

IBM Open XL C/C++ for Linux on Power 17.1.1 supports IBM Power10 processor-based systems and adopts a new compiler architecture

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At a glance

IBM^(R) Open XL C/C++ for Linux^(R) on Power^(R) is a standards-based, high-performance C/C++ compiler that delivers the following features and benefits:

- Support for IBM Power7, IBM Power8, IBM Power9, and IBM Power10 processor-based servers
- Use of the LLVM compiler infrastructure from the open source community
- Support for C and C++ programming language standards, including C++17, that can provide increased functionality and easier portability for your source code
- Inclusion of the optimized IBM Mathematical Acceleration Subsystem (MASS) libraries that give you frequently used mathematical procedures
- Addition of the monthly pricing metric for more flexibility, especially when using the compiler in the cloud
- Enterprise-level IBM service and support over the extended lifecycle of the offering

Overview

Open XL C/C++ for Linux on Power is a standards-based, high-performance compiler that facilitates creating and maintaining applications written in C and C++ for IBM Power solutions. It generates code that can take advantage of the capabilities of the latest Power10 architecture and optimize your hardware utilization.

Over the course of multiple releases, the family of Open XL C/C++ for Linux on Power compilers has offered new and enhanced functions that can provide the necessary tools to modernize and maintain applications to meet clients' critical business needs. Open XL C/C++ for Linux on Power 17.1.1 includes the following new features:

- Support for the latest Power10 architecture
- Adoption of the LLVM compiler infrastructure from the open source community into the XL family of compilers, beginning with this compiler
- Support for C11, C17, C++11, C++14, and C++17 programming language standards
- Upgrade of the MASS libraries to exploit the Power10 architecture

- Addition of a monthly pricing charge unit to give you more flexibility, especially when using the compiler in the cloud
- Enterprise-level service and support to provide you with the benefits of the IBM enhanced lifecycle model that give you a minimum of five full years of standard support from the date of the product release with the option to extend support for at least an additional three years following the program's end of service date for an extra charge

Open XL C/C++ for Linux on Power 17.1.1 is part of the same family of compilers that includes XL C/C++ for Linux 16.1 and XL C/C++ for Linux 13.1.

Key requirements

- IBM Power Systems servers that are supported by:
 - Red Hat[®] Enterprise Linux (RHEL) 8.4, 8.6, or 9.0
 - Ubuntu 20.04 or 22.04
 - Suse Linux Enterprise Server (SLES) 15 SP3
- The required hard disk space is 720 MB.

Planned availability date

July 29, 2022

Availability within a country is subject to local legal requirements.

Description

Open XL C/C++ for Linux on Power 17.1.1 utilizes the Power10 architecture, supports the C11, C17, C++11, C++14, and C++17 programming standards, and implements the LLVM compiler infrastructure.

New architecture compiler options for Power10 technology

The new `-mcpu` compiler option specifies the processor architecture for which code is generated and automatically tuned. There is no separate `tune` option in this release. With this version of Open XL C/C++ for Linux on Power 17.1.1, a new architecture option is available to specify code generation explicitly for the Power10 architecture.

- The new compiler option `-mcpu=pwr10` instructs the compiler to produce code that can exploit the Power10 architecture. This compiler option also automatically tunes the optimizations for the Power10 architecture.

Compiling your applications with the `-mcpu=pwr10` compiler option enables you to automatically utilize and tune for the capabilities in the Power10 architecture without having to rewrite your code.

Also available are the following new `-mcpu` options that generate code for previous Power processor architectures:

- The `-mcpu=pwr8` generates code that executes on both the Power8 and Power9 architectures.
- The `-mcpu=pwr9` generates code that executes on the Power9 architecture.

Built-in compiler functions for Power10 technology

Several new built-in functions are delivered in this release to unlock Power10 architecture instructions. They enable direct access to Power10 features at the application level. For example, the matrix multiply accelerator (MMA) built-in functions can be used to directly take advantage of the new MMA in the Power10

processor. MMA is embedded into the Power10 processor and is designed to achieve faster artificial intelligence (AI) inference for FP32, BFloat16, and INT8 calculations, which can improve performance for enterprise AI inference workloads. Coupled with the broad IBM portfolio of AI software, Power10 can enable you to glean more impactful insights from data associated with your enterprise applications.

