



# IBM PL/I for AIX , V3.1 delivers support for the latest IBM POWER7 Systems architecture as well as many functional improvements and usability enhancements

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## At a glance

PL/I for AIX®, V3.1 delivers the following:

- Support for the new POWER7™ systems architecture
- Integration of the latest compiler back-end from COBOL, XL C, XL C/C++, and XL Fortran for AIX to give you better performance
- An improved IBM® Debugger for AIX that enables you to conveniently debug programs
- Performance enhancements for the code and for the compiler itself
- Numerous usability improvements

## Overview

PL/I for AIX, V3.1 is a productive and powerful development environment for building PL/I applications. It includes the PL/I compiler, the PL/I library, and the IBM Debugger for AIX.

With PL/I for AIX, you can upgrade existing PL/I code to make use of the newest technological advancements. PL/I for AIX is built on 30 years' worth of compiler development experience. It delivers PL/I function so that you can continue integration of PL/I and web-oriented business processes.

New in Version 3.1:

- Numerous performance enhancements both to the generated code and the compiler performance itself.
- Usability enhancements including new and improved messages, updated listings, new and changed compiler options, new and improved built-in functions and improvements to the SQL preprocessor.
- Quality improvements
- Serviceability improvements

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

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## Key prerequisites

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- IBM Power Systems™ servers that are supported by AIX V5.3, AIX V6.1, and AIX V7.1
- 350 MB of disk space

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## Planned availability date

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June 17, 2011: Electronic and physical software delivery

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## Description

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### **An upgraded optimizing back-end component for PL/I for AIX**

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A new level of the optimizing back-end component is available internally within PL/I for AIX. This common back-end compiler component is shared with other AIX compilers such as COBOL, XL C, XL C/C++, and XL Fortran. Through this common code base, PL/I for AIX programmers will benefit from the latest optimization technologies and continuous quality improvements provided from other IBM compilers supporting the POWER systems architectures.

### **Enhancements that improve performance**

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#### **Improved generated code**

- REFER -- The mapping of structures using REFER is done inline if either the REFER is simple or the REFER is complex but all its elements are byte-aligned. In these situations, the generated code will perform faster than previously.
- Conversions involving DB2® date-time patterns are inlined. Conversions between dates using any of the three supported DB2 date-time patterns or the corresponding date-time patterns without any punctuation are inlined.
- Code for REPATTERN is inlined if the target date has a DB2 date-time pattern and the source has either a DB2 date-time pattern or a date-time pattern that starts with YYYYMMDD.
- The CHAR built-in when applied to a CHAR expression is always inlined.
- The assignment of ' ' to WIDECHAR is improved.
- The ALLOCATION built-in function is inlined.
- Assignments to BIT variables with inherited dimensions are inlined if the variables have strides divisible by eight.
- Code generated for some array assignments is improved.
- FIXED BIN(31,31) compares are improved.

#### **Compiler performance**

- The generation of the XREF listing is accomplished in less time.
- Processing of duplicate INCLUDEs is done faster. If the same file is used more than once as an INCLUDE file (for example, if it specifies part of a structure declaration that appears in more than DECLARE statement), then the file is opened and read only once. This leads to faster compilations of programs that contain many duplicate INCLUDEs.

#### **Usability enhancements**

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#### **Additional and improved messages**

- Message inserts are now passed to the compiler user exit.
- Improved message for conversions handled by a library call.

If the conversion is for an assignment to a variable, the name of that variable will now be included in the message. This makes it possible when such a conversion is generated as part of a structure assignment, to determine which element in the structure is the target of the library call. If the conversion is to PICTURE, its external specification will now be included in the message.

