IBM Enterprise COBOL for z/OS, V6.2 delivers support for the new IBM z14 hardware and IBM z/OS V2.3 operating system

At a glance

IBM® Enterprise COBOL for z/OS®, V6.2 exploits the capabilities of IBM z/Architecture® and adds the following new features and enhancements:

- Compiler support for the new IBM z14 hardware and IBM z/OS™ V2.3 operating system so applications can take advantage of the latest IBM Z architecture and operating system features and capabilities
- Ability to exploit the new Vector Packed Decimal Facility of z14
- New and changed COBOL statements, such as the new JSON PARSE statement
- Improved compiler listings with compiler messages at the end of the listing as in previous releases of the compiler
- Support of COBOL 2002/2014 standards with the addition of the COBOL Conditional Compilation language feature
- New and changed COBOL options for increased flexibility
- Improved usability of the compiler in the z/OS UNIX™ System Services environment
- Improved interfaces to optional products and tools such as IBM Debug for z Systems™ (formerly Debug Tool for z/OS) and IBM Application Discovery and Delivery Intelligence (formerly EzSource)
- Compile-time and runtime performance enhancements
- Support for the latest middleware, including IBM CICS®, IBM DB2® and IBM IMS™

Overview

Enterprise COBOL for z/OS is a leading-edge, z/OS-based compiler that helps you create and maintain mission-critical, line-of-business COBOL applications to execute on your z/OS operating systems. The applications that are created by using Enterprise COBOL for z/OS can interoperate with IBM CICS, IBM DB2, IBM IMS, and other transactional and data systems.

Over the course of multiple releases, Enterprise COBOL for z/OS has offered new and enhanced functions to provide the tools needed to modernize and maintain applications to meet your critical business needs. The following are some of the new and improved features delivered with Version 6.2:
• Compiler support for the new z14 hardware and z/OS V2.3 operating system so applications can take advantage of the latest IBM Z architecture and operating system features and capabilities
• Exploitation of the new Vector Packed Decimal Facility of z14 to increase the performance of decimal compute intensive applications without the need for source code changes
• Implementation of the new JSON PARSE statement to provide you with additional programming and modernization features
• Addition of the COBOL 2002/2014 Conditional Compilation language feature
• New and changed COBOL statements for increased functionality
• New and changed COBOL options for increased flexibility
• Improved usability of the compiler in the z/OS UNIX System Services environment
• Improved interfaces to other licensed programs and tools
• Improved listing layout so that compiler diagnostic messages are easier to find
• Compile-time improvements (with OPTIMIZE(1) & OPTIMIZE(2)) and runtime performance enhancements

Enterprise COBOL for z/OS, V6.2 continues the IBM commitment to the COBOL programming language on IBM Z through investment in new compiler technology and the continued delivery of new features. With Version 6.2, you gain the benefit of new investment that is combined with more than 50 years of IBM experience in compiler development.

Key prerequisites

Enterprise COBOL for z/OS V6.2 requires z/OS V2.1 (5650-ZOS), or later.

For additional details, refer to the Software requirements section.

Planned availability date

September 8, 2017

Description

Enterprise COBOL for z/OS V6.2 incorporates leading-edge code generation and optimization technology to maximize hardware utilization, and helps improve application performance.

Version 6.2 delivers:

• Support for the new IBM z14 hardware and IBM z/OS V2.3 operating system
• New features that include:
  – JSON PARSE
  – Additional support for the COBOL 2002/2014 standards
  – New and changed compiler options
• Improved interfaces while adding performance improvements

Support for z14 and z/OS V2.3

Enterprise COBOL V6.2 adds support for building and running COBOL applications on the new z14 hardware and z/OS V2.3 operating system.
Vector Packed Decimal Facility

Enterprise COBOL V6.2 adds support for exploiting the new Vector Packed Decimal Facility in z14 through the ARCH(12) compiler option.

The Vector Packed Decimal Facility allows the dominant COBOL data types, packed and zoned decimal, to be handled in wide 16-byte vector registers instead of in memory. Decimal and floating-point computationally intensive COBOL programs, which are optimized with Enterprise COBOL V6.2 and that target z14 ARCH(12), can deliver CPU time reduction on the z14 server over the same applications built with COBOL V6.1. No source changes are required to take advantage of this new facility; just recompile with ARCH(12) to target z14.