Additional functions for Power10 MMA

Two new built-in types are introduced to support the Power10 MMA technology: The `_vector_pair` supports the 32-byte vector type, and the `_vector_quad` vector supports the 64-byte vector type. In addition, several new instructions are introduced to support the MMA built-in types. For example, `MMA_LXVP` is introduced to perform paired vector load, and `MMA_STXVP` is introduced to perform paired vector store.

Adoption of a new compiler infrastructure with implementation of the LLVM within Open XL C/C++ for Linux on Power

The Open XL C/C++ Linux on Power 17.1.1 compiler replaces the existing IBM XL C/C++ compiler infrastructure with the LLVM infrastructure from the open source compiler and toolchain project. LLVM is an open source compilation technology framework that is actively maintained by a large development community and that supports multiple architectures and programming languages. Included in LLVM is the Clang (C language) component, which provides the C and C++ language family front end in the latest language standards for LLVM.

IBM XL C/C++ has a rich tradition of providing enterprise-level offerings with advanced optimization technology. In the more recent versions of the IBM C/C++ offerings, IBM has integrated parts of the Clang subproject to provide C11, C17, C++11, C++14, and C++17 support on the Linux on Power platform.

The benefits of implementing the Open XL C/C++ compiler with the LLVM compiler infrastructure include the following:

- Can simplify cross-platform development for applications containing new C and C++ language features, including C11, C17, C++11, C++14, and C++17
- Can accelerate support for emerging C and C++ language standards that are planned to be made available in IBM offerings more promptly
- Can optimize return on investment with full hardware exploitation on your Linux on Power platform, which can result in optimal application performance delivered through advanced optimization technology
- The capability to build higher-quality code and reduce development time with access to Clang and LLVM diagnostic and reporting capabilities
- Integration with various LLVM open source tools and utilities to help with developers' productivity
- Greater support through the LLVM community
- Enterprise-level service and support from IBM for Open XL C/C++ for Linux on Power and Open XL Fortran for Linux on Power

C11, C17, C++11, C++14, and C++17 standards support

Adopting the LLVM technology within the compiler enables support of the C11 and C17 programming language standards in the C compiler component of Open XL C/C++ for Linux on Power and the C++11, C++14, and C++17 programming language standards, as well as the C++11, C++14, and C++17 standard libraries, in the C++ compiler component of Open XL C/C++ for Linux on Power. With Open XL C/C++, you have the flexibility to compile your source code with a choice of the following two compiler invocations:

- `ibm-clang` or `ibm-clang_r`, to invoke the new LLVM-based XL C compiler that supports the C11 and C17 standards
- `ibm-clang++` or `ibm-clang++_r`, to invoke the new LLVM-based XL C++ compiler that supports the C++11, C++14, and C++17 standards

Support of programming language standards provides you with significant functionality and facilitates optimal portability of your source code among a variety of compiler implementations.

MASS libraries

MASS libraries are an accelerated set of frequently used mathematical functions that can provide improved performance over the default system math library. This release includes MASS scalar, single instruction, multiple data (SIMD), and vector libraries optimized for Power7, Power8, Power9, and Power10 processors.

Also in this release, the MASS scalar and SIMD libraries are automatically used by the compiler.

To automatically use the MASS scalar library, enable fast math through compiler option: `-Ofast` or `-fapprox-func`.

To automatically use the MASS SIMD library, specify compiler option: `-mllvm -vectorlibrary=MASSV`.

Supports IBM Advance Toolchain for Linux on Power 15.0

Open XL C/C++ for Linux on Power 17.1.1 supports the IBM Advance Toolchain for Linux on Power 15.0, a set of open source development tools and runtime libraries. With IBM Advance Toolchain for Linux on Power, you can take advantage of the latest Power hardware features on Linux, especially the tuned libraries.

Supports additional Linux distributions

Open XL C/C++ for Linux on Power 17.1.1 now also runs on RHEL 9 and Ubuntu 20.04 and 22.04.

Monthly pricing metric

The IBM Open XL C/C++ for Linux on Power 17.1.1 compiler is available with a new monthly pricing option to provide more flexibility for cloud-based use cases, whether for the compilers running on the IBM Cloud^(R), your private cloud, or on other cloud service provider environments. The pricing options enable organizations to accrue the following benefits:

- Take advantage of new cloud use cases with an ongoing and flexible low-cost approach for using the compilers in the cloud.
- Pay for what you need on a term or subscription basis, with IBM Software Subscription and Support included.

