

Enterprise PL/I for z/OS
Version 5 Release 3

Data Sheet



September 2019

This edition applies to Version 5 Release 3 of IBM® Enterprise PL/I for z/OS® (program number 5655-PL5) 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 PL/I for z/OS library](#). Because Enterprise PL/I 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.

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Chapter 1. Enable your PL/I applications to exploit the latest z/Architecture®

Enterprise PL/I is a leading-edge enterprise class PL/I compiler for IBM z/OS. It helps you to create and maintain mission-critical, line-of-business PL/I applications to execute on your z/OS operating systems. The applications that are created by using Enterprise PL/I can interoperate with IBM CICS®, Db2®, IMS, and other transactional and data systems.

Enterprise PL/I for z/OS®, V5.3 delivers advanced compiler support, which not only enables you to take advantage of the latest IBM Z® hardware achievements, but also facilitates your new, on demand business endeavors by helping incorporate modern web technology, such as web services, XML, JSON and Java™ into your existing PL/I applications. With its enhanced capabilities, you can deliver new enhancements quicker, with less cost and lower risk.

Enterprise PL/I for z/OS, V5.3 reinforces the continuing IBM commitment to the PL/I programming language on the z/OS operation systems and the continued delivery of new features. With Enterprise PL/I for z/OS, V5.3, you can benefit from over 50 years of IBM experience in PL/I compiler innovation and development.

Chapter 2. Highlights

Enterprise PL/I for z/OS, V5.3 delivers the following new and improved features:

- Exploitation of the new IBM z15™ hardware
- Improved processing of UTF-8 strings with the introduction of a new native datatype
- Several usability enhancements, particularly support for namespaces and VALUE sets
- New built-in functions and options to add more functionality and increase flexibility
- Improved JSON and XML support
- Compiler and runtime support for z/OS V2.4

Exploitation of the new IBM z15™ hardware

Enterprise PL/I for z/OS, V5.3 reduces CPU usage of decimal compute intensive applications by up to 50%, and on average by 12% on IBM z14 over the same compute intensive applications originally built with the previous Enterprise PL/I product. The new ARCH(13) compiler option allows the compiler to exploit the latest IBM z15.

Improved processing of UTF-8 strings with the introduction of a new native datatype

Enterprise PL/I for z/OS, V5.3 provides increased efficiency and support for Unicode data encoded in UTF-8 format. A new native datatype, UCHAR, has been introduced to help users easily build maintainable applications and process UTF-8 strings efficiently.

The enhanced support for processing UTF-8 strings also includes support for hex strings ending with the suffix UX so that you specify arbitrary UTF-8 string constants such as '00' ux (the lowest UCHAR value) and 'F48FBFBF' ux (the highest UCHAR value).

New built-in functions such as UPPERASCII, UPPERLATIN1, LOWERASCII, and LOWERLATIN1 let you easily change the case of most UTF-8 strings while the new built-in functions FOLDEDSIMPLEMATCH and FOLDEDFULLMATCH let you make case-insensitive comparisons of any two UTF-8 strings.

In addition, you can implicitly and explicitly convert UCHAR data to other data types just as you can with CHAR data, and you can use the new ONUCHAR and ONUSOURCE built-in functions and pseudovariables to diagnose and fix any conversion errors that may arise.

The enhanced support for processing UTF-8 strings means that you can now work directly with UTF-8 strings without having to waste CPU resources on converting them. This results in more maintainable programs and is especially useful when you modernize your PL/I applications to work with web services.

Several usability enhancements, particularly support for namespaces and VALUE sets

The QUALIFY statement and a corresponding END statement delimit a qualify block, and thus create a namespace for ORDINALs, other types, and named constants.

The VALUelist and VALUERANGE attributes limit the set of values that a variable, an argument, or a returned value can have.

The VALUelistFROM attribute lets you copy a VALUE set from one variable to another.

Besides, the compiler also delivers a number of new features to help you optimize your PL/I applications and increase your programming productivity. Specifically, the new Enterprise PL/I for z/OS, V5.3:

- Supports the date/time patterns YYYY/MM/DD, YY/MM/DD, YYYY-MM-DDTHH:MI:SS.999999, DD/MM/YYYY, and DD/MM/YY.
- Enables you to use the // (two slashes) characters to specify that the rest of a line is a comment.
- Increases the maximum LINECOUNT value to 65535 lines so that fewer page breaks are created in listings intended to be viewed only online.

