

9.2

IBM MQ Overview



Note

Before using this information and the product it supports, read the information in [“Notices” on page 249](#).

This edition applies to version 9 release 2 of IBM® MQ and to all subsequent releases and modifications until otherwise indicated in new editions.

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About IBM MQ

Introductory information to help you get started with IBM MQ 9.2, including an introduction to the product and an overview of what is new and what is changed for this release.

You can use IBM MQ to enable applications to communicate at different times and in many diverse computing environments.

What is IBM MQ?

IBM MQ supports the exchange of information between applications, systems, services and files by sending and receiving message data via messaging queues. This simplifies the creation and maintenance of business applications. IBM MQ works with a broad range of computing platforms, and can be deployed across a range of different environments including on-premises, in cloud, and hybrid cloud deployments. IBM MQ supports a number of different APIs including Message Queue Interface (MQI), Java Message Service (JMS), REST, .NET, IBM MQ Light and MQTT.

IBM MQ provides:

- Versatile messaging integration from mainframe to mobile that provides a single, robust messaging backbone for dynamic heterogeneous environments.
- Message delivery with security-rich features that produce auditable results.
- Qualities of service that provide once and once only delivery of messages to ensure messages will withstand application and system outages.
- High-performance message transport to deliver data with improved speed and reliability.
- Highly available and scalable architectures to support an application's needs.
- Administrative features that simplify messaging management and reduce time spent using complex tools.
- Open standards development tools that support extensibility and business growth.

An application has a choice of programming interfaces, and programming languages to connect to IBM MQ.

IBM MQ provides these *messaging* and *queuing* capabilities across multiple modes of operation: *point-to-point* ; *publish/subscribe*.

Messaging

Programs communicate by sending each other data in messages rather than by calling each other directly.

Queuing

Messages are placed on queues, so that programs can run independently of each other, at different speeds and times, in different locations, and without having a direct connection between them.

Point-to-point

Applications send messages to a queue and receive messages from a queue. Each message is consumed by a single instance of an application. The sender must know the name of the destination, but not where it is.

Publish/subscribe

Applications subscribe to topics. When an application publishes a message on a topic, IBM MQ sends copies of the message to those subscribing applications. The publisher does not know the names of subscribers, or where they are.

Related information

[System Requirements for IBM MQ](#)

IBM MQ

IBM MQ is robust, secure and reliable messaging middleware. It uses messages and queues to support exchange of information between applications, systems, services and files. It simplifies and accelerates the integration of different applications and business data across multiple platforms. It supports a wide range of APIs and languages, and can be deployed on-premises, in cloud, and in hybrid cloud.



Documentation sets are available for each of the following IBM MQ products:

- [“IBM MQ for Multiplatforms and IBM MQ for z/OS” on page 6](#)
- [“IBM MQ Explorer” on page 6](#)
- [“IBM MQ in containers and IBM Cloud Pak for Integration” on page 7](#)
- [“IBM MQ on Cloud” on page 7](#)
- [“IBM MQ Appliance” on page 7](#)

IBM MQ for Multiplatforms and IBM MQ for z/OS

The documentation for both these products is presented in a single documentation set, subdivided into the following categories. Each category contains topics that apply to the IBM MQ for Multiplatforms product, or to the IBM MQ for z/OS® product, or to both products. This documentation is for the IBM MQ 9.2 Long Term Support release and its maintenance, as well as for the IBM MQ 9.2 Continuous Delivery releases.

- [About IBM MQ](#)
- [Technical overview](#)
- [Scenarios](#)
- [Planning](#)
- [Maintaining and migrating](#)
- [Installing and uninstalling](#)
- [Securing](#)
- [Configuring](#)
- [Administering](#)
- [Developing applications](#)
- [Monitoring and performance](#)
- [Troubleshooting and support](#)
- [Reference](#)

IBM MQ Explorer

IBM MQ Explorer is an optional graphical user interface that runs on Windows and Linux® x86-64. It can remotely connect to queue managers that are running on any supported platform including z/OS, enabling your entire messaging backbone to be viewed, explored, and altered from the console.

See [Introduction to IBM MQ Explorer](#).

IBM MQ in containers and IBM Cloud Pak for Integration

You can run IBM MQ in the pre-packaged container provided in IBM Cloud Pak® for Integration, IBM MQ Advanced and IBM MQ Advanced for Developers. This IBM MQ Advanced container offers a supported image and Operator, and can be used to deploy a production-ready IBM MQ image into Red Hat® OpenShift®.

You can also run IBM MQ in a container you build yourself.

See [IBM MQ in containers and IBM Cloud Pak for Integration](#).

IBM MQ on Cloud

This managed service is available in both IBM Cloud® and Amazon Web Services (AWS). The IBM MQ on Cloud service lets you use IBM MQ as a managed offering, leaving IBM to handle upgrades, patches and also many of the operational management tasks, and allowing you to focus on the integration of IBM MQ with your applications.

See [IBM MQ on Cloud](#).

IBM MQ Appliance

The IBM MQ Appliance is a hardware product that provides IBM MQ ready installed and ready to use. There is no general-purpose operating system that is exposed to the administrator or messaging user, and everything that runs on the appliance is factory-installed in the appliance firmware.

See [IBM MQ Appliance](#).

Introduction to IBM MQ

An overview of what IBM MQ can do, how you use it, how it works, and what tools and resources come with it.

What can IBM MQ do for me?

IBM MQ provides a universal messaging backbone with robust connectivity for flexible and reliable messaging for applications and the integration of existing IT assets using a service-oriented architecture (SOA).

- IBM MQ sends and receives data between your applications, and over networks.
- Message delivery is *assured* and *decoupled* from the application. Assured, because IBM MQ exchanges messages transactionally, and decoupled, because applications do not have to check that messages they sent are delivered safely.
- You can secure message delivery between queue managers with TLS.
- With Advanced Message Security (AMS), you can encrypt and sign messages between being put by one application and retrieved by another.
- Application programmers do not need to have communications programming knowledge.

How do I use IBM MQ?

An IBM MQ messaging system is made up of one or more queue managers. Queue managers are where messaging resources, such as queues, are configured and what applications connect to, either running on the same system as the queue manager or over the network.


A network of connected queue managers supports asynchronous routing of messages between systems, where producing and consuming applications are connected to different queue managers.


IBM MQ can be managed using a variety of tools, from the IBM MQ Explorer GUI, through scripted or interactive command line tools or programmatically.

The applications connecting to IBM MQ can be written in any one of many different programming languages and to many different APIs. From C and Cobol, to Java and .Net to NodeJS and Ruby.

How does IBM MQ work?

Here is a brief overview of how IBM MQ works.



- First a messaging application must connect to a queue manager. This may require a channel to be created on the queue manager to accept application connections.
- When your application wants to transfer data to another application, it creates a message and puts the data into it. It puts the message onto a queue, or publishes the message to a topic to be delivered to subscribers to the topic.
- The queue or subscriptions may be on the same queue manager or on other, connected, queue managers. If the latter the connected queue managers work together to reliably transfer the message from the producer's queue manager to the target queue managers. The applications do not communicate with each other, the queue managers do.
- Messages can be handled based on a number of different qualities of service, where reliability and persistence is traded for speed. The highest quality of service given to messages are persistent messages that are sent and received under the control of transactions. This will ensure that messages are delivered once and once only even in the event of system, network or application failures.
- IBM MQ channels are used to connect one queue manager to another over a network. You can create IBM MQ channels yourself, or a queue manager can join a cluster of queue managers where IBM MQ channels are automatically created when they are needed.
-  On z/OS, you can configure multiple queue managers to share queues on the coupling facility. Applications connected to different queue managers can get and put messages to and from the same queues.
- You can have many queues and topics on one queue manager.
- You can have more than one queue manager on one computer.
- An application can run on the same computer as the queue manager, or on a different one. If it runs on the same computer, it is an IBM MQ server application. If it runs on a different computer, it is an IBM MQ client application. Whether it is IBM MQ client or server makes almost no difference to the application. You can build a client/server application with IBM MQ clients or servers.

 If you are new to using IBM MQ and want to find out more about getting started with IBM MQ, see [LearnMQ](#) on IBM Developer.

What tools and resources come with IBM MQ ?

IBM MQ provides the following tools and resources:

- Control commands, which are run from the command line. You create, start, and stop queue managers with the control commands. You also run IBM MQ administrative and problem determination programs with the control commands.
- IBM MQ script commands (MQSC), which are run by an interpreter. Create queues and topics, configure, and administer IBM MQ with the commands. Edit the commands in a file, and pass the file to the **runmqsc** program to interpret them. You can also run the interpreter on one queue manager, which sends the commands to a different computer to administer a different queue manager.
- The Programmable Command Format (PCF) commands, which you call in your own applications to administer IBM MQ. The PCF commands have the same capability as the script commands, but they are easier to program.
- The IBM MQ Console is a web-based user interface that you can use to administer IBM MQ. The IBM MQ Console runs in a browser and provides control over queue managers and IBM MQ objects.

- The REST API provides an alternative programmable interface to the existing IBM MQ Script Commands (MQSC) and Programmable Command Format (PCF) tools. This RESTful API can help you to embed IBM MQ administration into popular DevOps and automation tooling.
- Sample programs.
-   On Windows and Linux x86 and x86-64 platforms, you can use the IBM MQ Explorer to administer and configure the entire network of queue managers, irrespective of the platform that they are running on. IBM MQ Explorer does the same administrative tasks as the script commands, but is much easier to use interactively.

Related concepts

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[Technical overview](#)

IBM MQ license information

What you can purchase with IBM MQ and what each purchase entitles you to install.

Notice: This License Guide provides supplementary information to assist you in deploying the Programs you licensed from IBM within your purchased entitlement. Your license agreement (such as the IBM International Program License Agreement (IPLA) or equivalent, and its transaction documents, including the License Information for the IBM MQ product offering) is the sole and complete agreement between you and IBM regarding use of the Program.

What you can purchase with IBM MQ

5724-H72 IBM MQ for Multiplatforms

For IBM MQ for Multiplatforms, the product offering contains the following chargeable components that can be independently purchased:

- IBM MQ
- IBM MQ High Availability Replica (formerly IBM MQ Idle Standby) [“1” on page 9](#)
- IBM MQ Advanced
- IBM MQ Advanced High Availability Replica (formerly IBM MQ Advanced Idle Standby) [“1” on page 9](#)
- IBM MQ Advanced for Developers (Non-warranted, free download)
- IBM MQ Advanced for Non-Production Environment



Attention:

1. Prior to IBM MQ 9.1.4, IBM License Metric Tool (ILMT) reports need to be manually corrected to indicate if a detected installation is IBM MQ High Availability Replica or IBM MQ Advanced Advanced High Availability Replica entitled. From IBM MQ 9.1.4, it is possible to use the **setmqinst** command -l and -e options to correctly set the High

Availability Replica entitlement for ILMT to automatically detect. For further information see the **setmqinst** and **dspmqinst** commands.

2. When configuring the ILMT scanner, exclude the IBM MQ maintenance backup directories from being scanned (for example, /opt/mqm/maintenance on Linux). ILMT instructions are available from <https://www.ibm.com/docs/en/license-metric-tool?topic=scanned-excluding-additional-directories> and <https://www.ibm.com/docs/en/license-metric-tool?topic=scanner-excluding-directories-from-software-scans>

For the following chargeable components, existing Subscription and Support can be renewed. No new entitlement can be purchased. See the [Withdrawal Announcement Letter](#) for more information.

- IBM MQ Telemetry
- IBM MQ Advanced Message Security
- IBM MQ Advanced Message Security High Availability Replica (formerly IBM MQ Advanced Message Security Idle Standby)
- IBM MQ Managed File Transfer Service
- IBM MQ Managed File Transfer Service High Availability Replica (formerly IBM MQ Managed File Transfer Service Idle Standby)
- IBM MQ Managed File Transfer Agent

z/OS

On z/OS, IBM MQ offers the following Programs that can be purchased independently:

- **5655-MQ9** IBM MQ for z/OS
- **5655-AV1** IBM MQ Advanced for z/OS Value Unit Edition
- **5655-AV9** IBM MQ Advanced for z/OS
- **5655-VU9** IBM MQ for z/OS Value Unit Edition

For the following chargeable components, existing Subscription and Support can be renewed. No new entitlement can be purchased. See the [Withdrawal Announcement Letter](#) for more information:

- **5655-MF9** IBM MQ Managed File Transfer for z/OS
- **5655-AM9** IBM MQ Advanced Message Security for z/OS

What is my enterprise entitled to install?

Important: For IBM MQ for Multiplatforms, the IBM MQ installation media contains all the components, but you must only install the subset that you have purchased entitlement for.

Any component marked as 'unlimited installs' is a client component and as many copies as required may be installed on client systems. These will not be counted against your purchased IBM MQ entitlement.

IBM MQ, IBM MQ Advanced, and IBM Cloud Pak for Integration

In the following table, IBM MQ product features are listed in the first column, and the IBM MQ product offerings are in the remaining columns of the table. For each product feature, a tick in the column for a product offering indicates which product offering entitlement you need to use a product feature.

Table 1. Product offering entitlement for IBM MQ, IBM MQ Advanced, and IBM Cloud Pak for Integration

IBM MQ product feature	IBM MQ	IBM MQ Advanced and V 9.2.2 V 9.2.0.3 IBM MQ Advanced for Non-Production Environment	IBM MQ for z/OS	IBM MQ for z/OS Value Unit Edition	IBM MQ Advanced for z/OS Value Unit Edition	IBM MQ Appliance	V 9.2.2 IBM Cloud Pak for Integration
IBM MQ client (unlimited installs)	✓	✓	✓	✓	✓	✓	✓
Telemetry Service (unlimited installs)		✓					✓
Advanced Message Security		✓			✓	✓	✓
Managed File Transfer Service		✓			✓		✓
Managed File Transfer Agent (unlimited installs) ^{"1"} on page 13		✓			✓	✓	✓
Managed File Transfer Tools (unlimited installs)		✓			✓	✓	✓
Managed File Transfer Database Logger component (unlimited installs) ^{"1"} on page 13		✓			✓	✓ ^{"2"} on page 13	✓

Table 1. Product offering entitlement for IBM MQ, IBM MQ Advanced, and IBM Cloud Pak for Integration (continued)

IBM MQ product feature	IBM MQ	IBM MQ Advanced and V 9.2.2 V 9.2.0.3 IBM MQ Advanced for Non-Production Environment	IBM MQ for z/OS	IBM MQ for z/OS Value Unit Edition	IBM MQ Advanced for z/OS Value Unit Edition	IBM MQ Appliance	V 9.2.2 IBM Cloud Pak for Integration
Replicated Data Queue Manager (RedHat x86-64 only)		✓ "3" on page 13					✓
Deprecated Bridge to blockchain (unlimited installs) "1" on page 13 "8" on page 14 "9" on page 14		✓ "4" on page 13			✓ "4" on page 13		✓ "4" on page 13
Deprecated Bridge to Salesforce (unlimited installs) "10" on page 14	✓ "4" on page 13	✓ "4" on page 13					✓ "4" on page 13
IBM MQ Advanced container		✓ "5" on page 13					✓
V 9.2.0 IBM MQ Internet Pass-Thru (unlimited installs) "6" on page 13	✓	✓	✓	✓	✓	✓	✓
V 9.2.0 IBM Aspera fasp.io Gateway		✓			✓	✓	✓



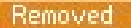

Table 1. Product offering entitlement for IBM MQ, IBM MQ Advanced, and IBM Cloud Pak for Integration (continued)

IBM MQ product feature	IBM MQ	IBM MQ Advanced and V 9.2.2 V 9.2.0.3 IBM MQ Advanced for Non-Production Environment	IBM MQ for z/OS	IBM MQ for z/OS Value Unit Edition	IBM MQ Advanced for z/OS Value Unit Edition	IBM MQ Appliance	V 9.2.2 IBM Cloud Pak for Integration
AMQP	✓	✓				✓	✓
V 9.2.2 Native HA							V 9.2.2 ✓ “7” on page 13
All other IBM MQ components from the install media not explicitly mentioned above	✓	✓	✓	✓	✓	✓	✓

Notes:

- May only connect to an IBM MQ Advanced or IBM MQ Appliance entitled queue manager. Managed File Transfer components may also connect to queue managers with IBM MQ Managed File Transfer entitlement.
- FILE mode only as a client connection.
- Requires IBM MQ Advanced entitlement on one node and IBM MQ Advanced or IBM MQ Advanced High Availability Replica entitlement on the other two nodes.
- Linux Linux x86-64 only.
- Developer container images are on [Docker Hub](#). The production images are delivered as Continuous Delivery updates only with no Long Term Support.
- V 9.2.0 Cryptographic hardware support is an advanced feature that may only be used if one of the queue managers connected to MQIPT has IBM MQ Advanced, IBM MQ Appliance or IBM MQ Advanced for z/OS Value Unit Edition entitlement. For more information, see [EnableAdvancedCapabilities](#).
- V 9.2.3 A Native HA capability preview was delivered in IBM MQ 9.2.2, for clients deploying container-based queue managers to IBM Cloud Pak for Integration 2021.1.1 in Red Hat OpenShift using the IBM MQ container. In IBM MQ 9.2.3, Native HA is available for production use for customers with entitlement to IBM Cloud Pak for Integration deploying IBM MQ Advanced conversion entitlement ratios. The Native HA capability is also included in the free IBM MQ Advanced for Developers download. Native HA is only supported in a container.
 - V 9.2.4 From IBM MQ 9.2.4, customers are supported under their IBM Cloud Pak for Integration entitlement to use Native HA in custom containers. The Native HA capability will be

supported in custom built images running in Kubernetes v1.18 onwards, across public and private cloud environments. IBM provides as-is reference implementations on GitHub for [building the custom container image](#), and a helm chart for deploying it. These together show how Native HA can be deployed in a common Kubernetes environment. Customers are recommended to verify that this functions correctly within their intended Kubernetes environment.

8.  IBM MQ Bridge to blockchain is deprecated across all releases (see [US Announcement letter 222-341](#)).
9.   For Long Term Support, IBM MQ Bridge to blockchain is removed at IBM MQ 9.2.0 CSU 21.
10.  IBM MQ Bridge to Salesforce is deprecated across all releases (see [US Announcement letter 222-341](#)).

Managed File Transfer, Advanced Message Security, and Telemetry

In the following table, IBM MQ product features are listed in the first column, and the IBM MQ product offerings are in the remaining columns of the table. For each product feature, a tick in the column for a product offering indicates which product offering entitlement you need to use a product feature.

Table 2. Product offering entitlement for Managed File Transfer, Advanced Message Security, and Telemetry							
IBM MQ product feature	IBM MQ Managed File Transfer Service ^{"1"} on page 16	IBM MQ Managed File Transfer Agent ^{"1"} on page 16	IBM MQ Advanced Message Security ^{"1"} on page 16	IBM MQ Telemetry ^{"1"} on page 16	IBM MQ Advanced for z/OS ^{"2"} on page 16	IBM MQ Managed File Transfer for z/OS ^{"1"} on page 16	IBM MQ Advanced Message Security for z/OS ^{"1"} on page 16
IBM MQ client (unlimited installs)							
Telemetry Service				✓			
Advanced Message Security			✓		✓		✓
Managed File Transfer Service	✓				✓	✓	
Managed File Transfer Agent (unlimited installs)	✓	✓			✓ ^{"3"} on page 16	✓	
Managed File Transfer Tools (unlimited installs)	✓	✓			✓	✓	

Table 2. Product offering entitlement for Managed File Transfer, Advanced Message Security, and Telemetry (continued)

IBM MQ product feature	IBM MQ Managed File Transfer Service ^{“1”} on page 16	IBM MQ Managed File Transfer Agent ^{“1”} on page 16	IBM MQ Advanced Message Security ^{“1”} on page 16	IBM MQ Telemetry ^{“1”} on page 16	IBM MQ Advanced for z/OS ^{“2”} on page 16	IBM MQ Managed File Transfer for z/OS ^{“1”} on page 16	IBM MQ Advanced Message Security for z/OS ^{“1”} on page 16
Managed File Transfer Logger component (unlimited installs)	✓	✓			✓	✓	
Replicated Data Queue Manager (RedHat x86-64 only)							
<div> <div> </div> <div> </div> </div> Bridge to blockchain (unlimited installs) ^{“8”} on page 14 ^{“9”} on page 14							
<div> <div> </div> <div> </div> </div> Bridge to Salesforce (unlimited installs) ^{“10”} on page 14							
IBM MQ Advanced container							
<div> <div> </div> <div> </div> </div> IBM MQ Internet Pass-Thru							
AMQP							

Table 2. Product offering entitlement for Managed File Transfer, Advanced Message Security, and Telemetry (continued)

IBM MQ product feature	IBM MQ Managed File Transfer Service ^{“1”} on page 16	IBM MQ Managed File Transfer Agent ^{“1”} on page 16	IBM MQ Advanced Message Security ^{“1”} on page 16	IBM MQ Telemetry ^{“1”} on page 16	IBM MQ Advanced for z/OS ^{“2”} on page 16	IBM MQ Managed File Transfer for z/OS ^{“1”} on page 16	IBM MQ Advanced Message Security for z/OS ^{“1”} on page 16
All other IBM MQ components from the install media not explicitly mentioned above					✓	✓	✓

Notes:

1. New entitlement can no longer be purchased for these Programs.
2. IBM MQ for z/OS entitlement must be separately purchased.
3. May only connect to an IBM MQ Advanced, IBM MQ Appliance, or IBM MQ Managed File Transfer entitled queue manager.

IBM MQ Advanced for Developers (non-warranted)

IBM MQ Advanced for Developers is available as a free download for development purposes, and provides the full set of capability available with IBM MQ Advanced. To get the download, complete the following steps:

1. Go to [Downloading IBM MQ 9.2](#).
2. Click the tab for the latest Fix Pack.
3. Near the end of the document, find **Other useful links > Development > IBM MQ Advanced for Developers**.
4. Click the link for your preferred platform (Windows / Linux / Ubuntu / Raspberry Pi).

This is a free download. Support for development, test and staging environments may be obtained through purchasing IBM MQ Advanced for Non-Production Environment entitlement.



Attention: The IBM MQ license defines what is considered as development purposes.

Additionally, your enterprise can mix and match IBM MQ versions as required. Therefore, your 100 PVUs of IBM MQ (Server) entitlement could be split into 50 PVUs of the IBM MQ 9.1 version and 50 PVUs of the IBM MQ 9.2 version of this component.

What are High Availability Replica chargeable components?

High Availability Replica (formerly Idle Standby) parts have been introduced to cater for high availability environments, where multiple systems are configured to provide redundancy. In this case, not all systems will be utilized to full capacity and a lower charge might be applicable to reflect that.

For most scenarios of failover systems where IBM MQ is installed:

- If failover is automatic, and there is no other active use of IBM MQ, then license the failover system as IBM MQ High Availability Replica or IBM MQ Advanced High Availability Replica.

- If failover is manual (for example, for Disaster Recovery), and there is no other active use of IBM MQ, then no IBM MQ or IBM MQ High Availability Replica licenses (or their IBM MQ Advanced equivalents) are required. See [Backup Licensing documents](#).
- The IBM MQ Replicated Data Queue Manager High Availability and Disaster Recovery Features require entitlement as described in the license terms. A copy of the terms are below.

V 9.2.0 You must use the **setmqinst** command to specify that an installation is a High Availability Replica. This action applies tags to the installation such that it can be identified by the IBM License Metric Tool (ILMT). For more information, see [setmqinst](#).

Notes:

1. Use of the IBM MQ multi-instance queue manager and Replicated Data Queue Manager features require High Availability Replica entitlement.
2. There is no High Availability Replica part for the MQ Telemetry component. The same MQ Telemetry part needs to be purchased for the active and passive system, unless you have IBM MQ Advanced High Availability Replica, in which case it is included.

License terms for IBM MQ High Availability Replica components are defined in the Program license terms.



Attention: Always check the Program license agreement for the latest licensing terms.

License terms as of IBM MQ 9.2:

A. Licensee's use of the Program is limited to use of the following features as stated below or as stated in the Other High Availability Solutions section.

1. Multi-Instance Queue Manager Feature

Licensee is permitted to use the multi-instance queue manager feature of the Program for Stand-by Purposes only. Stand-by Purposes are defined as having the Program started, but ensuring that the Program remains idle unless the active and separately entitled IBM MQ copy of the program fails over to the high availability replica Program. If this occurs, the high availability replica Program may be used to carry out productive work during the period of failover. The Program is considered "idle" if, until a failover takes place, it is not used to carry out productive work of any kind and is used exclusively for administrative actions.

2. Replicated Data Queue Manager High Availability Feature

Licensee's use of this replicated data queue manager feature of the Program requires configuration on three servers and requires that all queue managers on the three servers be Replicated Data Queue Managers. Two of the servers may be configured and entitled as IBM MQ Advanced High Availability Replica, but the copy of IBM MQ on the third configured server must be licensed separately by obtaining entitlements to IBM MQ Advanced. When using this high availability feature in conjunction with replication to a disaster recovery site, the three high availability servers at the disaster recovery site must also be entitled as described above.

3. Replicated Data Queue Manager Disaster Recovery Feature

Licensee's use of this replicated data queue manager feature of the Program requires configuration on two servers and requires that all queue managers on the two servers be Replicated Data Queue Managers. One of the servers may be configured and entitled as an IBM MQ Advanced High Availability Replica, but the copy of IBM MQ on the second configured server must be licensed separately by obtaining entitlements to IBM MQ Advanced. This disaster recovery configuration of two servers is a separate configuration to using three servers as a high availability configuration, even when that is used with replication to a disaster recovery site.

B. Other High Availability Solutions

If Licensee chooses to use other high availability solutions along with the Program, Licensee is permitted to use the Program as a high availability replica so long as it resides for backup purposes on a standby server and the Program is not started. The Program may be started automatically by the high availability

components in the event of the active server failing, in which event the Program may be used to carry out productive work during the period of failover.

How do I configure IBM MQ Advanced for Non-Production Environment?

V 9.2.2 **V 9.2.0.3**

IBM MQ Advanced for Non-Production Environment is an entitlement option for internal development and test systems for non-production activities.

You must use the **setmqinst** command to specify that an installation is a Non-Production Environment. This action applies tags to the installation such that it can be identified by the IBM License Metric Tool (ILMT). For more information, see [setmqinst](#).

Which components of IBM MQ can I install separately from the queue manager?

Some components of IBM MQ are designed to be for client or administrator usage and are intended to be installed on systems that are remote from an IBM MQ queue manager, but connected over a network to an IBM MQ queue manager. The following list shows the IBM MQ components that are in this category and can be installed on remote systems in accordance with the license terms:

IBM MQ/IBM MQ Appliance

- IBM MQ C, C++ and .NET clients
- IBM MQ Java/JMS client
- IBM MQ Resource Adapter
- IBM MQ Internet Pass-Thru (IPT)
- IBM MQ Explorer
- **Deprecated** IBM MQ Bridge to Salesforce

IBM MQ Advanced/IBM MQ Appliance

- IBM MQ Managed File Transfer Agent
- IBM MQ Managed File Transfer Database Logger
- IBM MQ Managed File Transfer Tools
- IBM Aspera fasp.io Gateway
- **Deprecated** IBM MQ Bridge to blockchain

V 9.2.0.21 **Removed** For Long Term Support, IBM MQ Bridge to blockchain is removed at IBM MQ 9.2.0 CSU 21.

None of the components in this list are charged, so do not incur additional costs when installed on systems remote from the IBM MQ queue manager.

Further to this, a subset of these components are licensed to be redistributable with 3rd party applications. For more information, see [“IBM MQ Redistributable Components” on page 19](#).

Other questions

In an IBM MQ network using IBM MQ Advanced features, such as Managed File Transfer and Advanced Message Security, which MQ queue managers require IBM MQ Advanced entitlement?

- For Advanced Message Security, only the end-point queue managers where AMS Policies are defined require IBM MQ Advanced entitlement.
- For Managed File Transfer, only the queue managers where MFT components (Agent and Logger) connect require IBM MQ Advanced entitlement.
- Intermediary queue managers that are just routing messages, but perform no IBM MQ Advanced processing, only require IBM MQ entitlement.

Questions about High Availability and the Replicated Data Queue Manager capability:

- Q: When configuring the RDQM High Availability feature can I place all the queue managers under RDQM control on the same system?

A: Yes. Queue managers can run on any node in the HA group, including all three queue managers on one node. This is not an optimal configuration for making best use of system resources across the three nodes, but our licensing does not prohibit this.


- Q: Do all nodes in a RDQM HA or DR configuration need to have the same memory, disk and CPU capacity?

A: No, but our recommendation is that all nodes have the same resource allocation. RDQM maximum disk storage capacity is limited to the maximum capacity of the smallest system in the configuration and queue manager creation will fail if RDQM cannot allocate the required disk capacity up front. For CPU and memory, if a well resourced, high performing, system fails over to system with less memory and CPU then there could be undesirable performance consequences because maximum message throughput rates will be reduced.

- Q: Can I place both a RDQM HA queue manager and RDQM DR queue manager on the same system?

A: This would not be in compliance with the IBM MQ Advanced High Availability Replica license terms because a system must be either a dedicated RDQM HA or DR node. It cannot be both. It is technically possible, but this configuration would require IBM MQ Advanced entitlement.

Supporting Programs

The following Supporting Program is licensed with IBM MQ Advanced 9.2, IBM MQ Advanced for Non-Production Environment 9.2, IBM MQ Advanced for z/OS Value Unit Edition 9.2,  and IBM MQ Advanced for z/OS 9.2:

- IBM Aspera fasp.io Gateway 1.2

Related concepts

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[Technical overview](#)

[IBM MQ non-install images](#)

Related information

[Downloading IBM MQ 9.2](#)

IBM MQ Redistributable Components

IBM MQ delivers several components that are licensed to be redistributable with third-party applications. The redistributable license terms may be found in the relevant IBM MQ Program license agreement.

The license agreement can be found at the [IBM Terms website](#). In the license agreement, IBM MQ Client components are also listed as being "Components Not Used for Establishing Required Entitlements". It is the IBM MQ queue manager to which the application is connected that requires correct entitlement.

All IBM MQ redistributable components are supported for use in production environments, and share the same system requirements and support lifecycle as the corresponding installable client images. See the [IBM Software Lifecycle](#) page for more information.

IBM MQ Client components

IBM MQ Client components may be redistributed under the license terms of the following Programs:

- IBM MQ
- IBM MQ Advanced
- IBM MQ Appliance M2000, M2001 and M2002
- IBM MQ for z/OS
- IBM MQ for z/OS Value Unit Edition
- IBM MQ Advanced for z/OS Value Unit Edition

Requirements:

The queue manager to which the application connects must be entitled with one of the above Programs.

Redistributables:

- IBM MQ Clients from IBM Fix Central
 - <https://ibm.biz/mq92redistclients>
- IBM MQ Message Service Client (XMS) for C/C++ (IA94 SupportPac)
 - <https://ibm.biz/mqxms3supportpac>
- IBM MQ .NET Client components from nuget.org
 - <https://www.nuget.org/packages/IBMMQDotnetClient/>
 - <https://www.nuget.org/packages/IBMXMSDotnetClient/>
- IBM MQ Java Client components from Maven
 - <https://search.maven.org/search?q=a:com.ibm.mq.allclient>, or
 - <https://mvnrepository.com/artifact/com.ibm.mq/com.ibm.mq.allclient>

IBM MQ Managed File Transfer Agent

IBM MQ Managed File Transfer Agent (including, from IBM MQ 9.2.1, the Managed File Transfer Logger component) may be redistributed under the license terms of the following Programs:

- IBM MQ Advanced
- IBM MQ Appliance M2000, M2001 and M2002
- IBM MQ Advanced for z/OS Value Unit Edition
- IBM MQ Managed File Transfer Agent

Requirements:

The queue manager to which the application connects must be entitled with one of the above Programs.

Redistributables:

- IBM MQ Managed File Transfer Agent from IBM Fix Central.
 - <https://ibm.biz/mq92redistmftagent>

IBM MQ for z/OS stub routines

IBM MQ for z/OS stub routines may be redistributed under the license terms of the following Programs:

- IBM MQ for z/OS

- IBM MQ for z/OS Value Unit Edition
- IBM MQ Advanced for z/OS Value Unit Edition

Requirements:

The queue manager to which the application connects must be entitled with one of the above Programs.

Redistributables:

The following MQ stub routines that are intended to be bound, link-edited, or otherwise included with code and run on z/OS systems and are contained in the following data set - CSQ.SCSQLOAD:

- CSQBSTUB, CSQBRSI, CSQBRSTB, CSQCSTUB, CSQQSTUB, CSQXSTUB, CSQASTUB

Members of the following data sets are required for application development and compilation and may also be redistributed:

- CSQ.SCSQPLIC - PL/I include files
- CSQ.SCSQMACS – assembler macros
- CSQ.SCSQHPPS – C++ header files
- CSQ.SCSQC370 – C header files
- CSQ.SCSQCOBC – COBOL copy books
- CSQ.SCSQDEFS – C++ side decks subset:

CSQA, CSQBAS1X, CSQBAS2X, CSQBMB1X, CSQBMB2X, CSQBMQ1, CSQBMQ1X, CSQBMQ2X, CSQBRI1, CSQBRI1X, CSQBRI2X, CSQBRR1, CSQBRR1X, CSQBRR2X, CSQBXB1X, CSQBXB2X, CSQBXI1, CSQBXI1X, CSQBXI2X, CSQBXQ1, CSQBXQ1X, CSQBXQ2X, CSQBXR1, CSQBXR1X, CSQBXR2X, CSQBXS1X, CSQBXS2X, CSQC, CSQCMQ2X, CSQCXQ2X, CSQMDA, CSQMDL, CSQMDV, CSQMD1A, CSQMD1L, CSQMD1V, CSQMD2A, CSQMD2L, CSQMD2V, CSQP, CSQQMQ1X, CSQQMQ2X, CSQQXQ1X, CSQQXQ2X, CSQV

IBM MQ Client for .NET license information

The IBM MQ Client for .NET is a component of IBM MQ that can be downloaded free-of-charge. It can be used to integrate third party .NET applications into an IBM MQ messaging infrastructure. The IBM MQ Clients, including the IBM MQ Client for .NET, are licensed under the IBM MQ Client license terms in the IBM MQ product license.

The IBM MQ Client for .NET is part of the IBM MQ Client package, which contains client libraries supporting many different programming languages. IBM MQ Clients (including IBM MQ .NET client libraries) are made available free-of-charge with certain redistribution rights (see IBM MQ product license for redistributables terms) to enable third parties to easily develop and distribute IBM MQ applications. The IBM MQ Clients are provided as-is. For technical support and defect fixes a support agreement with IBM is required.

IBM MQ product identifiers and export information

An overview of IBM MQ product offerings, their associated product identifiers (PIDs), and export classifications.

Table 3. Table of IBM MQ products, their associated PID values, and export classifications		
IBM MQ product offering	Product identifier (PID)	Export classification (ECCN)
IBM MQ "1" on page 22	5724-H72	5D992
IBM MQ for z/OS	5655-MQ9	5D992
IBM MQ for z/OS Value Unit Edition	5655-VU9	5D992

Table 3. Table of IBM MQ products, their associated PID values, and export classifications (continued)

IBM MQ product offering	Product identifier (PID)	Export classification (ECCN)
IBM MQ Advanced for z/OS Value Unit Edition “2” on page 22	5655-AV1	5D002.c.1
IBM MQ Advanced for z/OS “3” on page 22	5655-AV9	5D992
IBM MQ Advanced Message Security for z/OS “4” on page 22	5655-AM9	EAR99
IBM MQ Managed File Transfer for z/OS “4” on page 22	5655-MF9	5D992

Notes:

- 5724-H72 IBM MQ contains the following chargeable components:
 - IBM MQ
 - IBM MQ High Availability Replica
 - IBM MQ Advanced
 - IBM MQ Advanced High Availability Replica
 - IBM MQ Managed File Transfer Service [“4” on page 22](#)
 - IBM MQ Managed File Transfer Service High Availability Replica [“4” on page 22](#)
 - IBM MQ Managed File Transfer Agent [“4” on page 22](#)
 - IBM MQ Advanced Message Security [“4” on page 22](#)
 - IBM MQ Advanced Message Security High Availability Replica [“4” on page 22](#)
 - IBM MQ Telemetry [“4” on page 22](#)
- IBM MQ Advanced for z/OS Value Unit Edition is a zCAP (Collocated Application Pricing) Defining Program.
- V 9.2.0

At IBM MQ 9.2.0 Long Term Support, IBM MQ Advanced for z/OS is a bundle of IBM MQ Advanced Message Security for z/OS, IBM MQ Managed File Transfer for z/OS, and the Connector Pack.

CD

At IBM MQ 9.2.x Continuous Delivery, IBM MQ Advanced for z/OS is a bundle of IBM MQ Advanced Message Security for z/OS and IBM MQ Managed File Transfer for z/OS.

Separate entitlement to IBM MQ for z/OS or IBM MQ for z/OS Value Unit Edition is required to run the queue manager.
- As per the [9th July, 2019 Withdrawal Announcement Letter](#), these Programs are withdrawn from sale. Existing customers can continue to use these products and will continue to receive fixes and future functional updates (if a valid subscription and support contract is in place). The capabilities will continue to be available to new and existing customers with IBM MQ Advanced, IBM MQ Advanced for z/OS and IBM MQ Advanced for z/OS VUE.

IBM MQ Appliances

MQ Appliance

Table 4. IBM MQ Appliance products, their associated PID values, and export classifications

IBM MQ product offering	Product identifier (PID)	Machine-Type Model (MTM)	Firmware Export classification (ECCN)	Hardware Export classification (ECCN)
IBM MQ Appliance M2000	5725-S14	8436-54X	5D992	5A992
IBM MQ Appliance M2001	5725-Z09	8436-55X	5D992	5A992
IBM MQ Appliance M2002	5737-H47	8441-54X	5D992	5A002.a.2

Related concepts

 Product usage recording with IBM MQ for z/OS products

IBM MQ release types and versioning


From IBM MQ 9.0 there are two main types of release; a Long Term Support (LTS) release and Continuous Delivery (CD) release. From IBM MQ 9.2.1, some versions of the IBM MQ Advanced container are Extended Update Support (EUS) releases.

LTS and CD release types

The aim of the two main release types is to meet the requirement for delivery of new and enhanced IBM MQ functions as rapidly as possible in the next CD release, while at the same time maintaining a stable LTS release for systems that need a long term deployment of IBM MQ, and for customers who prefer this traditional option.




The two release types are distinguishable by the modification number, that is the M digit of the VRMF:

- Long Term Support releases always have a modification number of zero, for example 9.1.0 and 9.2.0.
- Continuous Delivery releases usually have a modification number that is non-zero, for example, 9.1.4, 9.1.5, and so on.

 The only exception to this rule is on IBM MQ for z/OS, where from IBM MQ for z/OS 9.2.0 there is a CD release available at the same time as each LTS release, and with the same V.R.M number. That is, there is an IBM MQ for z/OS 9.2.0 LTS release and an IBM MQ for z/OS 9.2.0 CD release, which are functionally identical. This provides for a simpler install experience for z/OS users who want to be able to upgrade CD releases by applying PTFs to a single SMP/E install, even when crossing an LTS release boundary. You can distinguish between IBM MQ for z/OS 9.2.0 LTS and IBM MQ for z/OS 9.2.0 CD by looking at the [CSQY000I](#) message in the queue manager job log.

Each LTS release is supported for the duration of the release. Each CD release is supported for 12 months or while it is one of the most recent two CD releases, whichever is longer. For more information, see [IBM MQ FAQ for Long Term Support and Continuous Delivery releases](#).

To check the IBM MQ version:

- Type the command **dspmqver**, or **DSPMQMVER** on IBM i. The returned messages include the three-digit VRM or, if maintenance has been applied, the four-digit VRMF.
- Use the REST API [GET](#) method.
-   View the [queue manager property panel](#) in IBM MQ Explorer.
-  Look at the [CSQY000I](#) message in the queue manager job log. This message is issued when the queue manager starts, and shows the release level and release type.

The command level of a queue manager is the three-digit VRM level. An IBM MQ program can call MQINQ, passing the MQIA_COMMAND_LEVEL selector, to get the command level of the queue manager it is connected to. You can also view the queue manager command level in the [queue manager property panel](#) in IBM MQ Explorer.

Maintenance delivery model

From 1Q 2023, there are two types of maintenance:



Fix packs

Fix packs contain roll-ups of all defects fixed since the previous fix pack delivery or GA. Fix packs are produced exclusively for LTS releases during their normal support lifecycle.

Cumulative security updates (CSUs)

CSUs are smaller updates and contain security patches released since the previous maintenance or GA. CSUs are produced for LTS releases (including releases in extended support), and for the latest IBM MQ CD release, as required to deliver relevant security patches.

Both types of maintenance are mutually cumulative (that is, they contain everything included in older CSUs and fix packs) and both are installed using the same mechanisms for applying maintenance. Also, both types of maintenance update the F digit of the VRMF to a higher number than any previous maintenance:

-  For LTS releases, the F digit of the VRMF is either a fix pack number, which is a value divisible by 5, or a CSU number, which is a value not divisible by 5. For example, 9.2.0.5 is a fix pack and 9.2.0.1 is an LTS CSU.
-  For CD releases, the F digit of the VRMF is either a zero or a CSU number, which is a value not divisible by 5. However this does not affect 9.2 CD releases, because they are no longer supported.

For maintenance releases before 1Q 2023, there were no CSU updates. Therefore the F digit in the VRMF always represents the fix pack level.

Maintenance levels do not affect the command level of the queue manager. No migration is required, and maintenance levels do not affect the service end date of a release.

For more information, see [Changes to IBM MQ's maintenance delivery model](#).

For each supported platform, the release type you choose affects ordering, installation, maintenance and migration. For more information, see [IBM MQ release types: planning considerations](#).

Maintenance delivery model: differences by platform

Multi For Multiplatforms, LTS fix packs and CSUs, and CD CSUs,

- are downloaded as interim fixes
- are downloaded by fix pack or CSU number
- are cumulative

z/OS For z/OS, LTS fix packs and CSUs

- are downloaded as interim fixes
- are downloaded by Program Temporary Fix (PTF) number
- are cumulative

z/OS CD CSUs are not usually made available as separate downloads. They are bundled into the next CD release. If you cannot wait for the next CD release, you can request a CD CSU as a USERMOD.

IBM MQ Advanced container and the EUS release model

###

The IBM MQ Advanced container is only supported when deployed using the IBM MQ Operator on the Red Hat OpenShift Container Platform. IBM MQ Advanced container Operators are supported for use as part of the IBM Cloud Pak for Integration, or independently. The IBM Cloud Pak for Integration uses the Extended Update Support (EUS) release model, which provides 18 months support for each EUS release.