Organizations across all industries are investing in cloud technologies for innovation, growth, and efficiency. Many of these organizations are seeking a blend of public cloud, private cloud, and traditional IT platforms. IBM solutions can help organizations achieve this hybrid cloud integration.

The drive to cloud-based use cases creates a need for a simplified monthly subscription type licensing. To satisfy this need, Virtual Processor Core is a simplified metric that is available for a monthly license charge and offered for IBM Open XL C/C++ for Linux on Power.

Open XL C/C++ for Linux on Power 17.1.1 is available with monthly pricing metrics for billing and payments. All technical capabilities are available in the Open XL C/C++ for Linux on Power 17.1.1 monthly offering that are available in the existing one-time license charge version of this compiler.

The benefits of the monthly term offering include:

- Flexibility to license the compilers for short-term needs
- Acquisition of new software to test a proof of concept, especially in a cloud environment, can lead to a long-term software investment

- Can be used in production upgrades and migration projects, especially when moving to the cloud
- Flexibility to use your operating expense budget rather than your capital expense budget where you might be able to avoid lengthy approval cycles common with capital expenditure approvals
- Inclusion of IBM Service and Support with each license
- The capability to use the traditional term charge metric of the cloud so that you can pay as you go

IBM service and support

This offering follows the enhanced IBM software support lifecycle model that brings with it enterprise-level service and support from IBM on the Open XL C/C++ for Linux on Power 17.1.1 compiler, containing open source code from the LLVM project. The IBM Service and Support organization is made up of teams of individuals who work together to provide you with the responsive platform and cross-platform software support that you require. For complex or code-related problems, IBM has specialized skilled service teams with access to the specialists in the development laboratories, as required. This means you have access to the right level of IBM expertise when you need it, regardless of where they are located. The aim of IBM Service and Support is to achieve a level of support excellence that exceeds client expectations and differentiates IBM in the marketplace.

Product positioning

LLVM compiler infrastructure from the Open Community

Open XL C/C++ for Linux on Power replaces the current front-end and back-end components with the LLVM compiler infrastructure from the open source community.

IBM is a recognized leader in supporting open source software, with thousands of IBMers participating in open source projects to expand technologies and strengthen communities. IBM supports the belief that open source is the bedrock of modern computing.

From IBM's work with Linux, Apache, and Eclipse in the early years of open source to the current work across all layers of the cloud stack, application development, blockchain, artificial intelligence, quantum computing, and machine learning, IBM has delivered a broad portfolio of open source offerings while helping to build sustainable thriving communities and ecosystems around open source projects that matter to its clients. The introduction of the LLVM compiler infrastructure within Open XL C/C++ for Linux on Power is another step in IBM's sustained commitment to open source innovation.

As an active sponsor and strong supporter of the LLVM open source project, the IBM compiler technology team is committed to bringing the benefits and innovations from the LLVM community to its enterprise clients. The compiler team is contributing code for Power Systems and IBM Z^(R) in the areas of code generation and exploitation, portability, usability enhancements, and toolchain support. Recently, the IBM compiler team increased participation in the LLVM project by adding IBM AIX^(R) support and enhancing loop optimizations. The team believes that its participation and leadership in open source is a differentiating value for clients and will work to ensure that its open source contributions benefit the ecosystem as a whole. The compiler team is pushing their innovation upstream.

XL stands for exceptional

Originally coined in 1990 in the first edition of the compiler user guide, XL was described as a short form for exceptional. The original text, reproduced below, continues to apply today.

The exceptional (XL) family of compilers provide consistency and high performance across multiple programming languages by sharing the same code optimization technology.

With the introduction of the LLVM compiler infrastructure from the open community, the brand of the XL family of compilers is now extended to be *Open XL*.

Infrastructure that matters

The Open XL family of compilers continues to serve the Power Systems community. This makes the high-performance Open XL C/C++ for Linux on Power compiler an optimal fit for the requirements of big data and data analytics.