Detection of invalid data and program detection features

Enterprise COBOL V6.2 includes features to detect invalid data and program issues, and restores pre-V5 behavior where possible, to help ease migration to the latest COBOL compiler. If you have not yet started the transition to COBOL V5.x or V6.1, you can now upgrade directly to COBOL V6.2 and take advantage of the following features:

- INITCHECK. New compiler option tells the compiler to perform a static analysis of the program, and to emit a warning message for data items that are used before they are initialized.
- NUMCHECK. New compiler option to tell the compiler whether to generate extra code to validate data items when they are used as sending data times. For zoned decimal (numeric USAGE DISPLAY) and packed decimal (COMP-3) data items, the compiler generates implicit numeric class tests for each sending field. For binary data items, the compiler generates SIZE ERROR checking to determine whether the data item has more digits than its PICTURE clause allows. The ZONECHECK compiler option is deprecated but tolerated for compatibility. It is replaced by NUMCHECK(ZON).
- PARMCHECK. New compiler option finds subprograms that write beyond the end of WORKING-STORAGE. This option tells the compiler to generate an extra data item following the last item in WORKING-STORAGE that is then used at run time to check whether a called subprogram corrupted data beyond the end of WORKING-STORAGE.
- SSRANGE. New compiler suboptions allow:
  - A message instead of an abend and continue processing for additional out of range conditions in a single run
  - A reference modification of zero length to proceed without a message or abend

Restoration of pre-Version 5 behavior for compiler listings

Compiler diagnostic messages now appear at the end of the listing, as was the case in COBOL compilers before Enterprise COBOL V5.

JSON PARSE

Enterprise COBOL V6.2 adds support for the JSON PARSE statement. This completes the support for JSON (Java™ Script Object Notation) that was started in Enterprise COBOL V6.1 with the addition of JSON GENERATE statement. The JSON PARSE statement enables capability to parse JSON documents directly from COBOL by converting JSON text to COBOL data formats, and extending business critical (System of Record) applications that are written in COBOL to support mobile (Systems of Engagement) applications where the preference is REST/JSON. This support also complements z/OS Connect by supporting the 'pass-through service' where JSON texts are passed directly to COBOL applications which parse the JSON text and process the transaction.

COBOL 2002/2014 standards

Enterprise COBOL V6.2 adds support for the COBOL 2002 Conditional Compilation language feature with the introduction of the DEFINE compiler option that allows a user to define or set conditional compilation constants at compile time, and also the >>DEFINE, >>IF, and >>EVALUATE compiler directives that are used for conditional compilation. Conditional compilation provides a way of including or omitting selected
lines or source code (or copybooks) depending on the values of literals or arithmetic expressions that are specified by the DEFINE directive. In this way, you can create multiple variants of the same program without the need to maintain separate source streams.

**Controlling optimizer inlining of PERFORMed procedures**

Enterprise COBOL V6.2 adds support for controlling compiler inlining of PERFORMed procedures when using the OPTIMIZE(1) or OPTIMIZE(2) compiler options with the following new features:

- The INLINE compiler option can tell the compiler to not do any inlining (NOINLINE) or to allow the compiler to do inlining if it makes sense to do so (INLINE)
- The >>INLINE ON and >>INLINE OFF compiler directives to disable specific paragraphs within the source from being inlined

**TEST, NOTEST Option**

Enterprise COBOL V6.2 adds support for new combinations of suboptions to both the TEST and NOTEST compiler options, including TEST(NODWARF), TEST(SEPARATE), and NOTEST(DWARF, SOURCE).

**Usability enhancements**

Enterprise COBOL V6.2 improves usability of the compiler in the z/OS UNIX System Services environment with addition of help information for the cob2 compiler invocation command.

**Improved interfaces to other products**

- Addition of MD5 signatures to program objects and debug data to allow matching of debug data with executables even if a program is recompiled
- Three new fields at the end of PPA4:
  - Offset of the first user-defined data item in WORKING-STORAGE
  - Total length of user-defined data items in WORKING-STORAGE
  - Bit to indicate whether there are EXTERNAL data items

**Improved performance**

- The IBM-supplied default for the AFP compiler option is changed from VOLATILE to NOVOLATILE so that the compiler can generate more efficient code sequences for programs with floating point operations
- General compile-time performance improvements (with OPTIMIZE(1) and OPTIMIZE(2))
- General batch runtime performance improvements
- General online transaction runtime performance improvements

**Accessibility by people with disabilities**

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be found on the Product accessibility information website.

**Section 508 of the US Rehabilitation Act**

Enterprise COBOL for z/OS, V6.2 is capable as of September 8, 2017, when used in accordance with associated IBM documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be found on the IBM Accessibility website.
Enterprise COBOL is a premier, enterprise-class COBOL compiler for the z/OS system. It is a proven and reliable program that:

- Delivers innovation for modernizing business-critical applications and programming features to increase programmer productivity.
- Bolsters the overall benefits of transactional and data systems, such as CICS, IMS, and DB2.

