IBM XL Fortran for Linux , V13.1 delivers support for the POWER7 processor architecture

Table of contents

At a glance

XL Fortran for Linux® is a standards-based, high-performance Fortran compiler with advanced optimization and performance-tuning features. XL Fortran for Linux, V13.1 delivers the following new features and enhancements:

- Support for the latest POWER7™ processor architecture, to deliver improved application performance and capability through exploitation of the architectural enhancements made available through the advancement of the Power® technology
- New diagnostic reports that can help identify opportunities to improve the performance of your applications
- Compliance to ISO programming language standards including the Fortran 2003 standard
- Support for the OpenMP 3.0 industry standard

For ordering, contact your IBM® representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: RE001).

Overview

XL Fortran for Linux is designed to:

- Optimize and tune your applications for execution on IBM Power platforms
- Help you unleash the full power of your IT investment
- Create and maintain critical business and scientific applications
- Maximize application performance
- Improve developer productivity

The performance gain from years of compiler optimization experience is realized in the continuous release-to-release compiler improvements that support the POWER4™ processor through to the POWER5™ and POWER6™ processors.

With this release, XL Fortran for Linux, V13.1 introduces enhancements for exploitation of the latest POWER7 architecture:

- Support for the vector unit and vector scalar extension (VSX) instruction set in the POWER7 processors
- Specific POWER7 processor tuning for the vector functions within the Mathematical Acceleration Subsystem (MASS) libraries

- New intrinsic functions to support POWER7 processor instructions
- New arch and tune compiler options to specify code generation for the POWER7 processor architecture

With the support of the latest POWER7 processor chip, IBM advances a more than 20-year investment in the XL compilers for Power Series® and PowerPC® series architecture.

IBM has a long history of delivering innovative, high-quality compiler products to the marketplace. Over the course of multiple releases, the XL family of compilers offers new functions, enhancements, and standards conformance to provide you with the tools needed to develop and maintain smarter applications to meet critical business needs.

Additional enhancements to XL Fortran for Linux, V13.1 include:

- Full support for the Fortran 2003 programming language standards and for the OpenMP 3.0 industry standard, to deliver more functionality and to allow for maximum portability of your source code
- Additional features to increase performance tuning and optimization of your Fortran applications
- New and enhanced compiler options, directives, and intrinsic functions to give you even more flexibility

Key prerequisites

Systems -- IBM Power System servers supported by

- Red Hat Enterprise Linux 5.5 (RHEL 5.5)
- SUSE Linux Enterprise Server 11 Service Pack 1 (SLES 11 SP1)
- SUSE Linux Enterprise Server 10 Service Pack 2 (SLES 10 SP2)

Required hard disk space -- 200 MB

Planned availability date

August 20, 2010

Description

XL Fortran for Linux continues to deliver additional functionality and enhancements including support for the latest POWER7 processor architecture to help improve application performance and capability.

Exploitation of the new POWER7 processor architecture

A key strength of XL Fortran for Linux is performance and its ability to optimize and tune generated code for execution on Power platforms. The performance gain from years of IBM compiler optimization experience can be seen in the release-to-release compiler improvements from the development of the POWER4 processors, through to the POWER4+™, POWER5, POWER5+™, and POWER6 processors. XL Fortran for Linux, V13.1 introduces support for the latest POWER7 processor architecture.

XL Fortran for Linux, V13.1 supports the VSX instruction set in the POWER7 processors. New data types and intrinsic procedures are introduced to support the VSX instruction, allowing you to efficiently manipulate vector operations in your applications. The advanced compiler optimizer can also automatically take advantage of these vector facilities to help parallelize your application.

The highly-tuned Mathematical Acceleration Subsystem (MASS) libraries are enhanced to support the POWER7 processors:

- The vector procedures within the vector MASS library have been tuned for the POWER7 architecture. The procedures can be used in either 32- or 64-bit mode.
- New procedures such as exp2, exp2m1, log21p, and log2 are added in both single- and double-precision functional groups. In addition, procedures supporting earlier POWER processors are included to support POWER7 processors.
- The MASS SIMD libraries, which contain an accelerated set of frequently used math intrinsic procedures, are enhanced to support POWER7 processors.