One of the most discussed topics in the IT world is the migration of applications to a cloud environment. With an infrastructure that includes the Power10 and support for some of the latest Linux distributions, implementing a cloud environment is easier than ever before.

Organizations that look to invest in open standards and open source-based architectures should consider the Open XL C/C++ for Linux on Power compiler.

Make Open XL C/C++ the backbone of your IT application development environment to drive competitive differentiation.

Program number

Program number	VRM	Program name
5765-J20	17.1.1	Open XL C/C++ for Linux on Power- AAS
5725-C73	17.1.1	Open XL C/C++ for Linux on Power- PA
5765-J22	17.1.1	Open XL C/C++ for Linux on Power- AAS

Program number	Subscription and Support Program number
5765-J20	5648-F60
	5648-F61
	5648-F62
	5648-F63
	5648-F64
	5648-F90
	5648-F95
	5648-12F

Program number	Subscription and Support Program number
5765-J22	5771-J22
	5772-J22
	5773-J22
	5774-J22
	5775-J22
	5776-J22

Offering Information

Product information is available on the [IBM Offering Information](#) website.

More information is also available on the [Passport Advantage^{\(R\)} and Passport Advantage Express](#) website.

Publications

Links to PDF manuals and HTML-based production documentation are available on the [IBM Open XL C/C++ for Linux on Power IBM Documentation](#) website.

Effective July 29, 2022, softcopy publications for IBM Open XL C/C++ for Linux on Power 17.1.1 will be available on the [IBM Documentation](#) website.

No hardcopy publications are shipped with these programs.

Services

IBM Systems Lab Services

Systems Lab Services offers infrastructure services to help build hybrid cloud and enterprise IT solutions. From servers to storage systems and software, Systems Lab Services can help deploy the building blocks of a next-generation IT infrastructure to empower a client's business. Systems Lab Services consultants can perform infrastructure services for clients online or onsite, offering deep technical expertise, valuable tools, and successful methodologies. Systems Lab Services is designed to help clients solve business challenges, gain new skills, and apply best practices.

Systems Lab Services offers a wide range of infrastructure services for IBM Power servers, IBM Storage systems, IBM Z, and IBM LinuxONE. Systems Lab Services has a global presence and can deploy experienced consultants online or onsite around the world.

For assistance, contact Systems Lab Services at ibmsls@us.ibm.com.

To learn more, see the [IBM Systems Lab Services](#) website.

IBM Consulting™

As transformation continues across every industry, businesses need a single partner to map their enterprise-wide business strategy and technology infrastructure. IBM Consulting is the business partner to help accelerate change across an organization. IBM specialists can help businesses succeed through finding collaborative ways of working that forge connections across people, technologies, and partner ecosystems. IBM Consulting brings together the business expertise and an ecosystem of technologies that help solve some of the biggest problems faced by organizations. With methods that get results faster, an integrated approach that is grounded in an open and flexible hybrid cloud architecture, and incorporating technology from IBM Research^(R) and IBM Watson^(R) AI, IBM Consulting enables businesses to lead change with confidence and deliver continuous improvement across a business and its bottom line.

For additional information, see the [IBM Consulting](#) website.

IBM Technology Support Services (TSS)

Get preventive maintenance, onsite and remote support, and gain actionable insights into critical business applications and IT systems. Speed developer innovation with support for over 240 open-source packages. Leverage powerful IBM analytics and AI-enabled tools to enable client teams to manage IT problems before they become emergencies.

TSS offers extensive IT maintenance and support services that cover more than one niche of a client's environment. TSS covers products from IBM and OEMs, including servers, storage, network, appliances, and software, to help clients ensure high availability across their data center and hybrid cloud environment.

For details on available services, see the [Technology support for hybrid cloud environments](#) website.

IBM Expert Labs

Expert Labs can help clients accelerate their projects and optimize value by leveraging their deep technical skills and knowledge. With more than 20 years of industry experience, these specialists know how to overcome the biggest challenges to deliver business results that can have an immediate impact.

Expert Labs' deep alignment with IBM product development allows for a strategic advantage as they are often the first in line to get access to new products, features, and early visibility into roadmaps. This connection with the development enables them to deliver First of a Kind implementations to address unique needs or expand a client's business with a flexible approach that works best for their organization.

For additional information, see the [IBM Expert Labs](#) website.