The IBM MQ Advanced container image is based on IBM MQ Continuous Delivery, and is typically supported as a CD release. However, if a container image is based on a version of IBM MQ marked as -eus, and the container is used as part of the IBM Cloud Pak for Integration, the container is instead supported as an EUS release.

For detailed mappings between IBM MQ Operators, IBM Cloud Pak for Integration versions, and container images, see [Release history for IBM MQ Operator](#).

Related concepts

[Applying maintenance to IBM MQ](#)

Related information

[Downloading IBM MQ 9.2](#)

Pricing metric for Virtual Processor Cores (VPCs)

Virtual Processor Core (VPC) is a unit by which IBM MQ can be licensed. A VPC can be either a virtual core assigned to a virtual machine, or a physical processor core, provided that the server is not partitioned for virtual machines. If the number of virtual cores exceeds the number of physical cores, then the number of VPCs that you must license is equal to the number of physical cores.

Usage of each VPC is measured in Virtual Processor Core-Instance-Hours, and captured in whole minute increments. An Instance is a running copy of IBM MQ (the Program), not including copies of the Program used for backup purposes, specifically those designated as "cold" or "warm", as defined in the IBM Software Licensed under the IPLA - Backup Use Defined Document located here: [Software policies](#).

You must get sufficient entitlements for the total number of Hours that each VPC is made available to each Instance of the Program in a twelve (12) month fixed term. You must use the metering tool provided with the Program to monitor your usage of the Program. If the metering tool is not used, you must get entitlements for 720 Hours per calendar month for each VPC in your environment that can be made available to an Instance of the Program, regardless of whether the VPC is being made available or has been made available to an Instance of the Program.

For more information about how to determine the usage of VPCs, see [Virtual Processor Core \(VPC\)](#). This article explains how to use the IBM License Metric Tool to configure and create a report that you can use to determine the number of VPCs that you need to license. The article includes examples of how to calculate VPC consumption for virtual and physical server environments.

Related tasks

[Configuring IBM MQ for use with the metering service in IBM Cloud Private](#)

► V 9.2.0


► V 9.2.0


What's new and changed in IBM MQ 9.2.0

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

Delivery and support model

IBM MQ 9.2.0 follows the delivery and support model for IBM MQ that was introduced in IBM MQ 9.0. From IBM MQ 9.0, two release types are made available; a Long Term Support (LTS) release and a Continuous Delivery (CD) release.



 The Long Term Support release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time. This release is intended for systems which demand a long term deployment and maximum stability.

 Continuous Delivery releases deliver new functional enhancements, in addition to fixes and security updates, on a much shorter cadence, so providing much more rapid access to those new functions. These releases are intended for systems where applications want to exploit the very latest capabilities of IBM MQ.

For further information see [IBM MQ release types](#) and [IBM MQ FAQ for Long Term Support and Continuous Delivery releases](#).

How to use the what's new and changed information for IBM MQ 9.2.0

IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5, along with some features and enhancements that are new at IBM MQ 9.2.0:

- Features that are new to Long Term Support (LTS) users at IBM MQ 9.2.0 are indicated by a dark blue icon 
- Features that are new to Continuous Delivery (CD) users at IBM MQ 9.2.0 are indicated by a light blue icon 

Related concepts

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)



[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.0

IBM MQ 9.2.0 delivers features and enhancements beyond those that were available in IBM MQ 9.1.0 Long Term Support. The features that you have access to depends on your product entitlement.

For more information on what you can purchase with IBM MQ, and what each purchase entitles you to install, see [“IBM MQ license information” on page 9](#).

IBM MQ 9.2.0 includes the features that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5, along with some features that are new at IBM MQ 9.2.0:


- Features and enhancements that are new to Long Term Support (LTS) users at IBM MQ 9.2.0 are indicated by a dark blue icon 
- Features and enhancements that are new to Continuous Delivery (CD) users at IBM MQ 9.2.0 are indicated by a light blue icon 

New for IBM MQ for Multiplatforms - base and Advanced entitlement



On Multiplatforms, that is, all platforms except IBM MQ for z/OS, the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

















Active/active messaging

-  [“Automatic balancing of a pool of connected applications across a set of available queue managers” on page 31](#)







Extending your network

-  [“IBM MQ Internet Pass-Thru” on page 31](#)

Managing IBM MQ

-  [“Support for Transport Layer Security \(TLS\) 1.3” on page 33](#)
-  [“Increased level of control to determine how IBM MQ uses available storage” on page 34](#)
-  [“Version 2 of the REST API” on page 34](#)
-  [“Enhancements to the administrative REST API” on page 34](#)
-  [“Host header validation for the IBM MQ Console and REST API” on page 35](#)
-  [“Updated IBM MQ Console look and feel” on page 35](#)
-   [“Enhancements to the IBM MQ Bridge to Salesforce” on page 35](#)
-  [“Configurable ephemeral directory” on page 36](#)
-  [“Userdata directory” on page 36](#)
-   [“License acceptance after installation on Linux” on page 36](#)
-    [“Installing IBM MQ for Linux with the yum installer on Linux Red Hat” on page 36](#)
-  [“More effective integration with WebSphere Liberty” on page 36](#)

Developing for IBM MQ




-  [“Enhancements to the messaging REST API” on page 37](#)
-   [“Support for running applications on Microsoft .NET Core” on page 37](#)
-    [“Advanced Message Queuing Protocol \(AMQP\) shared subscription enhancement” on page 37](#)

New for IBM MQ for Multiplatforms - Advanced entitlement only







The following features and enhancements are available only with Advanced entitlement.





Active/active messaging

-   [“Disaster recovery for high availability replicated data queue managers” on page 39](#)
-  [“Highly available Managed File Transfer agents” on page 39](#)





Extending your IBM MQ network

-   [“Use of IBM Aspera fasp.io Gateway streaming for IBM MQ messages” on page 39](#)
-   [“Enhancements to the IBM MQ Bridge to blockchain” on page 39](#)
- [“Support for PKCS #11 cryptographic hardware in MQIPT” on page 40](#)

Managing IBM MQ

-  [“New features and enhancements for Managed File Transfer” on page 40](#)
-  [“Identification of installs of High Availability Replica” on page 41](#)
-   [“Improved password protection for Java Advanced Message Security clients” on page 41](#)

Deploying the IBM MQ Advanced container


-   [“.zip images of IBM MQ are available for use with development and production containers” on page 41](#)
-   [“MQ Operators replace Helm as the mechanism for deploying an IBM MQ Advanced container” on page 41](#)

New for IBM MQ for z/OS - base and Advanced VUE entitlement





The following features and enhancements are available both with base product entitlement, and with IBM MQ Advanced for z/OS Value Unit Edition (Advanced VUE) entitlement.










Fault tolerance








-  [“Improved log throughput using zHyperWrite” on page 43](#)

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New for IBM MQ for z/OS - Advanced and Advanced VUE entitlement only




The following features and enhancements are available with Advanced or Advanced VUE entitlement only.

IBM MQ Advanced for z/OS entitlement





The following capabilities are new for Long Term Support at IBM MQ for z/OS 9.2.0. However, they are not available in the IBM MQ 9.2 Continuous Delivery releases:

-  [“IBM MQ Advanced for z/OS Value Unit Edition features now available with IBM MQ Advanced for z/OS entitlement” on page 49](#)

Active/active messaging

-    [“Highly available Managed File Transfer agents” on page 49](#)

Managing IBM MQ



-  [“Advanced Message Security interception on server-to-server message channels” on page 50](#)
-   [Improved password protection for Java Advanced Message Security clients](#)
-  [“New features and enhancements for Managed File Transfer” on page 51](#)

New IBM MQ for z/OS features - Advanced VUE entitlement only


 

The following features are available with Advanced VUE entitlement only.

Extending your IBM MQ network

-  [“Use of IBM Aspera fasp.io Gateway streaming for IBM MQ messages” on page 50](#)
-  [“IBM MQ Bridge to blockchain Hyperledger Fabric support” on page 50](#)


Related concepts

  [What's changed in IBM MQ 9.2.0](#)



Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.1.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

 [New, changed, and removed messages in IBM MQ 9.2.0](#)

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

 [New, changed, and removed messages since IBM MQ 9.1.5](#)

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

  [Deprecated, stabilized and removed features in IBM MQ 9.2.0](#)

A number of features are deprecated, stabilized or removed from IBM MQ 9.2.0.

[“IBM MQ license information” on page 9](#)

[What you can purchase with IBM MQ and what each purchase entitles you to install.](#)

Related reference

[What's new and what's changed in IBM MQ Explorer](#)

Related information


[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.0 for Multiplatforms - base and Advanced entitlement

For Multiplatforms, IBM MQ 9.2.0 delivers a number of new features that are available with base product entitlement, and also with Advanced entitlement.








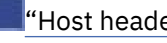






Active/active messaging

-  [“Automatic balancing of a pool of connected applications across a set of available queue managers” on page 31](#)

Extending your network

-  [“IBM MQ Internet Pass-Thru” on page 31](#)

Managing IBM MQ

-  [“Support for Transport Layer Security \(TLS\) 1.3” on page 33](#)
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-  [“Version 2 of the REST API” on page 34](#)
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-  [“Userdata directory” on page 36](#)
-   [“License acceptance after installation on Linux” on page 36](#)
-  [“Installing IBM MQ for Linux with the yum installer on Linux Red Hat” on page 36](#)
-  [“More effective integration with WebSphere Liberty” on page 36](#)

Developing IBM MQ

- **V 9.2.0** [“Enhancements to the messaging REST API” on page 37](#)
- **Windows** **macOS** **V 9.2.0** **Linux** [“Support for running applications on Microsoft .NET Core” on page 37](#)
- **V 9.2.0** **V 9.2.0** **ALW** [“Advanced Message Queuing Protocol \(AMQP\) shared subscription enhancement” on page 37](#)

Automatic balancing of a pool of connected applications across a set of available queue managers

V 9.2.0 Uniform clusters

Uniform clusters are a specific pattern of an IBM MQ cluster that provides applications with a highly available and horizontally scaled collection of queue managers. When an application interacts with a uniform cluster as a single group, the queue managers work together to maintain an even balance of application instances across the cluster, including across queue manager maintenance and restarts. Automatic balancing across a set of clustered queue managers is supported for applications written in C, JMS, IBM MQ .NET, and XMS .NET. For more information, see [About uniform clusters](#).

Application balancing is done at the *application instance* level. An application instance is a group of related connections identified within the queue manager by a shared [connection tag](#).

V 9.2.0 Single set of configuration files

A single set of configuration files can be defined once and used to deploy multiple queue managers into the uniform cluster, ensuring the configuration is consistent across them. You have various options to help you configure uniform clusters. You can:

- Apply [automatic configuration from an MQSC script at startup](#).
- Apply [automatic configuration from an INI script at startup](#).
- Use additional `qm.ini` file stanzas to assist [automatic cluster configuration](#).
- Provide an input file to **runmqsc**; see [Running MQSC commands from text files](#) for more details.

V 9.2.0 Application resource monitoring

You can display the status of one or more applications, and application instances, connected to a queue manager, cluster, or a uniform cluster by using the **DISPLAY APSTATUS** MQSC command or the [Inquire Application Status](#) and [Inquire Application Status \(Response\)](#) PCF commands. This information allows you to [monitor](#) and [troubleshoot](#) application balancing.

You can monitor usage statistics for each application that you specify by adding the **STATAPP** class to the **amqsrua** command. You can use this information to help you understand how your applications are being moved between queue managers and identify any anomalies. For more information, see [Monitoring system resource usage by using the amqsrua command](#).

V 9.2.0 JSON format client channel definition table


The JSON format for the client channel definition table (CCDT) gives various improvements over the existing binary format CCDT, including the ability to define duplicate channel definitions of the same name. This is a client-side feature (that is, you need an IBM MQ 9.2.0 client, not an IBM MQ 9.2.0 queue manager). For more information, see [Configuring a JSON format CCDT](#).

IBM MQ Internet Pass-Thru

V 9.2.0 Inclusion of IBM MQ Internet Pass-Thru

IBM MQ Internet Pass-Thru (MQIPT) is a utility that can be used to implement messaging solutions between remote sites across the internet. In IBM MQ 9.2.0, MQIPT is a fully-supported optional component of IBM MQ that you can download from [IBM Fix Central for IBM MQ](#). MQIPT has previously been available as support pack MS81.

The following changes have been made to MQIPT since version 2.1 of the support pack:

- The supplied Java runtime environment (JRE) has been upgraded from Java 7 to Java 8, to match the JRE version supplied with IBM MQ.
- The SSL 3.0, TLS 1.0, and TLS 1.1 protocols are disabled by default. The only cryptographic protocol that is enabled by default is TLS 1.2. To enable protocols that are disabled, follow the procedure in [Enabling deprecated protocols and CipherSuites](#).
- Support for IBM Network Dispatcher has been removed.
-  The IPT Administration Client graphical user interface has been removed. Previous versions of the IPT Administration Client cannot be used with MQIPT in IBM MQ 9.2.0. To configure and administer MQIPT, edit the `mqipt.conf` configuration file and use the **mqiptAdmin** command, as described in [Administering MQIPT by using the command line](#).
- All sample files supplied with MQIPT are now located under a new directory called `samples` in the MQIPT installation directory.
- The **CommandPort** property has been removed from the sample configuration file `mqiptSample.conf` to improve security. This means that when using the sample configuration, MQIPT does not listen on a command port for commands issued by the **mqiptAdmin** command. To allow MQIPT to be administered remotely using the **mqiptAdmin** command, change the configuration file to specify a value for the **CommandPort** or **SSLCommandPort** property. Review the security considerations in [Other security considerations](#) before enabling an MQIPT command port.

For more information about MQIPT, see [IBM MQ Internet Pass-Thru](#).

Enhanced protection of stored passwords in MQIPT

From IBM MQ 9.2.0, all passwords that are stored in the MQIPT configuration can be protected by encrypting the passwords using the **mqiptPW** command. IBM MQ 9.2.0 also introduces a new, more secure, protection method for passwords that are stored for use by MQIPT, and the ability for you to specify an encryption key that is used to encrypt and decrypt stored passwords. For more information, see [Encrypting stored passwords](#).

Improved administration of MQIPT

The following new features of MQIPT in IBM MQ 9.2.0 allow easier and more secure administration of MQIPT using the **mqiptAdmin** command.

- Local instances of MQIPT can be administered using the **mqiptAdmin** command without the need for MQIPT to listen on a command port. The **mqiptAdmin** command must be run under the user ID that was used to start the MQIPT instance. Alternatively, on AIX® and Linux, the `root` user can be used.
- MQIPT can be configured to authenticate administrative commands received by a command port. If remote command authentication is enabled, users of the **mqiptAdmin** command must enter the correct access password, specified in the **AccessPW** property in the MQIPT configuration, whenever an administrative command is issued using a command port.
- MQIPT can be configured to listen for administrative commands using a command port that is secured by TLS. This uses encryption to protect data sent between the **mqiptAdmin** command and the MQIPT instance being administered, including the access password if MQIPT is configured to require authentication for commands received by the command port. The TLS command port can be configured in addition to the unsecured command port that is available in previous versions of MQIPT.
- A local address can be specified to restrict connections to either the unsecured or the TLS command port to those from a specific network interface. This can be used, for instance, to prevent remote administration of MQIPT, while allowing different users on the local machine to use the command port to administer MQIPT.

For more information about administering MQIPT using the **mqiptAdmin** command, see [Administering MQIPT by using the command line](#).

Support for Transport Layer Security (TLS) 1.3

► V 9.2.0 Transport Layer Security (TLS) 1.3 support for a range of protocols

IBM MQ 9.2.0 supports Transport Layer Security (TLS) 1.3 for a range of protocols. TLS 1.3 can be used for connections between queue managers and for C, C++, IBM MQ classes for Java, and IBM MQ classes for JMS client applications.

Support for TLS 1.3 for Java and JMS client applications is provided when using Java 11.

► V 9.2.0 New CipherSpecs for TLS 1.3

The new CipherSpecs for TLS 1.3 that IBM MQ 9.2.0 provides are described in [Enabling CipherSpecs](#). (For a list of these CipherSpecs, see the TLS 1.3 CipherSpecs section in [Table 1](#).) All the new CipherSpecs work both with RSA and Elliptic Curve certificates.

For ease of configuration and future migration, IBM MQ 9.2.0 also provides a set of alias CipherSpecs including ANY_TLS12, ANY_TLS12_OR_HIGHER, and ANY_TLS13_OR_HIGHER among others. Migrating existing security configurations to use an alias CipherSpec means that you can adapt to cipher additions and deprecations without needing to make further invasive configuration changes in the future. Adding an alias CipherSpec to message channel agent channels, MQI, Java and .NET clients, and cluster channels means that you can:

- Configure TLS channel security without needing to know a long complicated IBM MQ specific CipherSpec string.
- Adapt without any configuration change to use new ciphers, and handle deprecation of weak ciphers. This feature is particularly useful within clusters.

For more information about the alias CipherSpecs, see [Enabling CipherSpecs](#). (For a list of these CipherSpecs, see the Alias CipherSpecs section in [Table 1](#).) See also [SSLCIPH](#), and [Migrating existing security configurations to use an alias CipherSpec](#).

To use TLS 1.3 or TLS 1.3 alias CipherSpecs, the JRE running your Java or JMS application must support TLS 1.3.

Note: When using earlier CipherSpecs on a queue manager that has TLS 1.3 enabled through a server `qm.ini` property or a client `mqclient.ini` property, which is the default setting on a new queue manager, there are some changes that you should be aware of.

In accordance with the TLS 1.3 specification, many earlier CipherSpecs are disabled and *cannot be enabled* by use of the existing configuration options. These include:

- All SSLv3 CipherSpecs
- All RC2 or RC4 CipherSpecs
- All CipherSpecs with an encryption key size of less than 112 bits

To restore previous behavior, TLS 1.3 can be disabled as described in [Using TLS 1.3 in IBM MQ](#).

► V 9.2.0 Provision for a list of acceptable TLS CipherSpecs

From IBM MQ 9.2.0, you can provide a custom list of ordered and enabled CipherSpecs that IBM MQ is permitted to use. For more information on how to configure a custom list, see [Providing a custom list of ordered and enabled CipherSpecs on Multiplatforms](#).

► V 9.2.0 ► V 9.2.0 For more information about CipherSpec ordering, see [“CipherSpec order” on page 60](#).

► V 9.2.0 TLS Handshake Transcript

IBM MQ 9.2.0 adds support for the TLS handshake transcript available from the IBM Global Security Kit (GSKit) cryptographic provider. This functionality is available on Distributed platforms that utilize IBM MQ both in the queue manager and client. To view the TLS handshake transcript, GSKit and GSKit trace must be enabled and a TLS handshake must fail. The transcript will then be collected and written out as part of the `amqrmppa` or client application trace file.

► V 9.2.0 ► IBM i TLS 1.3 on IBM i

The availability of TLS 1.3 on IBM MQ is dependent on the availability of TLS 1.3 in the underlying IBM i operating system. For details on what IBM i versions support TLS 1.3 and how to enable it, see [System TLS support for TLSv1.3](#).

Increased level of control to determine how IBM MQ uses available storage

► V 9.2.0 From IBM MQ 9.2.0, you have the option of configuring and monitoring queues that will support substantially more than the two terabyte default limit used in releases of IBM MQ prior to IBM MQ 9.2.0. You also have the option of reducing the size a queue file can grow to. To enable you to configure queues, there is an additional attribute on local and model queues, **MAXFSIZE** and to monitor queues there are two additional queue status attributes, **CURFSIZE** and **CURMAXFS**. For more information, see [Modifying IBM MQ queue files](#).

Version 2 of the REST API

► V 9.2.0 IBM MQ 9.2.0 introduces version 2 of the REST API. This version increase applies to the administrative REST API, messaging REST API, and MFT REST API. This version increase changes the resource URL that is used for the REST API. The URL prefix for the resource URLs at version 2 is the following URL:

```
https://host:port/ibmmq/rest/v2/
```

You can continue to use the version 1 URL for existing applications. Most REST API resources are available in both versions. However, new REST API resources are available only with the version 2 URL. For example, the new publish URL in the messaging REST API is available only with the version 2 URL.

The following REST API resources are not available in version 2:

- GET subscription
- GET channel
- POST queue
- PATCH queue
- GET queue
- DELETE queue

You can use the [MQSC](#) resource URL as an alternative to using these version 1 REST API resources.

For more information, see [REST API versions](#).

Enhancements to the administrative REST API

► V 9.2.0 IBM MQ 9.2.0 introduces new administrative REST API enhancements with the `/admin/action/qmgr/{qmgrName}/mqsc` resource. Before IBM MQ 9.2.0, this resource could be used to send MQSC commands to a queue manager for processing. Now, you can choose to send the MQSC command to the queue manager, and receive responses, in JSON format instead of the MQSC command format.

For example, before IBM MQ 9.2.0 the MQSC command could be sent to the `/admin/action/qmgr/{qmgrName}/mqsc` resource in the following format:

```
{
  "type": "runCommand",
  "parameters": {
    "command": "DEFINE CHANNEL(NEWSVRCONN) CHLTYPE(SVRCONN)"
  }
}
```

From IBM MQ 9.2.0, you can send the command in the following JSON format:

```
{
  "type": "runCommandJSON",
  "command": "define",
  "qualifier": "channel",
  "name": "NEWSVRCONN",
  "parameters": {
    "chltype": "svrconn"
  }
}
```

From IBM MQ 9.2.0, the following enhancements are available with the JSON format MQSC REST API:

- The following commands are now supported:
 - DISPLAY CONN(*connectionID*) TYPE (HANDLE)
 - DISPLAY CONN(*connectionID*) TYPE (*)
 - DISPLAY CONN(*connectionID*) TYPE (ALL)
- Single quotation marks are automatically escaped. You no longer need to use an additional single quotation mark to specify a single quotation mark in an attribute value.
- In the **SET POLICY** command, the **SIGNER** and **RECIP** attributes are now list attributes. Instead of specifying a string value for these attributes, you now use a JSON array. This change enables you to specify multiple values for the **SIGNER** and **RECIP** within a single command.
- Enhanced MQSC syntax error checking is now available. When an MQSC syntax error is detected in the JSON input, instead of returning a 200 response and the MQSC error in the response body, a 400 response is returned with a new error message indicating where the syntax error occurred.

For more information about the `/admin/action/qmgr/{qmgrName}/mqsc` resource and the format of the JSON you can specify in the request body, see [POST /admin/action/qmgr/{qmgrName}/mqsc](#).

Host header validation for the IBM MQ Console and REST API

V 9.2.0 You can configure the mqweb server to restrict access to the IBM MQ Console and REST API such that only requests that are sent with a host header that matches a specified allowlist are processed. An error is returned if a host header value that is not on the allowlist is used. For more information, see [Configuring host header validation for the IBM MQ Console and REST API](#).

Updated IBM MQ Console look and feel

V 9.2.0 From IBM MQ 9.2.0 a new console, with a new look and feel, is available on Multiplatforms. For more information, see [Quick tour of the New Web Console](#).

Enhancements to the IBM MQ Bridge to Salesforce

V 9.2.0 **Linux** **Changes to tracing and logging on IBM MQ Bridge to Salesforce**
IBM MQ 9.2.0 introduces additional configuration options that permit two major classes of additional topology, and changes to the way in which tracing and logging work on IBM MQ Bridge to Salesforce. For more information, see [Additional configuration options for IBM MQ Bridge to Salesforce and runmqsfb \(run IBM MQ Bridge to Salesforce\)](#) for details of the changes to this command.

V 9.2.0 **Linux** **V 9.2.0** **Secure password encryption for IBM MQ Bridge to Salesforce**
IBM MQ 9.2.0 provides additional security options for the IBM MQ Bridge to Salesforce, including options for how passwords are stored. For more information, see [runmqsfb \(run IBM MQ Bridge to Salesforce\)](#).

Configurable ephemeral directory

V 9.2.0 **Linux** **AIX** IBM MQ 9.2.0 introduces the **EphemeralPrefix**, which defines the location that data ephemeral to the queue manager should go, such as queue manager operating system sockets, allowing the AIX and Linux domain sockets to be placed on a non-mounted file system in a Red Hat OpenShift environment. For more information, see [Configurable ephemeral directory](#).

Note: You do not have to run in Red Hat OpenShift to run in this environment. You have the option to use an alternative ephemeral data directory on all platforms except z/OS, and on the IBM MQ Appliance.

Userdata directory

V 9.2.0 From IBM MQ 9.2.0, the queue manager filestore includes a `userdata` directory that you can use for storing the persistent state of an application. For more information, see [Userdata directory](#) and [Storing persistent application status](#).

License acceptance after installation on Linux

V 9.2.0 **Linux** From IBM MQ 9.2.0, on Linux, you have the option of accepting the correct license for your enterprise after you install the product. For more information, see [License acceptance on IBM MQ for Linux](#).

Installing IBM MQ for Linux with the yum installer on Linux Red Hat

Linux

V 9.2.0 **Linux** **V 9.2.0** From IBM MQ 9.2.0, you can use the yum installer on Linux Red Hat to install, modify, and uninstall IBM MQ.

Using the yum installer enables you to install IBM MQ components without needing to consider the dependencies that the component has. The yum installer automatically installs the pre-requisite components as part of the installation process.

For more information, see [Installing IBM MQ on Linux Red Hat using yum](#) and [Uninstalling or modifying IBM MQ on Linux](#).

More effective integration with WebSphere Liberty

V 9.2.0 Message-driven bean problem resolution

From IBM MQ 9.2.0, the **maxSequentialDeliveryFailures** activation specification property defines the maximum number of sequential message delivery failures to a message-driven bean (MDB) instance that the resource adapter tolerates, before pausing the MDB. For more information, see [IBM MQ message-driven bean pause in WebSphere® Liberty](#).

V 9.2.0 Full Liberty XA support with client channel definition tables

When using WebSphere Liberty 18.0.0.2 onwards, with IBM MQ 9.2.0, you can make use of queue manager groups within the client channel definition table (CCDT) in conjunction with XA transactions. This means that it is now possible to make use of workload distribution and availability, provided by queue manager groups, whilst maintaining transaction integrity. For more information, see [Full Liberty XA support with client channel definition tables](#).

This is a client-side feature, that is, you need an IBM MQ 9.2.0 resource adapter, not an IBM MQ 9.2.0 queue manager.

Enhancements to the messaging REST API

Ability to browse messages on a queue

IBM MQ 9.2.0 introduces the ability to browse messages on a queue by using the messaging REST API:

- You can use the `/messaging/qmgr/{qmgrName}/queue/{queueName}/message` resource with an HTTP GET to browse the next message on the queue. For more information, see [GET /messaging/qmgr/{qmgrName}/queue/{queueName}/message](#).
- You can use the `/messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist` resource with an HTTP GET to view a list of messages on the queue. For more information, see [GET /messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist](#).

Enhanced REST messaging performance with connection pools

To optimize the performance of the messaging REST API, connections to IBM MQ queue managers are pooled. That is, instead of each REST request creating, using, and destroying its own connection, each REST request uses a connection from a connection pool. By default, 20 connections are available for each queue manager pool. You can change the maximum number of pooled connections and the default behavior of the messaging REST API when all connections are in use by using the **setmqweb properties** command. For more information, see [Configuring the messaging REST API](#).

Publish messages to topics with the messaging REST API

From IBM MQ 9.2.0, you can publish messages to a specified topic by using the messaging REST API. You can use the `/messaging/qmgr/{qmgrName}/topic/{topicString}/message` resource with an HTTP POST to publish a message to the topic. For more information, see [POST /messaging/qmgr/{qmgrName}/topic/{topicString}/message](#).

Support for running applications on Microsoft .NET Core

.NET Core support Windows and Linux

From IBM MQ 9.2.0, IBM MQ supports .NET Core on IBM MQ .NET and XMS .NET on Windows and Linux.

For more information, see [Installing IBM MQ classes for .NET Standard](#) and [Installing IBM MQ classes for XMS .NET Standard](#).




Support for development of .NET Core applications on macOS

IBM MQ 9.2.0 supports the development of .NET Core applications on macOS. Once developed, these applications can be run supported on either Windows or Linux environments. For more information, see [Developing IBM MQ .NET Core applications on macOS](#).

Simplified creation of .NET Core applications

IBM MQ 9.2.0 adds .NET project templates to Microsoft Visual Studio, enabling you to write your applications more quickly. For more information, see [Using the IBM MQ .NET project template](#) and [Using the IBM MQ XMS .NET project template](#).




Advanced Message Queuing Protocol (AMQP) shared subscription enhancement

   IBM MQ 9.2.0 adds support to AMQP channels for consuming data from subscriptions and shared-subscriptions for example when using the Qpid™ JMS client library. For more information, see [Developing AMQP client applications](#).

Related concepts

    [What's new in IBM MQ 9.2.0 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.0 delivers a number of new features that are available only with IBM MQ Advanced for Multiplatforms entitlement.

   [What's new in IBM MQ for z/OS 9.2.0 - base and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

    [What's new in IBM MQ for z/OS 9.2.0 - Advanced and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement and some that are available with IBM MQ Advanced for z/OS Value Unit Edition entitlement only.







[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.







What's new in IBM MQ 9.2.0 for Multiplatforms - Advanced entitlement only

IBM MQ 9.2.0 delivers a number of new features that are available only with IBM MQ Advanced for Multiplatforms entitlement.





Active/active messaging

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-  [“Support for PKCS #11 cryptographic hardware in MQIPT” on page 40](#)

Managing IBM MQ

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-  [“Identification of installs of High Availability Replica” on page 41](#)
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Deploying the IBM MQ Advanced container

-   [“.zip images of IBM MQ are available for use with development and production containers” on page 41](#)
-   [“MQ Operators replace Helm as the mechanism for deploying an IBM MQ Advanced container” on page 41](#)

Disaster recovery for high availability replicated data queue managers

V 9.2.0 **Linux** You can now configure a replicated data queue manager (RDQM) that runs on a high availability group on one site, but can fail over to another high availability group at another site if some disaster occurs that makes the first group unavailable. This is known as a DR/HA RDQM. See [RDQM disaster recovery and high availability](#).

Replicated data queue managers now available on RHEL 8

V 9.2.0 **Linux** **V 9.2.0** You can now configure replicated data queue managers on RHEL 8.2 and onwards. See [Installing RDQM \(replicated data queue managers\)](#).

Highly available Managed File Transfer agents

V 9.2.0 From IBM MQ 9.2.0, you can set up Managed File Transfer standard and bridge agents to be highly available. You can configure multiple instances of the same MFT agent on two or more servers in active and standby mode. If the active instance of the agent fails at any time, even when transfers are not in progress, another instance of the agent automatically starts up and enables file transfer to continue. This occurs, even in cases where one of the agents fails due to network issues, hardware issues, or any other reason that causes the agent to stop. For more information, see [Highly available agents in IBM MQ Managed File Transfer](#).

Use of IBM Aspera fasp.io Gateway streaming for IBM MQ messages

Windows **V 9.2.0** **Linux** Queue managers can be configured so that IBM MQ system, application, and Managed File Transfer messages pass through an Aspera gateway to reach a destination using the Aspera FASP protocol in place of TCP/IP. For some use cases, this allows messages to move between destinations more rapidly than otherwise would be the case.

From IBM MQ 9.2.0, IBM MQ Advanced for Multiplatforms provides entitlement for using an IBM Aspera fasp.io Gateway. An IBM MQ Advanced for Multiplatforms queue manager can also use an Aspera gateway running on Linux on POWER® Systems or Linux for IBM Z.

An Aspera gateway is set up, under Linux or Windows, for use by sending and receiving queue managers. Each of these queue managers must be one of IBM MQ Advanced for z/OS VUE, IBM MQ Advanced for Multiplatforms, or IBM MQ Appliance queue managers. The gateway does not need to run on the same server as the queue manager, or on the IBM MQ Appliance.

For more information, see [Defining an Aspera gateway connection on Linux or Windows](#).

Note that use of the Aspera gateway is limited to IBM MQ messages unless the gateway is separately entitled.

Enhancements to the IBM MQ Bridge to blockchain

V 9.2.0 **Linux** **IBM MQ Bridge to blockchain Hyperledger Fabric support**
From IBM MQ 9.2.0, the IBM MQ Bridge to blockchain is updated to add support for Hyperledger Fabric for interaction between IBM MQ and the blockchain. This support replaces previous APIs that were used for connectivity. For more information, see [Configuring IBM MQ for use with blockchain](#).

V 9.2.0 **Linux** **Changes to tracing and logging on IBM MQ Bridge to blockchain.**
IBM MQ 9.2.0 introduces changes to the way in which tracing and logging work on IBM MQ Bridge to blockchain. For more information, see [Additional configuration options for IBM MQ Bridge to blockchain](#).

► **V 9.2.0** ► Linux ► **V 9.2.0** **Secure password encryption for IBM MQ Bridge to blockchain**
IBM MQ 9.2.0 provides additional security options for the IBM MQ Bridge to blockchain, including options for how passwords are stored. For more information, see [runmqbcb \(run IBM MQ Bridge to blockchain\)](#).

Support for PKCS #11 cryptographic hardware in MQIPT

► **V 9.2.0** From IBM MQ 9.2.0, IBM MQ Internet Pass-Thru (MQIPT) can access digital certificates that are stored in cryptographic hardware that supports the PKCS #11 interface. See [Using PKCS #11 cryptographic hardware](#) for more information.

New features and enhancements for Managed File Transfer

► **V 9.2.0** **Highly available Managed File Transfer agents**
From IBM MQ 9.2.0, you can set up Managed File Transfer standard and bridge agents to be highly available. You can configure multiple instances of the same MFT agent on two or more servers in active and standby mode. If the active instance of the agent fails at any time, even when transfers are not in progress, another instance of the agent automatically starts up and enables file transfer to continue. This occurs, even in cases where one of the agents fails due to network issues, hardware issues, or any other reason that causes the agent to stop. For more information, see [Highly available agents in IBM MQ Managed File Transfer](#).

► **V 9.2.0** **Managed File Transfer support for FTP server on existing IBM i systems**
From IBM MQ 9.2.0 you can use an FTP server, running on IBM i, to upload and download files, from or to, the root file system ("/") of the Integrated File System (IFS)



Attention:

1. You do not require IBM MQ for IBM i to be installed on your IBM i machine.
2. You can use the root (/) file system only. Other file systems are not supported.

For more information, see the [fteCreateBridgeAgent](#) command.

► **V 9.2.0** **New `fteClearMonitorHistory` command for clearing resource monitor history**
From IBM MQ 9.2.0, the **`fteClearMonitorHistory`** command provides a mechanism for clearing the history of a Managed File Transfer resource monitor to simplify the process of re-initiating failed transfers. For more information, see [Clearing resource monitor history](#) and [fteClearMonitorHistory](#).

► **V 9.2.0** **New property for specifying the permission of the MFT log file**
The MFT Logger enables you to log data about the use of Managed File Transfer in an offline store for additional review or auditing. IBM MQ 9.2.0 introduces a new property, **`wmqfte.file.logger.filePermissions`**, in the `logger.properties` file which allows you to enable read permissions on the logger file, making it easier for additional sources to read these logs and consume the data for analysis. For more information, see [the MFT logger.properties file](#).

► **V 9.2.0** **Option to specify wait time for Managed File Transfer database logger shut down**
From IBM MQ 9.2.0, a new property, **`immediateShutdownTimeout`**, is added to the `logger.properties` file. When this property is called, the logger waits for the specified amount of time for any outstanding operations to complete and shut down gracefully. For more information, see [The MFT logger.properties file](#).

► **V 9.2.0** **Option to specify an installation name with the `fteCreateEnvironment` command**
IBM MQ 9.2.0 introduces an additional parameter to the **`fteCreateEnvironment`** command, which sets the environment variable for the configuration and transfer of files for the Redistributable Managed File Transfer Agent. You can use the new **`-n`** parameter to specify an installation name. For more information, see [Creating the initial configuration for the Redistributable Managed File Transfer Agent](#) and [fteCreateEnvironment](#).

► V 9.2.0 New REST API calls for Managed File Transfer administration

IBM MQ 9.2.0 expands the existing administrative REST API for Managed File Transfer, by adding

- REST API calls for creating a new resource monitor, listing MFT resource monitor status along with other configuration information, and deleting an existing resource monitor, or deleting the history of an existing resource monitor. For more information, see [admin/mft/monitor](#).
- A REST API call for creating file transfers. For more information, see [admin/mft/transfer](#).

► V 9.2.0 Support for the MQWebUser role in the MFT REST API

From IBM MQ 9.2.0, you can use the MQWebUser role to authenticate:

- POST operations. For more information, see [POST](#) for monitors and [POST](#) for transfers.
- GET operations. For more information, see [GET](#) for agents, [GET](#) for transfers, and [GET](#) for monitor status.

For more information, see [admin/mft/transfer](#).

► V 9.2.0 ► V 9.2.0 Enhanced credentials protection

IBM MQ 9.2.0 introduces enhanced security features. See the changes to [fteObfuscate](#) and [Improvements to MFT security](#) for more information.

Identification of installs of High Availability Replica

► V 9.2.0 From IBM MQ 9.2.0, when installing and configuring IBM MQ Advanced for RDQM, you can nominate individual installs as either IBM MQ Advanced or IBM MQ Advanced High Availability Replica. This is then reported with IBM License Management Tool (ILMT) to allow for correct license identification. For more information, see [setmqinst \(set IBM MQ installation\)](#).

Improved password protection for Java Advanced Message Security clients

► V 9.2.0 ► V 9.2.0 An improvement has been deployed to Java Advanced Message Security (AMS) clients that allows them to parse configurations that contain encrypted passwords. This allows for the protection of keystore and truststore passwords inside an AMS configuration file.

This new improved system deprecates the old password protection system, and if your enterprise protected passwords in Java AMS clients prior to IBM MQ 9.2.0, you should protect the passwords again using the new command.

A command has been provided that can encrypt plain text passwords into the encrypted format usable with Java AMS clients. For more information, see [Advanced Message Security - Java](#).

.zip images of IBM MQ are available for use with development and production containers


► Linux ► V 9.2.0 IBM MQ server is now packaged as a .zip file to support clients building their own container images for Linux for x86-64 environments. The .zip file enables IBM MQ container images to be built that can run under the Red Hat OpenShift **restricted** security context constraints (SCC) without requiring privilege escalation. The .zip images are available as CD release updates only, with no long-term support option, and can only be used for building container images.

MQ Operators replace Helm as the mechanism for deploying an IBM MQ Advanced container


► Linux ► V 9.2.0 At IBM MQ 9.1.5, IBM MQ introduced version 1.0.0 of a Kubernetes Operator that provides native integration with Red Hat OpenShift Container Platform. MQ Operator 1.0.0 is only compatible with IBM MQ 9.1.5. For IBM MQ 9.2.0, MQ Operator 1.1.0 is added, which is compatible with IBM MQ 9.1.5 and IBM MQ 9.2.0.

From IBM MQ 9.2.0, MQ Operators are the supported mechanism for deploying an IBM MQ Advanced container. Helm is no longer supported.

Related concepts

 [What's new in IBM MQ 9.2.0 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.0 delivers a number of new features that are available with base product entitlement, and also with Advanced entitlement.

 [What's new in IBM MQ for z/OS 9.2.0 - base and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

 [What's new in IBM MQ for z/OS 9.2.0 - Advanced and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement and some that are available with IBM MQ Advanced for z/OS Value Unit Edition entitlement only.


[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.



What's new in IBM MQ for z/OS 9.2.0 - base and Advanced VUE entitlement

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.











Fault tolerance

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Extending your IBM MQ network

-  [“Enhancements to IBM MQ support for IBM z/OS Connect Enterprise Edition” on page 43](#)
-  [IBM MQ Internet Pass-Thru](#)

Managing IBM MQ

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Developing for IBM MQ

- **V 9.2.0** [Enhancements to the messaging REST API](#)

Application development

- **LTS** [“\[Long Term Support\]Simplified Java application technologies” on page 48](#)

Improved log throughput using zHyperWrite

V 9.2.0 IBM MQ for z/OS 9.2.0 adds the ability to use zHyperWrite, when writing to active log data sets that have been configured for synchronous replication, using IBM MQ Metro Mirror. zHyperWrite can speed up IBM MQ log writes by removing some of the time required for the synchronous replication of data.

For more information, see [Using MetroMirror with IBM MQ](#).

Enhancements to IBM MQ support for IBM z/OS Connect Enterprise Edition

V 9.2.0 Runnable Service Archive support for IBM MQ

z/OS Connect EE version 3.0.21.0 and later, ships an enhanced version of the MQ Service Provider which supports service archive files. You should migrate to that version of z/OS Connect EE and use the built-in MQ Service Provider, instead of using the service provider shipped with the IBM MQ for z/OS product.

For more information, see [Quick start scenarios](#) for the MQ Service Provider in the z/OS Connect EE documentation in IBM Documentation. Detailed reference information is provided under [Using the IBM MQ service provider](#).

V 9.2.0 Support for using client connections with IBM z/OS Connect Enterprise Edition

The MQ Service Provider for IBM z/OS Connect EE now supports client connections to both remote and local z/OS queue managers. This allows more flexible deployments as the queue manager and IBM z/OS Connect EE server do not need to be running on the same LPAR. For more information, see [Using the IBM MQ service provider](#).

IBM MQ Internet Pass-Thru

V 9.2.0 Inclusion of IBM MQ Internet Pass-Thru

IBM MQ Internet Pass-Thru (MQIPT) is a utility that can be used to implement messaging solutions between remote sites across the internet. In IBM MQ 9.2.0, MQIPT is a fully-supported optional component of IBM MQ that you can download from [IBM Fix Central for IBM MQ](#). MQIPT has previously been available as support pack MS81.

The following changes have been made to MQIPT since version 2.1 of the support pack:

- The supplied Java runtime environment (JRE) has been upgraded from Java 7 to Java 8, to match the JRE version supplied with IBM MQ.
- The SSL 3.0, TLS 1.0, and TLS 1.1 protocols are disabled by default. The only cryptographic protocol that is enabled by default is TLS 1.2. To enable protocols that are disabled, follow the procedure in [Enabling deprecated protocols and CipherSuites](#).
- Support for IBM Network Dispatcher has been removed.
- **V 9.2.0** **V 9.2.0** The IPT Administration Client graphical user interface has been removed. Previous versions of the IPT Administration Client cannot be used with MQIPT in IBM MQ 9.2.0. To configure and administer MQIPT, edit the `mqipt.conf` configuration file and use the **mqiptAdmin** command, as described in [Administering MQIPT by using the command line](#).

- All sample files supplied with MQIPT are now located under a new directory called `samples` in the MQIPT installation directory.
- The **CommandPort** property has been removed from the sample configuration file `mqiptSample.conf` to improve security. This means that when using the sample configuration, MQIPT does not listen on a command port for commands issued by the **mqiptAdmin** command. To allow MQIPT to be administered remotely using the **mqiptAdmin** command, change the configuration file to specify a value for the **CommandPort** or **SSLCommandPort** property. Review the security considerations in [Other security considerations](#) before enabling an MQIPT command port.

