



IBM Enterprise PL/I for z/OS , V4.1 delivers performance improvements and usability enhancements

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At a glance

IBM® Enterprise PL/I for z/OS® V4.1 delivers:

- Exploitation for the latest IBM zEnterprise™ 196 architecture for improved application performance
- Compiler enhancements to improve debugging with IBM Debug Tool
- SQL preprocessor support enhancements
- XML validation improvements
- Numerous usability improvements, many of them customer-requested
- Continued quality improvements

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. It gives you access to IBM DB2®, IBM CICS®, and IBM IMS™ systems, and other data and transaction systems.

This compiler facilitates 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 offers exploitation for the latest hardware architecture contained in the new zEnterprise 196, compiler enhancements for improved debugging using Debug Tool, and a number of usability enhancements, as well as additional quality improvements, many of them customer-requested.

This new version of Enterprise PL/I for z/OS V4.1 underscores the continuing IBM commitment to the PL/I programming language on the z/OS platform.

With Enterprise PL/I for z/OS V4.1, you can leverage more than 30 years of IBM experience in application development.

Key prerequisites

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

Planned availability date

September 24, 2010

Description

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 V4 introduces the new ARCH(9) option to support the latest IBM zEnterprise 196 servers. The following new facilities are used to produce code targeting the new models:
 - Load/store-on-condition
 - Distinct-operands
- The compiler will now place code inline 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 via less-efficient library calls.

zEnterprise 196 hardware exploitation has been implemented in the Enterprise PL/I for z/OS compiler through the addition of the ARCHITECTURE(9) option. This option enables the use of new instructions from the load/store-on-condition and the distinct-operands facilities to be exploited in the compiler-generated code. This is designed to provide better performing applications tuned for the zEnterprise 196 server. Additional optimization and tuning help to improve the floating-point performance. These changes can improve the performance of generated code without the need for changes to the source code. A performance improvement of over 3% was observed using code generated by Enterprise PL/I for z/OS Version 4 using ARCH(9) when compared to code generated using the Enterprise PL/I for z/OS V3.9.

These reported performance improvements are based on internal IBM lab measurements using the ARCH(9) and OPT(3) compiler options. Performance results for specific applications will vary; some factors affecting performance are the source code and the compiler options specified.

Debug Tool enhancements

When using TEST(SEPARATE):

- The compiler optionally places the statement number in the side 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 $B(2)$ will be listed in the monitor window, rather than all of A and all of B.
- The compiler includes information in the side file, identifying the source lines for declares, references, and assignments.
- The compiler generates information to identify the implicit locator reference when a variable is based on the ADDR of an array element. With this enhancement, you will be able to list based storage if the pointer is an element of an array.

Usability enhancements

- The SQL preprocessor, which is integrated into Enterprise PL/I for z/OS will now support the XREF option.

- Enterprise PL/I facilitates Web interoperability using XML parsing and generation. XML validation is supported via the XML System Services parser and the new PLISAXD built-in routine. PLISAXD has the same set of arguments as the PLISAXC built-in subroutine except that it has an additional, mandatory argument that is the address of an optimized schema representation.
- The compiler now allows initialization of typed structures. In particular, the INIT attribute will be allowed on leaf elements of a DEFINE STRUCTURE statement, and the new VALUE type-function may then be used to initialize or assign to a variable having that structure type.

Quality improvements

- The compiler now flags OPTIONS(MAIN COBOL/FORTRAN).
- The compiler now flags all assignments to REFER objects.
- The compiler now allows RESPECT(DATE) to be overwritten.
- The compiler now accepts static label arrays declared without emitting a warning message, if the arrays are declared as NONASGN.
- The compiler can flag, via the new DEPRECATE option, the usage of user-specified built-in functions, user variable, or include files. With this option, you can more easily enforce internal quality and naming standards.
- The compiler provides more RULES suboptions to flag poor 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 is removed since the older 'SAA' compilers are no longer in service.
- The (NO)STORAGE suboption of the CHECK option is removed since Language Environment® (LE) provides the equivalent function more dynamically.