- Allows you to assign '' to HANDLES, OFFSETs, AREAs, and ENTRYs as a simple way to assign a null value to them in the same manner that you can assign '' to POINTERS.
- Limits false positives in NOLAXENTRY and NOLAXQUAL checking by excluding names starting with 'DFH', 'DSN', 'EYU', 'SQL', or 'IBM'.

New built-in functions and options to add more functionality and increase flexibility

Enterprise PL/I for z/OS, V5.3 provides you with additional functionality so that you can modernize your applications. It also allows for maximum portability of your source code among a variety of compiler implementations.

The V5.3 compiler provides the following new and enhanced built-in functions:

New built-in functions

- **Array:** INARRAY, QUICKSORT, and QUICKSORTX
- **Buffer:** MEMREPLACE
- **Condition:** ONOPERATOR
- **Comparison and replacement:** IFTHENELSE, FOLDEDFULLMATCH, FOLDEDSIMPLEMATCH, REGEX, and REPLACE
- **Date/time value:** MAXDATE, STCKETODATE, STCKTODATE, PLISTCKLOCAL, PLISTCKUTC, PLISTCKELOCAL, and PLISTCKEUTC
- **File reference:** FILEDDWORD
- **JCL:** ISJCLSYMBOL
- **Precision:** PRECVAl and SCALEVAL
- **UTF-8 string:** BYTELENGTH, UHIGH, ULOW, UVALID, UPPERLATIN1, UPPERASCII, LOWERLATIN1, LOWERASCII, ONUCHAR, and ONUSOURCE
- **System information:** GETSYSWORD and GETSYSINT

Enhanced built-in functions

- **Buffer:** MEMCONVERT
- **JSON:** JSONPUTVALUE and JSONPUTMEMBER

The V5.3 compiler provides the following new and modified compiler options:

New compiler options

- MAXINIT
- PP(MACRO('ID'))
- PP(MACRO('IGNORE')) | PP(MACRO('NOIGNORE'))
- PP(SQL('LINEFILE'))

Modified compiler options

- The ARCH(13) suboption of ARCH
- The (NO)FOFLONDIV suboption of DECIMAL
- The (NO)PADDING suboption of DEFAULT
- The (NO)RESET suboption of USAGE(REGEX)
- The (NO)COMPLEX suboption of RULES
- The (NO)GLOBAL suboption of RULES
- The (NO)LAXEXPORTS suboption of RULES
- The (NO)LAXFIELDS suboption of RULES
- The (NO)LAXOPTIONAL suboption of RULES
- The (NO)LAXPACKAGE suboption of RULES

- The (NO)LAXPARMS suboption of RULES
- The (NO)LAXSCALE suboption of RULES
- The (NO)UNREFSTATIC suboption of RULES
- The (NO)PADDING suboption of RULES
- The LOWER suboption of JSON(CASE)
- The HEEDCASE and IGNORECASE suboptions of JSON(GET)
- The 64K suboption of LIMITS(STRING)

Improved JSON and XML support

Enterprise PL/I for z/OS, V5.3 increases support for various casings of names in the JSON functions via

- the addition of LOWER as a suboption to the JSON(CASE)compiler option
- the new JSON(GET(HEEDCASE | IGNORECASE)) compiler option
- the support for an optional parameter to JSONPUTMEMBER and JSONPUTVALUE that specifies whether the names should be written in lowercase, in uppercase, or as is.

A new XMLNAME attribute has been introduced, so that alternate name formats can be specified for XML output.

Compiler and runtime support for z/OS V2.4

Enterprise PL/I for z/OS, V5.3 adds support for building and running PL/I applications for the z/OS V2.4 operating system.

Chapter 3. Other Enterprise PL/I for z/OS features

Handle big data requirements with 64-bit support

Enterprise PL/I for z/OS, Version 5 supports 64-bit applications with the LP(64) option. This means that all the storage limitations of 32-bit applications are lifted; your application can acquire and manipulate more than 2GB of total storage, and individual structures and arrays can now be larger than 2GB in size. In addition, Enterprise PL/I for z/OS, Version 5 enables you to exploit the removal of these data limits while using all the PL/I statements and functions as in your existing 32-bit applications.

