

Enterprise COBOL for z/OS
Version 6.3

What's New



Note

Before using this information and the product it supports, be sure to read the general information under [“Notices” on page 7](#).

First edition (30 November 2020 update)

This edition applies to Version 6 Release 3 of IBM® Enterprise COBOL for z/OS® (program number 5655-EC6) and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure that you are using the correct edition for the level of the product.

You can view or download softcopy publications free of charge in the [Enterprise COBOL for z/OS library](#). Because Enterprise COBOL for z/OS supports the continuous delivery (CD) model and publications are updated to document the features delivered under the CD model, it is a good idea to check for updates once every two months.

It is our intention to update the product documentation for this release periodically, without updating the order number. If you need to uniquely refer to the version of your product documentation, refer to the order number with the date of update.

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About this information

This information provides an executive overview of new and improved features in Enterprise COBOL for z/OS 6.3 and Enterprise COBOL for z/OS 6.3 with PTFs installed.

Throughout this information, "COBOL" or "Enterprise COBOL" means "IBM Enterprise COBOL for z/OS".

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Be sure to include the name of the document, the publication number, the version of Enterprise COBOL, and, if applicable, the specific location (for example, the page number or section heading) of the text that you are commenting on.

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Chapter 1. What is new in Enterprise COBOL for z/OS 6.3 and COBOL 6.3 with PTFs installed

This section lists new and improved features in Enterprise COBOL for z/OS 6.3 and Enterprise COBOL for z/OS 6.3 with PTFs installed.

Enterprise COBOL for z/OS supports the continuous delivery (CD) model so that you can receive new features and enhanced capabilities as soon as the code is ready without waiting for the next release. The below feature descriptions that begin with an APAR number are introduced in the PTFs that are shipped with Enterprise COBOL for z/OS 6.3. Install the latest PTFs using the FIXCAT feature of SMP/E to take advantage of these features. For more information on SMP/E FIXCATs, see [Determining service required](#). For more information on PTFs and APARs for Enterprise COBOL for z/OS, see the [COBOL for z/OS support page](#).

The enhancements that are described in this section also have an associated cross-reference to the COBOL publications for your convenience.

The changes mainly fall into the following categories:

- [AMODE 64 \(64-bit\) support](#)
- [UTF-8 support](#)
- [Support of 2002 and 2014 COBOL standards](#)
- [JSON enhancements](#)
- [Other language element changes](#)
- [Compiler option changes](#)
- [Migration assistance](#)
- [Listing changes](#)
- [Installation customization changes](#)
- [Compiler message changes](#)

AMODE 64 (64-bit) support

You can now develop AMODE 64 (64-bit) applications with Enterprise COBOL.

Consider the changes in development and compilation. ([Compiling, binding, and running COBOL AMODE 64 applications](#))

The following language elements are enhanced to provide the AMODE 64 support:

Using **POINTER** and **POINTER-32** phrases under **LP(64)**

When LP(32) is in effect, the USAGE POINTER and USAGE POINTER-32 data types are synonyms. However, they behave differently when LP(64) is in effect.

- A POINTER data item can be SET to a value from a POINTER-32 data item. The high-order word of the POINTER data item is cleared to zero. ([POINTER phrase](#))
- A POINTER-32 data item can be SET to a value from a POINTER data item. Only the low-order word of the POINTER data item is used in this case. It is a programming error if the high-order word of the AMODE 64 POINTER data item is not zero. ([POINTER-32 phrase](#))

Using SYNCHRONIZED clause under LP(64)

If the SYNCHRONIZED clause is specified for data items that have the following usages, the items will be aligned on a fullword boundary if LP(32) is in effect, or on a doubleword boundary if LP(64) is in effect. (SYNCHRONIZED clause)

Note the following usages when you compile code under LP(64):

- USAGE FUNCTION-POINTER (FUNCTION-POINTER phrase)
- USAGE INDEX (INDEX phrase)
- USAGE OBJECT REFERENCE (OBJECT REFERENCE phrase)
- USAGE POINTER (POINTER phrase)
- USAGE POINTER-32 (POINTER-32 phrase)
- USAGE PROCEDURE-POINTER (PROCEDURE-POINTER phrase)

Using intrinsic functions under LP(64)

When you compile with LP(64), you must be aware that the returned value is an 18-digit integer. On the other hand, when you compile with LP(32), the returned value of the following intrinsic functions is a 9-digit integer.

- LENGTH (LENGTH)
- ULENGTH (ULENGTH)
- UPOS (UPOS)
- USUPPLEMENTARY (USUPPLEMENTARY)
- UVALID (UVALID)

Compiling programs that contain UTF-8 data items with LP(64)

PH18638: You can compile programs with the LP(64) option when the program contains UTF-8 data items.

