Break
STOPPING	Application terminated externally	N	N	N
ENDING	For transient applications	N	N	N
ABENDING	Application abend	N	Y	N
BREAKING	Non-recoverable abend	N	N	Y
STOPPED	Application shutdown externally	Y	N	N
ENDED	Transient application shutdown	Y	N	N
BROKEN	Non-recoverable abend	Y	N	Y
RESTART	Restart after abend	Y	Y	N
AUTOTERM	No change during shutdown	N	N	N
AUTODOWN or RESTART	System is being shut down. The status will depend on the shutdown parameters.	Y	?	?
ZOMBIE	Occurs if there are problems with the address space cleanup.	Y	?	?

For information about how the CODE parameters can affect the values of FINAL, ABEND, and BREAK see the description of The CODE Parameter.

Syntax



Parameters

JOBNAME
The name of the job that the message is for. If not specified, the job name is taken from the message's job name field. You must supply a value for the job name if you are calling TERMMSG from a CLIST.

MSGTYPE
This parameter is used to search for command and reply entries to *subsystem*/*msgtype*-pairs in the automation control file, where *subsystem* is the subsystem name derived from the job name.

When a match occurs, the commands associated with the entries are issued.

If the MSGTYPE parameter is not specified, the message identifier of the message that TERMMSG is called for is taken as the default.

EHKVAR
This parameter determines whether the tokens of the parsed message text are to be stored in task global variables EHKVAR0 through EHKVAR9 and EHKVART.

YES
The tokens of the triggering message are to be assigned to the task global variables EHKVAR*n*.

NO
No values are to be assigned to the task global variables EHKVAR*n*.

FINAL
Indicates whether this is the final termination message. If no FINAL value is coded, TERMMSG defaults to FINAL=NO.

YES
The message is the final termination message for the application. The application will be placed into the appropriate status, depending on the values of the ABEND and BREAK parameters. See Table 8 on page 180 for details. If it is monitorable, the application is not placed into a down status until an application monitor check confirms that it has left the machine. If it is not monitorable, the application is placed into a down status after its termination delay time.

NO
This is not the final termination message.

ABEND
Indicates whether the application is suffering a recoverable abend. If no ABEND value is coded, TERMMSG defaults to ABEND=NO.

YES
The application is suffering a recoverable abend. The application will be placed into the appropriate status, depending on the value of the FINAL parameter. See Table 8 on page 180 for details.

When the final termination message for an abending application (FINAL=YES) is received, the error threshold is checked and the application is restarted if it has not exceeded its critical error threshold.

NO
The application is not suffering a recoverable abend.

BREAK
Indicates whether the application is suffering a non-recoverable abend. The application will be placed into the appropriate status, depending on the value of the FINAL parameter. If no BREAK value is coded, TERMMSG defaults to BREAK=NO.

YES
The application is suffering a non-recoverable abend and should be placed into BREAKING status. When its final termination message is received (FINAL=YES) it is placed into BROKEN status. SA z/OS will not restart it from this status without human intervention through the SETSTATE command dialog.

NO
The application is not suffering a non-recoverable abend.

REPLY
This parameter determines whether a defined reply is issued for a message that TERMMSG has been called for.

YES
A defined reply in the automation policy for the message that is being handled by TERMMSG is issued. REPLY=YES is assumed as the default if the message is a WTOR, otherwise the default is REPLY=NO.

NO
A defined reply for a WTOR that is being handled by TERMMSG is not issued.

PASSES
Specifies whether passes are used to issue commands or replies (or both) that have been defined in the automation policy.

YES
PASSES=YES is passed to the ISSUEACT command.

NO
PASSES=NO is passed to the ISSUEACT command.

CODE1=*code1*
CODE2=*code2*
CODE3=*code3*
When specified, the codes that are passed are used to search for code definitions for the termination message in the automation policy MESSAGES/USER DATA. First the automation policy is searched for code definitions against the message ID of the subsystem that issued the termination message. If these cannot be found, the automation policy is searched for code definitions against the message ID MVSESA.

The meaning of the codes depends on the NetView automation table entry that invoked TERMMSG.

The value returned for the matching code definition can consist of two tokens. The first token is used as the action to modify the FINAL, ABEND and BREAK parameters of TERMMSG in the following way:

Action	Final	Abend	Break
STOPPING	–	–	–

Action	Final	Abend	Break
STOPPED	Yes	–	–
ABENDING	–	Yes	–
ABENDED	Yes	Yes	–
BREAKING	–	–	Yes
BROKEN	Yes	–	Yes
IGNORE	–	–	–

If IGNORE is returned as the first token, the processing of TERMMSG stops. In this case the second token of the returned value is not considered. The status of the application is not updated and no command or reply is issued by TERMMSG.

If specified, the second token of the returned value is used as the start type for the subsystem's next startup. The next start type is set with the INGSET command.

TERMMSG does not apply the code values for selecting defined commands or replies to be issued.

Note: An action of IGNORE can be used for messages not resulting in the termination of the application. TERMMSG will not perform any status change and will simply stop processing.

PID
The process ID of the resource. Together with the ASID, it uniquely identifies the resource.

ASID
The ASID that is associated with the resource. Together with the PID, it uniquely identifies the resource.

Restrictions and Limitations

- If TERMMSG is driven by a delete operator message, no action is taken in response to this message.
- If a normal termination message (ABEND=NO,BREAK=NO) is received for an application that is not being shut down by SA z/OS (and is already in the AUTOTERM status), it is placed into the STOPPING status. When its final termination message has been processed, its Restart option is checked. If this is ALWAYS it is placed into the RESTART status. If the Restart option is not ALWAYS it is placed into the STOPPED status.

  This behavior can be changed using the AOFRESTARTALWAYS advanced automation option.
- Once an application has entered a serious error condition (a status of AUTOTERM, STOPPING, ABENDING, or BREAKING), termination messages indicating less important error conditions are ignored.
- Commands for a status are only issued the first time the status is entered.
- If the TERMMSG command is called on a task other than the AOFWRK*nn* auto operator that is responsible for the subsystem, TERMMSG will schedule itself to that AOFWRK*nn* auto operator. That is, when the calling procedure regains control, the status of the subsystem may not yet have changed.
- Only termination messages for applications with known address space IDs are processed by TERMMSG.

  The address space ID is not checked if TERMMSG is called from an automation procedure (CLIST), or if TERMMSG has been triggered by message BPXF024I.

  The address space ID is also ignored if the job name parameter that was specified differs from the job name associated with the triggering message.
- The triggering message is automatically captured with a default severity of NORMAL. The default severity can be overridden using the code definitions under pseudo-message ID CAPMSGS. Under CODE2, specify MVSESA for messages with SYSTEMMSG=YES, or otherwise, the subsystem's jobname. The severity used is the content of Value Returned of the first row that matches in the code definitions table. CODE3 is not considered. To avoid message capturing, set Value Returned to *IGNORE*.

Usage

The definition of termination messages ensures early detection of any problems with subsystems. A number of termination messages is already known to SA z/OS. **You can define an additional termination message using the MESSAGES/USER DATA policy item of the application to set the AT status of the message as terminating or terminated.** During the automation policy build an appropriate NetView automation table statement is created that calls TERMMSG. See the MESSAGES/USER DATA policy item in *IBM System Automation for z/OS Defining Automation Policy* for more details about defining termination messages.

Message IEF404I is used by SA z/OS as the final termination message for all applications. The following example shows how TERMMSG is called by IEF404I in the automation table:

```
IF MSGID='IEF404I' & TOKEN(2) = SVJOB & DOMAINID=%AOFDOM%
   & ATF('ING$QRY APPL,,JOB='VALUE(SVJOB)) ^= ''
THEN
EXEC(CMD('TERMMSG FINAL=YES,JOBNAME=' SVJOB) ROUTE(ONE %AOFOPGSSOPER%));
```

The ING$QRY NetView automation table function is used to screen the message before invoking TERMMSG. See "ING$QRY" on page 197 for more information.

Using code definitions to a message avoids having to code multiple automation table statements or to issue multiple commands to call TERMMSG.

The following example shows how TERMMSG is called by generic message IEF450I:

```
IF MSGID='IEF450I' & TOKEN(2) = SVJOB & DOMAINID=%AOFDOM%
   & ATF('ING$QRY APPL,,JOB='VALUE(SVJOB)) ^= ''
         & TEXT = . 'ABEND=' SCODE UCODE .
THEN
EXEC(CMD('TERMMSG JOBNAME='SVJOB ',CODE1=' SVJOB ',CODE2='
         SCODE ',CODE3=' UCODE) ROUTE(ONE %AOFOPGSSOPER%));
```

If you are calling TERMMSG from an automation procedure, and this calling procedure is not running on the AOFWRK*nn* automation operator that is responsible for the affected subsystem, the TERMMSG command will be routed to that operator. The TERMMSG command will run asynchronously to the calling procedure. This means that when the calling procedure regains control, the status of the affected subsystem may not yet have changed.

All commands and replies that are triggered through TERMMSG have access to the SAFE, called AOFMSAFE, that stores the message that caused the TERMMSG call.

Task Global Variables

EHKVAR0 through EHKVAR9 and EHKVART

When defining the commands in the automation control file to be issued by TERMMSG command , the variables &EHKVAR0 through &EHKVAR9 and &EHKVART can be used to be substituted by the tokens of the parsed message that has driven TERMMSG. &EHKVAR0 will be substituted by the message ID, &EHKVAR1 will be substituted by the first token of the message text after the message ID, &EHKVAR2 with the second token and so on. &EHKVART will be substituted by the trailing message text after the 9th token.

Examples

TERMMSG is called with CODE1=ABENDED and CODE2=S222 by the termination message of an application that has the following codes defined for it:

Code 1	Code 2	Code 3	Value Returned
ERROR*	$PJF		STOPPING
ABEND*	S222		ABENDING HOT

A match occurs with the second code definition, and the application is placed in the status ABENDING and the start type for the next application startup is set to HOT.

Chapter 3. Monitoring Routines

SA z/OS offers several routines that can be used to monitor various aspects of your enterprise.

AOFADMON

Purpose

The AOFADMON routine is used to determine the status of a job within the operating system using the **`MVS D A`** method.

It is strongly recommended that you use INGPJMON rather than AOFADMON.

Syntax

▶▶ AOFADMON —— *jobname* ▶◀

Parameters

jobname
The job name that the operating system knows the associated application by.

Return Codes

0
The job is active.

4
The job is starting.

8
The job is inactive.

12
Parameter error.

AOFAPMON

Purpose

The AOFAPMON routine is used to determine the status of a PPI receiver. It calls DISPPI and checks if a specific PPI receiver is active.

Syntax

▶▶ AOFAPMON —— ppiname ▶◀

Parameters

ppiname
The name of the PPI receiver this routine searches for. When the PPI receiver is active, the system issues return code 0. Otherwise return code 8 is issued.

Restrictions and Limitations

None.

Return Codes

0
: The resource is active.

8
: The resource is inactive.

AOFATMON

Purpose

The AOFATMON routine is used to determine the status of a task operating within the NetView environment. When the application is defined using the SA z/OS customization dialogs, the application job name must be defined to be the NetView task name.

Syntax

```
►► AOFATMON ── taskname ►◄
```

Parameters

taskname
: The name of the NetView task whose status is to be obtained. This name is the same as the application job name.

Return Codes

0
: The task is active.

4
: The task is starting.

8
: The task is inactive.

12
: Parameter error.

AOFCPSM

Purpose

The AOFCPSM routine is used to determine the status of processor operations.

Syntax

```
►► AOFCPSM ── jobname ►◄
```

Parameters

jobname
: The job name that SA z/OS knows the processor operations application by.

Return Codes

0
: The task is active.

8

The task is inactive.

12

Error.

AOFUXMON

Purpose

The AOFUXMON routine is used to determine the status of a resource with application type USS. This resource can either be a z/OS UNIX process, a file in the z/OS UNIX file system (zFS), or a TCP port. Depending on the kind of resource (process, file, or port) AOFUXMON decides which internal monitoring method to use.

Syntax

```
►► AOFUXMON ── jobname ─►◄
```

Parameters

jobname

The job name that SA z/OS knows the associated USS process, file, or port by.

Restrictions and Limitations

AOFUXMON should only be used as a programming facility because its only output is a return code.

AOFUXMON uses active rather than passive monitoring for ports. Active monitoring will cause a connection to be established to an active port. If this is not desirable then a customer supplied monitoring routine should be used instead of AOFUXMON for port monitoring.

Return Codes

0

The resource is active.

4

The resource is starting.

8

The resource is inactive or OMVS is inactive.

12

One of the following parameter errors occurred:

The *jobname* parameter was not specified.

The *jobname* parameter does not represent a USS type resource.

The *jobname* parameter does not represent a USS PATH, PORT or FILE.

20

A return code other than 0, 4 or 8 was returned from the USS INGCCMD routine. Check for related messages or turn on debug for AOFUXMON (this also turns on debug for INGCCMD).

INGDBMON

Purpose

The INGDBMON routine can be used to determine the status of a DB2 system. It calls INGJPMON to determine the status of a job as known by the operating system. If INGPJMON returns with RC=8, which means the address space has ended, INGDBMON additionally checks if the subsystem is still registered to the operating system's subsystem interface (SSI). If it is still registered, a return code of RC=0 is issued. Only if the subsystem is no longer registered, RC=8 is issued.

Make sure that the COMMAND SCOPE field for the DB2 is set to STARTED (the default value). This means that the command prefix is registered at DB2 startup and unregistered when DB2 stops.

Syntax

```
►► INGDBMON ── jobname ►◄
```

Parameters

jobname
This is the name of the job to be searched for.

Return Codes

0
The job is active.

4
The job is starting.

8
The job is inactive.

12
Parameter error.

INGDVMON

Purpose

The INGDVMON routine is used to determine the existence of a dynamic virtual IP address (DVIPA) on the local system.

Note: It is required that the parameters `IPSTACK=jobname_tcpip` and `DVIPA=dvipa_ip_address` are defined as 'Startup Parameters' in the APPLICATION INFO policy of the DVIPA application.

Syntax

```
►► INGDVMON ── jobname ►◄
```

Parameters

jobname
Specifies the job name that is assigned to the DVIPA application.

This can be obtained from the SUBSJOB task global variable that is returned by AOCQRY.

Return Codes

0
: The DVIPA is active.

8
: The DVIPA does not exist on the local system.

12
: The existence of a DVIPA cannot be determined.

INGPJMON

Purpose

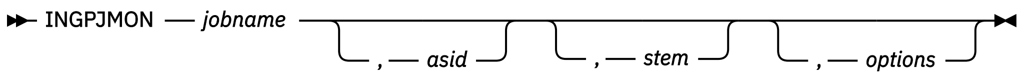
The INGPJMON routine is used to determine the status of a job as known by the operating system. This is *not* the SA z/OS status of the job, which should be determined using AOCQRY.

INGPJMON does the following:

- It optionally returns the jobname and address space ID that match passed criteria
- It allows you to search for all address spaces that match the specified jobname
- It supports optional address-space search criteria

This monitoring routine is the foundation for supporting duplicate job names because standard address space monitoring takes the address space ID associated with the job into account. This allows you to distinguish between multiple occurrences of the same job in the system.

Syntax



Note: All parameters are positional and must be replaced by a comma if omitted and followed by another operand.

Parameters

jobname
: This is the name of the job to be searched for. An asterisk (*) must be specified as a placeholder if no job name is given.

asid
: This is the address space ID (in hex) associated with the job. If omitted, the INGPJMON routine returns the first address space that matches the job name.

stem
: This is the name of a NetView task global stem variable that will contain the job name and ASID of the address space that has been found.

  The parameter is optional. If a task global name is specified, the following data are returned separated by a comma:

  1. Job name.
  2. Address space ID. If more than one ASID are returned, they are separated by a blank.

options
: These are additional options, as follows:

  ***ALL**
  : Causes the monitoring routine to return all ASIDs that match the specified job name.

***TRACE**
Causes the monitoring routine to trace its processing by means of the component trace.

The following example shows how to retrieve data via a NetView task global stem:

```
'INGPJMON WEBSERVER,,STEM01,*ALL'
'GLOBALV GETT STEM01.0 STEM01.1'
 exit 0
```

After executing the sample REXX the following data will be returned:

```
   stem01.0 = 1
   stem01.1 = WEBSERVER,0028 0033 0045,
```

In this example WEBSERVER is running in three address spaces.

A maximum of 48 ASIDs can be returned in each stem variable due to the NetView restriction of 256 bytes per variable. If more than 48 ASIDs are returned then additional ASIDs will be returned in additional stem variables. The last ASID is terminated by a comma.

Return Codes

0
The job is active.

4
The job is starting.

8
The job is inactive.

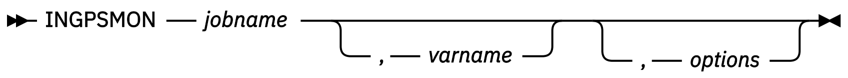
12
Parameter error.

INGPSMON

Purpose

The INGPSMON routine is used to determine the status of an MVS subsystem. Unlike INGPJMON it does not search MVS address space control blocks but monitors the status of the specified job name via the IEFSSI service.

Syntax



Parameters

jobname
This is the job name that is assigned to the subsystem. The job name must be identical to the MVS subsystem name. Specify !PRI for the primary subsystem.

varname
This is the name of a NetView task global stem variable that contains information about the MVS subsystem.The output that is returned in the task global variable is as follows:

Byte	Length	Description
1	4	Name of MVS subsystem
5	1	Delimiter, contains blank

Byte	Length	Description
6	1	Contains P if primary subsystem
7	1	Contains D if dynamic
8	1	Contains S if subsystem accepts SETSSI command
9	1	Contains A if subsystem is active

options
These are additional options, as follows:

***TRACE**
Causes the monitoring routine to trace its processing by means of the MVS component trace function.

Return Codes

0
The job is active.

4
The job is starting.

8
The job is inactive.

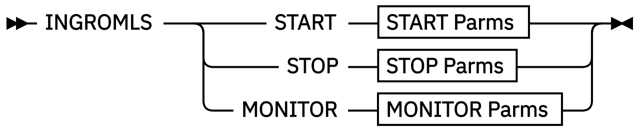
12
Parameter error.

INGROMLS

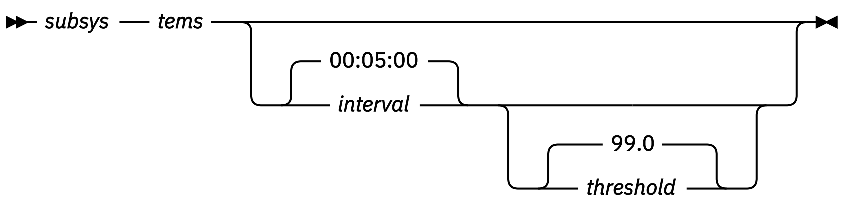
Purpose

This is the monitor routine for the Looping Address Space Suppression logic. When run, it queries OMEGAMON for resources with a high CPU Loop Index value and takes recovery actions, as defined in your automation policy, against them.

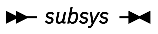
Syntax



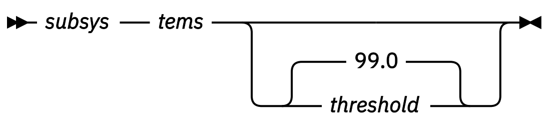
START Parms



STOP Parms



MONITOR Parms



Parameters

START
Starts a timer to drive the monitor at the specified interval with the specified threshold. An immediate monitoring cycle is not performed.

MONITOR
Performs a monitoring and recovery cycle.

STOP
Shuts down the monitor, purges messages from SDF, resets recovery pass counts.

subsys
The name of the subsystem that holds the looping address space monitor.

tems
The name of the Network (NTW) defined in your policy that points to the TEMS SOAP server that holds the OMEGAMON data for the system the monitor is being run on.

interval
The time between consecutive runs of the monitor. Defaults to 5 minutes. Running it much more often may cause performance issues on your TEMS.

threshold
The value of the CPU Loop Index that is used as a cutoff for whether or not the address space is a problem. Higher values make the monitor take a little longer to recognise looping address spaces, lower values will increase the number of false positives. Valid values are 0.1 to 100.0. The default is 99.0. It is recommended that you use values >95.0, especially if you have active recovery commands coded (STOP, CANCEL, FORCE, SUSPEND).

Restrictions and Limitations

The routine should only be used as a part of the looping address space suppression procedure.

Frequently calling the routine to perform monitoring may have an adverse impact upon the TEMS it is talking to.

The routine should be run on the system it is monitoring. Running it on the wrong system (or pointing to the wrong TEMS) may result in it incorrectly identifying address spaces that are being managed by System Automation, possibly leading it to issuing recovery commands (STOP, CANCEL, FORCE, SUSPEND) that will have undesirable and unwanted side effects.

Return Codes

0
Worked.

4
Worked, but may not have done anything.

Recovery flag turned off.

8
Bad call/set up.

Incorrect, extraneous or otherwise unacceptable parameters.

Unable to find CMS.

12
Failure.

Unable to find userid and password.

Unable to find SOAP Network definition.

SOAP Network definition incomplete.

Non-zero rc from INGOMX.

SOAP query failed or did not return expected data.

INGROMON

Purpose

The INGROMON routine is used to determine the status of the OMVS address space.

Syntax

```
►► INGROMON ►◄
```

Return Codes

0
OMVS is fully initialized.

4
OMVS is starting.

8
OMVS is inactive.

INGVMON

Purpose

The INGVMON routine is used to determine the status of a virtual operator station task (VOST). It should be used as monitoring routine in a VOST management APL.

Syntax

```
►► INGVMON — jobname ►◄
```

Parameters

jobname
Specifies the job name that SA z/OS knows the associated VOST management APL as. This can be obtained from the SUBSJOB task global variable returned by AOCQRY.

Restrictions and Limitations

INGVMON should only be used as a programming facility because its only output is a return code.

Return Codes

0
The VOST is ACTIVE.

8
    The VOST is INACTIVE.

12
    Monitoring failed.

16
    One of the following parameter errors occurred:

- The *jobname* parameter was not specified.
- The *jobname* parameter is not a valid job name.

ISQMTSYS

Purpose

The ISQMTSYS routine monitors processor operations target system resources. It is used to verify the availability of a target system according to a timer defined by the user.

Syntax

```
►► ISQMTSYS — jobname ►◄
```

Parameters

jobname
    The job name that SA z/OS knows the processor operations target system by.

Return Codes

0
    The target system is active.

4
    The target system is starting.

8
    The target system is inactive.

12
    The resource could not be found.

Chapter 4. SA z/OS REXX Functions

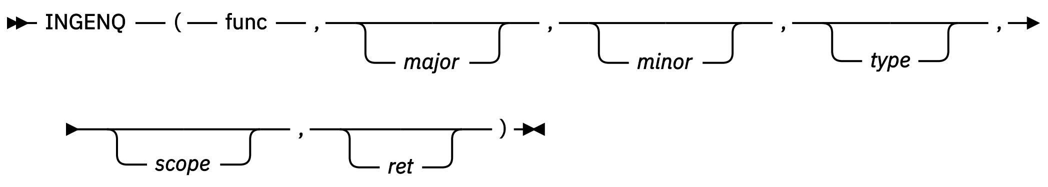
INGENQ

Purpose

This function performs z/OS macros ENQ and DEQ.

If function INGENQ fails, it returns a decimal number. If the syntax of the function is invalid then REXX error 40 ("Incorrect call to Routine") is forced. For details see "Return Codes and Messages" on page 196.

Syntax



Parameters

func

E

enqueue a resource

D

dequeue a resource

major

(Optional) Specifies the major name of the resource, up to 8 characters in length. If you omit this argument System Automation uses INGENQ for function calls 'E' and 'D'.

Note:

- The wildcard, for example, "ABC*", is not recognized and it is treated as a normal character.
- Do not mix ENQ scope SYSTEM and SYSTEMS requests that use the same major and minor. This is required due to RNL=NO parameter.

minor

(Optional) Specifies the minor name of the resource, up to 255 characters in length. For function calls 'E' and 'D' the default name is 20 bytes long "SA$$uuuuuuuupppppppp", where uuuuuuuu is the current TSO user ID or job name and pppppppp is 8 byte long name of the current REXX program that issued the INGENQ.

Note:

- The wildcard, for example, "ABC*", is not recognized and it is treated as a normal character.
- Do not mix ENQ scope SYSTEM and SYSTEMS requests that use the same major and minor. This is required due to RNL=NO parameter.

type

(Optional) Specifies the type of request, E for exclusive or S for shared.

Note: The argument is only used for function call 'E'. The default is E.

scope

(Optional) Specifies the scope of the request. You can specify the following values:

STEP
for a job-wide request

SYSTEM
for a system-wide request

SYSTEMS
for a system-wide request

Note: Scope is used for all function calls. The default is SYSTEM.

Ret
(Optional) Specifies the type of return for the enqueue request. The value is one of the following:

HAVE
Returns control when ENQ has been obtained (it waits if another user holds the resource). This is the default.

NONE
Returns control when ENQ has been obtained.

TEST
Tests whether the desired ENQ is available immediately but does not obtain the lock on the resource.

USE
Obtains the desired resource only if it is available immediately.

Note: This argument is only used for function call 'E' and 'D'.

The following example obtains an exclusive ENQ with scope job step and with default major resource name INGENQ and minor resource name RESABC.

```
value = INGENQ('E',,'RESABC','E','STEP','HAVE')
```

Return Codes and Messages

If function INGENQ fails for 'E' and 'D', then the corresponding decimal macro return code is returned as function value.

For example,

'D' and value=8 means you released an ENQ that you do not own or was already released.
'E' and value=8 means the task has already obtained the resource.
'E' 'USE' and val=4 means the resource is not immediately available.

For more details, see *z/OS Programming: Assembler Services Reference*.

If function INGENQ forces REXX error 40 then the following message will be issued if it was called within the NetView environment:

```
AOF355E INCORRECT CALL TO COMMUNICATION FUNCTION INGPCENQ RC=nn
```

nn	Description
2004	Unsupported arguments
2008	Syntax error 40 requested due to ENQ HAVE and USE (optional if arg 7 specified)
2012	Internal error, STACK failed
44	Internal error, ABEND occurred
40	COMM ENV block not available
28	Function not valid or argument list error
4	Incorrect number of arguments

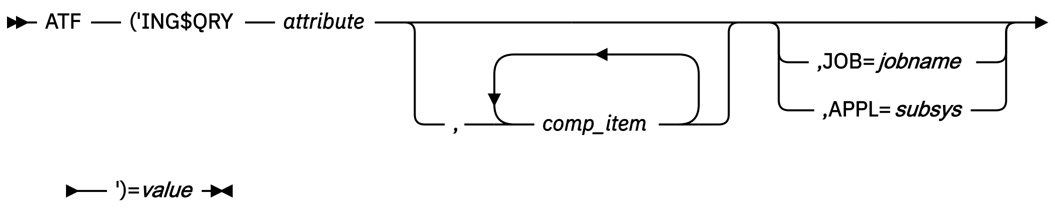
ING$QRY

Purpose

SA z/OS provides a NetView Automation Table Function (ATF), called ING$QRY. This allows you to query or compare the status and other important attributes of jobs that are controlled by SA z/OS from within the AT and use the result as a condition in the AT statement. INGQUERY is an alias of ING$QRY.

Refer to the attribute parameter description for the attributes that can be queried and used in an AT entry. The routine returns the attribute or comparison result as the function value of the NetView ATF function so that it can be used within the AT statement.

Format



Parameters

The program name and the parameters must be specified with a literal quoted string. However, variable values can be passed as ATF parameters using the VALUE (varname) syntax.

attribute
This identifies the particular attribute of the job. It can be one of the following:

APPL
The subsystem name of the resource. This assumes that the specified resource name is a job name. It can be used to check if the job is controlled by SA z/OS.

ASID
Returns the address space ID of the resource.

CATEGORY
Returns the category of the resource (for example, JES2, DB2, IMS, USS, and so forth).

CMDPFX
Returns the command prefix of the resource.

FILE
Returns the file information of the resource.