Use of System Management Facilities records to ease administration

A new level of z/OS System Management Facilities (SMF) tracking support within Enterprise PL/I for z/OS, Version 5, allows you, when you have implemented sub-capacity tracking, to reduce your administrative reporting overhead.

SMF collects and records system and job related information that is used by the Sub-Capacity Reporting Tool (SCRT) to report on sub-capacity products.

With Version 5, Enterprise PL/I for z/OS is instrumented so it can be tracked by SMF89 records. If you have enabled the collection of SMF70 and SMF89 records on your machine and you are using SCRT to report the usage of the PL/I compiler, you will no longer have to tell SCRT where your PL/I compiler runs. Enterprise PL/I for z/OS, Version 5 can now automatically be tracked by SMF89 records and is supported by SCRT Java release V23.13.4 and SCRT Classic release V23.7.4. You must use SCRT Java release V23.13.4 or SCRT Classic release V23.7.4, or a later release, whenever you use Enterprise PL/I for z/OS, Version 5.

In conjunction with the SMF record support, system administrators can now define a disablement policy through the SYSx.PARMLIB(IFAPRDxx) parameter library. This client-requested feature can be used to disable the use of the Enterprise PL/I for z/OS, Version 5 compiler within a specific z/OS system.

You continue to gain the benefits of implementing sub-capacity for Enterprise PL/I for z/OS, Version 5 while reducing your administrative overhead.

Provides compatibility for PL/I programs and Java components

Because it supports the Institute of Electrical and Electronics Engineers (IEEE) decimal floating point standard, the Enterprise PL/I for z/OS compiler can receive, manipulate, and send Java data without any translation.

To further improve Java interoperability, Enterprise PL/I for z/OS provides a thread-safe PL/I library and multithreading statements (ATTACH, WAIT, DETACH) as part of the PL/I language supported by the compiler.

Easier migration

The Enterprise PL/I for z/OS Compiler and Runtime Migration Guide provides you with helpful information you might need to move your existing OS PL/I V2 and PL/I for MVS applications to the new runtime environment. Migrating to the new compiler allows your existing applications to take advantage of the many new functions available in Enterprise PL/I for z/OS and to enjoy the many performance benefits provided by the new compiler.

Cross-platform support and workstation-based development

Enterprise PL/I for z/OS is part of a family of compatible compilers, application development tools, and maintenance tools. Along with Enterprise PL/I for z/OS, IBM offers PL/I compilers for multiple platforms as well as IBM File Manager, IBM Fault Analyzer, and Debug Tool. The recommended workstation-based

development environment is IBM Developer for z/OS, which provides an interactive, workstation-based environment to help you create, maintain, and reuse applications.

Chapter 4. System requirements

The following table presents the system requirements for Enterprise PL/I for z/OS V5.3.

Software	Hardware
<p>Enterprise PL/I for z/OS, V5.3 runs under the control of, or along with, the currently supported releases of the following programs and their subsequent releases or their equivalents. For more information about the following programs listed that require program temporary fixes (PTFs), refer to the <i>Program Directory</i> and the preventive service planning (PSP) bucket.</p> <p>Required licensed programs:</p> <ul style="list-style-type: none"> z/OS V2.2 (5650-ZOS), or later <p>Optional licensed programs:</p> <p>Depending on the functions that are used, one or more of the following programs may be required:</p> <ul style="list-style-type: none"> IBM CICS Transaction Server for z/OS, Version 5 (5655-Y04) IBM CICS Transaction Server for z/OS, Version 4 (5655-S97) IBM CICS Transaction Server for z/OS Value Unit Edition, Version 5 (5722-DFJ) Enterprise COBOL for z/OS Version 6 (5655-EC6) Enterprise COBOL for z/OS Version 5 (5655-W32) Enterprise COBOL for z/OS Version 4 (5655-S71) Enterprise PL/I for z/OS, Version 5 (5655-PL5) Enterprise PL/I for z/OS, Version 4 (5655-W67) IBM Db2 11 for z/OS (5615-DB2) IBM Db2 10 for z/OS (5605-DB2) IBM Db2 11 for z/OS Value Unit Edition (5697-P43) IBM Db2 10 for z/OS Value Unit Edition (5697-P31) IBM Debug for z Systems, V14.1 (5655-Q50) IBM Debug for z Systems, V14.0 (5655-Q50) IBM Debug Tool for z/OS, Version 13.1 (5655-Q10) IBM DFSORT element of z/OS (5650-ZOS) IBM z/OS High Level Assembler/MVS and VM and VSE (5696-234) IBM Fault Analyzer for z/OS, Version 14.1 (5655-Q41) IBM Fault Analyzer for z/OS, Version 13.1 (5655-Q11) IBM File Manager for z/OS, Version 14.1 (5655-Q42) IBM File Manager for z/OS, Version 13.1 (5655-Q12) 	<p>Enterprise PL/I for z/OS, V5.3 runs on the following IBM Z[®] servers:</p> <ul style="list-style-type: none"> IBM z15™ IBM z14™ IBM z13[®] IBM z13s™ IBM zEnterprise[®] EC12 (zEC12) IBM zEnterprise BC12 (zBC12) IBM zEnterprise 196 (z196) zEnterprise 114 (z114)