- One-time DO loops are now flagged.
- Labels used as arguments are now flagged.
- The use of SIZE against a CHAR(\*) NONVARYING parameter to an OPTIONS(NODESCRIPTOR) procedure is now flagged.
- DEFINED and BASED that are larger than their base are now flagged even if their base was not declared first.
- Under CMPAT, the compiler now flags aggregates that are too large.
- When a KEYED DIRECT file without a KEY/KEYFROM clause is used, message IBM2180 will be issued.
- In message IBM1435, the assumed precision will be 15.
- The message flagging a semicolon in a comment now includes the line number of the line where the semicolon appears.
- Assignments of FIXED DEC variables to FIXED DEC are flagged if SIZE could be raised.
- IBM1387 now indicates that the NODESCRIPTOR attribute will be ignored when it is invalid.
- Assignments that can change a REFER object are flagged (as they were under the old compiler with message IEL0653I).
- The compiler now flags the use of AUTO (and STATIC) variables as tables in TRANSLATE and VERIFY (since this can lead to poor performance).
- The compiler now flags the use of a function to set the initial value in a DO loop (since this can lead to unexpected results).
- The compiler now scans for duplicate WHEN values in SELECT statements, even if ' ' is specified as a WHEN value;
- The compiler now flags any %DECLARE that does specify any attributes, thus leading to easier detection of errors such as the extraneous comma in the statement "%DCL A, CHAR, B FIXED;".
- The compiler now flags any SUBSTR reference where the third argument is zero since while technically valid, this is almost certainly a coding error.
- The compiler now optionally flags storage overlay problems where the base variable is a parameter.
- The compiler now flags the specification of a scale factor in a FLOAT declaration since this is invalid and may point to a typo in the source where FLOAT was typed but FIXED was meant.
- The compiler now flags any bit prefix operand that does not have the BIT attribute (as it already did for bit infix operands).
- Message IBM2610 is subdivided by flagging built-in references where one argument is FIXED DEC and the other is FIXED BIN or FLOAT.
- The new SUPPRESS attribute allows a suboption of UNINIT and/or UNREF to be specified. When specified, these will cause the compiler to suppress any messages saying the associated variables are uninitialized or unreferenced, respectively.
- For operations producing FIXED(p,q) with  $q > p$ , the compiler will now flag with a warning message code where the result of a FIXED operation has a scale factor greater than its precision (for example when multiplying two FIXED DEC(15,8) values).
- The compiler will now flag with an error message code for LINESIZE - RECSIZE mismatches where an OPEN specifies a LINESIZE that is too large for the LRECL etc specified in the file's declare.
- The compiler will now flag with a warning message code where a POINTER or an OFFSET is declared as BASED on the ADDR of a FIXED BIN (or vice versa). This will help identify code that will need to be changed before moving to 64-bit.
- The compiler now recognizes and flags OR, NOT or QUOTE with no valid characters with a severe message.

- The compiler now flags the error, INITIAL with PARAMETER, with a unique error message.
- The compiler now flags the error, INITIAL with DEFINED, with a unique error message.
- The compiler now flags code involving allocations where an aggregate is mapped via a library call with an informational message.

### **Listing changes**

- The listing allots additional columns for line numbers.
- More room at the right margin is provided to be used in the attributes, cross-reference and message listings.
- For compilations that produce no messages, the compiler includes a line stating "no compiler messages" where the compiler messages would have been listed.
- In this release, the compiler allots seven columns to hold the line number for the source in a compilation. Previously only five digits were allotted.
- The listing header is widened to include all of listing.
- The compiler places the first 43 bytes from line one in the header line of all pages after page one. Previously the listing header was truncated to 25 bytes.
- The ENV attribute, if specified on the declare of a file, is included in the attributes listing.

### **New and changed compiler options**

- CODEPAGE now accepts the entries 1026 (the Turkish code page) and 1155 (the 1026 code page plus the Euro symbol).
- The (NO)FOFLONMULT suboption is supported within DECIMAL.
- The NULLSTRADDR and NULLSTRPTR suboptions are supported within DEFAULT.
- IGNORE allows you to suppresses PUT FILE and/or DISPLAY statements. PL/I programmers can use these statements for debug purposes while more easily compiling them out of the production version.
- Suboptions such as SOURCE, AFTERMARCO, may be specified within the new LISTVIEW option.
- MAXNEST allows you to flag excessive nesting of BEGIN, DO, IF, and PROC statements
- QUOTE allows you to specify alternate code points for the quote (") symbol since this symbol is not code-page invariant.
- XML allows you to specify that the tags in the output of the XMLCHAR built-in function be either in all upper case or in the case in which they were declared.
- In an assignment of one structure to another, if the structures map the same, the assignment would normally be done as an aggregate move. But if the structure contained any POINTER fields, then the previous version of the compiler did the assignment field by field. Under the NOREDUCE option, this version of the compiler will also do the assignment field by field.
- USAGE accepts HEX and SUBSTR as suboptions.
- The MACRO preprocessor leaves %include, %xinclude, %inscan, and %xinscan in the compiler listing as comments making it easier for you to locate that code in the listings.
- The INONLY MACRO preprocessor suboption allows you to specify whether it should process only %INCLUDE statements or whether it should process all macro statements.
- The NAMEPREFIX MACRO preprocessor suboption forces macro procedures and variable names to start with a specified character. This option allows you to enforce quality and naming standards for your organization.

### **SQL improvements**

- The DIMACROSS attribute specifies a DIMENSION attribute on a structure but which will effectively be removed from the structure and propagated to its children. This attribute is particularly useful with SQL multi-row fetch.

