



IBM MQ V9.0 delivers new, more flexible delivery and support options, enhanced encryption configurations, self-service enhancements, and updates to managed file transfer capabilities

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At a glance

IBM[®] MQ V9.0 for multiplatforms offers a reliable, secure, and robust messaging solution for deployments on-premise, in the cloud, or in hybrid environments.

IBM MQ V9.0 delivers new and enhanced capabilities and also a new continuous delivery and support model. The long-term support release offers only a set of fixpacks to be applied to the delivered MQ V9.0 function. The continuous delivery release delivers both fixes and new functional enhancements as a set of modification-level updates. This enables you to obtain more rapid access to functional enhancements.

In addition to enhancements to IBM MQ core Queue Manager capabilities, there are enhancements to IBM MQ Advanced Message Security and IBM MQ Managed File Transfer. These, along with IBM MQ Telemetry, remain separately licensed extensions to IBM MQ. They are also available under the IBM MQ Advanced entitlement.

Updates include:

- Web addressable access to the Client Channel Definition Table (CCDT)
- IBM MQ Managed File Transfer Protocol Bridge Enhancements
- New mode of operation for IBM MQ Advanced Message Security
- IBM MQ Advanced Message Security support for non-IBM Java[™] Runtime Environments (JREs)
- LDAP authorizations on Microsoft[™] Windows[™] operating system
- Updated Resource Adapter for traditional WebSphere[®] Application Server
- UTF-16 code page support
- Enhanced application activity trace
- Performance monitoring API

For ordering, contact your IBM representative or an IBM Business Partner. For more information, contact the Americas Call Centers at: 800-IBM-CALL (426-2255).
Reference: YE001

Overview

IBM MQ V9.0 for multiplatforms is a robust and secure messaging middleware offering that allows applications, systems, services, and files to exchange data rapidly and reliably. For more than 20 years, IBM has led the market in messaging middleware, with more than 10,000 businesses across all geographies and industries that rely on IBM MQ.

IBM MQ V9.0 builds on the functions and capabilities that were added in previous releases of:

- IBM MQ
- IBM WebSphere MQ
- IBM WebSphere MQ Advanced
- IBM WebSphere MQ Advanced Message Security
- IBM WebSphere MQ Managed File Transfer
- IBM WebSphere MQ Telemetry

Clients with an active license can obtain the new and enhanced functions that are offered in IBM MQ V8 by migrating directly to Version 9.0 from WebSphere IBM MQ V7.1, V7.5, or V8.0, without migrating to an interim version or release.

IBM MQ V9.0 represents the first release of a new way that IBM MQ is brought to market and supported. From this version of IBM MQ onwards, IBM offers a new delivery and support model that separates out the delivery of defect fixes from any new function. Licensed clients of IBM MQ offerings can choose to consume IBM MQ through a long term support model that contains the latest features at the time of general availability, with only defect fixes provided during the support cycle. An additional choice of a continuous delivery model is offered, where new function is delivered incrementally alongside defect fixes in much more frequent modification-level updates. To maintain support, clients on this continuous delivery model will need to keep their IBM MQ environment up-to-date with the continuous delivery of modification levels rather than the long term support fixpacks.

Key prerequisites

For details of hardware and software requirements, refer to the [Technical information](#) section.

Planned availability date

- June 2, 2016 (Electronic software delivery)
- June 17, 2016 (Physical media)

Description

The initial delivery of IBM MQ V9 provides the basis for both the ongoing, long-term support stream, and also the base for additional function that will be added in future modification-level updates. The key features of IBM MQ V9 provide additional valuable enhancements, but also provide the basis for future enhancements as part of the continuous delivery stream of updates.

Updates in the initial Version 9.0 offering enhance the core IBM MQ functions with a number of common enhancements. These apply across all platforms and provide the foundation for ongoing work to enhance self-service operation for IBM MQ deployments, as well as a number of key customer-driven request for enhancements (RFEs).

In addition to enhancing IBM MQ core Queue Manager capabilities, there are enhancements to the IBM MQ Advanced Message Security capability and the IBM MQ Managed File Transfer capability. These, along with IBM MQ Telemetry, remain separately licensed extensions to IBM MQ, or available as the bundled IBM MQ Advanced entitlement.

These updates support many of the key deliverables that comprise the IBM MQ V9.0 offering. Central in this offering is IBM MQ Advanced V9.0, which provides combined entitlement to all the core functions and capabilities that are delivered by the offering, without requiring additional separate entitlements for each chargeable component. The separately chargeable components available in IBM MQ Advanced include:

- IBM MQ, which provides the enterprise messaging infrastructure.
- IBM MQ Advanced Message Security, which provides policy-based, end-to-end encryption of the message contents.
- IBM MQ Telemetry, which provides lightweight, scalable connectivity to IBM MQ Telemetry Transport (IBM MQTT)-connected clients and devices.
- IBM MQ Managed File Transfer, which allows data held in the file system to be moved over the IBM MQ network for enhanced reliability and security. It offers both a file-to-file transfer mode and also file-to-message and message-to-file transfer modes.

