



IBM Enterprise PL/I for z/OS, V4.5 offers new function and improved performance

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Overview

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

This compiler can help facilitate your new on-demand business endeavors by helping to integrate PL/I and web-based business processes in web services, XML, Java™, and PL/I applications. This compiler's interoperability helps you capitalize on existing IT investment while more smoothly incorporating new, web-based applications as part of your organization's infrastructure.

Version 4.5 offers:

- Modernization: Support for JSON parse, generate, and validate.
- Performance improvements
 - IBM z13™ (ARCH(11)) hardware architecture exploitation
 - Inlining of MOD and REM of large packed decimal and multiply
- Improved middleware support
 - Faster code generated for CICS calls
 - Support for named constants as SQL host variables
 - Better error reporting for invalid SQL statements
- Usability enhancements
 - Support for strings with lengths longer than 32K
 - New INLIST and BETWEEN built-in functions
 - Support for apostrophes in PICTURE variables
 - New REINIT statement
 - New built-in functions to generate the store-clock hardware instructions
 - Compiler options to help customers improve code quality

Enterprise PL/I for z/OS, V4.5 reinforces the continuing IBM commitment to the PL/I programming language on the z/OS platform.

With Enterprise PL/I for z/OS, V4.5, you can take advantage of more than 45 years of IBM experience in compiler development.

Key prerequisites

- z/OS V1.13 (5694-A01), or later
- z/OS V2.1 (5650-ZOS), or later

For details, refer to the [Software requirements](#) section.

Planned availability date

February 27, 2015

Description

Modernization

A series of new built-in functions and subroutines provide the ability to parse and generate JSON text.

Performance improvements

- The ARCH option now accepts 11 as its maximum value, and when ARCH(11) is specified, the compiler will generate code that exploits the new hardware instructions on the supported z Systems™. This code can improve the performance of some instances of the INDEX, SEARCH, and VERIFY built-in functions.
- Faster code is generated for MOD and REM of FIXED DEC with precision greater than 15 places.

Improved middleware support for CICS, DB2 and IMS

- Faster code generation for EXEC CICS statements
- SQL enhancements
 - The validation of an EXEC SQL statement will not stop when the first, invalid host variable is found, but will instead continue to check all host variable references.
 - A named constant, i.e. a PL/I variable with the VALUE attribute can now be used as a host variable if SQL allows a constant in that setting.
 - The new SQL preprocessor option (NO)CODEPAGE determines how the compiler CODEPAGE option is honored by the SQL preprocessor.
 - The new SQL preprocessor option (NO)WARNDECP allows you to reduce the amount of "noise" produced by the SQL preprocessor.
 - A structure may now be used as indicator variable for a host structure variable.

Usability enhancements

- The LIMITS option supports a new suboption that specifies the maximum length allowed when declaring a string variable, and allows support for strings longer than 32K characters. The maximum length of the string can now be up to 128MB.
- The new BETWEEN built-in function makes it easier to write code that tests if a variable is in between 2 specified values. This built-in function also makes it easier for the compiler to generate more efficient code for such tests.
- The new INLIST built-in function makes it easier to write code that tests if a variable has a value in a specified list of values. This built-in function also makes it easier for the compiler to generate faster code for such tests.
- The new NULLENTY built-in function makes it easy to assign a null value to an entry variable and to test if an entry variable is null. Under the options INITAUTO, INITBASED, and so on, entry variables will now be initialized.