- The SQL preprocessor also supports an INCONLY option. This option acts similar to the INCONLY option in the MACRO preprocessor: under PP(SSQL('INCONLY')) only EXEC SQL INCLUDE statements will be processed and all other EXEC SQL statements will be left as is.
- DBCS is now supported by the integrated SQL preprocessor (as it had already been supported by the MACRO and CICS® preprocessors).
- The INDICATORS built-in function makes it easy to declare an array to be used as a SQL indicator variable with a structure.

### **New and improved built-in functions**

- The FLOATDEC, FLOATBIN, FIXEDDEC, FIXEDBIN built-in functions are useful in specifying with one built-in function the attributes desired for a numerical result. They can be particularly useful in avoiding the two conversions that might result if, for example, the DECIMAL and then the FLOAT built-in function were used to convert a FIXED BIN to FLOAT DEC.
- The LOCATION built-in function may now specify the first element using REFER in a structure without the structure having been allocated. This allows the resultant offset to be used in static declarations, and it makes it much easier for a programmer to calculate the size of some REFER-based structures.
- MEMCONVERT allows you to convert arbitrary lengths of data between arbitrary code pages.
- PICSPEC allows you to cast CHARACTER data to PICTURE.
- REPATTERN is improved, by supporting three additional DB2 date-time formats:
  - YY-MM-DD
  - MM/DD/YY
  - DD.MM.YY

The following date patterns with blank suppression are also supported:

- ZY-ZM-ZD
- ZM/ZD/ZY
- ZD.ZM.ZY
- ZD.ZM.ZY
- YY-ZM-ZD
- ZM/ZD/YY
- ZD.ZM.YY

### **Miscellaneous other requirements**

- Support for the INONLY, INOUT, and OUTONLY attributes enables improved documentation of function prototypes and the flagging of uninitialized variables.
- Calls to null procedures are removed.

Some programming practices cause the production version of the code to contain calls to procedures consisting of only a PROCEDURE and an END statement (although their test version may have debugging or logging code, for example). The compiler now detects if any internal procedures are null and then eliminate any calls to them.

- The NOINIT attribute is allowed on substructures.
- Trailing OPTIONAL arguments are permitted in calls to internal procedures.
- The omission of trailing OPTIONAL arguments is also permitted for internal procedures.
- The attribute DLLINTERNAL is accepted in the OPTIONS attribute on PROCEDURE and ENTRY statements allowing for more control over generated DEF files. This attribute specifies that the compiler should not put the named PROC or ENTRY in the generated DEF file.

- The new %DO SKIP MACRO construct makes it possible to support meta-comments.
- The following new built-in functions provide improved support for UTF-8 and UTF-16:
  - MEMCU12, MEMCU14, MEMCU21, etc performs fast conversions amongst UTF-8, UTF-16 and UTF-32.
  - PLITRAN11, PLITRAN12, and so on, performs fast translations amongst UTF-8 and UTF-16.
  - ULENGTH: Returns the number of UTF-8 or UTF-16 characters in a CHAR or WIDECHAR string, respectively.
  - ULENGTH8: Returns the CHAR length, if the UTF-16 characters in a WIDECHAR string were converted to UTF-8.
  - ULENGTH16: Returns the WIDECHAR length, if the UTF-8 characters in a CHAR string were converted to UTF-16.
  - UPOS: Returns the position of the nth UTF-8 or UTF-16 character in a CHAR or WIDECHAR string, respectively.
  - USUBSTR: Returns the substring starting with the i'th UTF-8 or UTF-16 character and of length j such characters in a CHAR or WIDECHAR string respectively.
  - USURROGATE: Tests if a CHAR or WIDECHAR string contains any surrogate pairs.
  - UVALID: Tests if a CHAR or WIDECHAR string contains valid UTF-8 or UTF-16 data, respectively.
  - UWIDTH: Returns the width of the nth UTF-8 or UTF-16 character in a CHAR or WIDECHAR string, respectively.

## Quality improvements

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- Under the CHECK(CONFORMANCE) option, structures and array parameters and arguments are also be checked to see that they match.