For more information about MQIPT, see [IBM MQ Internet Pass-Thru](#).

V 9.2.0 Enhanced protection of stored passwords in MQIPT

From IBM MQ 9.2.0, all passwords that are stored in the MQIPT configuration can be protected by encrypting the passwords using the **mqiptPW** command. IBM MQ 9.2.0 also introduces a new, more secure, protection method for passwords that are stored for use by MQIPT, and the ability for you to specify an encryption key that is used to encrypt and decrypt stored passwords. For more information, see [Encrypting stored passwords](#).

V 9.2.0 **V 9.2.0** Improved administration of MQIPT

The following new features of MQIPT in IBM MQ 9.2.0 allow easier and more secure administration of MQIPT using the **mqiptAdmin** command.

- Local instances of MQIPT can be administered using the **mqiptAdmin** command without the need for MQIPT to listen on a command port. The **mqiptAdmin** command must be run under the user ID that was used to start the MQIPT instance. Alternatively, on AIX and Linux, the `root` user can be used.
- MQIPT can be configured to authenticate administrative commands received by a command port. If remote command authentication is enabled, users of the **mqiptAdmin** command must enter the correct access password, specified in the **AccessPW** property in the MQIPT configuration, whenever an administrative command is issued using a command port.
- MQIPT can be configured to listen for administrative commands using a command port that is secured by TLS. This uses encryption to protect data sent between the **mqiptAdmin** command and the MQIPT instance being administered, including the access password if MQIPT is configured to require authentication for commands received by the command port. The TLS command port can be configured in addition to the unsecured command port that is available in previous versions of MQIPT.
- A local address can be specified to restrict connections to either the unsecured or the TLS command port to those from a specific network interface. This can be used, for instance, to prevent remote administration of MQIPT, while allowing different users on the local machine to use the command port to administer MQIPT.

For more information about administering MQIPT using the **mqiptAdmin** command, see [Administering MQIPT by using the command line](#).

Support for data set encryption

V 9.2.0 IBM MQ for z/OS 9.2.0 introduces support for the use of z/OS data set encryption, for active log data sets, page sets, and shared message data sets. This means that all data stored in IBM MQ for z/OS data sets can now be protected on disk. For more information, see [Confidentiality for data at rest on IBM MQ for z/OS with data set encryption](#).

Support for Transport Layer Security (TLS) 1.3

► V 9.2.0 ► V 9.2.0 Transport Layer Security (TLS) 1.3 support for a range of protocols

IBM MQ for z/OS 9.2.0 supports Transport Layer Security (TLS) 1.3 for a range of protocols. TLS 1.3 can be used for connections between queue managers and for C, C++, IBM MQ classes for Java, and IBM MQ classes for JMS client applications.

Support for TLS 1.3 for Java and JMS client applications is provided when using Java 11.

► V 9.2.0 ► V 9.2.0 New CipherSpecs for TLS 1.3

The new CipherSpecs for TLS 1.3 that IBM MQ for z/OS 9.2.0 provides are described in [Enabling CipherSpecs](#). (For a list of these CipherSpecs, see the TLS 1.3 CipherSpecs section in [Table 1](#).) All the new CipherSpecs work both with RSA and Elliptic Curve certificates.

For ease of configuration and future migration, IBM MQ for z/OS 9.2.0 also provides a set of alias CipherSpecs including ANY_TLS12, ANY_TLS12_OR_HIGHER, and ANY_TLS13_OR_HIGHER among others. Migrating existing security configurations to use an alias CipherSpec means that you can adapt to cipher additions and deprecations without needing to make further invasive configuration changes in the future. Adding an alias CipherSpec to message channel agent channels, MQI, Java and .NET clients, and cluster channels means that you can:

- Configure TLS channel security without needing to know a long complicated IBM MQ specific CipherSpec string.
- Adapt without any configuration change to use new ciphers, and handle deprecation of weak ciphers. This feature is particularly useful within clusters.

For more information about the alias CipherSpecs, see [Enabling CipherSpecs](#). (For a list of these CipherSpecs, see the Alias CipherSpecs section in [Table 1](#).) See also [SSLCIPH](#), and [Migrating existing security configurations to use an alias CipherSpec](#).

Note: When using earlier CipherSpecs on a queue manager that has TLS 1.3 enabled, there are some changes that you should be aware of.

In accordance with the TLS 1.3 specification, many earlier CipherSpecs are disabled and *cannot be enabled* by use of the existing configuration options. These include:

- All SSLv3 CipherSpecs
- All RC2 or RC4 CipherSpecs
- All CipherSpecs with an encryption key size of less than 112 bits

To restore previous behavior, TLS 1.3 can be disabled as described in [Using TLS 1.3 in IBM MQ](#).

► V 9.2.0 ► V 9.2.0 Provision for a list of acceptable TLS CipherSpecs

From IBM MQ for z/OS 9.2.0, you can provide a custom list of ordered and enabled CipherSpecs that IBM MQ is permitted to use. For more information on how to configure a custom list, see [Providing a custom list of ordered and enabled CipherSpecs on IBM MQ for z/OS](#).

For more information about CipherSpec ordering, see [“CipherSpec order” on page 60](#).

SECPROT attribute available on z/OS

► V 9.2.0 From IBM MQ for z/OS 9.2.0, the **SECPROT** (MQIACH_SECURITY_PROTOCOL) attribute, which displays the security protocol currently in use, is available on z/OS. For more information, see [DISPLAY CHSTATUS](#).



Simplified support for backwards migration

► V 9.2.0 ► V 9.2.0 IBM MQ for z/OS 9.2.0 makes backwards migration simpler by removing the need to apply a migration PTF to earlier version of the product prior to performing backwards migration. Instead, before performing backwards migration, you issue the command START QMGR BACKMIG(target_vrm), where target_vrm is the VRM of the release to backwards migrate to, which


causes the queue manager to start up and perform the necessary backwards migration steps on its data before shutting down again.

Once the command has been successfully processed, you can backwards migrate the queue manager. For more information see [Migrating IBM MQ on z/OS](#), and [START QMGR](#).

Simplified installation of continuous delivery releases

  IBM MQ for z/OS 9.2.0 makes it easier to keep Continuous Delivery releases at the most recent level, particularly when moving over Long Term Support release boundaries. For more information, see [IBM MQ release types](#).

Version 2 of the REST API

 IBM MQ 9.2.0 introduces version 2 of the REST API. This version increase applies to the administrative REST API, messaging REST API, and MFT REST API. This version increase changes the resource URL that is used for the REST API. The URL prefix for the resource URLs at version 2 is the following URL:

```
https://host:port/ibmmq/rest/v2/
```

You can continue to use the version 1 URL for existing applications. Most REST API resources are available in both versions. However, new REST API resources are available only with the version 2 URL. For example, the new publish URL in the messaging REST API is available only with the version 2 URL.


The following REST API resources are not available in version 2:

- GET subscription
- GET channel
- POST queue
- PATCH queue
- GET queue
- DELETE queue

You can use the [MQSC](#) resource URL as an alternative to using these version 1 REST API resources.

For more information, see [REST API versions](#).

Enhancements to the administrative REST API

 IBM MQ 9.2.0 introduces new administrative REST API enhancements with the `/admin/action/qmgr/{qmgrName}/mqsc` resource. Before IBM MQ 9.2.0, this resource could be used to send MQSC commands to a queue manager for processing. Now, you can choose to send the MQSC command to the queue manager, and receive responses, in JSON format instead of the MQSC command format.

For example, before IBM MQ 9.2.0 the MQSC command could be sent to the `/admin/action/qmgr/{qmgrName}/mqsc` resource in the following format:

```
{
  "type": "runCommand",
  "parameters": {
    "command": "DEFINE CHANNEL(NEWSVRCONN) CHLTYPE(SVRCONN)"
  }
}
```

From IBM MQ 9.2.0, you can send the command in the following JSON format:

```
{
  "type": "runCommandJSON",
  "command": "define",
  "qualifier": "channel",
  "name": "NEWSVRCONN",
  "parameters": {
```

```

    "chlname": "svrconn"
  }
}

```

From IBM MQ 9.2.0, the following enhancements are available with the JSON format MQSC REST API:

- The following commands are now supported:
 - DISPLAY CONN(*connectionID*) TYPE (HANDLE)
 - DISPLAY CONN(*connectionID*) TYPE (*)
 - DISPLAY CONN(*connectionID*) TYPE (ALL)
- Single quotation marks are automatically escaped. You no longer need to use an additional single quotation mark to specify a single quotation mark in an attribute value.
- In the **SET POLICY** command, the **SIGNER** and **RECIP** attributes are now list attributes. Instead of specifying a string value for these attributes, you now use a JSON array. This change enables you to specify multiple values for the **SIGNER** and **RECIP** within a single command.
- Enhanced MQSC syntax error checking is now available. When an MQSC syntax error is detected in the JSON input, instead of returning a 200 response and the MQSC error in the response body, a 400 response is returned with a new error message indicating where the syntax error occurred.

For more information about the `/admin/action/qmgr/{qmgrName}/mqsc` resource and the format of the JSON you can specify in the request body, see [POST /admin/action/qmgr/{qmgrName}/mqsc](#).

Updated IBM MQ Console look and feel

V 9.2.0 From IBM MQ for z/OS 9.2.0 a new console, with a new look and feel, is available on z/OS. For more information, see [Quick tour of the New Web Console](#).

Simpler configuration of the product ID (PID) that the mqweb server runs under

V 9.2.0 IBM MQ for z/OS 9.2.0 simplifies the process used to associate the mqweb server with a PID, replacing the old manual approach. When Creating a new mqweb server, the **crtmqweb** command now takes a parameter specifying which PID the server will run under. The **setmqweb** command has been enhanced to allow the PID associated with an existing mqweb server to be changed. For more information on how you use the mqweb server on z/OS, see [Associating the mqweb server with a PID](#).

Host header validation for the IBM MQ Console and REST API

V 9.2.0 You can configure the mqweb server to restrict access to the IBM MQ Console and REST API such that only requests that are sent with a host header that matches a specified allowlist are processed. An error is returned if a host header value that is not on the allowlist is used. For more information, see [Configuring host header validation for the IBM MQ Console and REST API](#).

Message-driven bean problem resolution

V 9.2.0 IBM MQ 9.1.1 introduces the **maxSequentialDeliveryFailures** activation specification property, which defines the maximum number of sequential message delivery failures to a message-driven bean (MDB) instance that the resource adapter tolerates, before pausing the MDB. For more information, see [IBM MQ message-driven bean pause in WebSphere Liberty](#).

Enhancements to the messaging REST API

V 9.2.0 **Ability to browse messages on a queue**
 IBM MQ 9.2.0 introduces the ability to browse messages on a queue by using the messaging REST API:

- You can use the `/messaging/qmgr/{qmgrName}/queue/{queueName}/message` resource with an HTTP GET to browse the next message on the queue. For more information, see [GET /messaging/qmgr/{qmgrName}/queue/{queueName}/message](#).
- You can use the `/messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist` resource with an HTTP GET to view a list of messages on the queue. For more information, see [GET /messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist](#).

V 9.2.0 Enhanced REST messaging performance with connection pools

To optimize the performance of the messaging REST API, connections to IBM MQ queue managers are pooled. That is, instead of each REST request creating, using, and destroying its own connection, each REST request uses a connection from a connection pool. By default, 20 connections are available for each queue manager pool. You can change the maximum number of pooled connections and the default behavior of the messaging REST API when all connections are in use by using the **setmqweb properties** command. For more information, see [Configuring the messaging REST API](#).

V 9.2.0 Publish messages to topics with the messaging REST API

From IBM MQ 9.2.0, you can publish messages to a specified topic by using the messaging REST API. You can use the `/messaging/qmgr/{qmgrName}/topic/{topicString}/message` resource with an HTTP POST to publish a message to the topic. For more information, see [POST /messaging/qmgr/{qmgrName}/topic/{topicString}/message](#).

Application development

LTS Simplified Java application technologies

With APAR PH56722, IBM MQ classes for JMS and IBM MQ classes for Java applications running in a batch environment are allowed to use client connectivity to any z/OS queue manager, regardless of the PID that the queue manager is running under.

See [Java client connectivity to batch applications running on z/OS](#) for more information.

Related concepts

V 9.2.0 **Multi** **V 9.2.0** [What's new in IBM MQ 9.2.0 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.0 delivers a number of new features that are available with base product entitlement, and also with Advanced entitlement.

V 9.2.0 **Multi** **V 9.2.0** **MQ Adv.** [What's new in IBM MQ 9.2.0 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.0 delivers a number of new features that are available only with IBM MQ Advanced for Multiplatforms entitlement.

V 9.2.0 **V 9.2.0** **MQ Adv. VUE** **MQ Adv. z/OS** [What's new in IBM MQ for z/OS 9.2.0 - Advanced and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement and some that are available with IBM MQ Advanced for z/OS Value Unit Edition entitlement only.

[“IBM MQ license information” on page 9](#)


What you can purchase with IBM MQ and what each purchase entitles you to install.

What's new in IBM MQ for z/OS 9.2.0 **- Advanced and Advanced VUE entitlement**




IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement and some that are available with IBM MQ Advanced for z/OS Value Unit Edition entitlement only.

IBM MQ Advanced for z/OS entitlement





The following capabilities are new for Long Term Support at IBM MQ for z/OS 9.2.0. However, they are not available in the IBM MQ 9.2 Continuous Delivery releases:

-  “IBM MQ Advanced for z/OS Value Unit Edition features now available with IBM MQ Advanced for z/OS entitlement” on [page 49](#)



Active/active messaging

-    “Highly available Managed File Transfer agents” on [page 49](#)

Extending your IBM MQ network


-   “Use of IBM Aspera fasp.io Gateway streaming for IBM MQ messages” on [page 50](#)
-   “IBM MQ Bridge to blockchain Hyperledger Fabric support” on [page 50](#)

Managing IBM MQ

-    “Advanced Message Security interception on server-to-server message channels” on [page 50](#)
-     Improved password protection for Java Advanced Message Security clients
-    “New features and enhancements for Managed File Transfer” on [page 51](#)


IBM MQ Advanced for z/OS Value Unit Edition features now available with IBM MQ Advanced for z/OS entitlement

Customers with IBM MQ Advanced for z/OS entitlement gain access to features that were previously only available with IBM MQ Advanced for z/OS Value Unit Edition entitlement. Including:

-  The Connector Pack component, which provides the [IBM Aspera fasp.io Gateway](#), which can improve the speed of transfer of IBM MQ data in lossy, high latency, networks.

Highly available Managed File Transfer agents

  This feature is available with Advanced and Advanced VUE entitlement.

 From IBM MQ for z/OS 9.2.0, you can set up Managed File Transfer standard and bridge agents to be highly available. You can configure multiple instances of the same MFT agent on two or more servers in active and standby mode. If the active instance of the agent fails at any time, even when transfers are not in progress, another instance of the agent automatically starts up and enables file transfer to continue. This occurs, even in cases where one of the agents fails due to network issues, hardware issues, or any other reason that causes the agent to stop. For more information, see [Highly available agents in IBM MQ Managed File Transfer](#).

Use of IBM Aspera fasp.io Gateway streaming for IBM MQ messages

MQ Adv. VUE This feature is available with Advanced VUE entitlement.

V 9.2.0 Queue managers can be configured so that IBM MQ system, application, and Managed File Transfer messages pass through an Aspera gateway to reach a destination using the Aspera FASP protocol in place of TCP/IP. For some use cases, this allows messages to move between destinations more rapidly than otherwise would be the case.

From IBM MQ 9.2.0, IBM MQ Advanced for z/OS VUE provides entitlement for using the IBM Aspera fasp.io Gateway.

An Aspera gateway is set up, under Linux or Windows, for use by sending and receiving queue managers. Each of these queue managers must be one of IBM MQ Advanced for z/OS VUE, IBM MQ Advanced for Multiplatforms, or IBM MQ Appliance queue managers. The gateway does not need to run on the same server as the queue manager, or on the IBM MQ Appliance.

For more information, see [Defining an Aspera gateway connection on Linux or Windows](#).

Note that use of the Aspera gateway is limited to IBM MQ messages unless the gateway is separately entitled.

IBM MQ Bridge to blockchain Hyperledger Fabric support

MQ Adv. VUE This feature is available with Advanced VUE entitlement.

V 9.2.0 From IBM MQ for z/OS 9.2.0, the IBM MQ Bridge to blockchain is updated to add support for Hyperledger Fabric for interaction between IBM MQ and the blockchain. This support replaces previous APIs that were used for connectivity. For more information, see [Configuring IBM MQ for use with blockchain](#).

Advanced Message Security interception on server-to-server message channels

MQ Adv. VUE **MQ Adv. z/OS** This feature is available with Advanced and Advanced VUE entitlement.

V 9.2.0 IBM MQ for z/OS 9.2.0 introduces AMS interception on server-to-server message channels. This feature allows you to support AMS and to communicate with business partners who do not support AMS by enabling you, for example, to decrypt outbound messages to a business partner who does not use AMS and to encrypt inbound messages from a business partner who does not use AMS. For more information, see [Advanced Message Security interception on message channels](#) and [server-to-server message channel interception examples](#).

Improved password protection for Java Advanced Message Security clients

MQ Adv. VUE **MQ Adv. z/OS** This feature is available with Advanced and Advanced VUE entitlement.

V 9.2.0 **V 9.2.0** An improvement has been deployed to Java Advanced Message Security (AMS) clients that allows them to parse configurations that contain encrypted passwords. This allows for the protection of keystore and truststore passwords inside an AMS configuration file.

This new improved system deprecates the old password protection system, and if your enterprise protected passwords in Java AMS clients prior to IBM MQ for z/OS 9.2.0, you should protect the passwords again using the new command.

A command has been provided that can encrypt plain text passwords into the encrypted format usable with Java AMS clients. For more information, see [Advanced Message Security - Java](#).

New features and enhancements for Managed File Transfer

MQ Adv. VUE **MQ Adv. z/OS** These features and enhancements are available with Advanced and Advanced VUE entitlementment.

V 9.2.0 Highly available Managed File Transfer agents

From IBM MQ for z/OS 9.2.0, you can set up Managed File Transfer standard and bridge agents to be highly available. You can configure multiple instances of the same MFT agent on two or more servers in active and standby mode. If the active instance of the agent fails at any time, even when transfers are not in progress, another instance of the agent automatically starts up and enables file transfer to continue. This occurs, even in cases where one of the agents fails due to network issues, hardware issues, or any other reason that causes the agent to stop. For more information, see [Highly available agents in IBM MQ Managed File Transfer](#).

V 9.2.0 New **fteClearMonitorHistory** command for clearing resource monitor history

From IBM MQ for z/OS 9.2.0, the **fteClearMonitorHistory** command provides a mechanism for clearing the history of a Managed File Transfer resource monitor to simplify the process of re-initiating failed transfers. For more information, see [Clearing resource monitor history and fteClearMonitorHistory](#).

V 9.2.0 Option to specify wait time for Managed File Transfer database logger shut down

From IBM MQ for z/OS 9.2.0, a new property, **immediateShutdownTimeout**, is added to the `logger.properties` file. When this property is called, the logger waits for the specified amount of time for any outstanding operations to complete and shut down gracefully. For more information, see [The MFT logger.properties file](#).

V 9.2.0 New REST API calls for Managed File Transfer administration

IBM MQ for z/OS 9.2.0 expands the existing administrative REST API for Managed File Transfer, by adding

- REST API calls for creating a new resource monitor, listing MFT resource monitor status along with other configuration information, and deleting an existing resource monitor, or deleting the history of an existing resource monitor. For more information, see [admin/mft/monitor](#).
- A REST API call for creating file transfers. For more information, see [admin/mft/transfer](#).

V 9.2.0 Support for the **MQWebUser** role in the MFT REST API

From IBM MQ for z/OS 9.2.0, you can use the **MQWebUser** role to authenticate:

POST operations

For more information, see [POST](#) for monitors and [POST](#) for transfers.

GET operations

For more information, see [GET](#) for agents, [GET](#) for transfers, and [GET](#) for monitor status.

For more information, see [admin/mft/transfer](#).

V 9.2.0 **V 9.2.0** Enhanced credentials protection

IBM MQ for z/OS 9.2.0 introduces enhanced security features. See the changes to **fteObfuscate** and [Improvements to MFT security](#) for more information.




Related concepts

V 9.2.0 **Multi** **V 9.2.0** [What's new in IBM MQ 9.2.0 for Multiplatforms - base and Advanced entitlementment](#)

For Multiplatforms, IBM MQ 9.2.0 delivers a number of new features that are available with base product entitlement, and also with Advanced entitlementment.

V 9.2.0 **Multi** **V 9.2.0** **MQ Adv.** [What's new in IBM MQ 9.2.0 for Multiplatforms - Advanced entitlementment only](#)

IBM MQ 9.2.0 delivers a number of new features that are available only with IBM MQ Advanced for Multiplatforms entitlement.

   [What's new in IBM MQ for z/OS 9.2.0 - base and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.0 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.



[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.












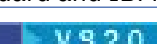





What's changed in IBM MQ 9.2.0

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.1.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.









IBM MQ 9.2.0 includes enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5, along with some enhancements that are new at IBM MQ 9.2.0:




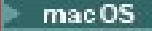

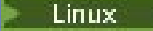





- Changes that are new to Long Term Support (LTS) users at IBM MQ 9.2.0 are indicated by a dark blue icon 
- Changes that are new to Continuous Delivery (CD) users at IBM MQ 9.2.0 are indicated by a light blue icon 

Client application changes





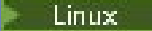
-    [“IBM MQ C redistributable client packages extended to include elements required to build applications” on page 54](#)
-   [“Improved error reporting when HOME is set to a directory that cannot be accessed” on page 54](#)
-     [“Support for .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard” on page 55](#)
-    [“Change to minimum required version of .NET Framework” on page 55](#)
-   [“Update to IBM MQ and Microsoft .NET mapping table for IBM MQ managed .NET client” on page 55](#)
-   [“Reduction in the number of XMS.NET dynamic link libraries” on page 55](#)
-  [“Custom application identification” on page 55](#)

Command and configuration changes










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-   [“Change to displayed values for MQCNO_RECONNECT and MQCNO_RECONNECT_Q_MGR in DISPLAY CONN command” on page 56](#)
-   [“Name change for APPLNAMECHG value in DISPLAY APSTATUS command” on page 56](#)
-  [“TYPE response added to DISPLAY APSTATUS command” on page 56](#)
-   [“Changes to the DISPLAY CONN command” on page 56](#)

-   [“Removal of 12 character limit on MCAUSER user ID for AMQP channels on Windows” on page 56](#)
-      [“Support for converting between CCSIDs 37 and 500” on page 57](#)
-   [“Changes for uniform clusters” on page 57](#)
-   [“Change to suppression of FFSTs for errors on initial communications flows” on page 57](#)









IBM MQ Explorer changes

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Installation and migration changes

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-  [“Migrating uniform clusters to IBM MQ 9.1.5 or later” on page 58](#)
-    [“Additional InstallPATH option for the crtmqpkg command” on page 58](#)
-     [“Changes to the replicated data queue manager \(RDQM\) install packages” on page 58](#)




Managed File Transfer changes

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-   [“New RecoveryTimedOut transfer state for MFT agents” on page 58](#)
-   [“Change to how MFT resource monitors initiate polling” on page 58](#)
-   [“Java EE database logger uses WebSphere Application Server traditional 9.0” on page 59](#)

Queue manager changes

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-  [“Change to trigger monitor shutdown code” on page 59](#)
-  [“Target shutdown time option for endmqm command” on page 59](#)

REST API changes




-  [“Removal of the ibm-mq-total-browse-size response header from the messaging REST API” on page 59](#)
-  [“Java exceptions no longer returned in REST JSON error responses” on page 60](#)
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Security changes












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-   “mqm.gskit.rte library update” on page 60








Tracing changes

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IBM MQ for z/OS changes

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-    “Removal of IBM MQ for z/OS enablement modules” on page 61
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IBM MQ Internet Pass-Thru changes

-   “MQIPT Java security manager policy changes” on page 62
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-   “Removal of the IPT Administration Client” on page 63
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IBM MQ C redistributable client packages extended to include elements required to build applications



From IBM MQ 9.2.0, the IBM MQ C redistributable client packages include the elements required to build the application that is the header files and copybooks. This simplifies application development process as it means that you no longer need to do a full installation of IBM MQ components in order to get started with developing your application. However, the sample source code is still not included in these packages.

The **genmqpkg** command that you can use to build a tailor made package with the subset of files needed for your application is extended so that the repackaging can now be done programmatically as well as interactively. This means that you can embed the rebuilding of the redistributable client into an automated development pipeline for onwards processing.

For more information, see [Redistributable clients](#) and [Installation considerations for redistributable clients](#).

Improved error reporting when HOME is set to a directory that cannot be accessed



The `${HOME}/.mqm` directory is created by the queue manager when using an unregistered or non-installed version of IBM MQ such as the redistributable client. For more information, see [Limitations and other considerations for redistributable clients](#) and [IBM MQ file system permissions applied to /var/mqm](#).

From IBM MQ 9.2.0, the IBM MQ code has been modified so that a more appropriate error message is displayed if there is a problem writing to the HOME directory. The code path that previously led to a SEGV failure has also been corrected.

Reduction in the number of XMS.NET dynamic link libraries



From IBM MQ 9.2.0, the number of XMS.NET dynamic link libraries has been significantly reduced, to a total of five.

The five dynamic link libraries are:

- IBM.XMS.dll - includes all the national language messages
- IBM.XMS.Comms.RMM.dll
- **Windows** Three policy dynamic link libraries:
 - policy.8.0.IBM.XMS.dll
 - policy.9.0.IBM.XMS.dll
 - policy.9.1.IBM.XMS.dll

Support for .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard



From IBM MQ 9.2.0, Microsoft.NET Core 3.1 is the minimum required version for running IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard.

V 9.2.0.25 From IBM MQ 9.2.0 Fix Pack 25, IBM MQ supports .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard. If you are using a .NET Core 3.1 application, you can run this application with a small edit in the csproj file, setting the targetframeworkversion to "net6.0", without any recompilation required.

For more information, see [Installing IBM MQ classes for .NET Standard](#) and [Installing IBM MQ classes for XMS .NET Standard](#).

Change to minimum required version of .NET Framework



From IBM MQ 9.2.0, to run IBM MQ classes for .NET Framework you must install Microsoft.NET Framework V4.6.2. For more information, see [Installing IBM MQ classes for .NET Framework](#).

Update to IBM MQ and Microsoft .NET mapping table for IBM MQ managed .NET client



From IBM MQ 9.2.0, the IBM MQ and Microsoft .NET mapping table for the IBM MQ managed .NET client has been updated to include the TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 and TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 CipherSpecs. This update means that the correct SSL/TLS protocol version is proposed to the server by the client so that the client can connect to a queue manager via a TLS enabled channel using these CipherSpecs. For more information, see [CipherSpec mappings for the managed .NET client](#).

Custom application identification



In addition to the existing ability to choose an application name on Java or JMS client applications, IBM MQ 9.2.0 extends this to other programming languages. For more information, see [Specifying the application name in supported programming languages](#).

New IGNSTATE parameter for runmqsc START and STOP commands

► V 9.2.0 ► Multi

From IBM MQ 9.2.0, it is possible to specify what the return code from **runmqsc START** and **STOP** commands should be in the case where the object being started or stopped is already in the desired state. This makes it easier to write **runmqsc** scripts that give the same result when they are executed multiple times. The object types that **IGNSTATE** applies to are: CHANNEL, LISTENER, and SERVICE.

For more information about how you use this attribute, see [START CHANNEL](#) and [STOP CHANNEL](#).

Change to displayed values for MQCNO_RECONNECT and MQCNO_RECONNECT_Q_MGR in DISPLAY CONN command

► V 9.2.0 ► ALW

The **DISPLAY CONN** command displays connection information for applications connected to a queue manager. Two displayed **CONNOPTS** parameter options are MQCNO_RECONNECT and MQCNO_RECONNECT_Q_MGR.

If you are using an IBM MQ 9.2.0 or later client, the values displayed for MQCNO_RECONNECT and MQCNO_RECONNECT_Q_MGR are the effective reconnect options. If you are using an earlier client version, the values displayed are whatever the application specifies, whether they are currently taking effect or not.

For more information, see [DISPLAY CONN](#).

Name change for APPLNAMECHG value in DISPLAY APSTATUS command

► V 9.2.0 ► ALW

From IBM MQ 9.2.0, the **APPLNAMECHG** value of the **IMMREASN** parameter of the **DISPLAY APSTATUS** command has been renamed **APPNAMECHG**.

TYPE response added to DISPLAY APSTATUS command

► V 9.2.0 ► Multi

From IBM MQ 9.2.0, the MQSC command **DISPLAY APSTATUS** displays the **TYPE** of response, which is one of application (APPL), local (LOCAL), or queue manager (QMGR). For more information, see [Monitoring application balancing](#).

The equivalent PCF command Inquire Application Status (**MQCMD_INQUIRE_APPL_STATUS**) also displays the type of response. For more information, see [Inquire Application Status \(Response\)](#).

Changes to the DISPLAY CONN command

► V 9.2.0 ► ALW

From IBM MQ 9.2.0, there is a change in behavior for the **DISPLAY CONN** command, and the equivalent PCF, REST API, and IBM MQ Explorer output.

Connections coming from either the REST API or IBM MQ Explorer, which previously appeared with an **APPLTYPE** of **USER** and a blank **APPLDESC**, now appear with an **APPLTYPE** of **SYSTEM** and an **APPLDESC** of:

IBM MQ REST API

For connections coming from the IBM MQ REST API.

IBM MQ Explorer

For connections coming from an IBM MQ Explorer.

Removal of 12 character limit on MCAUSER user ID for AMQP channels on Windows

► Windows ► V 9.2.0

AMQP channels have an MCAUSER attribute, which you can use to set the IBM MQ user ID that all connections to that channel are authorized under (see [MCAUSER setting on a channel](#)). On Windows, before IBM MQ 9.2.0, the MCAUSER user ID setting is only supported for user IDs up to 12 characters in length. From IBM MQ 9.2.0, the 12 character limit is removed.

Support for converting between CCSIDs 37 and 500



From IBM MQ 9.2.0, support has been added for converting between CCSIDs 37 and 500 on the IBM MQ Appliance, Windows, Linux, and macOS.

Changes for uniform clusters



In IBM MQ 9.2.0, when using a uniform cluster, it is possible to prevent the use of dynamic queues for applications that have connected with [MQCNO_RECONNECT](#). Certain messaging patterns, particularly those that involve the use of dynamic queues, can cause problems in a uniform cluster because applications can be asked to reconnect at any time. To prevent the use of dynamic queues in a uniform cluster, set the environment variable `AMQ_BLOCK_RECONN_DYN_QUEUES` for every queue manager.

In IBM MQ 9.2.0, it is not possible to open cluster queues for output in a uniform cluster when the bind type in use is `MQOO_BIND_ON_OPEN` and the application has connected with the connect option [MQCNO_RECONNECT](#) or [MQCNO_RECONNECT_Q_MGR](#). In some cases, applications may be using `MQOO_BIND_ON_OPEN` because it is the default option for cluster queues, but it may not be necessary for those applications. If that is the case and the messages semantics of `MQOO_BIND_ON_OPEN` are not required, change the bind type to one of the other bind options. The same behavior can be enabled for regular clusters by setting the environment variable `AMQ_BIND_ON_OPEN_W_RECONNECT=NEVER` on all queue managers that applications can connect to. If you wish to allow `BIND_ON_OPEN` to be used in conjunction with the [MQCNO_RECONNECT](#) or [MQCNO_RECONNECT_Q_MGR](#) options, set the environment variable `AMQ_BIND_ON_OPEN_W_RECONNECT=ALLOW` on all queue managers.

Change to suppression of FFSTs for errors on initial communications flows



From IBM MQ 9.2.0, the capture of FFSTs when reporting [AMQ9207E](#) error messages on initial communications flows is suppressed by default. For more information, see [Environment variables descriptions](#).

Change to Eclipse level for IBM MQ Explorer



From IBM MQ 9.2.0, IBM MQ Explorer is built on Eclipse 4.15.

Changes to delivery mechanism for updates to stand-alone IBM MQ Explorer



From IBM MQ 9.2.0, the stand-alone IBM MQ Explorer, previously known as SupportPac MSOT, is available as a stand-alone application from [Fix Central](#). SupportPac MSOT is no longer available from the IBM download site. For information on how to install the stand-alone IBM MQ Explorer, see [Installing and uninstalling IBM MQ Explorer as a stand-alone application on Linux and Windows](#).

Reduction in the number of default objects



From IBM MQ 9.2.0 the number of default objects has been reduced by one, from 84 to 83. This is because of the removal of the `SYSTEM.MESSAGE.ASSOCIATION.QUEUE`, previously used by the MQ Light web console. The console is no longer available in IBM MQ, so the default object has been removed.

Migrating uniform clusters to IBM MQ 9.1.5 or later

Multi

You need to be aware of certain restrictions when you migrate a uniform cluster from IBM MQ 9.1.4 to IBM MQ 9.1.5 or later. For more information, see [Limitations and considerations for uniform clusters](#).

Additional InstallPATH option for the `crtmqpkg` command

Linux

From IBM MQ 9.2.0, when installing a maintenance update with the `crtmqpkg` command, you can use the additional option **InstallPATH**. The update is installed directly into the directory specified by **InstallPATH**. For more information, see [Multiple IBM MQ installations](#).

V 9.2.0.2 From IBM MQ 9.2.0 Fix Pack 2, the **InstallPATH** option is also available with the `crtmqfp` command. For more information, see [Applying maintenance level updates on Linux using RPM](#).

Changes to the replicated data queue manager (RDQM) install packages

V 9.2.0 Linux V 9.2.0 MQ Adv.

IBM MQ 9.2.0 introduces RHEL8 support as well as RHEL7 support for RDQM. The RHEL8 version installs Pacemaker 2, the RHEL7 version install Pacemaker 1. You now install RDQM and associated packages manually rather than by running an installation script. See [Installing RDQM \(replicated data queue managers\)](#).

See [hardware and software requirements on Linux systems](#) for more information.

New return codes returned by `fteStartAgent` command

V 9.2.0

Before IBM MQ 9.2.0, the `fteStartAgent` command returned either 0 for success or 1 for any type of failure. From IBM MQ 9.2.0, the `fteStartAgent` command can return four additional codes that indicate the nature of a failure. For more information, see [fteStartAgent: start an MFT agent](#).

New `RecoveryTimeout` transfer state for MFT agents

V 9.2.0 MQ Adv.

From IBM MQ 9.2.0, if a transfer recovery timeout is set for a transfer, the source agent moves the transfer into the `RecoveryTimeout` state if transfer recovery times out. After the transfer has been resynchronized, the destination agent removes any part files that were created during the transfer and sends a completion message to the source agent.

For more information, see [Transfer recovery timeout concepts](#) and [MFT agent transfer states](#).

Change to how MFT resource monitors initiate polling

V 9.2.0 MQ Adv.

Before IBM MQ 9.2.0, if a resource monitor performs a poll that takes longer than the polling interval, the next poll starts as soon as the current one finishes with no gap in between. If the items that are found during the first poll are still there when the second poll takes place, this could cause performance issues as it could have an effect on how quickly resource monitors submit work to an agent.

From IBM MQ 9.2.0, the way in which resource monitors initiate polling has been changed so that the resource monitor now uses the `ScheduledExecutorService` and initiates the next poll only after the

completion of the previous poll plus the configured poll interval time. This means that there will now always be a gap in between the poll intervals, rather than having another poll starting straight away after the previous poll if the poll time was longer than the poll interval.

For more information, see [MFT resource monitoring concepts](#).

Java EE database logger uses WebSphere Application Server traditional 9.0

► V 9.2.0 ► MQ Adv.

From IBM MQ 9.2.0 the Java EE database logger uses WebSphere Application Server traditional 9.0.

See [Installing the Java EE database logger for MFT](#) for more information.

Improvements in performance to queue manager shutdown times

► V 9.2.0

From IBM MQ 9.2.0, in certain situations which previously could have caused an extended period between issuing the **endmqm** command, and the queue manager stopping, the shutdown period has been very significantly reduced.



Attention: This is a significant change in performance, therefore, IBM MQ applications and queue manager topologies that make assumptions about extended shutdown periods, might effectively see changes in behavior in some cases.

As an extreme example, in circumstances where remote SENDER channels would have been notified that the receiver was ending during a slower shutdown, this might now only be detected when the next message is sent (which could, as expected, result in loss of non-persistent messages if using the setting NPMSPEED HIGH).

Change to trigger monitor shutdown code

► V 9.2.0 ► Multi

From IBM MQ 9.2.0, a normal shutdown when the queue manager is ending, of either a trigger monitor or client trigger monitor, returns a code of 0 rather than 10.

For more information, see [runmqtm](#) and [runmqtrm](#).

Target shutdown time option for endmqm command

► V 9.2.0 ► Multi

From IBM MQ 9.2.0, you have the option to end the queue manager within a target time of a number of seconds that you specify.

For more information, see [Stopping a queue manager](#) and [endmqm](#).

Removal of the **ibm-mq-total-browse-size** response header from the messaging REST API

► V 9.2.0

From IBM MQ 9.2.0, the response header **ibm-mq-total-browse-size** is no longer returned when you browse a list of messages on a queue using the messaging REST API. That is, when you send a GET request to the `/messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist` URL, the response no longer contains the **ibm-mq-total-browse-size** header.

For more information about GET `/messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist`, see [GET /messaging/qmgr/{qmgrName}/queue/{queueName}/messagelist](#).

Java exceptions no longer returned in REST JSON error responses

► V 9.2.0

Previously, when an error response was returned by the REST API and the error was a Java error, the JSON response included details of the Java exception. From IBM MQ 9.2.0, this information is no longer returned. For more information about REST API error responses, see [REST API error handling](#).

File encoding variable added to the jvm.options file for the mqweb server

► V 9.2.0

From IBM MQ 9.2.0, the file encoding that is used to store user dashboard information for the IBM MQ Console is set to UTF-8. This setting ensures that user dashboard information in double-byte character sets is displayed correctly.

This update is made automatically only for new installations of IBM MQ where the IBM MQ data directory does not exist. If you upgrade your version of IBM MQ, or reinstall IBM MQ with an existing IBM MQ data directory, you must manually set the file encoding if you experience issues with the display of the user dashboard information.

The file encoding is set in the `jvm.options` file. For more information, see [Tuning the mqweb server JVM](#).

CipherSpec order

► V 9.2.0 ► Multi ► V 9.2.0 ► z/OS

The order of CipherSpecs is used when choosing between multiple possible CipherSpecs, for example when using one of the ANY* CipherSpecs. (For more information about ANY* CipherSpecs, see [Enabling CipherSpecs](#), and for a list of these CipherSpecs, see the Alias CipherSpecs section in [Table 1](#).) For this reason, the order of CipherSpecs presented during a TLS handshake by queue managers, C clients and unmanaged .NET clients has been changed to match the generally accepted preferred order, ensuring a more secure CipherSpec is chosen where possible. This may change what CipherSpec is selected during a TLS handshake compared to previous releases of IBM MQ.

Managed .NET clients and DataPower clients do not specify a single CipherSpec but present their own ordered CipherSpec list to IBM MQ. Prior to IBM MQ supporting alias CipherSpecs, it was necessary to configure the IBM MQ channel to specify a single CipherSpec based on the client's CipherSpec ordering. With this change to CipherSpec ordering, it is possible that existing clients configured in this way fail to connect with an [AMQ9631](#) error reported on the queue manager. It is recommended to no longer calculate the specific CipherSpec for the channel configuration and instead specify an Alias CipherSpec, for example ANY_TLS12_OR_HIGHER. The most secure available CipherSpec will then be negotiated between the client and the server.

For more information about the order of CipherSpecs that IBM MQ uses from IBM MQ 9.2.0 and how to change this, see [CipherSpec order in TLS handshake](#).

GCM Cipher update

► Windows ► V 9.2.0 ► Linux ► V 9.2.0

Following advice from IBM Global Security Kit (GSKit), a limit of $2^{24.5}$ TLS records is now in place on GCM Ciphers. TLS communications that use GCM Ciphers, and do not reset the SSL key before the TLS records limit is reached, are terminated. For more information, see [Enabling CipherSpecs](#).

mqm.gskit.rte library update

► V 9.2.0 ► Multi

Additional GSKit libraries are used internally by the queue manager and client, and the `mqm.gskit.rte` file set is a dependency of both components. During installation IBM MQ automatically installs the `mqm.gskit.rte` library.

Changes to the tracing of the AMQR and MQXR services



From IBM MQ 9.2.0 you can trace selected areas of interest, as well as the entire service, for both the AMQR and MQXR services.

For more information, see [Tracing the Advanced Message Queuing Protocol \(AMQP\) Service](#) and [Tracing the telemetry \(MQXR\) service](#).

Change to format of trace timestamps



From IBM MQ 9.2.0, the format of Windows trace timestamps has changed. See [Example trace data for Windows](#) for an example of the revised format.

Managed File Transfer for z/OS FMID moved to be part of IBM MQ for z/OS product installation



These changes apply to both IBM MQ Advanced for z/OS and IBM MQ Advanced for z/OS Value Unit Edition.

Prior to IBM MQ for z/OS 9.2, z/OS users with entitlement to IBM MQ Advanced for z/OS, IBM MQ for z/OS Value Unit Edition (VUE), or IBM MQ for z/OS Managed File Transfer for z/OS (MFT) had to perform a separate SMP/E install to obtain the MFT binaries using FMID HMF9110.

From IBM MQ for z/OS 9.2, the MFT binaries are provided as part of the IBM MQ for z/OS base installation under FMID JMS9207, simplifying the install process.

Important: You still need to be entitled to one of IBM MQ Advanced for z/OS, IBM MQ for z/OS Value Unit Edition (VUE), or IBM MQ for z/OS Managed File Transfer for z/OS if you install FMID JMS9207.

See [Installing IBM MQ Advanced for z/OS](#) for more information.

Important effects of this change are that:

1. The MFT binaries will be installed into an `mqft` directory inside the z/OS UNIX System Services (z/OS UNIX) Components directory, for example: `/mqm/V9R2M0/mqft`.
2. The MFT bin directory moves under the `mqft` directory, for example: `/mqm/V9R2M0/mqft/bin`.
Note: This might affect any scripts that you have, which run any of the **fte*** commands, for example **fteStartAgent**.
3. The SBFGCMDS data set, which contains MFT JCL has been renamed to SCSQFCMD. However, the individual JCL members inside the data set have not been renamed
4. The BFGCUSTM job in the SBFGCMDS data set now uses a value of BFG_PROD that is relative to the z/OS UNIX Components directory.