Accessibility by people with disabilities

A U.S. 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 V4.1	5655-W67	09/24/2010	Japanese

Program number

Program name	Program number
IBM Enterprise PL/I for z/OS V4.1	5655-w67

Previous program information

Previous program name and number: Enterprise PL/I for z/OS, V3 - 5655-H31

Technical information

Specified operating environment

Hardware requirements

Enterprise PL/I for z/OS, V4.1 will run on the following IBM servers:

- zEnterprise 196
- z10™ Enterprise Class, or follow-on
- IBM System z9® Enterprise Class or z9™ Business Class, or follow-on
- zSeries® z990, or follow-on
- zSeries z890, or follow-on

Software requirements

Enterprise PL/I for z/OS V4.1 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 programs listed below that require program temporary fixes (PTFs), refer to the *Program Directory* and the preventive service planning (PSP) bucket.

z/OS V1.10 (5694-A01), or later, is a required licensed program.

Optional licensed programs

- CICS Transaction Server for z/OS, V4 (5655-S97)
- CICS Transaction Server for z/OS, V3 (5655-M15)
- Enterprise COBOL for z/OS, V4 (5655-S71)
- Enterprise COBOL for z/OS and OS/390®, V3 (5655-G53)
- IBM COBOL for OS/390 and VM V2 (5648-A25)
- COBOL for MVS™ and VM V1.2 (5688-197)
- IBM DB2 UDB for z/OS, V9 (5635-DB2)
- DB2 UDB for z/OS, V8 (5625-DB2)
- IBM Debug Tool for z/OS, V9 (5655-U27)
- Debug Tool for z/OS, V8 (5655-S17)
- Debug Tool for z/OS, V7 (5655-R44)
- Debug Tool Utilities and Advanced Functions for z/OS, V8 (5655-S16)
- Debug Tool Utilities and Advanced Functions for z/OS, V7 (5655-R45)
- IBM DFSORT™ element of z/OS (5694-A01) or OS/390 (5647-A01)
- IBM High Level Assembler/MVS and VM and VSE (5696-234)
- IBM IMS V10 (5635-A01)
- IMS V9 (5655-J38)

- OS PL/I V2.3 (5668-909, 5668-910, 5668-911)
- PL/I for MVS and VM V1.1 (5688-235)
- VisualAge PL/I for OS/390 V2 (5655-B22)
- Enterprise PL/I for z/OS V3 (5655-H31)
- IBM VS FORTRAN V2 (5668-806, 5688-087)
- For C/C++ with Enterprise PL/I -- You must use the XL C/C++ feature of z/OS (5694-A01).

User group requirements

This announcement addresses nine 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:

- MR102909480
- MR0129066613
- MR0312104052
- MR0427097311
- MR0505094514
- MR1029094810
- MR1104096225
- MR1110093235
- MR1112095051

Planning information

Packaging

The Enterprise PL/I for z/OS, V4.1 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

New licensees

- Orders for new licenses can be placed now.
- Registered customers can access IBMLink™ for ordering information and charges.
- Shipment will not occur before the availability date.
- Unless a later date is specified, orders entered before the planned availability date will be assigned a schedule date of one week following availability.
- Orders entered after the planned availability date will be assigned a schedule date for the week following order entry.

Shipment will begin on the planned availability date.

New users of Enterprise PL/I for z/OS V4 should specify: Type: 5655 Model: W67

Parallel Sysplex license charge (PSLC) basic license

To order a basic license, specify the program number and quantity of MSU.

If there is more than one program copy in a Parallel Sysplex®, the charge for all copies is associated to one license by specifying the applicable PSLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the System Usage Registration No-Charge (SYSUSGREG NC) Identifier on the licenses.

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic MLC, PSLC below 3 MSU Basic MLC, PSLC AD SYSUSGREG NC, PSLC AD

Workload License Charge (WLC) Basic License

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable WLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the Workload Registration Variable WLC Identifier on the licenses.

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic MLC, Variable WLC Workload Registration No Charge, Variable WLC

Advanced Workload License Charge (AWLC) Basic License

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic AWLC, AWLC Workload Registration No Charge, AWLC

For more information on the Advanced Workload License Charge, refer to Software Announcement [AP10-0220](#), dated July 22, 2010.

