Version 13.1.2 of IBM XL C for AIX, IBM XL C/C++ for AIX, and IBM XL C/C++ for Linux; and Version 15.1.2 of IBM XL Fortran for AIX and IBM XL Fortran for Linux deliver detailed reporting and performance enhancements in addition to improved language interoperability and standards conformance

Table of contents

At a glance

XL C/C++ for Linux™, V13.1.2 for little endian distributions delivers a number of new features and enhancements:

- C11 compliance and support for a majority of the C++11 standards, supporting code portability between multiple operating systems and hardware platforms
- Full conformance for OpenMP 3.1 features and selected OpenMP 4.0 features
- Symmetric, multi-processing capabilities
- Vector data types and access to the vector multimedia extension (VMX) and vector scalar extension (VSX) instructions on the POWER8™ processor
- Compiler reports were added to provide additional information for optimizations in multiple formats

XL C/C++ for Linux, V13.1.2, and XL Fortran for Linux, V15.1.2 for little endian distributions now support Red Hat Enterprise Linux 7.1 for IBM® POWER®.

Version 15.1.2 for XL Fortran for AIX® and XL Fortan for Linux deliver quality improvements over the previous release by including fixes from all previous release PTFs and resolving other known issues, in addition to adding a new visibility attribute for external linkage entities, and enhanced interoperability between XL Fortran and XL C.

Version 13.1.2 for XL C for AIX and XL C/C++ for AIX deliver quality improvements over the earlier release by including fixes from all previously released PTFs and other, resolved known issues.

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

Overview

A key strength of the new XL C/C++ V13.1.2, and XL Fortran V15.1.2 compiler products is their ability to generate highly optimized code for execution, and their ability to provide feedback to assist the user in further exploitation of IBM Power Systems™. The performance gain from years of IBM compiler optimization experience on XL C/C++/Fortran for AIX/Linux can be seen in the release-to-release compiler improvements from the development of the IBM POWER4 processors through to the following processors:

- POWER5
- POWER5+
- POWER6®
- POWER6+™
- POWER7®
- POWER7+™
- POWER8

The XL C/C++ compiler supports the C standard ISO/IEC 9899:1999, also known as C99 and the C++ standard ISO/IEC 14882:2003, the C++ 2003 programming standard. Version 13.1.2, XL C/C++ for Linux on little endian distributions delivers support for additional features of the latest C standard ISO/IEC 9899:2011, also known as C11 and the latest C++ standard ISO/IEC 14882:2011, also known as C++11.

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

Over the course of multiple releases, the XL C/C++/Fortran for AIX/Linux compilers offered new and enhanced functions to provide you with the tools needed to modernize and maintain applications to meet your critical business needs. The following are some of the new and improved features within the latest versions:

- XL C/C++ for Linux for little endian Linux distributions offers a new compiler design built with Clang front end components. It provides improved GCC compatibility and language standards support for easier migration and enhanced capability.
- XL C/C++ for Linux for little endian Linux distributions is C11 compliant and supports a majority of the C++11 standards, supporting code portability between multiple operating systems and hardware platforms.
- Assumed length feature for improved XL Fortran to XL C interoperability
- Added support for RHEL 7.1 in XL C/C++ for Linux on little endian distributions, in addition to exisiting support for Ubuntu 14.04 and 14.10, SLES 12
- Full conformance for OpenMP 3.1 features and selected OpenMP 4.0 features in XL C/C++ for Linux on little endian distributions
- Symmetric multi-processing (SMP) capabilities in Power Systems in XL C/C++ for Linux on little endian distributions
- Vector data types and access to the vector multimedia extension (VMX) and vector scalar extension (VSX) instructions on POWER8 in XL C/C++ for Linux on little endian distributions

- Compiler optimization reports in XL C/C++ for Linux on little endian distributions:
  - Detailed reporting in both XML and HTML format
  - Optimization transformation analysis reports
  - Reports on data reorganization
  - Extended profiling reports
  - Additional loop analysis reports
  - Enhancements to SHOWPDF reports
- -qvisibility for XL Fortran AIX and Linux on little endian distributions for decreased object size, reduced symbol collision, increased optimization, and improved dynamic link efficiency
- Increased quality across XL C, XL C/C++ and XL Fortran for AIX/Linux

All of the expertise and heritage that served enterprise businesses over the years are upgraded and refined for programmers of the latest AIX and Linux distributions for IBM Power(R) technology so they can take advantage of proven IBM compiler technology.