### New/changed compiler options

- DEPRECATE allows you to request that the compiler flag the usage of specified built-in functions, user variables, or include files. With this option, you can more easily enforce internal quality and naming standards.
- MAXGEN flags statements generating lots of code. With this option, programmers have the knowledge to help them improve the efficiency of their programming.
- ONSNAP allows you to request the compiler to insert an ON STRINGRANGE SNAP statement or an ON STRINGSIZE SNAP statement into the prologue of a MAIN or FromAlien procedure so that the calling module and module name can be identified.
- The PPCICS, PPINCLUDE, PPMACRO, and PPSQL options allows you to specify the options to be passed to the corresponding preprocessor.
- Under NOREDUCE, the compiler will not reduce an assignment of matching structures to a simple move, if the structures contain any POINTER fields.
- The compiler allows RESPECT(DATE) to be overwritten.
- The RULES suboption is enhanced to help identify areas where coding can be improved.
- NOELSEIF flags any ELSE statement that is immediately followed by an IF statement and suggest that it be rewritten as a SELECT statement.
- NOGLOBALDO flags loops with a control variable declared in a parent block.
- NOGOTO(LOOSE) allows GOTOs only if in the same block.
- NOLAXENTRY flags unprototyped entry declares.
- NOLAXQUAL(STRICT) flags references to variables not qualified with their level-1 name.
- NOLAXSCALE flags declares of FIXED DEC(p,q) and FIXED BIN(p,q) where q is less than 0 or q is greater than p.
- NOLAXSTG flags any declare where a variable A is declared as BASED on ADDR(B) and STG(A) > STG(B) not only (as the compiler did before) when B is

- AUTOMATIC, BASED or STATIC with constant extents but now also when B is a parameter declared with constant extents.
- NOPADDING flags structures with padding.
- NOPROCENDONLY flags END statements for PROCs that do not name the PROC they are closing.
- NOSELFASIGN flags assignments of variables to themselves.
- NOSTOP flags the use of STOP and EXIT.
- The following changes are made to the compiler options for simplification:
  - The COMPACT option is dropped.
  - The default setting for DEFAULT(REORDER/ORDER) is changed to DEFAULT(REORDER).
  - The SAA/SAA2 suboption of the LANGLVL option is removed since the older 'SAA' compilers are no longer in service.

### **Additional and improved messages**

- The compiler flags code where the result of a FIXED operation has a scale factor less than zero.
- The compiler flags ENTRYs used as functions but declared without the RETURNS attribute.
- The compiler flags with a new, unique message the use of a duplicate ORDINAL in a SELECT statement.
- The compiler flags OPTIONS(MAIN COBOL/FORTRAN).
- The compiler flags all assignments to REFER objects.
- The compiler flags PROC(REENTRANT) when neither RENT nor DFT(NONASGN) is in effect.
- The compiler flags parameters declared inappropriately as BYVALUE, for example, declaring a FIXED DEC parameter BYVALUE.
- The compiler accepts static label arrays declared without emitting a warning message if the arrays are declared as NONASGN.

### **Serviceability improvements**

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- The build date of preprocessors will be identified. The first line of the output from each of the preprocessors will now include the build date for that preprocessor. The assembler listing will also include the build date for the compiler backend. These dates will make it easier to determine quickly the level of service customers have installed.
- 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 an E-level message will be issued to warn the user.
- Additional and improved messages
  - The compiler flags a CLOSE statement for a file if that statement occurs in an ENDFILE ON-block for that file (thus detecting a user error that is usually resolved only after a PMR is opened).
  - The compiler flags ON ERROR blocks not starting with ON ERROR SYSTEM, thus making it less likely users will have ON ERROR blocks that go into "infinite" loops.
  - When the compiler cannot open a file, the compiler will, if possible, also include the related C runtime message in the message in the listing.

### **Accessibility by people with disabilities**

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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](http://www.ibm.com/able/product_accessibility/index.html)

## Section 508 of the U.S. Rehabilitation Act

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PL/I for AIX, V3.1 is capable as of June 17, 2011, when used in accordance with associated IBM documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be requested on the following website

[http://www-3.ibm.com/able/product\\_accessibility/index.html](http://www-3.ibm.com/able/product_accessibility/index.html)

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## Product positioning

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### IBM PL/I Family

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PL/I for AIX, V3.1 is part of the family of IBM PL/I compilers that support a number of platforms. The IBM PL/I family consists of PL/I for AIX, Enterprise PL/I for z/OS®, ILE PL/I for System i® and PL/I for VSE.

### Redistribution of PL/I library components at no extra charge

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You can redistribute PL/I for AIX library components with a PL/I application that you develop without requiring additional licenses. The library components that are redistributed with your PL/I application can be installed on any number of AIX systems that are used for production deployment of your PL/I application.

For additional information on redistribution and for a list of library components that you may redistribute, refer to the file named REDIST or documentation within the program.