An additional option is to deploy IBM MQ on the IBM MQ Appliance. See the [Statement of general direction](#) section for details on the availability of IBM MQ V9 on the IBM MQ Appliance.

Enhancements to IBM MQ V9.0

Operational practices for deployment, configuration, and use of IBM MQ reflect the different approaches seen in varying cloud environments. They are also in demand for use in non-cloud environments. An IBM Redpaper™ publication, entitled [IBM MQ as a Service: A Practical Approach](#), addresses some of the ways in which this can be accomplished with the product today.

IBM MQ V9.0 approaches this movement towards cloud-style manageability by enhancing the product to offer the initial delivery of more self-service functions. The initial step in this process is an update to the Client Connectivity Definition Table (CCDT). These have previously only been accessible through IBM MQ tooling and with specific knowledge. IBM MQ V9 improves the ability for clients to remain connected to MQ Queue Managers by hosting the CCDT in a central location accessible through a URI by removing the need to individually update the CCDT for each deployed client.

In IBM MQ V8.0, support was added for JMS 2.0. At that time, WebSphere Application Server did not support JMS 2.0 and therefore, the Resource Adapter, which supported JMS 2.0 in IBM MQ V8.0, was not at the correct level for WebSphere Application Server. IBM MQ V9.0 delivers an updated version of the Resource Adapter to work with traditional WebSphere Application Server.

IBM MQ V8.0 added support for the LDAP authentication and also LDAP authorization on Unix platforms. IBM MQ V9.0 adds support for LDAP authorization on Microsoft Windows.

IBM MQ V9.0 also adds support for UTF-16 code page conversions.

An enhanced application activity trace provides an improved mechanism for deep monitoring and inspection of message traffic. The process is simplified with a new publish-subscribe API.

Performance monitoring using the publish-subscribe API for queue manager statistics collection gives access for the first time to detailed information such as API, IO, and hardware resource usage at a per-object or per-queue manager level.

Enhancements to IBM MQ Advanced Message Security

Previous versions of IBM MQ Advanced Message Security (working with IBM MQ V7.0.1, IBM MQ V7.5, and IBM MQ V8.0) had restrictions on what Java Runtime Environments (JRE) could be used. In these environments, Java and JMS bindings applications were not affected because they used native cryptographic libraries, such as GSKit or z/OS[®] System SSL. However, the cryptographic libraries that provided digital signing and encryption were only provided in IBM JRE. This was problematic for environments where IBM JRE could not be used, such as with applications that were only certified for an Oracle JRE. Mitigation was the MCA intercept feature, which was added in the IBM MQ Advanced Message Security in IBM MQ V7.5 that moved encryption from the IBM MQ client to the IBM MQ server. This was not ideal in terms of performance and weakened the end-to-end benefits of IBM MQ Advanced Message Security.

In IBM MQ V9.0, JMS clients provide their own cryptographic libraries, which work under any JRE supported by IBM MQ. For example, by using Open Source BouncyCastle crypto API in IBM MQ V9.0, JMS client applications no longer need to be run under an IBM JRE to take advantage of IBM MQ Advanced Message Security.

IBM MQ Advanced Message Security and its predecessor IBM MQ Extended Security Edition have always provided two levels of protection

- Integrity (digital signing only)
- Privacy (digital signing and encryption)

IBM MQ Advanced Message Security uses PKCS#7 format to protect data. A digital signature requires an asymmetric key operation to sign the hash. This proves the message origin and ensures that nobody has tampered with the content. A further asymmetric key operation is required to validate the signed hash when getting the message with the encrypted contents. For encryption, each and every message gets a new symmetric key. That symmetric key is encrypted for each recipient with an asymmetric key operation. A recipient requires an asymmetric key operation to discover the symmetric key that was used.

This requires a lot of asymmetric key operations, which are expensive in terms of CPU cycles. This impacts message throughput and workload. Integrity and privacy policies incur multiple, asymmetric key operations per message. These operations can therefore quickly become a bottleneck for applications that need to put and get more than a few hundred messages per second. To complement integrity and privacy policies, a new, third alternative, Confidentiality (Encryption only with optional key reuse), is provided by IBM MQ Advanced Message Security in IBM MQ V9.0.