New hardware directives and intrinsic functions that unlock POWER7 processor features, let you take direct control at the application level:

- POWER7 prefetch extensions and cache control instructions
- POWER7 hardware instructions

New arch and tune compiler options are added to specify code generation for the POWER7 processor architecture. -qarch=pwr7 instructs the compiler to produce code that can fully exploit the POWER7 hardware hardware architecture. -qtune=pwr7 enables optimizations tuned for the POWER7 hardware platforms.

With the support of the latest POWER7 processor chip, IBM advances a more than 20-year investment in compilers for Power Series and PowerPC series architectures.

New diagnostics reports to improve the performance of your code

Compiler reports in XML format

With this release, reports containing key compiler optimization information, are now available. These reports identify areas in your code where the compiler could apply optimization. Equally important, the reports also provide information on areas where optimizations could not be applied along with the reasons why they were not applied. This type of information was not readily obvious or available in previous versions of the compiler. You can use this information to change your code to allow the compiler to take advantage of additional optimizations for improving performance.

These new compiler reports are produced in XML format (XML 1.0) and are easily consumable by tools that you can create to read and analyze the results. A stylesheet, xlstyle.xsl, is provided to render the report in a human-readable format that can be read by anyone with a browser that supports XSLT.

In this release, reports for four optimization categories are provided:

- Inlining
- Loop transformations
- Data reorganizations
- Profile-directed feedback information

The new -qlistfmt option and its associated suboptions generate the XML 1.0 report. This new feature allows the compiler to report, in XML format, on the results of more detailed optimization transformation analysis that were previously available only with limited information and only in text format. These new reports can help you do a higher level of performance tuning in less time.

Enhanced profiling reports

When using -qreport with the -qpdf option, additional information is generated on the loop iteration count and on the block and call count, and a report on the number of cache misses for certain functions.

Reports of data reorganization

The compiler now generates reports on data reorganizations that provide a summary of useful information regarding how the program variable data is reorganized by the compiler. Information on data reorganization includes:

- Common block splitting
- Array splitting
- Array transposing
- Memory allocation merging
- Array interleaving
- Array coalescing

Also available is a report on the location of data prefetch instructions that are inserted by the compiler.

Additional loop analysis

A new suboption is added to -qhot to allow for more aggressive loop analysis. In conjuction with this, -qhot=level=2 together with -qsmp and -qreport provide information about loop nests on which the aggressive loop analysis was performed. This report can be found in the Loop Transformation section of the listing file and can also appear in the new XML listing file.

Utilization tracking and reporting tool to understand compiler usage

This release introduces a new feature that lets you track and report on the compiler utilization within your enterprise. This feature helps determine whether your organization's use of the compiler matches your compiler license entitlements. When enabled, each invocation of the compiler is recorded in a compiler utilization file. The utilization reporting tool can then be used to generate a report of the overall usage of the compiler within your organization. In particular, the report indicates the number of concurrent users using the compiler.

OpenMP 3.0

The OpenMP API supports multi-platform shared-memory parallel programming in Fortran, C, and C++ on many architectures including UNIX® platforms and Microsoft® Windows® platforms. OpenMP is a portable, scalable programming model that provides parallel programmers a simple and flexible, standard interface for developing parallel applications for platforms ranging from the desktop to the supercomputer. The specification is defined by the OpenMP organization, a group of computer hardware and software vendors, including IBM. You can find more information about OpenMP specifications at

http://www.openmp.org

XL Fortran initially delivered selected features of the OpenMP V3.0 in the previous V12.1 release. With V13.1, XL Fortran now supports the full OpenMP 3.0 industry specification. Features implemented for OpenMP V3.0 in this release are:

- Full support for OpenMP task level parallelizations - The OpenMP constructs TASK and TASKWAIT gives you the ability to parallelize irregular algorithms, such as pointer chasing or recursive algorithms.
- Allocatable arrays - Allocatable arrays allow you to specify these arrays on PRIVATE, FIRSTPRIVATE, LASTPRIVATE, REDUCTION, COPYIN, and COPYPRIVATE clauses.
- Nested parallelism - Runtime routines are available to set or get the nested levels and thread limit.
- Stack size control - You can now control the size of the stack for threads created by the OMP runtime library using the new environment variable OMP_STACKSIZE.

