Enterprise COBOL for z/OS
6.4

Licensed Program Specifications

GI13-4532-03

Fourth edition (May 2022)

This edition applies to Version 6.4 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.

Contents

Chapter 1. Overview

Enterprise COBOL for z/OS is a leading-edge, IBM z/OS based compiler that helps you create, modernize, and maintain mission-critical, line-of-business COBOL applications to execute on your z/OS operating systems. The applications that are created using Enterprise COBOL for z/OS can interoperate with transactional and data systems such as IBM CICS®, IBM Db2®, and IBM IMS. The COBOL compiler helps your existing COBOL applications work with modern infrastructure technologies, such as mobile, web, and cloud, with native support for JSON, XML, and Java™.

COBOL 6.4 features

Enterprise COBOL for z/OS 6.4 introduces the following new and improved features:

- Support of IBM z16 to maximize your hardware investment, reduce CPU usage, and improve performance of critical COBOL applications
- Improved Java/COBOL interoperability to easily extend the capabilities of your COBOL applications with Java
- Interoperability between AMODE 31 (31-bit) and AMODE 64 (64-bit) COBOL programs to handle your growing COBOL program data without converting the entire application to run in AMODE 64
- Support for user-defined functions to enable you to write your own functions and invoke them like intrinsic functions, improving code modularity and maintainability
- Improved integration with IBM Automatic Binary Optimizer for z/OS to invest in your future so that modules you compile today take advantage of future IBM Z® hardware enhancements, without having to be recompiled

Chapter 2. Specified operating environment for Enterprise COBOL

This section lists the hardware and software requirements for IBM Enterprise COBOL for z/OS 6.4.

Hardware requirements

Enterprise COBOL for z/OS 6.4 runs on and generates code that runs on the following IBM Z servers:

- IBM z16
- IBM z15® Models T01 and T02
- IBM z14® Models M01-M05
- IBM z14 Model ZR1
- IBM z13®
- IBM z13s®
- IBM zEnterprise® EC12
- IBM zEnterprise BC12

Software requirements

Enterprise COBOL for z/OS 6.4 runs under the control of, or in conjunction with, the currently supported releases of the following programs and their subsequent releases or their equivalents.

For more information, see the *Enterprise COBOL Program Directory* and the preventive service planning (PSP) bucket.

Required licensed programs

Enterprise COBOL for z/OS 6.4 and its generated object programs run under z/OS 2.3 (5650-ZOS), or later operating systems.

IBM Language Environment® (LE) for z/OS provides the execution environment and library of COBOL runtime services required to compile and run COBOL applications using Enterprise COBOL for z/OS. LE for z/OS 2.3 or 2.4 with APAR PH28966, or LE for z/OS 2.5 is required.

- For installation on z/OS, z/OS SMP/E is required.
- For customization during or after installation, z/OS High Level Assembler is required.
- Enterprise COBOL XML PARSE statements in programs, which are compiled with the XMLPARSE(XMLSS) compiler option, require z/OS XML System Services 2.3 (5650-ZOS), or later.
- The new COBOL/Java interoperability feature available in Enterprise COBOL for z/OS 6.4 requires IBM SDK for z/OS, Java Technology Edition 8.0.6.36 (JVM), IBM Semeru Certified Edition for z/OS 11.0.14.1 or later.

Optional licensed programs for z/OS

Depending on the functions used, you may require other software products such as CICS, Db2, or IMS. For a list of compatible software, see the Software Product Compatibility Reports (SPCR) website. From the SPCR website, click Create a Report under in-depth reports, search for Enterprise COBOL for z/OS, choose version 6.4 and then click submit.

Chapter 3. Industry standards supported by Enterprise COBOL 6.4

Enterprise COBOL supports the following industry standards.

ISO standards

ISO 1989:1985, Programming Languages - COBOL.

ISO/IEC 1989/AMD1:1992, Programming Languages - COBOL: Intrinsic function module.