This new mode of operation continues to use PKCS#7 to share a symmetric encryption key. However, there is no digital signature, which eliminates some of the per message asymmetric key operations. The symmetric key still needs to be encrypted with asymmetric key operations for each recipient, but the symmetric key can be optionally reused over multiple messages that are destined for the same recipients. If key reuse is permitted by policy, then only the first message requires asymmetric key operations. Subsequent messages only need to use symmetric key operations.

Symmetric key reuse is conceptually similar to the way in which SSL-TLS sessions work. In these sessions, the initial labor intensive asymmetric key operations are used in the handshake. And then after the handshake is complete, the session key is used to securely exchange data using symmetric key. Significant CPU cost savings can be made with confidentiality policies through symmetric key reuse, which is configured using the new `-k` parameter on `setmqspl`.

Enhancements in IBM MQ Managed File Transfer

IBM MQ is frequently used in conjunction with its Managed File Transfer extension and is available either as a separate license or as part of the IBM MQ Advanced offering. One of the key features of IBM MQ Managed File Transfer is the ability

to intercept existing FTP flows with the included FTP protocol bridge function. The IBM MQ Managed File Transfer function in IBM MQ V9 enhances this protocol bridge capability in a number of ways:

- A comprehensive coverage of FTP errors aids problem diagnosis when errors occur in this area.
- A more extensive logging of FTP communications provides additional insight and aid operations.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be found on the [IBM Accessibility](#) website.

Section 508 of the US Rehabilitation Act

IBM MQ V9.0 is capable as of June 2, 2016, 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.

[U.S. Section 508 Voluntary Product Accessibility Template \(VPAT\)](#) contains details on accessibility compliance.

Product positioning

While there are many products or components in the market that claim to provide messaging, only IBM MQ has more than 20 years of experience of providing a comprehensive, robust, and secure enterprise messaging solution, that is suitable for all types of business-critical transactional and non-transactional messaging. Most other messaging solutions are either not scalable, not as secure, or are very simplified and cannot be used to the same extent as IBM MQ.

IBM MQ can help organizations get more from their IT investments by offering a reliable and flexible integration backbone for exchanging messages between applications and web services.

- The core of application integration, delivers the reliable and proven messaging backbone for service-oriented architecture (SOA) connectivity, as the universal, multipurpose data transport. It connects many commercial IT systems, with support for more than 80 platform configurations.
 - Supports industry-standard JMS 2.0 messaging and offers a choice of APIs.
 - Interoperates with the JMS messaging services which enables Java EE environments to bridge to other environments.
 - Delivers a flexible connectivity solution that can grow incrementally with changing business needs.
- IBM MQ for z/OS^(R) exploits the capabilities of the IBM z SystemsTM platform to deliver a messaging powerhouse.
- IBM WebSphere MQ for HP OpenVMS, WebSphere MQ for HP NonStop Server, and WebSphere MQ for z/VSE^(R) all extend the reach of IBM MQ to these specific computing platforms.
- IBM MQ Advanced Message Security expands the industry-standard security that is supplied by IBM MQ with end-to-end data protection for applications. It enables enterprise-wide, remote management of security policies on an MQ network and can be deployed to existing production environments without changes to existing IBM MQ applications. This capability is integrated into IBM MQ V8 on all supported platforms but is separately licensed for definition and use of policies. Licensing is included in IBM MQ Advanced.
- IBM MQ Managed File Transfer Service and IBM MQ Managed File Transfer Agents leverage both existing messaging infrastructures to provide reliable, secure managed file transfer between systems without major recoding of

applications that produce and consume files instead of messages. Licensing for IBM MQ Managed File Transfer is subject to entitlement in addition to IBM MQ entitlement, but licensing for IBM MQ Managed File Transfer Service is included in IBM MQ Advanced entitlement.

- IBM MQ Telemetry provides a lightweight client to run on physical devices, such as sensors, or mobile devices (mobile phones), which extends the reach of the IBM MQ infrastructure. Connectivity to MQTT clients or the IBM MQ Telemetry Daemon for Devices is available subject to separate entitlement. Included with entitlement to IBM MQ Advanced is entitlement to deploy IBM MQ Telemetry on all supported MQ servers in the enterprise.
- WebSphere MQ Low Latency Messaging (on Linux™, Microsoft Windows, and Oracle Solaris platforms) extends the IBM MQ product family with low-latency, high-throughput delivery. It is optimized for the high-volume, low-latency requirements typical of financial market firms and other industries where speed of data delivery is paramount. This is not provided with IBM MQ, but is available separately with separate entitlement. Messages can be exchanged both ways between IBM MQ and WebSphere MQ Low Latency Messaging.

IBM MQ delivers the messaging backbone that underpins and extends the IBM ESB portfolio. It supplies the transport layer that ESBs can build upon, to augment the backbone with mediation, transformation, and routing services. IBM Integration Bus adds transformation, intelligent routing, and information flow modeling to the IBM MQ messaging backbone. This ESB distributes information and data generated by business events in real time to people, applications, and devices throughout the extended enterprise and beyond.