FILTER
Returns information about the command parameters that are specified to make the process unique.

IPLCOMP
Returns the IPL complete indication of the resource.

IPSTACK
Returns the IP stack name of the resource.

JOB
Returns the name of the job. It can be used to check whether the resource (subsystem) is managed by SA z/OS.

JOBLOG
Returns the job log monitoring interval of the resource.

JOBTYPE
Returns the job type of the resource (MVS, NONMVS or TRANSIENT).

OPER
Returns the work operator that is associated with the resource.

OWNER
Returns the owner information of the resource.

PARENT
Returns the parent information for the resource. Parent information is derived from each relationship that has a sequence number assigned to it.

PATH
Returns information about the UNIX process that the resource represents.

PID
Returns the USS Process ID (PID) that is associated with the resource.

PLEX
Returns the name of the plex that is associated with the resource. Currently, this attribute is only used for the IMSplex name as specified in the IMS CONTROL Policy Item.

PORT
Returns the TCPIP port that is associated with the resource.

PROCESS
Returns START or STOP if the resource is within the startup or shutdown phase, respectively.

SKIPACTIVE
Returns the 'SKIP ACTIVE status' indication of the resource.

STAT
Returns the agent status of the resource.

STRTCYC
Returns the number of start cycles of the resource.

STRTDLY
Returns the start delay time of the resource.

SUBCAT
Returns the subcategory of the resource, for example, AOR or TOR, for CICS.

SUBID
Returns the MVS subsystem identifier of the resource.

SUSPEND
Returns DIRECT or INDIRECT if the resource is suspended.

SYMBOL*n*
Returns the requested application symbol, where *n* is 1–9.

UPDLY
Returns the UP status delay time of the resource.

USER
Returns the USS user ID that is associated with the resource.

WLMNAME
Returns the WLM resource name that is associated with the resource.

WTOR
Returns all outstanding reply IDs.

comp_item
Defines the string that the attribute value should be compared against. More than one compare item can be specified, separated by a blank character. The compare item can be a wildcard, for example, abc*

If the attribute value matches one of the items in the compare string, the ATF value is set to string 'TRUE', otherwise it is set to string 'FALSE'.

If no compare item is specified, the ING$QRY ATF function returns the attribute value.

jobname
The name of the job that the attribute value should be returned for or compared against. The default is the job that issued the message.

subsys
The name of the subsystem that the attribute value should be returned for or compared against.

Return codes

The ING$QRY routine sets the following return code when returning to NetView:

0
Normal completion.

1
The specified variable name is unknown.

2
An error occurred and no output was provided. This may be due to:

- Invalid parameters were passed to the routine.
- Returning the common global variable failed.
- The job does not belong to a subsystem that is controlled by SA z/OS.

Restrictions

None.

Usage

This routine is used as a NetView Automation Table Function (ATF) within an AT condition statement to query and compare attributes of SA z/OS-controlled subsystems.

Examples

1. The following example checks whether the status of the resource that issued message WAS001I is UP and if so triggers exit AOFRIMSG:

```
IF MSGID = 'WAS001I' & ATF('ING$QRY STAT') = 'UP' THEN
  EXEC(CMD('AOFRIMSG') ROUTE(ONE *));
```

2. The following example returns the status of the resource that issued message WAS002I in variable MYVAR:

```
IF MSGID = 'WAS002I' & ATF('ING$QRY STAT') = MYVAR THEN
  EXEC(CMD('AOFRIMSG 'MYVAR) ROUTE(ONE *));
```

3. The following example checks whether the status of the resource that issued message WAS003I is either DOWN or UP. If so, it triggers exec AOFRIMSG:

```
IF MSGID = 'WAS003I' & ATF('ING$QRY STAT,DOWN UP') = 'TRUE' THEN
  EXEC(CMD('AOFRIMSG') ROUTE(ONE *));
```

4. The following example checks whether the status of job AMY0 is UP when message WAS004I is issued and if so, issues command INGLIST:

```
IF MSGID = 'WAS004I' & ATF('ING$QRY STAT,UP,JOB=AMY0') = 'TRUE' THEN
  EXEC(CMD('INGLIST AM* OUTMODE=NETLOG') ROUTE(ONE *));
```

5. The following example uses a wildcard in the compare items list. In this case it would return a list of AUTO... matches:

```
IF MSGID = 'WAS005I' & ATF('ING$QRY STAT,AU* DOWN') = 'TRUE' THEN
  EXEC(CMD('RES') ROUTE(ONE *));
```

6. The following example checks whether the subsystem is controlled by SA z/OS, assuming that the 2nd token of the message contains the job name:

   ```
   IF MSGID = 'WAS006I' & TOKEN(2) = SVJOB & ATF('ING$QRY JOB') =
   VALUE(SVJOB) THEN
     EXEC(CMD('AOFRIMSG') ROUTE(ONE *));
   ```

Part 3. Status Display Facility Definitions

This part describes the definitions for the status display facility (SDF). See *IBM System Automation for z/OS User's Guide* for information about how to set up the display panels and how to use SDF.

Chapter 5. SDF Initialization Parameters

The SDF initialization parameters define basic SDF initialization specifications, such as screen size, default PF keys, and the initial screen displayed when a SDF session is started. These parameters are specified in the DSIPARM member AOFINIT, and processed when the AOFTDDF task is started.

The SDF initialization parameters are as follows:

BODYSCROLL
Scroll keys to be used in BODY areas, see "BODYSCROLL" on page 204

CURSOR
Primary cursor location in panels, see "CURSOR" on page 204

DCOLOR
Default status descriptor color, see "DCOLOR" on page 205

DPFK*nn*
PF key settings for detail status panel, see "DPFKnn" on page 206

DPFKDESC1
PF key descriptions for detail status panel, see "DPFKDESC1" on page 206

DPFKDESC2
PF key descriptions for detail status panel, see "DPFKDESC2" on page 207

EMPTYCOLOR
Default color for status component without a status descriptor, see "EMPTYCOLOR" on page 207

ERRCOLOR
Default color for status component without a tree structure entry, see "ERRCOLOR" on page 208

INITSCRN
Initial screen, see "INITSCRN" on page 209

MAXOPS
Maximum operator logon limit, see "MAXOPS" on page 209

MAXTREEDSPSZ
Maximum data space size, see "MAXTREEDSPSZ" on page 210

PFK*nn*
Default PF key settings, see "PFKnn" on page 239

PRIORITY
Priority and color definitions, see "PRIORITY" on page 211

PRITBLSZ
Priority and color table size, see "PRITBLSZ" on page 213

PROPDOWN
Propagate status downward in SDF tree structure, see "PROPDOWN" on page 213

PROPUP
Propagate status upward in SDF tree structure, see "PROPUP" on page 214

SCREENSZ
Screen size, see "SCREENSZ" on page 214

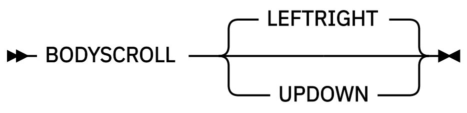
TEMPERR
Temporary error limit value, see "TEMPERR" on page 215

BODYSCROLL

Purpose

The BODYSCROLL parameter defines the navigation commands to be used for scrolling inside a BODY section. For details about the navigation commands, see "Navigation Commands" on page 266.

Syntax



Parameters

LEFTRIGHT
The function keys defining that the navigation commands LEFT and RIGHT are used for scrolling inside a BODY section.

This is the default.

UPDOWN
The function keys defining that the navigation commands UP and DOWN are used for scrolling inside a BODY section.

Examples

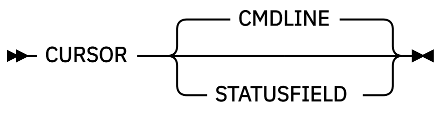
```
BODYSCROLL = UPDOWN
```

CURSOR

Purpose

The CURSOR parameter defines the location of the cursor when a panel is displayed.

Syntax



Parameters

CMDLINE
The cursor is positioned at the first character of the command line when the panel is displayed. If you then move the cursor into a BODY section, the cursor remains in that position when you scroll up or down or after you press a function key, unless a status update occurs.

This is the default.

STATUSFIELD
The cursor is positioned at the first character of the very first status field when the panel is displayed. The very first status field is the status field (CELL or STATUSFIELD) with the lowest absolute screen location.

Examples

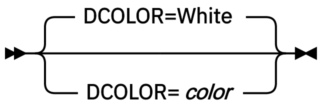
```
BODYSCROLL = STATUSFIELD
```

DCOLOR

Purpose

The DCOLOR parameter defines the color that is used for a status descriptor that is outside any of the defined priority and color ranges. This parameter is optional. If it is not coded, the program default color is White.

Syntax



Parameters

color

The color that is used for the status descriptor. It can be one of the following:

R
Red

P
Pink

Y
Yellow

T
Turquoise

G
Green

B
Blue

W
White

The default is White.

Restrictions and Limitations

In member AOFINIT, if the number of PRIORITY parameters (see “PRIORITY” on page 211) exceeds the default PRITBLSZ parameter value of 7 (see “PRITBLSZ” on page 213), the DCOLOR parameter must follow the PRITBLSZ parameter.

Usage

The recommended value for DCOLOR is White. It is supplied in the SA z/OS SINGNPRM member AOFINIT. It does not conflict with existing status and color definitions.

Examples

```
DCOLOR = WHITE
```

DPFK*nn*

Purpose

The DPFK*nn* parameter defines all PF keys unique to a detailed status panel.

Syntax

▶▶─ DPFK *nn*=*command* ─▶◀

Parameters

nn
PF key number. Values can range from 1 to 24. You can modify all PF key definitions.

command
The command executed when the defined PF key is pressed.

Restrictions and Limitations

This parameter must be specified on one line. Continuation lines are not allowed. The total length of the parameter and parameter value specification cannot exceed 72 characters.

PF keys defined by DPFK*nn* statements are only active when the detail panel is displayed and override the default settings defined with the PFK*nn* parameter.

Usage

Table 21 on page 239 shows variables that you can use as part of the command specified on the DPFK*nn* parameter.

Examples

```
DPFK9 = SCREEN VTAMSTAT
```

The following example assigns the SDFCONF command to the PF4 key to delete SDF entries. This is useful because it prompts you for confirmation before performing the actual deletion. If you do not want the prompt panel to appear, then add ",VERIFY=NO" to the end of the SDFCONF command.

Note: VFY can be used as an abbreviation for VERIFY should a parameter length restriction apply.

```
PFK4 = SDFCONF &ROOT,&COMPAPPL,&RV,&SID,&SNODE,&DATE,&TIME,&DA
```

When SDFCONF deletes an exceptional message entry from the SDF control structure it also removes the message from all other interfaces that the message has been sent to, for example, TEP.

DPFKDESC1

Purpose

The DPFKDESC1 parameter defines the first part of the PF key description appearing at the bottom of the detail screen. This text is concatenated with the text defined with the DPFKDESC2 parameter.

Syntax

▶▶─ DPFKDESC1= *text* ─▶◀

Parameters

text

The text of the detail PF key description. The length of text allowed for this parameter depends on the total parameter length limit (72 characters) and the total text length limit defined by DPFKDESC1 and DPFKDESC2 (80 characters). For example, when defining a detail PF key description that is 79 characters long, you can define the first 60 characters of text on DPFKDESC1 and the remainder of the text on DPFKDESC2.

Restrictions and Limitations

- This parameter must be specified on one line. Continuation lines are not allowed. The total length of the parameter and parameter value specification cannot exceed 72 characters.
- The total length of the PF key description defined by DPFKDESC1 and DPFKDESC2 cannot exceed 80 characters.

Examples

```
DPFKDESC1=1=Help 3=Return 4=Delete 6=Roll 7=Up 8=Down
```

DPFKDESC2

Purpose

The DPFKDESC2 parameter defines the second part of the PF key description appearing at the bottom of the detail screen. This text is concatenated with the text defined with the DPFKDESC1 parameter. Note that leading spaces are honored for allowing the text to be displayed right-aligned.

Syntax

```
▶▶─ DPFKDESC2= text ─▶◀
```

Parameters

text

The text of the continued PF key description, begun in a previous DPFKDESC1 statement. The length of the text depends on the length specified on the previous DPFKDESC1 statement, because the total description text defined by DPFKDESC1 and DPFKDESC2 cannot exceed 80 characters.

Restrictions and Limitations

- This parameter must be specified on one line. Continuation lines are not allowed. The total length of the parameter and parameter value specification cannot exceed 72 characters.
- The total length of the PF key description defined by DPFKDESC1 and DPFKDESC2 cannot exceed 80 characters.

Examples

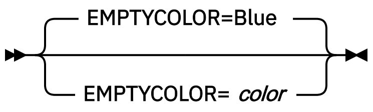
```
DPFKDESC2= 11=Last 12=First
```

EMPTYCOLOR

Purpose

The EMPTYCOLOR parameter defines the color displayed for a status component that has no status descriptor associated with it. This parameter is optional. If it is not coded, the default color is Blue.

Syntax



Parameters

color
The color that is used for the status descriptor. It can be one of the following:

R	Red
P	Pink
Y	Yellow
T	Turquoise
G	Green
B	Blue
W	White

The default is Blue.

Usage

The recommended value for EMPTYCOLOR is Blue. It is supplied in SA z/OS DSIPARM member AOFINIT. It does not conflict with existing status and color definitions. This parameter can be overridden in the AOFTREE member.

Examples

```
EMPTYCOLOR = BLUE
```

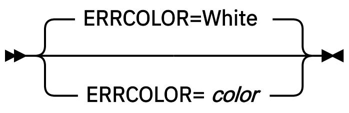
ERRCOLOR

Purpose

The ERRCOLOR parameter defines the color displayed for a status component that does not have a corresponding entry in the SDF tree structure.

This parameter is optional. If it is not coded, the default color is White.

Syntax



Parameters

color
The color that is used for the status component. It can be one of the following:

R
Red

P
Pink

Y
Yellow

T
Turquoise

G
Green

B
Blue

W
White

The default is White.

Examples

```
ERRCOLOR = YELLOW
```

INITSCRN

Purpose

The INITSCRN parameter defines the initial panel displayed by SDF.

Syntax

```
►►─ INITSCRN= panel_name ─►◄
```

Parameters

panel_name
Any valid alphanumeric name with a maximum length of sixteen.

Usage

If you change the name of the initial panel defined in the AOFPNLS member of the NetView DSIPARM data set, you must also change the panel name in the INITSCRN parameter.

Examples

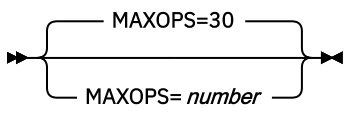
```
INITSCRN = SYSTEMA1
```

MAXOPS

Purpose

The MAXOPS parameter defines the maximum number of logged-on operators that can use the SDF. This parameter is optional. If it is not coded, a program default of 30 is used.

Syntax



Parameters

number
The number of maximum operators. Values can range from 1 to 999. The default is 30.

Usage

If the number of operators trying to use the SDF is more than the number defined in MAXOPS, additional operators are denied access to the SDF, because the dynamic update facility keeps an internal count of logged-on operators.

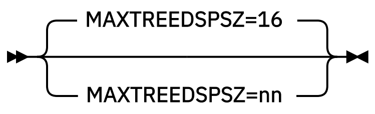
Examples

```
MAXOPS = 35
```

MAXTREEDSPSZ

Purpose

The parameter defines the maximum size of the data space for holding status component information. For calculating the required size in your environment refer to "Calculating the Data Space Size" on page 220. A simple approach is to specify the size of your installation limit. As the data space is initially allocated with 2 MB, it can grow as needed.



Parameters

nn
The maximum size of the data space in MB. The value can range from 4 to 2047. The default value is 16.

Restrictions and Limitations

The size will be reduced to the size of your installation limit if MAXTREEDSPSZ defines a larger value.

Examples

```
MAXTREEDSPSZ=4
```

PFK*nn*

Purpose

The PFK*nn* parameter defines the default PF key settings for SDF panels.

Syntax

►► PFK*nn*=*command* ►◄

Parameters

nn
: Values can range from 1 to 24.

command
: The command issued when the defined PF key is pressed.

Restrictions and Limitations

This parameter must be specified on one line. Continuation lines are not allowed. The total length of the parameter and parameter value specification cannot exceed 72 characters.

Usage

Table 21 on page 239 shows the variables that can be used as part of the command specified on the PFK*nn* parameter.

Examples

To issue `MVS D A,TSO` when PF4 is pressed with the cursor placed on the TSO entry on the status screen:

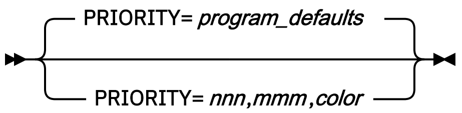
```
PFK4 = MVS D A,&INFO
```

PRIORITY

Purpose

The PRIORITY parameter defines the relationship between colors and priority ranges. This parameter is optional. If it is not coded, program defaults are used.

Syntax


PRIORITY= *program_defaults*

PRIORITY= *nnn*,*mmm*,*color*

Parameters

nnn
: The lower limit of the priority range. It can be any valid number between 001 and 99999999.

mmm
: The upper limit of the priority range. It can be any valid number between 001 and 99999999. It must be equal to or greater than the value specified in *nnn*.

color
: The color that is used for a particular priority range. It can be one of the following:

  R
  : Red

  P
  : Pink

Y	Yellow
T	Turquoise
G	Green
B	Blue
W	White

program_defaults
These are:

Priority Range	Color
001–199	RED
200–299	PINK
300–399	YELLOW
400–499	TURQUOISE
500–599	GREEN
600–699	BLUE

Restrictions and Limitations

- This parameter must be specified on one line. Continuation lines are not allowed. The total length of the parameter and parameter value specification cannot exceed 72 characters.
- In the AOFINIT member, if the number of PRIORITY parameters defining priority and color ranges (see "PRIORITY" on page 211) exceeds the default PRITBLSZ parameter value of 7 (see "PRITBLSZ" on page 213), the DCOLOR parameter must follow the PRITBLSZ parameter.
- Default values for priorities and colors are used if and only if no PRIORITY parameters are defined. If you choose to customize any priority and color definitions, you must specify all priority and color definitions in AOFINIT, rather than customizing the one priority and color definition and using the defaults for the remaining definitions.

Usage

It is recommended that you use the priority and color values that are supplied with the SA z/OS DSIPARM member AOFINIT.

Examples

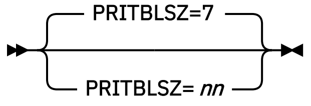
```
PRIORITY = 001,199,RED
PRIORITY = 200,299,PINK
PRIORITY = 300,399,YELLOW
PRIORITY = 400,499,TURQUOISE
PRIORITY = 500,599,GREEN
PRIORITY = 600,699,BLUE
```

PRITBLSZ

Purpose

The PRITBLSZ parameter defines the number of priority and color ranges defined by the PRIORITY entries. This parameter is optional. The default is 7.

Syntax



Parameters

nn

The number of priority and color ranges. It can be any number greater than or equal to 7. The default is 7.

Restrictions and Limitations

In the AOFINIT member, if the number of PRIORITY parameters defining priority and color ranges (see "PRIORITY" on page 211) exceeds the default PRITBLSZ parameter value of 7 (see "PRITBLSZ" on page 213), the DCOLOR parameter must follow the PRITBLSZ parameter.

Usage

The recommended value for PRITBLSZ is 7. It is supplied with the SA z/OS DSIPARM member AOFINIT.

Examples

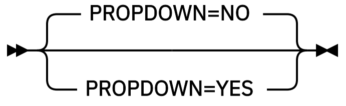
```
PRITBLSZ = 7
```

PROPDOWN

Purpose

The PROPDOWN parameter defines whether status information should be sent down the status tree as a system default or not. This parameter is optional. The default is NO.

Syntax



Parameters

None.

Usage

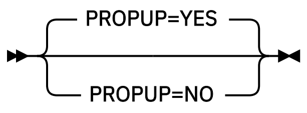
The recommended value for PROPDOWN is NO.

PROPUP

Purpose

The PROPUP parameter defines whether status information should be sent up the status tree as a system default. This parameter is optional. The default is YES.

Syntax



Parameters

None.

Usage

The recommended value for PROPUP is YES.

SCREENSZ

Purpose

The parameter SCREENSZ defines the buffer size as well as the screen size. The screen size is used for verifying panel definitions of panels with an undefined screen size.

The first value of the SCREENSZ parameter defines the screen buffer size. The buffer size must be as large as the largest panel size. The size of each panel can be calculated as follows:

1. Count the number of CELL definitions that fit into the associated BODY section. Repeat this step for each BODY section.
2. Accumulate the counts.
3. Multiply the sum by 17.
4. Add the length of each CELL definition that has been counted in step 1.
5. Count the number of STATUSFIELD, TEXTFIELD, BODYHEADER, and DATETIME definitions.
6. Multiply the count by 13 and add the value to the result of step 4.
7. Add the length of each STATUSFIELD, TEXTFIELD, and BODY definition, and add 17 for DATETIME if defined.
8. Add twice the maximum panel width.
9. Add 32.
10. Round the total size to the next higher multiple of 8.

For example, the screen buffer size of INGPAPL panel is:

2840 for a 24x80 screen

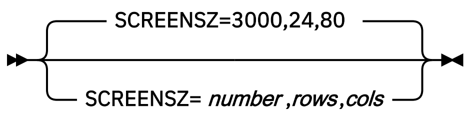
5016 for a 27x132 screen

3960 for a 32x80 screen

5104 for a 43x80 screen

15960 for a 62x160 screen

Syntax



Parameters

number
Buffer size value. Values can range from 3000 to 99999. The default is 3000.

rows
The minimum number of rows. Values can range from 24 to 62. The default is 24.

cols
The minimum number of columns. Values can range from 80 to 160. The default is 80.

Usage

The buffer is allocated using the NetView service DSIGET with the parameters MAINTSK=YES, Q=NO, and SP=0. For performance reasons, the buffer is NOT checked against an overflow. In case of an buffer overflow, unpredictable results may occur.

Examples

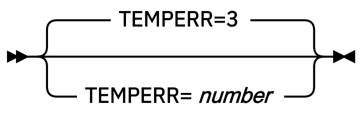
```
SCREENSZ = 6000,43,80
```

TEMPERR

Purpose

The TEMPERR parameter defines the maximum number of temporary input/output errors when trying to display an SDF panel. This parameter is optional. The default is 3.

Syntax



Parameters

number
Values can range from 3 to 99. The default is 3.

Usage

The recommended value for TEMPERR is 3. It is supplied with the SA z/OS DSIPARM member AOFINIT.

Examples

```
TEMPERR = 3
```

Priority and Color Default Assignments

In SDF and the DISPSTAT command dialog, subsystems appear in different colors that indicate their status. The condition of WTORs, application groups (APGs), monitor resources (MTRs), tapes requests, TWS automation messages and gateways are also indicated by color.

You can modify the default assignments when you define your SA z/OS policy. Refer to the "Status Display Entry Type" in *IBM System Automation for z/OS Defining Automation Policy* for how to change the default assignments or to define your own status values.

Some of the default assignments show the value 'NOADD' in the field 'Req'. This means that the component with the corresponding status is not added to the SDF chain.

Note: Combining NOADD with 'Clear=Y' causes the component to be removed from the SDF display when this status is reached.

Subsystem

The color and highlighting of a subsystem in SDF indicate the current status of a subsystem (the possible status conditions are defined in "Automation Agent Statuses" in *IBM System Automation for z/OS User's Guide*).

Table 9 on page 216 shows the default color and highlighting that is assigned to each status by SA z/OS. White is also used by default to identify status components without a tree structure. These colors may have been changed for your SDF display.

Blinking as a means of highlighting is not used by every type of display, in particular when you are using 3270 terminal emulation on a PC. You may see another type of highlighting, for example, black text on a white background.

Table 9. Default Subsystem Status Colors and Priorities

Status	Priority	Color	Highlight
BROKEN	120	Red	Reverse
BREAKING	130		Blinking
STOPPED	140		Normal
HALFDOWN	220	Pink	Normal
STARTED2	230		Blinking
STUCK	240		Underline
ZOMBIE	250		Reverse
ABENDING	320	White	Reverse
HALTED	330		Underline
STOPPING	420	Yellow	Reverse
AUTOTERM	430		Normal
ENDING	440		Underline
RUNNING	520	Turquoise	Blinking
ACTIVE	530		Reverse
STARTED	540		Underline
RESTART	550		Normal
EXTSTART	550		Blinking

Table 9. Default Subsystem Status Colors and Priorities (continued)

Status	Priority	Color	Highlight
UP	640	Green	Normal
ENDED	650		Underline
DOWN	730	Blue	Underline
AUTODOWN	740		Normal
INACTIVE	740		Normal
CTLDOWN	750		Reverse
MOVED	760		Reverse
FALLBACK	770		Normal

Each automation status is assigned a priority number that SDF uses to determine what color to display if there are multiple status conditions present in a system. The status conditions are listed in Table 9 on page 216 in order of descending priority, that is, statuses listed first have higher priorities, and their color is displayed.

Gateway

In addition to displaying the status of subsystems, SDF uses colors to show the status of gateway sessions.

The following list explains what the gateway colors indicate:

Table 10. Table of Default Gateway Status Colors and Priorities

Status	Priority	Color	Highlight	Clear
COMMLOST	110	Red	Reverse	Y
COMMACT	640	Green	Normal	Y,RV*
COMMNACT	730	Blue	Normal	Y,RV*

A gateway session has an initial status of UNKNOWN, which corresponds to the SDF status COMMNACT. This status is not changed until the remote NetView could be contacted.

When a gateway session is terminated because one of the involved NetViews has terminated, the SDF status is changed to COMMNACT. However, if the gateway session was using non-XCF communication and the terminated NetView did not issue the **CLOSE NORMAL** command first, the SDF status is turned to COMMLOST. Only the **CLOSE NORMAL** command results in message DSI122I on the remote NetView, indicating an orderly shutdown of the NetView.

Spool

SDF uses the following colors to show the status of spools.

Table 11. Table of Default Spool Status Colors and Priorities

Status	Priority	Color	Highlight	Clear	Req
SPLFULL	150	Red	Normal	Y,RV	–
SPLSHORT	450	Yellow	Normal	Y,RV	–
SPLOK	550	Green	Normal	Y	–
SPLGONE	550		–	Y,RV	NOADD

WTOR

SDF also uses colors to show what type of WTOR each displayed WTOR is, based on classifications that have been specified using the customization dialog.

See the Chapter "WTOR Processing" in *IBM System Automation for z/OS Customizing and Programming* for more details.

Table 12. Table of Default WTOR Status Colors and Priorities

Status	Priority	Color	Highlight	Clear	Req
CWTOR	50	Red	Normal	Y	–
IWTOR	250	Pink	Normal	Y	–
UWTOR	450	Yellow	Normal	Y	–
NWTOR	550	Green	Normal	Y	–
RWTOR	750	Green	–	Y,RV	NOADD

Monitor Resource

SDF uses the following colors to show the status of monitor resources (MTRs).

Table 13. Table of Default Monitor Resource Status Colors and Priorities

Status	Priority	Color	Highlight	Clear
FATAL	110	Red	Reverse	Y,RV*
CRITICAL	140		Normal	Y,RV*
MINOR	410	Yellow	Blinking	Y,RV*
WARNING	450		Normal	Y,RV*
FAILED	550	Turquoise	Normal	Y,RV*
NORMAL	650	Green	Normal	Y,RV*
UNKNOWN	730	Blue	Normal	Y,RV*

Captured Message

Captured exceptional messages that are shown in SDF have the following status definitions:

Table 14. Table of Default Captured Message Status Colors and Priorities

Status	Priority	Color	Highlight	Clear	Req
CMSG	50	Red	Normal	Y	–
IMSG	250	Pink	Normal	Y	–
UMSG	450	Yellow	Normal	Y	–
DELETE	750	Green	–	Y	NOADD

TWS Automation

TWS automation messages that are shown in SDF have the following status definitions:

Table 15. Table of Default TWS Automation Status Colors and Priorities

Status	Priority	Color	Highlight	Clear	Req
OPCERR	190	Red	Normal	Y	–
BTCHEND	750	Green	–	Y,RV*	NOADD

Groups

Groups that are shown in SDF have the following status definitions:

Table 16. Table of Default Group Status Colors and Priorities

Status	Priority	Color	Highlight	Clear
APG_PROB	150	Red	Normal	Y,RV*
APG_ERR	450	Yellow	Normal	Y,RV*
APG_OK	650	Green	Normal	Y,RV*
APG_DOWN	750	Blue	Normal	Y,RV*

Processor Operations

Processor Operations (ProcOps) elements that are shown in SDF have the following status definitions.