For a full list of the changes, see [Changes caused by integrating IBM MQ Managed File Transfer for z/OS into the base product](#)

For information on how to migrate to the latest version of MFT see: [Migrating a Managed File Transfer for z/OS installation to the next version of the product](#).

Removal of IBM MQ for z/OS enablement modules



From IBM MQ for z/OS 9.2.0, the enablement modules for Advanced Message Security for z/OS, IBM MQ Advanced for z/OS Value Unit Edition, and IBM MQ for z/OS Value Unit Edition are no longer shipped.

 For Continuous Delivery, the enablement modules are no longer shipped from IBM MQ for z/OS 9.1.3 onwards.



Attention:

- If your enterprise is using the enablement modules for either IBM MQ Advanced for z/OS Value Unit Edition, or IBM MQ for z/OS Value Unit Edition, you should start setting the QMGRPROD attribute as part of migrating to IBM MQ for z/OS 9.2.0 or later. Failure to do this results in the wrong Product ID being associated with usage of the IBM MQ product, which will affect accurate SCRT reporting.
- If your enterprise is using the enablement module for Advanced Message Security, you should start setting the AMSPROD attribute as part of migrating to IBM MQ for z/OS 9.2.0 or later. Failure to do this prevents the queue manager starting up, and message [CSQY024I](#) will be issued.

For more information, see [z/OS installation overview](#) and [Product usage recording with IBM MQ for z/OS products](#).

Changes to the sample security exit CSQ4BCX3

From IBM MQ 9.2.0, the sample security exit [CSQ4BCX3](#) has been updated to support both the following methods of checking a user ID and password:

- Using the **RemoteUserIdentifier** and **RemotePassword** pair from the MQCD structure
- Using the **CSPUserIdPtr** and **CSPPasswordPtr** pair from the MQCSP structure.

For more information, see [IBM MQ for z/OS server connection channel](#).

The CONNSWAP parameter

The value of the **CONNSWAP** parameter is ignored by the CSQ6SYSP macro as applications are always made non-swappable during IBM MQ API calls..

For more information, see [Using CSQ6SYP](#).

In addition, the [DISPLAY SYSTEM](#) MQSC command and [Inquire System](#) PCF command no longer return CONNSWAP information.

MQIPT Java security manager policy changes

From IBM MQ 9.2.0, if you are using a Java security manager with MQIPT, you must include additional `javax.management.MBeanServerPermission`, `javax.management.MBeanPermission`, and `javax.management.MBeanTrustPermission` permissions in the policy file. For the full list of permissions that are required to use a Java security manager with MQIPT, see [Java security manager](#).

Toleration of invalid global property values in the MQIPT configuration

Previous versions of MQIPT terminated immediately if an invalid value for an property in the global section of the `mqipt.conf` configuration file was detected during startup or when refreshing MQIPT. From IBM MQ 9.2.0, invalid values for most properties in the global section are tolerated when refreshing the MQIPT configuration. If properties with invalid values in the global section are present when MQIPT is refreshed, a warning message is issued and the effective value of the property remains unchanged. This prevents invalid property values from causing an active instance of MQIPT to shut down when it is refreshed.

Removal of the IPT Administration Client

► V 9.2.0 ► V 9.2.0

The IPT Administration Client graphical user interface has been removed. Previous versions of the IPT Administration Client cannot be used with MQIPT in IBM MQ 9.2.0. To configure and administer MQIPT, edit the `mqipt.conf` configuration file and use the **mqiptAdmin** command, as described in [Administering MQIPT by using the command line](#).

Changes to connection sharing by JMS applications

► V 9.2.0

If applications are configured as `reconnectable`, channel instances can only be shared between related JMS objects, that is a JMS Connection and its related JMS Sessions. This might require additional channel instances to be configured to support such applications.

For example, if an application uses a single JMS Connection and a single JMS Session, and the channel used has **SHARECNV** equal to 10, previously up to five instances of the application could share a single channel instance. This is still the case if the application is not configured to be `reconnectable`, but if the application is configured as `reconnectable`, each application instance will require its own channel instance, so five channel instances in total would be needed.

For more information, see [Sharing a TCP/IP connection in IBM MQ classes for JMS](#).

Related concepts

► V 9.2.0 ► V 9.2.0

[What's new in IBM MQ 9.2.0](#)

IBM MQ 9.2.0 delivers features and enhancements beyond those that were available in IBM MQ 9.1.0 Long Term Support. The features that you have access to depends on your product entitlement.

► V 9.2.0

[New, changed, and removed messages in IBM MQ 9.2.0](#)

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

► V 9.2.0

[New, changed, and removed messages since IBM MQ 9.1.5](#)

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

► V 9.2.0 ► V 9.2.0

[Deprecated, stabilized and removed features in IBM MQ 9.2.0](#)

A number of features are deprecated, stabilized or removed from IBM MQ 9.2.0.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)








► V 9.2.0 New, changed, and removed messages in IBM MQ 9.2.0

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

► V 9.2.0

[For a list of just the messages that are new, changed or removed since IBM MQ 9.1.5, see “New, changed, and removed messages since IBM MQ 9.1.5” on page 79.](#)

- Multi [“New, changed, and removed IBM MQ AMQ messages” on page 64](#)
- “New, changed, and removed Managed File Transfer messages” on page 69
- Windows ► Linux ► AIX [“New, changed and removed MQ Telemetry messages” on page 71](#)

- [“New, changed, and removed REST API messages” on page 71](#)
- [“New, changed, and removed IBM MQ Console messages” on page 72](#)
-   [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 72](#)
-  [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 73](#)
-    [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 73](#)
- [“New, changed and removed MQJMS messages” on page 74](#)
- [“New, changed and removed JSON messages” on page 74](#)
-  [“New, changed, and removed z/OS messages” on page 74](#)

New, changed, and removed IBM MQ AMQ messages



The following AMQ messages are new for IBM MQ 9.2.0:

AMQ3xxx: Utilities and tools

AMQ3557E to AMQ3568E
 AMQ3569I
 AMQ3570E to AMQ3700I
 AMQ3678E
 AMQ3679I to AMQ3685E
 AMQ3689E
 AMQ3692I
 AMQ3697I
 AMQ3686E to AMQ3688I
 AMQ3690I
 AMQ3691I
 AMQ3693E to AMQ3695E
 AMQ3704E to AMQ3707E
 AMQ3701I to AMQ3703E
 AMQ3708I to AMQ3709E
 AMQ3710 to AMQ3716
 AMQ3717 to AMQ3722
 AMQ3900I to AMQ3915I
 AMQ3916 to AMQ3919

AMQ5xxx: Installable services

AMQ5047I
 AMQ5048I
 AMQ5022I (HP NSS) to AMQ5029I (HP NSS)
 AMQ5065
 AMQ5102W
 AMQ5401S (HP NSS) to AMQ5414W (HP NSS)
 AMQ5612I IBM MQ Appliance
 AMQ5660I IBM MQ Appliance

AMQ5600I (HP NSS)
AMQ5603I (HP NSS)
AMQ5605I (HP NSS)
AMQ5607I (HP NSS)
AMQ5640I (HP NSS) to AMQ5645I (HP NSS)
AMQ5772I
AMQ5767I to AMQ5771E
AMQ5773W to AMQ5778E
AMQ5779I

AMQ6xxx: Common services

AMQ6007S
AMQ6183W (HP NSS)
AMQ6184W (HP NSS)
AMQ6322I AIX and Linux
AMQ6323E IBM i
AMQ6327E
AMQ6328W
AMQ6526E IBM MQ Appliance
AMQ6599W

AMQ7xxx: IBM MQ product

AMQ7362
AMQ7363 to AMQ7367
AMQ7438 to AMQ7439
AMQ7495 to AMQ7496
AMQ7830E

AMQ8xxx: Administration

AMQ8042I (HP NSS)
AMQ8277E
AMQ8399E
AMQ870CI IBM i
AMQ8D40 IBM i
AMQ8932
AMQ8933
AMQ8938
AMQ8939I to AMQ8942I
AMQ8953I

AMQ9xxx: Remote

AMQ9226W (HP NSS)
AMQ9567
AMQ9568
AMQ9695
AMQ9696
AMQ9697
AMQ9698

AMQ9699
AMQ9720W
AMQ9721S
AMQ9798
AMQ9851E
AMQ9881 to AMQ9884
AMQ9885W
AMQ9886E
AMQ9887W

The following AMQ messages are changed for IBM MQ 9.2.0:

AMQ3xxx: Utilities and tools

AMQ3706E (Message reworded)
AMQ3711E (Explanation and Response added)
AMQ3717E (Message reworded)
AMQ3719E (Explanation and Response added)
AMQ3727E (Explanation and Response added)
AMQ3741I (Typo fixed)
AMQ3750E (Explanation and Response added)
AMQ3752E (Explanation and Response added)
AMQ3758I ("estimated time to completion" changed to "estimated time of completion")
AMQ3760W (Explanation and Response added)
AMQ3764I (Severity changed from "Error" to "Information")
AMQ3765I (Severity changed from "Error" to "Information")
AMQ3766E (Explanation and Response added)
AMQ3767I (description of each available command switch added)
AMQ3774E (Explanation and Response added)
AMQ3775E (Explanation and Response added)
AMQ3780E (Explanation and Response added)
AMQ3781E (Explanation and Response added)
AMQ3782E (Explanation and Response added)
AMQ3791E (Explanation and Response added)
AMQ3795E (Explanation and Response added)
AMQ3812E (Explanation and Response added)
AMQ3814I (Changed message text)
AMQ3815I (Changed message text)
AMQ3821E (Changed message text)
AMQ3822E (Changed message text)
AMQ3828E (Explanation and Response added)
AMQ3830E (Explanation and Response added)
AMQ3841I ("estimated time to completion" changed to "estimated time of completion")
AMQ3865E (Explanation and Response added)
AMQ3866E (Explanation and Response added)
AMQ3867E (Explanation and Response added)

AMQ3877E (Explanation and Response added)
AMQ3878E (Explanation and Response added)
AMQ3879E (Explanation and Response added)
AMQ3880E (Explanation and Response added)
AMQ3891E (Explanation and Response added)
AMQ3892E (Explanation and Response added)
AMQ3893E (Explanation and Response added)
AMQ3894I (Usage rewritten and three extra options added to the code blocks in Usage)

  **AMQ4xxx: User interface messages (Windows and Linux systems)**

AMQ4547E (Minor edit in Response)

AMQ5xxx: Installable services

AMQ5058 to AMQ5060 (References to IBM Cloud Product Insights changed to "the metering service")
AMQ5062 (References to IBM Cloud Product Insights changed to "the metering service")
AMQ5540 (Response section changed)
AMQ5600I (Three extra options added to the code block in Usage)
AMQ5610I (AIX) (Changed usage text)
AMQ5610I (all platforms) (Changed usage text)
AMQ5610I (Windows) (Usage updated)
AMQ5610 to AMQ5611 (Parameter **-w** removed)
AMQ5613I (Change to usage example for IBM MQ Appliance)
AMQ5976I (Response added)

AMQ6xxx: Common Services

AMQ6174I (Minor change in Description, Explanation and Response)
AMQ6245 Windows (minor rewording)
AMQ6257 to AMQ6258 (Explanation section expanded)
AMQ6314I (Usage description extended)
AMQ6538 (Usage of **-s** parameter rewritten)
AMQ6543E (Explanation extended)
AMQ6558E (Changed message text)
AMQ6598 (Explanation section changed)
AMQ6621I (**dspmqttrc** command added)
AMQ6642I (Usage extended)
AMQ6626 (Typo in Explanation; command name changed from **setmqini** to **dspmqini** in Response)
AMQ6636 (Usage example and parameters updated)
AMQ6637I (Usage example and parameters updated)

AMQ7xxx: IBM MQ product

AMQ7196I (Explanation added. Message and Response updated)
AMQ7367I (Minor changes in Description and Explanation)
AMQ7540 (Typo in Explanation)
AMQ7541 (Typo in Explanation)
AMQ7824 (Explanation section changed)

AMQ8xxx: Administration

AMQ8045 (MQLight channel changed to AMQP channel)
AMQ8084S (Severity changed from "Information" to "Severe error")

AMQ8242S (Explanation extended to cover TLS 1.3)
 AMQ8326S (Severity changed from "Information" to "Severe error")
 AMQ8404E (Severity changed from "Information" to "Error")
 AMQ8413E (Severity changed from "Information" to "Error")
 AMQ8416 (Message extended; Response rewritten)
 AMQ8419S (Severity changed from "Information" to "Severe error")
 AMQ8421E (Severity changed from "Information" to "Error")
 AMQ8423S (Severity changed from "Information" to "Severe error")
 AMQ8242 (Explanation section changed and two attribute names updated)
 AMQ8424E (Severity changed from "Information" to "Error")
 AMQ8425E (Severity changed from "Information" to "Error")
 AMQ8429E (Severity changed from "Information" to "Error")
 AMQ8430E (Severity changed from "Information" to "Error")
 AMQ8432S (Severity changed from "Information" to "Severe error")
 AMQ8433S (Severity changed from "Information" to "Severe error")
 AMQ8434S (Severity changed from "Information" to "Severe error")
 AMQ8442S (Severity changed from "Information" to "Severe error")
 AMQ8449E (Severity changed from "Information" to "Error")
 AMQ8458S (Severity changed from "Information" to "Severe error")
 AMQ8486S (Severity changed from "Information" to "Severe error")
 AMQ8492 (MQLight service changed to AMQP service)
 AMQ8494S (Severity changed from "Information" to "Severe error")
 AMQ8496 (MQLight service changed to AMQP service)
 AMQ8499I (Extra option added in Usage)
 AMQ8549E (Severity changed from "Information" to "Error")
 AMQ8554E (Severity changed from "Information" to "Error")
 AMQ8555E (Severity changed from "Information" to "Error")
 AMQ8569E (Severity changed from "Information" to "Error")
 AMQ8586I (Two extra options added in Usage)
 AMQ8599E (Command name is no longer hard coded in the Message and Explanation)
 AMQ8698E (Severity changed from "Information" to "Error")
 AMQ8938E (Typos fixed)

AMQ9xxx: Remote

AMQ9017E (Explanation extended)
 AMQ9441I (change in Explanation)
 AMQ9509 (Object type parameterised)
 AMQ9512 (Explanation shortened)
 AMQ9513S (Explanation expanded)
 AMQ9527 (Explanation and Response rewritten)
 AMQ9544 (Explanation and Response rewritten)
 AMQ9548 (Message and Explanation improved)
 AMQ9557S (Explanation expanded)
 AMQ9616S (TLS 1.3 updates in Explanation and Response section changed)
 AMQ9631S (Update for the 'ANY' type CipherSpecs in response)

AMQ9635S (TLS 1.3 update in Response)
AMQ9637E (Message, Explanation and Response rewritten)
AMQ9641S (Update for the 'ANY' type CipherSpecs in response)
AMQ9645E (Message, Explanation and Response rewritten)
AMQ9658E (Message, Explanation and Response rewritten)
AMQ9674S (TLS 1.3 update in Response)
AMQ9796W (Typo fixed)
AMQ9849E (Message, Explanation and Response rewritten)
AMQ9887W (Typo fixed)

The following AMQ messages are removed for IBM MQ 9.2.0:

AMQ3xxx: Utilities and tools

AMQ3944E

AMQ7xxx: IBM MQ product

AMQ7153E

AMQ7167

AMQ7816

AMQ7820

AMQ7821

AMQ8xxx: Administration

AMQ8343

AMQ9xxx: Remote

AMQ9087E

AMQ9619S

AMQ9924

AMQ9955

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.0:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0190W (replaces BFGAG0189W)

BFGAG0191I (replaces BFGAG0188I)

BFGAG0192I to BFGAG0201I

BFGBR0001 - BFGBR9999: MFT protocol bridge messages

BFGBR0209E

BFGBR0217E to BFGBR0219E

BFGCH0001 - BFGCH9999: MFT command handler messages

BFGCH0128E

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0780I

BFGCL0781E

BFGCL0782E

BFGCL0783E

BFGCL0784E

BFGCL0785E

BFGCL0786W

BFGCL0787I to BFGCL0793I

BFGCL0794E to BFGCL0809E

BFGDB0001 - BFGDB9999: MFT database logger messages

BFGDB0082I

BFGDB0083W

BFGDM0001 - BFGDM9999: MFT resource monitor messages

BFGDM0123I

BFGDM0124E

BFGDM0125E

BFGDM0126I

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0411E

BFGIO0412E

BFGIO0413E

BFGPC0001 - BFGPC9999: MFT process controller messages

BFGPC0054E to BFGPC0061E

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0141I to BFGPR0143I

BFGPR0144E to BFGPR0152E

BFGSS0001 - BFGSS9999: MFT state store messages

BFGSS0082I

BFGTR0001 - BFGTR9999: MFT transfers messages

BFGTR0083E

The following Managed File Transfer messages are changed for IBM MQ 9.2.0:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0124E (Response extended)

BFGAG0125W (Link to product documentation updated in Response)

BFGBR0001 - BFGBR9999: MFT protocol bridge messages

BFGBR0023E (Extended Description and Response)

BFGCH0001 - BFGCH9999: MFT command handler messages

BFGCH0025E (Typo fixed)

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0181E (Severity changed from "Information" to "Error")

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0037E (Message extended)

The following Managed File Transfer messages are changed to have "Information Center" references repointed to IBM Documentation for IBM MQ 9.2.0:

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0126I

BFGCL0128I

BFGCL0424I

BFGCL0425I

BFGCM0001 - BFGCM9999: MFT migrating from File Transfer Edition messages (LTS only)

BFGCM0239I

BFGCM0241I

BFGCM0242I

BFGCM0243I

BFGCR0001 - BFGCR9999: MFT routines that run commands messages

BFGCR0003E
BFGCR0005E
BFGCR0012E
BFGCR0013E
BFGCR0014E

BFGDM0001 - BFGDM9999: MFT resource monitor messages

BFGDM0107W

BFGSS0001 - BFGSS9999: MFT state store messages

BFGSS0027E
BFGSS0028E
BFGSS0029E

BFGUB0001 - BFGUB9999: MFT configuration and properties messages

BFGUB0054E
BFGUB0055E
BFGUB0056E
BFGUB0057E

The following Managed File Transfer messages are removed for IBM MQ 9.2.0:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0188I (Replaced by BFGAG0191I)
BFGAG0189W (Replaced by BFGAG0190W)

New, changed and removed MQ Telemetry messages



There are no new, changed or removed [MQ Telemetry messages](#) for IBM MQ 9.2.0.

New, changed, and removed REST API messages

The following REST API messages are new for IBM MQ 9.2.0:

MQWB01xx: REST API messages MQWB0100 to 0199

MQWB0119E to MQWB0121E

MQWB03xx: REST API messages MQWB0300 to 0399

MQWB0315E
MQWB0316E

MQWB04xx: REST API messages MQWB0400 to 0499

MQWB0422E to MQWB0445E
MQWB0441E

MQWB09xx: REST API messages MQWB0900 to 0999

MQWB0902E

MQWB11xx: REST API messages MQWB1100 to 1199

MQWB1126E to MQWB1143I

The following REST API messages are changed for IBM MQ 9.2.0:

MQWB00xx: REST API messages MQWB0000 to 0099

MQWB0009E (Response shortened)
MQWB0013E (Simplified Explanation)

MQWB01xx: REST API messages MQWB0100 to 0199

MQWB0103E (Extra line "Not authorized to browse" added to the Description)

MQWB03xx: REST API messages MQWB0300 to 0399

MQWB0300E (Explanation updated)

MQWB0303E ("publishing" added to Message and Explanation)

MQWB0303E (Description extended to include browsing)

MQWB0309E (Description extended to include browsing)

MQWB09xx: REST API messages MQWB0900 to 0499

MQWB0901E (Description extended to mention UTF-8)

MQWB11xx: REST API messages MQWB1100 to 1199

MQWB1105E (Typo fixed)

There are no removed REST API messages for IBM MQ 9.2.0.

New, changed, and removed IBM MQ Console messages

The following IBM MQ Console messages are new for IBM MQ 9.2.0:

MQWB20xx IBM MQ Console messages

MQWB2021

MQWB2022

There are no changed IBM MQ Console messages for IBM MQ 9.2.0.

The following IBM MQ Console messages are removed for IBM MQ 9.2.0:

MQWB20xx IBM MQ Console messages

MQWB2021

MQWB2022

MQWB2023E

New, changed, and removed IBM MQ Bridge to blockchain messages



The following IBM MQ Bridge to blockchain messages are new for IBM MQ 9.2.0:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC031E

AMQBC056E

AMQBC057I

AMQBC058E

AMQBC059E to AMQBC064E

AMQBC065E

AMQBC066E

AMQBC070W to AMQBC077E

AMQBC090E to AMQBC094E

The following IBM MQ Bridge to blockchain messages are changed for IBM MQ 9.2.0:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC000I (Usage updated)

AMQBC022E (Message text rewritten)

AMQBC004I (Typo fixed)

AMQBC035E (Message extended)

AMQBC055E (rewritten Description)

AMQBC058E (rewritten Description)

The following IBM MQ Bridge to blockchain messages are removed for IBM MQ 9.2.0:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC053E

AMQBC054E

New, changed, and removed IBM MQ Bridge to Salesforce messages



The following IBM MQ Bridge to Salesforce messages are new for IBM MQ 9.2.0:

IBM MQ Bridge to Salesforce messages AMQSF000 to 999

AMQSF040E to AMQSF046E

AMQSF047E

AMQSF048E

AMQSF049W to AMQSF057E

The following IBM MQ Bridge to Salesforce messages are changed for IBM MQ 9.2.0:

IBM MQ Bridge to Salesforce messages AMQSF000 to 999

AMQSF000I (Usage example updated)

AMQSF004I (Typo fixed)

AMQSF005E (Typo fixed)

AMQSF012E (Message extended)

AMQSF021E (minor edit in Description)

AMQSF022I (Reclassified as an "Information" message)

AMQSF032E (Message text rewritten)

AMQSF034E (message ID changed from AMQSF034 to AMQSF034E and typo fixed)

There are no removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.0.

New, changed and removed IBM MQ Internet Pass-Thru messages



The following IBM MQ Internet Pass-Thru messages are new for IBM MQ 9.2.0:

MQCPxxxx: MQIPT messages

MQCPE101 to MQCPE116

MQCPI145 to MQCPI153

MQCPI155

MQCPW010 to MQCPW017

MQCAxxxx: administration client messages

MQCAE057 to MQCAE066

MQCAI105 to MQCAI109

MQCAW001

The following IBM MQ Internet Pass-Thru messages are changed for IBM MQ 9.2.0:

MQCPxxxx: MQIPT messages

MQCPE022 (property name in message text changed to an insert and Explanation section expanded)

MQCPE023 (message reworded)

MQCPE066 (message reworded)

MQCPE078 (minor clarification to Explanation)

MQCPE094 (minor clarification to Explanation)

MQCPI008 (additional information added to message text)
MQCPI022 (Explanation section expanded)
MQCPI025 (reworded Explanation)
MQCPI027 (message text and Explanation changed to clarify meaning)
MQCPI031 to MQCPI032 (Explanation section expanded)
MQCPI035 (message text changed to improve translation)
MQCPI039 (correction to Explanation)
MQCPI040 (message text and Explanation expanded)
MQCPI073 to MQCPI074 (message reworded)
MQCPI139 (Explanation section expanded)
MQCPI141 (Explanation section expanded)

MQCAxxxx: administration client messages

MQCAE023 to MQCAE024 (reworded Explanation and Response)
MCAE026 (reworded Explanation)
MQCAI025 (reworded Explanation)

The following IBM MQ Internet Pass-Thru messages are removed for IBM MQ 9.2.0:

MQCPxxxx: MQIPT messages

MQCPE033
MQCPI020

MQCAxxxx: administration client messages

All MQCAxxxx messages issued by the IPT Administration Client

New, changed and removed MQJMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.2.0.

New, changed and removed JSON messages

There are no new, changed or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.0.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are new for IBM MQ 9.2.0:

Coupling Facility manager messages (CSQE...)

CSQE280I

Data manager messages (CSQI...)

CSQI010I
CSQI052E
CSQI053E
CSQI090E

Recovery log manager messages (CSQJ...)

CSQJ165I
CSQJ166E
CSQJ167E
CSQJ370I

Message manager messages (CSQM...)

CSQM527E

CSQM528E
CSQM529E
CSQM530E
CSQM572E
CSQM573E
CSQM574E
CSQM575E
CSQM576E
CSQM577E
CSQM578I
CSQM579E
CSQM581E
CSQM582E
CSQM583E
CSQM584E

Utilities messages (CSQU...)

CSQU096I
CSQU097E

Distributed queuing messages (CSQX...)

CSQX180I
CSQX298E
CSQX616E
CSQX629E
CSQX631E
CSQX635E
CSQX641E
CSQX668I
CSQX669I
CSQX670I
CSQX671I
CSQX797E

Initialization procedure and general services messages (CSQY...)

CSQY041D
CSQY042E
CSQY043E
CSQY044D
CSQY045I

Advanced Message Security (CSQ0...)

CSQ0234I

Subsystem support messages (CSQ3...)

CSQ3018I

Db2® manager messages (CSQ5...)

CSQ5040E

The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.0:

Coupling Facility manager messages (CSQE...)

CSQE232E (Table summary added)

CSQE280I (Example SMDS report and Encrypt (y/n) option added to the Explanation)

Data manager messages (CSQI...)

CSQI005I (Explanation is shortened)

CSQI010I (Encrypt (y/n) option added to the Explanation)

CSQI045I (Extra link added to Response)

CSQI046E (Extra link added to Response)

CSQI047E (Extra link added to Response)

CSQI065I (Table format fixed, and "Page class" information improved)

Recovery log manager messages (CSQJ...)

CSQJ031D (Extra link added to Response)

CSQJ032E (Extra link added to Response)

CSQJ103E (Updated link to documentation in System programmer response)

CSQJ104E (Added a link to the "DFSMS/MVS Macro Instructions for Data Sets" manual)

CSQJ111A (MQ becomes IBM MQ)

CSQJ115E (Hyperlinks added)

CSQJ160I (Extra information added to the system programmer response section.)

CSQJ161I (Extra information added to the system programmer response section)

CSQJ166E (Typo fixed)

CSQJ213E (Updated link to documentation in System programmer response)

CSQJ228E (Updated link to documentation in System programmer response)

CSQJ302E (Updated link to documentation in System programmer response)

CSQJ370I (Log status report extended)

Message manager messages (CSQM...)

CSQM079I (Link to Advanced Message Security information is updated)

CSQM108I (Table summary added)

CSQM4nnI (Table summary added)

CSQM526I (Notation change to "SSLv3")

Buffer manager messages (CSQP...)

CSQP014E (Codeblock amended in System programmer response)

CSQP030E (Updated link to documentation in System programmer response)

CSQP035E (Updated link to documentation in System programmer response)

Recovery manager messages (CSQR...)

CSQR031I (Explanation extended)

Initialization procedure and general services messages (CSQY...)

CSQV451I (IBM Documentation link text reworked, and example queue manager name changed)

CSQV453I (IBM Documentation link text reworked)

CSQV457E (IBM Documentation link text reworked)

CSQV459I (IBM Documentation link text reworked)

Distributed queuing messages (CSQX...)

CSQX042E - CSQX045E (Updated link to documentation in System programmer response)

CSQX049E to CSQX051E (Updated link to documentation in System programmer response)

CSQX058E (Action and Response extended)

CSQX502E (Table summary added)

CSQX503E (Message amended, Explanation extended)

CSQX599E (Explanation extended)

CSQX616E (Programmer response includes TLS 1.3 information)

CSQX629E (Explanation updated to link to common CipherSpec order table. Programmer response includes TLS 1.3 information)

CSQX631E (Explanation updated to link to common CipherSpec order table and allowed CipherSpec table. Programmer response includes TLS 1.3 information)

CSQX635E (Explanation updated to link to common CipherSpec order table.)

CSQX641E (Programmer response updated to include TLS 1.3 information)

CSQX674E (Programmer response updated to include TLS 1.3 information)

CSQX690I (Programmer response updated to include TLS 1.3 information and link to new message)

CSQX692I (System programmer response extended)

CSQX694I (Programmer response updated to include TLS 1.3 information and link to new message)

CSQX719E (Parameter names tweaked)

Initialization procedure and general services messages (CSQY...)

CSQY024I (Explanation and Response expanded)

CSQY025I (Message text amended)

CSQY039I (Explanation updated)

CSQY040I (Explanation updated)

CSQY041D (Explanation updated)

CSQY291E (Explanation and Response expanded, and updated link to documentation in System programmer response)

Advanced Message Security (CSQ0...)

CSQ0210E (Explanation rewritten; Response extended)

CSQ0216E (System action extended)

CSQ0608E (Response extended)

IBM MQ-IMS bridge Messages (CSQ2...)

CSQ2002E (Capitalization error fixed)

CSQ2003E (Capitalization error fixed)

CSQ2005I (Capitalization error fixed)

CSQ2023E (Capitalization error fixed)

Db2 manager messages (CSQ5...)

CSQ5005E (More information link updated)

Generalized command preprocessor messages (CSQ9...)

CSQ9000E (Link updated)

CSQ9002E (Link updated)

CSQ9003E (Link updated)

CSQ9007E (Two links updated)

CSQ9008E (Link updated)

CSQ9011E (Link updated)

CSQ9014E (Two links updated)

CSQ9015E (Two links updated)

CSQ9019E (Two links updated)

CSQ9020E (Two links updated)

CSQ9025E (Link updated)

CSQ9026E (Two links updated)
CSQ9028E (Two links updated)
CSQ9030E (Two links updated)
CSQ9031E (Link updated)
CSQ9035E (Two links updated)
CSQ9045E (Link updated)

"pagesets" is changed to "page sets" throughout.

The following IBM MQ for z/OS CSQ messages are removed for IBM MQ 9.2.0:

Recovery log manager messages (CSQJ...)

CSQJ167E (The separate LTS version needed for IBM MQ 9.1)

Message manager messages (CSQM...)

CSQM572E to CSQM578I

Distributed queuing messages (CSQX...)



CSQX166E
CSQX696I
CSQX698I

All CSQZ messages (MQ Service Provider messages) have been removed.


Related concepts

  [What's new in IBM MQ 9.2.0](#)



IBM MQ 9.2.0 delivers features and enhancements beyond those that were available in IBM MQ 9.1.0 Long Term Support. The features that you have access to depends on your product entitlement.

  [What's changed in IBM MQ 9.2.0](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.1.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

 [New, changed, and removed messages since IBM MQ 9.1.5](#)

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

  [Deprecated, stabilized and removed features in IBM MQ 9.2.0](#)

A number of features are deprecated, stabilized or removed from IBM MQ 9.2.0.

[“New, changed, and removed messages since IBM MQ 9.1.5” on page 79](#)

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)


[JMS exception messages](#)












[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

New, changed, and removed messages since IBM MQ 9.1.5

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

 For a list of all the messages that are new, changed or removed since IBM MQ 9.2.0, see [“New, changed, and removed messages in IBM MQ 9.2.0” on page 63.](#)

-  [“New, changed, and removed IBM MQ AMQ messages” on page 79](#)
- [“New, changed, and removed Managed File Transfer messages” on page 80](#)
-    [“New, changed and removed MQ Telemetry messages” on page 80](#)
- [“New, changed, and removed REST API messages” on page 80](#)
- [“New, changed, and removed IBM MQ Console messages” on page 80](#)
-   [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 80](#)
-  [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 81](#)
-    [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 81](#)
- [“New, changed and removed MQJMS messages” on page 82](#)
- [“New, changed and removed JSON messages” on page 82](#)
-  [“New, changed, and removed z/OS messages” on page 82](#)

New, changed, and removed IBM MQ AMQ messages

Multi

The following AMQ messages are new since IBM MQ 9.1.5:

AMQ3xxx: Utilities and tools

AMQ3557E to AMQ3568E

AMQ3678E

AMQ8xxx: Administration

AMQ870CI IBM i

AMQ8D40 IBM i

AMQ9xxx: Remote

AMQ9851E

The following AMQ messages are changed since IBM MQ 9.1.5:

AMQ5xxx: Installable services

AMQ5613I (Change to usage example for IBM MQ Appliance)

AMQ5976I (Response added)

AMQ6xxx: Common services

AMQ6314I (Usage description extended)

AMQ6543E (Explanation extended)

AMQ6642I (Usage extended)

Links to IBM support sites are updated throughout the AMQ messages.

The following AMQ messages are removed since IBM MQ 9.1.5:

AMQ3xxx: Utilities and tools

AMQ3944E

AMQ7xxx: IBM MQ product

AMQ7153E

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new since IBM MQ 9.1.5:

BFGBR0001 - BFGBR9999: MFT protocol bridge messages

BFGBR0217E to BFGBR0219E

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0794E to BFGCL0809E

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0412E

BFGIO0413E

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0144E to BFGPR0152E

BFGTR0001 - BFGTR9999: MFT transfers messages

BFGTR0083E

There are no changed or removed Managed File Transfer messages since IBM MQ 9.1.5:

New, changed and removed MQ Telemetry messages



There are no new, changed or removed [MQ Telemetry messages](#) since IBM MQ 9.1.5.

New, changed, and removed REST API messages

The following REST API messages are new since IBM MQ 9.1.5:

MQWB11xx: REST API messages MQWB1100 to 1199

MQWB1126E to MQWB1143I

There are no changed or removed REST API messages since IBM MQ 9.1.5.

New, changed, and removed IBM MQ Console messages

There are no new, changed or removed IBM MQ Console messages since IBM MQ 9.1.5.

New, changed, and removed IBM MQ Bridge to blockchain messages



The following IBM MQ Bridge to blockchain messages are new since IBM MQ 9.1.5:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC065E

AMQBC066E

AMQBC070W to AMQBC077E

AMQBC090E to AMQBC094E

The following IBM MQ Bridge to blockchain messages are changed since IBM MQ 9.1.5:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC000I (Usage example updated)

AMQBC022E (Message text rewritten)

The following IBM MQ Bridge to blockchain messages are removed since IBM MQ 9.1.5:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC053E

AMQBC054E

New, changed, and removed IBM MQ Bridge to Salesforce messages



The following IBM MQ Bridge to Salesforce messages are new since IBM MQ 9.1.5:

IBM MQ Bridge to Salesforce messages AMQSF000 to 999

AMQSF049W to AMQSF057E

The following IBM MQ Bridge to Salesforce messages are changed since IBM MQ 9.1.5:

IBM MQ Bridge to Salesforce messages AMQSF000 to 999

AMQSF000I (Usage example updated)

AMQSF032E (Message text rewritten)

There are no removed IBM MQ Bridge to Salesforce messages since IBM MQ 9.1.5.

New, changed and removed IBM MQ Internet Pass-Thru messages



The following IBM MQ Internet Pass-Thru messages are new since IBM MQ 9.1.5:

MQCPxxxx: MQIPT messages

MQCPE110 to MQCPE116

MQCPI152 to MQCPI153

MQCPI155

MQCPW013 to MQCPW017

MQCAxxxx: administration client messages

MQCAE057 to MQCAE066

MQCAI105 to MQCAI109

MQCAW001

The following IBM MQ Internet Pass-Thru messages are changed since IBM MQ 9.1.5:

MQCPxxxx: MQIPT messages

MQCPE022 (Property name in message text changed to an insert and Explanation section expanded)

MQCPE023 (Message reworded)

MQCPE078 (Minor clarification to Explanation)

MQCPE094 (Minor clarification to Explanation)

MQCPI008 (Additional information added to message text)

MQCPI022 (Explanation section expanded)

MQCPI025 (Reworded Explanation)

MQCPI027 (Message text and Explanation changed to clarify meaning)

MQCPI031 to MQCPI032 (Explanation section expanded)

MQCPI035 (Message text changed to improve translation)

MQCPI039 (Correction to Explanation)

MQCPI040 (Message text and Explanation expanded)

MQCPI139 (Explanation section expanded)

MQCPI141 (Explanation section expanded)

MQCAxxxx: administration client messages

MQCAE023 to MQCAE024 (Reworded Explanation and Response)

MCAE026 (Reworded Explanation)

MQCAI025 (Reworded Explanation)

The following IBM MQ Internet Pass-Thru messages are removed since IBM MQ 9.1.5:

MQCPxxxx: MQIPT messages

MQCPE033

MQCPI020

MQCAxxxx: administration client messages

All MQCAxxxx messages issued by the IPT Administration Client

New, changed and removed MQJMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.1.5.

New, changed and removed JSON messages

There are no new, changed or removed [JSON format diagnostic messages](#) for IBM MQ 9.1.5.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are new since IBM MQ 9.1.5:

Data manager messages (CSQI...)

CSQI090E

Message manager messages (CSQM...)

CSQM528E

CSQM529E

CSQM530E

CSQM572E

CSQM573E

CSQM574E

CSQM575E

CSQM576E

CSQM577E

CSQM578E

CSQM579E

CSQM581E

CSQM582E

CSQM583E

CSQM584E

Utilities messages (CSQU...)

CSQU096I

CSQU097E

Distributed queuing messages (CSQX...)

CSQX668I

CSQX669I

CSQX670I

CSQX671I

Initialization procedure and general services messages (CSQY...)

CSQY042E

CSQY043E

CSQY044D

CSQY045I

The following IBM MQ for z/OS CSQ messages are changed since IBM MQ 9.1.5:

Message manager messages (CSQM...)

CSQM079I (Link to Advanced Message Security information is updated)

CSQM526I (Notation change to "SSLv3")

Buffer manager messages (CSQP...)

CSQP014E (Codeblock amended in System programmer response)

Distributed queuing messages (CSQX...)

CSQX503E (Message amended, Explanation extended)

CSQX599E (Explanation extended)

CSQX616E (Explanation amended. System programmer response extended for TLS 1.3)

CSQX629E (Explanation amended)

CSQX631E (Explanation amended. System programmer response extended)

CSQX635E (Explanation amended. System programmer response extended)

CSQX641E (Explanation amended. System programmer response extended)

CSQX674E (System programmer response extended)

CSQX690I (System programmer response extended)

CSQX692I (System programmer response extended)

CSQX694I (System programmer response extended)

Initialization procedure and general services messages (CSQY...)

CSQY039I (Explanation updated)

CSQY040I (Explanation updated)

CSQY041D (Explanation updated)

The following IBM MQ for z/OS CSQ messages are removed since IBM MQ 9.1.5:

Recovery log manager messages (CSQJ...)

CSQJ167E (The separate LTS version needed for IBM MQ 9.1)

Message manager messages (CSQM...)

CSQM572E to CSQM578I

All CSQZ messages (MQ Service Provider messages) have been removed.

Related concepts

  [What's new in IBM MQ 9.2.0](#)



IBM MQ 9.2.0 delivers features and enhancements beyond those that were available in IBM MQ 9.1.0 Long Term Support. The features that you have access to depends on your product entitlement.

  [What's changed in IBM MQ 9.2.0](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.1.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

 [New, changed, and removed messages in IBM MQ 9.2.0](#)

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

  [Deprecated, stabilized and removed features in IBM MQ 9.2.0](#)
A number of features are deprecated, stabilized or removed from IBM MQ 9.2.0.

[“New, changed, and removed messages in IBM MQ 9.2.0” on page 63](#)

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)






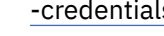
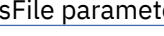


[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

Deprecated, stabilized and removed features in IBM MQ 9.2.0

A number of features are deprecated, stabilized or removed from IBM MQ 9.2.0.



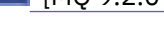
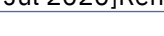



Deprecated features










-  [“Deprecation: Secure Sockets Layer v3 \(SSLv3\) and TLS 1.0 ” on page 85](#)
-   [“\[MQ 9.2.0 Jul 2020\]\[MQ 9.2.0 Jul 2020\]Deprecation of support for -credentialsFile parameter” on page 85](#)
-   [“\[MQ 9.2.0 Jul 2020\]\[MQ 9.2.0 Jul 2020\]Deprecation of support for all Managed File Transfer environment variables beginning with FTE” on page 85](#)
-   [“\[MQ 9.2.0 Jul 2020\]\[MQ 9.2.0 Jul 2020\]Deprecation of Dashboard Web Console” on page 85](#)
-   [“\[MQ 9.2.0 Jul 2020\]\[MQ 9.2.0 Jul 2020\]Deprecation of XMS .NET Multicast messaging \(using RMM\) ” on page 85](#)

Stabilized features

- [“Stabilization: amqmdnet.dll library” on page 85](#)
- [“Stabilization: IBM.XMS.* libraries” on page 86](#)

Removed features


-  [“\[MQ 9.2.0 Jul 2020\]Removal of support for the Oracle Solaris operating system” on page 86](#)
-    [“\[Windows\]\[MQ 9.2.0 Jul 2020\]\[Linux\]Removal of Postcard application and Default Configuration wizard” on page 86](#)
-    [“\[Windows\]\[MQ 9.2.0 Jul 2020\]\[MQ 9.2.0 Jul 2020\]Removal of IBM MQ support for Microsoft Active X” on page 86](#)

-    “[MQ 9.2.0 Jul 2020][MQ 9.2.0 Jul 2020][z/OS]Removal of queue sharing group samples not using Universal Table Spaces” on page 86
-   “[MQ 9.2.0 Jul 2020][MQ 9.2.0 Jul 2020]Removal of the IPT Administration Client” on page 86
-    “[MQ 9.2.0 Jul 2020][MQ 9.2.0 Jul 2020][z/OS]IBM MQ service provider for IBM z/OS Connect EE no longer shipped with IBM MQ” on page 86
-  “[MQ 9.2.0.21 Dec 2023][Linux]Removal of IBM MQ Bridge to blockchain component” on page 86

Deprecated features

Deprecation: Secure Sockets Layer v3 (SSLv3) and TLS 1.0

 For Long Term Support, Secure Sockets Layer v3 (SSLv3) and TLS 1.0 have been deprecated from IBM MQ 9.2.0. This means that IBM MQ 9.2.0 is the last release to provide SSLv3 and TLS 1.0 support for Long Term Support.

 The plan is to remove support in a future Continuous Delivery release after that.

Deprecation of support for **-credentialsFile** parameter

The **-credentialsFile** parameter of the **fteObfuscate** command, used in IBM MQ prior to IBM MQ 9.2, has been deprecated. You can use the **-f** parameter instead. For more information, see [fteObfuscate: encrypt sensitive data](#).

Deprecation of support for all Managed File Transfer environment variables beginning with FTE

Support for all Managed File Transfer environment variables that begin with **FTE** has been deprecated. You can substitute **FTE** environment variables with those that begin with **BFG** as shown in the following examples:

- For **FTE_ANT_HOME**, substitute **BFG_ANT_HOME**
- For **FTE_CLASSPATH**, substitute **BFG_CLASSPATH**
- **FTE_JVM_PROPERTIES**, substitute **BFG_JVM_PROPERTIES**
- For **FTE_JAVA_HOME**, substitute **BFG_JAVA_HOME**

Deprecation of Dashboard Web Console

The old widget-based Dashboard Web Console is now deprecated. The New Web Console is enabled by default, although you can switch back to the Dashboard Web Console if required. See [Switching between console types](#).