ISO/IEC 1989/AMD2:1994, Programming Languages - Correction and clarification amendment for COBOL.

ISO/IEC 1989:2002, Information technology - Programming languages - COBOL (partial support)

ISO 1989:1985 is identical to ANSI INCITS 23-1985 (R2001), Programming Languages - COBOL.

ISO/IEC 1989/AMD1:1992 is identical to ANSI INCITS 23a-1989 (R2001), Programming Languages - Intrinsic Function Module for COBOL.

ISO/IEC 1989/AMD2:1994 is identical to ANSI INCITS 23b-1993, Programming Language - Correction Amendment for COBOL.

ISO/IEC 1989:2002 is identical to ANSI INCITS 1989-2002 (R2013), Information technology - Programming languages COBOL (partial support)

ISO/IEC 1989:2014 is identical to ANSI INCITS 1989-2014, Information technology - Programming languages, their environments and system software interfaces - Programming language COBOL (partial support)

For supported modules, see American National Standards below.

International Reference Version of the ISO 7-bit code defined in *International Standard 646, 7-Bit Coded Character Set for Information Interchange*.

American National standards

ANSI INCITS 23-1985 (R2001), Programming Languages - COBOL.

ANSI INCITS 23a-1989 (R2001), Programming Languages - Intrinsic Function Module for COBOL.

ANSI INCITS 23b-1993 (R2001), Programming Language - Correction Amendment for COBOL.

ANSI INCITS 1989-2002 (R2013), Information technology - Programming languages COBOL (partial support)

ANSI INCITS 1989-2014, Information technology - Programming languages, their environments and system software interfaces - Programming language COBOL (partial support)

The 7-bit coded character set defined in American National Standard X3.4-1977, Code for Information Interchange.

All required modules are supported at the highest level defined by the 85 COBOL Standard. In the following list, the shorthand notation for describing module levels is shown in parentheses. For example, to summarize module information for sequential input and output, the shorthand notation is (2 SEQ 1,2). The first digit indicates the level of language elements within the module supported by Enterprise COBOL. Next is the three-character abbreviation of the module name as used in the standard. Finally, the two digits separated by a comma indicate the minimum and maximum levels of the module. For example, (2 SEQ 1,2) means that Enterprise COBOL supports the sequential I-O module at level 2, while the range of levels in the module is from 1 (minimum) to 2 (maximum).

- Nucleus (2 NUC 1,2)

  Provides internal processing of data within the four basic divisions of a program and the capability for defining and accessing tables.
- Sequential I-O (2 SEQ 1,2)

  Provides access to records of a file in established sequence. The sequence is established as a result of writing the records to the file.
- Relative I-O (2 REL 0,2)

  Provides access to records in either a random or sequential manner. Each record is uniquely identified by an integer specifying the record's logical position in a file.
- Indexed I-O (2 INX 0,2)

  Provides access to records in either a random or sequential manner. Each record in an indexed file is uniquely identified by the value of a key within that record.
- Sort-Merge (1 SRT 0,1)

  Orders one or more files of records, or combines two or more identically ordered files of records, according to a set of user-specified keys.
- Inter-Program Communication (2 IPC 1,2)

  Allows a COBOL program to communicate with other programs through transfers of control and access to common data items.
- Source Text Manipulation (2 STM 0,2)

  Allows the insertion of source program text as part of the compilation of the source program. COBOL libraries contain texts which are available to the compiler at compile time and which can be treated by the compiler as part of the source program.

In addition, the following optional modules of the standard are supported:

- Intrinsic Functions (1 ITR 0,1)

  Provides the capability to reference a data item whose value is derived automatically at the time of reference during the execution of the object program.
- Debug (1 DEB 0,2)

  Monitors object program execution through declarative procedures, special debugging lines, and a special register, DEBUG-ITEM, which gives specific information about execution status.
- Segmentation (2 SEG 0,2)

  Refreshes independent segments when required.