IBM Security^(R) Expert Labs

With extensive consultative expertise on IBM Security software solutions, Security Expert Labs helps clients and partners modernize the security of their applications, data, and workforce. With an extensive portfolio of consulting and learning services, Expert Labs provides project-based and premier support service subscriptions.

These services can help clients deploy and integrate IBM Security software, extend their team resources, and help guide and accelerate successful hybrid cloud solutions, including critical strategies such as zero trust. Remote and on-premises software deployment assistance is available for IBM Cloud Pak^(R) for Security, IBM Security QRadar^(R)/QRoC, IBM Security SOAR/Resilient^(R), IBM i2^(R), IBM Security Verify, IBM Security Guardium^(R), and IBM Security MaaS360^(R).

For more information, contact Security Expert Labs at sel@us.ibm.com.

For additional information, see the [IBM Security Expert Labs](#) website.

Technical information

Specified operating environment

Hardware requirements

- Power servers that support the following Linux Distros:
 - RHEL 8.4, 8.6, or 9.0
 - Ubuntu 20.04 or 22.04
 - SLES 15 SP3
- Disk space of at least 720 MB

Software requirements

For Open XL C/C++ for Linux on Power 17.1.1

- Supported operating systems:
 - RHEL 8.4, 8.6, or 9.0
 - Ubuntu 20.04 or 22.04
 - SLES 15 SP3
- Instance of GNU Compiler Collection (GCC) and Perl
 - See the *XL C/C++ for Linux Installation Guide* for required packages.
- 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

IBM Support

[IBM Support](#) is your gateway to technical support tools and resources that are designed to help you save time and simplify support. IBM Support can help you find answers to questions, download fixes, troubleshoot, submit and track problem cases, and build skills. Learn and stay informed about the transformation of IBM Support, including new tools, new processes, and new capabilities, by going to the [IBM Support Insider](#).

Additional IBM support

IBM Client Engineering for Systems

Client Engineering for Systems is a framework for accelerating digital transformation. It helps you generate innovative ideas and equips you with the practices, technologies, and expertise to turn those ideas into business value in weeks. When you work with Client Engineering for Systems, you bring pain points into focus. You empower your team to take manageable risks, adopt leading technologies, speed up solution development, and measure the value of everything you do. Client Engineering for Systems has experts and services to address a broad array of use cases, including capabilities for business transformation, hybrid cloud, analytics and AI, infrastructure systems, security, and more. Contact Client Engineering for Systems at sysgarage@ibm.com.

Planning information

Planning Information

For more information, see the [XL C/C++ Compiler Family](#) website.

Packaging

This offering is delivered through the internet as an electronic download.

This offering is available from [IBM Products](#). On IBM Products, you can discover, try, and buy software, hardware, and services from IBM and third-party providers.

Security, auditability, and control

Open XL C/C++ for Linux on Power 17.1.1 uses the security and auditability features of the host hardware or software.

The client is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

Products announced as dual-pipe are available for ordering by program number and feature number or by part number. Products can be obtained by part number through [Passport Advantage](#) .

For more information, contact your IBM representative or IBM Business Partner.

These programs are available only through Passport Advantage.

Passport Advantage

Program name/Description	Part number
Open XL C/C++ for Linux on Power, Authorized User License + SW S&S 12 Months	D54KXLL
Open XL C/C++ for Linux on Power, Authorized User Annual SW S&S Renewal	E01M2LL
Open XL C/C++ for Linux on Power, Authorized User SW S&S Reinstatement 12 Months	D54KYLL
Open XL C/C++ for Linux on Power, Concurrent User License + SW S&S 12 Months	D043RLL
Open XL C/C++ for Linux on Power, Concurrent User Annual SW S&S Renewal	E04U8LL
Open XL C/C++ for Linux on Power, Concurrent User SW S&S Reinstatement 12 Months	D043SLL
Open XL C/C++ for Linux on Power Virtual Processor Core Monthly License	D0BEKZX

Passport Advantage trade up

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 number of Concurrent User licenses.

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 feature number.

Precursor product	Trade-up product	Trade-up part number
Open XL C/C++ for Linux on Power Authorized User single entitlement	Open XL C/C++ for Linux on Power Concurrent User single entitlement	D0DEXLL is used to trade up from single Authorized User to single Concurrent User

Consult your IBM representative if you have any questions.