Deprecation of XMS .NET Multicast messaging (using RMM)

XMS .NET Multicast messaging (using RMM) was deprecated from IBM MQ 9.2 and will be removed in a future release of XMS .NET.

Stabilized features

Stabilization: amqmdnet.dll library

From IBM MQ 9.2.0, the `amqmdnet.dll` library for .NET Framework is still supplied, but this library is stabilized; that is, no new features will be introduced into it.

For any of the latest features you must migrate to the `amqmdnetstd.dll` library. However, you can continue to use the `amqmdnet.dll` library on IBM MQ 9.1 or later Long Term Support or Continuous Delivery releases.

For more information, see [Installing IBM MQ classes for .NET Standard](#).

Stabilization: IBM.XMS.* libraries

From IBM MQ 9.2.0, all the IBM.XMS.* libraries are still supplied, but these libraries are stabilized; that is, no new features will be introduced into them.

For any of the latest features, you must migrate to the `amqmxmsstd.dll` library. However, you can continue to use the existing libraries on IBM MQ 9.1 or later Long Term Support or Continuous Delivery releases.

For more information, see [Installing IBM MQ classes for XMS .NET Standard](#).

Removed features

Removal of support for the Oracle Solaris operating system

Support for Solaris for all IBM MQ components, including server and clients, is removed from IBM MQ 9.2.

Removal of Postcard application and Default Configuration wizard

The Postcard application and its supporting Default Configuration wizard, which were used in earlier versions of IBM MQ for installation verification and were deprecated from IBM MQ 9.1.0, are removed from the product at IBM MQ 9.2.0.

Removal of IBM MQ support for Microsoft Active X

From IBM MQ 9.0, support for Microsoft Active X is deprecated, and is removed from the product at IBM MQ 9.2.0. IBM MQ classes for .NET are the recommended replacement technology. For more information, see [Developing .NET applications](#).

Removal of queue sharing group samples not using Universal Table Spaces

The queue sharing group samples for setting up a Db2 environment that did not use Universal Table Spaces have been removed, following their deprecation in IBM MQ 9.1. The following JCL members have been removed: CSQ45DTS, CSQ45DSG, CSQ45DDB, CSQ45CTS, CSQ45CTB, CSQ45CSG, CSQ45CDB.

Alternative samples which use Universal Table Spaces are supplied; see [Set up the Db2 environment](#). For more information on setting up your Db2 environment, see [Planning your Db2 environment](#).

Removal of the IPT Administration Client

The IPT Administration Client graphical user interface has been removed. Previous versions of the IPT Administration Client cannot be used with MQIPT in IBM MQ 9.2.0. To configure and administer MQIPT, edit the `mqipt.conf` configuration file and use the `mqiptAdmin` command, as described in [Administering MQIPT by using the command line](#).

IBM MQ service provider for IBM z/OS Connect EE no longer shipped with IBM MQ

The IBM MQ service provider for IBM z/OS Connect EE is no longer shipped as part of the IBM MQ product. From IBM z/OS Connect EE 3.0.21 the IBM MQ service provider has been shipped as part of the IBM z/OS Connect EE product and provides enhanced capabilities compared to the version of the service provider shipped with the IBM MQ product.

For more information on IBM z/OS Connect EE, see [z/OS Connect EE IBM Documentation](#).

For more information on the IBM MQ service provider, see [Using the IBM MQ service provider](#).

Removal of IBM MQ Bridge to blockchain component

The IBM MQ Bridge to blockchain is deprecated across all releases from November 22 2022 (see [US Announcement letter 222-341](#)). For Long Term Support, IBM MQ Bridge to blockchain is removed at IBM MQ 9.2.0 CSU 21.

Related concepts

[What's new in IBM MQ 9.2.0](#)

IBM MQ 9.2.0 delivers features and enhancements beyond those that were available in IBM MQ 9.1.0 Long Term Support. The features that you have access to depends on your product entitlement.

[What's changed in IBM MQ 9.2.0](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.1.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

[New, changed, and removed messages in IBM MQ 9.2.0](#)

A number of new messages have been added and some existing messages have been changed or removed since IBM MQ 9.1.0.

[New, changed, and removed messages since IBM MQ 9.1.5](#)

For Continuous Delivery users, a summary of the new messages that have been added and the existing messages have been changed or removed since IBM MQ 9.1.5.

Related reference

[Deprecated Cipherspecs](#)

What's new and changed in IBM MQ 9.2.x Continuous Delivery

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

Continuous Delivery releases (CD releases) deliver new functional enhancements, in addition to fixes and security updates, on a much shorter cadence, so providing much more rapid access to those new functions. This delivery model is intended for systems where applications want to exploit the very latest capabilities of IBM MQ.

The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

It is also possible for newly created features in one CD release to be modified in later CD releases to improve the user experience. Where migration to the improved capability is required it will be documented.

For further information see [IBM MQ release types](#) and [IBM MQ FAQ for Long Term Support and Continuous Delivery releases](#).

Related concepts

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new and changed in IBM MQ 9.2.5

IBM MQ 9.2.5, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related concepts

What's new and changed in IBM MQ 9.2.4

IBM MQ 9.2.4, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.3

IBM MQ 9.2.3, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.2

IBM MQ 9.2.2, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.1

IBM MQ 9.2.1, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.5

IBM MQ 9.2.5 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

New for IBM MQ for Multiplatforms - base and Advanced entitlement

 Multi

On Multiplatforms, the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

Managing IBM MQ

- [“Support for multiple queue manager certificates in MQIPT” on page 90](#)
- [“TLS support for the IBM MQ .NET XA Monitor application” on page 90](#)
- [“Additional configuration option to control TLS environment in C clients” on page 90](#)
- [“Support for Transport Layer Security \(TLS\) 1.3 in MQIPT” on page 90](#)
- [“REST Messaging API: greater access to message properties when sending and receiving messages using the REST API” on page 91](#)

New IBM MQ for Multiplatforms features - Advanced entitlement only

 Multi

 MQ Adv.

The following features and enhancements are available on Multiplatforms only with Advanced entitlement.

Managing IBM MQ

- [“Enhanced fterRAS logging” on page 91](#)

New for IBM MQ for z/OS - base, Advanced, and Advanced VUE entitlement



The following features and enhancements are available both with base product entitlement, and with IBM MQ Advanced for z/OS (Advanced) and IBM MQ Advanced for z/OS Value Unit Edition (Advanced VUE) entitlement.

Managing IBM MQ

- [“New queue managers 64-bit RBA capable by default” on page 92](#)
- [“Support for multiple queue manager certificates in MQIPT” on page 92](#)
- [“Support for Transport Layer Security \(TLS\) 1.3 in MQIPT” on page 92](#)
- [“REST Messaging API: greater access to message properties when sending and receiving messages using the REST API” on page 93](#)

New for IBM MQ for z/OS - Advanced and Advanced VUE entitlement only



The following features and enhancements are available with Advanced or Advanced VUE entitlement only.

Managing IBM MQ

- [“Enhanced fterRAS logging” on page 94](#)

Related concepts

What's changed in IBM MQ 9.2.5

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.5 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

New, changed, and removed messages in IBM MQ 9.2.5

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.5.

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

Multi V 9.2.5 What's new in IBM MQ 9.2.5 for Multiplatforms - base and Advanced entitlement

For Multiplatforms, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

Managing IBM MQ

- [“Support for multiple queue manager certificates in MQIPT” on page 90](#)
- [“TLS support for the IBM MQ .NET XA Monitor application” on page 90](#)
- [“Additional configuration option to control TLS environment in C clients” on page 90](#)
- [“Support for Transport Layer Security \(TLS\) 1.3 in MQIPT” on page 90](#)
- [“REST Messaging API: greater access to message properties when sending and receiving messages using the REST API” on page 91](#)

Support for multiple queue manager certificates in MQIPT

From IBM MQ 9.2.5, per-channel certificates can be used on a queue manager for TLS connections received from IBM MQ Internet Pass-Thru (MQIPT), where the MQIPT route is configured as a TLS client.

IBM MQ supports the use of multiple certificates on the same queue manager, using a per-channel certificate label, specified using the **CERTLABL** attribute on the channel definition. Inbound channels to the queue manager rely on detecting the channel name using TLS Server Name Indication (SNI), in order for the queue manager to present the correct certificate. From IBM MQ 9.2.5, MQIPT can be configured to allow multiple certificates to be used by the destination queue manager by either setting the SNI to the channel name, or passing through the SNI received on the inbound connection to the route.

For more information about multiple certificate support and MQIPT, see [IBM MQ multiple certificate support with MQIPT](#).

TLS support for the IBM MQ .NET XA Monitor application

The IBM MQ .NET client provides an XA Monitor application, WmqDotnetXAMonitor, that you can use to recover any incomplete distributed transactions. From IBM MQ 9.2.5, the WmqdotnetXAMonitor application includes the option to establish a secure connection to the queue manager. For more information, see [Using the WMQDotnetXAMonitor application](#) and [WmqDotNETXAMonitor application configuration file settings](#).

Additional configuration option to control TLS environment in C clients

A new configuration option has been added to C clients to allow a different mode of operating when creating TLS connections.

For more information, see the [EnvironmentScope](#) attribute of the SSL stanza of the client configuration file .

Support for Transport Layer Security (TLS) 1.3 in MQIPT

From IBM MQ 9.2.5, IBM MQ Internet Pass-Thru (MQIPT) supports Transport Layer Security (TLS) 1.3. Three new CipherSuites are provided for use with TLS 1.3.

TLS 1.3 can be used on routes where MQIPT is configured as a TLS server, TLS client, or TLS proxy. Connections between the **mqiptAdmin** command and MQIPT can also be secured with TLS 1.3.

TLS 1.3 is enabled by default on routes that use TLS, and the TLS command port, from IBM MQ 9.2.5. To disable TLS 1.3, specify the protocols to be enabled using the **SSLClientProtocols**, **SSLServerProtocols**, or **SSLCommandPortProtocols** properties.

For more information about TLS support in MQIPT, see [SSL/TLS support](#). The new CipherSuites are listed in the TLS 1.3 section of [Table 1](#).

REST Messaging API: greater access to message properties when sending and receiving messages using the REST API

The following new features provide increased access to message properties when sending or receiving messages by using the REST API:

- A new REST API V3 has been introduced. New features are available by using the v3 version of the resource URL.
- Support for a message priority request header has been added.
- Application-specific correlation IDs can now be used (bringing the use of Correlation and Message IDs more in line with JMS).
- Support for setting and reading multiple user-defined message properties has been added.



Details of the new features are available in the following topics:

- [Message post](#)
- [Message get](#)
- [Message delete](#)
- [Message list get](#)
- [Topic post](#)




Related concepts

   [What's new in IBM MQ 9.2.5 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.5 delivers an enhancement for IBM MQ that is available only with IBM MQ Advanced for Multiplatforms entitlement.

  [What's new in IBM MQ 9.2.5 for z/OS - base and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

   [What's new in IBM MQ 9.2.5 for z/OS - Advanced and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.5 delivers an enhancement for Managed File Transfer that is available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

   [What's new in IBM MQ 9.2.5 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.5 delivers an enhancement for IBM MQ that is available only with IBM MQ Advanced for Multiplatforms entitlement.

Managing IBM MQ



- [“Enhanced fteRAS logging” on page 91](#)

Enhanced fteRAS logging



From IBM MQ 9.2.5, the output of the **fteRAS** command has been enhanced to include subscription logging.




See [fteRAS](#) for an example of the enhanced output.

Related concepts

  [What's new in IBM MQ 9.2.5 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

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On z/OS, IBM MQ 9.2.5 delivers an enhancement for Managed File Transfer that is available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

[What you can purchase with IBM MQ and what each purchase entitles you to install.](#)

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On z/OS, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

Managing IBM MQ

- [“New queue managers 64-bit RBA capable by default” on page 92](#)
- [“Support for multiple queue manager certificates in MQIPT” on page 92](#)
- [“Support for Transport Layer Security \(TLS\) 1.3 in MQIPT” on page 92](#)
- [“REST Messaging API: greater access to message properties when sending and receiving messages using the REST API” on page 93](#)

New queue managers 64-bit RBA capable by default

IBM MQ for z/OS 9.2.5 simplifies the creation of new queue managers by making them use a 64 bit log RBA, and being capable of having up to 310 active logs, by default. This means that you no longer have to run the CSQJUCNV utility on new queue managers to use these capabilities.

For more information, see [CSQJUCNV](#) and [Larger log Relative Byte Address](#).

Support for multiple queue manager certificates in MQIPT

From IBM MQ 9.2.5, per-channel certificates can be used on a queue manager for TLS connections received from IBM MQ Internet Pass-Thru (MQIPT), where the MQIPT route is configured as a TLS client.

IBM MQ supports the use of multiple certificates on the same queue manager, using a per-channel certificate label, specified using the **CERTLABL** attribute on the channel definition. Inbound channels to the queue manager rely on detecting the channel name using TLS Server Name Indication (SNI), in order for the queue manager to present the correct certificate. From IBM MQ 9.2.5, MQIPT can be configured to allow multiple certificates to be used by the destination queue manager by either setting the SNI to the channel name, or passing through the SNI received on the inbound connection to the route.

For more information about multiple certificate support and MQIPT, see [IBM MQ multiple certificate support with MQIPT](#).

Support for Transport Layer Security (TLS) 1.3 in MQIPT

From IBM MQ 9.2.5, IBM MQ Internet Pass-Thru (MQIPT) supports Transport Layer Security (TLS) 1.3. Three new CipherSuites are provided for use with TLS 1.3.

TLS 1.3 can be used on routes where MQIPT is configured as a TLS server, TLS client, or TLS proxy. Connections between the **mqiptAdmin** command and MQIPT can also be secured with TLS 1.3.

TLS 1.3 is enabled by default on routes that use TLS, and the TLS command port, from IBM MQ 9.2.5. To disable TLS 1.3, specify the protocols to be enabled using the **SSLClientProtocols**, **SSLServerProtocols**, or **SSLCommandPortProtocols** properties.

For more information about TLS support in MQIPT, see [SSL/TLS support](#). The new CipherSuites are listed in the TLS 1.3 section of [Table 1](#).

REST Messaging API: greater access to message properties when sending and receiving messages using the REST API



The following new features provide increased access to message properties when sending or receiving messages by using the REST API:

- A new REST API V3 has been introduced. New features are available by using the v3 version of the resource URL.
- Support for a message priority request header has been added.
- Application-specific correlation IDs can now be used (bringing the use of Correlation and Message IDs more in line with JMS).
- Support for setting and reading multiple user-defined message properties has been added.

Details of the new features are available in the following topics:

- [Message post](#)
- [Message get](#)
- [Message delete](#)
- [Message list get](#)
- [Topic post](#)




Related concepts

  [What's new in IBM MQ 9.2.5 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

   [What's new in IBM MQ 9.2.5 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.5 delivers an enhancement for IBM MQ that is available only with IBM MQ Advanced for Multiplatforms entitlement.

   [What's new in IBM MQ 9.2.5 for z/OS - Advanced and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.5 delivers an enhancement for Managed File Transfer that is available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

   [***What's new in IBM MQ 9.2.5 for z/OS - Advanced and Advanced VUE entitlement***](#)

On z/OS, IBM MQ 9.2.5 delivers an enhancement for Managed File Transfer that is available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

Managing IBM MQ



- [“Enhanced fteRAS logging” on page 94](#)

Enhanced fteRAS logging




From IBM MQ 9.2.5, the output of the **fteRAS** command has been enhanced to include subscription logging.

See [fteRAS](#) for an example of the enhanced output.



Related concepts

  [What's new in IBM MQ 9.2.5 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

   [What's new in IBM MQ 9.2.5 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.5 delivers an enhancement for IBM MQ that is available only with IBM MQ Advanced for Multiplatforms entitlement.

  [What's new in IBM MQ 9.2.5 for z/OS - base and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.5 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's changed in IBM MQ 9.2.5

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.5 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Command and configuration changes

- [“REST API now uses the WebSphere Liberty Profile jaxrs-2.1 feature” on page 94](#)
- [“BALTIMEOUT parameter name changed to BALTMOUT” on page 94](#)
- [“Changes to JMS/Java applications affecting applications connecting via TLS” on page 95](#)
- [“New MQXR property to disable generating Java cores for FDC” on page 95](#)
- [“Change to Managed File Transfer Monitor.xsd XML schema” on page 95](#)

REST API now uses the WebSphere Liberty Profile jaxrs-2.1 feature

The REST API previously used the WebSphere Liberty Profile `jaxrs-1.1` feature to map URLs to Java code, and to parse incoming requests. The REST API has now migrated to the `jaxrs-2.1` feature to maintain currency and remove some restrictions.

In normal operation, there should be no difference in behavior. However, there might be some changes for error conditions:

- The `jaxrs-1.1` feature accepted URLs containing multiple consecutive `'/'` characters. `jaxrs-2.1` does not, so some connections might be rejected, reporting no suitable URL is available. Applications that encounter this problem will need to be amended to correct the URL presented.
- The HTTP response code returned in error conditions might change. It will still be an error code but the exact value might be different. This will not affect successful operations.

BALTIMEOUT parameter name changed to BALTMOUT

From IBM MQ 9.2.5, the name of the **BALTIMEOUT** parameter introduced in the IBM MQ 9.2.4 release is shortened to **BALTMOUT**, in keeping with wider IBM MQ conventions. Any MQSC scripts which reference the IBM MQ 9.2.4 spelling, either in a **DISPLAY** command, or parsing of the output might require updates.

See [DISPLAY APSTATUS](#) for the change.

Changes to JMS/Java applications affecting applications connecting via TLS

A defect was found within JMS and Java applications when generating a server name indication (SNI) header for TLS connections. The defect meant that JMS and Java applications were not converting IBM MQ channel names to a SNI address in accordance with the rules defined in [How IBM MQ provides multiple certificates capability](#).

The fix now resolves this issue and allows JMS and Java applications to correctly convert an IBM MQ channel name to an SNI address. However, Java performs validation on the SNI address set during TLS initialization to ensure that it conforms to RFC 1123 restrictions. If the last character of an IBM MQ channel name is a lowercase letter or symbol, then an invalid SNI address will be generated and the JMS/Java application will fail to start a TLS connection. This failure can be recognized by the presence of `BadChannelNameException` in the stack trace. If you encounter this failure, you can resolve it by doing either of the following:

- Modifying IBM MQ channel names to end with an uppercase letter or digit.
- Configuring JMS/Java applications to use the hostname SNI address instead of the IBM MQ channel name SNI address by using the **OutboundSNI** setting of the SSL stanza of the client configuration file.


New MQXR property to disable generating Java cores for FDC

From IBM MQ 9.2.5, you can set the **com.ibm.mq.MQXR.GenerateJavaDump** property to specify whether or not Java core dumps are generated alongside Failure Data Captures (FDCs). For more information, see [Location of telemetry logs, error logs, and configuration files](#).


Change to Managed File Transfer Monitor.xsd XML schema

The Managed File Transfer Monitor.xsd XML schema is used to manually build XML messages to create resource monitors that monitor a directory resource. From IBM MQ 9.2.5, there is a change to the `maxOccurs` attribute of the `directory` element, which is now set to 1. This attribute was previously set to unbounded, which indicated that there could be multiple directory entries. However, this was incorrect because you can only specify one directory when creating a resource monitor that monitors a directory. For more information, see [MFT monitor request message formats](#).

Related concepts

 [What's new in IBM MQ 9.2.5](#)

IBM MQ 9.2.5 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

 [New, changed, and removed messages in IBM MQ 9.2.5](#)

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.5.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)


Related information











[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

New, changed, and removed messages in IBM MQ 9.2.5

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.5.

-  [“New, changed, and removed IBM MQ AMQ messages” on page 96](#)
- [“New, changed, and removed Managed File Transfer messages” on page 97](#)

-    [“New, changed and removed MQ Telemetry messages” on page 98](#)
- [“New, changed, and removed REST API messages” on page 98](#)
- [“New, changed, and removed IBM MQ Console messages” on page 98](#)
-   [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 98](#)
-  [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 98](#)
-    [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 98](#)
- [“New, changed and removed MQJMS messages” on page 98](#)
- [“New, changed and removed JSON messages” on page 99](#)
-  [“New, changed, and removed z/OS messages” on page 99](#)

New, changed, and removed IBM MQ AMQ messages

Multi

The following AMQ messages are new for IBM MQ 9.2.5:

AMQ3xxx: Utilities and tools

AMQ3243E to AMQ3246E
 AMQ3497I
 AMQ3498E
 AMQ3501I to AMQ3534E
 AMQ3536I to AMQ3550I
 AMQ3635I

AMQ6xxx: Common Services

AMQ6330E

AMQ7xxx: IBM MQ product

AMQ7153W
 AMQ7497W

AMQ8xxx: Administration

AMQ870DI (IBM i)
 AMQ870EI (IBM i)
 AMQ8D41 (IBM i)

AMQ9xxx: Remote

AMQ9263E
 AMQ9852I to AMQ9854I

The following AMQ messages are changed for IBM MQ 9.2.5:

AMQ3xxx: Utilities and tools

AMQ3240I (Message reworded and Explanation extended)
 AMQ3980E (Minor edits in Message, Explanation, and Response)
 AMQ3985I (backup file name added to Message, and mentioned in Explanation)
 AMQ3992I (Usage parameter list extended)
 AMQ3994I (Usage updated)
 AMQ3995E (Message and Response updated)

AMQ5xxx: Installable services

AMQ5600I IBM MQ Appliance (Usage updated)

AMQ6xxx: Common Services

AMQ6165W (Explanation extended)

AMQ6620I (list of available commands extended)

AMQ6623I (list of available commands extended)

AMQ6624I (Usage extended)

AMQ6637I (Usage extended)

AMQ6645I (Message and Explanation updated)

AMQ6651E (Message and Explanation updated)

AMQ6680E (Message and Explanation updated)

AMQ6697E (Message and Explanation updated)

AMQ7xxx: IBM MQ product

AMQ7148E (Message and Explanation updated)

AMQ7369W (Message reworded)

AMQ7371W (Explanation extended)

AMQ7472W (Response reworded)

AMQ8xxx: Administration

AMQ8079W Windows (Response extended)

AMQ8120I (Message reworded)

AMQ8384I Windows (Usage extended)

AMQ8702I IBM MQ Appliance (Usage amended)

AMQ8710I (Usage amended)

AMQ8955E (Explanation extended)

AMQ9xxx: Remote

AMQ9514E (Explanation extended)

AMQ9617E (Explanation and Response extended)

AMQ9825I (Usage extended)

"Knowledge Center" replaced with "IBM Documentation" throughout.

The following AMQ messages are removed for IBM MQ 9.2.5:

AMQ6xxx: Common Services

AMQ6183W (HP NSS)

AMQ6184W (HP NSS)

AMQ8xxx: Administration

AMQ8771I (DEC) to AMQ8796E (DEC)

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.5:

BFGAG0001 - BFGAG9999

BFGAG0211W

BFGBR0001 - BFGBR9999

BFGBR0221E to BFGBR0223E

BFGCL0001 - BFGCL9999

BFGCL0827I

BFGMQ0001 - BFGMQ9999

BFGMQ1046I

BFGTR0001 - BFGTR9999

BFGTR0084E

The following Managed File Transfer messages are removed for IBM MQ 9.2.5:

BFGPR0001 - BFGPR9999

BFGPR0153I

There are no changed Managed File Transfer for IBM MQ 9.2.5.

New, changed and removed MQ Telemetry messages



There are no new, changed, or removed MQ Telemetry messages for IBM MQ 9.2.5.

New, changed, and removed REST API messages

The following REST API messages are new for IBM MQ 9.2.5:

MQWB03xx: REST API messages MQWB0300 to 0399

MQWB0317E

The following REST API messages are changed for IBM MQ 9.2.5:

MQWB01xx: REST API messages MQWB0100 to 0199

MQWB0115E (typo fixed in Message)

"Knowledge Center" replaced with "IBM Documentation" throughout.

There are no removed REST API messages for IBM MQ 9.2.5.

New, changed, and removed IBM MQ Console messages

The following IBM MQ Console messages are changed for IBM MQ 9.2.5:

MQWB20xx IBM MQ Console messages

MQWB2020E ("Knowledge Center" replaced with "IBM Documentation")

There are no new or removed IBM MQ Console messages for IBM MQ 9.2.5.

New, changed, and removed IBM MQ Bridge to blockchain messages



The following IBM MQ Bridge to blockchain messages are changed for IBM MQ 9.2.5:

AMQBCxxx: IBM MQ Bridge to blockchain messages

AMQBC036E ("Knowledge Center" replaced with "IBM Documentation")

There are no new or removed IBM MQ Bridge to blockchain messages for IBM MQ 9.2.5.

New, changed, and removed IBM MQ Bridge to Salesforce messages



There are no new, changed, or removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.5.

New, changed and removed IBM MQ Internet Pass-Thru messages



There are no new, changed, or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.5.

New, changed and removed MQJMS messages

There are no new, changed, or removed JMS exception messages for IBM MQ 9.2.5.

New, changed and removed JSON messages

There are no new, changed or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.5.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.5:

Recovery log manager messages (CSQJ...)

CSQJ073E (System programmer response is rewritten)

CSQJ103E (System programmer response is rewritten)

CSQJ302E (System programmer response is rewritten)

Buffer manager messages (CSQP...)

CSQP030E (System programmer response is rewritten)

CSQP035E (System programmer response is rewritten)

Agent services messages (CSQV...)

CSQV451I (System programmer response is rewritten)

CSQV453I (System programmer response is rewritten)

Agent services messages (CSQW...)

CSQW701E (System programmer response is rewritten)

Distributed queuing messages (CSQX...)

CSQX027E and CSQX028E (System programmer response is rewritten)

CSQX042E and CSQX043E (System programmer response is rewritten)

CSQX044E (System programmer response is rewritten)

CSQX045E (System programmer response is rewritten)

CSQX049E (System programmer response is rewritten)

CSQX050E (System programmer response is rewritten)

CSQX051E (System programmer response is rewritten)

CSQX620E (System programmer response is rewritten)

CSQX635E (Explanation is extended, System programmer response is rewritten)

CSQX671I (Updated a note number in System programmer response)

Initialization procedure and general services messages (CSQY...)

CSQY200E (System programmer response is rewritten, and link is added)

CSQY210E (System programmer response is rewritten)

CSQY220I (Explanation is extended)

CSQY291E (System programmer response is rewritten)

Service facilities messages (CSQ1...)

CSQ1217E (for the RBA RANGE WARNING, the RETCODE parameter is excluded for IBM MQ 9.2.5)

Subsystem support messages (CSQ3...)

CSQ3119E (System programmer response is rewritten)

Many links are updated to point to the latest version of the z/OS documentation.

There are no new or removed IBM MQ for z/OS CSQ messages for IBM MQ 9.2.5.

Related concepts

[What's new in IBM MQ 9.2.5](#)

IBM MQ 9.2.5 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

[What's changed in IBM MQ 9.2.5](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.5 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)

[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

V 9.2.4 What's new and changed in IBM MQ 9.2.4

IBM MQ 9.2.4, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related concepts

V 9.2.5 [What's new and changed in IBM MQ 9.2.5](#)

IBM MQ 9.2.5, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.3 [What's new and changed in IBM MQ 9.2.3](#)

IBM MQ 9.2.3, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.2 [What's new and changed in IBM MQ 9.2.2](#)

IBM MQ 9.2.2, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.1 [What's new and changed in IBM MQ 9.2.1](#)

IBM MQ 9.2.1, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.4 What's new in IBM MQ 9.2.4

IBM MQ 9.2.4 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

New for IBM MQ for Multiplatforms - base and Advanced entitlement

Multi

On [Multiplatforms](#), the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

Managing IBM MQ

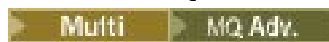
- [“Support for influencing application re-balancing within uniform clusters” on page 103](#)

- [“Encryption of passphrases for MQTT channels” on page 103](#)
- [“.NET client changes for Application Pattern Support” on page 103](#)
- [“OutboundSNI property for NQMI and XMS .NET clients” on page 103](#)
- [“TLS 1.3 support from IBM MQ Java applications” on page 103](#)
- [“SecureCommsOnly setting available on the queue manager” on page 103](#)
- [“Configurable IBM MQ Console message browsing controls” on page 103](#)
- [“Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls” on page 104](#)
- [“Option to capture installation-level diagnostics only with runmqras command” on page 104](#)
- [“IBM MQ code signing support” on page 104](#)

Developing for IBM MQ

- [“Java 17 support for IBM MQ Clients” on page 104](#)

New IBM MQ for Multiplatforms features - Advanced entitlement only



The following features and enhancements are available on Multiplatforms only with Advanced entitlement.

Managing IBM MQ

- [“Enhanced credentials protection for Managed File Transfer” on page 105](#)
- [“Improvements to the fteRAS command” on page 105](#)
- [“Transfer logging on Managed File Transfer” on page 105](#)

New for IBM MQ for z/OS - base, Advanced, and Advanced VUE entitlement



The following features and enhancements are available both with base product entitlement, and with IBM MQ Advanced for z/OS (Advanced) and IBM MQ Advanced for z/OS Value Unit Edition (Advanced VUE) entitlement.

Managing IBM MQ

- [“Changes to statistics collection intervals” on page 106](#)
- [“CSQUDSPM utility supports upper case and lower case parameters” on page 106](#)
- [“Using IBM MQ for z/OS with AT-TLS” on page 106](#)
- [“Configurable IBM MQ Console message browsing controls” on page 106](#)

New for IBM MQ for z/OS - Advanced and Advanced VUE entitlement only



The following features and enhancements are available with Advanced or Advanced VUE entitlement only.

Managing IBM MQ

- [“Enhanced credentials protection for Managed File Transfer” on page 107](#)
- [“Improvements to the fteRAS command” on page 107](#)
- [“Transfer logging on Managed File Transfer” on page 107](#)

Related concepts



Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.4 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

New, changed, and removed messages in IBM MQ 9.2.4

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.4.

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.4 for Multiplatforms - base and Advanced entitlement

For Multiplatforms, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

Managing IBM MQ

- [“Support for influencing application re-balancing within uniform clusters” on page 103](#)
- [“Encryption of passphrases for MQTT channels” on page 103](#)
- [“.NET client changes for Application Pattern Support” on page 103](#)
- [“OutboundSNI property for NQMI and XMS .NET clients” on page 103](#)
- [“TLS 1.3 support from IBM MQ Java applications” on page 103](#)
- [“SecureCommsOnly setting available on the queue manager” on page 103](#)
- [“Configurable IBM MQ Console message browsing controls” on page 103](#)
- [“Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls” on page 104](#)
- [“Option to capture installation-level diagnostics only with runmqras command” on page 104](#)
- [“IBM MQ code signing support” on page 104](#)

Developing for IBM MQ

- [“Java 17 support for IBM MQ Clients” on page 104](#)

Support for influencing application re-balancing within uniform clusters

IBM MQ 9.2.4 adds support for controlling or influencing the re-balancing behavior between uniform clusters to suit the needs of specific types of application; for example, minimizing interruptions to in flight transactions, or ensuring requester applications receive their responses before being moved.

One of the goals of uniform clustering is to allow workload to be distributed across a group of queue managers. In IBM MQ 9.2.4 behavior has been modified so that applications are only balanced when they are actively performing IBM MQ operations. Applications check to see whether they should move when they are performing an IBM MQ operation like MQPUT, MQGET, or MQCMIT.

Important: An application which has only performed an MQCONN operation is not rebalanced until it subsequently performs one of these MQI operations.

You can use the default behaviors described in [Influencing application re-balancing in uniform clusters](#) or make changes, either at configuration or deployment time through the `client.ini` file.

Alternatively, you can make the balancing behavior and requirements part of the application logic using the [MQBNO](#) structure.

Encryption of passphrases for MQTT channels

IBM MQ 9.2.4 adds support for encryption of passphrases for IBM MQ 9.2.4 channels.

For more information, see [Encryption of passphrases for MQTT TLS channels](#) and [Migration of plain text passphrases to encrypted passphrases](#).

.NET client changes for Application Pattern Support

IBM MQ 9.2.4 adds support for re-balancing applications on XMS .NET and .NET.

For further information on XMS .NET see [Properties of ConnectionFactory](#), and for .NET see [Influencing application re-balancing in .NET](#).

OutboundSNI property for NQMI and XMS .NET clients

IBM MQ 9.2.4 exposes a property and environment variable to NMQI and XMS .NET clients, which allows you to set the **OutboundSNI** property. In addition, the default value for this property has been changed to **channel1**.

Prior to IBM MQ 9.2.4 the **OutboundSNI** property was always set to ***** for the .NET Clients.

For more information, see [XMS .NET property mapping for administered objects](#) and [OutboundSNI property](#).

TLS 1.3 support from IBM MQ Java applications

From IBM MQ 9.2.4, using the Java runtime environment (JRE) provided by IBM MQ permits the use of the TLS 1.3 CipherSpecs as described in [TLS CipherSpecs](#) and [CipherSuites](#) in IBM MQ classes for JMS.

Note: In the Java runtime environment shipped as part of IBM MQ, the Java Security Provider for FIPS has been updated from IBMJCEFIPS to IBMJCEPlusFIPS.

SecureCommsOnly setting available on the queue manager

From IBM MQ 9.2.4, a security enhancement has been deployed to allow queue managers to be configured to only allow secure communications. A warning message is issued on startup if plain text communications are enabled. For more information, see [SecureCommsOnly](#).

Configurable IBM MQ Console message browsing controls

At IBM MQ 9.2.4, general updates have been made to improve the usability of the IBM MQ Console for a better user experience. These include the capability to download and view complete message contents

from the IBM MQ Console, enhancing the prior previewing capability. You can configure these capabilities with three new parameters, **mqConsoleMaxMsgCharsToDisplay**, **mqConsoleMaxMsgRequestSize** and **mqConsoleMaxMsgsPerRequest**, that have been added to the **setmqweb** command. For more information, see [setmqweb \(set mqweb server configuration\)](#).

Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls

From IBM MQ 9.2.4, two new optional tuning parameters, **OAMLdapConnectTimeout** and **OAMLdapQueryTimeLimit**, have been added. You can use these two parameters within the TuningParameters stanza in the queue manager configuration file, **qm.ini**. For more information, see [TuningParameters stanza of the qm.ini file](#).

Option to capture installation-level diagnostics only with runmqras command

From IBM MQ 9.2.4, the **runmqras** command includes a new parameter, **-noqmdata**, to capture installation-level diagnostics only, skipping any queue manager-specific diagnostics. For more information, see [runmqras \(collect IBM MQ diagnostic information\)](#).




IBM MQ code signing support

IBM MQ deliverables that you can download from IBM are signed with a digital signature. From IBM MQ 9.2.4, to aid with verifying the deliverables, IBM MQ provides an additional package that you can download from Fix Central. This package contains signatures and the public keys that are used to sign the IBM MQ binary files. For more information, see [IBM MQ code signatures](#).



Java 17 support for IBM MQ Clients




IBM MQ 9.2.4 adds Java 17 support for IBM MQ classes for Java and IBM MQ classes for JMS for Oracle and Oracle and Adoptium.

Related concepts

   [What's new in IBM MQ 9.2.4 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.4 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

  [What's new in IBM MQ 9.2.4 for z/OS - base and Advanced VUE entitlement](#)
On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

   [What's new in IBM MQ 9.2.4 for z/OS - Advanced and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

   [What's new in IBM MQ 9.2.4 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.4 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

Managing IBM MQ

- [“Enhanced credentials protection for Managed File Transfer” on page 105](#)
- [“Improvements to the fteRAS command” on page 105](#)

- [“Transfer logging on Managed File Transfer” on page 105](#)

Enhanced credentials protection for Managed File Transfer

At IBM MQ 9.2.0, the **fteObfuscate** command was enhanced to encrypt and decrypt credentials with a stronger algorithm and a user supplied key. From IBM MQ 9.2.4, the command has an additional protection mode that provides MD5 hashing and encryption of credentials using the latest algorithm and a user specified key to encrypt.

For more information, see [fteObfuscate](#) and [Improvements to Managed File Transfer security from IBM MQ 9.2](#)



Attention: Managed File Transfer will still be able to use any existing stored credentials from a previous release. Migration of credentials to use the new encryption algorithm is not automatic. To enhance the security in your enterprise, you need to re-encrypt the credentials using the **fteObfuscate** command with the additional option on the **protection mode** parameter.

Improvements to the fteRAS command

IBM MQ 9.2.4 improves the output of information to the console so that you can see the progress of the command while it runs.

For more information, see [fteRAS](#).

Transfer logging on Managed File Transfer

IBM MQ 9.2.4 introduces transfer logging on MFT for enhanced visibility of file transfer status. More information is provided about the activities of MFT agents, including details of both successful transfers and any failure cases. Transfer logs can assist users in resolving common problems and can also be used to supply more detailed diagnostics if required by IBM support.

A further option of **LogTransfer** has been added to the **fteSetAgentLogLevel** command and the MFT agent.properties file.

Note: The **LogTransfer** option cannot be used with either the **LogAgent** or **LogMonitor** options.

For more information, see the [fteSetAgentLogLevel](#) command and [The MFT agent.properties file](#).

IBM MQ 9.2.4 also introduces a new log file transferlog0.json. For more information, see [Output produced by the LogTransfer function](#).

Related concepts

[V 9.2.4](#) [Multi](#) [What's new in IBM MQ 9.2.4 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

[V 9.2.4](#) [z/OS](#) [What's new in IBM MQ 9.2.4 for z/OS - base and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

[V 9.2.4](#) [MQ Adv. VUE](#) [MQ Adv. z/OS](#) [What's new in IBM MQ 9.2.4 for z/OS - Advanced and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's new in IBM MQ 9.2.4 for z/OS - base and Advanced VUE entitlement

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

Managing IBM MQ

- [“Changes to statistics collection intervals” on page 106](#)
- [“CSQUDSPM utility supports upper case and lower case parameters” on page 106](#)
- [“Using IBM MQ for z/OS with AT-TLS” on page 106](#)
- [“Configurable IBM MQ Console message browsing controls” on page 106](#)

Changes to statistics collection intervals

IBM MQ for z/OS can capture statistics and accounting data in SMF records at regular intervals. Statistics data is cheap to capture and small in volume. Accounting data is more expensive to capture, and can be large in volume.

From IBM MQ for z/OS 9.2.4 you have the ability to define separate intervals for the collection of statistics and accounting data allowing more frequent capturing of statistics data without also having to capture large volumes of accounting data.

IBM MQ for z/OS 9.2.4 also adds the ability to collect SMF records at more precise intervals. You can define the statistics and accounting intervals so that they use a value for both minutes and seconds.

This not only allows for more precise data collection, but also more frequent collection, as you can select an interval of less than one minute. This can be particularly important when analyzing performance problems.

For more information, see [Using System Management Facility](#) and [Using CSQ6SYSP](#).

CSQUDSPM utility supports upper case and lower case parameters

From IBM MQ for z/OS 9.2.4, the CSQUDSPM utility now supports upper case and lower case parameters. This means batch jobs using this utility can be written with CAPS ON, which is a common configuration.

This change also means those using the utility in Unix System Services have the choice to use upper or lower case flags, to match their preference.

For more information, see [Display queue manager information utility \(CSQUDSPM\)](#)

Using IBM MQ for z/OS with AT-TLS

Documentation for using IBM MQ for z/OS with AT-TLS has been added.

Note: AT-TLS can make it simpler to enable TLS on channels. Whilst this documentation has been added at IBM MQ 9.2.4, it is valid for all releases of IBM MQ for z/OS 9.2.

For more information, see [Use of AT-TLS with IBM MQ for z/OS](#).

Configurable IBM MQ Console message browsing controls

At IBM MQ 9.2.4, general updates have been made to improve the usability of the IBM MQ Console for a better user experience. These include the capability to download and view complete message contents from the IBM MQ Console, enhancing the prior previewing capability. You can configure these capabilities with three new parameters, **mqConsoleMaxMsgCharsToDisplay**, **mqConsoleMaxMsgRequestSize** and **mqConsoleMaxMsgsPerRequest**, that have been added to the **setmqweb** command. For more information, see [setmqweb \(set mqweb server configuration\)](#).

Related concepts

V 9.2.4 **Multi** [What's new in IBM MQ 9.2.4 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

V 9.2.4 **Multi** **MQ Adv.** [What's new in IBM MQ 9.2.4 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.4 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

V 9.2.4 **MQ Adv. VUE** **MQ Adv. z/OS** [What's new in IBM MQ 9.2.4 for z/OS - Advanced and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

[What you can purchase with IBM MQ and what each purchase entitles you to install.](#)

V 9.2.4 **MQ Adv. VUE** **MQ Adv. z/OS** [***What's new in IBM MQ 9.2.4 for z/OS - Advanced and Advanced VUE entitlement***](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

Administration

- [“Enhanced credentials protection for Managed File Transfer” on page 107](#)
- [“Improvements to the fteRAS command” on page 107](#)
- [“Transfer logging on Managed File Transfer” on page 107](#)

Enhanced credentials protection for Managed File Transfer

At IBM MQ 9.2.0, the **fte0bfuscate** command was enhanced to encrypt and decrypt credentials with a stronger algorithm and a user supplied key. From IBM MQ 9.2.4, the command has an additional protection mode that provides MD5 hashing and encryption of credentials using the latest algorithm and a user specified key to encrypt.

For more information, see **fte0bfuscate** and [Improvements to Managed File Transfer security from IBM MQ 9.2](#)



Attention: Managed File Transfer will still be able to use any existing stored credentials from a previous release. Migration of credentials to use the new encryption algorithm is not automatic. To enhance the security in your enterprise, you need to re-encrypt the credentials using the **fte0bfuscate** command with the additional option on the **protection mode** parameter.

Improvements to the fteRAS command

IBM MQ 9.2.4 improves the output of information to the console so that you can see the progress of the command while it runs.

For more information, see [fteRAS](#).

Transfer logging on Managed File Transfer

IBM MQ 9.2.4 introduces transfer logging on MFT. More information is provided about the activities of MFT agents, including details of both successful transfers and any failure cases. Transfer logs can assist users in resolving common problems and can also be used to supply more detailed diagnostics if required by IBM support.

A further option of **LogTransfer** has been added to the **fteSetAgentLogLevel** command and the MFT `agent.properties` file.

Note: The **LogTransfer** option cannot be used with either the **LogAgent** or **LogMonitor** options.

For more information, see the **fteSetAgentLogLevel** command and [The MFT `agent.properties` file](#).

IBM MQ 9.2.4 also introduces a new log file `transferlog0.json`. For more information, see [Output produced by the **LogTransfer** function](#).