Note: To avoid any conflict with other status elements each ProcOps status element begins with the # (hash) sign.

Table 17. Table of Ensemble Status Colors and Priorities

Status	Priority	Color	Highlight	ProcOps Ensemble Status
#SESSPRB	140	Red	Normal	SESSION PROBLEM
#SUSPEND	250	Pink	Normal	SUSPENDED
#DORMANT	350	White	Normal	DORMANT
#CONNECT	380	White	Normal	CONNECTING
#CLOSED	450	Turquoise	Normal	CLOSED
#ACTIVE	550	Green	Normal	ACTIVE
#UNKNOWN	680	Blue	Normal	UNKNOWN

Table 18. Table of Processor Status Colors and Priorities

Status	Priority	Color	Highlight	ProcOps Processor Status
#PROBLEM	120	Red	Reverse	LPAR DEFINITION PROBLEM
#PROBLEM	120	Red	Reverse	TARGET HARDWARE PROBLEM
#SERVREQ	220	Pink	Normal	SERVICE REQUIRED
#SUSPEND	250	Pink	Normal	SUSPENDED
#PORREQ	320	Yellow	Normal	POWER-ON-RESET REQUIRED

Table 18. Table of Processor Status Colors and Priorities (continued)

Status	Priority	Color	Highlight	ProcOps Processor Status
#SERVICE	330	Yellow	Normal	SERVICE
#DEGRAD	340	Yellow	Normal	DEGRADED
#POWSAV	420	Turquoise	Normal	POWER SAVE
#ACTIVE	550	Green	Normal	OK
#ACTIVE	550	Green	Normal	OPERATING
#POWOFF	600	Blue	Normal	POWERED OFF
#UNKNOWN	680	Blue	Normal	UNKNOWN

Table 19. Table of LPAR Status Colors and Priorities

Status	Priority	Color	Highlight	ProcOps LPAR Status
#DISWAIT	110	Red	Blink	DISABLED WAIT
#CRIALRT	150	Red	Normal	SERIOUS ALERT
#LOADERR	160	Red	Normal	LOAD FAILED
#DCCF	170	Red	Normal	DCCF
#NOTOPER	240	Pink	Normal	NOT OPERATING
#SUSPEND	250	Pink	Normal	SUSPENDED
#CLOSED	450	Turquoise	Normal	CLOSED
#INITIAL	540	Green	Normal	INITIALIZED
#IPLCOMP	550	Green	Normal	IPL COMPLETE
#INACTIV	650	Blue	Normal	NOT ACTIVE
#UNKNOWN	680	Blue	Normal	UNDECIDABLE
#UNKNOWN	680	Blue	Normal	UNKNOWN

Config Refresh Monitoring

The configuration status of the agents that are shown in SDF have the following status definitions:

Table 20. Table of Config Refresh Monitoring Agent Statuses

Status	Priority	Color	Highlight	Clear
CFG_PROB	100	Red	Reverse	Y,RV*
CFG_REFR	450	Yellow	Normal	Y,RV*
CFG_COMP	650	Green	Normal	Y,RV*

Calculating the Data Space Size

The tree structure implemented by SDF consists of the following elements:

SC
Status Component element.

SCD
Status Component Descriptor element.

SCDC
Status Component Descriptor Chain element.

The sample members INGTALL w/o GDPS and INGTCFG.

```
1 &SDFROOT.
 2 APPLS
  3 SUBSYS
 2 APG
  3 GROUPS
 2 MONITOR
 2 WTOR
 2 CPMSGS
 2 GATEWAY
 2 TAPE
 2 TWS
  3 OPCERR

1 INGCFG
 2 &SDFCsaplex.
  3 AGENT
```

each defining a tree structure with a depth of three. When GDPS is installed the maximum depth of the sample member INGTALL is five. Note that the depth means the actual depth of the tree rather than the largest number that is specified in front of a node.

Assuming you have defined two names in the AAO globals AOF_AAO_SDFROOT.* and three subplex names in the globals AOF_AAO_SDFCSAPLEX* the total number of SCs in the sample above is 31 (= 2 * 12 + 1 + 3 * 2 = 2 system names * 12 status components in first tree + 1 static status component in the second tree + 3 subplex names * 2 status components). Each request that is processed by AOCUPDT with the option SDFUPDT=YES (default) deletes the old entry if any exists and creates an SCD entry that is first chained to its corresponding node. The SCD is then chained to all parent nodes in the hierarchy and/or to all child nodes in the hierarchy depending on the values of the keywords PROPUP (default=YES) and PROPDOWN (default=NO) which are defined in the member AOFINIT. For example, updating the status of the application TSO using the command AOCUPDT first deletes the corresponding SCD including "all" related SCDCs before one SCD and three SCDC entries are created. One SCDC entry is then chained to SUBSYS, one to APPLS and one to the root status component.

For calculating your maximum size of the data space, you should review the subsequent information.

SC	128	bytes
SCD	1.024	bytes
SCDC	32	bytes

The initial size of the data space is 2MB, the minimum is 4MB, and the default maximum size is 16MB. You may specify up to 2047MB in the member AOFINIT.

The maximum size will not exceed your installation, even if specified larger. Note that you cannot specify less than the minimum size. 8K of the data space are reserved for other information than status component elements. The number of blocks initially allocated for each element are:

SC	51	=	1.632	entries
SCD	397	=	1.588	entries
SCDC	62	=	7.936	entries

If the space of one element is exhausted, the following number of blocks (1 block = 4KB) will be allocated unless the data space has no more space.

SC	4	=	128	entries
SCD	32	=	128	entries
SCDC	5	=	640	entries

When the number of incremental blocks cannot be allocated but the data space has not reached its maximum size, just one block will be allocated.

Chapter 6. SDF Definition Statements

The status display facility (SDF) provides a display of automated systems and resources using assigned status colors. An operator monitors the status of automated systems and resources by viewing the SDF main panel.

Typically, an application shown in green on an SDF status panel indicates the application is up, while red indicates the application is stopped or in a problem state. Operators can use the SDF to monitor the system and decide what actions to take when problems occur.

See *IBM System Automation for z/OS Defining Automation Policy* for information on how to define the SDF in the customization dialogs. You only need to change these entries if you use values other than the SA z/OS-provided defaults.

The subsequent panel definition statements let you define status component panels only. A detail status panel is always generated by SDF with the screen size 24x80.

Attention: Using a single quote as a parameter requires you to specify it as four single quotes. Furthermore, when a single quote is part of a string it must be replaced by two single quotes. Or, when used as a string delimiter, the string or each partial string, if the string is spread over two or more lines, must be enclosed in single quotes. Otherwise, unpredictable results occur.

AOFTREE

Purpose

AOFTREE is a NetView DSIPARM member containing tree structure definitions, or referencing other tree structure definition members by using %INCLUDE statements. The tree structure definitions specify the propagation hierarchy that is used for status color changes. Note that AOFTREE must not contain any variable that is subject to replication.

The tree definitions allow non-unique component names at the lowest tree level as long as this level does not immediately follow the root level. Since SDF can only work with unique names it will automatically expand the tree definitions to make any non-unique entry unique. This is accomplished by appending the name of the parent component to the non-unique component name. However, you can specify your own name when it is not the root name and when it is defined in the hierarchy from the root to the status component. Refer to "AOCUPDT" on page 46 on how to modify the status of a non-unique entry.

Like the variable &SDFROOT. which enforce SDF to replicate a complete tree definition as may times as it finds different values in the corresponding common globals you may also use variables for defining component names to enforce SDF to replicate sub-trees. Each variable should be defined in the CNMSTYLE sheet when the variable must be resolved at SDF initialization time and must begin with &SDFC and end with a period. The characters in between must follow the NetView rules of defining common globals. The substitution values are defined by a stem using the following syntax:

```
COMMON.AOF_AAO_SDFCxxx.0 = n
COMMON.AOF_AAO_SDFCxxx.n = value_1 value_2...
:
```

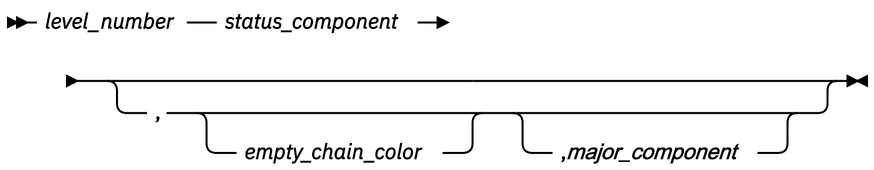
where *n* must be a natural number greater than 0. Otherwise, SDF ignores the sub-tree definition.

Refer to "Config Refresh Monitoring" in *IBM System Automation for z/OS User's Guide* for a usage example.

Note that AOFTREE must not contain any variable that is subject to replication (see "SDF Tree Structure Definitions" on page 248).

Syntax

Each tree structure definition entry must be in the following format:



Parameters

level_number

The level number assigned to each component in the tree structure. It can be any valid number between 1 and 9999. A tree structure must start with the root as level number 1.

If a level number is less than that of the preceding status component, the level number that is used must be defined in the tree structure as a superior node to that status component. For example, the following tree structure definition is *incorrect:*

```
1 SY1
  3 APPLIX
 2 GATEWAY
```

Multiple roots can be defined in the same member, using 1 as the level number.

status_component

The status component that is associated with the *level_number*. It can be any application or subsystem that status information is to be displayed for. System symbols are supported for the status component name. This can help reduce both customization work and errors.

Uses the subsystem entry name as defined in the automation control file. The status component entry for the root must match the SDFROOT value specified on the SA z/OS Environment Setup panel in the customization dialogs that define the current automation policy.

empty_chain_color

The color that a status component is displayed in on the SDF status panel if no status descriptor is associated with a status component. It can be one of the following:

R
Red

P
Pink

Y
Yellow

T
Turquoise

G
Green

B
Blue

W
White

This entry is optional. If it is not coded, the value specified for the SDF initialization parameter EMPTYCOLOR in member AOFINIT is used. See "EMPTYCOLOR" on page 207 for more details.

major_component

The major component that makes the status component unique in case the status component is defined more than once in the tree.

The major component will automatically be assigned by the command SDFTREE or when SDF processes the NetView DSIPARM member AOFTREE. In both cases the parent component name will be assigned. You may define a different name. But, it cannot be the root name and it must be a name in the hierarchy from the root to the status component.

Usage

SA z/OS uses the following status components:

BATCH
Batch job related events

CPMSGS
Exceptional messages

GATEWAY
Gateway events

GROUPS
APG resources

MONITOR
MTR resources

OPCERR
TWS events

SPOOL
Spool events

SUBSYS
APL resources (subsystems)

TAPE
Tape-related events

TSOUSERS
TSO users

WTOR
WTOR messages

Processor Operations related status components

ENS
zEnterprise® ensemble resources

TGT
LPAR resources

THW
Processor resources

When creating tree structure definitions, consider the following:

- Level numbers define the order of dependence. As an example, in "Examples" on page 225, AOFAPPL is defined to depend on AOFSSI because AOFAPPL relies on AOFSSI for its message traffic. With propagation, any AOFSSI status change is reflected on both AOFAPPL and SY1 status components.
- Duplicate status components in the same tree structure should not be used.
- Not all status components defined in a tree structure require a corresponding panel entry. That is, you can define entries in a tree structure that do not have a corresponding panel display. However, every panel should have a corresponding entry in the tree structure.
- To avoid addressing conflicts, each root name must be unique. SDF addresses each status component defined in the tree structure as `root_component.status_component`

Examples

This example defines two separate tree structures, SY1 and SY2, representing two different MVS systems. SY1 is the focal point and SY2 is the target system.

Figure 12 on page 226 and Figure 13 on page 226 show the tree structures that must be defined in the tree structure definition member for SY1.

Note: /* denotes a comment field.

```
/* TREE STRUCTURE FOR SYSTEM SY1
1 SY1
 2 SUBSYS
  3 AOFAPPL
   4 AOFSSI
  3 JES2
   4 SPOOL
  3 VTAM
  3 RMF
```

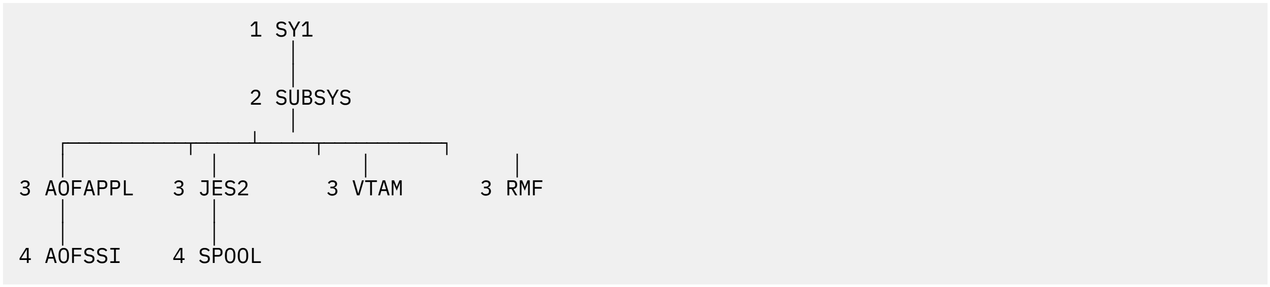


Figure 12. Example Tree Structure Definitions: System SY1

```
/* TREE STRUCTURE FOR SYSTEM SY2 ON SY1
1 SY2
 2 SUBSYS
  3 AOFAPPL
   4 AOFSSI
  3 JES2
   4 SPOOL
  3 VTAM
  3 RMF
  3 TSO
```

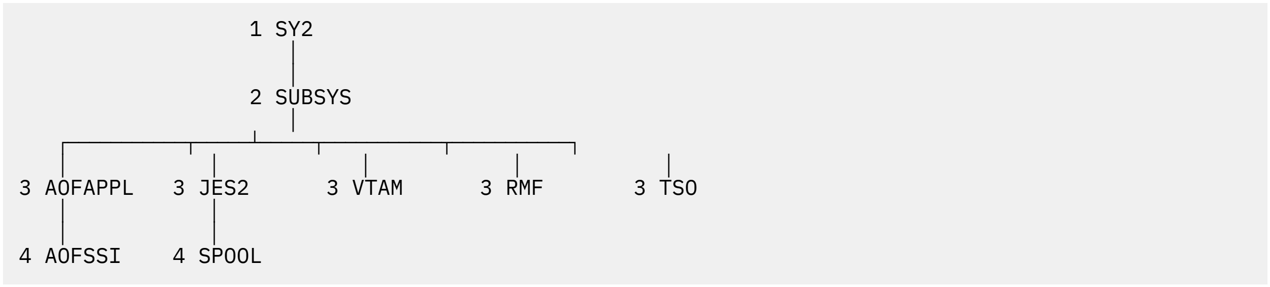


Figure 13. Example Tree Structure Definitions: System SY2

These tree structures are referenced in the AOFTREE member on SY1 by the following %INCLUDE statements:

```
%INCLUDE(SY1TREE)
%INCLUDE(SY2TREE)
```

The AOFTREE member in system SY2 contains only a %INCLUDE statement referencing the tree structure for SY2.

Both tree structures start with level number 1. While the tree structures have unique root names, they can have similar status component names, such as JES2, and TSO. The corresponding settings for the root component can be defined in the system policy and SYSTEM INFO definitions.

The next example defines a tree structure that will automatically be expanded by SDF if the common globals are defined properly. Otherwise, SDF will ignore the definitions.

```
/* TREE STRUCTURE FOR CONFIG INFO OF SAPLEXES
1 SYSPLEX
 2 SDFC&XXX.
  3 CONFIG
```

Assuming the CNMSTYLE sheet defines the following common globals··

```
COMMON.AOF_AAO_SDFCXXX.0 = 4
COMMON.AOF_AAO_SDFCXXX.1 = KEY1PLEX KEYAPLEX
COMMON.AOF_AAO_SDFCXXX.4 = AOCAPLEX
```

SDF will expand the definitions to··

```
1 SYSPLEX
 2 KEY1PLEX
  3 CONFIG,,KEY1PLEX
 2 KEYAPLEX
  3 CONFIG,,KEYAPLEX
 2 AOCAPLEX
  3 CONFIG,,AOCAPLEX
```

This allows the configuration status of each system in the sysplex to be shown on the "SAplex" level as follows··

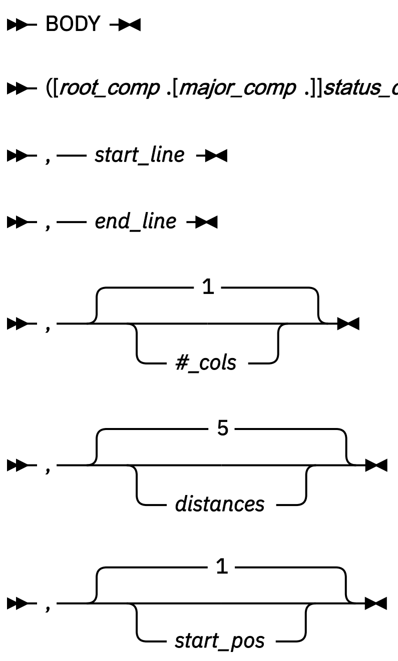
```
AOCUPDT SYSPLEX.KEY3/KEY1PLEX.CONFIG STATUS=...
AOCUPDT SYSPLEX.KEYB/KEYAPLEX.CONFIG STATUS=...
AOCUPDT SYSPLEX.AOCA/AOCAPLEX.CONFIG STATUS=...
```

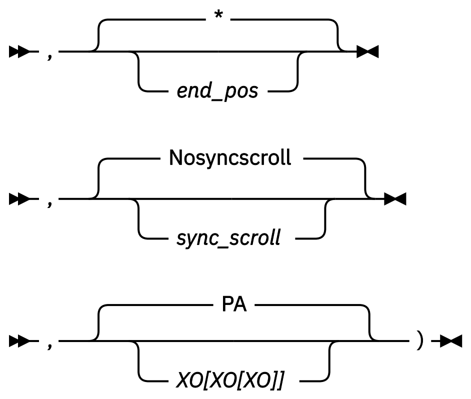
BODY

Purpose

The BODY statement is used to define the section in the panel that can be used by SDF to display the various status components listed in the order of their priority, as well as the layout of the table.

Syntax





Parameters

root_comp
The root component name as defined in the root node of the tree structure. The root component must be coded when more than one tree has been defined and the status component is defined in multiple trees. Because the root component is always unique, each status component in a tree structure can be uniquely identified using the root component as a prefix.

major_comp
The major component name as defined in the AOFTREE member. The major component must be coded when the status component is not uniquely defined within a tree. Refer to AOFTREE on how to define the major component name that the status component can be uniquely identified.

status_comp
The name of the status component as defined in the AOFTREE member. The maximum length is 16 characters.

start_line
The line number where the body section begins. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation if `*-n` where *n* is the displacement from the bottom line.

end_line
The last line of the body section. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the bottom line.

The resulting value must be in the range specified in the *length* parameter in the PANEL definition statement (see "PANEL" on page 237) and must not be less than *start_line*.

#_cols
Specifies the number of columns to be generated. The default is 1.

This variable can also be asterisk (*). In this case, SA z/OS attempts to fill the entire BODY width with columns. This is only useful when the panel width is *.

distance
Specifies the distance between columns. The default is 5.

start_pos
Specifies the column number where the body section begins. The default is 1. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the rightmost column.

The resulting value must be in the range specified in the *width* parameter in the PANEL definition statement (see "PANEL" on page 237) minus the length of this body and must not be greater than *end_pos*.

end_pos

Specifies the column number where the body section ends. The default is the screen width. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*` or `*-n` where *n* is the displacement from the rightmost column.

sync_scroll

Specifies whether BODYs that show different information of the *same* status component should be scrolled synchronously when either BODY section is being scrolled. The parameter can be one of the following:

N

No synchronous scrolling takes place (default).

S

All BODY sections displaying information of the same status component and have set this parameter are scrolled synchronously when either BODY section is scrolled.

XO

Specifies whether the CELLs of the BODY are sorted or not. The default specification PA indicates no sorting. Up to three sort fields can be specified. Each sort field consists of the type of information followed by the sort order:

X

denotes the type of information to be sorted.

See "STATUSFIELD" on page 240 for the list of valid types.

O

denotes the sort order, *A* for ascending and *D* for descending.

Note that a sort field does not necessarily be defined in a CELL statement.

Note: Since sorting needs serialization a huge amount of updates of a status component being displayed may lead to performance degradation.

Restrictions and Limitations

The distance between two columns appears one character more than as specified. This is caused by a 'START FIELD' order which terminates each cell.

You can specify up to 32 BODY sections per panel.

If two BODY definitions of a panel display the same status component, the sort specification of the first BODY definition is being used.

The root component name cannot be used for sorting.

Examples

The examples below assume a 43x80 screen size. The next example shows the definition that is needed for a Subsystem Status display where the panel body starts at line 4 and runs to line 39. The section begins at column 1 and ends at column 80. The panel layout is 2 columns. The CELLs are sorted in ascending order by priority and then by the name of the status component.

```
BODY(&SDFROOT..SUBSYS,04,*-4,2,2,,,,PACA)
```

This example shows the definition that is needed for a Monitor Status display where the panel body starts at line 23 and runs to line 40. The section begins at column 41 and ends at column 80. The panel layout is as many columns as fit in 40-character width.

```
BODY(&SDFROOT.MONITOR,*-20,*-3,*,1,41,*)
```

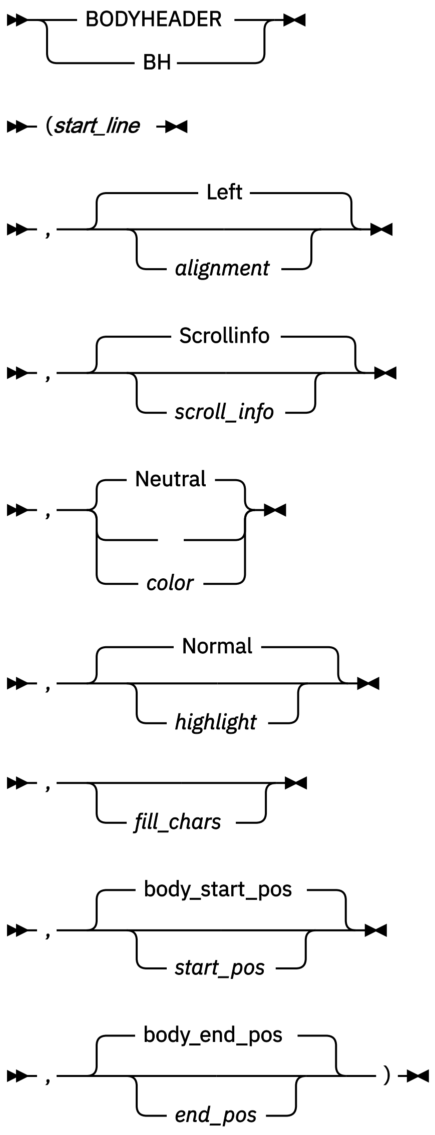
BODYHEADER

Purpose

The BODYHEADER statement is used to define a descriptive header and the scrolling information of the body section. The length of the header is implicitly defined by the body width.

Note: The scrolling information is only displayed when the header is long enough to show the complete information, that is, "ƀnn/nnn(nnn)". It may overwrite the title defined by BODYTEXT.

Syntax



Parameters

start_line
The line number that the header should be displayed on. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the bottom line.

alignment
The justification of the text specified in the corresponding BODYTEXT statement. It can be one of the following:

C
Center

L
Left (default)

scroll_info
Specifies whether scroll information is displayed or not. It can be one of the following:

S
Scroll information is displayed right-justified at the end of the header line (default).

N
No scroll information is displayed.

color
The color that the text specified in the corresponding BODYTEXT statement is displayed in. It can be one of the following:

B
Blue

G
Green

N
Neutral (=White)

P
Pink

R
Red

T
Turquoise

W
White

Y
Yellow

highlight
Specifies the type of highlighting to be used for information units of the status component. The value can be one of the following:

N
Normal (default)

B
Blink

R
Reverse

U
Underscore

fill_chars
You can specify a string of up to 6 characters that replaces the spaces in the header line.

start_pos
Specifies the column number where the header line begins. The default is the start column of the body section. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the

rightmost column. The resulting value must be in the range specified in the *width* parameter in the PANEL definition statement (see “PANEL” on page 237) and must not be greater than *end_pos*.

end_pos
: Specifies the column number where the header line ends. The default is the end column of the body section. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*` or `*-n` where *n* is the displacement from the rightmost column.

Restrictions and Limitations

Not more than one header can be specified per body.

This statement must follow its associated 'BODY' definition statement.

Examples

This example defines the header line being on line 3. The title is centered and supplemented with scroll information on the right side. Spaces are replaced by hyphens. The whole text is displayed in turquoise, and uses reverse highlighting.

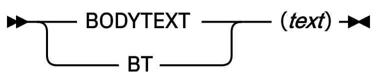
```
BH(03,Center,,Turquoise,Reverse,-)
```

BODYTEXT

Purpose

The BODYTEXT statement defines the text displayed in the panel header line (see “BODYHEADER” on page 230).

Syntax



Parameters

text
: The text displayed in the header line. The length of the text determines the width of the corresponding BODY definition.

Restrictions and Limitations

The total length of the BODYTEXT cannot be exceed the field length defined by the combination of BODY *start_pos* and *end_pos* parameter values.

This statement must follow its associated 'BODY' definition statement.

Usage

To continue a BODYTEXT statement, insert a delimiting comma and leave the remaining columns up to and including column 72 blank. Resume the text definition in column 1 of the following line. See “TEXTTEXT” on page 247 for an example of a continued statement.

Examples

The example shows the definitions that are needed for the Subsystem Status display from "BODY" on page 227.

```
BT(Subsystem Status)
```

CELL

Purpose

The CELL statement is used to define the various information units to be displayed for a status component and their placement in the body section.

Syntax

```
►► CELL ►◄

►► (start_pos ►◄

►► , — end_pos ►◄

►► , — highlight — , ►◄

►► X, ──────────────── , ──────────────── ) ►◄
       └─ start_ofs ─┘     └─ end_ofs ─┘
```

Parameters

start_pos
Specifies the starting position that the status component information unit is to be placed on.

end_pos
Specifies the position where the information unit ends. You can also specify an asterisk (*) to indicate that the information unit ends at the end of the body section.

highlight
Specifies the type of highlighting to be used for this information unit of the status component. The value can be one of the following:

N
Normal

B
Blink

R
Reverse

U
Underscore

The highlight attribute is overwritten by the corresponding attribute of the status component descriptor when specified. Refer to "Priority and Color Default Assignments" on page 216 for the actual highlighting value.

X
Denotes the type of information to be displayed. If omitted, the MVS job name is displayed if the resource is a subsystem or WTOR.

See Table 22 on page 242 for a list of valid types.

start_ofs
Specifies the first character of the data to be moved to the panel field. The default is 1.

end_ofs
Specifies the last character of the data to be moved to the panel field. The default is the length of the field that is represented by the type.

See Table 22 on page 242 for a list of valid types and their maximum length.

To allow for the attribute type that precedes every field, there must be a minimum of two spaces between the ending position of one field and the beginning position of the next. For example, if the end-position of a CELL is in column 10, the start-position of the next CELL must be column 12 or later.

Restrictions and Limitations

- You can specify a maximum of 12 cells.
- A *start_pos* parameter value of 1 is not allowed.