ESW trade up

Trade up from Authorized User to Concurrent User

Current licensees of the IPLA replaced programs with active Subscription and Support (S&S) are eligible to trade up to Open XL C/C++ for Linux on Power 17.1.1. All IPLA replaced program entitlements to be traded in must be terminated. In some cases the IPLA replaced program entitlements may not be the same as the IPLA replacement program entitlement. Current licensees of the IPLA replaced programs interested in trading up to IPLA replacement programs should contact their IBM representative.

Program name: Open XL C/C++ for Linux on Power 17.1.1

Program PID: 5765-J20

Entitlement identifier	Description	License option/Pricing metric
0003	Open XL C/C++ for Linux on Power 17.1.1	Authorized User
0001	Open XL C/C++ for Linux on Power 17.1.1	Concurrent User

There is no physical media pack for IBM Open XL C/C++ for Linux on Power 17.1.1.

Basic license: To order the programs described in this announcement for Open XL C/C++ for Linux on Power 17.1.1 (5765-J20), specify the type-model number and the applicable features from the tables below.

For ordering of perpetual license on a per Authorized and per Concurrent User basis, see below.

For ordering a trade up from Authorized User to Concurrent User, see below.

Clients 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.

Below is a list of precursor products and their associated Authorized User feature 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 feature number.

Precursor product	Trade-up product	Trade-up feature number
XL C/C++ for Linux on Power Authorized User single entitlement	Open XL C/C++ for Linux on Power 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.

Program number	Feature description	OTC feature number
5765-J20	Open XL C/C++ for Linux on Power 17.1.1 OTC with 1-year SW S&S per Authorized User	M8RUQE
5765-J20	Open XL C/C++ for Linux on Power 17.1.1 OTC with 1-year SW S&S per Concurrent User	M8RVQE
5765-J20	Open XL C/C++ for Linux on Power 17.1.1 trade up from single Authorized User entitlement to single Concurrent User entitlement	ZIUJB2

Program Number	Description	Medium	Medium feature number
5765-J20	Function feature code		5809
5765-J20	Customization feature: Electronic delivery		3450
5765-J20	Med. feature code		3435

Maintenance offering client: Media supply entitlement details

Clients with active Software Maintenance for XL C/C++ for Linux are entitled to receive the media supply, if available, corresponding to the Open XL C/C++ for Linux on Power level of the program as long as the level of the program continues to be active. Eligible clients should add the applicable DVD-ROM media supply feature number from the following table to their existing maintenance record.

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

- Open XL C/C++ for Linux on Power 17.1.1 (5765-J20)
- XL C/C++ for Linux, V16.1 (5765-J13)

- XL C/C++ for Linux, V13.1 (5765-J08)

XL C/C++ for Linux on Power entitled maintenance offering description

Feature description	Medium	Feature number
Open XL C/C++ for Linux on Power 17.1.1 (5765-J20) functional feature code		5809
Customization feature: Electronic delivery		3450
Electronic delivery only (to obtain electronic delivery order both electronic feature codes 3450 and 3453)		3453
Med. feature code		3435

Feature description	Medium	Feature number
XL C/C++ for Linux, 16.1 (5765-J13)	DVD-ROM Media Supply	5809
Customization feature: Electronic delivery		3450
Customization feature: Do not ship publications		3470

Feature description	Medium	Feature number
XL C/C++ for Linux, V13.1 (5765-J08)	DVD-ROM Media Supply	5809
Customization feature: Electronic delivery		3450
Customization feature: Do not ship publications		3470

For ordering of Monthly Term License on a Per Virtual Processor Core basis

Program number	Feature description	OTC feature number
5765-J22	Open XL C/C++ for Linux on Power 17.1.1 per Virtual Processor Core - 3 Month Term	V8RWBG
5765-J22	Open XL C/C++ for Linux on Power 17.1.1 per Virtual Processor Core - 6 Month Term	V8RXBG
5765-J22	Open XL C/C++ for Linux on Power 17.1.1 per Virtual Processor Core - 12 Month Term	V8RYBG
5765-J22	Open XL C/C++ for Linux on Power 17.1.11 per Virtual Processor Core - 36 Month Term	V8RZBG
5765-J22	Open XL C/C++ for Linux on Power 17.1.1 per Virtual Processor Core - 48 Month Term	V8R0BG
5765-J22	Open XL C/C++ for Linux on Power 17.1.1 per Virtual Processor Core - 60 Month Term	V8R1BG

Program Number	Feature description	Supply feature number
5765-J22	Functional feature code	5809
5765-J22	Customization feature: Electronic delivery	3450

5765-J22	Med. feature code	3435
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The monthly term license is offered with Software Maintenance (SWMA). You must register your SWMA to receive service and support by placing an order for the appropriate no-charge registration product ID and feature code.