Entry Workload License Charge (EWLC) Basic License

To order a basic license, specify the program number and the quantity of MSUs.

To order EWLC software, specify the program number and the EWLC monthly charge feature number from the following table. Also, specify the feature number for the desired distribution medium.

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic MLC, Entry WLC

Growth opportunity license charge (GOLC)

To order a basic license, specify the program number and the correct level.

Specify the GOLC monthly license option.

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic MLC, GOLC

System z entry license charge (zELC)

To order zELC software, specify the program number and z800 model.

Specify the zELC monthly license option.

Entitlement identifier	Description	License option/ Pricing metric
S0166DJ	Enterprise PL/I V4	Basic MLC, zELC

Single version charging

To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Basic machine-readable material

Orderable Supply ID:	Language	Distribution Medium	Description
S0166DG	US English	3590 Tape Cartridge	Ent PL/I for z/OS V4.1
S0166DH	Japanese	3590 Tape Cartridge	Ent PL/I for z/OS V4.1

Customization options

Select the appropriate feature numbers to customize your order to specify the delivery options desired. These features can be specified on the initial or MES orders.

Example

If publications are not desired for the initial order, specify feature number 3470 to ship media only. For future updates, specify feature number 3480 to ship media updates only. If, in the future, publication updates are required, order an MES to remove feature number 3480; then, the publications will ship with the next release of the program.

Initial shipments

Feature number	Description
3444	Serial Number Only (suppresses shipment of media and documentation)
3470	Ship Media Only (suppresses initial shipment of documentation)
3471	Ship Documentation Only (suppresses initial shipment of media)
3451	Internet Electronic Delivery

Update shipments

Feature number	Description
3480	Ship Media Updates Only (suppresses update shipment of documentation)
3481	Ship Documentation Only (suppresses update shipment of media)
3482	Suppress Updates (suppresses update shipment of media and documentation)

Expedite shipments

Feature number	Description
3445	Local IBM Office Expedite (for IBM use only)
3446	Customer Expedite Process Charge (\$30 charge for each product)

Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

A *Program Directory* (GI11-9144) and *Licensed Program Specification* (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 Customized Offerings (for example, CBPDO, ServerPac, SystemPac®).

CBPDO and ServerPac are offered for Internet delivery, where ShopzSeries product ordering is available. Internet delivery of ServerPac may help improve automation and software delivery time. For more details on Internet delivery, refer to the ShopzSeries help information at

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

Media type for this software product is chosen during the customized offerings ordering process. Based on your customer environment, it is recommended that the highest possible density tape media is selected. Currently offered media types are:

- CBPDOs - 3480, 3480 Compressed, 3490E, 3590, 3592¹
- ServerPacs - 3480, 3480 Compressed, 3490E, 3590, 3592¹
- SystemPacs - 3480, 3480 Compressed, 3490E, 3590, 3592¹

¹ 3592 is highest density media. Selecting 3592 will ship the fewest number of media.

Once a product becomes generally available, it will be included in the next ServerPac and SystemPac monthly update.

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 three weeks after inclusion in ServerPac.
- SystemPac shipments will begin four weeks after inclusion in SystemPac due to additional customization and data input verification.

Terms and conditions

Agreement

IBM Customer Agreement

Variable charges apply

No

Location license applies

No

Use limitation applies

No

Educational allowance available

Yes, 15% education allowance applies to qualified education institution customers.

Volume orders

Not applicable.

Replaced programs		Replacement programs	
Program number	Program name	Program number	Program name
5734-PL1	OS PL/I V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5734-PL2	OS PL/I V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5734-PL3	OS PL/I V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5734-LM4	OS PL/I V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5734-LM5	OS PL/I V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5668-909	OS PL/I V2	5655-w67	IBM Enterprise PL/I for z/OS V4
5668-910	OS PL/I V2	5655-w67	IBM Enterprise PL/I for z/OS V4
5688-194	IBM CODE/370	5655-w67	IBM Enterprise PL/I for z/OS V4
5688-235	IBM PL/I for MVS and VM V1	5655-w67	IBM Enterprise PL/I for z/OS V4
5655-B22	IBM VisualAge® PL/I for OS/390 V2	5655-w67	IBM Enterprise PL/I for z/OS V4
5655-H31	IBM Ent PL/I for z/OS V3	5655-w67	IBM Enterprise PL/I for z/OS V4