New IBM Z hardware has increasing complexity. Enterprise COBOL for z/OS, V6.2 delivers advanced compiler support to allow you to fully benefit from hardware advancements. The ARCH and OPTIMIZE compiler options of Enterprise COBOL for z/OS can be used to unleash the full power of IBM processors that are delivered in the various IBM Z hardware models. COBOL programmers no longer need a deep understanding of z/Architecture to exploit leading-edge performance of new IBM Z hardware. Developers only need to focus on the logic of the applications and let the compiler determine the best way to transform and optimize the code generation for the IBM Z hardware on which the application will run.

With Enterprise COBOL for z/OS, V6.2, the return on your hardware and middleware investments is increased. With the implementation of advanced code generation and optimization technology, Enterprise COBOL for z/OS, V6.2 establishes a foundation for delivery of additional optimization features and exploitation of z/Architecture.

With its enhanced capabilities, simplified programming, and increased programmer productivity, you can continue to use Enterprise COBOL for z/OS to modernize existing business-critical applications. Modernization enables the reuse of your proven business logic and allows you to:

- Deliver new enhancements quicker, with less cost and lower risk.
- Add modern GUIs to business-critical COBOL applications or extend them to work with web, cloud, or mobile infrastructures.
- Build on proven applications in which you do not need to write original code.

Enterprise COBOL for z/OS, V6.2 continues the IBM commitment to COBOL on z/OS and with this release, you gain the benefit of new investment combined with more than 50 years of IBM experience in compiler development.

**Hardware and software support services**

**SmoothStart/installation services**

IBM SmoothStart Services and Installation Services are not provided.

**Program number**

<table>
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<th>Program name</th>
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<td>6.2.0</td>
<td>IBM Enterprise COBOL for z/OS, V6</td>
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**Business Partner information**

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to **BP Attachment for Announcement Letter 217-323** for this announcement. A PartnerWorld ID and password are required (use IBMid).

**Technical information**

**Specified operating environment**
**Hardware requirements**

Enterprise COBOL for z/OS, V6.2 will run on the following IBM Z servers:

- z14
- z13™ or z13s
- zEnterprise™ EC12 or zEnterprise BC12
- zEnterprise 196 or zEnterprise 114

**Software requirements**

Enterprise COBOL for z/OS, V6.2 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 on the following programs listed that require program temporary fixes (PTFs), refer to the *Program Directory* and the preventive service planning (PSP) bucket.

- z/OS V2.1 (5650-ZOS), or later 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 V2.1 (5650-ZOS), or later.

**Optional licensed programs**

Depending on the functions used, one or more of the following programs may be required:

- IBM CICS Transaction Server (CICS TS) for z/OS, V5.x (5655-Y04)
- CICS Transaction Server for z/OS Value Unit Edition V5.x (5722-DF3)
- CICS Transaction Server for z/OS V4.2 (5655-S97)
- IBM DB2 12 for z/OS (5650-DB2)
- DB2 12 for z/OS Value Unit Edition (5770-AF3)
- DB2 11 for z/OS (5615-DB2)
- DB2 11 for z/OS Value Unit Edition (5697-P43)
- IBM IMS V14 (5635-A05)
- IMS Transaction Manager Value Unit Edition V14 (5655-TM3)
- IMS Database Value Unit Edition V14 (5655-DSE)
- IMS V13 (5635-A04)
- IMS Transaction Manager Value Unit Edition V13 (5655-TM2)
- IMS Database Value Unit Edition V13 (5655-DSM)
- IBM DFSORT element of z/OS V2 (5650-ZOS)
- IBM High Level Assembler/MVS™ and VM and VSE V1.6.x (5696-234)
- IBM 31-bit SDK for z/OS, Java™ Technology Edition V8.0 (5655-DGG)
- IBM 31-bit SDK for z/OS, Java Technology Edition V7.0 (5655-W43)
- IBM 31-bit SDK for z/OS, Java Technology Edition V6.0 (5655-R31)
- IBM z/OS V2.1 Client Web Enablement Toolkit (5650-ZOS - APAR Number OA46575)
- IBM Debug for z Systems V14.1 (5655-Q50)
- IBM Debug Tool for z/OS, V13.1 (5655-Q10)
- IBM Fault Analyzer for z/OS, V14.1 (5655-Q41)
- Fault Analyzer for z/OS, V13.1 (5655-Q11)
• IBM File Manager for z/OS, V14.1 (5655-Q42)
• File Manager for z/OS, V13.1 (5655-Q12)
• IBM Application Performance Analyzer for z/OS, V14.1 (5655-Q49)
• Application Performance Analyzer for z/OS, V13.1 (5655-Q09)
• IBM Developer for z Systems, V14.x (5724-T07) (formerly IBM Rational Developer for z Systems, V9.x)
• IBM Application Delivery Foundation for z Systems, V3.1 (5655-AC6)
• IBM Application Delivery Intelligence, V5.x (5725-Y87)
• IBM Application Discovery and Delivery Intelligence, V5.x (5737-B66)
• COBOL Report Writer Release 4 (5798-DYR, 5798-DZX)
• IBM Automatic Binary Optimizer for z/OS, V1.3 (5697-AB1) (for automatically optimizing pre-V5 COBOL program modules)
• Enterprise COBOL for z/OS, V5.x (5655-W32)
• Enterprise COBOL for z/OS, V4.2 (5655-S71)
• Enterprise PL/I for z/OS, V5.x (5655-PL5)
• Enterprise PL/I for z/OS, V4.5 (5655-W67)
• XL C/C++ with Enterprise COBOL (You must use the XL C/C++ feature of z/OS V2 (5650-ZOS) , or later.)
• IBM VS FORTRAN V2 (5668-806, 5688-087)