The IBM MQ family is complemented by skills, services, and offerings from more than 800 IBM Business Partners worldwide.

In addition, [SupportPac product extensions](#) and [GitHub](#) offer additional function available as a download from the Internet.

Statement of general direction

IBM intends to add support for IBM MQ V9.0 in a future update to the IBM MQ Appliance. This will enable clients, who deploy IBM MQ on IBM MQ Appliance, to take advantage of the added benefits and features that are delivered in IBM MQ V9.0.

IBM MQ V9.0 intends to add support for IBM PureApplication^(R) in a future update. This will enable clients who deploy MQ in IBM PureApplication to take advantage of the added benefits and features that are delivered in IBM MQ V9.0.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remain at our sole discretion.

Reference information

For information about IBM MQ Appliance M2001, refer to Software Announcement [216-156](#), dated April 19, 2016.

For information about IBM MQ for z/OS, V9.0, refer to Software Announcement [216-161](#), dated April 19, 2016.

Program number

| Program number | VRM | Program name |
|----------------|-------|--------------|
| 5724-H72 | 9.0.0 | IBM MQ |

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^{\(R\)}](#) website.

Publications

A printed *Quick Start Guide* is shipped with the product.

IBM MQ V9.0 documentation is published in IBM Knowledge Center, which can be viewed from a web browser with Internet access.

On June 2, 2016, the online version of the IBM MQ V9.0 product documentation will be available in [IBM Knowledge Center](#).

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, go to the [IBM Software Services](#) website.

Technical information

Specified operating environment

Hardware requirements

Details of the hardware requirements are included in the [IBM MQ System Requirements](#).

Software requirements

Details of the software requirements are included in the [IBM MQ System Requirements](#).

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.

Compatibility

IBM MQ V9.0 queue managers and clients interoperate with queue managers and clients from current and previous levels of WebSphere MQ or MQSeries^(R) products. The IBM MQ Explorer runs on the Linux on x86-64 and Windows platforms. The MQ Explorer supplied with IBM MQ V9.0 can be used on a client connection to connect to any supported level of IBM MQ or WebSphere MQ on any platform. IBM MQ Managed File Transfer supports file transfer to and from server and client installations at any level of WebSphere MQ File Transfer Edition.

Limitations

For additional information, refer to [Usage restriction](#) topic in the [Terms and conditions](#) section of this announcement, or to the license information document that is available on the [IBM Software License Agreement website](#).

IBM Electronic Support

The IBM Support Portal is your gateway to technical support. This includes IBM Electronic Support tools and resources, for software and hardware, to help save time and simplify support. The Electronic Support tools can help you find answers to questions, download fixes, troubleshoot, automate data collection, submit and track problems through the Service Request online tool, and build skills. All these tools are made available through your IBM support agreement. Read about the Electronic Support portfolio of tools on the [IBM Electronic Support](#) website.

You can also access the [IBM Support Portal](#) page and the online [Service requests and PMRs](#) tool for more support.

Planning information

Function that is removed in IBM MQ V9.0

Compatibility mode for RPG applications on IBM i

IBM MQ no longer provides support for RPG applications which utilize dynamic linkage known as compatibility mode. This mode of operation was needed for applications written before WebSphere MQ V5.1, and subsequent versions of the product that were provided a compatible, runtime environment for these applications, even though the copybooks that were needed for compiling them was removed in Version 6.0. Dynamic linkage (compatibility mode) was provided by the following programs in library QMQM, which is removed in IBM MQ V9.0:

- AMQVSTUB
- AMQZSTUB
- QMQM
- MQCLOSE
- MQCONN
- MQDISC
- MQGET
- MQINQ
- MQOPEN
- MQPUT
- MQPUT1
- MQSET

With IBM MQ V9.0, future applications that use this compatibility mode of operation need to be recompiled to use the static-bound MQ calls, which are provided by the LIBMQM and LIBMQM_R service programs.

Additional information regarding the use of these MQ calls is documented in the [IBM MQ Knowledge Center](#) under the topic *IBM i Application Programming Reference (ILE/RPG)*.

MD5 in IBM MQ Advanced Message Security

From IBM MQ V9.0, MD5 and SHA-1 signature algorithms and RC2 and DES encryption algorithms on IBM MQ Advanced Message Security policies are disabled in default configurations. It is not possible to define new security policies that use these algorithms.

Stabilization of IBM MQ classes for Java

IBM will make no further enhancements to the IBM MQ classes for Java. They are functionally stabilized at the level shipped in IBM MQ V8.0. Existing applications that use the IBM MQ classes for Java will continue to be fully supported. Because this API is stabilized, new features will not be added and requests for enhancements rejected. The term fully supported means that defects will be fixed together with any changes necessitated by changes to IBM MQ system requirements.