- The library routines supporting the XML parsers now recognize if an event in any of the PLISAX event structures was set to null (via the NULLENTRY built-in function or through use of UNSPEC) and these library routines will not call it in that case. This allows you to limit your XML parsing code to only the events in which you are interested and to improve the performance of the overall parse at the same time.
- The new VARYING4 attribute can be used in declarations of string variables to specify that the variable has a 4-byte length prefix (rather than the 2-byte length prefix used by VARYING variables).
- Apostrophes are now accepted as insertion characters in picture strings in the same way as the comma, point, and slash.
- The new REINIT statement allows variables to be reset with their INITIAL values.
- The RULES(NOPADDING) message IBM2442 is enhanced to include the name of the variable containing the padding.
- The aggregate listing is enhanced to mark arrays of VARYING that contain padding between array members (for example, when a structure contains an array of CHAR(31) VARYING ALIGNED).
- When SUBSCRIPTRANGE is enabled and an array assignment includes arrays with non-constant bounds, the compiler now generates code that will raise the SUBSCRIPTRANGE condition if the bounds do not match. If the bounds are all constant, the compiler will also continue to check at compile-time that they match.
- The new NOFILEREf option eliminates the file reference table from the listing if the compiler issues no messages for the specified FLAG setting.
- The new FORCE(NOLAXQUAL) attribute in combination with the new FORCE suboption of the RULES(NOLAXQUAL) option provides the ability to enforce the NOLAXQUAL rules in a structure-by-structure manner.
- The new NULLINIT attribute specifies that any elements of a variable that do not have an INITIAL attribute will be given a default initial value (as an AUTOMATIC variable would under the INITAUTO compiler option).
- The new macro preprocessor built-in functions SYSDIMSIZE, SYSOFFSETSIZE, and SYSPOINTERSIZE provide the ability to write code that will be operational under various compiler options that change the number of bytes used for various data items.
- The new macro XPROCEDURE statement is identical to the macro PROCEDURE statement except that the preprocessor will ignore rather than flag any subsequent occurrence of an XPROCEDURE statement if the leftmost name on the statement is the name of an already defined preprocessor procedure.
- The use of INITIAL on REFER objects is now flagged with an E-level message.
- The new ALL/SOURCE suboptions to the RULES(NOLAXNESTED) and RULES(NOPADDING) compiler options provide finer control than when the compiler flags questionable coding.
- The NONASSIGNABLE suboption is extended to support INONLY and STATIC as suboptions thereby providing a way to have INONLY as well as STATIC variables marked as NONASSIGNABLE
- The MACRO preprocessor now also supports a DEPRECATE and a DEPRECATENEXT option that allow you to remove selected macro procedures over a course of planned stages.
- The new MAXBRANCH compiler option can help you find excessively complex code.
- The new PLISTCK, PLISTCKE, and PLISTCKF built-in subroutines generate the corresponding store clock hardware instruction to help you time sections of code more easily. Also, with these new built-in subroutines you can get clock values more precise than those provided by the date-time built-in functions.
- The compiler now flags any attempt to FETCH or RELEASE the procedure which it is currently compiling.
- If a FIXED or FLOAT variable has the VALUE attribute, then the compiler will list its value (as a character string) in the ATTRIBUTES listing.
- The LOCATES attribute has been extended to allow the located type to be any computational type, an ORDINAL type, or a STRUCT type.

- The new SMFTOJULIAN and JULIANTOSMF built-in functions support conversions between Julian and SMF date formats.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Hardware and software support services

SmoothStart/installation services

IBM SmoothStart and Installation Services are not provided.

Availability of national languages

Description	Program number	Availability date	Language
IBM Enterprise PL/I for z/OS V4.5	5655-W67	February 27, 2015	English Japanese

Program number

Program name	Program number
IBM Enterprise PL/I for z/OS, V4.5	5655-W67

Technical information

Specified operating environment

Hardware requirements

The Enterprise PL/I for z/OS, V4.5 compiler runs on the following IBM servers:

- z13
- zEnterprise® EC12 (zEC12) or zEnterprise BC12 (zBC12)
- zEnterprise 196 (z196) or zEnterprise 114 (z114)
- System z10® Enterprise Class (z10™ EC) or System z10 Business Class (z10 BC)
- System z9® Enterprise Class (z9® EC) or System z9 Business Class (z9 BC)

The Enterprise PL/I for z/OS, V4.5 compiler generates code that runs on the following IBM servers:

- z13
- zEnterprise EC12 (zEC12) or zEnterprise BC12 (zBC12)
- zEnterprise 196 (z196) or zEnterprise 114 (z114)
- System z10 Enterprise Class (z10 EC) or System z10 Business Class (z10 BC)
- System z9 Enterprise Class (z9 EC) or System z9 Business Class (z9 BC)

Software requirements

Enterprise PL/I for z/OS, V4.5 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 V1.13 (5694-A01), or later
- z/OS V2.1 (5650-ZOS), or later

Optional licensed programs

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

- CICS Transaction Server for z/OS, V5 (5655-Y04)
- CICS Transaction Server for z/OS, V4 (5655-S97)
- CICS Transaction Server for z/OS, V3 (5655-M15)
- CICS Transaction Server for z/OS Value Unit Edition, V5 (5722-DFJ)
- DB2 11 for z/OS (5615-DB2)
- DB2 10 for z/OS (5605-DB2)
- DB2 11 for z/OS Value Unit Edition (5697-P43)
- DB2 10 for z/OS Value Unit Edition (5697-P31)
- IMS V13 (5635-A04)
- IMS V12 (5635-A03)
- IMS Transaction Manager Value Unit Edition V13 (5655-TM2)
- IMS Transaction Manager Value Unit Edition V12 (5655-TM1)
- IMS Database Value Unit Edition V13 (5655-DSM)
- IMS Database Value Unit Edition V12 (5655-DSQ)
- DFSORT element of z/OS (5694-A01, 5650-ZOS)
- High Level Assembler/MVS and VM and VSE (5696-234)
- Debug Tool for z/OS, V13.1 (5655-Q10)
- Debug Tool for z/OS, V12.1 (5655-W70)
- Debug Tool for z/OS, V11.1 (5655-W45)
- Fault Analyzer for z/OS V13.1 (5655-Q11)
- Fault Analyzer for z/OS V12.1 (5655-W69)
- Fault Analyzer for z/OS V11.1 (5655-W46)
- File Manager for z/OS V13.1 (5655-Q12)
- File Manager for z/OS V12.1 (5655-W68)
- File Manager for z/OS V11.1 (5655-W47)
- Application Performance Analyzer for z/OS, V13.1 (5655-Q09)
- Application Performance Analyzer for z/OS, V12.1 (5655-W71)
- Application Performance Analyzer for z/OS, V11.1 (5697-Q03)
- Rational® Developer for System z®, V9 (5724-T07)
- Rational Developer for System z, V8 (5724-T07)
- Enterprise COBOL for z/OS, V5 (5655-W32)
- Enterprise COBOL for z/OS, V4 (5655-S71)
- Enterprise PL/I for z/OS, V4 (5655-W67)
- Enterprise PL/I for z/OS, V3 (5655-H31)
- For XL C/C++ with Enterprise PL/I (You must use the XL C/C++ feature of z/OS, V1.13 (5694-A01) or the XL C/C++ feature of z/OS, V2.1 (5650-ZOS), or later)