Key prerequisites

XL C for AIX, V13.1.2

IBM Power Systems servers that support one of the following:

- AIX V6.1 TL 2 Service Pack 5, or later
- AIX V7.1
- IBM i V7.1 PASE V7.1
- IBM i V7.2 PASE V7.2

Requires a hard disk space of 280 MB.

XL C/C++ for AIX, V13.1.2

Power Systems servers that support one of the following:

- AIX V6.1 TL 2 Service Pack 5, or later
- AIX V7.1
- IBM i V7.1 PASE V7.1
- IBM i V7.2 PASE V7.2

Requires a hard disk space of 340 MB.

XL Fortran for AIX, V15.1.2

Power Systems servers that support one of the following:

- AIX 6.1 TL 2 Service Pack 5
- AIX 7.1
- IBM PASE for i V7.1
- IBM i V7.2 PASE V7.2

Requires a hard disk space of 360 MB.

XL C/C++ for Linux, V13.1.2, for little endian distributions

Power Systems servers that support one of the following:

- Ubuntu 14.04 for IBM POWER8
- Ubuntu 14.10 for IBM POWER8
- SUSE Linux Enterprise Server 12 for IBM Power
- Red Hat Enterprise Linux 7.1 for IBM POWER

Requires a hard disk space of 160 MB.

XL Fortran for Linux, V15.1.2, for little endian distributions

Power Systems servers that support one of the following:

- Ubuntu 14.04 for IBM POWER8
- Ubuntu 14.10 for IBM POWER8
- SUSE Linux Enterprise Server 12 for IBM Power
- Red Hat Enterprise Linux 7.1 for IBM POWER

Requires a hard disk space of 230 MB.

Planned availability date

June 19, 2015

Description

Programming language standards

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

The following C11 features are now supported by the C compiler within XL C/C++ for Linux on little endian distributions:

- Alignment
- Unicode and UTF-8 literals
- Conversion between pointer and floats
- Composite types for VLAs
- Math error conditions
- Typedef redeclarations
- Complex type init
- Generic type generics
- Temporary lifetime extns
- LANGLVL(STDC11)

The following C++11 features are now supported by the C++ compiler within XL C/C++ for Linux on little endian distributions:

- Move constructor
- Generalized attributes
- Raw string literal
- Non-static member initializers

- Unrestricted unions
- Unicode and UCN literals
- Variadic template
- Rangefor
- Local classes
- Move special member function
- Explicit virtual override
- Decltype and call
- Inheriting ctors
- Conditional behavior
- Undefined behavior
- Alignment
- Template alias
- Final
- Move "this"
- PODs
- New char type
- Lambdas
- Uniform Init
- Generalized Const Expr
- User defined literals
- Template variable
- C++11 Library (GCC)
- Langlvl (STDC++11)

OpenMP

The OpenMP API supports multi-platform shared-memory parallel programming in Fortran, C and C++ on many architectures, which include AIX/Linux 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 that range from the desktop to the supercomputer. The specification is defined by the OpenMP organization, a group of computer hardware and software vendors that includes IBM. You can find more information about the OpenMP specifications at

http://www.openmp.org

The XL C/C++/Fortran implementation is primarily based on the IBM interpretation of the OpenMP Application Program Interface V3.1. Supported features include:

- Full support for OpenMP task level parallelization. The OpenMP constructs TASK and TASKWAIT provide functionality to parallelize irregular algorithms, such as pointer chasing or recursive algorithms.
- Arrays that can be allocated in data sharing attribute clause. Arrays can now appear in PRIVATE, FIRSTPRIVATE, LASTPRIVATE, REDUCTION, COPYIN, and COPYPRIVATE clauses.
- Nested parallelism. Runtime routines are available to set or get the nested levels and thread limit.
- Maximum nesting level. The maximum number of nested and active parallel regions can now be controlled with the new environment variable OMP_MAX_ACTIVE_LEVELS.
- 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.

- Waiting thread control. You can provide hints to the compiler on the desired behavior of waiting threads with the new environment variable OMP_WAIT_POLICY.
- Number of threads control. The number of OpenMP threads to use for the whole program can now be controlled with the new environment variable OMP_THREAD_LIMIT.
- 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 that are assigned to the same thread in the constructs.