- Symbols used in the PICTURE clause
- UTF-8 literals
- Defining UTF-8 data items

Compiling programs that contain dynamic-length elementary items with LP(64)

PH18640: You can compile programs with the LP(64) option when the program contains dynamic-length elementary items. (Dynamic-length items)

UTF-8 support

With the native language support for UTF-8, you can now define, move, and compare UTF-8 data items.

- The native support for UTF-8 data items is provided by a new USAGE clause of UTF-8, plus a picture symbol 'U', which together define a new class, category, and USAGE of data in Enterprise COBOL. (Symbols used in the PICTURE clause)
- The UTF-8 literal formats that Enterprise COBOL provides are basic UTF-8 literals and hexadecimal notation for UTF-8 literals. (UTF-8 literals)
- You can work directly with UTF-8 data. (Using UTF-8 data (Unicode) in COBOL)

Support of 2002 and 2014 COBOL standards

- A DYNAMIC LENGTH clause is supported to specify a dynamic-length elementary item. A dynamic-length elementary item is a data item whose length might change at run time. This is part of the 2014 COBOL Standard. (Dynamic-length items)

- The REPOSITORY paragraph FUNCTION specifier INTRINSIC allows declaration of intrinsic function names that may be used without specifying the word FUNCTION. This is part of the 2002 COBOL Standard. ([REPOSITORY paragraph](#))
- PH31047: New date and time intrinsic functions are introduced that support encoding and decoding of date and time information to and from formats specified in ISO 8601, and that support encoding and decoding date and time information to and from integers that are suitable for arithmetic.

Note: COBOL Runtime LE APAR PH31133 must also be applied on all systems where programs that make use of these new date and time intrinsic functions are linked or run.

The following intrinsic functions are added as part of the 2002 COBOL Standard:

- TEST-DATE-YYYYMMDD: The TEST-DATE-YYYYMMDD function tests whether a date in standard date form (YYYYMMDD) is a valid date in the Gregorian calendar. ([TEST-DATE-YYYYMMDD](#))
- TEST-DAY-YYYYDDD: The TEST-DAY-YYYYDDD function tests whether a date in Julian date form (YYYYDDD) is a valid date in the Gregorian calendar. ([TEST-DAY-YYYYDDD](#))

The following intrinsic functions are added as part of the 2014 COBOL Standard:

- COMBINED-DATETIME: The COMBINED-DATETIME function combines a date in integer date form and a time in standard numeric time form into a single numeric item from which both date and time components can be derived. ([COMBINED-DATETIME](#))
- FORMATTED-CURRENT-DATE: The FORMATTED-CURRENT-DATE function returns a character string that represents the current date and time provided by the system on which the function is evaluated. ([FORMATTED-CURRENT-DATE](#))
- FORMATTED-DATE: The FORMATTED-DATE function converts a date from its integer date form to the requested format. ([FORMATTED-DATE](#))
- FORMATTED-DATETIME: The FORMATTED-DATETIME function uses a combined time and date format to convert and combine a date in the integer date form and a numeric time expressed as seconds past midnight to a formatted date and time representation according to that combined date and time format. ([FORMATTED-DATETIME](#))
- FORMATTED-TIME: The FORMATTED-TIME function uses a format to convert a value that represents seconds past midnight to a formatted time of day in the requested format. ([FORMATTED-TIME](#))
- INTEGER-OF-FORMATTED-DATE: The INTEGER-OF-FORMATTED-DATE function converts a date that is in a specified format to an integer date form. ([INTEGER-OF-FORMATTED-DATE](#))
- SECONDS-FROM-FORMATTED-TIME: The SECONDS-FROM-FORMATTED-TIME function converts a time that is in a specified format to a numeric value that represents the number of seconds after midnight. ([SECONDS-FROM-FORMATTED-TIME](#))
- SECONDS-PAST-MIDNIGHT: The SECONDS-PAST-MIDNIGHT function returns a value in standard numeric time form that represents the current local time of day provided by the system on which the function is evaluated. ([SECONDS-PAST-MIDNIGHT](#))
- TEST-FORMATTED-DATETIME: The TEST-FORMATTED-DATETIME function tests whether a data item that represents a date, a time, or a combined date and time is valid according to the specified format. ([TEST-FORMATTED-DATETIME](#))

JSON enhancements

- PH18641: A new "NAME IS OMITTED" phrase is added to the JSON GENERATE statement to allow generation of an anonymous JSON object, whose top-level parent name is not generated. ([JSON GENERATE statement](#))
- PH26789: A new "CONVERTING" phrase is added to the JSON GENERATE and JSON PARSE statements so that you can generate and parse JSON boolean values:
 - [JSON GENERATE statement](#)
 - [JSON PARSE statement](#)

- Producing JSON output
- Processing JSON input

Note: COBOL Runtime LE APAR PH26698 must also be applied on all systems where programs that make use of this new feature are linked or run.

- PH30975: New "when-phrase" and "generic-suppression-phrase" are added to the JSON GENERATE statement so that you can conditionally suppress data items during JSON GENERATE. (JSON GENERATE statement)

Note: COBOL Runtime LE APAR PH31172 must also be applied on all systems where programs that make use of this new feature are linked or run.