IBM MQ transport for SOAP

The IBM MQ transport for SOAP is deprecated. This includes the following product features:

- The IBM MQ transport for SOAP Java Listener
- The IBM MQ transport for SOAP .NET 1 and 2 Listener
- The IBM MQ transport for SOAP Java Axis2 Client
- The IBM MQ transport for SOAP Java client (deprecation was announced in IBM MQ V8.0)
- The IBM MQ transport for SOAP .NET 1 and 2 clients (deprecation was announced in IBM MQ V8.0)
- The IBM MQ bridge for HTTP (deprecation was announced in IBM MQ V8.0)

IBM MQ platform support

IBM MQ V9.0 removes support for Linux on POWER[®] (big endian), 32-bit client libraries on Windows and Linux x86-64, and IBM MQ Managed File Transfer Agent on 4690.

IBM MQ support for Microsoft ActiveX and VB6

IBM MQ support for Microsoft ActiveX and VB6 is deprecated. IBM MQ Classes for .NET are the recommended replacement technology.

Packaging

IBM MQ V9.0 is distributed by electronic download and a single physical media pack that consists of multiple DVDs and CD-ROMs.

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

IBM MQ uses the security and auditability features of the host 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 through Passport Advantage. It is not available as shrinkwrap.

These products may only be sold directly by IBM or by authorized IBM Business Partners for Software Value Plus.

More information can be found on the [IBM Software Value Plus](#) website.

To locate IBM Business Partners for Software Value Plus in your geography for a specific Software Value Plus portfolio, go to the [Find a Business Partner](#) page.

Product group: WebSphere

Product: IBM MQ (5724-H72)

Product category: MQ Series

Passport Advantage

IBM MQ

| Program name/Description | Part number |
|--|-------------|
| IBM MQ Per Processor Value Unit (PVU) License + SW S&S 12 Months | D55V1LL |
| IBM MQ Per Processor Value Unit (PVU) Annual SW S&S Renewal | E0256LL |
| IBM MQ Per Processor Value Unit (PVU) SW S&S Reinstatement 12 Months | D55V2LL |
| IBM MQ Idle Standby Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D0GGQLL |
| IBM MQ Idle Standby Processor Value Unit (PVU) Annual SW Subscription & Support Renewal | E0ALULL |
| IBM MQ Idle Standby Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D0GGSLL |

IBM MQ Advanced

| Program name/Description | Part number |
|--|-------------|
| IBM MQ Advanced Per Processor Value Unit (PVU) License + SW S&S 12 Months | D1GZULL |
| IBM MQ Advanced Per Processor Value Unit (PVU) Annual SW S&S Renewal | E0LNALL |
| IBM MQ Advanced Per Processor Value Unit (PVU) SW S&S Reinstatement 12 Months | D1GZVLL |
| IBM MQ Advanced Idle Standby Per Processor Value Unit (PVU) License + SW S&S 12 Months | D1H5GLL |
| IBM MQ Advanced Idle Standby Per Processor Value Unit (PVU) Annual SW S&S Renewal | E0LNDLL |
| IBM MQ Advanced Idle Standby Per Processor Value Unit (PVU) SW S&S Reinstatement 12 Months | D1H5HLL |
| IBM MQ Advanced for Developers Per Authorized User Single Install License + SW S&S 12 Months | D1H6ALL |
| IBM MQ Advanced for Developers Per Authorized User Single Install Annual SW S&S Renewal | E0LNHLL |

| Program name/Description | Part number |
|--|--------------------|
| IBM MQ Advanced for Developers Per Authorized User Single Install SW S&S Reinstatement 12 Months | D1H6DLL |

IBM MQ Telemetry

| Program name/Description | Part number |
|---|--------------------|
| IBM MQ Telemetry per Install License + SW S&S 12 Months | D0PJTL |
| IBM MQ Telemetry per Install Annual SW S&S Renewal | E0DRHLL |
| IBM MQ Telemetry per Install SW S&S Reinstatement 12 Months | D0PJULL |

IBM MQ Advanced Message Security Component

| Program name/Description | Part number |
|--|--------------------|
| IBM MQ Advanced Message Security Component Per PVU License + SW S&S 12 Months | D0PLFLL |
| IBM MQ Advanced Message Security Component Per PVU Annual SW S&S Renewal | E0DS8LL |
| IBM MQ Advanced Message Security Component Per PVU SW S&S Reinstatement 12 Months | D0PLGLL |
| IBM MQ Advanced Message Security Component Idle Standby per 10 PVUs License + SW S&S 12 Mo | D0PKZLL |
| IBM MQ Advanced Message Security Component Idle Standby per 10 PVUs Annual SW S&S Renewal | E0DS0LL |
| IBM MQ Advanced Message Security Component Idle Standby per 10 PVUs SW S&S Reinstatement 12 Mo | D0PL0LL |