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## Program number

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Program number	VRM	Program name
Product number for build to plan channel:		
5724-H45	3.1	IBM PL/I for AIX
Product number for build to order channel:		
5724-PL1	3.1	IBM PL/I for AIX

### Product identification number

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Program name	Program number
PL/I for AIX, V3.1	5724-PL1
PL/I for AIX SW S&S No Charge Registration/ 1 Year Renewal	5660-PL1
PL/I for AIX SW S&S 1 Year After License	5661-PL1
PL/I for AIX SW S&S 3 Year Registration	5662-PL1
PL/I for AIX SW S&S 3 Year Renewal	5663-PL1
PL/I for AIX SW S&S 3 Year After Licence	5664-PL1

## Business Partner information

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If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=211-203>

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## Offering Information

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Product information is available via the Offering Information website

<http://www.ibm.com/common/ssi>

Also, visit the Passport Advantage® website

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

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## Publications

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The publication *PL/I for AIX Installation Guide* (GC14-7322) is shipped with this program.

The following publications can be ordered from the Publications Center:

Title	Order number
PL/I for AIX Installation Guide	GC14-7322
PL/I for AIX Messages and Codes	GC14-7321
PL/I for AIX Programming Guide	SC14-7319
PL/I for AIX Language Reference	SC14-7320

The IBM Publications Center

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. Payment options for orders are via credit card (in the U.S.) or customer number for 20 countries. A large number of publications are available online in various file formats, and they can all be downloaded by all countries, free of charge.

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## Technical information

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### Specified operating environment

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#### Hardware requirements

For PL/I for AIX, V3.1

- System: IBM Power Systems servers that are supported by AIX V5.3, AIX V6.1, or AIX V7.1
- 256 MB of memory (512 MB, or higher, recommended)
- Disk space: 350 MB for PL/I compiler, tools, and product information

#### Software requirements

PL/I for AIX, V3.1 requires:

- AIX V5.3 TL 5300-09 (or higher), AIX V6.1 TL 6100-02 (or higher), or AIX V7.1

- Viewers to access and display the documentation such as:
  - Frames-capable browser to access HTML documentation
  - Portable Document Format (PDF) viewer to view PDF files

## **Optional programs**

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To use PL/I for AIX with optional programs, additional products are required:

- PL/I 32-bit applications that embed EXEC SQL statements require DB2 V9.1 for Linux®, UNIX®, and Windows®, DB2 V9.5 for Linux, UNIX, and Windows with fix pack 3, or DB2 V9.7 for Linux, UNIX, and Windows
- PL/I applications that embed EXEC CICS statements require TXSeries® for Multiplatforms -- When you use the integrated preprocessor: TXSeries for Multiplatforms TXSeries for Multiplatforms, V7.1

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a README file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

## **Planning information**

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### **Web information**

For information regarding IBM PL/I for AIX, visit

<http://www.ibm.com/software/awdtools/pli/>

For information regarding IBM application development, visit

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

### **Packaging**

The IBM PL/I for AIX, V3.1 package contains:

- One CD-ROM containing the PL/I for AIX, V3.1 product
- Quick Start Guide
- Passport Advantage customer letter
- Passport Advantage media pack pointer sheet

This program, when downloaded from a website, contains the applicable IBM license agreement and License Information, if appropriate, and will be presented for acceptance at the time of installation of the program. For future reference, the license and License Information will be stored in a directory such as LICENSE.TXT.

## **Security, auditability, and control**

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PL/I for AIX, V3.1 uses the security and auditability features of the host hardware or 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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## **Software Services**

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IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities.

Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services or to contact a Software Services sales specialist, visit

<http://www.ibm.com/software/sw-services/>

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## Ordering information

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Product Group: IBM PL/I

Product Identifier Description: IBM PL/I for AIX

PID: 5724-H45 and 5724-PL1

Product Category: PL/I

### **Charge metric**

Program name	Part number or PID number	Charge metric
For build to order PL/I for AIX, V3.1	5724-PL1	Authorized User Concurrent User
For build to plan PL/I for AIX, V3.1	5724-H45	Authorized User Concurrent User
For build to plan PL/I for AIX, V3.1	BA11RML	Authorized User Concurrent User

This program is licensed and charged based upon either the Authorized User or Concurrent User charge metric.

### **Authorized User**

Authorized User is a unit of measure by which the program can be licensed. An Authorized User is a unique person who is given access to the program. The program may be installed on any number of computers or servers and each Authorized User may have simultaneous access to any number of instances of the program at one time. Licensee must obtain separate, dedicated entitlements for each Authorized User accessing the program in any manner directly or indirectly (for example: via a multiplexing program, device, or application server) through any means. An entitlement for an Authorized User is unique to that Authorized User and may not be shared, nor may it be reassigned other than for the permanent transfer of the Authorized User entitlement to another person.