In addition, the following updates are made available:

- Adds FINAL and MERGEABLE clauses to the TASK construct to support optimization.
- Adds the TASKYIELD construct to allow users to specify where in the program task switching can be performed.
- Adds the omp_in_final runtime library routine to support specialization of final task regions.
- Extends the ATOMIC construct to include READ WRITE, and CAPTURE forms; adds the UPDATE clause to apply the existing form of the ATOMIC construct.
- Allows dummy arguments with the INTENT(IN) attribute to be specified on the FIRSTPRIVATE clause.
- Allows unallocated allocatable arrays to be specified on the COPYIN clause.
- Adds the OMP_PROC_BIND environment variable to control whether OpenMP threads are allowed to move between processors.
- Extends the OMP_NUM_THREADS environment variable to specify the number of threads to use for nested parallel regions.

The XL C/C++/Fortran implementations also support the following OpenMP 4.0 features:

- ATOMIC update and capture clause enhancements
- OMP_DISPLAY_ENV environment variable

XL Fortran to XL C interoperability (applies to all AIX and Linux compilers)

ISO/IEC TS 29113:2012 specifies the form and establishes the interpretation of facilities that extend the Fortran language defined by ISO/IEC 15391:2010. The purpose of ISO/IEC TS 29113:2012 is to promote portability, reliability, maintainability and efficient execution of programs containing parts written in Fortran and parts written in C, for use on a variety of computing systems.

The assumed length feature is an element of ISO/IEC TS 29113:2012. It allows you passing entities of type CHARACTER of any length via assumed length dummy arguments between Fortran and C.

Compiler Optimization Reports for the XL C/C++ Linux on little endian distributions

New compiler diagnostics reports in XML and HTML format help improve the performance of your code.

With this release, reports containing key compiler optimization information, are now available. These reports identify areas in your code where the compiler was able to apply optimization. Equally important, the reports also identify areas where optimizations could not be applied along with the reasons why they were not applied. This 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

Compiler reports produced in XML format (XML 1.0) are easily consumable by tools that you can create to read and analyze the results. A stylesheet, xlstyle.xsl, is provided to allow you to render the report into a human readable format that can be read by anyone with a browser which 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 are used to 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, you get additional information on the loop iteration count, the block and call count, and a report on the number of cache misses for certain functions.

Reports on data reorganization: The compiler can now generate reports on data reorganizations in the listing files. The data reorganization section provides a summary how program variable data is reorganized by the compiler. Information on data reorganization includes:

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

Also available in the listing files are the locations of data prefetch instructions that were inserted by the compiler.

Additional loop analysis reports: A new suboption has been added to -qhot to allow for more aggressive loop analysis. This new option, -qhot=level=2, together with -qsmp and -qreport, provides information about loop nests on which the aggressive loop analysis was performed. You can find this report in the Loop Transformation section of the listing file and in the new XML listing file.

Enhancements are made to profiling reports. New sections are added to your listing file to help you analyze your programs that include:

- Relevance of profiling data. This section shows how relevant your profiling data is to the source code. The more relevant the profiling data is to the source code, the higher the performance gain that you can achieve by using the profiling data.
- Missing profiling data. This section might include a warning message about missing profiling data.
- Outdated profiling data. This section might include a warning message about outdated profiling data.

Enhancements to SHOWPDF reports

In addition to block-counter and call-counter profiling information currently provided, you can also use the SHOWPDF utility to view cache-miss profiling and value profiling information.

Ability to harness the power of parallel computing in XL C/C++ compiler for Linux on little endian distributions

XL C/C++ for Linux on little endian distributions allows you to exploit the symmetric multi-processing (SMP) capabilities in Power Systems. You can parallelize your code automatically, or explicitly through the use of SMP directives. Pragma directives allow you to give the compiler information on the characteristics of a specific loop to be automatically parallelized or give you explicit control over parallelization.

XL C/C++ exposes hardware level capabilities directly to you through source-level intrinsic functions. Under the -qaltivec option, XL C/C++ for Linux supports vector data types and access to the VMX and vector scalar extension (VSX) instructions on POWER8 processors. VMX, also known as SIMD (Single Instruction Multiple Data). Vector capabilities, allow your program to calculate arithmetic results on up to sixteen data items simultaneously. You can also instruct the compiler to automatically perform SIMD vectorization at higher levels of optimization. The most common opportunity for this transformation is with loops that iterate over contiguous array data performing calculations on each element.

New feature, -qvisibility for XL Fortran AIX and Linux on little endian distributions

Specifies the visibility attribute for external linkage entities in object files. The external linkage entities have the visibility attribute that is specified by the -qvisibility option .