Examples

This example shows the definitions that are needed for the Subsystem Status display from "BODY" on page 227. The gap between the columns is 2 plus the indentation of the first cell, which is 5. There are three information units shown in each column line. The information units are:

- Job name
- Date
- Time

```
CELL(05,12,N)
CELL(14,21,N,D)
CELL(23,30,N,T)
```

DATETIME

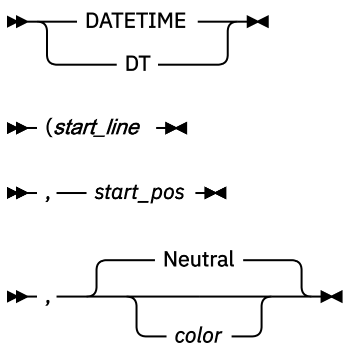
Purpose

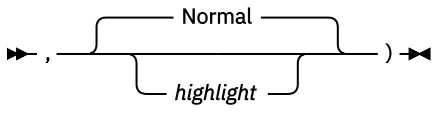
The DATETIME statement defines the location and attributes of the current date and time. When specified, it replaces the date and time displayed on the message line.

The field has a fixed length of 17. The presentation of the date and time values derives from the NetView DEFAULTS templates LONGDATE and LONGTIME.

Syntax

Parameters are positional.





Parameters

start_line
The line number that the field should be displayed on. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the bottom line. The resulting value must be in the range specified in the *length* parameter in the PANEL definition statement (see "PANEL" on page 237).

start_pos
The column number that the field is placed in. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the rightmost column. The resulting value must be in the range specified in the *width* parameter in the PANEL definition statement (see "PANEL" on page 237) minus the length of this field.

color
The color that the date and time are displayed in. It can be one of the following:

R
Red

P
Pink

Y
Yellow

T
Turquoise

G
Green

B
Blue

W
White (=Neutral)

highlight
Determines how the date and time are displayed. It can be one of the following:

N
Normal

B
Blink

R
Reverse

U
Underscore

Restrictions and Limitations

- The length of the field is fixed to 17 characters.
- Not more than one DATETIME field can be specified per panel.

Examples

This example defines the DATETIME field as being on line 1, positioned at the end of the line. The date and time are displayed in white, and use normal highlighting.

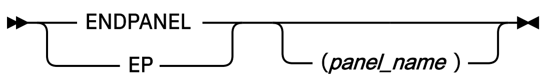
```
DATETIME(01,*-16,WHITE,NORMAL)
```

ENDPANEL

Purpose

The ENDPANEL statement identifies the end of a panel.

Syntax



Parameters

panel_name
The name of the panel. This parameter is optional. If specified, this parameter value must match the name specified on the previous PANEL statement.

Restrictions and Limitations

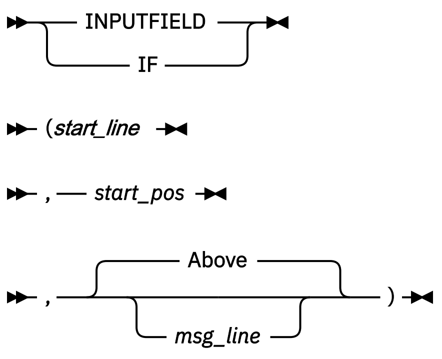
None.

INPUTFIELD

Purpose

The INPUTFIELD (IF) statement defines the location of the input field. Previously, the input field was the penultimate line of the panel. The IF statement gives you the flexibility to place the input field (command line) anywhere in the panel. In addition, it lets you define the message line to be placed below or above the input field.

Syntax



Parameters

start_line
The line number that the input field should be displayed on. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a

notation of `*-n` where *n* is the displacement from the bottom line. The resulting value must be in the range specified in the *length* parameter in the PANEL definition statement (see "PANEL" on page 237).

start_pos
The offset in the specified line where the input fields begins. The value plus the minimum length of the field (see "Restrictions and Limitations" on page 237) must be in the range specified in the *width* parameter in the PANEL definition statement (see "PANEL" on page 237).

msg_line
The position of the message line relative to the input field. The value can be one of the following:

A
Above (default)

B
Below

The input field is automatically terminated by any BODY, DATETIME, STATUSFIELD, or TEXTFIELD statement placed after it, either on the same line or the next.

Restrictions and Limitations

Not more than one input field can be specified per panel.

The minimum length of the input field is 15. The length is composed of the length of the prefix (5), two attributes (2), plus the maximum length of a NetView command name.

Examples

This example shows the definition that is needed for an input field that is 2 lines above the last line:

```
IF(*-2,01)
```

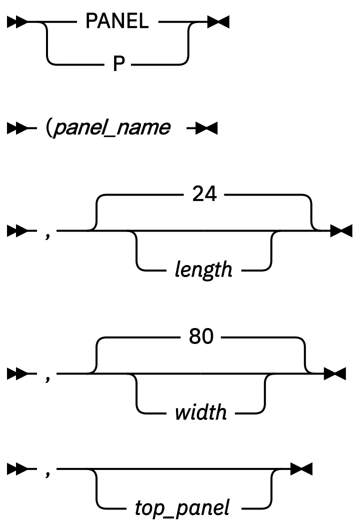
PANEL

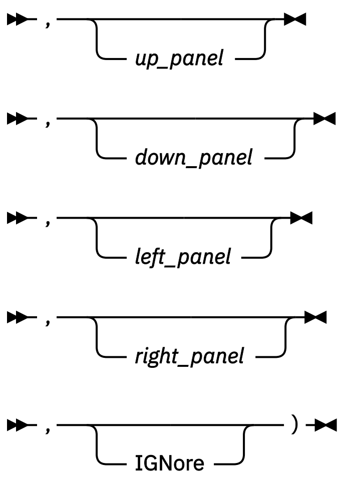
Purpose

The PANEL statement identifies the start of a new panel and its general attributes.

Syntax

Parameters are positional.





Parameters

panel_name
The name of the panel. It can be any panel name up to 16 characters long.

length
The number of lines or rows in the panel. It must be numeric. Supported values are 24, 32, 43, 62, or * (the screen size at logon). The default is 24.

width
The number of columns in the panel. It must be numeric. This can be 80, 132, 160, or * (the screen width at logon). The default is 80.

top_panel
The panel displayed when the TOP PF key is pressed or the TOP command is issued.

up_panel
The panel displayed when the UP PF key is pressed or the UP command is issued.

down_panel
The panel displayed when the DOWN PF key is pressed or the DOWN command is issued.

left_panel
The panel displayed when the left panel PF Key is pressed or the LEFT command is issued. The panel name can be *, allowing vertical scrolling through the displayed information of a body section.

right_panel
The panel displayed when the right panel PF key is pressed or the RIGHT command is issued. The panel name can be *, allowing vertical scrolling through the displayed information of a body section.

IGNore
This option causes SDF to ignore the UP/DOWN command when used in a BODY section.

Usage

- The default initial panel name that is supplied with SA z/OS is SYSTEM. If you change this name, also change the INITSCRN parameter value in the AOFINIT member (see "INITSCRN" on page 209 for details).
- If there is more data than can be displayed on a single screen, you can define continuation panels using the following parameters:
  - *left_panel*
  - *right_panel*
  - *down_panel*

- To continue a PANEL statement on another line after a delimiting comma, leave the remaining columns up to and including column 72 blank. The next positional parameter must begin in column 1 of the following line.

Examples

This example defines SY1SYS as the panel name. The length is 24 lines and the width is 80 characters. The panel named SYSTEM is displayed when the TOP and UP commands are used. No entries are defined for the DOWN, LEFT, or RIGHT commands.

```
PANEL(SY1SYS,24,80,SYSTEM,SYSTEM)
```

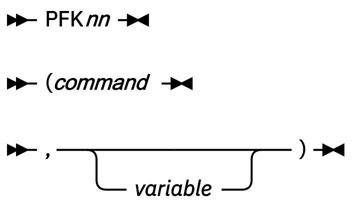
PFK*nn*

Purpose

The PFK*nn* entry defines all PF keys unique to a panel.

The definitions defined by PFK*nn* are only active when the status panel is displayed. They override the default settings defined with the initialization PFK*nn* statement in member AOFINIT (see "PFKnn" on page 239).

Syntax



Parameters

nn
The PF key number. It can range from 1 through 24.

command
The command called when the defined PF key is pressed. If you need to use commas in the command, enclose the entire command string in apostrophes.

variable
Variables can be used as part of the command specified in the PFK*nn* statement. Table 21 on page 239 shows variables that can be used.

Notes:

1. Use of these variables (that is, their appropriate translation from variables to values) is valid on a detail status panel or on a status panel when the cursor is on a status field.
2. The '#' character can be used alternatively instead of the '&' character in order to avoid name clashes with system symbol names.

Table 21. Variables for the PFKnn and DPFKnn parameters

Variable	Translated To
&CO or &COLOR	The color of the detail entry
&COMP or &RESOURCE	The component name
&DA or &DATA or &DISPDETL	The actual message text

Table 21. Variables for the PFKnn and DPFKnn parameters (continued)

Variable	Translated To
&DATE	The date the detail entry was added
&DCOMP	The displayed component name
&HL or &HIGHLITE	The highlight level of the detail entry
&IN or &INFO	Detail entry information displayed on the status panel
&PR or &PRIORITY	The priority of the detail entry
&QCOMP	The component name that the status was queued to by SDF
&RESAPPL or &COMPAPPL	The component name and the alternate component name, if used, to queue the status
&ROOT or &SYSTEM	Root or system
&RV or &REFVALUE	The reference value of the detail entry
&SENDERID or &SID	The name of the reporter submitting the detail entry
&SNODE or &SENDERNODE	The node of the reporter submitting the detail entry
&SO or &SOURCE	The current domain id submitting the detail entry
&SYSDATE	System date
&SYSTIME	System time
&TIME	The time the detail entry was added
&USER, &USR	The user data including any leading blank but truncated after the last non-blank character

Examples

This example results in issuing `MVS D A,TSO` when PF4 is pressed and the cursor is on the TSO entry: `PFK4('MVS D A,&INFO')`

STATUSFIELD

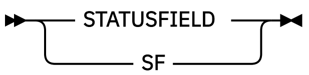
Purpose

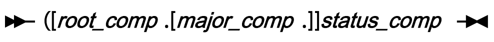
The STATUSFIELD statement defines the location of the status component on a panel and the panels that display when the UP and DOWN commands are used.

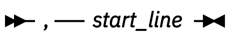
A STATUSFIELD statement is always accompanied by a STATUSTEXT statement (see "STATUSTEXT" on page 244) in a panel definition.

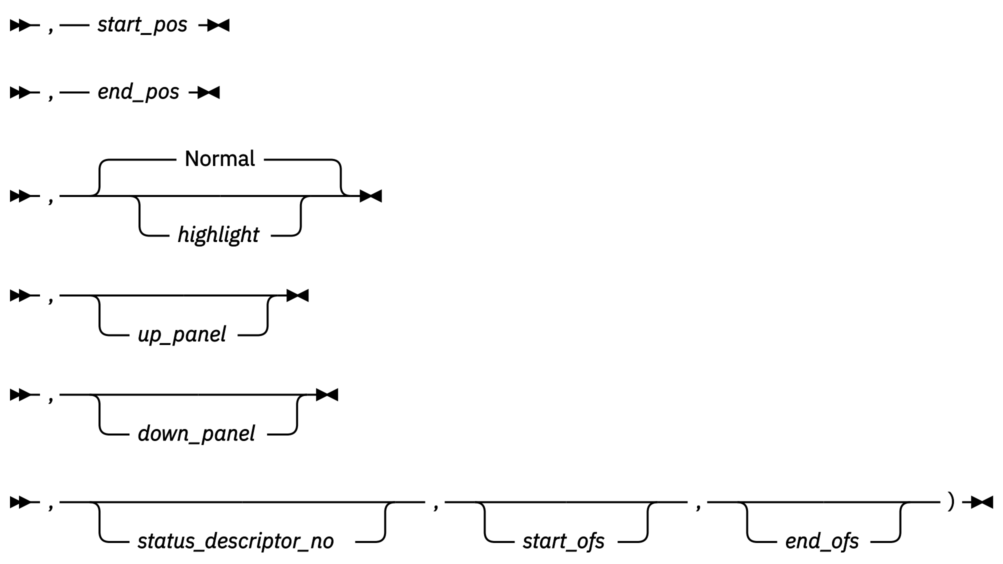
Syntax

Parameters are positional.









Parameters

root_comp
The root component name as defined in the root node of the tree structure. The root component must be coded when more than one tree has been defined and the status component, such as TSO or JES2, is defined in multiple trees. Because the root component is always unique, each status component in a tree structure can be uniquely identified using the root component as a prefix.

major_comp
The major component name as defined in the AOFTREE member. The major component must be coded when the status component is not uniquely defined within a tree. Refer to AOFTREE on how to define the major component name that the status component can be uniquely identified.

status_comp
The status component name as defined in the AOFTREE member. The maximum length is 16 characters.

start_line
The line number that the status component should be displayed on. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation if `*-n` where *n* is the displacement from the bottom line. The resulting value must be in the range specified in the *length* parameter in the PANEL definition statement (see "PANEL" on page 237).

start_pos
The actual column number within the specified *start_line* that the status component is to be placed on. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the right side of the panel. The resulting value must be in the range specified in the *width* parameter in the PANEL definition statement (see "PANEL" on page 237) minus the length of this field and must not be greater than *end_pos*.

There must be a minimum of two spaces between the ending position of one field and the beginning position of the next field to allow for attribute type. For example, if the end-position of a STATUSFIELD is in column 10, the start-position of the next STATUSFIELD must be column 12.

end_pos
The column number that the status component definition ends in. It is governed by the length of text defined in the STATUSTEXT definition. For example, if JES2 is to be defined, the length of the STATUSTEXT is four and the end position is the start position plus three. See "STATUSTEXT" on page 244 for more details. You can specify either the absolute number or use relative addressing based on

the width of the panel. Relative addressing uses a notation of `*` or `*-n` where *n* is the displacement from the rightmost column.

highlight
The type of highlighting that is used on the panel. It can be one of the following:

N
Normal

B
Blink

R
Reverse

U
Underscore

The highlight attribute is overwritten by the corresponding attribute of the status component descriptor when specified. Refer to "Priority and Color Default Assignments" on page 216 for the actual highlighting value.

up_panel
The panel displayed when the UP PF key is pressed.

down_panel
The panel displayed when the DOWN PF key is pressed.

status_descriptor_no
The status descriptor number of the panel. This number specifies the status descriptor displayed in each field. It must be numeric. The default is 0.

A status descriptor number of 0 causes the text as defined in the STATUSTEXT statement for this field (see STATUSTEXT text Parameter) to be displayed with the color and highlighting associated with the first status descriptor chained to the status component. A status descriptor of 1 essentially does the same, except that the status text is replaced by information contained in the first status descriptor chained to the status component. A status descriptor of 2 or higher has the same effect as a value of 1, except that the numbered status descriptor is used rather than the first.

Status descriptors are chained with the status component in ascending order of priority.

The status descriptor number may be prefixed with a letter denoting the type of information to be displayed. If no prefix is supplied, the MVS job name is displayed if the resource is a subsystem or WTOR. Valid prefixes are as follows:

Table 22. Field types and their maximum length

Type	Displays...	Maximum Length
A	The name of the alternate status component prefixed by the name of its major component when applicable	16 or 33
B	The name of the major status component	16
C	The name of the status component	33
D	The date the record was created. The format is derived from NetView DEFAULTS template LONGDATE.	8
M	The associated message text	240
O	The associated user data	240
P	The priority of the record	8
Q	The reference value for the record	40
R	The name of the root component	16

Table 22. Field types and their maximum length (continued)

Type	Displays...	Maximum Length
S	The reporting operator ID	8
T	The time the record was created. The format is derived from NetView DEFAULTS template LONGTIME.	8
U	The number of duplicate records	3
V	The job name or other information about the request	80
W	The full name of the status component which is the name of the status component followed by the value of prefix A enclosed in parentheses.	51 or 68
X	The reporting domain ID	8

start_ofs
Specifies the first character of the data to be moved to the panel field. The default is 1.

end_ofs
Specifies the last character of the data to be moved to the panel field. The default is the length of the field that is represented by the type.

Restrictions and Limitations

A *start_line* and *start_position* parameter value combination of 1,1 is not allowed.

SDF panels that contain STATUSFIELD entries that refer to status descriptors other than the first one may not be updated dynamically if the panel is not made resident either using the SDFPANEL ...,ADD command or during SDF initialization. Automatic updates on dynamically loaded panels may be obtained by coding a dummy panel containing STATUSFIELD entries that refer to the status component with a status descriptor number greater than 1.

At least one undefined (blank) position must be provided immediately preceding a STATUSFIELD. If *start_position* is specified as 1, the last position on the preceding line must not be defined.

Usage

- When designing a panel for any status component, make the end position greater than or equal to the start position. Otherwise, an error condition will occur during SDF initialization.
- To continue a STATUSFIELD statement on another line after a delimiting comma, leave the remaining columns up to and including column 72 blank. The next positional parameter must begin in column 1 of the following line. An example of a continued STATUSFIELD statement is:

```
STATUSFIELD(SY.VTAM,
04,10,13,NORMAL)
```

- For better performance, make sure that every status component referred to in the panel is defined in the corresponding AOFTREE member.

Examples

Example 1

In this example, the status component TSO on SY1 starts on line 4 in column 10, ends in column 13, and has normal highlighting. No entries are defined for the UP or DOWN commands.

```
STATUSFIELD(SY1.TSO,04,10,13,NORMAL)
```

Example 2

In this example, the status component SYSTEM starts on line 2 in column 04, ends in column 06, and has normal highlighting. No entries are defined for the UP panel. Panel SY1SYS is displayed when the DOWN command is issued.

```
SF(SY1.SYSTEM,02,04,06,N,,SY1SYS)
```

Example 3

In this example, three STATUSFIELD entries are defined for the same status component, SY1.GATEWAY. The highest-priority status descriptor is displayed in the first entry, the next highest-priority status descriptor is displayed in the second entry, and so on.

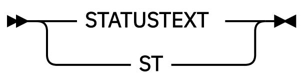
```
SF(SY1.GATEWAY,02,04,06,NORMAL,,,1)
SF(SY1.GATEWAY,03,04,06,NORMAL,,,2)
SF(SY1.GATEWAY,04,04,06,NORMAL,,,3)
```

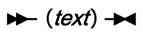
STATUSTEXT

Purpose

The STATUSTEXT statement defines the text data displayed in the STATUSFIELD statement (see "STATUSFIELD" on page 240). This text data is typically the status component name.

Syntax





Parameters

text

The default data displayed for the status component defined in the STATUSFIELD statement. This text can be replaced by text from a status descriptor chained to the status component if the *status_descriptor_number* parameter value on the corresponding STATUSFIELD statement is non-zero. The recommended value is the status component name. For example, for status component SY1.VTAM, specify VTAM for the *text* value. The length of text determines the end position coded in the STATUSFIELD statement.

Restrictions and Limitations

- Each STATUSFIELD statement must have a STATUSTEXT statement associated with it in a panel definition.
- The total length of the STATUSTEXT text cannot exceed the status field length defined by the combination of STATUSFIELD *start_position* and *end_position* parameter values.
- This statement must follow its associated 'STATUSFIELD' definition statement.

Usage

To continue a STATUSTEXT statement, insert a delimiting comma and leave the remaining columns up to and including column 72 blank. Resume the text definition in column 1 of the following line.

Examples

Example 1

The following statement defines status text 1234567890 for a status field:

```
STATUSTEXT(12345,
67890)
```

Example 2

This example defines that IMSCTL on SY2 displays as ACCOUNTS on the status display panel. Any status descriptors added for SY2.IMSCTL are displayed using the ACCOUNTS entry.

Note: The end position in the STATUSFIELD statement reflects the length of ACCOUNTS.

```
STATUSFIELD(SY2.IMSCTL,06,10,17,NORMAL)
STATUSTEXT(ACCOUNTS)
```

TEXTFIELD

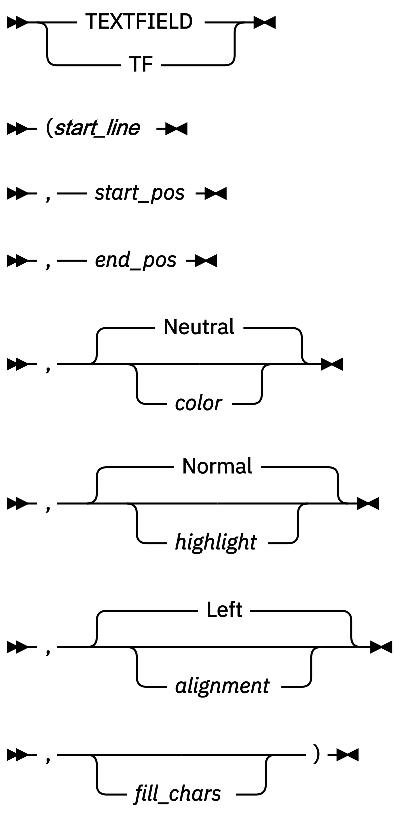
Purpose

The TEXTFIELD statement defines the location and attributes of fields that remain constant on the panels, such as panel headings, field names, and PF key designations.

Each TEXTFIELD statement must have a TEXTTEXT statement associated with it (see "TEXTTEXT" on page 247) in a panel definition.

Syntax

Parameters are positional.



Parameters

start_line
: The line number that the text field should be displayed on. You can specify either the absolute number or use relative addressing based on the bottom line of the panel. Relative addressing uses a notation

if `*-n` where *n* is the displacement from the bottom line. The resulting value must be in the range specified in the *length* parameter in the PANEL definition statement (see "PANEL" on page 237).

start_pos
The actual column number within the specified *start_line* that the text field is to be placed on. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*-n` where *n* is the displacement from the right side of the panel. The resulting value must be in the range specified in the *width* parameter in the PANEL definition statement (see "PANEL" on page 237) minus the length of this field and must not be greater than *end_pos*.

end_pos
The column number that the data specified in entry TEXTTEXT ends in. See "TEXTTEXT" on page 247 for more details. You can specify either the absolute number or use relative addressing based on the width of the panel. Relative addressing uses a notation of `*` or `*-n` where *n* is the displacement from the rightmost column.

color
The color that text specified in the corresponding TEXTTEXT statement is displayed in. It can be one of the following:

R
Red

P
Pink

Y
Yellow

T
Turquoise

G
Green

B
Blue

W
White (=Neutral)

highlight
Determines how the text specified in the corresponding TEXTTEXT statement is displayed. It can be one of the following:

N
Normal

B
Blink

R
Reverse

U
Underscore

alignment
The alignment of the text specified in the corresponding TEXTTEXT statement. It can be one of the following:

C
Center

L
Left (default)

fill_chars
You can specify a string of up to 6 characters that replaces the spaces in the text field.

Restrictions and Limitations

- A *start_line* and *start_position* parameter value combination of 1,1 is not allowed.
- If your text definition for an area of a panel requires more than 72 characters, continue the definition in additional TEXTFIELD and TEXTTEXT statement pairs. See "TEXTTEXT" on page 247 for an example of continuing definitions in additional TEXTFIELD and TEXTTEXT pairs.
- At least two undefined (blank) positions must be provided immediately preceding a TEXTFIELD if it follows a STATUSFIELD. If *start_position* is specified as 1, the last two positions on the preceding line must not be defined.
- At least one undefined (blank) position must be provided immediately preceding a TEXTFIELD if it follows another TEXTFIELD. If *start_position* is specified as 1, the last position on the preceding line must not be defined.

Usage

- When designing a panel, for any TEXTFIELD, make the *end_position* of the TEXTFIELD greater than or equal to the *start_position*. Otherwise, an error condition will occur during SDF initialization.
- To continue a TEXTFIELD statement on another line after a delimiting comma, leave the remaining columns up to and including column 72 blank. The next positional parameter must begin in column 1 of the following line. An example continued TEXTTEXT statement is:

```
TEXTFIELD(01,
25,57,WHITE,NORMAL)
```

Examples

This example defines the TEXTFIELD as being on line 1, starting in column 25, ending in column 57. The text is displayed in white, and uses normal highlighting.

```
TEXTFIELD(01,25,57,WHITE,NORMAL)
```

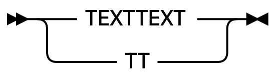
TEXTTEXT

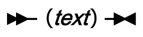
Purpose

The TEXTTEXT statement defines the data displayed in the corresponding TEXTFIELD entry (see "TEXTFIELD" on page 245).

Each TEXTFIELD statement must have a TEXTTEXT statement associated with it in a panel definition.

Syntax





Parameters

text
The data displayed for the TEXTFIELD statement. The length of the data determines the end position coded in the TEXTFIELD entry.

Restrictions and Limitations

The total length of the TEXTTEXT text cannot exceed the text field length defined by the combination of TEXTFIELD *start_position* and *end_position* parameter values.

This statement must follow its associated 'TEXTFIELD' definition statement.

Usage

To continue a TEXTTEXT statement, insert a delimiting comma and leave the remaining columns up to and including column 72 blank. Resume the text definition in column 1 of the following line. See the "TEXTTEXT" on page 247 for an example continued statement.

Examples

Example 1

In this example, "Data center systems" is displayed on the status display panel in white.

```
TEXTFIELD(01,25,57,WHITE,NORMAL)
TEXTTEXT(Data center systems)
```

Example 2

In this example, all PF key settings are displayed on line 24 of the status display panel.

```
TF(24,01,79,TURQUOISE,NORMAL)
TEXTTEXT(PF1=HELP 2=DETAIL 3=END  6=ROLL 7=UP 8=DN    ,
10=LF 11=RT 12=TOP)
```

Example SDF Definition

This section shows an example of defining SDF. This example is not reflected by the SA z/OS DSIPARM member AOFTREE.

In this example, two separate systems (SY1 and SY2) are defined to SDF so that SDF can monitor both systems. The example shows the entries that are required to define and customize SDF, including:

- SDF tree structure definitions
- SDF panel definitions
- SDF initialization parameters in AOFINIT
- SDF Status Details definitions

Notes:

1. This example assumes that SA z/OS focal point services are already implemented so that status can be forwarded from one system to another using notification messages.
2. It is also assumed that the advanced automation option (AAO) common globals AOF_AAO_SDFROOT.n (AOF_AAO_SDFROOT_LIST[n] are deprecated) define the SDF root names that are to be applied (see *IBM System Automation for z/OS Customizing and Programming*). If the common global is not specified SA z/OS will automatically set the global to the local system name.

SDF Tree Structure Definitions

Two tree structure definitions are required to set up the SDF hierarchy for systems SY1 and SY2.

Figure 14 on page 249 shows the tree structure definition for both systems. This tree structure is defined in a NetView DSIPARM data set member named SY1TREE.

```
1 &SDFROOT.
 2 SYSTEM
  3 JES
  3 VTAM
  3 RMF
  3 TSO
  3 AOFAPPL
   4 AOFSSI
  3 APPLIC
   4 SUBSYS
 2 ACTION,GREEN
  3 WTOR,GREEN
 2 GATEWAY
```

Figure 14. SDF Example: Tree Structure Definition for SY1 and SY2

SDF initialization uses the common global `AOF_AAO_SDFROOT.`*n* to generate as many tree structures as system names are found in the global for each structure that starts with `1 &SDFROOT.`.

Figure 15 on page 249 shows the hierarchy of monitored resources defined by the SY1 tree structure.

