With IBM® Enterprise PL/I for z/OS® V3R9, you can leverage more than 30 years of IBM experience in application development to facilitate your new On Demand Business endeavors, helping you to integrate PL/I and Web-based business processes in Web services, XML, Java™ and PL/I applications. This compiler’s interoperability lets you capitalize on existing IT investment while smoothly incorporating new, Web-based, applications as part of your organizations infrastructure.

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 you want to execute on your z/OS systems. It gives you access to IBM DB2®, IBM CICS®, and IBM IMS™ systems, and other data and transaction systems.

Highlights

Enterprise PL/I for z/OS V3R9 has added the following enhancements and improvements in this release:

- Performance improvements
- Usability enhancements
- Quality improvements
- Serviceability improvements

Performance improvements

Enterprise PL/I for z/OS V3R9 contains the following performance improvements:

- Additional exploitation of the hardware is implemented in the compiler in order to improve performance of the generated code:
  - The CU12, CU14, CU21, CU24, CU41 and CU42 system instructions for faster Unicode conversions
  - The TRTT, TROT, TRTO, and TROO system instructions for faster Unicode translations
  - The compare-and-trap hardware instruction for the detection of the dereferencing of null pointers
  - The compiler is built with ARCH(6) to improve its performance.
  - Miscellaneous improvements to generated code:
    - Improve code generated for UVALID.
    - Improve code generated for some array assignments.
    - Directly inline ROUND for Decimal Float Pointing (DFP) instead of using a slower library call.
    - Improve BIN(31,31) compares.

Usability enhancements

Enterprise PL/I for z/OS V3R9 contains the following performance improvements:

- Block-scoping in the CICS and SQL preprocessors is supported.
- You can include DFP in restricted expression when using math built-in functions.
- Support for UTF-8 and UTF-16 is improved:
  - New built-in functions are provided to support fast conversions amongst UTF-8, UTF-16 and UTF-32: MEMCU12, MEMCU14, MEMCU21, MEMCU24, MEMCU41, and MEMCU42.
  - New built-in functions are added to support fast translations amongst UTF-8 and UTF-16: PLITRAN11, PLITRAN11, PLITRAN21, and PLITRAN22.
  - The USURROGATE built-in function is provided to test if a CHAR or WCHAR string contains any UTF surrogate pairs.
  - UVALID is inlined for small strings.
The following date patterns with blank suppression are supported:
- ZY-ZM-ZD
- ZM/ZD/ZY
- ZD.ZM.ZY
- YY-ZM-ZD
- ZM/ZD/YY
- ZD.ZM.YY
- Support for the INONLY, INOUT, and OUTONLY attributes is enabled, so that function prototypes can be more self-documenting and the flagging of uninitialized variables can be more accurate.
- The MACRO preprocessor now leaves the %INCLUDE, %XINCLUDE, %INSCAN, and %XINSCAN statements in the compiler listing as comments.
- The new MACRO construct %DO SKIP is provided to support meta-comments.
- The NULLSTRPTR suboption of the DEFAULT compiler is provided to control whether sysnull or null is assigned to a pointer when the source in the assignment is a null string.
- The ROUNDDEC built-in function is provided so that a DFP number can be rounded at the nth decimal digit, rather than at the nth digit as provided by the ROUND built-in function.
- The IGNORE compiler option is provided, so that PUT FILE statements, DISPLAY statements, or both of them may be suppressed.
- The flagging of seemingly unused %INCLUDE statements is now dropped.

Quality improvements
Enterprise PL/I for z/OS V3R9 contains the following quality improvements:
- The compiler now flags the following errors:
  - Code where the result of a FIXED operation has a scale factor less than zero
  - ENTrYs used as functions but declared without the RETURNS attribute
  - The use of a duplicate ORDINAL in a SELECT statement. The new and unique message IBM2636I is issued.
  - The declaration of FIXED DEC(p,q) and FIXED BIN(p,q) where q is less than 0 or q is greater than p
  - Parameters declared inappropriately as BYVALUE, for example, declaring a FIXED DEC parameter BYVALUE

Serviceability improvements
Enterprise PL/I for z/OS V3R9 contains the following serviceability improvements:
- When the compiler cannot open a file, the compiler will now, if possible, also includes the related C runtime message in the listing.
- If user code requires a DFP conversion at compile time but the compile is running on a
machine without DFP hardware, this error will be trapped and a meaningful error issued.