The -qvisibility option globally sets visibility attributes for external linkage entities to describe whether and how an entity defined in one module can be referenced or used in other modules. Entity visibility attributes affect entities with external linkage only, and cannot increase the visibility of other entities. Entity preemption occurs when an entity definition is resolved at link time, but is replaced with another entity definition at run time.

Visibility attributes describe whether and how an entity defined in one module can be referenced or used in other modules. Visibility attributes affect entities with external linkage only, and cannot increase the visibility of other entities. By specifying visibility attributes for entities, you can export only the entities that are necessary to shared libraries. With this feature, you can get the following benefits:

- Decrease the size of shared libraries.
- Reduce the possibility of symbol collision.
- Allow more optimization for the compile and link phases.
- Improve the efficiency of dynamic linking.

XL C, XL C/C++ and XL Fortran for AIX

For IBM AIX compilers, increased quality level is emphasized by the inclusion of various fixes, which include but not limited to, all earlier PTF content.

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, which include those for the different architectures that are shipped in the popular IBM Power Systems. IBM compilers now include exploitation of the new POWER8 technology.

IBM compilers are designed to improve programmer productivity. The advanced compilation technology enables programmers to exploit leading edge performance of the new hardware without source code changes. Developers only need to focus on the logic of the applications and let the compiler figure out the best way to

transform and optimize the code generation for the systems the application will run on.

Program number

Program number	VRM	Program name
5765-J06	13.1.2	XL C for AIX - AAS
5725-C71	13.1.2	XL C for AIX - PA
5765-J07	13.1.2	XL C/C++ for AIX - AAS
5725-C72	13.1.2	XL C/C++ for AIX -PA
5765-J09	15.1.2	XL Fortran for AIX - AAS
5725-C74	15.1.2	XL Fortran for AIX - PA
5765-J08	13.1.2	XL C/C++ for Linux - AAS
5725-C73	13.1.2	XL C/C++ for Linux - PA
5765-J10	15.1.2	XL Fortran for Linux - AAS
5725-C75	15.1.2	XL Fortran for Linux - PA

Product identification number

Product	Program PID number	Subscription and Support (S&S) PID number	S&S description
XL C for AIX, V13.1.2	5765-J06	5648-F48	SW S&S 3-year Registration
	5765-J06	5648-F50	SW S&S 3 Years After License
	5765-J06	5648-F51	SW S&S 1 Year After License
	5765-J06	5648-F52	SW S&S 3-year Renewal
	5765-J06	5648-F54	SW S&S No Charge Registration/1-year Renewal
XL C/C++ for AIX, V13.1.2	5765-J07	5648-F45	SW S&S 3 Years After License
	5765-J07	5648-F46	SW S&S 3-year Renewal
	5765-J07	5648-F47	SW S&S 3-year Registration
	5765-J07	5648-F49	SW S&S No Charge Registration/1-year Renewal
	5765-J07	5648-F53	SW S&S 1 Year After License
XL C/C++ for Linux, V13.1.2	5765-J08	5648-F60	SW S&S No Charge Registration/1-year Renewal
	5765-J08	5648-F61	SW S&S 3-year Renewal
	5765-J08	5648-F62	SW S&S 1 Year After License
	5765-J08	5648-F63	SW S&S 3 Years After License
	5765-J08	5648-F64	SW S&S 3-year Registration

Product	Program PID number	Subscription and Support (S&S) PID number	S&S description
XL Fortran for AIX, V15.1.2	5765-J09	5648-F40	SW S&S 3 Years After License
	5765-J09	5648-F41	SW S&S 1 Year After License
	5765-J09	5648-F42	SW S&S 3-year Renewal
	5765-J09	5648-F43	SW S&S 3-year Registration
	5765-J09	5648-F44	SW S&S No Charge Registration/1-year Renewal
XL Fortran for Linux, V15.1.2	5765-J10	5648-F55	SW S&S No Charge Registration/1-year Renewal
	5765-J10	5648-F56	SW S&S 3-year Renewal
	5765-J10	5648-F57	SW S&S 1 Year After License
	5765-J10	5648-F58	SW S&S 3 Years After License
	5765-J10	5648-F59	SW S&S 3-year Registration

Offering Information

Product information is available via the Offering Information website

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

Also, visit the Passport Advantage(R) website

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(R) ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 215-218

Publications

No publications are shipped with these programs.