The following optional module of the standard is supported with the optional IBM COBOL Report Writer Precompiler (5798-DYR):

- Report Writer

The following optional modules of the standard are not supported:

- Communications
- Debug (2 DEB 0,2)

Restrictions: Enterprise COBOL has the following restrictions related to industry standards:

- OPEN EXTEND is not supported for ASCII encoded tapes (CODESET STANDARD-1 or STANDARD-2).
- File status 97 is an informational file status value that represents successful completion of an OPEN statement, rather than an unsuccessful completion as is normally the case for 9x file status values in the 85 COBOL Standard.

Chapter 4. Compatibility with previous product releases

Compatibility, coexistence, and migration

Enterprise COBOL for z/OS 6.4 provides a high level of source compatibility, object compatibility, and runtime environment compatibility with prior versions of IBM COBOL.

Enterprise COBOL for z/OS 6.4 is source compatible with earlier versions of IBM COBOL. This means that the compiler will compile correct COBOL source programs that were developed using Enterprise COBOL 6.3 or earlier, with the exception of obsolete functions that were removed and the addition of new reserved words. The removed functions include obsolete COBOL language syntax and obsolete compiler options. Complete details on removed obsolete functions are documented in the *Enterprise COBOL for z/OS Migration Guide*. IBM does not expect that many applications will be affected by the removed functions, which in practice are no longer heavily used. To assist in migration, a new compiler option FLAGMIG4 was added to Enterprise COBOL 4.2 through the service stream. This option delivers warning diagnostics to flag use of obsolete syntax and options in existing COBOL programs.

Enterprise COBOL for z/OS 6.4 is object compatible with earlier versions of IBM COBOL, in that applications can be constructed by using a mixture of object modules that are compiled with 6.4 and those compiled with earlier versions. All three types of calls can be used: static calls (within a link-edited module), dynamic calls (between programs link-edited as separate modules), and DLL calls. The following are exceptions:

- Interoperation with object modules that are compiled with OS/VS COBOL (5740-CB1) is no longer supported.
- Interoperation with object modules that are compiled with VS COBOL II (5688-958) is limited to programs compiled with the RES compiler option. Interoperation with VS COBOL II programs that are compiled with the NORES option is no longer supported.

Enterprise COBOL for z/OS 6.4 is runtime compatible with earlier versions of IBM COBOL. This means that COBOL programs using valid data will continue to produce the same runtime results after being recompiled with Enterprise COBOL for z/OS 6.4. A small number of exception cases are documented in the *Enterprise COBOL for z/OS Migration Guide*.

You can visit the COBOL Migration Portal for all Enterprise COBOL for z/OS migration-related information, including case studies, COBOL experts interview videos, the cloud-based COBOL Migration Assistant for a navigation through the migration process, COBOL Migration and Performance Tuning Webinars, FAQs, other IBM products to support your migration, and many other resources, which help ease your migration efforts from COBOL 4 or earlier to COBOL 6 compiler.

Chapter 5. Security, auditability, and control

The announced program uses the security and auditability features of the host operating system software. The customer is responsible for evaluation, selection and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Chapter 6. Licensed program materials availability

Restricted materials - No. This licensed program is available without source licensed program materials. It is available in object code only.

Chapter 7. Supplemental terms

Designated Machine Identification

Designated Machine Identification required: Yes.

Testing period

- Basic License: Not applicable.
- DSLO License: Not applicable.

Installation or location license

Not applicable. A separate license is required for each machine on which the licensed program will be used.

Usage restriction

Not applicable.

Type and duration of program services

- Central Service.
- Until discontinued by IBM with a minimum of 12 months written notice.

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Chapter 8. Notices and information for supported standards

zlib 1.1.4

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This edition supersedes the previous W3C Recommendation of 16 August 2006.

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An implementation report is available at http://www.w3.org/XML/2008/01/xml10-5e-implementation.html. A Test Suite is maintained to help assessing conformance to this specification.

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