### **Concurrent User**

Concurrent User is a unit of measure by which the program can be licensed. A Concurrent User is a person who is accessing the program at any particular point in time. Regardless of whether the person is simultaneously accessing the program multiple times, the person counts only as a single Concurrent User. The program may be installed on any number of computers or servers, but Licensee must obtain entitlements for the maximum number of Concurrent Users simultaneously accessing the program. Licensee must obtain an entitlement for each simultaneous Concurrent User accessing the program in any manner directly or indirectly (for example, via a multiplexing program, device, or application server) through any means.

**Note:** Some programs may be licensed where devices are considered users. In that case the following applies: Any computing device that requests the execution of or receives for execution a set of commands, procedures, or applications from the

program or that is otherwise managed by the program is considered a separate User of the program and requires an entitlement as if that device were a person.

### Passport Advantage

Program Name/Description	Part Number
PL/I for AIX, V3.1 Media Package Multilingual	BA11RML
PL/I for AIX, V3.1 Authorized User Lic + SW S&S 12 Mo	D5AE5LL
PL/I for AIX Authorized User Annual SW S&S Rnw1	E1AE7LL
PL/I for AIX Authorized User SW S&S Reinstate 12 Mo	D5AE8LL
PL/I for AIX Concurrent User Lic + SW S&S 12 Mo	D0JX1LL
PL/I for AIX Concurrent User Annual SW S&S Rnw1	E0C9GLL
PL/I for AIX Concurrent User SW S&S Reinstate 12 Mo	D0JX2LL

### Passport Advantage trade-up

Customers who have originally acquired licenses for Authorized User can trade-up their Authorized User licenses to an equivalent or appropriate number of Concurrent User licenses (previously known as Floating User).

Below is a list of precursor products and their associated Authorized User part numbers for which you must have already acquired a license, in order to be eligible to acquire the equivalent Concurrent User licenses using the trade-up part number.

Precursor product	Trade-up product	Trade-up part number
PL/I for AIX Authorized User single entitlement	PL/I for AIX Concurrent User single entitlement	D0JX3LL to trade-up from single Authorized User to single Concurrent User

Consult your IBM representative if you have any questions.

### Passport Advantage Customer: Media Pack Entitlement Details

Customers with active Maintenance or Subscription for the products listed below are entitled to receive the corresponding media pack.

Entitled Maintenance offerings  
Description

PL/I for AIX

Media Pack  
Description

Part number

PL/I for AIX, V3.1 Media Pk Multilingual

BA11RML

**Basic License:** To order the programs described in this announcement for 5724-PL1, specify the type-model number and the applicable features from the tables below. The medium feature (CD-ROM) need only be specified as required.

To request the media package (CD-ROM), specify media supply feature 6041 and 3410.

When placing an ESD order in econfig, specify a billing feature, the media feature 6041 and 3410, and the following ESD-only feature: 3450.

Description	Program number	OTC feature number	Medium feature number
PL/I for AIX, V3.1	5724-PL1		
-Per Authorized User with 1 Year SW S&S		0245	
-Per Concurrent User with 1 Year SW S&S		0246	
PL/I for AIX, V3.1 media		6041	
CD-ROM media code		3410	
Expedite Fee charged to branch office			3445
Customization features:			
Electronic Software Delivery (for upgrades only)			3450
Do not ship publications			3470
Do not ship media			3471

### Electronic Software Update Orders

Entitled Software Update (ESU) is a way for customers to self order their POWER software release upgrades via the Entitled Software Support (ESS) website without the need to go to their seller to place the upgrade order. Entitled Software Update (ESU) orders for Electronic Software Delivery (ESD), will now be available in all countries. ESU orders for POWER software including IBM PL/I for AIX, V3.1 will be placed on the Entitled Software Support (ESS) website

<http://www.ibm.com/servers/eserver/ess>

Customers should generally select electronic delivery when ordering via ESU, but do have the ability to select physical delivery. Programs ordered for ESD will have the same download images provided as provided on the CD media shipped for physical orders.

ESU customers placing ESD software orders will receive an e-mail with software order information. The ESU customer will be able to immediately proceed to the "Downloads" website support for program access, instead of waiting for delivery of a physical package shipped from IBM.

Customers choosing physical delivery will also have the electronic images available for ESD download.