IBM MQ Managed File Transfer Component

| Program name/Description | Part number |
|--|--------------------|
| IBM MQ Managed File Transfer Service Processor Value Unit (PVU) License + SW S&S 12 Months | D1H5JLL |
| IBM MQ Managed File Transfer Service Processor Value Unit (PVU) Annual SW S&S Renewal | E0LNELL |
| IBM MQ Managed File Transfer Service Processor Value Unit (PVU) SW S&S Reinstatement 12 Months | D1H5KLL |
| IBM MQ Managed File Transfer Service Idle Standby Per 10 PVUs License + SW S&S 12 Months | D1H6HLL |
| IBM MQ Managed File Transfer Service Idle Standby Per 10 PVUs Annual SW S&S Renewal | E0LNKLL |
| IBM MQ Managed File Transfer Service Idle Standby per 10 PVUs SW S&S Reinstatement 12 Months | D1H6ILL |
| IBM MQ File Transfer Agent Install License + SW S&S 12 Months | D1H6JLL |
| IBM MQ File Transfer Agent Install Annual SW S&S Renewal | E0LNLLL |
| IBM MQ File Transfer Agent Install SW S&S Reinstatement 12 Months | D1H6KLL |

Passport Advantage trade-up

You must have previously acquired licenses for the following precursor products to be eligible to acquire equivalent licenses of the trade-up products.

| Precursor product | Trade-up product | Trade-up part number |
|---|---|----------------------|
| IBM MQ Trade Up License + SW Subscription & Support 12 Months | IBM MQ Advanced Processor Value Unit (PVU) | D1GZWLL |
| IBM MQ Idle Standby Processor Value Unit Trade Up License + SW Subscription & Support 12 Months | IBM MQ Advanced Idle Standby Processor Value Unit (PVU) | D1H5ILL |
| IBM MQ for Linux on System z ^(R) Processor Value Unit (PVU) Trade Up License + SW Subscription & Support 12 Months | IBM MQ Advanced for Linux on System z Processor Value Unit (PVU) | D1H00LL |
| IBM MQ Idle Standby for Linux on System z PVU Trade Up License + SW Subscription & Support 12 Months | IBM MQ Advanced Idle Standby for Linux on System z Processor Value Unit (PVU) | D1H6ELL |

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.

| Media packs description | Part number |
|--|-------------|
| IBM MQ for Multiplatforms V9.0 Multilingual Media Pack | BA1AAML |

Cross-platform product for use on z Systems™ Integrated Facility for Linux (IFL) engines

Order the part numbers that follow when the product is intended to run on zEnterprise^(R) BladeCenter Extension or the Linux operating system on z Systems IFL engines. If the product is not intended to run in these environments, order from the other set of part numbers in this announcement. This set of part numbers provides the identical supply and authorization as the other set in this announcement.

IBM MQ

| Program name/Description | Part number |
|---|-------------|
| IBM MQ for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D55V4LL |
| IBM MQ for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal | E0257LL |
| IBM MQ for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D55V5LL |
| IBM MQ Idle Standby for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D0GGNLL |
| IBM MQ Idle Standby for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal | E0ALTLL |
| IBM MQ Idle Standby for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D0GGPLL |

IBM MQ Managed File Transfer

| Program name/Description | Part number |
|---|--------------------|
| IBM MQ File Transfer Agent for Linux on z Systems Install License + SW Subscription & Support 12 Months | D1H68LL |
| IBM MQ File Transfer Agent for Linux on z Systems Install Annual SW Subscription & Support Renewal 12 Months | E0LNGLL |
| IBM MQ File Transfer Agent for Linux on z Systems Install SW Subscription & Support Reinstatement 12 Months | D1H69LL |
| IBM MQ Managed File Transfer Service for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D1H4ZLL |
| IBM MQ Managed File Transfer Service for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal 12 Months | E0LNCLL |
| IBM MQ Managed File Transfer Service for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D1H50LL |
| IBM MQ Managed file Transfer Service Idle Standby for Linux on z Systems 10 Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D1H6FLL |
| IBM MQ Managed file Transfer Service Idle Standby for Linux on z Systems 10 Processor Value Unit (PVU) Annual SW Subscription & Support Renewal 12 Months | E0LNJLL |
| IBM MQ Managed file Transfer Service Idle Standby for Linux on z Systems 10 Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D1H6GLL |