The IBM Publications Center portal is located at

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. A large number of publications are available online in various file formats, and they can all be downloaded by all countries.

Services

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/

Technical information

Specified operating environment

Hardware requirements

For XL C for AIX, V13.1.2

- System: Power Systems servers that are supported by AIX 6.1 TL2 SP5 or AIX 7.1
- Disk space: 280 MB

For XL C/C++ for AIX, V13.1.2

- System: Power Systems servers that are supported by AIX 6.1 TL2 SP5 or AIX 7.1
- Disk space: 340 MB

For XL Fortran for AIX, V15.1.2

- System: Power Systems servers that are supported by AIX 6.1 TL2 SP5 or AIX 7.1
- Disk space: 360 MB.

For XL C for AIX, V13.1.2; XL C/C++ for AIX, V13.1.2; and XL Fortran for AIX, V15.1.2 PASE for i

- IBM i V7.1 PASE for i or IBM i V7.2 PASE for i

For XL C/C++ for Linux, V13.1.2

- System: Power Systems servers that are configured for the little endian architecture and supported by Ubuntu 14.04 for IBM POWER8, Ubuntu 14.10 for IBM POWER8, SUSE Linux Enterprise Server 12 for Power, or Red Hat Enterprise Linux 7.1 for IBM POWER
- Disk space: 160 MB

For XL Fortran for Linux, V15.1.2

- System: Power Systems servers that are configured for the little endian architecture and supported by Ubuntu 14.04 for IBM POWER8, Ubuntu 14.10 for IBM POWER8, SUSE Linux Enterprise Server 12 for Power, or Red Hat Enterprise Linux 7.1 for IBM POWER
- Disk space: 230 MB

Software requirements

For XL C for AIX, V13.1.2; XL C/C++ for AIX, V13.1.2; and XL Fortran for AIX, V15.1.2

- AIX V6.1 TL 2 Service Pack 5, or later or AIX V7.1
- Required software for documentation:
  - HTML browser to access HTML documentation
  - PDF viewer to view PDF files

For XL C for AIX, V13.1.2; XL C/C++ for AIX, V13.1.2; and XL Fortran for AIX, V15.1.2, for IBM PASE for i

- IBM PASE for i V7.1
- IBM PASE for i V7.2

For XL C/C++ for Linux, V13.1.2 and XL Fortran for Linux, V15.1.2

- One of the following operating systems:
  - Ubuntu 14.04 for IBM POWER8
  - Ubuntu 14.10 for IBM POWER8
  - SUSE Linux Enterprise Server 12 for Power
- Required software for documentation:
  - HTML browser to access HTML documentation
  - Portable Document Format (PDF) viewer to view any PDF files

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 C/C++, visit

http://www-03.ibm.com/software/products/en/ccompfami

For information regarding XL Fortran, visit

http://www.ibm.com/software/products/en/fortcompfami

For information regarding IBM Application Development, visit

http://www-03.ibm.com/software/products/en/category

Packaging

Each IBM XL Compiler package contains:

- One DVD-ROM, which contains the product
- Product Quickstart 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

XL C for AIX, V13.1.2; XL C/C++ for AIX, V13.1.2; XL Fortran for AIX, V15.1.2; XL C/C++ for Linux, V13.1.2; and XL Fortran for Linux, V15.1.2 use 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.

Ordering information

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

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

Ordering through Passport Advantage part numbers

Only the media pack part numbers are updated.

The ordering information is the same as previously announced.

Program name/Description	Part number
XL Fortran for Linux, V15.1.2 - Media Package Multilingual	BT0NCML

For ordering information on XL C/C++ for Linux, V13.1.2, refer to Software Announcement 214-411, dated October 6, 2014.

Program name/Description	Part number
XL C/C++ for Linux, V13.1.2 - Media Package Multilingual	BT0NBML

For ordering information on XL Fortran for AIX, V15.1.2, refer to Software Announcement 214-165, dated April 28, 2014.

Program name/Description	Part number
XL Fortran for AIX, V15.1.2 - Media Package Multilingual	BT0NAML

For ordering information on XL C for AIX, V13.1.2, refer to Software Announcement 214-161, dated April 28, 2014.

Program name/Description	Part number
XL C for AIX, V13.1.2 - Media Package Multilingual	BT0N8ML

For ordering information on XL C/C++ for AIX, V13.1.2, refer to Software Announcement 214-162, dated April 28, 2014.