- New environment variables - You can provide hints to the compiler on the desired behavior of waiting threads using the new environment variable OMP_WAIT_POLICY.
- PRIVATE clause - Some restrictions on the PRIVATE clause are removed. A list item that appears in the reduction clause of a parallel construct can now also appear in a PRIVATE clause on a work-sharing construct.
- Scheduling - A new SCHEDULE type, AUTO, allows the compiler and runtime system to control scheduling.
- Static schedule - Consecutive loop constructs with STATIC schedule with NOWAIT clause now guarantee the same iterations are being assigned to the same thread in the constructs.
- OMP_THREAD_LIMIT environment variable - The environment variable can be set to determine the number of OpenMP threads to use for the whole program. OMP_MAX_ACTIVE_LEVELS can be set to control the maximum number of nested and active parallel regions.

Fortran 2003 Standard

XL Fortran began implementing features for the new Fortran 2003 standard starting with XL Fortran for Linux, V8.1 (2002). Additional features were added in XL Fortran for Linux V9.1, V10.1, V11.1, and V12.1, as the standard changed from draft to ratified. With XL Fortran for Linux, V13.1, the remaining features are implemented so that the full Fortran 2003 programming language standard is now made available you.

The newly supported Fortran 2003 features are:

- Parameterized derived types, including kind and length parameters
- Generic interfaces with the same name as derived types

Support of programming language standards not only provides you with significant functionality but also allows for maximum portability of your source code among a variety of compiler implementations.

New and enhanced compiler options and directives for more flexibility

The following additional new or changed compiler options are available with this release of the compiler:

- -qarch includes a new suboption, -qarch=pwr7, allowing you to instruct the compiler to produce code that can fully exploit the POWER7 hardware platforms.
- -qassert includes new suboptions to provide information about the characteristics of the files that can help you to fine-tune optimizations.
- The -qbindcextname option can be used to control whether the -qextname option affects Fortran 2003 BIND(C) entities.
- -qfunctrace, inserts calls to user-defined tracing procedures at procedure entry and exit giving you powerful user-customizable debugging and profiling capabilities.
- The -qhot compiler option is a powerful alternative to tuning by hand. -qhot provides opportunities to optimize loops and array language. A new suboption is added for -qhot. The -qhot=fastmath option enables the replacement of math routines with available math routines from the XLOPT library only if -qstrict=nolibrary is enabled. -qhot=nofastmath disables this replacement.
- For improved performance, -qinline attempts to inline functions instead of generating calls to those functions and gives you new control over this powerful optimization.
- -qlibmpi is used to tune code based on the known behavior of the Message Passing Interface (MPI) functions.
- -qlistfmt generates an XML 1.0 report containing information about some optimizations performed by the compiler and some missed optimization opportunities for inlining, loop transformations, data reorganization, and profile-directed feedback.

- -qmkshrobj is used to create a shared object from generated object files.
- New suboptions are added to -qpdf1 and -qpdf2.
- -qprefetch includes a new suboption. When working with applications that generate a high cache-miss rate, -qprefetch=assistthread can be used to exploit assist threads for data prefetching.
- -qsaveopt is enhanced to also include the user's configuration file name and the options specified in the configuration files.
- -qsimd controls whether the compiler can automatically take advantage of vector instructions for processors that support them.
- -qstackprotect is used to protect your applications against malicious code or programming errors that overwrite or corrupt the stack.
- -qstrict includes a new suboption to allow more control over optimizations and transformations that violate strict program semantics. -qstrict=vectorprecision disables vectorization in loops where it might product different results in vectorized iterations than in nonvectorized ones.
- The -qtune=pwr7 suboption is added to -qtune to enable tuning for the POWER7 hardware platforms.