IBM MQ Advanced

| Program name/Description | Part number |
|--|--------------------|
| IBM MQ Advanced for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D1GZYLL |
| IBM MQ Advanced for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal 12 Months | E0LNBLL |
| IBM MQ Advanced for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D1GZZLL |
| IBM MQ Advanced Idle Standby for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D1H6BLL |
| IBM MQ Advanced Idle Standby for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal 12 Months | E0LNILL |
| IBM MQ Advanced Idle Standby for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D1H6CLL |
| IBM MQ Advanced for Developers for Linux on z Systems Authorized User Single Install License + SW Subscription & Support 12 Months | D1H5MLL |

| Program name/Description | Part number |
|---|--------------------|
| IBM MQ Advanced for Developers for Linux on z Systems Authorized User Single Install Annual SW Subscription & Support Renewal 12 Months | E0LNFLL |
| IBM MQ Advanced for Developers for Linux on z Systems Authorized User Single Install SW Subscription & Support Reinstatement 12 Months | D1H66LL |

IBM MQ Advanced Message Security

| Program name/Description | Part number |
|--|--------------------|
| IBM MQ Advanced Message Security Component for Linux on z Systems Processor Value Unit (PVU) License + SW Subscription & Support 12 Months | D0PLCLL |
| IBM MQ Advanced Message Security Component for Linux on z Systems Processor Value Unit (PVU) Annual SW Subscription & Support Renewal | E0DS7LL |
| IBM MQ Advanced Message Security Component for Linux on z Systems Processor Value Unit (PVU) SW Subscription & Support Reinstatement 12 Months | D0PLDLL |
| IBM MQ Advanced Message Security Component Idle Standby for Linux on z Systems 10 Processor Value Units (PVUs) License + SW Subscription & Support 12 Months | D0PKWLL |
| IBM MQ Advanced Message Security Component Idle Standby for Linux on z Systems 10 Processor Value Units (PVUs) Annual SW Subscription & Support Renewal | E0DRZLL |
| IBM MQ Advanced Message Security Component Idle Standby for Linux on z Systems 10 Processor Value Units (PVUs) SW Subscription & Support Reinstatement 12 Months | D0PKXLL |

Charge metric

| Program name | Part number or PID number | Charge metric |
|---------------------|----------------------------------|-----------------------------|
| IBM MQ | 5724-H72 | Processor Value Unit (PVU) |
| IBM MQ | 5724-H72 | PVU for Linux on z Systems™ |
| IBM MQ | 5724-H72 | Install |
| IBM MQ | 5724-H72 | Client |

Install

Install is a unit of measure by which the program can be licensed. An install is an installed copy of the program on a physical or virtual disk made available to be executed on a computer. Licensee must obtain an entitlement for each install of the program.

Processor Value Unit (PVU)

PVU is a unit of measure by which the program can be licensed. The number of PVU entitlements required is based on the processor technology (defined within the PVU table by processor value, brand, type, and model number at the website below) and the number of processors made available to the program. IBM continues to define a processor, for the purpose of PVU-based licensing, to be each processor core on a chip (socket). A dual-core processor chip, for example, has two processor cores. The PVU table can be found on the [PVU licensing for Distributed Software](#) page. Licensee

can deploy the program using either full capacity licensing or virtualization capacity (sub-capacity) licensing according to the Passport Advantage Sub-Capacity Licensing Terms found on the [Virtualization Capacity License Counting Rules](#) page. If using full capacity licensing, licensee must obtain PVU entitlements sufficient to cover all activated processor cores* in the physical hardware environment made available to or managed by the program, except for those servers from which the program has been permanently removed. If using virtualization capacity licensing, licensee must obtain entitlements sufficient to cover all activated processor cores made available to or managed by the program, as defined according to the Virtualization Capacity License Counting Rules that can be found on the [Virtualization Capacity License Counting Rules](#) page.

* An activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.

Notes

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- Some programs may be licensed on a managed basis only. In that case, the following applies. Instead of the entitlements required for the program directly, licensee must obtain PVU entitlements for this program sufficient to cover the processor cores managed by the program.
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Customers must use the IBM License Metric Tool unless they meet the exceptions described in the Attachment.

For information regarding PVU sub-capacity licensing, including terms and IBM License Metric Tool ordering information, go to the [Passport Advantage Virtualization Capacity \(Sub-capacity\) Licensing](#) website.