Warranty applies

Yes

Licensed program materials availability

Restricted Materials of IBM: No
Non-Restricted Source Materials: None
Object Code Only (OCO): All

Program services

Support Center applies: Yes
Access is available through the IBM Support Center

Available until discontinued: 12 months' written notice

APAR Mailing Address: IBM Corporation
APAR Processing
P.O. Box 49023
San Jose, CA 95161-9023

IBM Operational Support Services -- SupportLine

Yes

Prices

For all local charges, contact your IBM representative.

Sub-Capacity Charges for VWLC Products

Sub-capacity charges for VWLC products are based on product LPAR utilization capacity. Product LPAR utilization capacity for a VWLC product is the highest number of MSUs utilized by the combined LPARs in which a VWLC product runs concurrently during a reporting period. The number of MSUs is based on the highest observed rolling 4-hour average utilization used by the combination of the relevant LPARs during the reporting period. Refer to Software Announcement [AP00-1329](#), dated October 03, 2000, Software Announcement [AP01-1282](#), dated September 11, 2001, and Software Announcement [AP02-1115](#), dated April 30, 2002, for additional details on IBM Workload License Charges.

Sub-Capacity Charges Terms and Conditions

System z® software charges at less than full machine capacity for eligible VWLC products apply when z/OS is running in z/Architecture® (64 bit) mode on an IBM e(logo)server System z 900, no other MVS-based operating system is licensed to that server and the required information is provided by the customer in accordance with the applicable terms.

Sub-capacity charges for a VWLC product is based on the utilization of the LPARs where/when the product executes. To obtain charges at less than full machine capacity for VWLC products, the customer is required to:

- Sign and abide by the terms of the Attachment for IBM System z Workload License Charges - (Z125-6516).
- Obtain the latest version of the Sub-Capacity Reporting Tool.

- Install any VWLC product and IBM e(logo)server System z 900 Licensed Internal Code (LIC) service required for sub-capacity charging. Required service will be listed on the WLC Web site
<http://www.ibm.com/zseries/swprice>
- Collect SMF data as required by the Sub-Capacity Reporting Tool. Retain the collected SMF data for a period of not less than six months.
- Use the IBM provided Sub-Capacity Reporting Tool to process the collected SMF data. The Sub-Capacity Report produced by the tool is used to determine required license capacity for the VWLC products. Required license capacity is determined based on the largest MSU value of a VWLC product running concurrently in all LPARs during the reporting period. IBM reserves the right to request the system data that supports these product-defined capacity values for a period of up to six months after the data was collected.
- Provide an initial Sub-Capacity Report to begin to receive the benefits of less than full machine capacity charges. Sub-capacity charging will follow submission of a Sub-Capacity Report. There will be no retroactive application of sub-capacity charges.
- Submit Sub-Capacity Reports monthly.
- Submit Sub-Capacity Reports for all VWLC products with complete data for the entire reporting period to the e-mail address and by the date specified on the System z Software Pricing Web site that follows and in the current IBM System z Workload License Charges Exhibit (Z125-6324)

<http://www.ibm.com/zseries/swprice>

Sub-Capacity Reports that reflect a changed product defined capacity will be considered to be orders placed by the customer without further action on the customer's part and IBM is authorized to make any resulting billing increase or decrease. To place an order for a new license or to discontinue licenses, move licenses between machines, report a hardware model upgrade or enable or disable product features, the customer must contact IBM or their IBM Business Partner.

- Configure machine to send weekly Transmit System Availability Data (TSAD) to IBM via the IBM e(logo)server System z 900 Remote Support Facility (RSF). If the machine cannot connect via the RSF, provide this TSAD via an alternate means documented in the z/OS publication *Planning for Workload License Charges* at

<http://www.ibm.com/zseries/swprice>

For more information on the Advanced Workload License Charge, refer to Software Announcement [AP10-0220](#), dated July 22, 2010.

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<http://www-03.ibm.com/financing/us/index.html>

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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
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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