ESD help (instructions on how to use)

[http://www.ibm.com/systems/support/software/delivery/en\\_US/downloadinfo.html](http://www.ibm.com/systems/support/software/delivery/en_US/downloadinfo.html)

ESD sign-in (must have Customer number & POWER software entitlements to get in)

<http://www.ibm.com/servers/eserver/ess/OpenServlet.wss>

List of POWER software products that are available for electronic download:

[http://www.ibm.com/systems/support/software/delivery/en\\_US/supportedproducts.html](http://www.ibm.com/systems/support/software/delivery/en_US/supportedproducts.html)

### Maintenance Offering Customer: Media Supply Entitlement Details

Customers with active Software Maintenance are entitled to receive the media supply corresponding to PL/I for AIX, V3.1.

Eligible customers should add the applicable CD-ROM media supply feature number from the following table to their existing maintenance record. To request the media package (CD-ROM), specify the media supply features 6041 and 3410.

When placing an ESD order in econfig, specify a billing feature, the media features 6041 and 3410, and the following ESD only feature: 3450.

Entitled maintenance offerings description  
PL/I for AIX

Description		Medium Feature Number
PL/I for AIX, V3.1 (5724-PL1)	Media Supply CD-ROM Media Code	6041 3410
Expedite fee charge to Branch	3445	
	Customization features:	
Electronic Software Delivery (for upgrades only)		3450
Do not ship publications		3470
Do not ship media		3471

### Trade-up from Authorized User to Concurrent User

Customers who have originally acquired licenses for Authorized User can trade-up their Authorized User licenses to an equivalent or appropriate number of Concurrent User licenses.

The following is a list of precursor products for which you must have already acquired a license, in order to be eligible to acquire the equivalent Concurrent User licenses using the trade-up feature number.

Precursor product	Trade-up product	Trade-up feature number
PL/I for AIX Authorized User single entitlement	PL/I for AIX Concurrent User single entitlement	Is used to trade-up from single Authorized User to single Concurrent User
		OTC program number
		Feature number
PL/I for AIX, V3.1 - trade-up from single Authorized User entitlement to single Concurrent User entitlement		5724-PL1  0247

This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

Extending coverage for a total of three years from the date of acquisition may be elected. Order the program number, feature number, and quantity to extend coverage for your software licenses. If maintenance has expired, specify the after license feature number.

Feature description	Feature number
5724-PL1 - PL/I for AIX, V3.1 Per Authorized User with 1 Year SW S&S	0245
Per Concurrent User with 1 Year SW S&S	0246

5724-PL1 - PL/I for AIX, V3.1 media CD-ROM media code	6041 3410
5660-PL1 - IBM PL/I for AIX Per Authorized User SW S&S NoCharge Registration Per Authorized User SW S&S 1 Year Renewal Per Concurrent User SW S&S NoCharge Registration Per Concurrent User SW S&S 1 Year Renewal	1727 1728 1729 1730
5661-PL1 - IBM PL/I for AIX Per Authorized User SW S&S 1 Year After License Per Concurrent User SW S&S 1 Year After License	0647 0648
5662-PL1 - IBM PL/I for AIX Per Authorized User SW S&S 3 Year Registration Per Concurrent User SW S&S 3 Year Registration	0931 0932
5663-PL1 - IBM PL/I for AIX Per Authorized User SW S&S 3 Year Renewal Per Concurrent User SW S&S 3 Year Renewal	0197 0198
5664-PL1 - IBM PL/I for AIX Per Authorized User SW S&S 3 Year After License Per Concurrent User SW S&S 3 Year After License	0001 0002

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## Terms and conditions

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The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

### ***Licensing***

IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use. Part number products only, offered outside of Passport Advantage, where applicable, are license only and do not include Software Maintenance.

This software license includes Software Subscription and Support (also referred to as Software Maintenance).

### ***Agreement for Acquisition of Software Maintenance***

The IBM Agreement for Acquisition of Software Maintenance (Z125-6011) agreement applies for Subscription and Support (also referred to as Software Maintenance) and does not require customer signatures.

These programs are licensed under the IBM Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide for support with ongoing access to releases and versions of the program. IBM includes one year of Software Subscription and Support (also referred to as Software Maintenance) with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support (also referred to as Software Maintenance) can be extended by the purchase of a renewal option, if available. These programs have a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

**License Information form number**

L-JYIP-8G9RUX

The program's License Information will be available for review on the IBM Software License Agreement website

<http://www.ibm.com/software/sla/sladb.nsf>

**Limited warranty applies**

Yes

**Limited warranty**

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, consult the *IBM Software Support Handbook* found at

<http://www.ibm.com/support/handbook>

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

**Program technical support**

Technical support of a program product version or release will be available for a minimum of five years from the general availability date, as long as your Software Subscription and Support (also referred to as Software Maintenance) is in effect. This technical support allows you to obtain assistance (via telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Subscription and Support (Software Maintenance) also provides you with access to updates (modifications or fixes), releases, and versions of the program. You will be notified, via announcement letter, of discontinuance of support with 12 months' notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or IBM Business Partner. This extension may be available for a fee.