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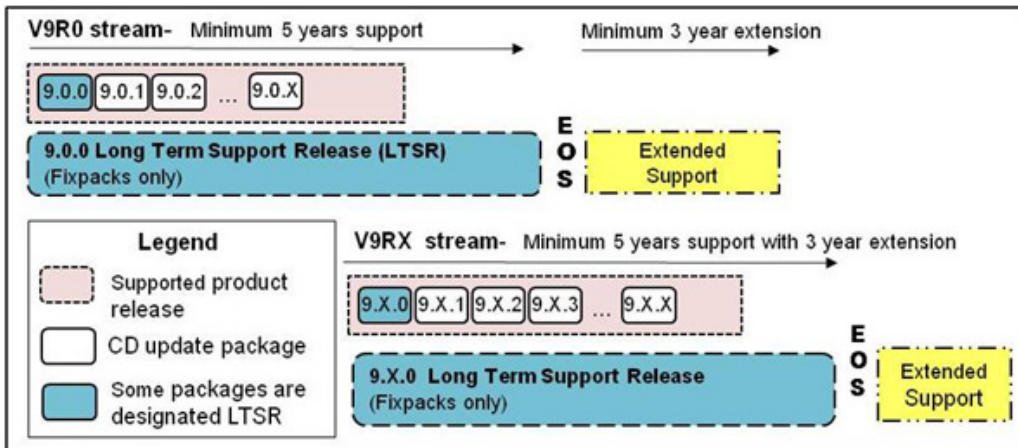
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With the IBM MQ V9.0 family of products, IBM MQ introduces a Continuous Delivery (CD) support model. Following the initial release of Version 9.0, new function and enhancements will be made available by incremental updates within the same version and release.

The new support model is implemented as follows:

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- An LTSR can be supported for a longer period time, thereby assisting clients where frequent functional updates may not be practical and a longer term deployment is desirable.
- Clients should stay up to date with the installation of updates and LTSR packages to obtain the latest maintenance and new function. Product defect fixes and security updates are only available for the two, most current CD updates and all active LTSRs. If required, individual product fixes can be made available between update packages for resolution of problems.
- Both new function and service will be made available in a single, easy-to-install package as modification level updates.
- Update packages are delivered on the latest product release stream when the new release becomes available.
- New functional updates are not available to previously released update packages and LTSRs.

- Support is available for all IBM components of a product until the product is withdrawn from support.
- Support extensions are available, for a minimum period of one year for an additional fee, following effective support discontinuance date of the product.

For support of IBM MQ V9.0

- LTSR is a recommended product level for which support, including defect and security updates, will be provided over a specified period of time. LTSR is intended for clients that may need a longer term deployment and maximum stability.
- New functionality, security updates, and defect fixes will be made available through CD releases. Additional support will be made available, as necessary, through iFixes on only the two most recent CD and LTSR. IBM expects that customers will upgrade to either the latest CDR or LTSR in order to receive on-going security updates and defect fixes.
- IBM MQ V9.0 is a LTSR and provides predictable support through iFixes and fixpacks for a minimum period of five years from the general availability date. A minimum, three-year extension of support is available for an additional fee.

License Information number

IBM MQ V9.0

License information form number: L-APIG-A3CGYB

- IBM MQ V9.0
- IBM MQ Telemetry V9.0
- IBM MQ Advanced Message Security Component V9.0
- IBM MQ Idle Standby V9.0
- IBM MQ Advanced Message Security Component Idle Standby V9.0

IBM MQ Advanced V9.0

License information form number: L-APIG-A3CGUE

IBM MQ Advanced for Developers V9.0

License information form number: L-APIG-A63G75

IBM MQ Advanced Idle Standby V9.0

License information form number: L-APIG-A63G5R

IBM MQ Managed File Transfer V9.0

License information form number: L-APIG-A3CGSS

- IBM MQ Managed File Transfer Service V9.0
- IBM MQ Managed File Transfer Service Idle Standby V9.0
- IBM MQ Managed File Transfer Agent V9.0

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Volume orders (IVO)

No

Passport Advantage applies

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Yes

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IBM Operational Support Services - SoftwareXcel

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No

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No

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- AIX 5L™ V5.1, or later, on an IBM System p 690 or equivalent partition-capable operating system and machine.
- OS/400^(R) V5R1, or later, running on an IBM System i^(R).
- Linux running in an LPAR under AIX 5L V5.1, OS/400 V5R1, or in a partition on an equivalent partition-capable operating system and server.

Sub-capacity pricing for eligible products is based on the current program pricing methodology, but the number of processors will be determined based on the sum of processors for all partitions where the program is defined (used). To obtain pricing at less than full machine capacity for eligible products, you are required to:

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- Install available updates to the operating system and eligible products such that license use can be accurately managed.
- Determine if the use of sub-capacity pricing terms results in a reduced requirement for entitlements; you can reallocate the entitlement difference by distributing entitlements across a larger or different set of systems, or reserve them for future growth. There will be no refunds for these freed up entitlements. Subscription, Software Maintenance and support volumes, and entitlements for existing contracts will continue at the same levels as the acquired licenses.

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Prices

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