Enterprise COBOL for z/OS, V6.2 in this announcement is supported for use only with the announced and currently supported levels of IBM software in the previous list. Enterprise COBOL for z/OS, V6.2 should continue to work with certain earlier, unsupported IBM software products.

IBM will undertake to fix problems found by using Enterprise COBOL for z/OS, V6.2 in this announcement with the earlier mentioned, unsupported product levels. IBM must be able to reproduce the problem using a supported level of the same product. If the problem can be reproduced and fixed, the fix will be developed and tested using supported levels of IBM software. If a fix is made available, it is likely to work on the unsupported product level; however, IBM cannot guarantee that the fix will work with the unsupported product.

User group requirements
The functions described in this announcement may address requirements from one or more of the worldwide user group communities. Groups include SHARE Inc., Guide SHARE Europe (GSE), Japan Guide Share (JGS), InterAction (Australia/New Zealand), COMMON, and COMMON Europe.

Planning information

Packaging
The Enterprise COBOL for z/OS, V6.2 package includes:

• Basic machine-readable material on the customer-selected distribution medium
• Program Directory (GI13-4526-01)
• Licensed Program Specifications (GI13-4532-01)

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.
Ordering information

Ordering z/OS through the Internet

Shopz provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). Shopz is available in the US, Canada, and several countries in Europe. In countries where Shopz is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order through the traditional IBM ordering process. For more details and availability, go to the Shopz website.

Unlicensed documentation

A Program Directory (GI13-4526-01) and Licensed Program Specification (GI13-4532-01) are supplied automatically with the basic machine-readable material. No other hardcopy publications are shipped with the product.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Customized Offerings

Product deliverables are shipped only through CBPDO and ServerPac. These customized offerings are offered for internet delivery from Shopz. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on internet delivery, go to the Help section on the Shopz website.

You choose the delivery method when you order the software. IBM recommends internet delivery. In addition to internet and DVD, the supported tape delivery options include:

- 3590
- 3592

Most products can be ordered in ServerPac the month following their availability in CBPDO. z/OS can be ordered through CBPDO and ServerPac at general availability. Many products will also be orderable in a Product ServerPac without also having to order the z/OS operating system or subsystem.

Shopz and CFSW will determine the eligibility based on product requisite checking. For more details on the product ServerPac, go to the Help section on the Shopz website.

For additional information on the Product ServerPac option, refer to Software Announcement 212-272, dated July 31, 2012.

Production of software product orders will begin on the planned general availability date.

- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability.

Terms and conditions
The terms for Enterprise COBOL for z/OS, V6.2, as previously announced and licensed under the IBM Customer Agreement are unaffected by this announcement. For more information on Enterprise COBOL for z/OS, V6.1 refer to Software Announcement 216-059, dated February 16, 2016.

Statement of good security practices

IT system security involves protecting systems and information through prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a lawful, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

Important: IBM does not warrant that any systems, products, or services are immune from, or will make your enterprise immune from, the malicious or illegal conduct of any party.

Prices

For additional information and current prices, contact your local IBM representative or IBM Business Partner.

For additional product information on Enterprise COBOL for z/OS V6, refer to Software Announcement 216-059, dated February 16, 2016.

Variable charges:

The applicable processor based one-time charge will be based on the group of the designated machine on which the program is licensed for use. If the program is designated to a processor in a group for which no charge is listed, the charge of the next higher group listed applies. For movement to a machine in a higher group, an upgrade charge equal to the difference in the then-current charges between the two groups will apply. For movement to a machine in a lower group, there will be no adjustment or refund of charges paid.

Order now

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Phone: 800-IBM-CALL (426-2255)
Fax: 800-2IBM-FAX (242-6329)

For IBM representative: askibm@ca.ibm.com
For IBM Business Partner: pwcs@us.ibm.com

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**Note:** Shipment will begin after the planned availability date.

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