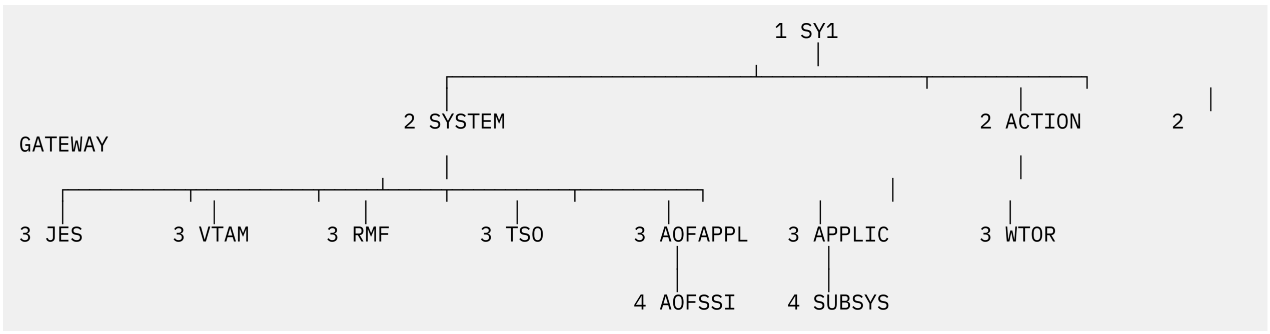


Figure 15. SDF Example: Hierarchy Defined by SY1 Tree Structure

This structure contains specific entries for the major system components, JES, RMF, VTAM, and TSO, as well as NetView (AOFAPPL) and the NetView SSI (AOFSSI). Note that the hierarchy differs from that defined in the SA z/OS automation control file. This is because the operator's view of these subsystems differs from the logical sequence that they are managed in by SA z/OS for startup and shutdown purposes.

The SYSTEM, APPLIC, and ACTION entries are logical, and may be used to view the status of all entries below them in priority order.

The SUBSYS, WTOR, and GATEWAY entries are also logical, and may be used to display the status of SUBSYSTEM, WTOR, and GATEWAY resource types. The status of any subsystem not appearing elsewhere in the tree will be queued under the SUBSYS entry. Similarly, WTORs and gateway status will be queued under WTOR and GATEWAY respectively.

A similar tree structure must be provided for SY2. As both systems are running the same set of base software, the tree structures are identical, except for the root (level 1) name, which will be SY2 rather than SY1. The member holding the tree structure must be defined in the Netview DSIPARM data set on each system. The tree structure is referenced by %INCLUDE statements in the base SDF tree definition member, AOFTREE, as follows:

```
%INCLUDE(SYXTREE)
```

Because SY1 is the focal point system in this example, the global `AOF_AAO_SDFROOT.`*n* on system SY1 must define both systems, SY1 and SY2.

Because our example does not require SY2 to function as a backup focal point system, the global `AOF_AAO_SDFROOT.`*n* system SY2 does not need to be specified.

SDF Panel Definitions

Following are panel definitions for:

- The root component or system panel, named SYSTEM
- The status component panel for system SY1, named SY1

Each panel definition is followed by the screen it defines.

SA z/OS provides samples similar to those described, as well as a sample GATEWAY panel definition for use on SY1.

On system SY1, these panel definitions are referenced by %INCLUDE statements in the main SDF panel definition member, AOFPNLS, as follows:

The GATEWAY, SY1, and SY2 panels must be resident as they contain generic field definitions.

```
%INCLUDE(SYSTEM)
%INCLUDE(GATEWAY)
%INCLUDE(SYX)
```

Root Component Panel Definition

First, the root panel, named SYSTEM, is defined.

Figure 16 on page 250 shows the panel definition statements that define the SYSTEM panel. This panel is the default initial SDF panel as assigned in the SDF initialization parameter member, AOFINIT. Three panels are accessed by pressing the DOWN PF key (PF8), GATEWAY, SY1, and SY2. All status components are prefixed with the root component and are listed in the corresponding tree structure. Each STATUSFIELD (SF) statement is followed by the corresponding STATUSTEXT (ST) statement. Similarly, each TEXTFIELD (TF) statement is followed by the corresponding TEXTTEXT (TT) statement.

```
/* DEFINE SYSTEM STATUS PANEL
P(SYSTEM,24,80)
TF(01,02,10,WHITE,NORMAL)
TT(SYSTEM)
TF(01,25,57,WHITE,NORMAL)
TT(DATA CENTER SYSTEMS)
SF(SY1.SYSTEM,04,04,11,N,,SY1)
ST(SY1)
SF(SY2.SYSTEM,06,04,11,N,,SY2)
ST(SY2)
SF(SY1.GATEWAY,02,70,77,N,,GATEWAY)
ST(GATEWAY)
TF(24,01,48,T,NORMAL)
TT(1=HELP 2=DETAIL 3=RET           6=ROLL      8=DN)
TF(24,51,79,T,NORMAL)
TT(        10=LF 11=RT 12=TOP)
EP
```

Figure 16. SDF Example: System Panel Definition Statements

This panel shows the layout defined by the statements in Figure 16 on page 250:

```
SYSTEM                 DATA CENTER SYSTEMS
                                                 GATEWAY

   SY1

   SY2
















1=HELP 2=DETAIL 3=RET          6=ROLL   8=DN      10=LF 11=RT 12=TOP
```

Status Component Panel Definition

Next, the panels for the status components, SY1 and SY2, are defined. These panels can be accessed by pressing the DOWN PF key (PF8) on the root component panel, after placing the cursor under the desired system name.

They can also be accessed directly by entering SDF SY1 or SDF SY2 from the NetView NCCF command line, or entering SCREEN SY1 from within SDF.

Because these panels contain dynamic status elements, it is necessary for them to be made resident. This is done by referring to them in %INCLUDE statements in the main SDF panel definition member.

Figure 17 on page 252 shows a sample panel definition for panel SY1 and SY2.

```
/* Panel definition statements for SY1/SY2 panel
P(&SDFROOT.,24,80,SYSTEM,SYSTEM)
TF(01,02,10,WHITE,NORMAL)
TT(&SDFROOT.)
TF(01,27,47,WHITE,NORMAL)
TT(&SDFROOT. SYSTEM STATUS)
SF(&SDFROOT..JES,04,16,24,N)
ST(JES)
SF(&SDFROOT..RMF,06,16,24,N)
ST(RMF)
SF(&SDFROOT..VTAM,08,16,24,N)
ST(VTAM)
SF(&SDFROOT..TSO,10,16,24,N)
ST(TSO)
SF(&SDFROOT..AOFAPPL,12.16,24,N)
ST(NetView)
SF(&SDFROOT..AOFSSI,14,18,28,N)
ST(NetView SSI)
SF(&SDFROOT..WTOR,4,45,50,N)
ST(WTORs:)
SF(&SDFROOT..WTOR,4,53,56,N,,,c1)
SF(&SDFROOT..WTOR,4,59,67,N,,,1)
SF(&SDFROOT..WTOR,5,53,56,N,,,c2)
SF(&SDFROOT..WTOR,5,59,67,N,,,2)
SF(&SDFROOT..WTOR,6,53,56,N,,,c3)
SF(&SDFROOT..WTOR,6,59,67,N,,,3)
SF(&SDFROOT..WTOR,7,53,56,N,,,c4)
SF(&SDFROOT..WTOR,7,59,67,N,,,4)
SF(&SDFROOT..APPLIC,9,45,57,N)
ST(Applications:)
SF(&SDFROOT..APPLIC,9,59,67,N,,,1)
SF(&SDFROOT..APPLIC,10,59,67,N,,,2)
SF(&SDFROOT..APPLIC,11,59,67,N,,,3)
SF(&SDFROOT..APPLIC,12,59,67,N,,,4)
SF(&SDFROOT..APPLIC,13,59,67,N,,,5)
SF(&SDFROOT..APPLIC,14,59,67,N,,,6)
PFK4('SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA')
TF(24,01,79,T,NORMAL)
TT('1=HELP 2=DETAIL 3=RET 4=DELETE 6=ROLL 7=UP'
'         10=LF 11=RT 12=TOP')
EP
```

Figure 17. SDF Example: Status Component Panel Definition Statements for SY1 and SY2

SDF initialization uses the common global `AOF_AAO_SDFROOT.`*n* to generate as many panels as system names are found in the global for each panel that specifies `P(&SDFROOT.,...)`.

Figure 18 on page 253 shows the layout defined by the statements in Figure 17 on page 252 for system SY1.

Note: Three of the four available WTOR dynamic fields have been filled with the WTOR number and the name of the job that issued them. WTORs will appear whether or not their source is defined to SA z/OS.

If you do not define the common globals AOF_AAO_SDFROOT.*n* or the ".0" variable contains the value 0, it defaults to the local system name and SDF initialization members AOFPNLS and AOFTREE.

However you can specify other member names than the default member names, for example:

```
SYS1 SYS2/MYPNLS SYS3//MYTREE SYS4/MYPNLS/MYTREE
```

Assuming AOFPNLS and MYPNLS contain two INCLUDE statements.

```
AOFPNLS                 MYPNLS
%INCLUDE(ABC) DYNAMIC   &INCLUDE(ABC) DYNAMIC
%INCLUDE(CDE) DYNAMIC   &INCLUDE(XYZ) DYNAMIC
```

and all members define only one panel like "`P(&SDFROOT.`*`member_name`*`,...)`" the following panels are generated when SDF initializes it:

For member ABC

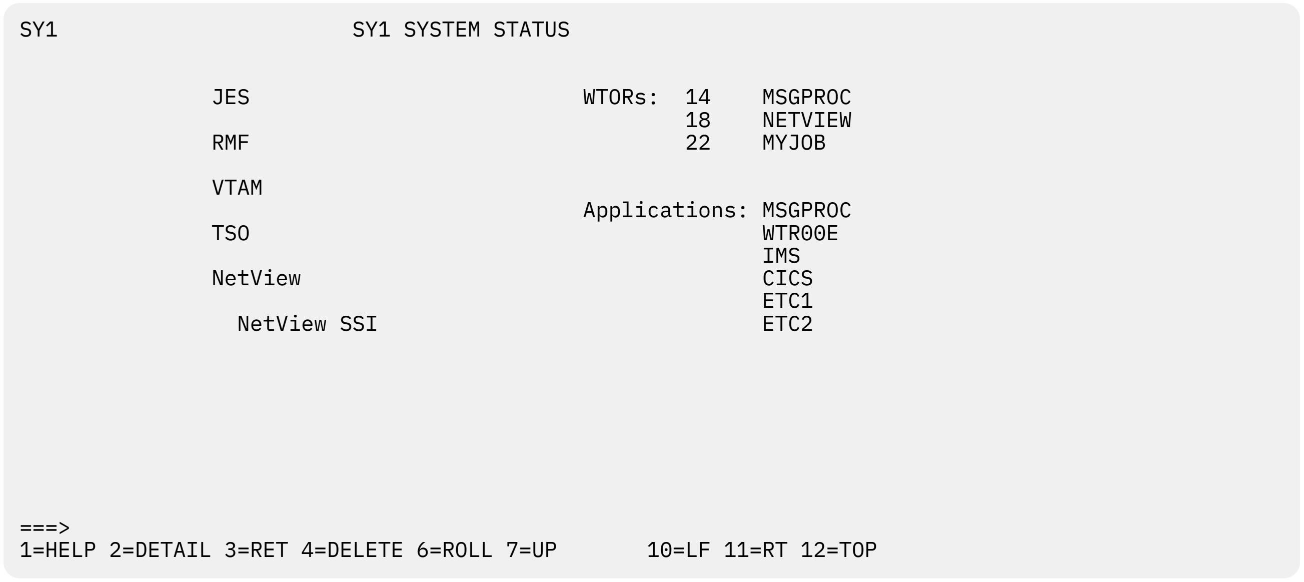
```
SYS1ABC, SYS2ABC, SYS3ABC, SYSABC4
```

For member CDE

```
SYS1CDE,         , SYS3CDE
```

For member XYZ

```
         SYS2XYZ,         SYS4XYZ
```



```
SY1                       SY1 SYSTEM STATUS


               JES                           WTORs:  14    MSGPROC
                                                     18    NETVIEW
               RMF                                   22    MYJOB

               VTAM
                                             Applications: MSGPROC
               TSO                                         WTR00E
                                                           IMS
               NetView                                     CICS
                                                           ETC1
                 NetView SSI                               ETC2








===>
1=HELP 2=DETAIL 3=RET 4=DELETE 6=ROLL 7=UP       10=LF 11=RT 12=TOP
```

Figure 18. Sample SY1 SDF Panel

The fields defined for the application names JES, RMF, VTAM, TSO, NetView and the NetView SSI are static in that only the color of the predefined status text changes when the highest priority status descriptor that is queued for the underlying status component changes. The fields defining **WTORs:** and **Applications:** are also static, but do not refer to a specific subsystem. These fields will also assume the color of the highest priority status descriptor that is queued. The **WTORs:** field is green when no replies are outstanding due to the SDF tree definition for the underlying status component, SY1.WTOR. The remaining static fields will appear turquoise, or the EMPTYCOLOR that is defined in the NetView DSIPARM member AOFINIT.

The status fields following **WTORs:** and **Applications:** are dynamic in that both their content and color depend on the status descriptor that they represent. The ability to select both the type of data and the status descriptor number that the data is obtained from allows generic status fields to be defined (see “STATUSFIELD” on page 240). This takes advantage of an SDF feature that allows the status descriptor to be queued under an alternate component should the primary status component not be defined in the SDF tree structure. For subsystems, the status component name is the subsystem name, and the alternate component is SUBSYS. WTORs are queued using the reply ID as the status component name, and WTOR as the alternate component name.

The use of generic field definitions has several advantages, and may considerably reduce the amount of maintenance required, particularly in large, multisystem environments. Using this method, the status components are displayed in priority order, so the most critical status subsystem is presented first. Also, if more subsystems are defined to SA z/OS than are defined on the panel, you will be notified of only the most critical situations. It is also possible to continue the list of statuses presented on additional panels if required.

You should note that using this method, subsystems do not always appear in the same position on the panel, which may make it difficult to find a specific subsystem. Also, some transient conditions can cause a subsystem to appear twice on the display. This can be eliminated by changing the SDF Status Detail definition to CLEAR=Y for the transient status definitions.

SDF Initialization Parameters in AOFINIT

For this example, the default AOFINIT entries that are supplied with SA z/OS are used.

```
SCREENSZ=10000,24,80
INITSCRN=SYSTEM
MAXOPS=10
PROPUP=YES
PROPDOWN=NO
TEMPERR=3
/* Priority/color relationships (default values) -----------------------
PRITBLSZ=7
PRIORITY=1,199,RED
PRIORITY=200,299,PINK
PRIORITY=300,399,YELLOW
PRIORITY=400,499,TURQUOISE
PRIORITY=500,599,GREEN
PRIORITY=600,699,BLUE
DCOLOR=WHITE
EMPTYCOLOR=BLUE
```

```
/* Status panel PF keys and description --------------------------------
PFK1=AOCHELP SDF
PFK2=DETAIL
PFK3=RETURN
PFK4=BACKWARD
PFK5=FORWARD
PFK6=ROLL
PFK7=UP
PFK8=DOWN
PFK9=BOT
PFK10=LEFT
PFK11=RIGHT
PFK12=TOP
PFK13=AOCHELP SDF
PFK14=DETAIL
PFK15=RETURN
PFK16=BACKWARD
PFK17=FORWARD
PFK18=ROLL
PFK19=UP
PFK20=DOWN
PFK21=BOT
PFK22=LEFT
PFK23=RIGHT
PFK24=TOP
```

```
/* Detail panel PF keys and description --------------------------------
DPFK1=AOCHELP SDF
DPFK2=
DPFK3=RETURN
/* Use the command below if you wish to delete without confirming
/* DPFK4=SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA,VFY=NO
DPFK4=SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA
DPFK5=
DPFK6=ROLL
DPFK7=UP
DPFK8=DOWN
DPFK9=
DPFK10=
DPFK11=BOT
DPFK12=TOP
DPFK13=AOCHELP SDF
DPFK14=
DPFK15=RETURN
/* Use the command below if you wish to delete without confirming
/* DPFK16=SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA,VFY=NO
DPFK16=SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA
DPFK17=
DPFK18=ROLL
DPFK19=UP
DPFK20=DOWN
DPFK21=
DPFK22=
DPFK23=BOT
DPFK24=TOP
DPFKDESC1=1=Help      3=Return 4=Delete      6=Roll 7=Up 8=Down
DPFKDESC2=          11=Bottom 12=Top
```

Note: /* denotes a comment field, where /* must be followed by a blank. Comments must always be on separate lines.

For more information on setting SDF initialization parameters, see Chapter 5, “SDF Initialization Parameters,” on page 203.

SDF Status Detail Definitions

Please refer to Table Default Subsystem Status Colors and Priorities for a list of SDF default status settings.

Example Of A Large SDF Panel

This section shows an example of a large SDF panel that consolidates the tree definitions of SA z/OS default member INGTALL into a single display panel:

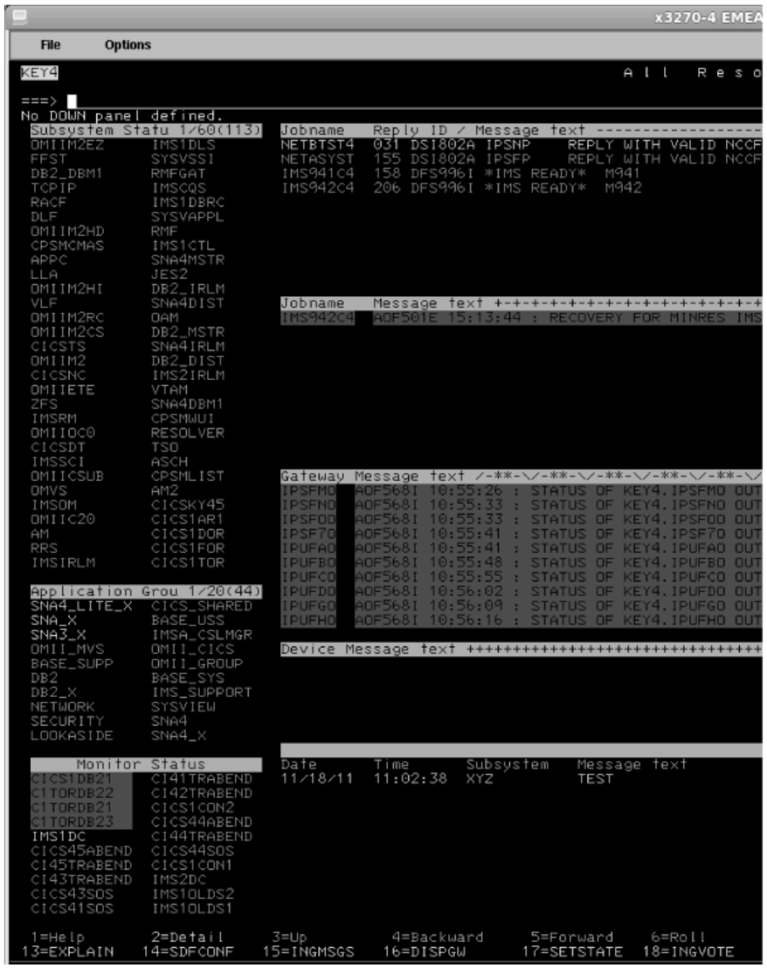
The sample includes all new definitions statements as well as the modified statements like INPUTFIELD.

```
P(&SDFROOT.,62,160,SYSTEM,SYSTEM, ,*,*)
TF(01,02,05,PINK,REVERSE)
TT(&SDFROOT.)
TF(01,67,92,WHITE,NORMAL)
TT(A l l   R e s o u r c e s)
/*- (1) -------------------------------------------------------------
IF(03,02,BELOW)
/*- (2) -------------------------------------------------------------
BODY(&SDFROOT..SUBSYS,06,35,*,1,02,27)
BH(05,,,T,R,-)
BT(Subsystem Status)
CELL(02,12,N,C)
/*- (3) -------------------------------------------------------------
BODY(&SDFROOT..GROUPS,38,47,*,1,02,27)
BH(37,L,S,T,R,+-)
BT(Application Group Status)
CELL(02,12,N,C)
/*- (4) -------------------------------------------------------------
BODY(&SDFROOT..MONITOR,50,*-3,*,1,02,27)
BH(49,C,N,T,R)
BT(Monitor Status)
CELL(02,12,N,C)
/*- (5) -------------------------------------------------------------
BODY(&SDFROOT..WTOR,06,15,*,1,29,*)
BODYHEADER(05,LEFT,SCROLLINFO,T,R,-)
BODYTEXT(Jobname   , Reply ID / Message text)
CELL(02,09,N)
CELL(12,*,N,M)
```

```
/*- (6) -------------------------------------------------------------
BODY(&SDFROOT..CPMSGS,18,27,*,1,29,*)
BH(17,LE,SCROLL,TURQUOISE,REVERSE,+-)
BT(Jobname   , Message text)
CELL(02,09,N)
CELL(12,*,N,M)
/*- (7) -------------------------------------------------------------
BODY(&SDFROOT..GATEWAY,30,39,*,1,29,*)
BH(29,LE,SCROLL,TURQUOISE,REVERSE,/-**-\)
BT(Gateway Message text)
CELL(02,07,N,C)
CELL(10,*,N,M)
/*- (8) -------------------------------------------------------------
BODY(&SDFROOT..TAPE,42,46,*,1,29,*)
BH(41,LE,SCROLL,TURQUOISE,REVERSE,+)
BT(Device Message text)
CELL(02,05,N,C)
CELL(09,*,N,M)
/*- (9) -------------------------------------------------------------
TF(49,30,33,T,N)
TT(Date)
TF(49,40,43,T,N)
TT(Time)
TF(49,50,58,T,N)
TT(Subsystem)
TF(49,62,73,T,N)
TT(Message text)
BODY(&SDFROOT..OPCERR,50,*-3,*,1,29,*)
```

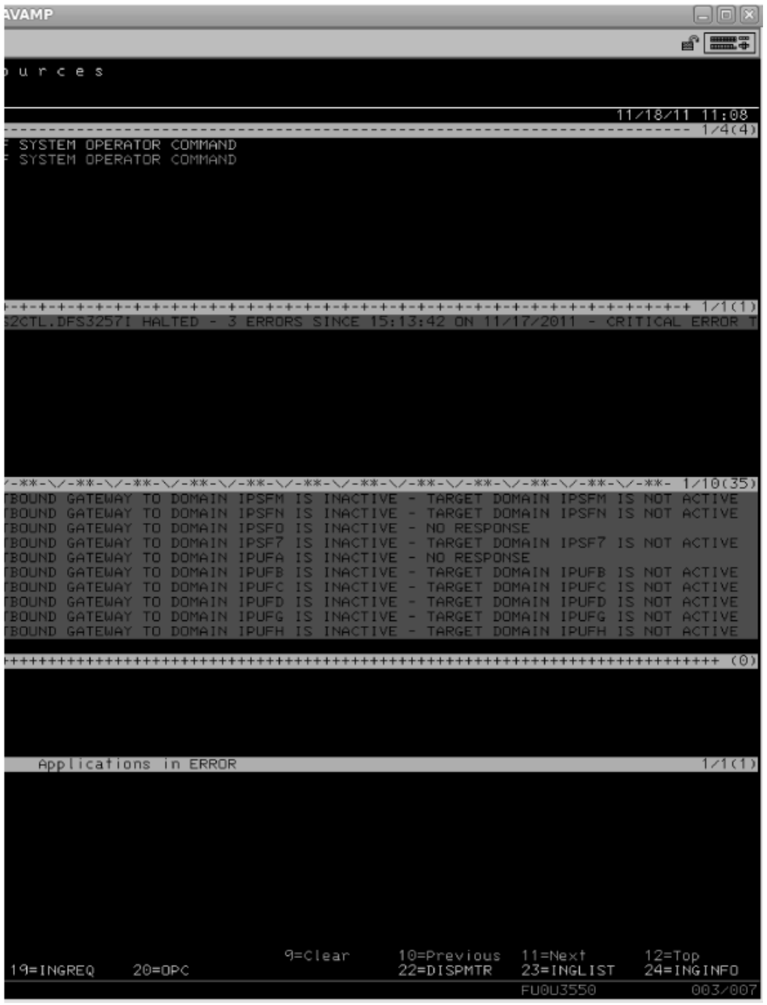
```
BH(48,C,,TURQUOISE,REVERSE)
BT(Applications in ERROR)
CELL(02,09,N,D)
CELL(12,19,N,T)
CELL(22,32,N,C)
CELL(34,*,N,M)
```

```
/*-------------------------------------------------------------------
PFK3(UP)
PFK9(CLEAR)
PFK13('EXPLAIN #COMP,TARGET=#SNODE')
PFK14('SDFCONF #ROOT,#COMPAPPL,#RV,#SID,#SNODE,#DATE,#TIME,#DA')
PFK15('INGMSGS TARGET=&SDFROOT.')
PFK16('DISPGW TARGET=&SDFROOT.')
PFK17('SETSTATE #COMP,TARGET=#SNODE')
PFK18('INGVOTE #COMP/APL/#ROOT,TARGET=#SNODE')
PFK19('INGREQ #COMP/APL/#ROOT,TARGET=#SNODE')
PFK20('OPC TARGET=&SDFROOT.')
PFK22('DISPMTR #COMP,REQ=DETAIL,TARGET=#SNODE')
PFK23('INGLIST #COMP/APL/#ROOT,TARGET=#SNODE')
PFK24('INGINFO #COMP/APL/#ROOT,TARGET=#SNODE')
TF(*-1,02,13,T,NORMAL)
TT( 1=Help)
TF(*-1,15,26,Y,NORMAL)
TT( 2=Detail)
TF(*-1,28,159,T,NORMAL)
TT( 3=Up         4=Backward    ,
 5=Forward    6=Roll                                 ,
 9=Clear     10=Previous  11=Next      12=Top)
TF(*,02,159,Y,NORMAL)
TT(13=EXPLAIN   14=SDFCONF   15=INGMSGS   16=DISPGW      ,
17=SETSTATE  18=INGVOTE   19=INGREQ    20=OPC          ,
             22=DISPMTR   23=INGLIST   24=INGINFO)
EP
```



```
KEY4                                                       A l l   R e s o
===>
No DOWN panel defined.
 Subsystem Statu 1/60(113)  Jobname   Reply ID / Message text ------------------
 OMIIM2EZ     IMS1DLS       NETBTST4  031  DSI802A IPSNP     REPLY WITH VALID NCCF
 FFST         SYSVSSI       NETASYST  155  DSI802A IPSFP     REPLY WITH VALID NCCF
 DB2_DBM1     RMFGAT        IMS941C4  158  DFS996I *IMS READY*  M941
 TCPIP        IMSCQS        IMS942C4  206  DFS996I *IMS READY*  M942
 RACF         IMS1DBRC
 DLF          SYSVAPPL
 OMIIM2HD     RMF
 CPSMCMAS     IMS1CTL
 APPC         SNA4MSTR
 LLA          JES2
 OMIIM2HI     DB2_IRLM
 VLF          SNA4DIST      Jobname   Message text +-+-+-+-+-+-+-+-+-+-+-+-+-+-+
 OMIIM2RC     OAM           IMS942C4  AOF501E 15:13:44 : RECOVERY FOR MINRES IMS
 OMIIM2CS     DB2_MSTR
 CICSTS       SNA4IRLM
 OMIIM2       DB2_DIST
 CICSNC       IMS2IRLM
 OMIIETE      VTAM
 ZFS          SNA4DBM1
 IMSRM        CPSMWUI
 OMIIOC0      RESOLVER
 CICSDT       TSO
 IMSSCI       ASCH
 OMIICSUB     CPSMLIST      Gateway Message text /-**-\/-**-\/-**-\/-**-\/-**-\/
 OMVS         AM2           IPSFMO  AOF568I 10:55:26 : STATUS OF KEY4.IPSFMO OUT
 IMSOM        CICSKY45      IPSFNO  AOF568I 10:55:33 : STATUS OF KEY4.IPSFNO OUT
 OMIIC20      CICS1AR1      IPSFOO  AOF568I 10:55:33 : STATUS OF KEY4.IPSFOO OUT
 AM           CICS1DOR      IPSF7O  AOF568I 10:55:41 : STATUS OF KEY4.IPSF7O OUT
 RRS          CICS1FOR      IPUFAO  AOF568I 10:55:41 : STATUS OF KEY4.IPUFAO OUT
 IMSIRLM      CICS1TOR      IPUFBO  AOF568I 10:55:48 : STATUS OF KEY4.IPUFBO OUT
                            IPUFCO  AOF568I 10:55:55 : STATUS OF KEY4.IPUFCO OUT
 Application Grou 1/20(44)  IPUFDO  AOF568I 10:56:02 : STATUS OF KEY4.IPUFDO OUT
 SNA4_LITE_X  CICS_SHARED   IPUFGO  AOF568I 10:56:09 : STATUS OF KEY4.IPUFGO OUT
 SNA_X        BASE_USS      IPUFHO  AOF568I 10:56:16 : STATUS OF KEY4.IPUFHO OUT
 SNA3_X       IMSA_CSLMGR
 OMII_MVS     OMII_CICS     Device Message text ++++++++++++++++++++++++++++++++
 BASE_SUPP    OMII_GROUP
 DB2          BASE_SYS
 DB2_X        IMS_SUPPORT
 NETWORK      SYSVIEW
 SECURITY     SNA4
 LOOKASIDE    SNA4_X

      Monitor Status        Date      Time      Subsystem    Message text
 CICS1DB21    CI41TRABEND   11/18/11  11:02:38  XYZ          TEST
 C1TORDB22    CI42TRABEND
 C1TORDB21    CICS1CON2
 C1TORDB23    CICS44ABEND
 IMS1DC       CI44TRABEND
 CICS45ABEND  CICS44SOS
 CI45TRABEND  CICS1CON1
 CI43TRABEND  IMS2DC
 CICS43SOS    IMS1OLDS2
 CICS41SOS    IMS1OLDS1

 1=Help       2=Detail      3=Up          4=Backward      5=Forward    6=Roll
13=EXPLAIN   14=SDFCONF    15=INGMSGS    16=DISPGW       17=SETSTATE  18=INGVOTE
```

Figure 19. Snapshot of the large display panel (left side)



AVAMP

```
ources

                                                        11/18/11 11:08
------------------------------------------------------------------ 1/4(4)
F SYSTEM OPERATOR COMMAND
F SYSTEM OPERATOR COMMAND









+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+ 1/1(1)
S2CTL.DFS3257I HALTED - 3 ERRORS SINCE 15:13:42 ON 11/17/2011 - CRITICAL ERROR T









/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-\/-**-  1/10(35)
TBOUND GATEWAY TO DOMAIN IPSFM IS INACTIVE - TARGET DOMAIN IPSFM IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPSFN IS INACTIVE - TARGET DOMAIN IPSFN IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPSFO IS INACTIVE - NO RESPONSE
TBOUND GATEWAY TO DOMAIN IPSF7 IS INACTIVE - TARGET DOMAIN IPSF7 IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPUFA IS INACTIVE - NO RESPONSE
TBOUND GATEWAY TO DOMAIN IPUFB IS INACTIVE - TARGET DOMAIN IPUFB IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPUFC IS INACTIVE - TARGET DOMAIN IPUFC IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPUFD IS INACTIVE - TARGET DOMAIN IPUFD IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPUFG IS INACTIVE - TARGET DOMAIN IPUFG IS NOT ACTIVE
TBOUND GATEWAY TO DOMAIN IPUFH IS INACTIVE - TARGET DOMAIN IPUFH IS NOT ACTIVE

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++ (0)





   Applications in ERROR                                                  1/1(1)











                            9=Clear     10=Previous  11=Next     12=Top
 19=INGREQ    20=OPC                    22=DISPMTR   23=INGLIST  24=INGINFO
                                                     FU0U3550          003/007
```

Figure 20. Snapshot of the large display panel (right side)

Chapter 7. SDF Commands

Using SDF Commands

SDF commands allow you to to load one or more tree structures defined in a single member or to delete a single tree structure.