Other language element changes

- A POINTER-32 phrase is added to the USAGE clause, which can be used to define pointer data items or data-pointers. (POINTER-32 phrase)
- PH20724: The use of passing a file-name to a subprogram with the USING phrase of the CALL statement was removed in Enterprise COBOL V6.3, but is restored in Enterprise COBOL V6.3 with PTF for APAR PH20724 installed.

- CALL statement
- Passing data

- PH20997: The UUID4 intrinsic function is introduced. (UUID4)

Note: COBOL Runtime LE PTF UI66560(V2R2)/UI66555(V2R3)/UI66557(V2R4) must also be applied on all systems where programs that make use of this new feature are linked or run.

Compiler option changes

- The following compiler option is new:
 - The new LP compiler option can be used to indicate whether an AMODE 31 (31-bit) or AMODE 64 (64-bit) program should be generated with the related language features enabled. LP(32) is the default. (LP)
- The following compiler options are modified:
 - ARCH(7) is no longer accepted. A new higher level of ARCH(13) is accepted. ARCH(8) is the default. (ARCH)
 - PH22581: INITCHECK: New suboptions LAX | STRICT are added to the INITCHECK option to control whether the compiler will issue warning messages for data items unless they are initialized on at least one, or on all, logical paths to a statement. (INITCHECK)
 - NUMCHECK:
 - Regardless of whether NUMCHECK(MSG) or NUMCHECK(ABD) is specified, invalid data found at compile time will produce a compile-time error message and the check will be removed.
 - PH27536: NUMCHECK(ZON): New suboptions LAXREDEF | STRICTREDEF are added to the NUMCHECK(ZON) option to control whether the compiler will check and issue warning messages for redefined items.
 - PH29542: NUMCHECK(BIN): New suboptions TRUNCBIN | NOTTRUNCBIN are added to the NUMCHECK(BIN) option to control whether the compiler will generate the checking code for binary data items.
 - (NUMCHECK)
 - Runtime APARs PH29755(V2R3/V2R4) and PH30338(V2R3/V2R4 AMODE 64): New support is added for LLA/VLF managed programs where DWARF diagnostic information is included. (TEST)

Migration assistance

- Runtime APARs PH20569(V2R2) and PH21261(V2R3/V2R4): A new runtime option (IGZCOMPAT) for MERGE statement is introduced to obtain support for DFSORT option NOBLKSET and the conventional merge method for Enterprise COBOL V5 or later versions.
 - [Sorting and merging files](#)
 - [Using DFSORT option NOBLKSET](#)
- Runtime APAR PH25917: A new option QSAMBUFFINITCHAR is added to the IGZUOPT module that allows you to control the initial character used for QSAM buffer initialization. ([Controlling initialization of QSAM buffer](#))

Listing changes

Listing terminologies change as follows:

- Static Map is changed to INITIAL HEAP STORAGE MAP. ([Example: initial heap storage map](#))
- Writeable static area (WSA) is changed to storage. ([Reading LIST output](#))
- WSA24 is changed to BELOW THE LINE STORAGE. ([Example: initial heap storage map](#))
- Automatic Map is changed to STACK STORAGE MAP. ([Example: DSA memory map \(stack storage map\)](#))

Installation customization changes

- The installation customization for placing compiler phases into shared storage is removed.

Compiler message changes

- The following messages are new:
 - IGYCB7315-W: A reference modifier with a non-positive value was found. ([IGYCB7315-W](#))
 - IGYCB7316-W: A reference-modification length with a non-positive value was found. ([IGYCB7316-W](#))
 - IGYCB7317-W: A reference-modification length value caused reference to be made beyond the rightmost character of &1. ([IGYCB7317-W](#))
 - IGYCB7318-W: A reference-modifier start value exceeded the number of characters in &1. ([IGYCB7318-W](#))
- The IGYPS0212-S message is removed.

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Enterprise COBOL for z/OS publications

COBOL for z/OS publications

You can find the following publications in the [Enterprise COBOL for z/OS library](#):

- *What's new*
- *Customization Guide*, SC27-8712-02
- *Language Reference*, SC27-8713-02
- *Programming Guide*, SC27-8714-02
- *Migration Guide*, GC27-8715-02
- *Performance Tuning Guide*, SC27-9202-01
- *Messages and Codes*, SC27-4648-01
- *Program Directory*, GI13-4526-02
- *Licensed Program Specifications*, GI13-4532-02

Softcopy publications

The following collection kits contain Enterprise COBOL and other product publications. You can find them at <http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>.

- *z/OS Software Products Collection*
- *z/OS and Software Products DVD Collection*

Support

If you have a problem using Enterprise COBOL for z/OS, see the following site that provides up-to-date support information: https://www.ibm.com/support/home/product/B984385H82239E03/Enterprise_COBOL_for_z/OS.

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