Maintenance program number description

Maintenance program number	Description
5771-J22	Open XL C/C++ for Linux on Power 17.1.1 for 3-month term
5772-J22	Open XL C/C++ for Linux on Power 17.1.1 for 6-month term
5773-J22	Open XL C/C++ for Linux on Power 17.1.1 for 12-month term
5774-J22	Open XL C/C++ for Linux on Power 17.1.1 for 36-month term
5775-J22	Open XL C/C++ for Linux on Power 17.1.1 for 48-month term
5776-J22	Open XL C/C++ for Linux on Power 17.1.1 for 60-month term

Maintenance program number	Feature description	OTC feature number
5771-J22	3-month term registration, per virtual processor core	H2A3BA
5772-J22	6-month term registration, per virtual processor core	H0DLBC
5773-J22	12-month term registration, per virtual processor core	Z1UKJA
5774-J22	36-month term registration, per virtual processor core	U3X9C5
5775-J22	48-month term registration, per virtual processor core	MAEKTB
5776-J22	60-month term registration, per virtual processor core	M1ZZTC

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

For a perpetual license based on a per-user basis, 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.

The perpetual software license includes one-year Software Maintenance

For IBM Open XL C/C++ for Linux on Power 17.1.1 (5765-J20)

Maintenance PID Description

Software Maintenance no-charge one-year registration plus one-year renewal (5648-F60)

Feature description	OTC feature number
Per Authorized User SW S&S 1-year registration	M4YKQF
Per Authorized User 1-year renewal	M4YKQG
Per Concurrent User SW S&S 1-year registration	M4YLQF
Per Concurrent User 1-year renewal	M4YLQG

Software Maintenance three-year registration (two-year uplift) (5648-F64)

Feature description	OTC feature number
Per Authorized User SW S&S 3-year registration	M4YUQH
Per Concurrent User SW S&S 3-year registration	M4YVQH

Software Maintenance three-year renewal (5648-F61)

Feature description	OTC feature number
Per Authorized User SW S&S 3-year renewal	M4YMRA
Per Concurrent User SW S&S 3-year renewal	M4YNRA

Software Maintenance one year after license (5648-F62)

Feature description	OTC feature number
Per Authorized User SW S&S 1-year after license	M4YPRB
Per Concurrent User SW S&S 1-year after license	M4YRRB

Software Maintenance three years after license (5648-F63)

Feature description	OTC feature number
Per Authorized User SW S&S 3-year after license	M4YSRC
Per Concurrent User SW S&S 3-year after license	M4YTRC

Software Maintenance two-year registration (5648-F95)

Feature description	OTC feature number
Per Authorized User SW S&S 2-year registration	M5HNX5
Per Concurrent User SW S&S 2-year registration	M5HPX5

Software Maintenance four-year registration (5648-12F)

Feature description	OTC feature number
Per Authorized User SW S&S 3-year after license	M5HXX7
Per Concurrent User SW S&S 3-year after license	M5HYX7

Software Maintenance five-year registration (5648-F90)

Feature description	OTC feature number
Per Authorized User SW S&S 3-year after license	M5HDX6
Per Concurrent User SW S&S 3-year after license	M5HEX6

Charge metric

The charge metrics for this licensed product can be found in the following License Information document:

Program identifier	License Information document title	License Information document number
5765-J20/5765-J22/5725-C73	Open XL C/C++ for Linux on Power 17.1.1 License	L-JYIP-CCSNNZ

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License Information number

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Program identifier	License Information document title	License Information document number
5765-J20/5765-J22/5725-C73	Open XL C/C++ Linux on Power 17.1.1 License Information	L-JYIP-CCSNNZ

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