Refer to “SDFTREE” on page 265.

- to load one or more panels defined in a single member or to delete a single panel, see “SDFPANEL” on page 263
- to initially display an SDF panel, “SDF” on page 261
- to move between panels, see “Navigation Commands” on page 266
- to move around the panels for each SDF display hierarchy, see “SCREEN” on page 261
- to delete an SDF record, see “SDFCONF” on page 262.
- to view the current allocation units and data space usage, see “SDFQTR” on page 264

Dynamically Loading Panels and Tree Structures

You can dynamically load panels and tree structures without restarting SDF. With this dynamic loading, you can load a small number of panels during initialization, and add or delete panel subsets when required during SDF operation.

This can significantly reduce the number of panels kept resident at any one time.

When you are dynamically loading panels or tree structures, there must be a member in the NetView DSIPARM data set with the same name as the panel name or the root component in the tree structure. If not, a "not found" error message is generated.

Note: Only panels that are loaded with the SDFPANEL command are available to all logged-on SA z/OS operators. All others are loaded only for the operator that calls them.

Dynamically Loading Panels

You can load panels dynamically in the following ways:

- With the SDFPANEL command, as described in “SDFPANEL” on page 263.
- With the SCREEN command, as described in “SCREEN” on page 261.
- When any of the following PANEL statement parameters call a panel not defined in AOFPNLS, and a member with the same name as that panel is found in the NetView DSIPARM data set:
  - *top_panel_name*
  - *up_panel_name*
  - *down_panel_name*
  - *left_panel_name*
  - *right_panel_name*

  See “PANEL” on page 237 for the PANEL statement description.

Performance hint: Dynamically loading panels reduces storage requirements. However, using the SCREEN command or PANEL statements that refer to the panels that are not defined in AOFPNLS can result in increased processor usage. For better performance, ensure the panels are included in the AOFPNLS member either directly or by an %INCLUDE. Note that AOFPNLS must not contain any variable that is subject to replication (see “Status Component Panel Definition” on page 251).

Dynamically Loading Tree Structures

You can load SDF tree structures dynamically with the SDFTREE command.

See "SDFTREE" on page 265.

When you load a new tree structure to replace an existing one, any status descriptors with identical names in both tree structures are copied to the new tree structure.

Dynamic Loading Example

Suppose you change the tree structure for root component SY1 and the panel named SY1SYS. The tree structure and panel definitions are maintained in separate members (instead of being directly coded in AOFTREE or AOFPNLS).

Use the following commands to load the new definitions:

```
SDFTREE SY1,ADD
SDFPANEL SY1SYS,ADD
```

For more information, see "SDFTREE" on page 265 and "SDFPANEL" on page 263.

Dynamic Loading Commands

Use the following commands to dynamically load SDF tree structures and panels, and to confirm that a panel was loaded:

SDFTREE
Load tree structure definition member

SDFPANEL
Load panel definition member

SCREEN
Display an SDF panel

When an error is detected while any of these dynamic loading commands is processing, no action is taken to change the existing tree structure or panel definitions. For example, if one of several panels defined or referenced by %INCLUDE statements in a panel definition member contains an error, none of the panels are placed into active use. Similarly, if an error is detected in a panel you attempt to load using the SCREEN command, the panel is not displayed.

Verifying Dynamic Loading of Panels

Use the SCREEN command to verify that a panel was correctly loaded.

See "SCREEN" on page 261 for the SCREEN command description.

You might want to create a test version of a panel you are modifying and display it using the SCREEN command to verify that your changes are correct. To do this:

1. Copy the existing panel definition member into another panel definition member.
2. Modify the panel definition statements in the new panel definition member. Use a different name for the panel on the PANEL statement.
3. Use the SCREEN command to verify that the changes to the panel are correct.
4. If you see anything in the displayed panel that should change, correct the panel definition statements.
5. Rename the panel to the name that is used for the production version of the panel. To do this, change the name specified on the PANEL statement.
6. Use the SDFPANEL command to load the new panel and put it into production. This SDFPANEL command causes the new panel to overwrite the old panel.

SCREEN

Purpose

The SCREEN command displays a specific SDF panel.

Syntax

```
▶▶─ SCREEN ── panel_name ─▶◀
```

Parameters

panel_name
The name of the panel to be displayed. *panel_name* is the name of the panel as it appears in the upper left hand corner of the screen.

Restrictions and Limitations

SCREEN can be issued only within SDF.

Usage

- If the specified panel is not in memory when the command is issued, the NetView DSIPARM data set is searched for a member name matching the specified panel name. If one is found, that member is loaded for the operator that the request was made from, and the panel defined in the member is displayed.
- If an error is detected in a panel you attempt to load using the SCREEN command, the panel is not displayed.
- If you plan to use the SCREEN command frequently in your SDF implementation, you might want to define a PF key that issues the SCREEN command.

Examples

`SCREEN SY1` displays the panel named SY1.

SDF

Purpose

Start the SDF dialog.

Syntax

```
▶▶─ SDF ──┬──────────────┬─▶◀
          └─ panel_name ─┘
```

Parameters

panel_name
The name of the panel that is initially displayed. If the name is not coded, the panel specified for the SDF initialization parameter INITSCRN in member AOFINIT is displayed (see "INITSCRN" on page 209).

Restrictions and Limitations

The command can be invoked on OST tasks only.

Usage

- If the specified panel is not in memory when the command is issued, the NetView DSIPARM data set is searched for a member name matching the specified panel name. If one is found, that member is loaded for the operator that the request was made from, and the panel defined in the member is displayed.
- If an error is detected in the panel you attempt to display initially, the panel is not displayed.

Examples

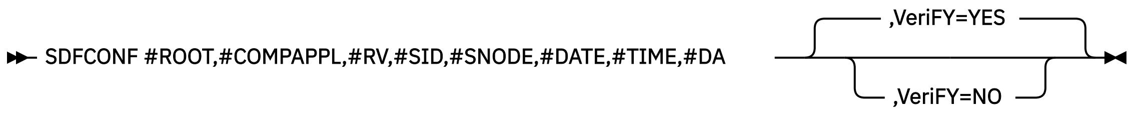
SDF displays the panel that has been specified for the SDF initialization parameter INITSCRN in member AOFINIT.

SDFCONF

Purpose

The SDFCONF command is used to confirm an SDF record for deletion. This command is usually assigned to the PF4 key. It shows a confirmation panel before deleting the SDF record.

Syntax



Parameters

The following parameters are displayed for the selected SDF record.

SDF Root Name
The name of the SDF root component.

SDF Component Name
The name of the component, for which SDF is presenting details.

Reference Value
A reference value assigned for this component.

Originating Operator ID (reporter)
The reporter submitting the component detail entry.

Originating Node Name (domain)
The originating node of the reporter submitting the component detail entry.

Originating Date
The system date.

Originating Time
The system time.

Detail Data (message)
The actual message text for the component.

Additional Options VERIFY|VFY={YES|NO}
Specifies whether the confirmation panel is shown or not. The default is YES. VFY is the same as VERIFY, but is used for static SDF 72 character limitation.

SDFPANEL

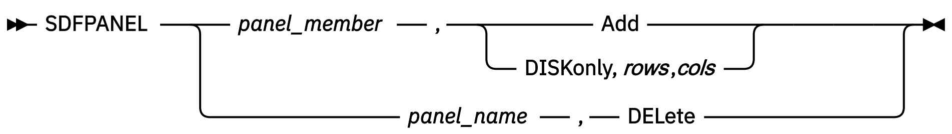
Purpose

SDFPANEL dynamically loads a panel member from the NetView DSIPARM data set or deletes a panel member. When loading a panel member you can additionally specify the minimum number of rows and columns that SDF uses to validate panels of undefined screen sizes.

SDFPANEL can be issued from a console.

Syntax

To add or delete a panel member use the following syntax:



Parameters

panel_member
The name of the member containing the panel to load.

panel_name
The name of the panel to delete. While you add panels by specifying the panel member name, you delete panels by specifying the actual panel name.

Add
Specifies that you want to add the specified panel member.

DELete
Specifies that you want to delete the specified panel.

DISKonly
Specifies that you want to add the specified panel member. However, any member previously loaded into storage is ignored.

rows
The minimum number of rows. Values can range from 24 to 62. The default is the corresponding value defined by the SCREENSZ parameter in the member AOFINIT.

cols
The minimum number of columns. Values can range from 80 to 160. The default is the corresponding value defined by the SCREENSZ parameter in the member AOFINIT.

Restrictions and Limitations

Panel definition members dynamically loaded by the SDFPANEL command are not reloaded when SDF is restarted. Only members that are specified in the AAO globals AOF_AAO_SDFROOT.* are reloaded. A root name that does not define the name of a panel member receives the default name AOFPNLS. You must either add the panel definitions to AOFPNLS (using %INCLUDE statements) before SDF is restarted, or manually reload them using the SDFPANEL command after SDF is restarted.

Members AOFPNLS and ISQPNLS cannot be added using this command. Use the command RESYNC SDFDEFS when you need to replace the definitions included in ISQPNLS while processor operations is active.

Usage

If one of several panels defined or referenced by %INCLUDE statements in a panel definition member contains an error, this panel is not placed in use.

A panel which does not contain an error but defines the variable &SDFROOT anywhere in its definition statements is replicated according to rules described in "Status Component Panel Definition" on page 251 with the following exception. If the member name that includes the panel does not occur in the `AOF_AAO_SDFROOT.`*n* globals, the panel is replicated for each system name found in the globals.

Examples

`SDFPANEL NEWPANEL,ADD` loads member NEWPANEL into memory. This loading allows operators to access the panel defined in NEWPANEL.

`SDFPANEL VARPANEL,43,80` loads member VARPANEL into memory. SDF uses the screen size 43x80 instead of the screen size defined at the initialization parameter "SCREENSZ" on page 214. You may omit the column parameter. In this case the minimum number of columns defaults to the number of columns defined in the initialization parameter.

SDFQTR

Purpose

SDFQTR shows you the current allocation units of the status component descriptors and of the data space that holds the information.

One allocation unit of the data space equates to 4K.

```
►►─ SDFQTR ─►◄
```

Parameters

None.

Restrictions and Limitations

SDF must be active.

Usage

The command takes a snapshot of the current allocation units. In case of space problems of the data space the command output allows you to calculate the new size more accurately.

Examples

The following example shows that the data space is still allocated at its minimum size of 2 MB. The maximum size as defined in AOFINIT is 2026 MB. The program has divided the 2 MB into 3 areas which allows the allocation of 1632 status component entries, 1588 status component descriptor entries, and 7936 link entries. The values in parentheses show the entries in use.

```
SDFQTR

AOFS080I MIN=512 CUR=512 MAX=518656
AOFS081I SC=1632(113) SCD=1588(263) SCDC=7936(728)
```

SDFTREE

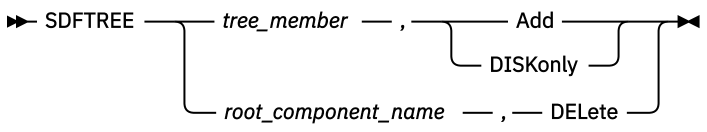
Purpose

SDFTREE dynamically loads an SDF tree structure definition member from the NetView DSIPARM data set or deletes a tree member from system memory.

SDFTREE can be issued from a console.

Syntax

To load or delete a tree structure definition member use the following syntax:



Parameters

tree_member
The name of the member containing the tree structure to load.

root_component_name
The name of the root component, which is the name that is used for level 1 in the tree structure that you want to delete. While you add a tree structure definition members by specifying a tree member name, you delete tree structure definition members by specifying a root component name.

Add
Specifies that you want to add the specified tree structure definition member.

DISKonly
Specifies that you want to add the specified tree structure member. However, any member previously loaded into storage is ignored

DELete
Specifies that you want to delete a tree structure definition member.

Restrictions and Limitations

Tree structure definition members dynamically loaded by the SDFTREE command are not reloaded when SDF is restarted. Only members that are specified in the AAO globals `AOF_AAO_SDFROOT.*` are reloaded. A root name that does not define the name of a tree structure member receives the default name AOFTREE. You must either add the tree definitions to AOFTREE (using %INCLUDE statements) before SDF is restarted, or manually reload them using the SDFTREE command after SDF is restarted.

Members AOFTREE and ISQTREE cannot be added using this command.

When you define a tree like the one that is supplied by System Automation in the sample member INGTCFG, you have to define the component names that belong to only the local target system in the AAO globals `AOF_SDF_SDFTGT_COMP.*`. The *.0* variable defines the number of adjacent globals.

You need to do this for each target system individually even for the backup focal point system. For convenience, the trailing wild character asterisk (*) is supported on the component name, the alternate component name, and the major component name, but not on the root component name. For example, specification "ROOT.H*(IPL*)" matches all component names beginning with "H" and its alternate component names beginning with "IPL". In addition, system symbols are supported as well.

Normally, the RESYNC FP command deletes and refreshes on the focal point system the tree information of all root names that are found on the target system except those that are owned by System Automation like INGCFG. The component names that are defined in the globals above cause System Automation to delete and refresh only the information of the components rather than of the root names the components belong to.

On the primary focal point system, the SDF backup focal point system behaves like a normal target system. However, the backup focal point system must have the same root names defined as the primary focal point system in case the primary focal point system becomes inactive. Since SDF has been enabled to refresh the user data on the focal point as well, you need to define the static root names of the BACKUP focal point in the AAO globals `AOF_AAO_SDFBFP_ROOT.n`. Otherwise, the command `RESYNC FP` will neither delete nor refresh the information of the static root names on the primary focal point system. This is also true when the backup focal point system becomes active after the primary focal point system. The *.0* variable defines the number of adjacent globals. Any adjacent global defines one or more static root names of the BACKUP focal point separated by a blank character.

Assuming you have two static root names on each system called PS1 and PS2 on the primary focal point, BS1 and BS2 on the backup focal point, and LS1 and LS2 on another target system, you then need to specify the following AAO globals on the backup focal point system even if all six static root names are defined on the backup focal point system by AOFTREE.

- AOF_AAO_SDFBFP_ROOT.0 1
- AOF_AAO_SDFBFP_ROOT.1 BS1 BS2

Usage

- When a new tree structure is loaded to replace an existing tree structure, the status descriptors of any status component with identical names in both trees are copied to the new tree.
- When an error is detected while this command is processing, no action is taken to change the existing tree structure.

Examples

`SDFTREE NEWTREE,ADD` loads member NEWTREE into system memory. This loading allows operators to access the tree structure defined in NEWTREE.

Navigation Commands

The following navigation commands are available within an SDF panel hierarchy:

BACKWARD
No action applies when entered in a detail panel.

When entered in a status panel, scrolls to the refreshed status panel that precedes the panel in the stack.

BOT
When entered in a detail panel, displays the detail panel of the last status element in the chain.

When entered in a status panel and the cursor is positioned anywhere in a body section, performs right scrolling of the body section to the last status descriptors in the chain that still fit into the displayable area.

DETAIL
No action applies when entered in a detail panel.

When entered in a status panel and the cursor is positioned at a status field or cell, displays the detail panel of the appropriate status element.

DOWN
When entered in a detail panel, displays the detail panel for the next status element in the chain.

When entered in a status panel:

- <u>cursor in status element</u>, displays the panel specified as "down" panel in the appropriate Status Field statement, if specified, otherwise the "down" panel specified in the PANEL statement,

- cursor not in status element, displays the panel specified as "down" panel in the PANEL statement,
- cursor in the body section,
  - ignores the command when the parameter IGNore has been specified in the PANEL statement,
  - displays the panel specified as "up|down" panel in the PANEL statement when the parameter IGNore has **not** been specified in the PANEL statement.

FORWARD

No action applies when entered in a detail panel.

When entered in a status panel, scrolls to the refreshed status panel that succeeds the panel in the stack.

LEFT

No action applies when entered in a detail panel.

When entered in a status panel:

- cursor in a body section, performs left scrolling of the body section,
- "left" panel in the PANEL statement does not specify '*', displays the panel specified as "left" panel in the PANEL statement.

RETURN

When used in a detail panel, returns to the refreshed status panel.

When entered in a status panel, exits SDF.

RIGHT

No action applies when entered in a detail panel.

When entered in a status panel:

- cursor in a body section, performs right scrolling of the body section,
- "right" panel in the PANEL statement does not specify '*', displays the panel specified as "right" panel in the PANEL statement.

SCREEN *panelname*

Displays the specified panel.

TOP

When entered in a detail panel, displays the detail panel of the last status element in the chain.

When entered in a status panel:

- cursor in a body section, performs left scrolling of the body section to the very first status descriptor.
- "top" panel in the PANEL statement defined, displays the panel specified as "top" panel in the PANEL statement,

UP

When entered in a detail panel, displays the detail panel for the previous status element in the chain.

When entered in a status panel:

- cursor in status element, displays the panel specified as "up" panel in the appropriate Status Field statement, if specified, otherwise the "up" panel specified in the PANEL statement,
- cursor not in status element, displays the panel specified as "up" panel in the PANEL statement,
- cursor in the body section,
  - ignores the command when the parameter IGNore has been specified in the PANEL statement,
  - displays the panel specified as "up|down" panel in the PANEL statement when the parameter IGNore has **not** been specified in the PANEL statement.

The navigation commands DOWN, LEFT, RIGHT, SCREEN, TOP, and UP put the panel name onto a stack. The navigation commands BACKWARD and FORWARD can be used to scroll thru the stack for displaying a panel. If the stack which holds at most 16 entries becomes full the first stack entry is removed before the current panel name is put onto the stack.

Appendix A. Notices

Trademarks

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Glossary

This glossary includes terms and definitions from:

- The *IBM Dictionary of Computing* New York: McGraw-Hill, 1994.
- The *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies can be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary* developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

The following cross-references are used in this glossary:

Contrast with. This refers to a term that has an opposed or substantively different meaning.
Deprecated term for. This indicates that the term should not be used. It refers to a preferred term, which is defined in its proper place in the glossary.
See. This refers the reader to multiple-word terms in which this term appears.
See also. This refers the reader to terms that have a related, but not synonymous, meaning.
Synonym for. This indicates that the term has the same meaning as a preferred term, which is defined in the glossary.
Synonymous with. This is a backward reference from a defined term to all other terms that have the same meaning.

A

ACF
See automation configuration file.

ACF/NCP
Advanced Communications Function for the Network Control Program. See Advanced Communications Function and Network Control Program.

ACF/VTAM
Advanced Communications Function for the Virtual Telecommunications Access Method. Synonym for VTAM. See Advanced Communications Function and Virtual Telecommunications Access Method.

active monitoring
In SA z/OSautomation control file, the acquiring of resource status information by soliciting such information at regular, user-defined intervals. See also passive monitoring.

adapter
Hardware card that enables a device, such as a workstation, to communicate with another device, such as a monitor, a printer, or some other I/O device.

adjacent hosts
Systems connected in a peer relationship using adjacent NetView sessions for purposes of monitoring and control.

adjacent NetView
In SA z/OS, the system defined as the communication path between two SA z/OS systems that do not have a direct link. An adjacent NetView is used for message forwarding and as a communication link between two SA z/OS systems. For example, the adjacent NetView is used when sending responses from a focal point to a remote system.

Advanced Communications Function (ACF)
A group of IBM licensed programs (principally VTAM, TCAM, NCP, and SSP) that use the concepts of Systems Network Architecture (SNA), including distribution of function and resource sharing.

advanced program-to-program communication (APPC)
A set of inter-program communication services that support cooperative transaction processing in a Systems Network Architecture (SNA) network. APPC is the implementation, on a given system, of SNA's logical unit type 6.2.

Advanced Workload Analysis Reporter (zAware)
IBM analytics appliance running in a z Systems® partition, activated in zACI mode. Customers can use the appliance to monitor the console message streams of other LPARs running in the same System z® cluster and create trend reports. Exploiting zAware and these trend reports can help to better predict OS outages or performance degradations and initiate proactive clusters.

alert
In SNA, a record sent to a system problem management focal point or to a collection point to communicate the existence of an alert condition.

In NetView, a high-priority event that warrants immediate attention. A database record is generated for certain event types that are defined by user-constructed filters.

alert condition
A problem or impending problem for which some or all of the process of problem determination, diagnosis, and resolution is expected to require action at a control point.

alert threshold
An application or volume service value that determines the level at which SA z/OS changes the associated icon in the graphical interface to the alert color. SA z/OS may also issue an alert. See warning threshold.

AMC
See Automation Manager Configuration.

American Standard Code for Information Interchange (ASCII)
A standard code used for information exchange among data processing systems, data communication systems, and associated equipment. ASCII uses a coded character set consisting of 7-bit coded characters (8-bit including parity check). The ASCII set consists of control characters and graphic characters. See also Extended Binary Coded Decimal Interchange Code.

APF
See authorized program facility.

API
See application programming interface.

APPC
See advanced program-to-program communication.

application
In SA z/OS, applications refer to z/OS subsystems, started tasks, or jobs that are automated and monitored by SA z/OS. On SNMP-capable processors, application can be used to refer to a subsystem or process.

Application entry
A construct, created with the customization dialogs, used to represent and contain policy for an application.

application group
A named set of applications. An application group is part of an SA z/OS enterprise definition and is used for monitoring purposes.

application program
A program written for or by a user that applies to the user's work, such as a program that does inventory or payroll.

A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

application programming interface (API)
An interface that allows an application program that is written in a high-level language to use specific data or functions of the operating system or another program.

ApplicationGroup entry
A construct, created with the customization dialogs, used to represent and contain policy for an application group.

ARM
See automatic restart management.

ASCB
Address space control block.

ASCB status
An application status derived by SA z/OS running a routine (the ASCB checker) that searches the z/OS address space control blocks (ASCBs) for address spaces with a particular job name. The job name used by the ASCB checker is the job name defined in the customization dialog for the application.

ASCII
See American Standard Code for Information Interchange.

ASF
See automation status file.

authorized program facility (APF)
A facility that permits identification of programs that are authorized to use restricted functions.

automated console operations (ACO)
The use of an automated procedure to replace or simplify the action that an operator takes from a console in response to system or network events.

automated function
SA z/OS automated functions are automation operators, NetView autotasks that are assigned to perform specific automation functions. However, SA z/OS defines its own synonyms, or *automated function names*, for the NetView autotasks, and these function names are referred to in the sample policy databases provided by SA z/OS. For example, the automation operator AUTBASE corresponds to the SA z/OS automated function BASEOPER.

automatic restart management (ARM)
A z/OS recovery function that improves the availability of specified subsystems and applications by automatically restarting them under certain circumstances. Automatic restart management is a function of the Cross-System Coupling Facility (XCF) component of z/OS.

automatic restart management element name
In MVS 5.2 or later, z/OS automatic restart management requires the specification of a unique sixteen character name for each address space that registers with it. All automatic restart management policy is defined in terms of the element name, including the SA z/OS interface with it.

automation
The automatic initiation of actions in response to detected conditions or events. SA z/OS provides automation for z/OS applications, z/OS components, and remote systems that run z/OS. SA z/OS also provides tools that can be used to develop additional automation.

automation agent
In SA z/OS, the automation function is split up between the automation manager and the automation agents. The observing, reacting and doing parts are located within the NetView address space, and are known as the *automation agents*. The automation agents are responsible for:

- Recovery processing
- Message processing
- Active monitoring: they propagate status changes to the automation manager

automation configuration file
The SA z/OS customization dialogs must be used to build the automation configuration file. It consists of:

- The automation manager configuration file (AMC)
- The NetView automation table (AT)
- The NetView message revision table (MRT)
- The MPFLSTxx member

automation control file (ACF)
In SA z/OS, a file that contains system-level automation policy information. There is one master automation control file for each NetView system that SA z/OS is installed on. Additional policy information and all resource status information is contained in the policy database (PDB). The SA z/OS customization dialogs must be used to build the automation control files. They must not be edited manually.

automation flags
In SA z/OS, the automation policy settings that determine the operator functions that are automated for a resource and the times during which automation is active. When SA z/OS is running, automation is controlled by automation flag policy settings and override settings (if any) entered by the operator. Automation flags are set using the customization dialogs.

automation manager
In SA z/OS, the automation function is split up between the automation manager and the automation agents. The coordination, decision making and controlling functions are processed by each sysplex's ***automation manager***.

The automation manager contains a model of all of the automated resources within the sysplex. The automation agents feed the automation manager with status information and perform the actions that the automation manager tells them to.

The automation manager provides ***sysplex-wide*** automation.

Automation Manager Configuration
The Automation Manager Configuration file (AMC) contains an image of the automated systems in a sysplex or of a standalone system. See also automation configuration file.