- IBM VS FORTRAN V2 (5668-806, 5688-087)

Enterprise PL/I for z/OS, V4.5, as described in this announcement, is supported for use only with the announced and currently supported levels of IBM software listed above. Enterprise PL/I for z/OS, V4.5 should continue to work with certain earlier, unsupported IBM software products.

IBM will undertake to fix problems found by using Enterprise PL/I for z/OS, V4.5 as described in this announcement with the previously mentioned earlier, 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 can not guarantee that the fix will work with the unsupported product.

User group requirements

This announcement addresses the following requirements from one or more of the worldwide user group communities. Groups include COMMON, COMMON Europe, Guide Share Europe (GSE), InterAction (Australia/New Zealand), Japan Guide Share (JGS), and SHARE Inc.

Requirements addressed include:

- RFE39273
- RFE39275
- RFE39277
- RFE39381
- RFE40093
- RFE41141
- RFE41142
- RFE41441
- RFE41475
- RFE41582
- RFE41867
- RFE41869
- RFE42074
- RFE42423
- RFE42426
- RFE42516
- RFE42647
- RFE43004
- RFE44719
- RFE53319
- RFE53331
- RFE54026
- RFE55006
- RFE55499
- RFE57005
- RFE61274
- RFE61771

Planning information

Packaging

The Enterprise PL/I for z/OS, V4.5 package includes:

- Basic machine-readable material on the customer-selected distribution medium
- Program Directory (GI11-9144)
- Licensed Program Specifications (GC14-7283)

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

Current licensees

Current licensees of IBM Enterprise PL/I for z/OS, V4.4 must order this release via MES.

New licensees

Orders for new licenses can be placed now.

Customers whose orders ship before the planned availability will receive Enterprise PL/I for z/OS, V4.4.

Customers whose orders ship after the planned availability date will receive Enterprise PL/I for z/OS, V4.5.

New users of Enterprise PL/I for z/OS, V4 should specify Type: 5655 Model: W67. New Users will receive Enterprise PL/I for z/OS, V4.5.

The previous release, Enterprise PL/I for z/OS, V4.4, is therefore withdrawn from marketing and is replaced by Enterprise PL/I for z/OS, V4.5.

For ordering information on Enterprise PL/I for z/OS V4, refer to Software Announcement [AP10-0214](#), dated July 22, 2010.

Based on the customer-requested arrival date (CRAD) and to allow for order processing, the first customer shipment will begin within seven business days after general availability.

System z New application license charge (zNALC) ordering info

A *Program Directory* (GI11-9144) and *Licensed Program Specifications* (GC14-7283) 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 via CBPDO and ServerPac. These customized offerings are offered for Internet delivery in countries where ShopzSeries product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes.

For more details on Internet delivery, refer to the Shopz help information at

<http://www.software.ibm.com/ShopzSeries>

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 via 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, visit the Help section on the Shopz website at

<http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp>

For additional information on the Product ServerPac option, refer to [AP12-0255](#), 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 PL/I for z/OS, V4 as previously announced in Software Announcement [AP10-0214](#), dated July 22, 2010, licensed under IBM Agreement Terms are unaffected by this announcement.

Prices

The pricing information for Enterprise PL/I for z/OS, V4, as previously announced in [AP10-0214](#), dated July 22, 2010, remains unaffected by this announcement.

Contact your IBM representative for information on the current prices for this program.

For all local charges, contact your IBM representative.

AP distribution

Country/Region	Announced
AP IOT	
ASEAN*	Yes
India/South Asia**	Yes
Australia	Yes
People's Republic of China	Yes
Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
South Korea	Yes
New Zealand	Yes
Japan IOT	
Japan	Yes

* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam
**Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, and Afghanistan

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