**Money-back guarantee**

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that (1) for programs acquired under the IBM International Passport Advantage offering, this term applies only to your first acquisition of the program and (2) for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

**Volume orders (IVO)**

Yes. Contact your IBM representative.

**Passport Advantage applies**

Yes, and through the Passport Advantage website at

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

**Usage restriction**

Yes. For additional information, refer to the License Information document that is available on the IBM Software License Agreement website

<http://www.ibm.com/software/sla/sladb.nsf>

**Software Subscription and Support (Software Maintenance) applies**

Yes. Software Subscription and Support (also referred to as Software Maintenance), is now included in the Passport Advantage Agreement. Installation and technical support for the products announced in this announcement is provided by the Software Subscription and Support (Software Maintenance) offering of the IBM International Passport Advantage Agreement. This fee service enhances customer productivity by providing voice or electronic access into the IBM support organizations.

IBM includes one year of Software Subscription and Support (Software Maintenance) with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support (Software Maintenance) can be extended by the purchase of a renewal option.

While your Software Subscription and Support (Software Maintenance) is in effect, IBM provides you assistance for your routine, short duration installation and usage (how-to) questions, and code-related questions. IBM provides assistance via telephone and, if available, electronic access, only to your information systems (IS) technical support personnel during the normal business hours (published prime shift hours) of your IBM support center. (This assistance is not available to your end users.) IBM provides Severity 1 assistance 24 hours a day, every day of the year. For additional details, consult your *IBM Software Support Handbook* at

<http://www.ibm.com/support/handbook>

Software Subscription and Support (Software Maintenance) does not include assistance for the design and development of applications, your use of programs in other than their specified operating environment, or failures caused by products for which IBM is not responsible under this agreement.

For additional information about the Passport Advantage Agreement, visit the Passport Advantage website at

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

All distributed software licenses include Software Subscription and Support (Software Maintenance) for a period of 12 months from the date of acquisition, providing a streamlined way to acquire IBM software and assure technical support coverage for all licenses. Extending coverage, for a total of three years from date of acquisition, may be elected. For additional information, refer to the **Changes to Distributed Software Products Model for Products Outside Passport Advantage** section in Software Announcement [201-201](#), dated July 10, 2001.

**Variable charges apply**

No

## Educational allowance available

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

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## Prices

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**Business Partner information:** If you are an IBM Business Partner -- Distributor for Workstation Software acquiring products from IBM, you may link to Passport Advantage Online for resellers where you can obtain Business Partner pricing information. An IBM ID and password are required.

<https://www.ibm.com/software/howtobuy/passportadvantage/paoreseller>

Information on charges is available at

<http://www.ibm.link.ibm.com/>

Select "United States" and then click on "IBMLink™ 2000".

Description	Program number	OTC feature number
IBM PL/I for AIX, V3.1 with 1 Year SW S&S		
- per Authorized User	5724-PL1	0245
- per Concurrent User	5724-PL1	0246
- trade-up from single Authorized User entitlement to single Concurrent User entitlement	5724-PL1	0247
IBM PL/I for AIX SW S&S 1 Year NoCharge Registration		
- per Authorized User	5660-PL1	1727
- per Concurrent User	5660-F81	1729
SW S&S 1 Year Renewal		
- per Authorized User	5660-PL1	1728
- per Concurrent User	5660-PL1	1730
IBM PL/I for AIX SW S&S 1 Year After License		
- per Authorized User	5661-PL1	0647
- per Concurrent User	5661-PL1	0648
IBM PL/I for AIX SW S&S 3 Year Registration		
- per Authorized User	5662-PL1	0931
- per Concurrent User	5662-PL1	0932
IBM PL/I for AIX SW S&S 3 Year Renewal		
- per Authorized User	5663-PL1	0197
- per Concurrent User	5663-PL1	0198
IBM PL/I for AIX SW S&S 3 Year After License		
- per Authorized User	5664-PL1	0001
- per Concurrent User	5664-PL1	0002

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## Order now

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To order, contact the Americas Call Centers or your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)  
Fax: 800-2IBM-FAX (242-6329)  
Internet: [callserv@ca.ibm.com](mailto:callserv@ca.ibm.com)  
Mail: IBM Teleweb Customer Support  
ibm.com® Sales Execution Center, Americas North  
3500 Steeles Ave. East, Tower 3/4  
Markham, Ontario  
Canada  
L3R 2Z1

Reference: YE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

**Note:** Shipments will begin after the planned availability date.

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