With IBM® Enterprise PL/I for z/OS® V4R2, 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 V4R2:

- Additional utilization of the latest IBM zEnterprise™ 196 architecture for improved compiler performance
- Compiler enhancements to improve debugging with IBM Debug Tool
- XML generation improvements for better web interoperability
- SQL preprocessor and SQL support enhancements
- Productivity improvements, many of them customer-requested

### Performance improvements

Enterprise PL/I for z/OS V4R2 contains the following performance improvements:

- The new UNROLL compiler option gives you control of loop unrolling.
- The compiler generates inline code to resolve the LENGTH and USUBSTR built-in functions for character strings.
- The compiler generates inline code for MEMINDEX(p, n, x) where x is WCHAR(1) just as it previously did if x was CHAR(1).
- The compiler generates inline code for STG(x) where x is a BASED variable using REFER when all NONVARYING BIT in x are specified with the ALIGNED attribute and all other elements in x are specified with UNALIGNED.

### Debug Tool enhancements

Enterprise PL/I for z/OS V4R2 contains the following debug tool improvement when using TEST(SEPARATE):

- The compiler supports typed structures in Debug Tool.

### Web interoperability improvements

Enterprise PL/I for z/OS V4R2 contains the following web interoperability improvement:

- XML generation, by using the XMLCHAR built-in function, supports XML attributes and the omission of null values.

### Middleware support enhancements

Enterprise PL/I for z/OS V4R2 contains the following enhancements on middleware support:

- The SQL preprocessor includes the following improvements:
  - It supports block scoping.
  - The preprocessor load module is smaller than the previous release.
  - It supports the use of the SQL TYPE attribute anywhere you can specify a PL/I data type.
- It handles PACKAGEs.
- It supports the following compiler options when processing declarations of host variables. It applies the defaults and rejects unsuitable host variables as appropriate.
  - DEFAULT(ANS | IBM)
  - DEFAULT(ASCII | EBCDIC)
  - DEFAULT((NO)EVENDEC)
  - DEFAULT((NON)NATIVE)
  - DEFAULT(SHORT(HEX | IEEE))
  - RULES((NO)LAXCTL)
- It recognizes the PRECISION attribute.
- It recognizes the UNSIGNED and COMPLEX attributes and rejects the use of these attributes in any host variable.
- It is implemented so that DSNHMLTR is declared in the outermost parent procedure containing the code that needs DSNHMLTR.
- It no longer puts an unprintable character in the source code when generating code to set the SQLAVDAID.
- It allows indicator arrays to have any lower bound.
- It generates an SQL parameter list structure that has fewer unions, fewer init clauses, and no additional declarations based on elements of the structure.
- The new BY DIMACROSS form of assignments makes it easier to write code to handle the results of SQL multi-row fetch.
- The compiler and the preprocessors (rather than just the SQL preprocessor when parsing EXEC SQL code) now all support <> as a not-equals symbol.
- The new INDICATORS built-in function makes it easy to declare an array to be used as an SQL indicator variable with a structure.

**Helps to increase productivity and user requests**

Enterprise PL/I for z/OS V4R2 contains the improvements that help to increase productivity and that are made according to user requests:

- The new PPLIST compiler option conditionally erases the part of the listing that is generated by any preprocessor phase that produces no messages.
- The compiler applies the NONASSIGNABLE attribute to any parameter that is declared with the INONLY attribute; it flags any assignment to a parameter that is declared as INONLY.
- The compiler supports a new STRICT | LOOSE suboption to RULES(NOLAXENTRY). Under the LOOSE suboption, OPTIONS(ASM) routines are not flagged when they do not specify a parameter list.
- Under RULES(NOLAXENTRY), the compiler does not flag names that start with DSN. Under RULES(NOUNREF), the compiler does not flag names that start with DSN or SQL.
- Under the new NOSELFASSIGN suboption of the RULES compiler option, the compiler flags assignments of variables to themselves.
- Under the new NOLAXRETURN suboption of the RULES compiler option, the compiler generates codes to raise an ERROR when a RETURN statement is used in either of the following ways:
  - With an expression in a procedure that is coded without the RETURNS option
  - Without an expression in a procedure that is coded with the RETURNS option
- The compiler issues a more meaningful message when a comma is missing in a structure declare.
- The compiler issues new and improved messages when the source code contains invalid shift-in and shift-out bytes.
- The compiler now explicitly supports some use of adjustable BASED without REFER.
- The compiler now supports comparisons of POINTER to null strings ("" and ""b).
- The compiler has raised the maximum number of distinct include files allowed in a single compilation from 2047 to 4095.

**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 2.

**Hardware requirements**

Enterprise PL/I for z/OS V4R2 runs only on the following (and later) IBM servers:

- zEnterprise 196, or later
- z10™ Enterprise Class, or later
- IBM System z9® Enterprise Class or z9 Business Class, or later
Software requirements
Enterprise PL/I for z/OS V4R2 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 preventive 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 4 (5655-S97)
- CICS Transaction Server for z/OS, Version 3 (5655-M15)
- Enterprise COBOL for z/OS Version 4 (5655-S71)
- Enterprise COBOL for z/OS and OS/390® Version 3 (5655-G53)
- IBM DB2 10 for z/OS (5605-DB2)
- IBM DB2 10 for z/OS VUE (5697-P31)
- IBM DB2 for z/OS Version 9 (5635-DB2)
- IBM DB2 for z/OS Version 9 VUE (5697-P12)
- DB2 UDB Version 8 for z/OS (5625-DB2)
- DB2 UDB Version 8 for z/OS VUE (5697-N29)
- IBM Debug Tool for z/OS, Version 11 (5655-W65)
- IBM Debug Tool for z/OS, Version 10 (5655-V50)
- IBM Debug Tool for z/OS, Version 9 (5655-U27)
- Debug Tool for z/OS, Version 8 (5655-S17)
- 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)
- IBM IMS Version 11 (5635-A02)
- IBM IMS Version 10 (5635-A01)
- IBM IMS Version 9 (5655-J38)
- 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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