Related concepts

V 9.2.4 **Multi** [What's new in IBM MQ 9.2.4 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

V 9.2.4 **Multi** **MQ Adv.** [What's new in IBM MQ 9.2.4 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.4 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

V 9.2.4 **z/OS** [What's new in IBM MQ 9.2.4 for z/OS - base and Advanced VUE entitlement](#)

On z/OS, IBM MQ 9.2.4 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

[“IBM MQ license information” on page 9](#)

[What you can purchase with IBM MQ and what each purchase entitles you to install.](#)

V 9.2.4 What's changed in IBM MQ 9.2.4

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.4 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Command and configuration changes

- [“New Bouncy Castle JAR file” on page 108](#)
- [“Improved toString\(\) methods for some objects in IBM MQ classes for JMS” on page 109](#)
- [“Improved toString\(\) methods for some objects in the IBM MQ resource adapter” on page 109](#)
- [“Improved toString\(\) methods for some objects in IBM MQ classes for Java” on page 109](#)
- [“Changes to runmqras command ftp option” on page 110](#)
- [“ConnName of application connection included in queue accounting records” on page 110](#)
- [“Newline limitation removed from the messaging REST API” on page 110](#)
- [“Changes to Managed File Transfer log files” on page 110](#)
- [“Update to use of standbyPollInterval property by highly available Managed File Transfer agents” on page 110](#)
- [“IBM MQ Operator 1.7.0 works with CP4I 2021.4” on page 111](#)
- [“\[MQ 9.2.4 Nov 2021\]Changes to how FIPS mode is enabled in MQIPT” on page 111](#)

New Bouncy Castle JAR file

The Bouncy Castle JAR files used to support Advanced Message Security have been updated and now include `bcutil-jdk15on.jar`. For more information, see [Support for non-IBM JREs with AMS](#).

Improved toString() methods for some objects in IBM MQ classes for JMS

The `com.ibm.mq.jms.MQConnection` and `com.ibm.mq.jms.MQSession` objects implement `javax.jms.Connection` and `javax.jms.Session` respectively. They now have `toString()` methods which return key information about the underlying connection to IBM MQ.

The resulting string is in JSON format and contains fields as follows

ObjectId

As a `className` and hexadecimal identifier

ConnectionId

In hexadecimal form

ConnectionMode

As specified at connection time

Host

Only applicable for client connections, but might be shown for bindings

Port

Only applicable for client connections, but might be shown for bindings

QueueManager

As specified at connection time

ResolvedQueueManager

Possibly different to `QueueManager` if a CCDT was used

The undocumented object produced by `ConnectionFactory.createContext()` essentially wraps a `Connection` and a `Session` object. Its `toString()` method produces a String representing a JSON object containing

ObjectId

As a `className` and hexadecimal identifier

Connection

The `toString()` representation of the `Connection`

Session

The `toString()` representation of the `Session`

Improved toString() methods for some objects in the IBM MQ resource adapter

Connections, Sessions and Contexts generated in the IBM MQ resource adapter wrap their IBM MQ classes for JMS equivalents, and the `toString()` methods on them will produce information including the `toString()` representations of the wrapped IBM MQ classes for JMS objects.

Improved toString() methods for some objects in IBM MQ classes for Java

The `toString()` method for `com.ibm.mq.MQQueueManager` in IBM MQ classes for Java also produces a string in JSON format and containing fields as follows

ObjectId

As a `className` and hexadecimal identifier

ConnectionId

In hexadecimal form

ConnectionMode

As specified at connection time

Host

Only applicable for client connections, but might be shown for bindings

Port

Only applicable for client connections, but might be shown for bindings

QueueManager

As specified at connection time

ResolvedQueueManager

Possibly different to **QueueManager** if a CCDT was used

Newline limitation removed from the messaging REST API

The messaging REST API no longer removes new-lines from the HTTP request body.

Changes to runmqras command ftp option

From IBM MQ 9.2.4, the **-ftp** IBM option is no longer available. For more information, see [runmqras](#) (collect IBM MQ diagnostic information).

ConnName of application connection included in queue accounting records

From IBM MQ 9.2.4, ConnName is included in queue accounting records as well as in MQI accounting records. Both Channel Name and ConnName are needed in queue accounting records in order to fully identify a client-connected application. For more information, see [Queue accounting message data](#).

Changes to Managed File Transfer log files

IBM MQ 9.2.4 introduces changes to resource monitor log files and protocol bridge agent log files:

Resource monitor log files

These event log files record several actions that take place when a monitor polls a resource, for example, a directory or a queue:

- The default value of the **resourceMonitorLogFiles** agent property has changed from 10 to 5. This means that, from IBM MQ 9.2.4 onwards, if the default is set, there can be a maximum of five resource monitor event log files, starting from resmonevent0.log to resmonevent4.log. However, you can change this value if required.
- If the agent is migrated from a version prior to IBM MQ 9.2.4, you should manually delete the resmonevent5.log to resmonevent9.log files if any exist.
- However, the size of each log file remains at 20 MB.

Protocol bridge agent log files

These event log files record the flow of commands and responses that flow between a protocol bridge agent and a file server, such as an SFTP server:

- The default value of **agentLogFiles** agent property has changed from 10 to 5. This means that from IBM MQ 9.2.4 onwards, if the default is set, there can be a maximum of five protocol bridge agent event log files, starting from agentevent0.log to agentevent4.log. However, you can change this value if required.
- If the agent is migrated from a version prior to IBM MQ 9.2.4, you should manually delete the agentevent5.log to agentevent9.log files if any exist.
- However, the size of each log file remains at 20 MB.

Update to use of standbyPollInterval property by highly available Managed File Transfer agents

The **standbyPollInterval** property is used by the standby instance of a highly available Managed File Transfer agent to attempt to open a shared queue at specified intervals. From IBM MQ 9.2.4, this property is also used by all instances to determine how long an instance waits between reconnection attempts if it becomes disconnected from its agent queue manager.

For more information about highly available Managed File Transfer agents, see [Highly available agents in Managed File Transfer](#).

IBM MQ Operator 1.7.0 works with CP4I 2021.4

For IBM MQ 9.2.4 in containers, you can use IBM MQ Operator 1.7.0. This Operator works with IBM Cloud Pak for Integration 2021.4.

Note: If you are using IBM MQ on IBM Cloud Pak for Integration with the Operations Dashboard (tracing) enabled, then before you migrate containers from a previous version of IBM MQ, see [Deploying or upgrading IBM MQ 9.2.2 or 9.2.3 with Operations Dashboard integration in IBM Cloud Pak for Integration 2021.4](#).

Changes to how FIPS mode is enabled in MQIPT

From IBM MQ 9.2.4, the IBMJCEPlusFIPS cryptographic provider should be used to provide FIPS-certified cryptography in MQIPT. To use the IBMJCEPlusFIPS cryptographic provider, specify the `com.ibm.jsse2.usefipsProviderName=IBMJCEPlusFIPS` Java system property. For more information about enabling FIPS mode in MQIPT, see [Enabling FIPS mode in MQIPT](#).

Related concepts

What's new in IBM MQ 9.2.4

IBM MQ 9.2.4 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

New, changed, and removed messages in IBM MQ 9.2.4

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.4.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)












Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

New, changed, and removed messages in IBM MQ 9.2.4

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.4.

-  [“New, changed, and removed IBM MQ AMQ messages” on page 112](#)
- [“New, changed, and removed Managed File Transfer messages” on page 112](#)
-    [“New, changed and removed MQ Telemetry messages” on page 113](#)
- [“New, changed, and removed REST API messages” on page 113](#)
- [“New, changed, and removed IBM MQ Console messages” on page 113](#)
-   [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 113](#)
-  [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 113](#)
-    [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 114](#)
- [“New, changed and removed MQJMS messages” on page 114](#)
- [“New, changed and removed JSON messages” on page 114](#)
-  [“New, changed, and removed z/OS messages” on page 114](#)

New, changed, and removed IBM MQ AMQ messages



The following AMQ messages are new for IBM MQ 9.2.4:

AMQ3xxx: Utilities and tools

AMQ3499E

AMQ3500E

AMQ6xxx: Common Services

AMQ6206I

AMQ6861W

AMQ9xxx: Remote

AMQ9108E

AMQ9722W

AMQ9723I

The following AMQ messages are changed for IBM MQ 9.2.4:

AMQ3xxx: Utilities and tools

AMQ3205E (Message and Explanation extended)

AMQ3232E (Explanation extended)

AMQ3240I (Explanation extended)

AMQ5xxx: Installable services

AMQ5776E (Explanation and Response extended)

AMQ6xxx: Common Services

AMQ6109S (Explanation extended)

AMQ6110S (Explanation extended)

AMQ6119S (Explanation extended)

AMQ6125E (Explanation extended)

AMQ6183W (Explanation extended)

AMQ6184W (Explanation extended)

AMQ6560I (Extra parameters added to the Usage list)

AMQ7xxx: IBM MQ product

AMQ7367I Minor edit in Explanation.

There following AMQ messages are removed for IBM MQ 9.2.4:

AMQ8xxx: Administration

AMQ8771I (DEC) to AMQ8796E (DEC)

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.4:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0205E to BFGAG0210W

BFGBR0001 - BFGBR9999: MFT protocol bridge messages

BFGBR0220E

BFGCH0001 - BFGCH9999: MFT command handler messages

BFGCH0129W

BFGCH0130I

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0819I to BFGCL0826E

BFGNV0001 - BFGNV9999: MFT native code messages

BFGNV0177E

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0154I

BFGSS0001 - BFGSS9999: MFT state store messages

BFGSS0090E

BFGTL0001 - BFGTL9999: MFT transfer agent messages

BFGTL0001I to BFGTL0076E

BFGTL9999E

BFGUT0001 - BFGUT9999: MFT tracing and logging messages

BFGUT0037E to BFGUT0039I

The following Managed File Transfer messages are changed for IBM MQ 9.2.4:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0141E (MQI reason code added to the Message)

BFGCL0001 - BFGCL9999: commands messages

BFGCL0261E (Message shortened)

BFGCL0262E (Message shortened)

BFGCL0756E (Extra option (LogTransfer) added to the Message and Explanation. Response rewritten.)

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0059E (Exception details added to the Message)

BFGNV0001 - BFGNV9999: MFT native code messages

BFGNV0066E (Typo fixed (missing period) in the Message)

The following messages are removed for Managed File Transfer for IBM MQ 9.2.4.

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0153I

New, changed and removed MQ Telemetry messages



There are no new, changed, or removed MQ Telemetry messages for IBM MQ 9.2.4.

New, changed, and removed REST API messages

The following REST API messages are changed for IBM MQ 9.2.4:

MQWB10xx: REST API messages MQWB1000 to 1099

MQWB1003I (dsmpmqweb properties information removed from Usage)

There are no new or removed REST API messages for IBM MQ 9.2.4.

New, changed, and removed IBM MQ Console messages

There are no new, changed, or removed IBM MQ Console messages for IBM MQ 9.2.4.

New, changed, and removed IBM MQ Bridge to blockchain messages



There are no new, changed, or removed IBM MQ Bridge to blockchain messages for IBM MQ 9.2.4.

New, changed, and removed IBM MQ Bridge to Salesforce messages



There are no new, changed, or removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.4.

New, changed and removed IBM MQ Internet Pass-Thru messages



There are no new, changed, or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.4.

New, changed and removed MQJMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.2.4.

New, changed and removed JSON messages

There are no new, changed, or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.4.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.4:

Recovery log manager messages (CSQJ...)

CSQJ107E (Extra sentence added to System action)

CSQJ108E (Extra sentence added to System action)

Distributed queuing messages (CSQX...)

CSQX164E (Typo fixed in Explanation)


CSQX502E (System programmer response extended)

CSQX547E (System programmer response amended)


CSQX632I (Explanation amended)

There are no new or removed IBM MQ for z/OS CSQ messages for IBM MQ 9.2.4.

Related concepts

 [What's new in IBM MQ 9.2.4](#)

IBM MQ 9.2.4 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

 [What's changed in IBM MQ 9.2.4](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.4 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)

[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

What's new and changed in IBM MQ 9.2.3

IBM MQ 9.2.3, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related concepts

What's new and changed in IBM MQ 9.2.5

IBM MQ 9.2.5, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.4

IBM MQ 9.2.4, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.2

IBM MQ 9.2.2, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

What's new and changed in IBM MQ 9.2.1

IBM MQ 9.2.1, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.3

IBM MQ 9.2.3 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

New for IBM MQ for Multiplatforms - base and Advanced entitlement

Multi

On Multiplatforms, the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

Managing IBM MQ

- [“Streaming queues to realize additional value from data already flowing through IBM MQ” on page 117](#)
- [“Remote queue manager support for the MQ Console” on page 117](#)
- [“Improved password protection for IBM MQ clients using cryptographic hardware” on page 117](#)
- [“Support for dynamic balancing of Java Platform, Enterprise Edition inbound connections in a uniform cluster” on page 118](#)
- [“New client option for runmqdlq command” on page 118](#)
- [“New client version of amqsdlqc sample” on page 118](#)

Developing for IBM MQ

- [“Support for the Apache Qpid JMS client library” on page 118](#)



New IBM MQ for Multiplatforms features - Advanced entitlement only

Multi

MQ Adv.

The following features and enhancements are available on Multiplatforms only with Advanced entitlement.

Managing IBM MQ

-  [“General availability of Native HA for IBM MQ containers in Red Hat OpenShift” on page 118](#)
-  [“Replicated Data Queue Manager \(RDQM\) kernel module serviceability enhancements” on page 119](#)

New for IBM MQ for z/OS - base, Advanced, and Advanced VUE entitlement



The following features and enhancements are available both with base product entitlement, and with IBM MQ Advanced for z/OS (Advanced) and IBM MQ Advanced for z/OS Value Unit Edition (Advanced VUE) entitlement.

Managing IBM MQ

- [“Remote queue manager support for the MQ Console” on page 119](#)

Related concepts

What's changed in IBM MQ 9.2.3

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.3 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

New, changed, and removed messages in IBM MQ 9.2.3

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.3.

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

Advanced entitlement

For Multiplatforms, IBM MQ 9.2.3 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

Managing IBM MQ

- [“Streaming queues to realize additional value from data already flowing through IBM MQ” on page 117](#)
- [“Remote queue manager support for the MQ Console” on page 117](#)
- [“Improved password protection for IBM MQ clients using cryptographic hardware” on page 117](#)
- [“Support for dynamic balancing of Java Platform, Enterprise Edition inbound connections in a uniform cluster” on page 118](#)
- [“New client option for runmqdlq command” on page 118](#)
- [“New client version of amqsdlqc sample” on page 118](#)

Developing for IBM MQ

- [“Support for the Apache Qpid JMS client library” on page 118](#)

Streaming queues to realize additional value from data already flowing through IBM MQ

IBM MQ 9.2.3 adds the streaming queues feature to IBM MQ queue managers, which allows you to configure a queue to put a near-identical copy of every message to a second queue.

Streaming queues can be useful in certain scenarios, where you need to create a copy of your messages. For example:

- Streaming messages to Apache Kafka using the Kafka Connect source connector for IBM MQ. For more information, see [kafka_connect_mq_source](#).
- Performing analysis on the data going through the system.
- Storing messages for recovery at a later time.
- Capturing a set of messages to use in development and test systems.
- Consuming IBM MQ event messages from the system event queues, and sending additional copies to other queues or topics.

For more information, see [Streaming queues](#).

Remote queue manager support for the MQ Console

IBM MQ 9.2.3 adds support for managing remote queue managers in the MQ Console. Adding remote queue managers to the MQ Console enables you to administer all your queue managers in a single MQ Console instance. The remote queue managers can be queue managers that are running in a different installation on the same system as the MQ Console, or queue managers that are running on a different system.

For more information about adding remote queue managers to the MQ Console, see [Adding a remote queue manager to the MQ Console](#).

Improved password protection for IBM MQ clients using cryptographic hardware

IBM MQ 9.2.3 deploys an improvement to IBM MQ clients that allows them to parse cryptographic hardware configuration strings that contain encrypted passwords. This allows for the protection of PKCS #11 token pins inside the **SSLCryptoHardware** attribute in the SSL stanza of the mqclient.ini file, and the **MQSSLCryp** environment variable.

Important: This is not applicable for cryptographic hardware settings provided to the queue manager using the queue manager SSLCryp setting, or provided to client applications using the MQSC0.CryptoHardware structure field.

A command has been provided that can encrypt plain text passwords into the encrypted format usable with cryptographic hardware configuration strings for IBM MQ clients. For more information, see [IBM MQ clients using cryptographic hardware](#).

Support for dynamic balancing of Java Platform, Enterprise Edition inbound connections in a uniform cluster

From IBM MQ 9.2.3, a new property **dynamicallyBalanced** is available when configuring ActivationSpecs. For more information, see [Configuring the resource adapter for inbound communication](#).

New client option for runmqdlq command

You can use **runmqdlq** with the **-c** parameter to specify that it should establish a client connection to a remote queue manager. For more information, see [runmqdlq \(run dead-letter queue handler\)](#).

New client version of amqsdlqc sample



A built version of the sample program, named **amqsdlqc**, is included. You can use this to connect to a remote queue manager in client mode. For more information, see [The sample DLQ handler amqsdlq](#).

Support for the Apache Qpid JMS client library



IBM MQ 9.2.3 adds two additional channel attributes, **TMPMODEL** and **TMPQPRFX**, enabling you to set the model queue and queue prefix that you use, while creating a temporary queue using Qpid JMS.

For more information, see [Developing AMQP client applications](#) and [DEFINE CHANNEL](#).

Related concepts

   [What's new in IBM MQ 9.2.3 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.3 delivers two enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

  [What's new in IBM MQ 9.2.3 for z/OS - base and Advanced VUE entitlement](#)
On z/OS, IBM MQ 9.2.3 delivers an MQ Console enhancement that is available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.



[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

   [What's new in IBM MQ 9.2.3 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.3 delivers two enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

Managing IBM MQ

-  [“General availability of Native HA for IBM MQ containers in Red Hat OpenShift” on page 118](#)
-  [“Replicated Data Queue Manager \(RDQM\) kernel module serviceability enhancements” on page 119](#)

General availability of Native HA for IBM MQ containers in Red Hat OpenShift





The native high availability (Native HA) capability provides a highly available queue manager, automatically recovering from failures in seconds. All recoverable IBM MQ data are consistently replicated across multiple sets of independent storage, preventing loss from storage failures and enabling failover across availability zones. A Native HA capability preview was delivered in IBM MQ 9.2.2, for clients deploying container-based queue managers to IBM Cloud Pak for Integration 2021.1.1 in Red Hat OpenShift using the IBM MQ container. In IBM MQ 9.2.3, this configuration becomes available for production use as part of IBM Cloud Pak for Integration 2021.2.1.

For more information, see [Native HA](#).



Replicated Data Queue Manager (RDQM) kernel module serviceability enhancements

RDQM relies on DRBD to provide data replication. IBM MQ 9.2.3 delivers enhancements to help you ensure that you have loaded the correct DRBD kernel module to match the OS kernel version and to improve diagnostics. For more information, see [Viewing RDQM and HA group status](#), [Viewing DR RDQM status](#), and [Viewing DR/HA RDQM and HA group status](#).

Related concepts



  [What's new in IBM MQ 9.2.3 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.3 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

  [What's new in IBM MQ 9.2.3 for z/OS - base and Advanced VUE entitlement](#)
On z/OS, IBM MQ 9.2.3 delivers an MQ Console enhancement that is available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

“IBM MQ license information” on page 9

What you can purchase with IBM MQ and what each purchase entitles you to install.

  [***What's new in IBM MQ 9.2.3 for z/OS - base and Advanced VUE entitlement***](#)

On z/OS, IBM MQ 9.2.3 delivers an MQ Console enhancement that is available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

Managing IBM MQ



- [“Remote queue manager support for the MQ Console” on page 119](#)

Remote queue manager support for the MQ Console


IBM MQ 9.2.3 adds support for managing remote queue managers in the MQ Console. Adding remote queue managers to the MQ Console enables you to administer all your queue managers in a single MQ Console instance. The remote queue managers can be queue managers that are running in a different installation on the same system as the MQ Console, or queue managers that are running on a different system.

For more information about adding remote queue managers to the MQ Console, see [Adding a remote queue manager to the MQ Console](#).

Related concepts

  [What's new in IBM MQ 9.2.3 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.3 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

   [What's new in IBM MQ 9.2.3 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.3 delivers two enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's changed in IBM MQ 9.2.3

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.3 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Command and configuration changes

- [“Change to OCSPTIMEOUT parameter” on page 120](#)
- [“Update to SNI setting for IBM MQ managed .NET client” on page 120](#)

Extending your IBM MQ network

-  [“IBM Aspera fasp.io Gateway version upgraded” on page 120](#)

Change to OCSPTIMEOUT parameter

From IBM MQ 9.2.3, if a value of 0 is set for the **OCSPTIMEOUT** parameter in the SSL stanza of the `qm.ini` or `mqclient.ini` configuration file, the default timeout of 30 seconds is used.

Update to SNI setting for IBM MQ managed .NET client

From IBM MQ 9.2.3, the IBM MQ managed .NET client has been updated to set SERVERNAME to the respective hostname if the **OutboundSNI** property is set to HOSTNAME, which allows an IBM MQ managed .NET client to connect to a queue manager using [Red Hat OpenShift routes](#).

IBM Aspera fasp.io Gateway version upgraded

IBM MQ 9.2.3 upgrades the version of the IBM Aspera fasp.io Gateway to 1.2.0 in IBM MQ Advanced for z/OS VUE. For more information, see [Defining an Aspera gateway connection on Linux or Windows](#).

IBM Aspera fasp.io Gateway 1.2 makes a number of breaking changes from earlier versions, including a changed directory structure and enabling TLS by default. See [Release Notes: IBM Aspera fasp.io Gateway 1.2](#) for details.

Related concepts

 [What's new in IBM MQ 9.2.3](#)

IBM MQ 9.2.3 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

 [New, changed, and removed messages in IBM MQ 9.2.3](#)

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.3.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.3 New, changed, and removed messages in IBM MQ 9.2.3

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.3.

- **Multi** “New, changed, and removed IBM MQ AMQ messages” on page 121
- “New, changed, and removed Managed File Transfer messages” on page 122
- **Windows** **Linux** **AIX** “New, changed and removed MQ Telemetry messages” on page 123
- “New, changed, and removed REST API messages” on page 123
- “New, changed, and removed IBM MQ Console messages” on page 123
- **Linux** **MQ Adv.** “New, changed, and removed IBM MQ Bridge to blockchain messages” on page 123
- **Linux** “New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 124
- **Windows** **Linux** **AIX** “New, changed and removed IBM MQ Internet Pass-Thru messages” on page 124
- “New, changed and removed JMS messages” on page 124
- “New, changed and removed JSON messages” on page 124
- **z/OS** “New, changed, and removed z/OS messages” on page 124

New, changed, and removed IBM MQ AMQ messages

Multi

The following AMQ messages are new for IBM MQ 9.2.3:

AMQ3xxx: Utilities and tools

AMQ3055I
AMQ3056I
AMQ3240I
AMQ3241E
AMQ3242E
AMQ3636I to AMQ3643I

AMQ6xxx: Common Services

AMQ6333E
AMQ6335E
AMQ6337E
AMQ6339E

AMQ7xxx: IBM MQ product

AMQ7369W to AMQ7371W
AMQ7442W

AMQ8xxx: Administration

AMQ8797E
AMQ8955E to AMQ8958E

The following AMQ messages are changed for IBM MQ 9.2.3:

AMQ3xxx: Utilities and tools

AMQ3201E (Typographical error fixed in Explanation; Response is rewritten)
AMQ3221E (Response is rewritten)

AMQ3230E (Response is rewritten)
AMQ3235I (Explanation is extended)
AMQ3237I (Explanation is extended)

AMQ6xxx: Common Services

AMQ6150E (Variable removed from Message and Explanation)
AMQ6668I (Code is amended in Usage)

AMQ7xxx: IBM MQ product

AMQ7301I (Message is rewritten)

AMQ8xxx: Administration

AMQ8001I (Variable is removed from Message)
AMQ8007I (Message is shortened)
AMQ8011I (Message is shortened)
AMQ8015I (Message is shortened)
AMQ8095I (Message is shortened)
AMQ8109I (Variable is added to Message)
AMQ8553I (Message is shortened)
AMQ8564I (Message is shortened)
AMQ8627I (Message is shortened)
AMQ8628I (Message is shortened)
AMQ8692I (Message is shortened)
AMQ8710I (Code is amended in Usage)
AMQ8860I (Message is shortened)
AMQ8863I (Message is shortened)

AMQ9xxx: Remote

AMQ9085I (Message is shortened)
AMQ9456I (Formerly AMQ9456W; references to "queue" are changed to "object")
AMQ9720W (Typo fixed in Explanation)

The following AMQ messages are removed for IBM MQ 9.2.3:

AMQ3xxx: Utilities and tools

AMQ3589E
AMQ3932E

AMQ9xxx: Remote

AMQ9099I (replaced with AMQ3056I)
AMQ9102W (replaced with AMQ6339W)
AMQ9103E (replaced with AMQ6335E)
AMQ9104E (replaced with AMQ6337E)
AMQ9107E (replaced with AMQ6333E)

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.3:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0204I

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0817E
BFGCL0818E

The following Managed File Transfer messages are changed for IBM MQ 9.2.3:

BFGMQ0001 - BFGMQ9999: MFT WMQ interface messages

BFGMQ1045I (Typo fixed in Explanation: DEFSOPT(EXCL) becomes DEFSOPT(SHARED))

The following Managed File Transfer messages are removed for IBM MQ 9.2.3:

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0153I

New, changed and removed MQ Telemetry messages



The following MQ Telemetry messages are new for IBM MQ 9.2.3:

Telemetry messages

AMQXR2105E

AMQXR2106E

New, changed, and removed REST API messages

The following REST API messages are new for IBM MQ 9.2.3:

MQWB10xx: REST API messages MQWB1000 to 1099

MQWB1004I

MQWB1012I

MQWB11xx: REST API messages MQWB1100 to 1199

MQWB1144E to MQWB1158E

The following REST API messages are changed for IBM MQ 9.2.3:

MQWB10xx: REST API messages MQWB1000 to 1099

MQWB1000I (Code updated and typo removed from Usage)

MQWB1003I (Code updated in Usage)

MQWB1010I (Code shortened in Usage)

MQWB11xx: REST API messages MQWB1100 to 1199

MQWB1126E (Explanation is extended and Response is rewritten)

MQWB1137E (Variable in the Message is edited)

There are no removed REST API messages for IBM MQ 9.2.3.

New, changed, and removed IBM MQ Console messages

The following IBM MQ Console messages are new for IBM MQ 9.2.3:

MQWB20xx IBM MQ Console messages

MQWB2025E to MQWB2027E

The following IBM MQ Console messages are changed for IBM MQ 9.2.3:

MQWB20xx IBM MQ Console messages

MQWB2010E (Typo fixed in the Response)

There are no removed IBM MQ Console messages for IBM MQ 9.2.3.

New, changed, and removed IBM MQ Bridge to blockchain messages



There are no new, changed, or removed IBM MQ Bridge to blockchain messages for IBM MQ 9.2.3.

New, changed, and removed IBM MQ Bridge to Salesforce messages

Linux

There are no new, changed, or removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.3.

New, changed and removed IBM MQ Internet Pass-Thru messages

Windows

Linux

AIX

There are no new, changed, or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.3.

New, changed and removed JMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.2.3.

New, changed and removed JSON messages

There are no new, changed, or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.3.

New, changed, and removed z/OS messages

z/OS

The following IBM MQ for z/OS CSQ messages are new for IBM MQ 9.2.3:

Message manager messages (CSQM...)

CSQM068I

The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.3:

Coupling Facility manager messages (CSQE...)

CSQE161E (Punctuation is improved in the Message)

CSQE280I (LTS version of the data set table is added)

Recovery log manager messages (CSQJ...)

CSQJ166E (LTS-specific version of the message is removed)

Command server messages (CSQN...)

CSQN207I (System action is extended)

Distributed queuing messages (CSQX...)

CSQX456E (References to "queue" are replaced with "cluster object" references; field "qmgr_name" is replaced with "qmgr_uuid"; Severity is changed to "4")

CSQX456I (LTS-only message. References to "queue" are replaced with "cluster object" references, and System programmer response is extended)

CSQX616E (System programmer response is extended)

Throughout the z/OS messages, references and links to IBM Knowledge Center are updated for IBM Documentation.

The following IBM MQ for z/OS CSQ messages are removed for IBM MQ 9.2.3:

Distributed queuing messages (CSQX...)

CSQX696I

Related concepts

9.2.3

What's new in IBM MQ 9.2.3

IBM MQ 9.2.3 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

9.2.3

[What's changed in IBM MQ 9.2.3](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.3 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)

[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

V 9.2.2 What's new and changed in IBM MQ 9.2.2

IBM MQ 9.2.2, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related concepts

V 9.2.5 [What's new and changed in IBM MQ 9.2.5](#)

IBM MQ 9.2.5, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.4 [What's new and changed in IBM MQ 9.2.4](#)

IBM MQ 9.2.4, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.3 [What's new and changed in IBM MQ 9.2.3](#)

IBM MQ 9.2.3, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.1 [What's new and changed in IBM MQ 9.2.1](#)

IBM MQ 9.2.1, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.2 What's new in IBM MQ 9.2.2

IBM MQ 9.2.2 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

New for IBM MQ for Multiplatforms - base and Advanced entitlement

Multi

On [Multiplatforms](#), the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

Developing for IBM MQ

- [“Browse support for IBM MQ AMQP channels” on page 127](#)

- [“Java clients installed with the self-extracting JAR file can use the JMSAdmin tool” on page 127](#)

New IBM MQ for Multiplatforms features - Advanced entitlement only







The following features and enhancements are available on Multiplatforms only with Advanced entitlement.

License and entitlement

- [“IBM MQ Advanced for Non-Production entitlement” on page 128](#)

Managing IBM MQ

-  [“RDQM now reports when an HA or DR node's replication was last in sync” on page 128](#)
-  [“RDQM summary status now includes the preferred location for HA queue managers” on page 128](#)
-  [“You can now see and clear RDQM HA failed resource actions” on page 128](#)
-  [“Native HA for IBM MQ containers on Red Hat OpenShift \(capability preview\)” on page 129](#)
- [“Improved password protection for MQI Advanced Message Security clients” on page 129](#)
- [“New Managed File Transfer commands for starting and stopping resource monitors” on page 129](#)

New for IBM MQ for z/OS - Advanced and Advanced VUE entitlement only



The following features and enhancements are available with Advanced or Advanced VUE entitlement only.

Managing IBM MQ

- [New Managed File Transfer commands for starting and stopping resource monitors](#)
- [“Improved guidance for use of Managed File Transfer on z/OS with data sets” on page 130](#)

Related concepts

What's changed in IBM MQ 9.2.2

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.1 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

New, changed, and removed messages in IBM MQ 9.2.2

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.2.

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's new in IBM MQ 9.2.2 for Multiplatforms - base and Advanced entitlement

For Multiplatforms, IBM MQ 9.2.2 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

Developing for IBM MQ

- [“Browse support for IBM MQ AMQP channels” on page 127](#)
- [“Java clients installed with the self-extracting JAR file can use the JMSAdmin tool” on page 127](#)

Browse support for IBM MQ AMQP channels

IBM MQ 9.2.2 adds browse support for point to point messaging to IBM MQ AMQP channels, so that AMQP clients, like Apache Qpid™ JMS applications, can connect to IBM MQ and browse messages.

For more information, see [Developing AMQP client applications](#).

Java clients installed with the self-extracting JAR file can use the JMSAdmin tool

From IBM MQ 9.2.2, the self-extracting JAR file `version-IBM-MQ-Install-Java-All.jar` has been updated to include all of the files related to the JMSAdmin tool, in addition to all of the files that it did before. As a result of these changes, a client that is installed using the self-extracting JAR file can use the JMSAdmin tool installed as part of the JAR file to create JMS administered objects within a file system context (.bindings file). The client can also look up and use these administered objects. For more information, see [Obtaining the IBM MQ classes for JMS separately](#).

Note: A client installed by unpacking the redistributable Java client does not contain the JMSAdmin tool, or its prerequisite JAR files `fscontext.jar` and `providerutil.jar`. For more information, see [Limitations and other considerations for redistributable clients](#).

Related concepts

What's new in IBM MQ 9.2.2 for Multiplatforms - Advanced entitlement only

IBM MQ 9.2.2 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

What's new in IBM MQ 9.2.2 for z/OS - Advanced and Advanced VUE entitlement

IBM MQ 9.2.2 includes enhancements for Managed File Transfer on z/OS.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.





What's new in IBM MQ 9.2.2 for Multiplatforms - Advanced entitlement only

IBM MQ 9.2.2 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

License and entitlement

- [“IBM MQ Advanced for Non-Production entitlement” on page 128](#)

Managing IBM MQ

-  [“RDQM now reports when an HA or DR node's replication was last in sync” on page 128](#)
-  [“RDQM summary status now includes the preferred location for HA queue managers” on page 128](#)
-  [“You can now see and clear RDQM HA failed resource actions” on page 128](#)
-  [“Native HA for IBM MQ containers on Red Hat OpenShift \(capability preview\)” on page 129](#)
- [“Improved password protection for MQI Advanced Message Security clients” on page 129](#)
- [“New Managed File Transfer commands for starting and stopping resource monitors” on page 129](#)

IBM MQ Advanced for Non-Production entitlement

From IBM MQ 9.2.2, if you have purchased a non-production license, you can set the licensed entitlement for an IBM MQ installation to IBM MQ Advanced for Non-Production by using the **setmqinst** command. This entitlement is then reported automatically to the IBM License Metric Tool (ILMT) to allow for correct license identification.

For more information, see [“IBM MQ license information” on page 9](#) and [setmqinst](#).

RDQM now reports when an HA or DR node's replication was last in sync

 Linux

From IBM MQ 9.2.2, the status that is returned by the **rdqmstatus** command reports the last time that a DR or HA RDQM node's replication was in sync, if synchronization has been lost. This information helps problem determination and recovery. For more information, see [Viewing RDQM and HA group status](#), [Viewing DR RDQM status](#), and [Viewing DR/HA RDQM and HA group status](#).

RDQM summary status now includes the preferred location for HA queue managers

 Linux

From IBM MQ 9.2.2, the summary status returned by the **rdqmstatus** command now reports the preferred location for each HA queue manager. For more information, see [Viewing RDQM and HA group status](#) and [Viewing DR/HA RDQM and HA group status](#).

You can now see and clear RDQM HA failed resource actions

 Linux

From IBM MQ 9.2.2, failed resource actions, which can prevent queue manager failover or result in a queue manager running in a non-preferred location, can be displayed and resolved using dedicated commands. You can now view details of failed resource actions by using the **rdqmstatus** command, and clear them by using the **rdqmclean** command. For more information, see [Failed resource actions](#).

Native HA for IBM MQ containers on Red Hat OpenShift (capability preview)

CP4I

A Native HA configuration provides a highly available queue manager where the recoverable MQ data (for example, the messages) are replicated across multiple sets of storage, preventing loss from storage failures. The queue manager consists of multiple running instances, one is the leader, the others are ready to quickly take over in the event of a failure, maximizing access to the queue manager and its messages.

Important:

Native HA is a capability preview in IBM Cloud Pak for Integration 2021.1.1, and is suitable for evaluation purposes only. For more information, see [Evaluating the Native HA feature in IBM Cloud Pak for Integration 2021.1.1](#)

Improved password protection for MQI Advanced Message Security clients

IBM MQ 9.2.2 deploys an improvement to MQI Advanced Message Security (AMS) clients, allowing you to protect sensitive credentials inside AMS configuration files.

In addition to the JKS keystore passwords, you can now protect PEM file passwords and pkcs#11 token pins.

For more information, see [Protecting passwords in AMS configuration files](#).

New Managed File Transfer commands for starting and stopping resource monitors

From IBM MQ 9.2.2, two new commands, **fteStartMonitor** and **fteStopMonitor**, allow you to start and stop resource monitors without needing to stop or restart an agent. This is useful, for example, in the following situations:

- If an agent has multiple resource monitors, and only some of them have encountered errors but the remaining resource monitors are still working fine so you just want to restart the failed resource monitors.
- If you want to stop a resource monitor to carry out some maintenance work, or if the resource monitor is not required for certain time and you do not want it to run unnecessarily, thus consuming precious system resources.

For more information, see [Starting an MFT resource monitor](#) and [Stopping an MFT resource monitor](#).

Related concepts

V 9.2.2 **Multi** [What's new in IBM MQ 9.2.2 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.2 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

V 9.2.2 **MQ Adv. VUE** **MQ Adv. z/OS** [What's new in IBM MQ 9.2.2 for z/OS - Advanced and Advanced VUE entitlement](#)

IBM MQ 9.2.2 includes enhancements for Managed File Transfer on z/OS.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

V 9.2.2 **MQ Adv. VUE** **MQ Adv. z/OS** [What's new in IBM MQ 9.2.2 for z/OS - Advanced and Advanced VUE entitlement](#)

IBM MQ 9.2.2 includes enhancements for Managed File Transfer on z/OS.

Managing IBM MQ

- [New Managed File Transfer commands for starting and stopping resource monitors](#)
- [“Improved guidance for use of Managed File Transfer on z/OS with data sets” on page 130](#)

New Managed File Transfer commands for starting and stopping resource monitors

Before IBM MQ 9.2.2, the only way to stop a resource monitor was by stopping the agent that was running the monitor operation. To restart a resource monitor, you had to restart the agent altogether.

From IBM MQ 9.2.2, two new commands, **fteStartMonitor** and **fteStopMonitor**, allow you to start and stop resource monitors without needing to stop or restart an agent.

Note that the JCL for **fteStartMonitor** is BFGXMNST, and the JCL for **fteStopMonitor** is BFGXMNSP.

This is useful, for example, in the following situations:

- If an agent has multiple resource monitors, and only some of them have encountered errors but the remaining resource monitors are still working fine so you just want to restart the failed resource monitors.
- If you want to stop a resource monitor to carry out some maintenance work, or if the resource monitor is not required for certain time and you do not want it to run unnecessarily, thus consuming precious system resources.

You can run these commands from any system where the Managed File Transfer commands component is installed, which means that you can start and stop a resource monitor from anywhere, and are not restricted to the system where the agent that owns the resource monitor is running. For more information, see [Starting an MFT resource monitor](#) and [Stopping an MFT resource monitor](#).


Improved guidance for use of Managed File Transfer on z/OS with data sets

This is a documentation only enhancement.


On z/OS, Managed File Transfer supports transfer of data to and from files and data sets. A wide range of data set types and characteristics are supported, but [Transferring between data sets on z/OS](#) describes some restrictions that apply. See the section on [Partitioned data sets \(PDS\)](#) and [partitioned data set extended \(PDSE\) data sets](#) for more detailed information.

[Using Managed File Transfer in combination with z/OS utilities to transfer files](#) gives additional guidance by describing methods that can be used to transfer data sets for which Managed File Transfer has restrictions.

Related concepts

 [What's new in IBM MQ 9.2.2 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.2 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

 [What's new in IBM MQ 9.2.2 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.2 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

[“IBM MQ license information” on page 9](#)









What you can purchase with IBM MQ and what each purchase entitles you to install.

What's changed in IBM MQ 9.2.2

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.1 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Command and configuration changes

- [“Change to automatic configuration from MQSC at startup” on page 131](#)
- [“Changes to channel status attributes” on page 131](#)
- [“Value of the SYSTEM.MQSC.REPLY.QUEUE MAXDEPTH attribute increased” on page 131](#)

-     [“Change to location of gateway and configuration files for Aspera gateway” on page 131](#)
-  [“Change to location of JAAS login files” on page 131](#)
- [“JMQUI updates for local address field set on an MQCD object” on page 131](#)
-    [“Change to Managed File Transfer delimiter transfer error messages” on page 132](#)
- [“New and removed Cipher Suites in MQIPT” on page 132](#)

Change to automatic configuration from MQSC at startup

From IBM MQ 9.2.2, the way that the auto-configuration feature behaves has changed. All MQSC commands are completed before applications can connect to the queue manager. This ensures that a queue manager's configuration is up to date prior to applications connecting but may increase the time it takes applications to connect to a restarted queue manager.

See [Automatic configuration from an MQSC script at startup](#) for further information.

Changes to channel status attributes

From IBM MQ 9.2.2, the following changes have been made to channel status attributes:

DISPLAY CHSTATUS command

If the value for BYTSENT or BYTSCVD exceeds 999999999, it wraps to zero.

Inquire Channel Status (response)

If the value for BytesSent or BytesReceived exceeds 999999999, it wraps to zero.

Value of the SYSTEM.MQSC.REPLY.QUEUE MAXDEPTH attribute increased

To ensure that a remotely connected **runmqsc** command can process the full results for each command, IBM MQ 9.2.2 increases the value of the MAXDEPTH attribute from 3000 to 999999999. IBM MQ 9.2.2 also changes the way in which the **WaitTime** parameter of the **runmqsc** command behaves, by setting the value of **WaitTime** as an expiry time for PCF request messages.

See [runmqsc](#) for more information.

Change to location of gateway and configuration files for Aspera gateway



From IBM Aspera fasp.io Gateway 1.1, the location of the gateway and configuration files has changed to /usr/local/etc/fasp.io/. For earlier versions of the Aspera gateway, the location is /etc/fasp.io/. For more information, see [Defining an Aspera gateway connection on Linux or Windows](#).

Change to location of JAAS login files



From IBM MQ 9.2.2, the location of the JAAS login files has changed to &MQ_INSTALL_DIRECTORY%/amqp/samples/jaas.

For earlier versions of IBM MQ, the location is &MQ_INSTALL_DIRECTORY%/ amqp/samples/samples

For more information, see [Creating and using AMQP channels](#), [Location of telemetry logs, error logs, and configuration files](#), and [JAAS login module not called by the telemetry service](#).

JMQUI updates for local address field set on an MQCD object

From IBM MQ 9.2.2, the Java Message Queueing Interface (JMQUI) has been updated to ensure that the [local address field](#) is set on an MQCD object after a channel instance has been created and is

connected to a queue manager. This means that when a channel exit written in Java calls the method `MQCD.getLocalAddress()`, the method returns the local address that the channel instance is using.

Change to Managed File Transfer delimiter transfer error messages

MQ Adv. > MQ Adv. VUE > MQ Adv. z/OS

From IBM MQ 9.2.2 only one empty message is sent when a transfer from a file fails due to a delimiter size check failure. See [Failure of a file-to-message transfer](#) for more details.

New and removed Cipher Suites in MQIPT

From IBM MQ 9.2.2, the following TLS 1.2 CipherSuites are available in IBM MQ Internet Pass-Thru (MQIPT) :

- TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256
- TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256
- TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256

These CipherSuites can be used only for routes between instances of MQIPT as they are not supported by IBM MQ.