Automation NetView
In SA z/OS the NetView that performs routine operator tasks with command procedures or uses other ways of automating system and network management, issuing automatic responses to messages and management services units.

automation operator
NetView automation operators are NetView autotasks that are assigned to perform specific automation functions. See also automated function. NetView automation operators may receive messages and process automation procedures. There are no logged-on users associated with automation operators. Each automation operator is an operating system task and runs concurrently with other NetView tasks. An automation operator could be set up to handle JES2 messages that schedule automation procedures, and an automation statement could route such messages to the automation operator. Similar to *operator station task*. SA z/OS message monitor tasks and target control tasks are automation operators.

automation policy
The policy information governing automation for individual systems. This includes automation for applications, z/OS subsystems, z/OS data sets, and z/OS components.

automation policy settings
The automation policy information contained in the automation control file. This information is entered using the customization dialogs. You can display or modify these settings using the customization dialogs.

automation procedure
A sequence of commands, packaged as a NetView command list or a command processor written in a high-level language. An automation procedure performs automation functions and runs under NetView.

automation routines
In SA z/OS, a set of self-contained automation routines that can be called from the NetView automation table, or from user-written automation procedures.

automation status file (ASF)
In SA z/OS, a file containing status information for each automated subsystem, component or data set. This information is used by SA z/OS automation when taking action or when determining what action to take. In Release 2 and above of AOC/MVS, status information is also maintained in the operational information base.

automation table (AT)
See NetView automation table.

autotask
A NetView automation task that receives messages and processes automation procedures. There are no logged-on users associated with autotasks. Each autotask is an operating system task and runs concurrently with other NetView tasks. An autotask could be set up to handle JES2 messages that schedule automation procedures, and an automation statement could route such messages to the autotasks. Similar to *operator station task*. SA z/OS message monitor tasks and target control tasks are autotasks. Also called *automation operator*.

available
In VTAM programs, pertaining to a logical unit that is active, connected, enabled, and not at its session limit.

B

Base Control Program (BCP)
A program that provides essential services for the MVS and z/OS operating systems. The program includes functions that manage system resources. These functions include input/output, dispatch units of work, and the z/OS UNIX System Services kernel. See also Multiple Virtual Storage and z/OS.

basic mode
A central processor mode that does not use logical partitioning. Contrast with logically partitioned mode.

BCP
See Base Control Program.

BCP Internal Interface
Processor function of System z processor families. It allows for communication between basic control programs such as z/OS and the processor support element in order to exchange information or to perform processor control functions. Programs using this function can perform hardware operations such as ACTIVATE or SYSTEM RESET.

beaconing
The repeated transmission of a frame or messages (beacon) by a console or workstation upon detection of a line break or outage.

blade
A hardware unit that provides application-specific services and components. The consistent size and shape (or form factor) of each blade allows it to fit in a BladeCenter chassis.

BladeCenter chassis
A modular chassis that can contain multiple blades, allowing the individual blades to share resources such as management, switch, power, and blower modules.

BookManager®
An IBM product that lets users view softcopy documents on their workstations.

C

central processor (CP)
The part of the computer that contains the sequencing and processing facilities for instruction execution, initial program load (IPL), and other machine operations.

central processor complex (CPC)
A physical collection of hardware that consists of central storage, (one or more) central processors, (one or more) timers, and (one or more) channels.

central site
In a distributed data processing network, the central site is usually defined as the focal point for alerts, application design, and remote system management tasks such as problem management.

channel
A path along which signals can be sent; for example, data channel, output channel. See also link.

channel path identifier
A system-unique value assigned to each channel path.

channel-attached
Attached directly by I/O channels to a host processor (for example, a channel-attached device).

Attached to a controlling unit by cables, rather than by telecommunication lines. Contrast with link-attached. Synonymous with local.

CHPID
In SA z/OS, channel path ID; the address of a channel.

CHPID port
A label that describes the system name, logical partitions, and channel paths.

CI
See console integration.

CICS/VS
Customer Information Control System for Virtual Storage. See Customer Information Control System.

CLIST
See command list.

clone
A set of definitions for application instances that are derived from a basic application definition by substituting a number of different system-specific values into the basic definition.

clone ID
A generic means of handling system-specific values such as the MVS SYSCLONE or the VTAM subarea number. Clone IDs can be substituted into application definitions and commands to customize a basic application definition for the system that it is to be instantiated on.

command
A request for the performance of an operation or the execution of a particular program.

command facility
The component of NetView that is a base for command processors that can monitor, control, automate, and improve the operation of a network. The successor to NCCF.

command list (CLIST)
A list of commands and statements, written in the NetView command list language or the REXX language, designed to perform a specific function for the user. In its simplest form, a command list is a list of commands. More complex command lists incorporate variable substitution and conditional logic, making the command list more like a conventional program. Command lists are typically interpreted rather than being compiled.

In SA z/OS, REXX command lists that can be used for automation procedures.

command procedure
In NetView, either a command list or a command processor.

command processor
A module designed to perform a specific function. Command processors, which can be written in assembler or a high-level language (HLL), are issued as commands.

Command Tree/2
An OS/2-based program that helps you build commands on an OS/2 window, then routes the commands to the destination you specify (such as a 3270 session, a file, a command line, or an

application program). It provides the capability for operators to build commands and route them to a specified destination.

common commands
The SA z/OS subset of the CPC operations management commands.

Common User Access (CUA) architecture
Guidelines for the dialog between a human and a workstation or terminal.

communication controller
A type of communication control unit whose operations are controlled by one or more programs stored and executed in the unit or by a program executed in a processor to which the controller is connected. It manages the details of line control and the routing of data through a network.

communication line
Deprecated term for telecommunication line.

connectivity view
In SA z/OS, a display that uses graphic images for I/O devices and lines to show how they are connected.

console automation
The process of having NetView facilities provide the console input usually handled by the operator.

console connection
In SA z/OS, the 3270 or ASCII (serial) connection between a PS/2 computer and a target system. Through this connection, the workstation appears (to the target system) to be a console.

console integration (CI)
A hardware facility that if supported by an operating system, allows operating system messages to be transferred through an internal hardware interface for display on a system console. Conversely, it allows operating system commands entered at a system console to be transferred through an internal hardware interface to the operating system for processing.

consoles
Workstations and 3270-type devices that manage your enterprise.

couple data set
A data set that is created through the XCF couple data set format utility and, depending on its designated type, is shared by some or all of the z/OS systems in a sysplex. See also sysplex couple data setand XCF couple data set.

coupling facility
The hardware element that provides high-speed caching, list processing, and locking functions in a sysplex.

CP
See central processor.

CPC
See central processor complex.

CPC operations management commands
A set of commands and responses for controlling the operation of System/390® CPCs.

CPC subset
All or part of a CPC. It contains the minimum *resource* to support a single control program.

CPU
Central processing unit. Deprecated term for processor.

cross-system coupling facility (XCF)
A component of z/OS that provides functions to support cooperation between authorized programs running within a sysplex.

Customer Information Control System (CICS)
A general-purpose transactional program that controls online communication between terminal users and a database for a large number of end users on a real-time basis.

customization dialogs
The customization dialogs are an ISPF application. They are used to customize the enterprise policy, like, for example, the enterprise resources and the relationships between resources, or the automation policy for systems in the enterprise. How to use these dialogs is described in *IBM System Automation for z/OS Customizing and Programming*.

D

DataPower® X150z
See IBM Websphere DataPower Integration Appliance X150 for zEnterprise (DataPower X150z).

DASD
See direct access storage device.

data services task (DST)
The NetView subtask that gathers, records, and manages data in a VSAM file or a network device that contains network management information.

data set
The major unit of data storage and retrieval, consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

data set members
Members of partitioned data sets that are individually named elements of a larger file that can be retrieved by name.

DBCS
See double-byte character set.

DCCF
See disabled console communication facility.

DCF
See Document Composition Facility.

DELAY Report
An RMF report that shows the activity of each job in the system and the hardware and software resources that are delaying each job.

device
A piece of equipment. Devices can be workstations, printers, disk drives, tape units, remote systems or communications controllers. You can see information about all devices attached to a particular switch, and control paths and jobs to devices.

DEVR Report
An RMF report that presents information about the activity of I/O devices that are delaying jobs.

dialog
Interactive 3270 panels.

direct access storage device (DASD)
A device that allows storage to be directly accessed, such as a disk drive.

disabled console communication facility (DCCF)
A z/OS component that provides limited-function console communication during system recovery situations.

disk operating system (DOS)
An operating system for computer systems that use disks and diskettes for auxiliary storage of programs and data.

Software for a personal computer that controls the processing of programs. For the IBM Personal Computer, the full name is Personal Computer Disk Operating System (PCDOS).

display
To present information for viewing, usually on the screen of a workstation or on a hardcopy device.

Deprecated term for panel.

distribution manager
The component of the NetView program that enables the host system to use, send, and delete files and programs in a network of computers.

Document Composition Facility (DCF)
An IBM licensed program used to format input to a printer.

domain
An access method and its application programs, communication controllers, connecting lines, modems, and attached workstations.

In SNA, a system services control point (SSCP) and the physical units (PUs), logical units (LUs), links, link stations, and associated resources that the SSCP can control with activation requests and deactivation requests.

double-byte character set (DBCS)
A character set, such as Kanji, in which each character is represented by a 2-byte code.

DP enterprise
Data processing enterprise.

DSIPARM
This file is a collection of members for NetView customization.

DST
Data Services Task.

E

EBCDIC
See Extended Binary Coded Decimal Interchange Code.

ECB
See event control block.

EMCS
Extended multiple console support. See also multiple console support.

ensemble
A collection of one or more zEnterprise nodes (including any attached zBX) that are managed as a single logical virtualized system by the Unified Resource Manager, through the Hardware Management Console.

ensemble member
A zEnterprise node that has been added to an ensemble.

enterprise
The composite of all operational entities, functions, and resources that form the total business concern and that require an information system.

Enterprise Systems Architecture (ESA)
A hardware architecture that reduces the effort required for managing data sets and extends addressability for system, subsystem, and application functions.

entries
Resources, such as processors, entered on panels.

entry type
Resources, such as processors or applications, used for automation and monitoring.

environment
Data processing enterprise.

error threshold
An automation policy setting that specifies when SA z/OS should stop trying to restart or recover an application, subsystem or component, or offload a data set.

ESA
See Enterprise Systems Architecture.

event
In NetView, a record indicating irregularities of operation in physical elements of a network.

An occurrence of significance to a task; for example, the completion of an asynchronous operation, such as an input/output operation.

Events are part of a trigger condition, such that if all events of a trigger condition have occurred, a startup or shutdown of an application is performed.

event control block (ECB)
A control block used to represent the status of an event.

exception condition
An occurrence on a system that is a deviation from normal operation. SA z/OS monitoring highlights exception conditions and allows an SA z/OS enterprise to be managed by exception.

Extended Binary Coded Decimal Interchange Code (EBCDIC)
A coded character set of 256 8-bit characters developed for the representation of textual data. See also American Standard Code for Information Interchange.

extended recovery facility (XRF)
A facility that minimizes the effect of failures in z/OS, VTAM, the host processor, or high availability applications during sessions between high availability applications and designated terminals. This facility provides an alternate subsystem to take over sessions from the failing subsystem.

F

fallback system
See secondary system.

field
A collection of bytes within a record that are logically related and are processed as a unit.

file manager commands
A set of SA z/OS commands that read data from or write data to the automation control file or the operational information base. These commands are useful in the development of automation that uses SA z/OS facilities.

focal point
In NetView, the focal-point domain is the central host domain. It is the central control point for any management services element containing control of the network management data.

focal point system
A system that can administer, manage, or control one or more target systems. There are a number of different focal point system associated with IBM automation products.

SA z/OS Processor Operations focal point system. This is a NetView system that has SA z/OS host code installed. The SA z/OS Processor Operations focal point system receives messages from the systems and operator consoles of the machines that it controls. It provides full systems and operations console function for its target systems. It can be used to IPL these systems. Note that some restrictions apply to the Hardware Management Console for an S/390® microprocessor cluster.

SA z/OS SDF focal point system. The SA z/OS SDF focal point system is an SA z/OS NetView system that collects status information from other SA z/OS NetViews within your enterprise.

Status focal point system. In NetView, the system to which STATMON, VTAM and NLDM send status information on network resources.

Hardware Management Console. Although not listed as a focal point, the Hardware Management Console acts as a focal point for the console functions of an S/390 microprocessor cluster. Unlike all the other focal points in this definition, the Hardware Management Console runs on a LAN-connected workstation,

frame
For a System/390 microprocessor cluster, a frame contains one or two central processor complexes (CPCs), support elements, and AC power distribution.

full-screen mode
In NetView, a form of panel presentation that makes it possible to display the contents of an entire workstation screen at once. Full-screen mode can be used for fill-in-the-blanks prompting. Contrast with line mode.

G

gateway session
An NetView-NetView Task session with another system in which the SA z/OS outbound gateway operator logs onto the other NetView session without human operator intervention. Each end of a gateway session has both an inbound and outbound gateway operator.

generic alert
Encoded alert information that uses code points (defined by IBM and possibly customized by users or application programs) stored at an alert receiver, such as NetView.

group
A collection of target systems defined through configuration dialogs. An installation might set up a group to refer to a physical site or an organizational or application entity.

group entry
A construct, created with the customization dialogs, used to represent and contain policy for a group.

group entry type
A collection of target systems defined through the customization dialog. An installation might set up a group to refer to a physical site or an organizational entity. Groups can, for example, be of type STANDARD or SYSPLEX.

H

Hardware Management Console (HMC)
A user interface through which data center personnel configure, control, monitor, and manage System z hardware and software resources. The HMC communicates with each central processor complex (CPC) through the Support Element. On an IBM zEnterprise 196 (z196), using the Unified Resource Manager on the HMCs or Support Elements, personnel can also create and manage an ensemble.

Hardware Management Console Application (HWMCA)
A direct-manipulation object-oriented graphical user interface that provides a single point of control and single system image for hardware elements. The HWMCA provides grouping support, aggregated and real-time system status using colors, consolidated hardware messages support, consolidated operating system messages support, consolidated service support, and hardware commands targeted at a single system, multiple systems, or a group of systems.

help panel
An online panel that tells you how to use a command or another aspect of a product.

hierarchy
In the NetView program, the resource types, display types, and data types that make up the organization, or levels, in a network.

high-level language (HLL)
A programming language that provides some level of abstraction from assembler language and independence from a particular type of machine. For the NetView program, the high-level languages are PL/I and C.

HLL
See high-level language.

host (primary processor)
The processor that you enter a command at (also known as the *issuing processor*).

host system
In a coupled system or distributed system environment, the system on which the facilities for centralized automation run. SA z/OS publications refer to target systems or focal-point systems instead of hosts.

HWMCA
See Hardware Management Console Application.

Hypervisor
A program that allows multiple instances of operating systems or virtual servers to run simultaneously on the same hardware device. A hypervisor can run directly on the hardware, can run within an operating system, or can be imbedded in platform firmware. Examples of hypervisors include PR/SM, z/VM®, and PowerVM® Enterprise Edition.

I

IBM blade
A customer-acquired, customer-installed select blade to be managed by IBM zEnterprise Unified Resource Manager. One example of an IBM blade is a POWER7® blade.

IBM Secure Service Container (SSC)
IBM Z partitions, activated to run in SSC operating mode, provide the basic infrastructure runtime and deployment support for firmware or software based appliances, such as zAware or z/VSE® VNA.

IBM Smart Analyzer for DB2 for z/OS
An optimizer that processes certain types of data warehouse queries for DB2 for z/OS.

IBM System z Application Assist Processor (zAAP)
A specialized processor that provides a Java™ execution environment, which enables Java-based web applications to be integrated with core z/OS business applications and backend database systems.

IBM System z Integrated Information Processor (zIIP)
See Integrated Information Processor (IIP).

IBM Websphere DataPower Integration Appliance X150 for zEnterprise (DataPower X150z)
A purpose-built appliance that simplifies, helps secure, and optimizes XML and Web services processing.

IBM Workload Scheduler (IWS)
A family of IBM licensed products (formerly known as Tivoli Workload Scheduler or OPC/A) that plan, execute, and track jobs on several platforms and environments.

IBM zEnterprise 196 (z196)
The newest generation of System z family of servers built on a new processor chip, with enhanced memory function and capacity, security, and on demand enhancements to support existing mainframe workloads and large scale consolidation.

IBM zEnterprise BladeCenter Extension (zBX)
A heterogeneous hardware infrastructure that consists of a BladeCenter chassis attached to an IBM zEnterprise 196 (z196). A BladeCenter chassis can contain IBM blades or optimizers.

IBM zEnterprise BladeCenter Extension (zBX) blade
Generic name for all blade types supported in an IBM zEnterprise BladeCenter Extension (zBX). This term includes IBM blades and optimizers.

IBM zEnterprise System (zEnterprise)
A heterogeneous hardware infrastructure that can consist of an IBM zEnterprise 196 (z196) and an attached IBM zEnterprise BladeCenter Extension (zBX) Model 002, managed as a single logical virtualized system by the Unified Resource Manager.

IBM zEnterprise Unified Resource Manager
Licensed Internal Code (LIC), also known as firmware, that is part of the Hardware Management Console. The Unified Resource Manager provides energy monitoring and management, goal-oriented policy management, increased security, virtual networking, and data management for the physical and logical resources of a given ensemble.

I/O resource number
Combination of channel path identifier (CHPID), device number, etc. See internal token.

images
A grouping of processors and I/O devices that you define. You can define a single-image mode that allows a multiprocessor system to function as one central processor image.

IMS
See Information Management System.

IMS/VS
See Information Management System/Virtual Storage.

inbound
In SA z/OS, messages sent to the focal-point system from the PC or target system.

inbound gateway operator
The automation operator that receives incoming messages, commands, and responses from the outbound gateway operator at the sending system. The inbound gateway operator handles communications with other systems using a gateway session.

Information Management System (IMS)
Any of several system environments available with a database manager and transaction processing that are capable of managing complex databases and terminal networks.

Information Management System/Virtual Storage (IMS/VS)
A database/data communication (DB/DC) system that can manage complex databases and networks. Synonymous with Information Management System.

initial microprogram load
The action of loading microprograms into computer storage.

initial program load (IPL)
The initialization procedure that causes an operating system to commence operation.

The process by which a configuration image is loaded into storage at the beginning of a workday or after a system malfunction.

The process of loading system programs and preparing a system to run jobs.

initialize automation
SA z/OS-provided automation that issues the correct z/OS start command for each subsystem when SA z/OS is initialized. The automation ensures that subsystems are started in the order specified in the automation control files and that prerequisite applications are functional.

input/output configuration data set (IOCDS)
A configuration definition built by the I/O configuration program (IOCP) and stored on disk files associated with the processor controller.

input/output support processor (IOSP)
The hardware unit that provides I/O support functions for the primary support processor and maintenance support functions for the processor controller.

Integrated Information Processor (IIP)
A specialized processor that provides computing capacity for selected data and transaction processing workloads and for selected network encryption workloads.

Interactive System Productivity Facility (ISPF)
An IBM licensed program that serves as a full-screen editor and dialog manager. Used for writing application programs, it provides a means of generating standard screen panels and interactive dialogs between the application programmer and the terminal user. See also Time Sharing Option.

interested operator list
The list of operators who are to receive messages from a specific target system.

internal token
A *logical token* (LTOK); name by which the I/O resource or object is known; stored in IODF.

IOCDS
See input/output configuration data set.

IOSP
See input/output support processor..

IPL
See initial program load.

ISPF
See Interactive System Productivity Facility.

ISPF console
You log on to ISPF from this 3270-type console to use the runtime panels for SA z/OS customization panels.

issuing host
The base program that you enter a command for processing with. See primary host.

J

JCL
See job control language.

JES
See job entry subsystem.

JES2
An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In an installation with more than one processor, each JES2 processor independently controls its job input, scheduling, and output processing. See also job entry subsystem and JES3

JES3
An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In complexes that have several loosely coupled processing units, the JES3 program manages processors so that the global processor exercises centralized control over the local processors and distributes jobs to them using a common job queue. See also job entry subsystem and JES2.

job
A set of data that completely defines a unit of work for a computer. A job usually includes all necessary computer programs, linkages, files, and instructions to the operating system.

An address space.

job control language (JCL)
A problem-oriented language designed to express statements in a job that are used to identify the job or describe its requirements to an operating system.

job entry subsystem (JES)
An IBM licensed program that receives jobs into the system and processes all output data that is produced by jobs. In SA z/OS publications, JES refers to JES2 or JES3, unless otherwise stated. See also JES2 and JES3.

K

Kanji
An ideographic character set used in Japanese. See also double-byte character set.

L

LAN
See local area network.

line mode
A form of screen presentation in which the information is presented a line at a time in the message area of the terminal screen. Contrast with full-screen mode.

link
In SNA, the combination of the link connection and the link stations joining network nodes; for example, a System/370 channel and its associated protocols, a serial-by-bit connection under the control of synchronous data link control (SDLC). See synchronous data link control.

In SA z/OS, link connection is the physical medium of transmission.

link-attached
Describes devices that are physically connected by a telecommunication line. Contrast with channel-attached.

Linux® on z Systems
UNIX-like open source operating system conceived by Linus Torvalds and developed across the internet.

local
Pertaining to a device accessed directly without use of a telecommunication line. Synonymous with channel-attached.

local area network (LAN)
A network in which a set of devices is connected for communication. They can be connected to a larger network. See also token ring.

A network that connects several devices in a limited area (such as a single building or campus) and that can be connected to a larger network.

logical partition (LP)
A subset of the processor hardware that is defined to support an operating system. See also logically partitioned mode.

logical token (LTOK)
Resource number of an object in the IODF.

logical unit (LU)
In SNA, a port through which an end user accesses the SNA network and the functions provided by system services control points (SSCPs). An LU can support at least two sessions, one with an SSCP and one with another LU, and may be capable of supporting many sessions with other LUs. See also physical unit and system services control point.

logical unit 6.2 (LU 6.2)
A type of logical unit that supports general communications between programs in a distributed processing environment. LU 6.2 is characterized by:

- A peer relationship between session partners
- Efficient use of a session for multiple transactions
- A comprehensive end-to-end error processing
- A generic application program interface (API) consisting of structured verbs that are mapped to a product implementation

Synonym for advanced program-to-program communication.

logically partitioned (LPAR) mode
A central processor mode that enables an operator to allocate system processor hardware resources among several logical partitions. Contrast with basic mode.

LOGR
The sysplex logger.

LP
See logical partition.

LPAR
See logically partitioned mode.

LU
See logical unit.

LU 6.2
See logical unit 6.2.

LU 6.2 session
A session initiated by VTAM on behalf of an LU 6.2 application program, or a session initiated by a remote LU in which the application program specifies that VTAM is to control the session by using the APPCCMD macro. See logical unit 6.2.

LU-LU session
In SNA, a session between two logical units (LUs) in an SNA network. It provides communication between two end users, or between an end user and an LU services component.

M

MAT
Deprecated term for NetView automation table.

MCA
See Micro Channel architecture.

MCS
See multiple console support.

member
A specific function (one or more modules or routines) of a multisystem application that is defined to XCF and assigned to a group by the multisystem application. A member resides on one system in the sysplex and can use XCF services to communicate (send and receive data) with other members of the same group.

message automation table (MAT)
Deprecated term for NetView automation table.

message class
A number that SA z/OS associates with a message to control routing of the message. During automated operations, the classes associated with each message issued by SA z/OS are compared to the classes assigned to each notification operator. Any operator with a class matching one of the message's classes receives the message.

message forwarding
The SA z/OS process of sending messages generated at an SA z/OS target system to the SA z/OS focal-point system.

message group
Several messages that are displayed together as a unit.

message monitor task
A task that starts and is associated with a number of communications tasks. Message monitor tasks receive inbound messages from a communications task, determine the originating target system, and route the messages to the appropriate target control tasks.

message processing facility (MPF)
A z/OS table that screens all messages sent to the z/OS console. The MPF compares these messages with a customer-defined list of messages (based on this message list, messages are automated and/or suppressed from z/OS console display), and marks messages to automate or suppress. Messages are then broadcast on the subsystem interface (SSI).

message suppression
The ability to restrict the amount of message traffic displayed on the z/OS console.

Micro Channel architecture
The rules that define how subsystems and adapters use the Micro Channel bus in a computer. The architecture defines the services that each subsystem can or must provide.

microprocessor
A processor implemented on one or a small number of chips.

migration
Installation of a new version or release of a program to replace an earlier version or release.

MP
Multiprocessor.

MPF
See message processing facility.

MPFLSTxx
The MPFLST member that is built by SA z/OS.

multi-MVS environment
physical processing system that is capable of operating more than one MVS image. See also MVS image.

multiple console support (MCS)
A feature of MVS that permits selective message routing to multiple consoles.

Multiple Virtual Storage (MVS)
An IBM operating system that accesses multiple address spaces in virtual storage. The predecessor of z/OS.

multiprocessor (MP)
A CPC that can be physically partitioned to form two operating processor complexes.

multisystem application
An application program that has various functions distributed across z/OS images in a multisystem environment.

multisystem environment
An environment in which two or more systems reside on one or more processors. Or one or more processors can communicate with programs on the other systems.

MVS
See Multiple Virtual Storage.

MVS image
A single occurrence of the MVS operating system that has the ability to process work. See also multi-MVS environment and single-MVS environment.

MVS/ESA
Multiple Virtual Storage/Enterprise Systems Architecture. See z/OS.

MVS/JES2
Multiple Virtual Storage/Job Entry System 2. A z/OS subsystem that receives jobs into the system, converts them to an internal format, selects them for execution, processes their output, and purges them from the system. In an installation with more than one processor, each JES2 processor independently controls its job input, scheduling, and output processing.

N

NAU
See network addressable unit.

See network accessible unit.

NCCF
See Network Communications Control Facility..

NCP
See network control program (general term).

See Network Control Program (an IBM licensed program). Its full name is Advanced Communications Function for the Network Control Program. Synonymous with ACF/NCP.

NCP/token ring interconnection
A function used by ACF/NCP to support token ring-attached SNA devices. NTRI also provides translation from token ring-attached SNA devices (PUs) to switched (dial-up) devices.

NetView
An IBM licensed program used to monitor a network, manage it, and diagnose network problems. NetView consists of a command facility that includes a presentation service, command processors, automation based on command lists, and a transaction processing structure on which the session monitor, hardware monitor, and terminal access facility (TAF) network management applications are built.

NetView (NCCF) console
A 3270-type console for NetView commands and runtime panels for system operations and processor operations.

NetView automation procedures
A sequence of commands, packaged as a NetView command list or a command processor written in a high-level language. An automation procedure performs automation functions and runs under the NetView program.

NetView automation table (AT)
A table against which the NetView program compares incoming messages. A match with an entry triggers the specified response. SA z/OS entries in the NetView automation table trigger an SA z/OS response to target system conditions. Formerly known as the message automation table (MAT).

NetView command list language
An interpretive language unique to NetView that is used to write command lists.

NetView hardware monitor
The component of NetView that helps identify network problems, such as hardware, software, and microcode, from a central control point using interactive display techniques. Formerly called *network problem determination application*.

NetView log
The log that NetView records events relating to NetView and SA z/OS activities in.

NetView message table
See NetView automation table.

NetView paths via logical unit (LU 6.2)
A type of network-accessible port (VTAM connection) that enables end users to gain access to SNA network resources and communicate with each other. LU 6.2 permits communication between processor operations and the workstation. See logical unit 6.2.

NetView-NetView task (NNT)
The task that a cross-domain NetView operator session runs under. Each NetView program must have a NetView-NetView task to establish one NNT session. See also operator station task.

NetView-NetView task session
A session between two NetView programs that runs under a NetView-NetView task. In SA z/OS, NetView-NetView task sessions are used for communication between focal point and remote systems.

network
An interconnected group of nodes.

In data processing, a user application network. See SNA network.

network accessible unit (NAU)
In SNA networking, any device on the network that has a network address, including a logical unit (LU), physical unit (PU), control point (CP), or system services control point (SSCP). It is the origin or the destination of information transmitted by the path control network. Synonymous with network addressable unit.

network addressable unit (NAU)
Synonym for network accessible unit.