Table 1. System requirements for Enterprise PL/I for z/OS V5.3 (continued)

Software	Hardware
<p>Optional licensed programs (continued) :</p> <ul style="list-style-type: none"> • IBM Application Performance Analyzer for z/OS, Version 14.1 (5655-Q49) • IBM Application Performance Analyzer for z/OS, Version 14.0 (5655-Q49) • IBM Application Performance Analyzer for z/OS, Version 13.1 (5655-Q09) • IBM IMS Version 14 (5635-A05) • IBM IMS Version 13 (5635-A04) • IBM IMS Transaction Manager Value Unit Edition Version 14 (5655-TM3) • IBM IMS Transaction Manager Value Unit Edition Version 13 (5655-TM2) • IBM IMS Transaction Manager Value Unit Edition Version 12 (5655-TM1) • IBM IMS Database Value Unit Edition Version 14 (5655-DSE) • IBM IMS Database Value Unit Edition Version 13 (5655-DSM) • IBM Developer for z/OS, Version 14.2 (5724-T07) • IBM Developer for z Systems, Version 14.1 (5724-T07) • IBM Developer for z Systems, Version 14.0 (5724-T07) • IBM Rational® Developer for System z®, Version 9 (5724-T07) • IBM Rational Developer for System z, Version 8.5 (5724-T07) • IBM VS FORTRAN, Version 2 (5668-806, 5688-087) • IBM Application Delivery Foundation for z/OS, Version 3.2 (5565-AC6) • IBM Application Delivery Foundation for z Systems, Version 3.1 (5565-AC6) • IBM Application Delivery Foundation for z Systems, Version 3.0 (5565-AC6) • IBM Application Delivery Foundation for z Systems, Version 1.2 (5697-CDT) • For XL C/C++ with Enterprise PL/I, you must use the XL C/C++ feature of z/OS, Version 2 Release 1 (5650-ZOS), or later. 	

Chapter 5. Ordering information

Upgrade to the latest Enterprise PL/I compiler and get more out of your IBM Z investment and stay ahead of competitors on the technology curve.

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.

- 5655-PL5 is the ordering Product ID (PID) for Enterprise PL/I for z/OS, V5.
- 5655-EPL is the ordering Product ID for Enterprise PL/I Value Unit Edition for z/OS, V5.
- 5655-EPS is the ordering Product ID for Enterprise PL/I Value Unit Edition for z/OS Subscription and Support.

Enterprise PL/I for z/OS is available through the Shopz website: www.ibm.com/software/shopzseries

Chapter 6. For more information

To learn more about IBM Enterprise PL/I for z/OS V5.3, contact your IBM representative or IBM Business Partner, or visit [Enterprise PL/I for z/OS](#).

To learn more about IBM Developer for z/OS software, visit www.ibm.com/software/rational/products/developer/systemz/

Chapter 7. Notices

References in this document to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM program product in this publication is not intended to state or imply that only IBM's program product may be used. Any functionally equivalent program may be used instead.

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