- If the SQL preprocessor is invoked more than once without INCONLY as its suboption, then the DBRM library created by the compiler will be empty, and now an E-level message will be issued to warn the user.

Specified operating environment for Enterprise PL/I

This section lists the hardware and software requirements for IBM Enterprise PL/I for z/OS, Version 3 Release 9.

Hardware requirements

Enterprise PL/I for z/OS V3R9 will run only on the following (and follow-on) IBM servers:

- z10 Enterprise Class, or follow on
- IBM z9® Enterprise Class or z9 Business Class, or follow-on
- zSeries® z900 or z990, or follow-on
- zSeries z800 or z890, or follow-on

Machine requirements

Enterprise PL/I and its compiled object programs can run on any IBM zSeries processor supported by the operating systems listed under “Programming Requirements.”

Programming requirements

Enterprise PL/I for z/OS V3R9 runs under the control of, or in conjunction with, the currently supported releases of the following IBM programs and their subsequent releases or their equivalents unless otherwise announced by IBM.

For more information on programs listed below that require program temporary fixes (PTFs), see the Enterprise PL/I Program Directory and the preventive support planning (PSP) bucket.

Required licensed programs

Enterprise PL/I and its generated object programs run under the following zSeries operating system:

- z/OS, Version 1 Release 9 (5694-A01) or later

Optional licensed programs

If you use the following programs with Enterprise PL/I, you must use the minimum release or later as stated below:

- CICS Transaction Server for z/OS, Version 3 (5655-M15)
  (CICS TS V2 or CICS TS V3 required if using Integrated CICS preprocessor support.)
- CICS Transaction Server for z/OS, Version 4 (5655-S97)
- Enterprise COBOL for z/OS and OS/390® V3 (5655-G53)
- Enterprise COBOL for z/OS V4 (5655-S71)
- COBOL for MVS & VM, Release 1.2 (5688-197)
- DB2 Universal Database™ for z/OS, Version 8 (5625-DB2)
- DB2 Universal Database for z/OS, Version 9 (5635-DB2)
  (DB2 V8 or DB2 V9 Required if using Integrated DB2 preprocessor support.)
- Debug Tool for z/OS, Version 7 Release 1 (5655-R44)
- Debug Tool Utilities and Advanced Functions for z/OS, Version 7 Release 1 (5655-R45)
- Debug Tool for z/OS, Version 8 Release 1 (5655-S17)
- Debug Tool Utilities and Advanced Functions for z/OS, Version 8 Release 1 (5655-S16)
- IBM Debug Tool for z/OS, Version 9 Release 1 (5655-U27)
- IBM DFSORT element of z/OS (5694-A01) or OS/390 (5647-A01)
- IBM z/OS High Level Assembler/MVS and VM and VSE (5696-234)
- IMS Version 9 (5655-J38)
- IMS Version 10 (5635-A01)
- OS PL/I Version 2 Release 3 (5668-909, 5668-910, 5668-911)
- PL/I for MVS & VM, Version 1 Release 1 (5688-235)
- IBM VS FORTRAN, Version 2 (5668-806, 5688-087)

Full Function VS Alternate Function offerings

As of September 8, 2008, the Full Function Offering is no longer being offered with any version of the Enterprise PL/I for z/OS compiler. The Enterprise PL/I for z/OS compiler Alternate Function Offering is still being offered.
Depending on the debugger functionality required, the debugger can be replaced by either Debug Tool for z/OS V8.1, Announcement 207-205, dated September 18, 2007, or Debug Tool Utilities and Advanced Functions for z/OS V8.1, Announcement 207-206, dated September 18, 2007.

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.

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

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This document is a W3C Recommendation. This fifth edition is not a new version of XML. As a convenience to readers, it incorporates the changes dictated by the accumulated errata (available at http://www.w3.org/XML/xml-V10-4e-errata) to the Fourth Edition of XML 1.0, dated 16 August 2006. In particular, erratum [E09] relaxes the restrictions on element and attribute names, thereby providing in XML 1.0 the major end user benefit currently achievable only by using XML 1.1. As a consequence, many possible documents which were not well-formed according to previous editions of this specification are now well-formed, and previously invalid documents using the newly-allowed name characters in, for example, ID attributes, are now valid.

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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