With IBM® Enterprise PL/I for z/OS® V4R1, 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. You can use this interoperability of the compiler to capitalize on existing IT investment while more smoothly incorporating new, web-based applications as part of your organization’s 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 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**

The following enhancements and improvements are added in Enterprise PL/I for z/OS V4R1:

- Exploitation of the latest hardware architecture, Model 2817, for better application performance
- Compiler enhancements to improve debugging with IBM Debug Tool
- SQL preprocessor support enhancements
- XML validation improvements
- Numerous usability improvements
- Continued quality improvements

**Performance improvements**

Enterprise PL/I for z/OS V4R1 contains the following performance improvements:

- The ARCH option controls the code generated by adjusting the instructions, scheduling, and other optimizations for a specific architecture level of the system. Enterprise PL/I for z/OS V4R1 introduces the new ARCH(9) option to support the latest 2817-xxx hardware models. The following new facilities are used to produce code targeting the new models:
  - Distinct-operands
  - Load/store-on-condition
- The compiler now inlines code to resolve references to elements of structures with complex REFER if all the elements are byte-aligned. Previously the compiler would have resolved these references by using slower library calls.

**Debug Tool enhancements**

Enterprise PL/I for z/OS V4R1 contains the following debug tool improvements when using TEST(SEPARATE):

- The compiler optionally places the statement number in the separate debug file, which reduces the size of the generated object.
- The compiler generates more specific information for the Debug Tool automonitor function. For example, for a statement of the form A(2) = B(2), only A(2) and B(2) are listed in the monitor window, rather than all of A and all of B.
- The compiler includes information in the separate debug file identifying the source lines for declarations, references, and assignments.
- The compiler generates information to identify the implicit locator reference when a BASED variable is based on the ADDR of an array element. With this enhancement, Debug Tool can list such PL/I variables and also variables with more complicated implicit locator references.

**Usability improvements**

Enterprise PL/I for z/OS V4R1 contains the following usability improvements:

- The SQL preprocessor, which is integrated into Enterprise PL/I for z/OS, now supports the XREF option.
- Enterprise PL/I for z/OS facilitates web interoperability using XML parsing and generation. XML validation is supported by using the XML System Services parser and the new PLISAXD built-in subroutine. PLISAXD has the same set of arguments as the PLISAXC
built-in subroutine except that it also has an additional, mandatory argument that is the address of the buffer containing an Optimized Schema Representation.

- The compiler now allows the initialization of typed structures. In particular, the INIT attribute is allowed on leaf elements of a DEFINE STRUCTURE statement, and the new VALUE type-function can then be used to initialize or assign to a variable having that structure type.

**Quality improvements**

Enterprise PL/I for z/OS V4R1 contains the following quality improvements:
- The compiler flags the use of OPTIONS(MAIN COBOL/FORTRAN).
- The compiler flags all assignments to REFER objects.
- The compiler allows RESPECT(DATE) to be overwritten.
- When the arrays are declared as NONASGN, the compiler now accepts static label arrays without issuing a warning message.
- The compiler flags, by using the new DEPREDATE option, the usage of user specified built-in functions, user variables, or included files. With this option, you can enforce internal quality and naming standards.
- The compiler provides more RULES suboptions to flag some types of coding:
  - NOGLOBALDO to flag loops with a control variable declared in a parent block
  - NOPADDING to flag structures with padding
- The compiler flags PROC(REENTRANT) when neither RENT nor DFT(NONASGN) is in effect.
- The SQL preprocessor now always lists the SQL options in effect.
- The SAA/SAA2 suboption of the LANGLVL option has been removed because the older SAA compilers are no longer in service.
- The (NO)STORAGE suboption of the CHECK option has been removed because Language Environment® provides the equivalent function more dynamically.

### Specified operating environment for Enterprise PL/I

This section lists the hardware and software requirements for IBM Enterprise PL/I for z/OS, Version 4 Release 1.

#### Hardware requirements

Enterprise PL/I for z/OS V4R1 runs only on the following (and later) IBM servers:
- z10™ Enterprise Class, or later
- IBM System z9® Enterprise Class or z9 Business Class, or later
- zSeries® or z990, or later
- zSeries or z890, or later

#### Software requirements

Enterprise PL/I for z/OS V4R1 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 about programs listed in the following section that require program temporary fixes (PTFs), see the Program Directory and the preventative service 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 1.11 (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 in the following list:
- CICS Transaction Server for z/OS, Version 3 (5655-M15)
- 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)
- IBM Debug Tool for z/OS, Version 8 (5655-S17)
• IBM Debug Tool for z/OS, Version 9 Release 1 (5655-U27)
• IBM Debug Tool for z/OS, Version 10 Release 1 (5655-V50)
• Debug Tool Utilities and Advanced Functions for z/OS, Version 8 (5655-S16)
• 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)
• For C/C++ with Enterprise PL/I, you must use the XL C/C++ feature of z/OS (5694-A01).

Full Function Offering
As of September 8, 2008, IBM no longer offers the Full Function Offering with any version of the Enterprise PL/I for z/OS compiler.

The debugger functionality can be replaced by Debug Tool for z/OS.

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.

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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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