New directives and intrinsic functions to help improve performance

- New VSX intrinsic functions and vector data types are added to enable direct access to these powerful vector capabilities of the POWER7 processors.
- The POWER7 processor has cache control and stream prefetch extensions that support store stream prefetch and prefetch depth control. New directives are made available to provide direct programmer access to these functions.
- New intrinsic functions are added corresponding to each new POWER7 hardware instruction. These functions are designed to allow you to improve performance by directly manipulating specific hardware instructions in your code at the application level.

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-03.ibm.com/able/product_accessibility/index.html

Section 508 of the U.S. Rehabilitation Act

XL Fortran for Linux, V13.1 is capable as of August 20, 2010, 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 Web site

http://www-03.ibm.com/able/product_accessibility/index.html

Product positioning

At a basic level, compilers are a bridge between your applications and the hardware architectures on which you run your business. IBM compilers are designed to unleash the full power of IBM processors, including those for the different architectures shipped in the popular IBM Power Systems™.

IBM compilers are designed to improve programmer productivity. The state-of-the-art compilation technology enables programmers to exploit leading-edge performance of the new hardware without source code changes. Developers need to focus only on the logic of the applications and let the compiler figure out the best way to transform and optimize the code generation for the system the application will run on.

Harness the power of parallel computing

Parallel programming with IBM XL Fortran exploits the advantages of multiprocessor systems, while maintaining full binary compatibility with existing single-processor systems. With the XL Fortran compiler's support of OpenMP 3.0 and improved OpenMP and auto-parallel performance, you can use XL Fortran to develop high-performance, parallelized applications.

For high-bandwidth data processing and algorithmic-intensive applications, XL Fortran can leverage VMX and VSX instructions and automatic SIMDization to improve program performance. By processing multiple pieces of data at once, the speed of executed code can increase, with the added benefit that the source code may not need to be rewritten.

Powerful, no-hassle performance optimization

Well-written and thoroughly debugged code, fully conformant to its language standard, can take maximum advantage of the optimizing technology in XL Fortran and may provide an increase in performance. The optimization and hardware features in XL Fortran help improve developer productivity. The compiler is able to generate code that exploits the leading-edge performance in existing and new hardware, often with no source code changes.

XL Fortran supports several levels of increasingly aggressive code transformations. Advanced optimization techniques such as inter-procedural analysis (IPA) and profile-directed feedback (PDF) are available only at high levels of optimization but can result in increased performance improvements. IPA analyzes and optimizes your application as a whole, rather than on a file-by-file basis. PDF generates information that instructs the optimizer to focus on trade-offs that favor code that executes more frequently.

Get more performance from the POWER platform with no source code changes. Upgrade to the latest XL Fortran compiler, which incorporates the latest advances in optimization and hardware technology support.

Multiple-Platform XL C/C++ and XL Fortran

XL Fortran for Linux, V13.1 is part of a larger family of IBM Fortran, C, and C++ compilers, which supports multiple platforms such as AIX®, z/OS® (C/C++), IBM Power Systems, Linux, Blue Gene/L™, Blue Gene/P™, and Cell Broadband Engine™ architecture. The modular structure of these compilers delivers optimizations and functionality on all platforms and to all languages. Further, each product derives from a common code base, so features and optimizations are tested in multiple languages and on multiple platforms. A common code base, along with compliance with international standards, make source-level portability of applications between IBM platforms easier.

Built on a common architecture XL Fortran, XL C, and XL C/C++ compilers promote consistency and reliability on many IBM platforms.