Network Communications Control Facility (NCCF)
The operations control facility for the network. NCCF consists of a presentation service, command processors, automation based on command lists, and a transaction processing structure on which the network management applications NLDM are built. NCCF is a precursor to the NetView command facility.

Network Control Program (NCP)
An IBM licensed program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Network Control Program.

network control program (NCP)
A program that controls the operation of a communication controller.

A program used for requests and responses exchanged between physical units in a network for data flow control.

Networking NetView
In SA z/OS the NetView that performs network management functions, such as managing the configuration of a network. In SA z/OS it is common to also route alerts to the Networking NetView.

NIP
See nucleus initialization program.

NNT
See NetView-NetView task.

notification message
An SA z/OS message sent to a human notification operator to provide information about significant automation actions. Notification messages are defined using the customization dialogs.

notification operator
A NetView console operator who is authorized to receive SA z/OS notification messages. Authorization is made through the customization dialogs.

NTRI
See NCP/token ring interconnection.

nucleus initialization program (NIP)
The program that initializes the resident control program; it allows the operator to request last-minute changes to certain options specified during system generation.

O

objective value
An average Workflow or Using value that SA z/OS can calculate for applications from past service data. SA z/OS uses the objective value to calculate warning and alert thresholds when none are explicitly defined.

OCA
In SA z/OS, operator console A, the active operator console for a target system. Contrast with OCB.

OCB
In SA z/OS, operator console B, the backup operator console for a target system. Contrast with OCA.

OPC/A
See Operations Planning and Control/Advanced.

OPC/ESA
See Operations Planning and Control/Enterprise Systems Architecture.

operating system (OS)
Software that controls the execution of programs and that may provide services such as resource allocation, scheduling, input/output control, and data management. Although operating systems are predominantly software, partial hardware implementations are possible. (T)

operations
The real-time control of a hardware device or software function.

Operations Planning and Control/Advanced (OPC/A)
A set of IBM licensed programs that automate, plan, and control batch workload. OPC/A analyzes system and workload status and submits jobs accordingly.

Operations Planning and Control/Enterprise Systems Architecture (OPC/ESA)
A set of IBM licensed programs that automate, plan, and control batch workload. OPC/ESA analyzes system and workload status and submits jobs accordingly. The successor to OPC/A.

operator
A person who keeps a system running.

A person or program responsible for managing activities controlled by a given piece of software such as z/OS, the NetView program, or IMS.

A person who operates a device.

In a language statement, the lexical entity that indicates the action to be performed on operands.

operator console
A functional unit containing devices that are used for communications between a computer operator and a computer. (T)

A display console used for communication between the operator and the system, used primarily to specify information concerning application programs and to monitor system operation.

In SA z/OS, a console that displays output from and sends input to the operating system (z/OS, LINUX, VM, VSE). Also called *operating system console*. In the SA z/OS operator commands and configuration dialogs, OC is used to designate a target system operator console.

operator station task (OST)
The NetView task that establishes and maintains the online session with the network operator. There is one operator station task for each network operator who logs on to the NetView program.

operator view
A set of group, system, and resource definitions that are associated together for monitoring purposes. An operator view appears as a graphic display in the graphical interface showing the status of the defined groups, systems, and resources.

OperatorView entry
A construct, created with the customization dialogs, used to represent and contain policy for an operator view.

optimizer
A special-purpose hardware component or appliance that can perform a limited set of specific functions with optimized performance when compared to a general-purpose processor. Because of its limited set of functions, an optimizer is an integrated part of a processing environment, rather than a stand-alone unit. One example of an optimizer is the IBM Smart Analytics Optimizer for DB2 for z/OS.

OS
See operating system.

OST
See operator station task.

outbound
In SA z/OS, messages or commands from the focal-point system to the target system.

outbound gateway operator
The automation operator that establishes connections to other systems. The outbound gateway operator handles communications with other systems through a gateway session. The automation operator sends messages, commands, and responses to the inbound gateway operator at the receiving system.

P

page
The portion of a panel that is shown on a display surface at one time.

To transfer instructions, data, or both between real storage and external page or auxiliary storage.

panel
A formatted display of information that appears on a terminal screen. Panels are full-screen 3270-type displays with a monospaced font, limited color and graphics.

By using SA z/OS panels you can see status, type commands on a command line using a keyboard, configure your system, and passthru to other consoles. See also help panel.

In computer graphics, a display image that defines the locations and characteristics of display fields on a display surface. Contrast with screen.

parameter
A variable that is given a constant value for a specified application and that may represent an application, for example.

An item in a menu for which the user specifies a value or for which the system provides a value when the menu is interpreted.

Data passed to a program or procedure by a user or another program, specifically as an operand in a language statement, as an item in a menu, or as a shared data structure.

partition
A fixed-size division of storage.

In VSE, a division of the virtual address area that is available for program processing.

On an IBM Personal Computer fixed disk, one of four possible storage areas of variable size; one can be accessed by DOS, and each of the others may be assigned to another operating system.

partitionable CPC
A CPC that can be divided into 2 independent CPCs. See also physical partition, single-image mode, MP, and side.

partitioned data set (PDS)
A data set in direct access storage that is divided into partitions, called *members*, each of which can contain a program, part of a program, or data.

passive monitoring
In SA z/OS, the receiving of unsolicited messages from z/OS systems and their resources. These messages can prompt updates to resource status displays. See also active monitoring

PCE
A processor controller. Also known as the support processor or service processor in some processor families.

PDB
See policy database.

PDS
See partitioned data set.

physical partition
Part of a CPC that operates as a CPC in its own right, with its own copy of the operating system.

physical unit (PU)
In SNA, the component that manages and monitors the resources (such as attached links and adjacent link stations) of a node, as requested by a system services control point (SSCP) through an SSCP-PU session. An SSCP activates a session with the physical unit to indirectly manage, through the PU, resources of the node such as attached links.

physically partitioned (PP) configuration
A mode of operation that allows a multiprocessor (MP) system to function as two or more independent CPCs having separate power, utilities, and maintenance boundaries. Contrast with single-image mode.

PLEXID group
PLEXID group or "extended XCF communication group" is a term used in conjunction with a sysplex. The PLEXID group includes System Automation Agents for a subset of a sysplex or for the entire sysplex. It is used to provide XCF communication beyond the SAplex boundaries. For a detailed description, refer to "Defining the Extended XCF Communication Group" in *IBM System Automation for z/OS Planning and Installation*.

POI
See program operator interface.

policy
The automation and monitoring specifications for an SA z/OS enterprise. See *IBM System Automation for z/OS Defining Automation Policy*.

policy database
The automation definitions (automation policy) that the automation administrator specifies using the customization dialog is stored in the policy database. Also known as the PDB. See also automation policy.

POR
See power-on reset.

port
System hardware that the I/O devices are attached to.

An access point (for example, a logical unit) for data entry or exit.

A functional unit of a node that data can enter or leave a data network through.

In data communication, that part of a data processor that is dedicated to a single data channel for the purpose of receiving data from or transmitting data to one or more external, remote devices.

power-on reset (POR)
A function that re-initializes all the hardware in a CPC and loads the internal code that enables the CPC to load and run an operating system. See initial microprogram load.

PP
See physical partition.

PPI
See program to program interface.

PPT
See primary POI task.

PR/SM
See Processor Resource/Systems Manager.

primary host
The base program that you enter a command for processing at.

primary POI task (PPT)
The NetView subtask that processes all unsolicited messages received from the VTAM program operator interface (POI) and delivers them to the controlling operator or to the command processor. The PPT also processes the initial command specified to execute when NetView is initialized and timer request commands scheduled to execute under the PPT.

primary system
A system is a primary system for an application if the application is normally meant to be running there. SA z/OS starts the application on all the primary systems defined for it.

problem determination
The process of determining the source of a problem; for example, a program component, machine failure, telecommunication facilities, user or contractor-installed programs or equipment, environment failure such as a power loss, or user error.

processor
A device for processing data from programmed instructions. It may be part of another unit.

In a computer, the part that interprets and executes instructions. Two typical components of a processor are a control unit and an arithmetic logic unit.

processor controller
Hardware that provides support and diagnostic functions for the central processors.

processor operations
The part of SA z/OS that monitors and controls processor (hardware) operations. Processor operations provides a connection from a focal-point system to a target system. Through NetView on the focal-point system, processor operations automates operator and system consoles for monitoring and recovering target systems. Also known as ProcOps.

Processor Resource/Systems Manager (PR/SM)
The feature that allows the processor to use several operating system images simultaneously and provides logical partitioning capability. See also logically partitioned mode.

ProcOps
See processor operations.

ProcOps Service Machine (PSM)
The PSM is a CMS user on a VM host system. It runs a CMS multitasking application that serves as "virtual hardware" for ProcOps. ProOps communicates via the PSM with the VM guest systems that are defined as target systems within ProcOps.

product automation
Automation integrated into the base of SA z/OS for the products CICS, DB2, IMS, IBM Workload Scheduler (formerly called *features*).

program operator interface (POI)
A NetView facility for receiving VTAM messages.

program to program interface (PPI)
A NetView function that allows user programs to send or receive data buffers from other user programs and to send alerts to the NetView hardware monitor from system and application programs.

protocol
In SNA, the meanings of, and the sequencing rules for, requests and responses used for managing the network, transferring data, and synchronizing the states of network components.

proxy resource
A resource defined like an entry type APL representing a processor operations target system.

PSM
See ProcOps Service Machine.

PU
See physical unit.

R

RACF
See Resource Access Control Facility.

remote system
A system that receives resource status information from an SA z/OS focal-point system. An SA z/OS remote system is defined as part of the same SA z/OS enterprise as the SA z/OS focal-point system to which it is related.

requester
A workstation from that user can log on to a domain from, that is, to the servers belonging to the domain, and use network resources. Users can access the shared resources and use the processing capability of the servers, thus reducing hardware investment.

resource
Any facility of the computing system or operating system required by a job or task, and including main storage, input/output devices, the processing unit, data sets, and control or processing programs.

In NetView, any hardware or software that provides function to the network.

In SA z/OS, any z/OS application, z/OS component, job, device, or target system capable of being monitored or automated through SA z/OS.

Resource Access Control Facility (RACF)
A program that can provide data security for all your resources. RACF protects data from accidental or deliberate unauthorized disclosure, modification, or destruction.

resource group
A physically partitionable portion of a processor. Also known as a *side*.

Resource Measurement Facility (RMF)
A feature of z/OS that measures selected areas of system activity and presents the data collected in the format of printed reports, System Management Facility (SMF) records, or display reports.

restart automation
Automation provided by SA z/OS that monitors subsystems to ensure that they are running. If a subsystem fails, SA z/OS attempts to restart it according to the policy in the automation configuration file.

Restructured Extended Executor (REXX)
A general-purpose, high-level, programming language, particularly suitable for EXEC procedures or programs for personal computing, used to write command lists.

return code
A code returned from a program used to influence the issuing of subsequent instructions.

REXX
See Restructured Extended Executor.

REXX procedure
A command list written with the Restructured Extended Executor (REXX), which is an interpretive language.

RMF
See Resource Measurement Facility.

S

SAF
See Security Authorization Facility.

SA IOM
See System Automation for Integrated Operations Management.

SAplex
SAplex or "SA z/OS Subplex" is a term used in conjuction with a sysplex. In fact, a SAplex is a subset of a sysplex. However, it can also be a sysplex. For a detailed description, refer to "Using SA z/OS Subplexes" in *IBM System Automation for z/OS Planning and Installation*.

SA z/OS
See System Automation for z/OS.

SA z/OS customization dialogs
An ISPF application through which the SA z/OS policy administrator defines policy for individual z/OS systems and builds automation control data.

SA z/OS customization focal point system
See focal point system.

SA z/OS data model
The set of objects, classes and entity relationships necessary to support the function of SA z/OS and the NetView automation platform.

SA z/OS enterprise
The group of systems and resources defined in the customization dialogs under one enterprise name. An SA z/OS enterprise consists of connected z/OS systems running SA z/OS.

SA z/OS focal point system
See focal point system.

SA z/OS policy
The description of the systems and resources that make up an SA z/OS enterprise, together with their monitoring and automation definitions.

SA z/OS policy administrator
The member of the operations staff who is responsible for defining SA z/OS policy.

SA z/OS SDF focal point system
See focal point system.

SCA
In SA z/OS, system console A, the active system console for a target hardware. Contrast with SCB.

SCB
In SA z/OS, system console B, the backup system console for a target hardware. Contrast with SCA.

screen
Deprecated term for panel.

screen handler
In SA z/OS, software that interprets all data to and from a full-screen image of a target system. The interpretation depends on the format of the data on the full-screen image. Every processor and operating system has its own format for the full-screen image. A screen handler controls one PS/2 connection to a target system.

SDF
See status display facility.

SDLC
See synchronous data link control.

SDSF
See System Display and Search Facility.

secondary system
A system is a secondary system for an application if it is defined to automation on that system, but the application is not normally meant to be running there. Secondary systems are systems to which an application can be moved in the event that one or more of its primary systems are unavailable. SA z/OS does not start the application on its secondary systems.

Security Authorization Facility (SAF)
An MVS interface with which programs can communicate with an external security manager, such as RACF.

server
A server is a workstation that shares resources, which include directories, printers, serial devices, and computing powers.

service language command (SLC)
The line-oriented command language of processor controllers or service processors.

service period
Service periods allow the users to schedule the availability of applications. A service period is a set of time intervals (service windows), during which an application should be active.

service processor (SVP)
The name given to a processor controller on smaller System/370 processors.

service threshold
An SA z/OS policy setting that determines when to notify the operator of deteriorating service for a resource. See also alert threshold and warning threshold.

session
In SNA, a logical connection between two network addressable units (NAUs) that can be activated, tailored to provide various protocols, and deactivated, as requested. Each session is uniquely identified in a transmission header by a pair of network addresses identifying the origin and destination NAUs of any transmissions exchanged during the session.

session monitor
The component of the NetView program that collects and correlates session-related data and provides online access to this information. The successor to NLDM.

shutdown automation
SA z/OS-provided automation that manages the shutdown process for subsystems by issuing shutdown commands and responding to prompts for additional information.

side
A part of a partitionable CPC that can run as a physical partition and is typically referred to as the A-side or the B-side.

Simple Network Management Protocol (SNMP)
A set of protocols for monitoring systems and devices in complex networks. Information about managed devices is defined and stored in a Management Information Base (MIB).

single image
A processor system capable of being physically partitioned that has not been physically partitioned. Single-image systems can be target hardware processors.

single-MVS environment
An environment that supports one MVS image. See also MVS image.

single-image (SI) mode
A mode of operation for a multiprocessor (MP) system that allows it to function as one CPC. By definition, a uniprocessor (UP) operates in single-image mode. Contrast with physically partitioned (PP) configuration.

SLC
See service language command.

SMP/E
See System Modification Program/Extended.

SNA
See Systems Network Architecture.

SNA network
In SNA, the part of a user-application network that conforms to the formats and protocols of systems network architecture. It enables reliable transfer of data among end users and provides protocols

for controlling the resources of various network configurations. The SNA network consists of network addressable units (NAUs), boundary function components, and the path control network.

SNMP
See Simple Network Management Protocol.

solicited message
An SA z/OS message that directly responds to a command. Contrast with unsolicited message.

SSCP
See system services control point.

SSI
See subsystem interface.

start automation
Automation provided by SA z/OS that manages and completes the startup process for subsystems. During this process, SA z/OS replies to prompts for additional information, ensures that the startup process completes within specified time limits, notifies the operator of problems, if necessary, and brings subsystems to an UP (or ready) state.

startup
The point in time that a subsystem or application is started.

status
The measure of the condition or availability of the resource.

status display facility (SDF)
The system operations part of SA z/OS that displays status of resources such as applications, gateways, and write-to-operator messages (WTORs) on dynamic color-coded panels. SDF shows spool usage problems and resource data from multiple systems.

steady state automation
The routine monitoring, both for presence and performance, of subsystems, applications, volumes and systems. Steady state automation may respond to messages, performance exceptions and discrepancies between its model of the system and reality.

structure
A construct used by z/OS to map and manage storage on a coupling facility.

subgroup
A named set of systems. A subgroup is part of an SA z/OS enterprise definition and is used for monitoring purposes.

SubGroup entry
A construct, created with the customization dialogs, used to represent and contain policy for a subgroup.

subplex
See SAplex.

subsystem
A secondary or subordinate system, usually capable of operating independent of, or asynchronously with, a controlling system.

In SA z/OS, an z/OS application or subsystem defined to SA z/OS.

subsystem interface (SSI)
The z/OS interface over which all messages sent to the z/OS console are broadcast.

support element
A hardware unit that provides communications, monitoring, and diagnostic functions to a central processor complex (CPC).

support processor
Another name given to a processor controller on smaller System/370 processors. See service processor.

SVP
See service processor.

symbolic destination name (SDN)
Used locally at the workstation to relate to the VTAM application name.

synchronous data link control (SDLC)
A discipline for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. SDLC conforms to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute and High-Level Data Link Control (HDLC) of the International Standards Organization.

SYSINFO Report
An RMF report that presents an overview of the system, its workload, and the total number of jobs using resources or delayed for resources.

SysOps
See system operations.

sysplex
A set of z/OS systems communicating and cooperating with each other through certain multisystem hardware components (coupling devices and timers) and software services (couple data sets).

In a sysplex, z/OS provides the coupling services that handle the messages, data, and status for the parts of a multisystem application that has its workload spread across two or more of the connected processors, sysplex timers, coupling facilities, and couple data sets (which contains policy and states for automation).

A Parallel Sysplex® is a sysplex that includes a coupling facility.

sysplex application group
A sysplex application group is a grouping of applications that can run on any system in a sysplex.

sysplex couple data set
A couple data set that contains sysplex-wide data about systems, groups, and members that use XCF services. All z/OS systems in a sysplex must have connectivity to the sysplex couple data set. See also couple data set.

Sysplex Timer
An IBM unit that synchronizes the time-of-day (TOD) clocks in multiple processors or processor sides. External Time Reference (ETR) is the z/OS generic name for the IBM Sysplex Timer (9037).

system
In SA z/OS, system means a focal point system (z/OS) or a target system (MVS, VM, VSE, LINUX, or CF).

System Automation for Integrated Operations Management
An outboard automation solution for secure remote access to mainframe/distributed systems. Tivoli System Automation for Integrated Operations Management, previously Tivoli AF/REMOTE, allows users to manage mainframe and distributed systems from any location.

The full name for SA IOM.

System Automation for z/OS
The full name for SA z/OS.

system console
A console, usually having a keyboard and a display screen, that is used by an operator to control and communicate with a system.

A logical device used for the operation and control of hardware functions (for example, IPL, alter/display, and reconfiguration). The system console can be assigned to any of the physical displays attached to a processor controller or support processor.

In SA z/OS, the hardware system console for processor controllers or service processors of processors connected using SA z/OS. In the SA z/OS operator commands and configuration dialogs, SC is used to designate the system console for a target hardware processor.

System Display and Search Facility (SDSF)
An IBM licensed program that provides information about jobs, queues, and printers running under JES2 on a series of panels. Under SA z/OS you can select SDSF from a pull-down menu to see the resources' status, view the z/OS system log, see WTOR messages, and see active jobs on the system.

System entry
A construct, created with the customization dialogs, used to represent and contain policy for a system.

System Modification Program/Extended (SMP/E)
An IBM licensed program that facilitates the process of installing and servicing an z/OS system.

system operations
The part of SA z/OS that monitors and controls system operations applications and subsystems such as NetView, SDSF, JES, RMF, TSO, ACF/VTAM, CICS, IMS, and OPC. Also known as SysOps.

system services control point (SSCP)
In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCPs, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units and logical units within its domain.

System/390 microprocessor cluster
A configuration that consists of central processor complexes (CPCs) and may have one or more integrated coupling facilities.

Systems Network Architecture (SNA)
The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

T

TAF
See terminal access facility.

target
A processor or system monitored and controlled by a focal-point system.

target control task
In SA z/OS, target control tasks process commands and send data to target systems and workstations through communications tasks. A target control task (a NetView autotask) is assigned to a target system when the target system is initialized.

target hardware
In SA z/OS, the physical hardware on which a target system runs. It can be a single-image or physically partitioned processor. Contrast with target system.

target system
In a distributed system environment, a system that is monitored and controlled by the focal-point system. Multiple target systems can be controlled by a single focal-point system.

In SA z/OS, a computer system attached to the focal-point system for monitoring and control. The definition of a target system includes how remote sessions are established, what hardware is used, and what operating system is used.

task
A basic unit of work to be accomplished by a computer.

In the NetView environment, an operator station task (logged-on operator), automation operator (autotask), application task, or user task. A NetView task performs work in the NetView environment. All SA z/OS tasks are NetView tasks. See also message monitor task, and target control task.

telecommunication line
Any physical medium, such as a wire or microwave beam, that is used to transmit data.

terminal access facility (TAF)
A NetView function that allows you to log onto multiple applications either on your system or other systems. You can define TAF sessions in the SA z/OS customization panels so you don't have to set them up each time you want to use them.

In NetView, a facility that allows a network operator to control a number of subsystems. In a full-screen or operator control session, operators can control any combination of subsystems simultaneously.

terminal emulation
The capability of a microcomputer or personal computer to operate as if it were a particular type of terminal linked to a processing unit to access data.

threshold
A value that determines the point at which SA z/OS automation performs a predefined action. See alert threshold, warning threshold, and error threshold.

time of day (TOD)
Typically refers to the time-of-day clock.

Time Sharing Option (TSO)
An optional configuration of the operating system that provides conversational time sharing from remote stations. It is an interactive service on z/OS, MVS/ESA, and MVS/XA.

Time-Sharing Option/Extended (TSO/E)
An option of z/OS that provides conversational timesharing from remote terminals. TSO/E allows a wide variety of users to perform many different kinds of tasks. It can handle short-running applications that use fewer sources as well as long-running applications that require large amounts of resources.

timers
A NetView instruction that issues a command or command processor (list of commands) at a specified time or time interval.

TOD
Time of day.

token ring
A network with a ring topology that passes tokens from one attaching device to another; for example, the IBM Token-Ring Network product.

TP
See transaction program.

transaction program
In the VTAM program, a program that performs services related to the processing of a transaction. One or more transaction programs may operate within a VTAM application program that is using the VTAM application program interface (API). In that situation, the transaction program would request services from the applications program using protocols defined by that application program. The application program, in turn, could request services from the VTAM program by issuing the APPCCMD macro instruction.

transitional automation
The actions involved in starting and stopping subsystems and applications that have been defined to SA z/OS. This can include issuing commands and responding to messages.

translating host
Role played by a host that turns a resource number into a token during a unification process.

trigger
Triggers, in combination with events and service periods, are used to control the starting and stopping of applications in a single system or a parallel sysplex.

TSO
See Time Sharing Option.

TSO console
From this 3270-type console you are logged onto TSO or ISPF to use the runtime panels for SA z/OS customization panels.

TSO/E
See Time-Sharing Option/Extended.

TWS
See IBM Workload Scheduler (IWS).

U

unsolicited message
An SA z/OS message that is not a direct response to a command.

uniform resource identifier (URI)
A uniform resource identifier is a string of characters used to identify a name of a web resource. Such identification enables interaction with representations of the web resource over the internet, using specific protocols.

user task
An application of the NetView program defined in a NetView TASK definition statement.

Using
An RMF Monitor III definition. Jobs getting service from hardware resources (processors or devices) are **using** these resources. The use of a resource by an address space can vary from 0% to 100% where 0% indicates no use during a Range period, and 100% indicates that the address space was found using the resource in every sample during that period.

V

view
In the NetView Graphic Monitor Facility, a graphical picture of a network or part of a network. A view consists of nodes connected by links and may also include text and background lines. A view can be displayed, edited, and monitored for status information about network resources.

Virtual Server
A logical construct that appears to comprise processor, memory, and I/O resources conforming to a particular architecture. A virtual server can support an operating system, associated middleware, and applications. A hypervisor creates and manages virtual servers.

Virtual Server Collection
A set of virtual servers that supports a workload. This set is not necessarily static. The constituents of the collection at any given point are determined by virtual servers involved in supporting the workload at that time.

virtual Server Image
A package containing metadata that describes the system requirements, virtual storage drives, and any goals and constraints for the virtual machine {for example, isolation and availability). The Open Virtual Machine Format (OVF) is a Distributed Management Task Force (DMTF) standard that describes a packaging format for virtual server images.

Virtual Server Image Capture
The ability to store metadata and disk images of an existing virtual server. The metadata describes the virtual server storage, network needs, goals and constraints. The captured information is stored as a virtual server image that can be referenced and used to create and deploy other similar images.

Virtual Server Image Clone
The ability to create an identical copy (clone) of a virtual server image that can be used to create a new similar virtual server.

Virtual Storage Extended (VSE)
A system that consists of a basic operating system (VSE/Advanced Functions), and any IBM supplied and user-written programs required to meet the data processing needs of a user. VSE and the hardware that it controls form a complete computing system. Its current version is called VSE/ESA.

Virtual Telecommunications Access Method (VTAM)
An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple-domain, and interconnected network capability. Its full name is Advanced Communications Function for the Virtual Telecommunications Access Method. Synonymous with ACF/VTAM.

VM Second Level Systems Support
With this function, Processor Operations is able to control VM second level systems (VM guest systems) in the same way that it controls systems running on real hardware.

VM/ESA
Virtual Machine/Enterprise Systems Architecture. Its current version is called z/VM.

volume
A direct access storage device (DASD) volume or a tape volume that serves a system in an SA z/OS enterprise.

VSE
See Virtual Storage Extended.

VTAM
See Virtual Telecommunications Access Method.

W

warning threshold
An application or volume service value that determines the level at which SA z/OS changes the associated icon in the graphical interface to the warning color. See alert threshold.

workstation
In SA z/OS workstation means the *graphic workstation* that an operator uses for day-to-day operations.

write-to-operator (WTO)
A request to send a message to an operator at the z/OS operator console. This request is made by an application and is handled by the WTO processor, which is part of the z/OS supervisor program.

write-to-operator-with-reply (WTOR)
A request to send a message to an operator at the z/OS operator console that requires a response from the operator. This request is made by an application and is handled by the WTO processor, which is part of the z/OS supervisor program.

WTO
See write-to-operator.

WTOR
See write-to-operator-with-reply.

WWV
The US National Institute of Standards and Technology (NIST) radio station that provides standard time information. A second station, known as WWVB, provides standard time information at a different frequency.

X

XCF
See cross-system coupling facility.

XCF couple data set
The name for the sysplex couple data set prior to MVS/ESA System Product Version 5 Release 1. See also sysplex couple data set.

XCF group
A set of related members that a multisystem application defines to XCF. A member is a specific function, or instance, of the application. A member resides on one system and can communicate with other members of the same group across the sysplex.

XRF
See extended recovery facility.

Z

z/OS
: An IBM mainframe operating system that uses 64-bit real storage. See also Base Control Program.

z/OS component
: A part of z/OS that performs a specific z/OS function. In SA z/OS, component refers to entities that are managed by SA z/OS automation.

z/OS subsystem
: Software products that augment the z/OS operating system. JES and TSO/E are examples of z/OS subsystems. SA z/OS includes automation for some z/OS subsystems.

z/OS system
: A z/OS image together with its associated hardware, which collectively are often referred to simply as a system, or z/OS system.

z196
: See IBM zEnterprise 196 (z196).

zAAP
: See IBM System z Application Assist Processor (zAAP).

zBX
: See IBM zEnterprise BladeCenter Extension (zBX).

zBX blade
: See IBM zEnterprise BladeCenter Extension (zBX) blade.

zCPC
: The physical collection of main storage, central processors, timers, and channels within a zEnterprise mainframe. Although this collection of hardware resources is part of the larger zEnterprise central processor complex, you can apply energy management policies to zCPC that are different from those that you apply to any attached IBM zEnterprise BladeCenter Extension (zBX) or blades. See also central processor complex.

zEnterprise
: See IBM zEnterprise System (zEnterprise).

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