From IBM MQ 9.2.2, the following CipherSuites have been removed from MQIPT :

- SSL_RSA_FIPS_WITH_3DES_EDE_CBC_SHA
- SSL_RSA_FIPS_WITH_DES_CBC_SHA

For more information about TLS support in MQIPT, see [SSL/TLS support](#).

Related concepts

V 9.2.2 [What's new in IBM MQ 9.2.2](#)

IBM MQ 9.2.2 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.2 [New, changed, and removed messages in IBM MQ 9.2.2](#)

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.2.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.2 New, changed, and removed messages in IBM MQ 9.2.2

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.2.

- **Multi** [“New, changed, and removed IBM MQ AMQ messages” on page 133](#)
- [“New, changed, and removed Managed File Transfer messages” on page 134](#)
- **Windows** **Linux** **AIX** [“New, changed, and removed MQ Telemetry messages” on page 134](#)
- [“New, changed, and removed REST API messages” on page 134](#)
- [“New, changed, and removed IBM MQ Console messages” on page 134](#)
- **Linux** **MQ Adv.** [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 135](#)

- **Linux** [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 135](#)
- **Windows** **Linux** **AIX** [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 135](#)
- [“New, changed and removed MQJMS messages” on page 135](#)
- [“New, changed and removed JSON messages” on page 135](#)
- **z/OS** [“New, changed, and removed z/OS messages” on page 135](#)

New, changed, and removed IBM MQ AMQ messages

Multi

The following AMQ messages are new for IBM MQ 9.2.2:

AMQ3xxx: Utilities and tools

AMQ3201E - AMQ3206E
 AMQ3208E - AMQ3219E
 AMQ3221E - AMQ3225E
 AMQ3227I - AMQ3239E
 AMQ3535E
 AMQ3551I
 AMQ3644I - AMQ3676I

AMQ5xxx: Installable services

AMQ5707E - AMQ5708E
 AMQ5781I

AMQ7xxx: IBM MQ product

AMQ7275E
 AMQ7277E
 AMQ7814I - AMQ7816I

AMQ8xxx: Administration

AMQ8270I - AMQ8273I AMQ8343I AMQ8634E AMQ8954W

AMQ9xxx: Remote

AMQ9099I
 AMQ9101E - AMQ9107E
 AMQ9797E

The following AMQ messages are changed for IBM MQ 9.2.2:

AMQ3xxx: Utilities and tools

AMQ3762I (Usage updated to include Native HA parameters)
 AMQ3844I (Usage information expanded)

AMQ5xxx: Installable services

AMQ5600I (Usage updated to include Native HA parameter)
 AMQ5613I (Usage updated to include Native HA parameter)

The Native HA capability is available for preview in the IBM MQ Advanced container image for IBM Cloud Pak for Integration. **It is not supported for production use.**

AMQ6xxx: Common Services

AMQ6570I (Usage information expanded)
 AMQ6571I (Usage information expanded)
 AMQ6622I (List of commands tidied up)

AMQ6623I (List of commands tidied up)

AMQ6693I (List of commands tidied up)

AMQ7xxx: IBM MQ product

AMQ7017S (Explanation and Response updated)

AMQ7493W (typo fixed)

AMQ7734I (Usage updated to include new parameter)

AMQ8xxx: Administration

AMQ8588W (Response clarified)

AMQ8894E (Message, Explanation and Response rewritten)

AMQ9xxx: Remote

AMQ9631E (Response rewritten)

AMQ9633E (Explanation extended)

AMQ9641E (Response rewritten)

The following AMQ messages are removed for IBM MQ 9.2.2:

AMQ3xxx: Utilities and tools

AMQ3589E

AMQ3932E

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.1:

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0812E - BFGCL0816I

BFGDM0001 - BFGDM9999: MFT resource monitor messages

BFGDM0128E - BFGDM0132E

BFGPR0001 - BFGPR9999: MFT miscellaneous messages

BFGPR0153I

BFGRP0001 - BFGRP9999: MFT audit information messages

BFGRP0038I

The following Managed File Transfer messages are changed for IBM MQ 9.2.2:

BFGSS0001 - BFGSS9999: MFT state store messages

BFGSS0024E (Message expanded)

BFGSS0087E (Typo fixed)

There are no removed Managed File Transfer for IBM MQ 9.2.2.

New, changed, and removed MQ Telemetry messages



There are no new, changed, or removed MQ Telemetry messages for IBM MQ 9.2.2.

New, changed, and removed REST API messages

There are no new, changed, or removed REST API messages for IBM MQ 9.2.2.

New, changed, and removed IBM MQ Console messages

There are no new, changed, or removed IBM MQ Console messages for IBM MQ 9.2.2.

New, changed, and removed IBM MQ Bridge to blockchain messages



There are no new, changed, or removed IBM MQ Bridge to blockchain messages for IBM MQ 9.2.2.

New, changed, and removed IBM MQ Bridge to Salesforce messages



There are no new, changed, or removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.2.

New, changed and removed IBM MQ Internet Pass-Thru messages



There are no new, changed, or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.2.

New, changed and removed MQJMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.2.2.

New, changed and removed JSON messages

There are no new, changed or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.2.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.2:

Batch adapter messages (CSQB...)

CSQB001E (Expands "USS" to "z/OS UNIX System Services")

Message manager messages (CSQM...)

CSQM001E (References to "USS" or "UNIX System Services" are expanded or corrected)

CSQM102E (Set of examples of weak CipherSpecs replaced by a link to another topic)

Buffer manager messages (CSQP...)

CSQP014E (Extra section added to System Programmer Response)

Distributed queuing messages (CSQX...)

CSQX004I (Explanation extended)

CSQX106E (References to "USS" or "UNIX System Services" are expanded or corrected)

CSQX616E (Details of how to re-enable weak CipherSpecs replaced by a link to another topic)

CSQX637E (Expands System programmer response)

CSQX642E (Expands System programmer response)

CSQX658E (Typo fixed)

CSQX674E (Details of how to re-enable weak CipherSpecs replaced by a link to another topic)

CSQX690I (Details of how to re-enable weak CipherSpecs replaced by a link to another topic)

CSQX692I (Details of how to re-enable weak CipherSpecs replaced by a link to another topic)

CSQX694E (Severity changed from "I" to "E", and details of how to re-enable weak CipherSpecs replaced by a link to another topic)

CSQX696I (Details of how to disable weak or broken CipherSpecs replaced by a link to another topic)

CSQX697I (Typo fixed, and details of how to disable weak or broken CipherSpecs replaced by a link to another topic)

There are no new or removed IBM MQ for z/OS CSQ messages for IBM MQ 9.2.1.

Related concepts

[V 9.2.2](#) What's new in IBM MQ 9.2.2

IBM MQ 9.2.2 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

[V 9.2.2](#) What's changed in IBM MQ 9.2.2

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.1 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)

[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

[V 9.2.1](#) What's new and changed in IBM MQ 9.2.1

IBM MQ 9.2.1, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related concepts

[V 9.2.5](#) What's new and changed in IBM MQ 9.2.5

IBM MQ 9.2.5, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

[V 9.2.4](#) What's new and changed in IBM MQ 9.2.4

IBM MQ 9.2.4, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

[V 9.2.3](#) What's new and changed in IBM MQ 9.2.3

IBM MQ 9.2.3, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

[V 9.2.2](#) What's new and changed in IBM MQ 9.2.2

IBM MQ 9.2.2, which is a Continuous Delivery (CD) release, delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

[V 9.2.1](#) What's new in IBM MQ 9.2.1

IBM MQ 9.2.1 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.








The individual features provided by a CD release are stand-alone functions but may increase in capability in subsequent CD releases, enhancing earlier CD features and forming a suite of related capabilities.

New for IBM MQ for Multiplatforms - base and Advanced entitlement




On Multiplatforms, the following features and enhancements are available with both base product entitlement, and with Advanced entitlement.

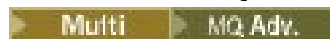
Managing IBM MQ

- [“New Web Console Application quick start” on page 139](#)
- [“Ability to trace New Web Console JavaScript running inside a browser” on page 139](#)
-  [“New Confirm License Entitlement panel” on page 139](#)
-   [“Permitting non-operating system users in the Object Authority Manager” on page 139](#)
-  [“New IGNSTATE parameter for using MQSC DELETE commands idempotently” on page 140](#)
-  [“Support for zlibNX compression library” on page 140](#)
-  [“Support for upgrading IBM MQ for Linux without uninstalling the earlier version” on page 140](#)
-  [“IBM MQ scaler for KEDA” on page 140](#)

Developing for IBM MQ







-  [“Point-to-point messaging on AMQP channels” on page 141](#)
- [“More flexible configuration for SNI support” on page 141](#)

New for IBM MQ for Multiplatforms - Advanced entitlement only



The following features and enhancements are available on Multiplatforms only with Advanced entitlement.

Managing IBM MQ

-  [“Deploying containers to IBM Cloud Pak for Integration” on page 142](#)
-   [“Containers and the EUS release model” on page 142](#)
-    [“Redistributable Managed File Transfer Logger” on page 142](#)
- [“Limiting the number of file transfers for each FTP endpoint” on page 142](#)

New for IBM MQ for z/OS - base, Advanced, and Advanced VUE entitlement



The following features and enhancements are available both with base product entitlement, and with IBM MQ Advanced for z/OS (Advanced) and IBM MQ Advanced for z/OS Value Unit Edition (Advanced VUE) entitlement.

Managing IBM MQ

- [New Web Console Application quick start](#)
- [Ability to trace New Web Console JavaScript running inside a browser](#)

Developing for IBM MQ

- [“More flexible configuration for SNI support” on page 143](#)

New for IBM MQ for z/OS - Advanced and Advanced VUE entitlement only

► z/OS ► MQ Adv. VUE ► MQ Adv. z/OS

The following features and enhancements are available with Advanced or Advanced VUE entitlement only.

Managing IBM MQ

- [“Guidance for use of Managed File Transfer on z/OS” on page 144](#)
- [Redistributable Managed File Transfer Logger](#)
- [Limiting the number of file transfers for each FTP endpoint](#)

Related concepts

► V 9.2.1 [What's changed in IBM MQ 9.2.1](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

► V 9.2.1 [Deprecated and removed features in IBM MQ 9.2.1](#)

A number of features are deprecated or removed from IBM MQ 9.2.1.

► V 9.2.1 [New, changed, and removed messages in IBM MQ 9.2.1](#)

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.1.

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)







[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

► V 9.2.1 ► Multi ***What's new in IBM MQ 9.2.1 for Multiplatforms - base and Advanced entitlement***


For Multiplatforms, IBM MQ 9.2.1 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

Managing IBM MQ

- [“New Web Console Application quick start” on page 139](#)
- [“Ability to trace New Web Console JavaScript running inside a browser” on page 139](#)
- ► Windows [“New Confirm License Entitlement panel” on page 139](#)

-   [“Permitting non-operating system users in the Object Authority Manager” on page 139](#)
-  [“New IGNSTATE parameter for using MQSC DELETE commands idempotently” on page 140](#)
-  [“Support for zlibNX compression library” on page 140](#)
-  [“Support for upgrading IBM MQ for Linux without uninstalling the earlier version” on page 140](#)
-  [“IBM MQ scaler for KEDA” on page 140](#)

Developing for IBM MQ

-  [“Point-to-point messaging on AMQP channels” on page 141](#)
- [“More flexible configuration for SNI support” on page 141](#)

New Web Console Application quick start

Enhancements to the New Web Console can help new users to get started more easily than ever before, following simple steps to create a messaging configuration with an application. For more information, see [Quick tour of the New Web Console](#).

Ability to trace New Web Console JavaScript running inside a browser

The New Web Console consists of JavaScript, which runs inside a browser, and back-end code, which is written in Java, which runs inside the mqweb server.

Before IBM MQ 9.2.1, there was no mechanism to trace the JavaScript. It was only possible to trace the back-end code for the New Web Console. From IBM MQ 9.2.1, the New Web Console has been updated to provide a mechanism to trace the JavaScript running inside a browser. For more information, see [Tracing the New Web Console](#).

New Confirm License Entitlement panel



From IBM MQ 9.2.1, the new **Confirm License Entitlement** panel in the Windows interactive installer is presented after feature selection if you have chosen to install any IBM MQ Advanced features (MQ Telemetry Service, Advanced Message Security, or Managed File Transfer Service), or if you are upgrading from an installation that already has these features.

This panel simply warns you that these features are considered IBM MQ Advanced functionality and should only be installed if you have entitlement to IBM MQ Advanced. This warning reduces the risk of users installing IBM MQ Advanced features on a machine in error. For more information, see [Installing the server using the Launchpad](#).

Permitting non-operating system users in the Object Authority Manager



From IBM MQ 9.2.1, the authority model has been simplified for IBM MQ running in a container environment, where usernames cannot be managed in the traditional way. The additional `UserExternal` option enables you to define permissions for users without the users having to exist in a Lightweight Directory Access Protocol (LDAP) server by allowing you to specify a non-operating system user name with a maximum of 12 characters to be used both for checking and setting authorizations.

For more information on the `UserExternal` option, see the `-oa` parameter of the `crtmqm` command and the **SecurityPolicy** parameter of the [Service stanza of the qm.ini file](#).

New **IGNSTATE** parameter for using **MQSC DELETE** commands idempotently



IBM MQ 9.2.1 introduces the **IGNSTATE** parameter for **DELETE** commands. This parameter allows you to specify whether you want the command to return an error return code if the object is already in the state the command would move it to. For more information about the **IGNSTATE** parameter and its options, see, for example, [DELETE queues](#).

Specifying this parameter allows you to use the command **DELETE** in an iterative manner, for example in scripts, without the command or script failing after the first run because an object has already been deleted and no longer exists. Since the **IGNSTATE** parameter is an addition to the existing **DELETE** command functionality, the default behavior for existing scripts is to continue to operate as they have done previously.

Note that, when running in **runmqsc -n** mode, that is, not connected to a queue manager, the two available **DELETE** commands, **DELETE AUTHINFO** and **DELETE CHANNEL**, accept the **IGNSTATE** parameter, but there is no difference in behavior between YES and NO options. If **runmqsc** is run normally, **DELETE AUTHINFO** and **DELETE CHANNEL** act like other objects.

Support for **zlibNX** compression library



From IBM MQ 9.2.1, channel compression of message data that uses ZLIBFAST or ZLIBHIGH compression techniques can opt to use hardware-acceleration in IBM MQ for AIX.

Opting to use the **zlibNX** library for channel compression will typically result in lower CPU usage and consequently improve message throughput rates. The impact of the **zlibNX** hardware-acceleration on channel compression will vary according to how large and how compressible the message data is. Highly compressible messages that are over 2KB in size are most likely to benefit from opting to use the **zlibNX** library.

For more information on data compression, see [Data compression \(COMPMSG\)](#). For information on the **AMQ_USE_ZLIBNX** environment variable, which enables the support in IBM MQ for AIX, see [Environment variables descriptions](#).

Support for upgrading IBM MQ for Linux without uninstalling the earlier version



From IBM MQ 9.2.1, you can choose to upgrade IBM MQ on Linux platforms without uninstalling the earlier version of IBM MQ. The version that you are upgrading from must be at IBM MQ 9.2.0, or later, and no fix packs can be installed for the earlier version. That is, the fix pack number in the version.release.modification.fixpack (V . R . M . F) release identifier must be 0.

Previously, when you moved from an earlier version of IBM MQ to a later version in a single stage migration scenario, you had to uninstall the earlier version of IBM MQ before you installed the later version. Now, you can choose to install the later version without uninstalling the earlier version, which can make the upgrade process quicker and easier.

For more information, see [Upgrading an IBM MQ installation on Linux](#).

IBM MQ scaler for KEDA

From IBM MQ 9.2.1, auto-scaling of client applications is possible based on queue depth. This feature uses the Kubernetes-based Event Driven Autoscaler (KEDA), which is a lightweight, open source solution designed to provide better scaling options for event-driven client applications on Kubernetes. You can use KEDA to scale client applications running on IBM MQ queue managers, including queue managers in containers.

For more information, see [Introduction to KEDA](#). The IBM MQ scaler for KEDA was contributed by the IBM MQ development team and is maintained by the KEDA community. If you have a question or would like to raise a issue, use the kedacore GitHub repo: <https://github.com/kedacore/keda/issues>.

Point-to-point messaging on AMQP channels



IBM MQ 9.2.1 adds point-to-point messaging support to IBM MQ AMQP channels, so that AMQP clients such as Apache Qpid™ JMS applications can connect to IBM MQ and send messages to queues or temporary queues, or receive messages from queues and temporary queues.

For more information, see [Developing AMQP client applications](#).

More flexible configuration for SNI support

SNI enables a client to indicate the hostname to which it is attempting to connect at the start of the handshaking process. From IBM MQ 9.2.1, an improvement has been made to allow the SNI to store either the IBM MQ channel name or the hostname.

The additional **OutboundSNI** property of the SSL stanza allows you to select whether the SNI should be set to the target IBM MQ channel name to the remote system when initiating a TLS connection, or to the hostname. For more information about the **OutboundSNI** property, see [SSL stanza of the qm.ini file](#) and [SSL stanza of the client configuration file](#) for more details.

For more information on how this property is used, see [Connecting to a queue manager deployed in a Red Hat OpenShift cluster](#).

Related concepts

[What's new in IBM MQ 9.2.1 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.1 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

[What's new in IBM MQ for z/OS 9.2.1 - base and Advanced VUE entitlement](#)
IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

[What's new in IBM MQ for z/OS 9.2.1 features - Advanced and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

[What's new in IBM MQ 9.2.1 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.1 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

Managing IBM MQ

- [“Deploying containers to IBM Cloud Pak for Integration” on page 142](#)
- [“Containers and the EUS release model” on page 142](#)
- [“Redistributable Managed File Transfer Logger” on page 142](#)
- [“Limiting the number of file transfers for each FTP endpoint” on page 142](#)

Deploying containers to IBM Cloud Pak for Integration

From IBM MQ 9.2.1, the IBM MQ Advanced container is supported for use as part of the [IBM Cloud Pak for Integration](#), or independently.

For detailed mappings between IBM MQ Operators, IBM Cloud Pak for Integration versions, and container images, see [Release history for IBM MQ Operator and containers](#).

Applicable versions of the IBM MQ Advanced container image are available from December 18, 2020.

Containers and the EUS release model



The IBM Cloud Pak for Integration uses the Extended Update Support (EUS) release model, which provides 18 months support for each EUS release.

The IBM MQ Advanced container image is based on IBM MQ Continuous Delivery, and is typically supported as a CD release. However, from IBM MQ 9.2.1, if a container image is based on a version of IBM MQ marked as -eus, and the container is used as part of the IBM Cloud Pak for Integration, the container is instead supported as an EUS release.

For more information, see [Support for IBM MQ Operator and containers](#).

Redistributable Managed File Transfer Logger



From IBM MQ 9.2.1, the Redistributable Managed File Transfer package includes the Managed File Transfer Logger component, enabling you to optionally copy published information about actions for analysis and auditing purposes. The logger supports FILE type loggers connecting in client mode to the coordination queue manager.

For more information, see [Downloading and configuring Redistributable Managed File Transfer components](#).



Limiting the number of file transfers for each FTP endpoint




From IBM MQ 9.2.1, enhancements to the Managed File Transfer protocol bridge agent enable you to choose to limit file transfers per File Transfer Protocol (FTP) and Secure FTP (SFTP) endpoint to reduce the risk of bottlenecks and effectively prioritize file transfers. You can limit the number of file transfers for each FTP endpoint by using the additional attributes of **maxActiveDestinationTransfers** (at both the global and individual server level) and **failTransferWhenCapacityReached**. For more information, see [Scenarios and examples for limiting the number of file transfers to individual file servers](#) and [Protocol bridge properties file format](#) for details of the additional attributes.

Related concepts

  [What's new in IBM MQ 9.2.1 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.1 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

  [What's new in IBM MQ for z/OS 9.2.1 - base and Advanced VUE entitlement](#)
IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

   [What's new in IBM MQ for z/OS 9.2.1 features - Advanced and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's new in IBM MQ for z/OS 9.2.1 - base and Advanced VUE entitlement

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.

Managing IBM MQ

- [New Web Console Application quick start](#)
- [Ability to trace New Web Console JavaScript running inside a browser](#)

Developing for IBM MQ

- [“More flexible configuration for SNI support” on page 143](#)

New Web Console Application quick start

Enhancements to the New Web Console can help new users to get started more easily than ever before, following simple steps to create a messaging configuration with an application. For more information, see [Quick tour of the New Web Console](#).

Ability to trace New Web Console JavaScript running inside a browser

The New Web Console consists of JavaScript, which runs inside a browser, and back-end code, which is written in Java, which runs inside the mqweb server.

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More flexible configuration for SNI support

SNI enables a client to indicate the hostname to which it is attempting to connect at the start of the handshaking process. From IBM MQ 9.2.1, an improvement has been made to allow the SNI to store either the IBM MQ channel name or the hostname.

The new **OutboundSNI** property of the TransportSecurity stanza allows you to select whether the SNI should be set to the target IBM MQ channel name to the remote system when initiating a TLS connection, or to the hostname. For more information about the **OutboundSNI** property, see [The QMINI data set](#).

Related concepts

What's new in IBM MQ 9.2.1 for Multiplatforms - base and Advanced entitlement

For Multiplatforms, IBM MQ 9.2.1 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

What's new in IBM MQ 9.2.1 for Multiplatforms - Advanced entitlement only

IBM MQ 9.2.1 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

What's new in IBM MQ for z/OS 9.2.1 features - Advanced and Advanced VUE entitlement

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's new in IBM MQ for z/OS 9.2.1 features - Advanced and Advanced VUE entitlement

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with Advanced or IBM MQ Advanced for z/OS Value Unit Edition entitlement.

Managing IBM MQ

- [“Guidance for use of Managed File Transfer on z/OS” on page 144](#)
- [Redistributable Managed File Transfer Logger](#)
- [Limiting the number of file transfers for each FTP endpoint](#)

Guidance for use of Managed File Transfer on z/OS

To ensure that Managed File Transfer makes full use of the resilience capabilities of IBM MQ on z/OS, additional guidance has been provided within IBM Documentation to help you configure Managed File Transfer to use queue-sharing groups. For more information, see [Planning your MFT infrastructure with IBM MQ for z/OS queue sharing groups](#).

Redistributable Managed File Transfer Logger



From IBM MQ 9.2.1, the Redistributable Managed File Transfer package includes the Managed File Transfer Logger component, enabling you to optionally copy published information about actions for analysis and auditing purposes. The logger supports FILE type loggers connecting in client mode to the coordination queue manager.

For more information, see [Downloading and configuring Redistributable Managed File Transfer components](#).




Limiting the number of file transfers for each FTP endpoint

From IBM MQ 9.2.1, enhancements to the Managed File Transfer protocol bridge agent enable you to choose to limit file transfers per File Transfer Protocol (FTP) and Secure FTP (SFTP) endpoint to reduce the risk of bottlenecks and effectively prioritize file transfers. You can limit the number of file transfers for each FTP endpoint by using the additional attributes of **maxActiveDestinationTransfers** (at both the global and individual server level) and **failTransferWhenCapacityReached**. For more information, see [Scenarios and examples for limiting the number of file transfers to individual file servers](#) and [Protocol bridge properties file format](#) for details of the additional attributes.



Related concepts

  [What's new in IBM MQ 9.2.1 for Multiplatforms - base and Advanced entitlement](#)

For Multiplatforms, IBM MQ 9.2.1 delivers a number of new features and enhancements that are available with base product entitlement, and also with Advanced entitlement.

   [What's new in IBM MQ 9.2.1 for Multiplatforms - Advanced entitlement only](#)

IBM MQ 9.2.1 delivers a number of new features and enhancements that are available only with IBM MQ Advanced for Multiplatforms entitlement.

  [What's new in IBM MQ for z/OS 9.2.1 - base and Advanced VUE entitlement](#)

IBM MQ for z/OS 9.2.1 delivers a number of new features and enhancements that are available with base and IBM MQ Advanced for z/OS Value Unit Edition (VUE) entitlement.



[“IBM MQ license information” on page 9](#)

What you can purchase with IBM MQ and what each purchase entitles you to install.

What's changed in IBM MQ 9.2.1

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

Managed File Transfer changes

- “Schedule ID included in error messages for semantically incorrect scheduled transfers” on page [145](#)
-   “Change to `ioIdleThreadTimeout` property on z/OS” on page [145](#)

Message changes

- “Message changes for AMQ9456I and CSQX456I” on page [145](#)

Security changes

- “Default authentication mode for IBM MQ classes for Java and IBM MQ classes for JMS client applications” on page [146](#)

Schedule ID included in error messages for semantically incorrect scheduled transfers

If a transfer with a semantically incorrect date and time combination is scheduled, this causes error messages to be displayed when you run the **fteListScheduledTransfers** command. From IBM MQ 9.2.1, the error messages include the schedule ID of the invalid scheduled transfer. You can then run the **fteDeleteScheduledTransfer** command with the **schedule_ID** parameter to delete the scheduled transfer that is not valid.

Change to `ioIdleThreadTimeout` property on z/OS



From IBM MQ 9.2.1, this property does not apply to agents running on IBM MQ for z/OS.

In addition, **FileIOWorker** threads for MFT agents running on IBM MQ for z/OS no longer time out.

See [The MFT agent.properties file](#) for further information.

Message changes for AMQ9456I and CSQX456I

From IBM MQ 9.2.1, the:

-  Severity for AMQ9456 has changed from Information to Warning.
This reflects the fact that, in most cases, this message indicates an underlying problem which requires operator intervention.
If you automatically monitor log files for these messages currently, ensure that you update your tooling appropriately.
-  *System programmer response* information has been expanded. See message [CSQX456I](#) for details

Default authentication mode for IBM MQ classes for Java and IBM MQ classes for JMS client applications

IBM MQ classes for Java and IBM MQ classes for JMS applications that use client transport can be configured to use either MQCSP or compatibility mode to supply authentication information when connecting to an IBM MQ queue manager.

Before IBM MQ 9.2.1, the default authentication mode is MQCSP in applications that use IBM MQ classes for Java, and compatibility mode in applications that use IBM MQ classes for JMS.

From IBM MQ 9.2.1, the default authentication mode is MQCSP for both applications that use IBM MQ classes for Java, and applications that use IBM MQ classes for JMS. The methods that can be used to select a specific authentication mode, and which methods take precedence, has also been clarified.

For more information about connection authentication in IBM MQ Java clients, and how to select a specific authentication mode, see [Connection authentication with the Java client](#).

These changes might cause the authentication method that is used by some Java client applications to change when the IBM MQ classes for Java or IBM MQ classes for JMS are upgraded to IBM MQ 9.2.1. This might cause applications that previously connected successfully to a queue manager to fail to connect with reason code 2035 (MQRC_NOT_AUTHORIZED). Review the information in [Connection authentication with the Java client](#) before migrating the IBM MQ classes for Java or IBM MQ classes for JMS to IBM MQ 9.2.1.

Related concepts

V 9.2.1 [What's new in IBM MQ 9.2.1](#)

IBM MQ 9.2.1 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.1 [Deprecated and removed features in IBM MQ 9.2.1](#)

A number of features are deprecated or removed from IBM MQ 9.2.1.

V 9.2.1 [New, changed, and removed messages in IBM MQ 9.2.1](#)

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.1.

Related reference

[What's new and what's changed in IBM MQ Explorer](#)

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.1 Deprecated and removed features in IBM MQ 9.2.1

A number of features are deprecated or removed from IBM MQ 9.2.1.

Deprecated features

- The **AllowOutboundSNI** property in the SSL stanza of the `qm.ini` and `mqclient.ini` files is now deprecated.

Removed features

- “Removal of `fteMigrateAgent`, `fteMigrateConfigurationOptions`, and `fteMigrateLogger` commands” on [page 147](#)

Deprecated features

Deprecation of the **AllowOutboundSNI** property in the SSL stanza of the `qm.ini` and `mqclient.ini` files

You should use the **OutboundSNI** property instead. For more information, see [SSL stanza of the `qm.ini` file](#) and [SSL stanza of the client configuration file](#).

Removed features

Removal of `fteMigrateAgent`, `fteMigrateConfigurationOptions`, and `fteMigrateLogger` commands

For Continuous Delivery, the `fteMigrateAgent`, `fteMigrateConfigurationOptions` and `fteMigrateLogger` commands are removed at IBM MQ 9.2.1.

LTS These commands are still available for IBM MQ 9.2 Long Term Support.

Related concepts

V 9.2.1 What's new in IBM MQ 9.2.1

IBM MQ 9.2.1 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.

V 9.2.1 What's changed in IBM MQ 9.2.1

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

V 9.2.1 New, changed, and removed messages in IBM MQ 9.2.1

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.1.

Related reference

[Deprecated Cipherspecs](#)

V 9.2.1 New, changed, and removed messages in IBM MQ 9.2.1

A number of new messages have been added and some existing messages have been changed or removed in IBM MQ 9.2.1.

- **Multi** [“New, changed, and removed IBM MQ AMQ messages” on page 147](#)
- [“New, changed, and removed Managed File Transfer messages” on page 148](#)
- **Windows** **Linux** **AIX** [“New, changed and removed MQ Telemetry messages” on page 149](#)
- [“New, changed, and removed REST API messages” on page 149](#)
- [“New, changed, and removed IBM MQ Console messages” on page 149](#)
- **Linux** **MQ Adv.** [“New, changed, and removed IBM MQ Bridge to blockchain messages” on page 149](#)
- **Linux** [“New, changed, and removed IBM MQ Bridge to Salesforce messages” on page 149](#)
- **Windows** **Linux** **AIX** [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 149](#)
- [“New, changed and removed MQJMS messages” on page 150](#)
- [“New, changed and removed JSON messages” on page 150](#)
- **z/OS** [“New, changed, and removed z/OS messages” on page 150](#)

New, changed, and removed IBM MQ AMQ messages

Multi

The following AMQ messages are new for IBM MQ 9.2.1:

AMQ3xxx: Utilities and tools

AMQ3552I

AMQ3553E

AMQ3554I
AMQ3555E
AMQ3556E
AMQ3677I

The following AMQ messages are changed for IBM MQ 9.2.1:

AMQ5xxx: Installable services

AMQ5542I (Response extended)
AMQ5600I (UNIX and Linux) (Usage example extended)
AMQ5774E (Message extended, Response reduced)

AMQ6xxx: Common Services

AMQ6537I (Usage example extended - ReplicationType added)
AMQ6538I (Usage example extended - ReplicationType added)
AMQ6544I (Message extended - dspdrsecondary added)

AMQ7xxx: IBM MQ product

AMQ7204E (Message extended)

AMQ8xxx: Administration

AMQ8007I (Message and Explanation extended)
AMQ8011I (Message and Explanation extended)
AMQ8015I (Message and Explanation extended)
AMQ8095I (Message and Explanation extended)
AMQ8553I (Message and Explanation extended)
AMQ8564I (Message and Explanation extended)
AMQ8627I (Message and Explanation extended)
AMQ8628I (Message and Explanation extended)
AMQ8670E (Message and Response extended)
AMQ8689E (Message and Response extended)
AMQ8692I (Message and Explanation extended)
AMQ8860I (Message and Explanation extended)
AMQ8863I (Message and Explanation extended)

AMQ9xxx: Remote

AMQ9085I (Message and Explanation extended)
AMQ9456W (Severity changed from "I" to "W")

There are no removed AMQ messages for IBM MQ 9.2.1.

New, changed, and removed Managed File Transfer messages

The following Managed File Transfer messages are new for IBM MQ 9.2.1:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0202I
BFGAG0203I

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0810E
BFGCL0811E

BFGDM0001 - BFGDM9999: MFT resource monitor

BFGDM0127E

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0414E

BFGSS0001 - BFGSS9999: MFT state store messages

BFGSS0083W

BFGSS0084E

BFGSS0085I

BFGSS0086I

BFGSS0087E

BFGSS0088W

BFGSS0089I

The following Managed File Transfer messages are changed for IBM MQ 9.2.1:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0201I (Typo fixed in Response)

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0121E (Message rewritten)

There are no removed Managed File Transfer for IBM MQ 9.2.1.

New, changed and removed MQ Telemetry messages



The following MQ Telemetry messages are changed for IBM MQ 9.2.1:

MQ Telemetry

AMQHT1001E (Updated URL in the Explanation)

AMQHT1003E (Updated URL in the Explanation)

There are no new or removed MQ Telemetry messages for IBM MQ 9.2.1.

New, changed, and removed REST API messages

There are no new, changed, or removed REST API messages for IBM MQ 9.2.1.

New, changed, and removed IBM MQ Console messages

The following IBM MQ Console messages are new for IBM MQ 9.2.1:

MQWB20xx IBM MQ Console messages

MQWB2024I

There are no changed or removed IBM MQ Console messages for IBM MQ 9.2.1.

New, changed, and removed IBM MQ Bridge to blockchain messages



There are no new, changed, or removed IBM MQ Bridge to blockchain messages for IBM MQ 9.2.1.

New, changed, and removed IBM MQ Bridge to Salesforce messages



There are no new, changed, or removed IBM MQ Bridge to Salesforce messages for IBM MQ 9.2.1.

New, changed and removed IBM MQ Internet Pass-Thru messages



The following IBM MQ Internet Pass-Thru messages are new for IBM MQ 9.2.1:

MQCPxxxx: MQIPT messages

MQCPE117 to MQCPE118

The following IBM MQ Internet Pass-Thru messages are changed for IBM MQ 9.2.1:

MQCPxxxx: MQIPT messages

MQCPE050 (Expanded message text, Explanation and User response)

New, changed and removed MQJMS messages

There are no new, changed, or removed [JMS exception messages](#) for IBM MQ 9.2.1.

New, changed and removed JSON messages

There are no new, changed or removed [JSON format diagnostic messages](#) for IBM MQ 9.2.1.

New, changed, and removed z/OS messages



The following IBM MQ for z/OS CSQ messages are changed for IBM MQ 9.2.1:

Recovery log manager messages (CSQJ...)

CSQJ077E (Extra paragraph in the System programmer response)

CSQJ100E (Typo fixed in the message text)

Message manager messages (CSQM...)

CSQM529E (Explanation rewritten)

CSQM582E (Explanation rewritten)

CSQM583E (Explanation rewritten)

Buffer manager messages (CSQP...)

CSQP004E (Typo fixed in System action)

Utilities messages (CSQU...)

CSQU020E (Extended System programmer response)

Distributed queuing messages (CSQX...)

CSQX456I (System programmer response information has been expanded)

CSQX458E (Severity level added)

CSQX459E (Severity level added)

CSQX616E (System programmer response rewritten)

CSQX670I (System programmer response extended)

CSQX690I (Typos fixed in System programmer response)

CSQX692I (System programmer response extended)

IBM MQ-IMS bridge Messages (CSQ2...)

CSQ2004E (Extra paragraph in the Explanation)

CSQ2004E (Extra paragraph in the System programmer response)

The word "Version" has been removed from IBM MQ product name across all messages.

There are no new or removed IBM MQ for z/OS CSQ messages for IBM MQ 9.2.1.

Related concepts



[What's new in IBM MQ 9.2.1](#)

IBM MQ 9.2.1 delivers a number of new and enhanced features on AIX, Linux, Windows, and z/OS.



[What's changed in IBM MQ 9.2.1](#)

Before upgrading your queue managers to the latest product version, review these changes to functions and resources since IBM MQ 9.2.0 and decide whether you must plan to make changes to existing applications, scripts, and procedures before starting to migrate your systems.

V 9.2.1

Deprecated and removed features in IBM MQ 9.2.1
A number of features are deprecated or removed from IBM MQ 9.2.1.

Related reference

[IBM MQ AMQ messages](#)

[Managed File Transfer diagnostic messages](#)

[Telemetry messages](#)

[REST API messages](#)

[IBM MQ Console messages](#)

[IBM MQ Bridge to blockchain messages](#)

[IBM MQ Bridge to Salesforce messages](#)

[IBM MQ Internet Pass-Thru messages](#)

[JMS exception messages](#)

[JSON format diagnostic messages](#)

[Messages for IBM MQ for z/OS](#)

LTS

What's changed in IBM MQ 9.2.0 Long Term Support

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

LTS releases do not deliver new functional enhancements. They contain only defect fixes and security updates, and are made available at regular intervals. They are intended for systems that demand maximum stability over a long term deployment period.

For more information see [IBM MQ release types](#) and [IBM MQ FAQ for Long Term Support and Continuous Delivery releases](#).

Note: From 1Q 2023, for Multiplatforms, there are two types of maintenance:

- Fix packs, which contain roll-ups of all defects fixed since the previous fix pack delivery (or GA). Fix packs are produced exclusively for Long Term Support (LTS) releases during their normal support lifecycle.
- Cumulative security updates (CSUs), which are smaller updates and contain security patches released since the previous maintenance (GA). CSUs are produced for LTS releases (including releases in extended support), and also for the latest IBM MQ Continuous Delivery (CD) release, as required to deliver relevant security patches.

For maintenance releases in or after 1Q 2023, the fourth digit in the VRMF represents either a fix pack number or a CSU number. Both types of maintenance are mutually cumulative (that is, they contain everything included in older CSUs and fix packs), and both are installed using the same mechanisms for applying maintenance. Both types of maintenance update the F-digit of the VRMF to a higher number than any previous maintenance: fix packs use "F" values divisible by 5, CSUs use "F" values not divisible by 5.

For maintenance releases before 1Q 2023, the fourth digit in the VRMF always represents the fix pack level. For example, the first fix pack of the IBM MQ 9.2.0 LTS release is numbered 9.2.0.1.

For more information, see [Changes to IBM MQ's maintenance delivery model](#).

For Long Term Support, maintenance updates for IBM MQ 9.2.0 for [Multiplatforms](#) and IBM MQ Appliance are provided as fix packs or cumulative security updates (CSUs).

z/OS

For z/OS, maintenance updates are provided as PTFs or cumulative security updates (CSUs). For z/OS UNIX System Services features (that is, JMS, REST API and MQ Console, Connector Pack, and Managed File Transfer) the z/OS PTFs are aligned directly with the [Multiplatforms](#) fix packs. Other PTFs are made available as and when they are produced.

IBM MQ 9.2.0 CSU 36

► V9.2.0.36

Changes to IBM MQ classes for Java and IBM MQ classes for JMS

From IBM MQ 9.2.0 CSU 36, Known Issue (KI) DT434353 has added support for Java 17 and later to the IBM MQ classes for Java and IBM MQ classes for JMS. As a result of this, the `finalize()` method has been removed from the following classes in the IBM MQ classes for Java:

- `com.ibm.mq.MQDistributionList`
- `com.ibm.mq.MQManagedObject`
- `com.ibm.mq.MQQueueManager`

and an internal class used by JMS connections, because the use of the `finalize()` method has been deprecated from Java 9 onwards.

This has implications for applications that do not explicitly close these objects once they have finished with them. Prior to the changes for the KI, the underlying Java Virtual Machine (JVM) would have called the `finalize()` method on them at some point after they had dropped out of scope. However, this will no longer happen and so applications that do not close the objects could end up leaking them and reporting `java.lang.OutOfMemoryError` exceptions after upgrading to a Fix Pack or Cumulative Security Update (CSU) that contains the fix for DT434353.

Changes to the IBM MQ Bridge to Salesforce

From IBM MQ 9.2.0 CSU 36, the IBM MQ Bridge to Salesforce has been updated to use Eclipse Jetty 12 and an IBM Semeru Runtime 21. The JRE is included as part of the `MQSeriesSFBridge` rpm, and can only be used to run the IBM MQ Bridge to Salesforce. Using it to run other applications is not supported.

The IBM Semeru Runtime 21 used to run the IBM MQ Bridge to Salesforce does not support the following CipherSuites that were supported by the IBM Java 8 that the IBM MQ Bridge to Salesforce used to use:

- `TLS_ECDHE_ECDSA_WITH_3DES_EDE_CBC_SHA`
- `TLS_ECDHE_ECDSA_WITH_NULL_SHA`
- `TLS_ECDHE_ECDSA_WITH_RC4_128_SHA`
- `TLS_ECDHE_RSA_WITH_3DES_EDE_CBC_SHA`
- `TLS_ECDHE_RSA_WITH_NULL_SHA`
- `TLS_ECDHE_RSA_WITH_RC4_128_SHA`
- `TLS_RSA_WITH_3DES_EDE_CBC_SHA`
- `SSL_RSA_WITH_DES_CBC_SHA`
- `TLS_RSA_WITH_NULL_SHA256`
- `SSL_RSA_WITH_RC4_128_SHA`

If the IBM MQ Bridge to Salesforce was previously configured to use one of these to create a secure TLS connection to IBM MQ, it will need to be reconfigured to use a different CipherSuite. For more information about CipherSuites, see [TLS CipherSpecs and CipherSuites in IBM MQ classes for JMS](#).


IBM MQ 9.2.0 Fix Pack 35

► V9.2.0.35

- [“Performance monitoring enhancements” on page 155](#)
- [“Changes to allow IBM MQ Java client properties `com.ibm.mq.cfg.TCP.CIntRcvBuffSize` and `com.ibm.mq.cfg.TCP.CIntSndBuffSize` to be set to zero” on page 155](#)




IBM MQ 9.2.0 Fix Pack 30

► V9.2.0.30

- [“New return code 2491” on page 156](#)
- [“Changes to Java Message Queueing Interface” on page 156](#)
-  [“Change to ioIdleThreadTimeout property” on page 156](#)


IBM MQ 9.2.0 Fix Pack 25




- [“Removal of support for RSA key exchange when operating in FIPS mode” on page 157](#)
-   [“Support for .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard” on page 157](#)
-  [“Update to zos_saf_registry.xml” on page 157](#)

IBM MQ 9.2.0 CSU 21



 The IBM MQ Bridge to blockchain is deprecated across all releases from November 22 2022 (see [US Announcement letter 222-341](#)).

 For Long Term Support, IBM MQ Bridge to blockchain is removed at IBM MQ 9.2.0 CSU 21.

IBM MQ 9.2.0 Fix Pack 20



There are no documentation updates relating to changes to functions and resources in IBM MQ 9.2.0 Fix Pack 20.

IBM MQ 9.2.0 Fix Pack 15



- [“Change to spelling of Java system property used by Managed File Transfer” on page 158](#)

IBM MQ 9.2.0 Fix Pack 10



- [“New OAMLDAPResponseWarningTime parameter in TuningParameters stanza of qm.ini” on page 159](#)

IBM MQ 9.2.0 Fix Pack 7



IBM MQ 9.2.0 Fix Pack 7 adds the following support:

- Support for RHEL 9

For queue managers in IBM MQ Long Term Support (LTS), you must download the manufacturing refresh from Passport Advantage®: M098CML IBM MQ 9.2.0.7 Long Term Support for Linux on x86 64-bit eImage

- Support for Ubuntu 22.04

For queue managers in IBM MQ Long Term Support (LTS), you must download the manufacturing refresh from Passport Advantage: M0988ML IBM MQ 9.2.0.7 Long Term Support for Ubuntu on x86 64-bit eImage

- Support for Windows 11 and Windows Server 2022

For queue managers in IBM MQ Long Term Support (LTS), you must download the manufacturing refresh from Passport Advantage: M0985ML => IBM MQ 9.2.0.7 Long Term Support for Windows 64-bit elmage

IBM MQ 9.2.0 Fix Pack 6

► V 9.2.0.6

There are no documentation updates relating to changes to functions and resources in IBM MQ 9.2.0 Fix Pack 6.