Programming language standards, industry specifications and other language influences

Programming language standards

XL Fortran supports the Fortran 77, 90, and 95 standards. With V13.1, XL Fortran supports the full Fortran 2003 standard including the object-oriented programming model.

XL Fortran consists of the following:

- The full American National Standard Fortran 90 language (Fortran 90) as defined in:
  - American National Standard Programming languages - Fortran, ANSI X3.198-1992
  - Information technology - Programming languages - Fortran, ISO/IEC 1539-1:1991(E)
- The full ISO Fortran 95 language standard (Fortran 95) as defined in:
  - Information technology - Programming languages - Fortran - Part 1: Base Language, ISO/IEC 1539-1:1997
- Extensions to the Fortran 95 standard:
  - Common industry extensions found in Fortran products from various compiler vendors
  - Extensions specified in SAA® Fortran
- The full Fortran 2003 language standard including full support of the object-oriented programming model with parameterized derived-types.

Industry specifications and other language influences

The IBM XL family of compilers is deeply involved in parallel computing and high-performance computing. The XL compilers implement both the AltiVec/VMX programming interface and the OpenMP 3.0 specification for shared memory programming model. With the V13.1 release, the VSX instruction set within the POWER7 architecture is also supported.

IBM is a member of the Standard Performance Evaluation Corporation (SPEC). The mission of SPEC is to identify and maintain standardized benchmarks that will drive high-performance computing for many years. SPEC released SPEC CPU2006 in 2006. CPU2006 is a benchmark focused on a system's processor, memory subsystem, and compiler. IBM continues to participate in the SPECCOMP suite which measures the performance of parallel benchmarks using OpenMP.

Support of programming language standards allows for portability of your source code among a variety of compiler implementations.

Program number

Program number	VRM	Program name
5724-X16	13.1	IBM XL Fortran for Linux

Product identification number

Program name	Program number
XL Fortran for Linux, V13.1	5724-X16
XL Fortran for Linux SW S&S 1-year After License - per Authorized User - per Concurrent User	5648-F57
XL Fortran for Linux SW S&S No Charge Registration/ 1-year Renewal - per Authorized User - per Concurrent User	5648-F55

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XL Fortran for Linux                5648-F59
 SW S&S 3-year Registration
   - per Authorized User
   - per Concurrent User

XL Fortran for Linux                5648-F56
 SW S&S 3-year Renewal
  - per Authorized User
  - per Concurrent User

XL Fortran for Linux                5648-F58
 SW S&S 3-year After License
   - per Authorized User
   - per Concurrent User
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Offering Information

Product information is available via the Offering Information Web site

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

Also, visit the Passport Advantage® Web site

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

Business Partner information

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=210-251

Publications

No hardcopy publications are shipped with this program.

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.

Technical information

Specified operating environment

Hardware requirements

For XL Fortran for Linux, V13.1:

- System: IBM Power Systems servers supported by
  - Red Hat Enterprise Linux 5.5 (RHEL 5.5)
  - SUSE Linux Enterprise Server 11 Service Pack 1 (SLES 11 SP1)
  - SUSE Linux Enterprise Server 10 Service Pack 2 (SLES 10 SP2)

- Required hard disk space: 200 MB

Software requirements

For XL Fortran for Linux, V13.1:

- Supported operating systems
  - Red Hat Enterprise Linux 5.5 (RHEL 5.5)
  - SUSE Linux Enterprise Server 11 Service Pack 1 (SLES 11 SP1)
  - SUSE Linux Enterprise Server 10 Service Pack 2 (SLES 10 SP2)
- Instance of GNU Compiler Collection (GCC)

  Refer to *XL Fortran for Linux Installation Guide* for required packages.
- Perl 5.0 or later, to run the installation utility
- Required software for documentation
  - A graphical desktop environment (such as K Desktop Environment or GNOME) that supports Web browsers and PDF viewers
  - A frames-capable HTML browser (to access help and other Web pages)
  - PDF viewer (to access PDF documentation)

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

Web information

For information regarding XL Fortran, visit

http://www.ibm.com/software/awdtools/fortran/

For information regarding IBM Application Development, visit

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

Packaging

The XL Fortran for Linux, V13.1 package contains:

- One CD-ROM containing the XL Fortran for Linux, V13.1 product
- XL Fortran for Linux, V13.1 Quickstart Guide
- Passport Advantage customer letter
- Passport Advantage media pack pointer sheet

This program, when downloaded from a Web site, 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

IBM XL Fortran for Linux, V13.1 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.