Program name/Description	Part number
XL C/C++ for AIX, V13.1.2 - Media Package Multilingual	BT0N9ML

Ordering through product identifier and feature codes, basic license, electronic delivery, maintenance and trade-up

The ordering information for basic license, electronic delivery, maintenance offering media supply details, and trade-up remain unchanged.

For ordering information on XL Fortran for Linux, V15.1.2, refer to Software Announcement 214-412, dated October 6, 2014.

Customers with active Software Maintenance for XL Fortran for Linux are entitled to receive the media supply corresponding to XL Fortran for Linux, V15.1.2 or a previous level of the program as long as the level of the program continues to be active. Media supply for version prior to Version 15.1.1 only contain the XL Fortran compiler for big endian distributions.

For ordering information on XL C/C++ for Linux, V13.1.2, refer to Software Announcement 214-411, dated October 6, 2014.

Customers with active Software Maintenance for XL C/C++ for Linux are entitled to receive the media supply corresponding to XL C/C++ for Linux, V13.1.2 or a previous level of the program as long as the level of the program continues to be active. Media supply for version prior to Version 13.1.1 only contain the XL C/C++ compiler for big endian distributions.

For ordering information on XL Fortran for AIX, V15.1.2, refer to Software Announcement 214-165, dated April 28, 2014.

Customers with active Software Maintenance for XL Fortran for AIX are entitled to receive the media supply corresponding to XL Fortran for AIX, V15.1.2 or a previous level of the program as long as the level of the program continues to be active.

For ordering information on XL C for AIX, V13.1.2, refer to Software Announcement 214-161, dated April 28, 2014.

Customers with active Software Maintenance for XL C for AIX are entitled to receive the media supply corresponding to XL C for AIX, V13.1.2 or a previous level of the program as long as the level of the program continues to be active.

For ordering information on XL C/C++ for AIX, V13.1.2, refer to Software Announcement 214-162, dated April 28, 2014.

Customers with active Software Maintenance for XL C/C++ for AIX are entitled to receive the media supply corresponding to XL C/C++ for AIX, V13.1.2 or a previous level of the program as long as the level of the program continues to be active.

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.

For ordering details for software maintenance for XL Fortran for Linux, V15.1.2, refer to Software Announcement 214-412, dated October 6, 2014.

For ordering details for software maintenance on XL C/C++ for Linux, V13.1.2, refer to Software Announcement 214-411, dated October 6, 2014.

For ordering details for software maintenance for AIX, V15.1.2, refer to Software Announcement 214-165, dated April 28, 2014.

For ordering details for software maintenance for AIX, V13.1.2, refer to Software Announcement 214-161, dated April 28, 2014.

For ordering details for software maintenance for XL C/C++ for AIX, V13.1.2, refer to Software Announcement 214-162, dated April 28, 2014.

Charge metric

Program name	Part number or PID number	Charge metric
XL C for AIX, V13.1.2	5725-C71, 5765-J06	Authorized User, Concurrent User
XL C/C++ for AIX, V13.1.2	5725-C72, 5765-J07	Authorized User, Concurrent User
XL Fortran for AIX, V15.1.2	5725-C73, 5765-J09	Authorized User, Concurrent User
XL C/C++ for Linux, V13.1.2	5725-C74, 5765-J08	Authorized User, Concurrent User
XL Fortran for Linux, V15.1.2	5725-C75, 5765-J10	Authorized User, Concurrent User

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Program name/Description	Part number
XL C for AIX, V13.1.0	BA17YML
XL C/C++ for AIX, V13.1.0	BA17ZML
XL Fortran for AIX, V15.1.0	BA181ML
XL C/C++ for Linux, V13.1.1	BT0MGML
XL Fortran for Linux, V15.1.1	BT0MHML
XL Fortran for AIX, V15.1.2	BT0NAML
XL C/C++ for Linux, V13.1.2	BT0NBML
XL Fortran for Linux, V15.1.2	BT0NCML

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XL C/C++ for AIX, V13.1.2       L-JWOG-9VVHXG
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For information on charges for XL Fortran for Linux, V15.1.2, refer to Software Announcement 214-412, dated October 6, 2014.

For information on charges for XL C/C++ for Linux, V13.1.2, refer to Software Announcement 214-411, dated October 6, 2014.

For information on charges for XL Fortran for AIX, V15.1.2, refer to Software Announcement 214-165, dated April 28, 2014.

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