Software Services

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/

Ordering information

This product is only available via Passport Advantage. It is not available as shrinkwrap.

Product Group: IBM XL Fortran

Product Identifier Description: IBM XL Fortran

PID: 5724-X16

Product Category: XL Fortran

Charge metric

Program name	Part number or PID number	Charge metric
XL Fortran for Linux, V13.1	5724-X16	Authorized User Concurrent User
XL Fortran for Linux, V13.1	BA0ZFML	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.

Passport Advantage

Program name/Description	Part number
XL Fortran for Linux, V13.1 Media Package Multilingual	BA0ZFML
XL Fortran for Linux Authorized User License + SW S&S 12 Months	D54L2LL
XL Fortran for Linux Authorized User Annual SW S&S Renewal	E01M4LL
XL Fortran for Linux Authorized User SW S&S Reinstatement 12 Months	D54L3LL
XL Fortran for Linux Concurrent User License + SW S&S 12 Months	D043VLL
XL Fortran for Linux Concurrent User Annual SW S&S Renewal	E04UALL
XL Fortran for Linux Concurrent User SW S&S Reinstatement 12 Months	D043WLL

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
XL Fortran for Linux Authorized User single entitlement	XL Fortran for Linux Concurrent User single entitlement	D0DEYLL 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 are entitled to receive the corresponding media pack.

Entitled maintenance offerings description

XL Fortran for Linux

Media Pack Description	Part number
XL Fortran for Linux, V13.1 Media Pk Multilingual	BA0ZFML

Basic License: To order the programs described in this announcement for 5724-X16, 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 5809 and 3410.

When placing an ESD order in econfig, specify a billing feature, the media feature 5809 and 3410, and the ESD only feature 3450.

Description	Program number	One-Time charge feature number	Medium	Medium feature number
XL Fortran for Linux, V13.1 OTC with 1-year SW S&S	5724-X16			
- per Authorized User		0230		
- per Concurrent User		0231		
Media Package			CD-ROM	5809
			CD-ROM	3410
Expedite Fee charge to Branch				3445
Customization features:				
ESD for upgrades only				3450
Do not ship pubs				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) Web site 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 XL Fortran for Linux, V13.1 will be placed on the Entitled Software Support (ESS) Web site

https://www-05.ibm.com/servers/eserver/ess/OpenServlet.wss

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 on the CD media shipped for physical orders.

ESU customers placing ESD software orders will receive an email with software order information. The ESU customer will be able to immediately proceed to the "Downloads" Web site 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

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

Maintenance Offering customer: Media Supply Entitlement details

Customers with active Software Maintenance for XL Fortran for Linux or XL Fortran Advanced Edition for Linux are entitled to receive the media pack corresponding to

XL Fortran for Linux, V13.1 or a previous level of the program as long as the level of the program continues to be active.

Eligible customers should add the applicable PID and 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 feature 5809 and 3410.

When placing an ESD order in econfig, specify a billing feature, the media feature 5809 and 3410, and the ESD only feature 3450. Note that these ESD features are also applicable to the compiler products:

- XL Fortran for Linux, V12.1 (5724-U84)
- XL Fortran Advanced Edition for Linux, V11.1 (5724-S74)
- XL Fortran Advanced Edition V10.1 for Linux (5724-M17)

Entitled maintenance offerings description

XL Fortran for Linux

Description		Medium Feature Number
XL Fortran for Linux V13.1	CD-ROM Media Supply	5809
for PID 5724-X16	CD-ROM Media Supply	3410
Expedite Fee Charge to Branch		3445
Customization features:		
ESD for upgrades only		3450
Do not ship pubs		3470
Do not ship media		3471
XL Fortran for Linux V12.1	CD-ROM Media Supply	6037
for PID 5724-U84	CD-ROM Media Supply	3410
Expedite Fee Charge to Branch		3445
Customization features:		
ESD for upgrades only		3450
Do not ship pubs		3470
Do not ship media		3471
XL Fortran Adv Ed for Linux V11.0	CD-ROM Media Supply	5809
for PID 5724-S74	CD-ROM Media Supply	3410
Expedite Fee Charge to Branch		3445
Customization features:		
ESD for upgrades only		3450
Do not ship pubs		3470
Do not ship media		3471
XL Fortran Adv Ed V10.0 Linux	CD-ROM Media Supply	5809
for PID 5724-M17	CD-ROM Media Supply	3410
Expedite Fee Charge to Branch		3445
Customization features:		
ESD for upgrades only		3450
Do not ship pubs		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
XL Fortran for Linux Authorized User single entitlement	XL Fortran for Linux Concurrent User single entitlement	Is used to trade up from single Authorized User to single Concurrent User

Consult your IBM representative if you have any questions.

Description	One-Time Charge program number	Feature number
XL Fortran for Linux, V13.1	5724-X16	
- trade up from single Authorized User entitlement to single Concurrent User entitlement		0232

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

Extending coverage for a total of three years from 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-X16 - IBM XL Fortran for Linux, V13.1	
Per Authorized User with 1-year SW S&S	0230
Per Concurrent User with 1-year SW S&S	0231
5724-X16 - IBM XL Fortran for Linux, V13.1	5809
Multilingual, CD ROM	3410
5648-F55 - IBM XL Fortran for Linux	
Per Authorized User SW S&S	
- NoCharge Registration	0001
- 1-year Renewal	0002
Per Concurrent User SW S&S	
- NoCharge Registration	0003
- 1-year Renewal	0004
5648-F57 - IBM XL Fortran for Linux	
Per Authorized User SW S&S 1-year After License	0001
Per Concurrent User SW S&S 1-year After License	0002
5648-F59 - IBM XL Fortran for Linux	
Per Authorized User SW S&S 3-year Registration	0001
Per Concurrent User SW S&S 3-year Registration	0002
5648-F56 - IBM XL Fortran for Linux	
Per Authorized User SW S&S 3-year Renewal	0001
Per Concurrent User SW S&S 3-year Renewal	0002
5648-F58 - IBM XL Fortran for Linux	
Per Authorized User SW S&S 3-year After License	0001
Per Concurrent User SW S&S 3-year After License	0002

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License Information form number

L-MCHN-85CSEJ

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Limited warranty applies

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Limited warranty

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Volume orders (IVO)

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Passport Advantage applies

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

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No

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Prices

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One-time

Description	Program number	charge feature number
XL Fortran for Linux, V13.1 with 1-year SW S&S		
- per Authorized User	5724-X16	0230
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XL Fortran for Linux, SW S&S NoCharge Registration		
- per Authorized User	5648-F55	0001
- per Concurrent User	5648-F55	0003
SW S&S 1-year Renewal		
- per Authorized User	5648-F55	0002
- per Concurrent User	5648-F55	0004
XL Fortran for Linux, SW S&S 1-year After License		
- per Authorized User	5648-F57	0001
- per Concurrent User	5648-F57	0002
XL Fortran for Linux, SW S&S 3-year Registration		
- per Authorized User	5648-F59	0001
- per Concurrent User	5648-F59	0002
XL Fortran for Linux, SW S&S 3-year Renewal		
- per Authorized User	5648-F56	0001
- per Concurrent User	5648-F56	0002
XL Fortran for Linux, SW S&S 3-year After License		
- per Authorized User	5648-F58	0001
- per Concurrent User	5648-F58	0002

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