IBM MQ 9.2.0 Fix Pack 5

► V 9.2.0.5

- [“Update to use of standbyPollInterval property by highly available Managed File Transfer agents” on page 159](#)
- [“Change to Managed File Transfer Monitor.xsd XML schema” on page 159](#)
- [“New MQXR property to disable generating Java cores for FDC” on page 159](#)

IBM MQ 9.2.0 Fix Pack 4

► V 9.2.0.4

- [“New Bouncy Castle JAR file” on page 160](#)
- [“Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls” on page 160](#)
- [“Update to SNI setting for IBM MQ managed .NET client” on page 160](#)

IBM MQ 9.2.0 Fix Pack 3

► V 9.2.0.3

- ► Multi ► MQ Adv. [“IBM MQ Advanced for Non-Production entitlement” on page 160](#)
- [“Changes to runmqras command” on page 160](#)

IBM MQ 9.2.0 Fix Pack 2

► V 9.2.0.2

- [“Java clients installed with the self-extracting JAR file can use the JMSAdmin tool” on page 161](#)
- [“Changes to channel status attributes” on page 161](#)
- [“JMQI updates for local address field set on an MQCD object” on page 161](#)
- [“Channel object migration code update to fix channel definition migration issue” on page 161](#)
- [“Change to OCSPTIMEOUT parameter” on page 162](#)
- ► Linux [“Additional InstallPATH option for the crtmqfp command” on page 162](#)
- ► MQ Adv. [“Change to Managed File Transfer delimiter transfer error messages” on page 162](#)

IBM MQ 9.2.0 Fix Pack 1

► V 9.2.0.1

- [“Ability to trace New Web Console JavaScript running inside a browser” on page 162](#)
- [“Schedule ID included in error messages for semantically incorrect scheduled transfers” on page 162](#)

Related concepts

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

[“Release and platform icons in the product documentation” on page 175](#)

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

[Recommended Fixes for IBM MQ](#)

[IBM MQ planned maintenance release dates](#)

V9.2.0.35 What's changed in IBM MQ 9.2.0 Fix Pack 35

IBM MQ 9.2.0 Fix Pack 35 includes resource changes.

Performance monitoring enhancements

From IBM MQ 9.2.0 Fix Pack 35, you can use the **mqperfck** command to generate an HTML report containing performance metrics for specified queues or channels over a set time period. The report shows key system and queue manager metrics such as CPU load and IO rate, as well as metrics for the object(s) under observation such as lock contention, MQI counts, selector and match-option mismatches, and network time. The report allows customers and IBM Support to review and compare workload between normal and problematic time periods or performant and non-performant environments. It is intended to gain insight into workload patterns during times of performance sensitivity without the need to capture IBM MQ trace. For more information, see [mqperfck \(MQ performance check\)](#) and [Metrics published on the system topics](#).

You can suppress the publication of the new statistics and their metadata by setting the **AMQ_NO_MQPERFCK_STATS** environment variable to any value before starting the queue manager.

Changes to allow IBM MQ Java client properties

com.ibm.mq.cfg.TCP.ClntRcvBuffSize and com.ibm.mq.cfg.TCP.ClntSndBuffSize to be set to zero

From IBM MQ 9.2.0 Fix Pack 35, if the value of either the **com.ibm.mq.cfg.TCP.ClntRcvBuffSize** or the **com.ibm.mq.cfg.TCP.ClntSndBuffSize** property is set as zero for an IBM MQ Java client, the Java Message Queuing Interface (JMQUI) uses the buffer size provided by the network layer. This resolves a previous issue where setting the properties to zero would incorrectly result in the JMQUI using TCP/IP send and/or receive buffers of size 32K when communicating with a queue manager. For more information, see [TCP stanza of the client configuration file](#).

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's changed in IBM MQ 9.2.0 Fix Pack 30

IBM MQ 9.2.0 Fix Pack 30 includes resource changes.

New return code 2491

IBM MQ 9.2.0 Fix Pack 30 adds a new return code (2491) that can appear in messages that are moved to the dead letter queue. For more information, see [2491 0x000009bb MQRC_MSG_LENGTH_ERROR](#).

Changes to Java Message Queueing Interface

From IBM MQ 9.2.0 Fix Pack 30, the following changes have been made to the Java Message Queueing Interface (JMQUI), which is the component within the IBM MQ classes for JMS that handles communication with a queue manager:

- When creating a new conversation for either a JMS Connection, Session and/or Context, the JMQUI now waits for a short period of time to see if a channel instance with space for the conversation becomes available.
- New conversation requests are now synchronized, to prevent multiple channel instances being created simultaneously.

These changes address the following issues that could previously occur when **SHARECONV** was set to a value greater than 1:

- If an application created a new JMS Connection, Session and/or Context, then the conversation associated with that object would be allocated on a new channel instance even if there was an existing channel instance that had space to accommodate it.
- If a multi-threaded application was creating JMS Connections, Sessions and/or Contexts concurrently, multiple channel instances would be created to accommodate the conversations associated with those objects, rather than allocating the conversations to the channel instance created by the first thread.

Change to `ioIdleThreadTimeout` property



From IBM MQ 9.2.0 Fix Pack 30, the `ioIdleThreadTimeout` property does not apply to Managed File Transfer agents running on IBM MQ for z/OS.




Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's changed in IBM MQ 9.2.0 Fix Pack 25

IBM MQ 9.2.0 Fix Pack 25 includes a number of resource changes.

- [“Removal of support for RSA key exchange when operating in FIPS mode” on page 157](#)
-   [“Support for .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard” on page 157](#)
-  [“Update to zos_saf_registry.xml” on page 157](#)

Removal of support for RSA key exchange when operating in FIPS mode

From IBM MQ 9.2.0 Fix Pack 25, the IBM Java 8 JRE removes support for RSA key exchange when operating in FIPS mode. This removal applies to the following CipherSuites:

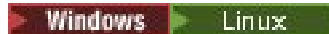
- TLS_RSA_WITH_AES_256_GCM_SHA384
- TLS_RSA_WITH_AES_256_CBC_SHA256
- TLS_RSA_WITH_AES_256_CBC_SHA
- TLS_RSA_WITH_AES_128_GCM_SHA256
- TLS_RSA_WITH_AES_128_CBC_SHA256
- TLS_RSA_WITH_AES_128_CBC_SHA
- TLS_RSA_WITH_3DES_EDE_CBC_SHA

To continue using FIPS mode, the following IBM MQ components should be changed to use a CipherSuite that is still supported:

- AMQP server
- Managed File Transfer (MFT)
- IBM MQ Console/Dashboard Web Console
- IBM MQ Explorer
- IBM MQ REST API
- IBM MQ Telemetry service

For more information, see [TLS CipherSpecs and CipherSuites in IBM MQ classes for Java](#).

Support for .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard



From IBM MQ 9.2.0, Microsoft.NET Core 3.1 is the minimum required version for running IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard.

From IBM MQ 9.2.0 Fix Pack 25, IBM MQ supports .NET 6 applications using IBM MQ classes for .NET Standard and IBM MQ classes for XMS .NET Standard. If you are using a .NET Core 3.1 application, you can run this application with a small edit in the csproj file, setting the `targetframeworkversion` to "net6.0", without any recompilation required.

For more information, see [Installing IBM MQ classes for .NET Standard](#) and [Installing IBM MQ classes for XMS .NET Standard](#).

Update to zos_saf_registry.xml



From IBM MQ 9.2.0 Fix Pack 25, the sample configuration file `zos_saf_registry.xml` has been updated to remove a duplicate `safAuthorization` entry.

This update fixes an issue where an ICH408I error might occur when the MQ Console on z/OS is upgraded to a level that ships WebSphere Liberty Profile 22.0.0.12 or later: that is, from IBM MQ 9.2.0 CSU 8.

For more information, see [Configuring a SAF registry for the IBM MQ Console and REST API](#).

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

▶ V9.2.0.15 What's changed in IBM MQ 9.2.0 Fix Pack 15

IBM MQ 9.2.0 Fix Pack 15 includes resource changes.

- [“Change to spelling of Java system property used by Managed File Transfer” on page 158](#)
- [“Change to the Java mapping for CCSID 943” on page 158](#)

Change to spelling of Java system property used by Managed File Transfer

Before IBM MQ 9.2.0 Fix Pack 15, the name of this Java system property that Managed File Transfer uses when checking if a user has specified a file containing the initial key that should be used for encrypting and decrypting credentials was misspelled in the product code as `com.ibm.wmqfte.cred.keyfile`.

From IBM MQ 9.2.0 Fix Pack 15, the spelling of the property name is corrected to be `com.ibm.wmqfte.cred.keyfile`. Managed File Transfer uses both versions of the Java system property when checking if a user has specified a file containing the initial key that should be used for encrypting and decrypting credentials. This allows you to use the correct spelling of the property name, while maintaining backwards compatibility with the old misspelled name. Note that if both Java system properties are set, then the value of the correctly spelled property `com.ibm.wmqfte.cred.keyfile` is used. For more information, see [Protecting passwords in IBM MQ component configuration files](#).

Change to the Java mapping for CCSID 943

Before IBM MQ 9.2.0 Fix Pack 15, the following Java components of IBM MQ would map CCSID 943 to the Java Charset “x-IBM943”:

- The Advanced Message Queuing Protocol (AMQP) service
- The IBM MQ classes for Java
- The IBM MQ classes for JMS
- The MQ Console
- IBM MQ Explorer
- Managed File Transfer
- The IBM MQ resource adapter
- The REST API
- The IBM MQ Telemetry (MQXR) service

From IBM MQ 9.2.0 Fix Pack 15 onwards, CCSID 943 is now mapped to Java Charset “x-IBM943C”

Note that this will prevent the encoding of the following two characters, which were present in “x-IBM943” at the same code points at the above two characters:

- YEN SIGN (U+00A5) --> 5c
- OVERLINE (U+203E) --> 7e

If you wish to use these characters which are unavailable in “x-IBM943C”, then using an alternative CCSID such as 1208 (UTF-8) instead of CCSID 943 is recommended which includes mappings for both sets of characters.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

▶ V9.2.0.10 What's changed in IBM MQ 9.2.0 Fix Pack 10

IBM MQ 9.2.0 Fix Pack 10 includes a resource change.

- [“New OAMLdapResponseWarningTime parameter in TuningParameters stanza of qm.ini” on page 159](#)

New **OAMLDAPResponseWarningTime** parameter in **TuningParameters** stanza of **qm.ini**

If a connection to an LDAP server took longer than the threshold number of seconds specified by the **OAMLDAPResponseWarningTime** parameter, then an **AMQ5544W** message will be written to the error log. For more information, see [TuningParameters stanza of the qm.ini file](#).

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V9.2.0.5 What's changed in IBM MQ 9.2.0 Fix Pack 5

IBM MQ 9.2.0 Fix Pack 5 includes a number of resource changes.

- “Update to use of **standbyPollInterval** property by highly available Managed File Transfer agents” on [page 159](#)
- “Change to Managed File Transfer Monitor.xsd XML schema” on [page 159](#)
- “New **MQXR** property to disable generating Java cores for FDC” on [page 159](#)
- “[MQ 9.2.0.5 Feb 2022]Changes to how FIPS mode is enabled in MQIPT” on [page 159](#)

Update to use of **standbyPollInterval** property by highly available Managed File Transfer agents

The **standbyPollInterval** property is used by the standby instance of a highly available Managed File Transfer agent to attempt to open a shared queue at specified intervals. From IBM MQ 9.2.0 Fix Pack 5, this property is also used by all instances to determine how long an instance waits between reconnection attempts if it becomes disconnected from its agent queue manager.

For more information about highly available Managed File Transfer agents, see [Highly available agents in Managed File Transfer](#).

Change to Managed File Transfer Monitor.xsd XML schema

The Managed File Transfer Monitor.xsd XML schema is used to manually build XML messages to create resource monitors that monitor a directory resource. From IBM MQ 9.2.0 Fix Pack 5, there is a change to the **maxOccurs** attribute of the **directory** element, which is now set to 1. This attribute was previously set to unbounded, which indicated that there could be multiple directory entries. However, this was incorrect because you can only specify one directory when creating a resource monitor that monitors a directory. For more information, see [MFT monitor request message formats](#).

New **MQXR** property to disable generating Java cores for FDC

From IBM MQ 9.2.0 Fix Pack 5, you can set the **com.ibm.mq.MQXR.GenerateJavaDump** property to specify whether or not Java core dumps are generated alongside Failure Data Captures (FDCs). For more information, see [Location of telemetry logs, error logs, and configuration files](#).

V9.2.0.5 Changes to how FIPS mode is enabled in MQIPT

From IBM MQ 9.2.0 Fix Pack 5, the **IBMJCEPlusFIPS** cryptographic provider should be used to provide FIPS-certified cryptography in MQIPT. To use the **IBMJCEPlusFIPS** cryptographic provider, specify the **com.ibm.jsse2.usefipsProviderName=IBMJCEPlusFIPS** Java system property. For more information about enabling FIPS mode in MQIPT, see [Enabling FIPS mode in MQIPT](#).

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

▶ V9.2.0.4 What's changed in IBM MQ 9.2.0 Fix Pack 4

IBM MQ 9.2.0 Fix Pack 4 includes a number of resource changes.

- [“New Bouncy Castle JAR file” on page 160](#)
- [“Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls” on page 160](#)
- [“Update to SNI setting for IBM MQ managed .NET client” on page 160](#)

New Bouncy Castle JAR file

The Bouncy Castle JAR files used to support Advanced Message Security have been updated and now include `bcutil-jdk15on.jar`. For more information, see [Support for non-IBM JREs with AMS](#).

Additional queue manager configuration attributes to control the connection and operation timeout for LDAP calls

From IBM MQ 9.2.0 Fix Pack 4, two new optional tuning parameters, **OAMLdapConnectTimeout** and **OAMLdapQueryTimeLimit**, have been added. You can use these two parameters within the `TuningParameters` stanza in the queue manager configuration file, `qm.ini`. For more information, see [TuningParameters stanza of the qm.ini file](#).

Update to SNI setting for IBM MQ managed .NET client

From IBM MQ 9.2.0 Fix Pack 4, the IBM MQ managed .NET client has been updated to set `SERVERNAME` to the respective hostname if the **OutboundSNI** property is set to `HOSTNAME`. This allows an IBM MQ managed .NET client to connect to a queue manager using Red Hat OpenShift routes. Note that, in IBM MQ 9.2.0 Fix Pack 4, the **OutboundSNI** property is added and supported only from the `mqclient.ini` file. You cannot set the property from the .NET application. From IBM MQ 9.2.1, CD customers can set the **OutboundSNI** property from the application or from the `mqclient.ini` file.



Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

▶ V9.2.0.3 What's changed in IBM MQ 9.2.0 Fix Pack 3

IBM MQ 9.2.0 Fix Pack 3 includes an entitlement change and a command change.

-   [“IBM MQ Advanced for Non-Production entitlement” on page 160](#)
- [“Changes to runmqras command” on page 160](#)

IBM MQ Advanced for Non-Production entitlement

From IBM MQ 9.2.0 Fix Pack 3, if you have purchased a non-production license, you can set the licensed entitlement for an IBM MQ installation to IBM MQ Advanced for Non-Production by using the **setmqinst** command. This entitlement is then reported automatically to the IBM License Metric Tool (ILMT) to allow for correct license identification.

For more information, see [“IBM MQ license information” on page 9](#) and [setmqinst \(set IBM MQ installation\)](#).

Changes to runmqras command

From IBM MQ 9.2.0 Fix Pack 3, the **runmqras** command includes a new parameter, **-noqmdata**, to capture installation-level diagnostics only, skipping any queue manager-specific diagnostics.

Also from IBM MQ 9.2.0 Fix Pack 3, the **-ftp** IBM option is no longer available.

For more information, see [runmqras \(collect IBM MQ diagnostic information\)](#).



Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

What's changed in IBM MQ 9.2.0 Fix Pack 2

IBM MQ 9.2.0 Fix Pack 2 includes a number of resource changes.

- [“Java clients installed with the self-extracting JAR file can use the JMSAdmin tool” on page 161](#)
- [“Changes to channel status attributes” on page 161](#)
- [“JMQUI updates for local address field set on an MQCD object” on page 161](#)
- [“Channel object migration code update to fix channel definition migration issue” on page 161](#)
- [“Change to OCSPTIMEOUT parameter” on page 162](#)
-  [“Additional InstallPATH option for the crtmqfp command” on page 162](#)
-  [“Change to Managed File Transfer delimiter transfer error messages” on page 162](#)

Java clients installed with the self-extracting JAR file can use the JMSAdmin tool

From IBM MQ 9.2.0 Fix Pack 2, the self-extracting JAR file *version-IBM-MQ-Install-Java-All.jar* has been updated to include all of the files related to the JMSAdmin tool, in addition to all of the files that it did before. As a result of these changes, a client that is installed using the self-extracting JAR file can use the JMSAdmin tool installed as part of the JAR file to create JMS administered objects within a file system context (.bindings file). The client can also look up and use these administered objects. For more information, see [Obtaining the IBM MQ classes for JMS separately](#).

Note: A client installed by unpacking the redistributable Java client does not contain the JMSAdmin tool, or its prerequisite JAR files *fscontext.jar* and *providerutil.jar*. For more information, see [Limitations and other considerations for redistributable clients](#).

Changes to channel status attributes

From IBM MQ 9.2.0 Fix Pack 2, the following changes have been made to channel status attributes:

DISPLAY CHSTATUS command

If the value for BYTSENT or BYTSCVD exceeds 999999999, it wraps to zero.

Inquire Channel Status (response)

If the value for BytesSent or BytesReceived exceeds 999999999, it wraps to zero.

JMQUI updates for local address field set on an MQCD object

From IBM MQ 9.2.0 Fix Pack 2, the Java Message Queueing Interface (JMQUI) has been updated to ensure that the [local address field](#) is set on an MQCD object after a channel instance has been created and is connected to a queue manager. This means that when a channel exit written in Java calls the method `MQCD.getLocalAddress()`, the method returns the local address that the channel instance is using.

Channel object migration code update to fix channel definition migration issue

Before IBM MQ 9.2.0 Fix Pack 2, if you migrate from IBM MQ 8.0.0 Fix Pack 1, IBM MQ 8.0.0 Fix Pack 2, or IBM MQ 8.0.0 Fix Pack 3 directly to IBM MQ 9.1.5 or later, channel objects are not migrated correctly when the queue manager is started at the new code level. Channels continue to work normally, but channel names are not displayed by the **runmqsc** command or IBM MQ Explorer.

From IBM MQ 9.2.0 Fix Pack 2, channel definitions are migrated correctly when the queue manager is started for the first time at the new code level. See also [Queue manager migration](#).

Change to OCSPTIMEOUT parameter

From IBM MQ 9.2.0 Fix Pack 2, if a value of 0 is set for the **OCSPTIMEOUT** parameter in the SSL stanza of the `qm.ini` or `mqclient.ini` configuration file, the default timeout of 30 seconds is used.

Additional InstallPATH option for the crtmqfp command

Linux

From IBM MQ 9.2.0 Fix Pack 2, when installing a maintenance update with the **crtmqfp** command, you can use the additional option **InstallPATH**. The update is installed directly into the directory specified by **InstallPATH**. For more information, see [Applying maintenance level updates on Linux using RPM](#).

V 9.2.0 **V 9.2.0** From IBM MQ 9.2.0, the **InstallPATH** option is also available with the **crtmqpkg** command. For more information, see [Multiple IBM MQ installations](#).

Change to Managed File Transfer delimiter transfer error messages

MQ Adv.

From IBM MQ 9.2.0 Fix Pack 2 only one empty message is sent when a transfer from a file fails due to a delimiter size check failure. See [Failure of a file-to-message transfer](#) for more details.

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

V 9.2.0.1 What's changed in IBM MQ 9.2.0 Fix Pack 1

IBM MQ 9.2.0 Fix Pack 1 includes a number of resource changes.

- “Ability to trace New Web Console JavaScript running inside a browser” on page 162
- “Schedule ID included in error messages for semantically incorrect scheduled transfers” on page 162

Ability to trace New Web Console JavaScript running inside a browser

The New Web Console consists of JavaScript, which runs inside a browser, and back end code, written in Java, which runs inside the mqweb server.

Before IBM MQ 9.2.0 Fix Pack 1, it was only possible to trace the back end code for the New Web Console. There was no mechanism to trace the JavaScript.

From IBM MQ 9.2.0 Fix Pack 1, the New Web Console has been updated to provide a mechanism to trace the Javascript running inside a browser. For more information, see [Tracing the New Web Console](#).

Schedule ID included in error messages for semantically incorrect scheduled transfers

If a transfer with a semantically incorrect date and time combination is scheduled, this causes error messages to be displayed when you run the **fteListScheduledTransfers** command. From IBM MQ 9.2.0 Fix Pack 1, the error messages include the schedule ID of the invalid scheduled transfer. You can then run the **fteDeleteScheduledTransfer** command with the **schedule_ID** parameter to delete the invalid scheduled transfer.

Related information

[System Requirements for IBM MQ](#)

LTS New, changed and removed messages for IBM MQ 9.2 LTS Fix Packs

A summary of the messages that have been added, changed or removed for IBM MQ 9.2 Fix Packs from IBM MQ 9.2.0 Fix Pack 6, with links to further information. New, changed and removed IBM MQ for z/OS messages since IBM MQ 9.2.5 are also summarized.

IBM MQ AMQ, Managed File Transfer, and z/OS messages have been updated for IBM MQ 9.2 LTS Fix Packs since IBM MQ 9.2.5:

- **Multi** [“New, changed and removed IBM MQ AMQ messages” on page 163](#)
- [“New, changed and removed IBM MQ Internet Pass-Thru messages” on page 164](#)
- [“New, changed and removed Managed File Transfer messages” on page 165](#)
- **z/OS** [“New, changed and removed z/OS \(CSQ\) messages since IBM MQ 9.2.5” on page 166](#)

There have been no updates to the following messages for IBM MQ 9.2 LTS Fix Packs since :IBM MQ 9.2.5

- REST API
- IBM MQ Console
- JSON
- MQJMS
- MQ Telemetry
- **Deprecated** IBM MQ Bridge to Salesforce
- **Deprecated** IBM MQ Bridge to blockchain

V9.2.0.21 **Removed** For Long Term Support, IBM MQ Bridge to blockchain is removed at IBM MQ 9.2.0 CSU 21.

New, changed and removed IBM MQ AMQ messages

V9.2.0.35 IBM MQ 9.2.0 Fix Pack 35

The following AMQ messages are new for IBM MQ 9.2.0 Fix Pack 35:

AMQ3xxx: Utilities and tools

AMQ3069-70

AMQ3072-86

There are no changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 35.

V9.2.0.30 IBM MQ 9.2.0 Fix Pack 30

There are no new, changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 30.

V9.2.0.25 IBM MQ 9.2.0 Fix Pack 25

The following AMQ messages are new for IBM MQ 9.2.0 Fix Pack 25:

AMQ3xxx: Utilities and tools

AMQ3632I

AMQ9xxx: Remote

AMQ9680E

AMQ9890I

AMQ9917W

There are no changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 25.

► **V9.2.0.20 IBM MQ 9.2.0 Fix Pack 20**

The following AMQ messages are new for IBM MQ 9.2.0 Fix Pack 20:

AMQ9xxx: Remote

AMQ9888W

AMQ9889W

There are no changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 20.

► **V9.2.0.15 IBM MQ 9.2.0 Fix Pack 15**

The following AMQ messages are changed for IBM MQ 9.2.0 Fix Pack 15:

AMQ7xxx: IBM MQ product

AMQ7486I (code extended and typo fixed in Explanation.)

There are no new or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 15.

► **V9.2.0.10 IBM MQ 9.2.0 Fix Pack 10**

The following AMQ messages are new for IBM MQ 9.2.0 Fix Pack 10:

AMQ5xxx: Installable services

AMQ5544

There are no changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 10.

► **V9.2.0.7 IBM MQ 9.2.0 Fix Pack 7**

The following AMQ messages are new for IBM MQ 9.2.0 Fix Pack 7:

AMQ3xxx: Utilities and tools

AMQ3495I

AMQ3496E

The following AMQ messages are changed for IBM MQ 9.2.0 Fix Pack 7:

AMQ5xxx: Installable services

AMQ5605I (Usage extended to include "Target" parameter.)

There are no removed AMQ messages for IBM MQ 9.2.0 Fix Pack 7.

► **V9.2.0.6 IBM MQ 9.2.0 Fix Pack 6**

There are no new, changed or removed AMQ messages for IBM MQ 9.2.0 Fix Pack 6.

New, changed and removed IBM MQ Internet Pass-Thru messages

► **V9.2.0.35 IBM MQ 9.2.0 Fix Pack 35**

The following IBM MQ Internet Pass-Thru messages are changed for IBM MQ 9.2.0 Fix Pack 35:

MQCPxxxx: MQIPT messages

MQCPE014 (User response updated to change range from "1024 to 65535" to "0 to 65535".)

There are no new or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.0 Fix Pack 35.

► **V9.2.0.30 IBM MQ 9.2.0 Fix Pack 30**

There are no new, changed or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.0 Fix Pack 30.

► **V9.2.0.25 IBM MQ 9.2.0 Fix Pack 25**

The following IBM MQ Internet Pass-Thru messages are changed for IBM MQ 9.2.0 Fix Pack 25:

MQCPxxxx: MQIPT messages

Capitalization change throughout ("Java Security Manager" changed to "Java security manager").

There are no new or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.0 Fix Pack 25.

► **V9.2.0.20 IBM MQ 9.2.0 Fix Pack 20**

The following IBM MQ Internet Pass-Thru messages are changed for IBM MQ 9.2.0 Fix Pack 20:

MQCPxxxx: MQIPT messages

MQCPE099 (IBM MQ Advanced for z/OS added to list of entitled products in User Response.)

MQCPE114 (IBM MQ Advanced for z/OS added to list of entitled products in User Response.)

There are no new or removed IBM MQ Internet Pass-Thru messages for IBM MQ 9.2.0 Fix Pack 20.

New, changed and removed Managed File Transfer messages

V9.2.0.35 IBM MQ 9.2.0 Fix Pack 35

There are no new, changed or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 35.

V9.2.0.30 IBM MQ 9.2.0 Fix Pack 30

There are no new, changed or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 30.

V9.2.0.25 IBM MQ 9.2.0 Fix Pack 25

The following Managed File Transfer messages are new for IBM MQ 9.2.0 Fix Pack 25:

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0419E

BFGIO0420E

There are no changed or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 25.

V9.2.0.20 IBM MQ 9.2.0 Fix Pack 20

There are no new, changed, or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 20.

V9.2.0.15 IBM MQ 9.2.0 Fix Pack 15

The following Managed File Transfer messages are changed for IBM MQ 9.2.0 Fix Pack 15:

BFGAG0001 - BFGAG9999: MFT agents messages

BFGAG0141E (Received reason code is no longer included in the message.)

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0059E (Received reason code is no longer included in the message.)

There are no new or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 15.

V9.2.0.10 IBM MQ 9.2.0 Fix Pack 10

The following Managed File Transfer messages are changed for IBM MQ 9.2.0 Fix Pack 10:

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0756E (Message, Explanation and Response are clarified.)

BFGMQ0001 - BFGMQ9999: MFT WMQ interface messages

BFGMQ1045I (Response updated.)

There are no new or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 10.

V9.2.0.7 IBM MQ 9.2.0 Fix Pack 7

The following Managed File Transfer messages are new for IBM MQ 9.2.0 Fix Pack 7:

BFGCL0001 - BFGCL9999: MFT commands messages

BFGCL0831I - BFGCL0834E

BFGIO0001 - BFGIO9999: MFT filesystem I/O on IBM i messages

BFGIO0416E

BFGUB0001 - BFGUB9999: MFT configuration and properties messages

BFGUB0088E

There are no changed or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 7.

There are no new, changed or removed Managed File Transfer messages for IBM MQ 9.2.0 Fix Pack 6.

New, changed and removed z/OS (CSQ) messages since IBM MQ 9.2.5

z/OS

The following CSQ messages are new since IBM MQ 9.2.5:

Recovery log manager messages (CSQJ...)

CSQJ169E

Data manager messages (CSQI...)

CSQI051E

Utilities messages (CSQU...)

CSQU559I

Distributed queuing messages (CSQX...)

CSQX166E

CSQX705E

IBM MQ-IMS bridge Messages (CSQ2...)

CSQ2007I

The following CSQ messages are changed since IBM MQ 9.2.5:

Coupling Facility manager messages (CSQE...)

CSQE007I (Hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE020E - CSQE021I (Hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE033E - CSQE035E (Hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE042E (Code correction in System programmer response.)

CSQE106E (Hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE137E (Typo "/cpf" removed from Message.)

CSQE146E (hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE162E (hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

CSQE222E (Information about reason code 02380000 is added to the System programmer response.)

Data manager messages (CSQI...)

CSQI042E - CSQI043E (Hyperlink added to "z/OS MVS Programming: Workload Management Services" in System programmer response.)

CSQI048I (Hyperlink added to "z/OS MVS Programming: Workload Management Services" in System programmer response.)

Recovery log manager messages (CSQJ...)

CSQJ077E (System programmer response extended.)

CSQJ105E ("preformatting" changed to "pre-formatting" in Explanation, and hyperlink added to "Media manager return codes" in System programmer response.)

CSQJ106E (Hyperlink added to "Media manager return codes" in Explanation.)

CSQJ107E - CSQJ108E (Hyperlink added to "z/OS DFSMS Macro Instructions for Data Sets" in Explanation.)

CSQJ111A (Order of paragraphs changed in System programmer response.)

CSQJ117E (Hyperlink added to "z/OS DFSMS Macro Instructions for Data Sets" in Explanation.)

CSQJ167E (System programmer response extended to describe the effect of applying APAR PH48657.)

CSQJ228E (Link updated in System programmer response.)

CSQJ302E (Link updated in System programmer response.)

CSQJ494E - CSQJ495E (Link updated in System programmer response.)

CSQJ499I (Extra paragraph added to System action.)

Message manager messages (CSQM...)

CSQM056E (One sentence rearranged and simplified in System programmer response.)

CSQM057E (One sentence rearranged and simplified in System programmer response.)

CSQM112E (System programmer response rewritten.)

Command server messages (CSQN...)

CSQN203I (One sentence rearranged and simplified in System programmer response.)

CSQN207I-CSQN212E (One sentence rearranged and simplified in System programmer response.)

Buffer manager messages (CSQP...)

CSQP004E (Link added to System programmer response.)

CSQP011E - CSQP012E (Link added to System programmer response.)

CSQP014E (Link changed in System programmer response.)

CSQP037E - CSQP039E (Link added to System programmer response.)

CSQP048E (Link added to System programmer response.)

Recovery manager messages (CSQR...)

CSQR027I (Typo fixed in Explanation.)

Utilities messages (CSQU...)

CSQU002E - CSQU003E (Link updated in System programmer response.)

CSQU090E (Link added to System programmer response.)

CSQU093E - CSQU094E (Link added to System programmer response.)

CSQU156E (Link added to System programmer response.)

CSQU504E (Link added to System programmer response.)

CSQU514E (Link added to System programmer response.)

CSQU518E (Link added to System programmer response.)

CSQU525E (Extra line added to System programmer response.)

CSQU533E (Link added to System programmer response.)

CSQU544E - CSQU545E (Link added to System programmer response.)

CSQU561E (Link added to System programmer response.)

CSQU568E ("SMDS Group" information added to message and System programmer response. Explanation extended.)

Agent services messages (CSQV...)

CSQV457E (Rewritten System programmer response.)

CSQV459I (Rewritten System programmer response.)

Instrumentation facilities messages (CSQW...)

CSQW124E (Explanation extended.)

CSQW133E (Links added to Explanation and System programmer response.)

CSQW200E (Link added to System programmer response.)

CSQW701E (Link updated in System programmer response.)

Distributed queuing messages (CSQX...)

CSQX477E (Rewrites in Explanation and System programmer response.)

CSQX004I (Number of bytes in a megabyte is corrected to 1048576 in Explanation.)
 CSQX027E - CSQX028E (Link updated in System programmer response.)
 CSQX042E - CSQX045E (Links updated in System programmer response.)
 CSQX049E - CSQX052E (Links updated in System programmer response.)
 CSQX054E - CSQX058E (Links added to System programmer response.)
 CSQX059E (System action is updated.)
 CSQX060E - CSQX061E (Link added to System programmer response.)
 CSQX069E (Link added to System programmer response.)
 CSQX104E (Link added to System programmer response.)
 CSQX106E (Link added to System programmer response.)
 CSQX110E - CSQX113E (Link added to System programmer response.)
 CSQX113E (System action is updated.)
 CSQX143E - CSQX144E (Link added to System programmer response.)
 CSQX153E - CSQX154E (Link added to System programmer response.)
 CSQX164E (Link updated in System programmer response.)
 CSQX201E - CSQX206E (Links added to System programmer response.)
 CSQX201E to CSQX206E (System programmer response is updated.)
 CSQX208E ("on z/OS " added to System programmer response.)
 CSQX208E to CSQX209E (System programmer response is updated.)
 CSQX209E - CSQX212E (Link added to System programmer response.)
 CSQX212E to CSQX213E (System programmer response is updated.)
 CSQX218E (System programmer response is updated.)
 CSQX235E (System programmer response is updated.)
 CSQX239E (System programmer response is updated.)
 CSQX250E (Rewritten System programmer response.)
 CSQX469E (extended System programmer response)
 CSQX567E to CSQX568E (System programmer response is updated.)
 CSQX567E - CSQX568E (Link added to System programmer response.)
 CSQX571E (Link updated in System programmer response.)
 CSQX617I (Note added to System programmer response.)
 CSQX617I (Typo fixed, and note added to System programmer response.)
 CSQX620E (Link updated in System programmer response.)
 CSQX625E (Link added to System programmer response) CSQX629E (Link updated in System programmer response.)
 CSQX629E (Explanation extended.)
 CSQX631E (References to local-protocol and remote-protocol removed.)
 CSQX633E - CSQX634E (Link updated in System programmer response and System programmer response extended.)
 CSQX634E (SSL certificate names corrected in System programmer response.)
 CSQX635E (Updated System programmer response.)
 CSQX637E -. CSQX638E (Link updated in System programmer response.)
 CSQX641E (Updated Message and Explanation.)
 CSQX642E (SSL certificate names corrected in System programmer response.)
 CSQX644E (SSL certificate names corrected in System programmer response.)

CSQX645E (SSL certificate names corrected in System programmer response and System programmer response is updated.)
CSQX645E (System programmer response: Link updated.)
CSQX646E (Link updated in System programmer response.)
CSQX658E (Link updated in System programmer response.)
CSQX663E (Link updated in System programmer response.)
CSQX665E - CSQX666E (Link updated in System programmer response.)
CSQX670I (System programmer response extended.)
CSQX683E - CSQX685E (Link updated in System programmer response.)
CSQX686E (System programmer response: Link updated and extended System programmer response.)
CSQX687E - CSQX689E (Link updated in System programmer response.)
CSQX694E (Message severity is reduced to CSQX694I.)
CSQX686E (SSL certificate names corrected in Explanation.)
CSQX878I (Extended System programmer response.)

Initialization procedure and general services messages (CSQY...)

CSQY024I (Reference to MQ 9.1.3 behavior removed from Explanation and System programmer response)
CSQY039I (Sentence referring back to MQ 9.0 is removed from Explanation.)
CSQY200E (Link updated in System programmer response.)
CSQY210E (Links updated in System programmer response.)
CSQY228E (System action updated to correct the message number in a reference to a different message.)
CSQY291E (Links updated in Explanation and System programmer response.)

IBM MQ-IMS bridge Messages (CSQ2...)

CSQ2002E (Capitalization change in System programmer response.)
CSQ2003E (Capitalization change in System programmer response.)
CSQ2005I (Capitalization change in System programmer response. Extra variable MQFB_DATA_LENGTH_TOO_SHORT added to System programmer response.)
CSQ2023E (Capitalization change in System programmer response.)

Subsystem support messages (CSQ3...)

CSQ3111I (Explanation extended.)
CSQ3120E (Hyperlink added to "IXCQUERY" in System programmer response.)

Db2 manager messages (CSQ5...)

CSQ5002E (Hyperlink added to "Db2 codes" in System programmer response.)
CSQ5007E (System action is updated. Hyperlink added to "Db2 codes" in System programmer response.)
CSQ5009E (Hyperlink added to "Db2 codes" in System programmer response.)
CSQ5010E (Hyperlink added to "IXCQUERY" in System programmer response.)
CSQ5011E (Hyperlink added to "IXCJOIN" in System programmer response.)
CSQ5012E (Hyperlink added to "IXCQUIES" in System programmer response.)
CSQ5013E (Hyperlink added to "IXCSETUS" in System programmer response.)
CSQ5025E (Hyperlink added to "Db2 codes" in System programmer response.)
CSQ5027E (Hyperlink added to "Db2 codes" in System programmer response.)
CSQ5116E (Hyperlink added to "z/OS MVS Programming Sysplex Services Reference" in System programmer response.)

General changes

[Links to z/OS manuals updated.](#)

[Links to IMS documentation updated.](#)

[Links to CICS documentation updated.](#)

The following CSQ messages are removed since IBM MQ 9.2.5:

Data manager messages (CSQI...)

[CSQI966I](#)

[CSQI967I](#)

Recovery log manager messages (CSQJ...)



[CSQJ165I](#)

What was new and changed in earlier versions



Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

For information about what was new and what changed in an earlier version of the product, see the appropriate section in the product documentation for that version.

IBM MQ 9.1

- [What's new and changed in IBM MQ 9.1.0](#)
-  [What's new and changed in IBM MQ 9.1.x Continuous Delivery](#)
-  [What's changed in IBM MQ 9.1.0.x Long Term Support](#)

IBM MQ 9.0

- [What's new and changed in IBM MQ 9.0.0](#)
-  [What's new and changed in IBM MQ 9.0.x Continuous Delivery](#)
-  [What's changed in IBM MQ 9.0.0.x Long Term Support](#)

IBM MQ 8.0

- [What's new in IBM MQ 8.0](#)
- [What's changed in IBM MQ 8.0](#)
- [What's new and changed in IBM MQ 8.0 Fix Packs](#)

IBM WebSphere MQ 7.5

- [What's new in IBM WebSphere MQ 7.5](#)
- [What's changed in IBM WebSphere MQ 7.5](#)
- [What's changed in IBM WebSphere MQ 7.5 Fix Packs](#)
- [Behavior that has changed between IBM WebSphere MQ Advanced Message Security 7.0.1 and IBM WebSphere MQ 7.5](#)
- [What's new in previous versions of IBM WebSphere MQ File Transfer Edition](#)
- [Changes between IBM WebSphere MQ File Transfer Edition 7.0.4 or earlier and IBM WebSphere MQ 7.5](#)

IBM WebSphere MQ 7.1 and earlier

For older versions of products, where documentation is provided outside of IBM Documentation, see [Documentation for older versions of IBM MQ](#).

Related concepts

[“What's new and changed in IBM MQ 9.2.0 ” on page 25](#)

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ 9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[Migration methods and concepts](#)

Related information

[System Requirements for IBM MQ](#)

[IBM MQ, WebSphere MQ, and MQSeries product readmes web page](#)

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Accessibility features for IBM MQ

Accessibility features assist users who have a disability, such as restricted mobility or limited vision, to use information technology content successfully.

Accessibility features

IBM MQ includes the following major accessibility features:

- Keyboard-only operation
- Operations that use a screen reader

IBM MQ uses the latest W3C Standard, [WAI-ARIA 1.0](https://www.w3.org/TR/wai-aria/) (<https://www.w3.org/TR/wai-aria/>), to ensure compliance to [US Section 508](https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) (<https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards>), and [Web Content Accessibility Guidelines \(WCAG\) 2.0](https://www.w3.org/TR/WCAG20/) (<https://www.w3.org/TR/WCAG20/>). To take advantage of accessibility features, use the latest release of your screen reader in combination with the latest web browser that is supported by this product.

The IBM MQ online product documentation in IBM Documentation is enabled for accessibility. The accessibility features of IBM Documentation are described at [../..about/releasenotes.html](https://www.ibm.com/docs/en/ibm-quantum/1.0.0/about/releasenotes.html).

Keyboard navigation

This product uses standard navigation keys.

Interface information

The fully accessible way of using IBM MQ is to use the command line interface. For more information about using commands, see [How to use IBM MQ control commands](#) and [Administration using MQSC commands](#).

For Windows, the accessible way to install IBM MQ is by using a non interactive installation. For further information, see [Advanced installation using msixexec](#).

The IBM MQ user interfaces do not have content that flashes 2 - 55 times per second.

The IBM MQ web user interface does not rely on cascading style sheets to render content properly and to provide a usable experience. However, the product documentation does rely on cascading style sheets. IBM MQ provides an equivalent way for low-vision users to use a user's system display settings, including high-contrast mode. You can control font size by using the device or browser settings.

Related accessibility information

In addition to standard IBM help desk and support websites, IBM has established a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

TTY service
800-IBM-3383 (800-426-3383)
(within North America)

IBM and accessibility

For more information about the commitment that IBM has to accessibility, see [IBM Accessibility](#) (www.ibm.com/able).

Release and platform icons in the product documentation

The product documentation for all IBM MQ 9.2 release types (LTS, CD, EUS), release versions, and platforms is provided in a single information set in IBM Documentation. If information is specific to a given release type, version, or platform, this is indicated by a rectangular icon. Information that applies to all release types, versions, and platforms is left unmarked.

Icons for release types and release versions

If a product feature applies to a specific release, icons are used to identify the release type to which the feature applies, and the release version at which a feature is first made available. For more information about the different release types, see [IBM MQ release types](#).

Release type icons

Long Term Support (LTS)

Information that applies to the Long Term Support release in general is indicated by a dark blue icon with the text LTS:



Continuous Delivery (CD)

Information that applies to the Continuous Delivery release in general is indicated by a light blue icon with the text CD:



Extended Update Support (EUS)

From IBM MQ 9.2.1, information that applies to the Extended Update Support release in general is indicated by a gray icon with the text EUS:



Release version icons

LTS versions

For Long Term Support release content, the icon is dark blue and contains the LTS release and Fix Pack number. For example:

 V 9.2.0.1

CD versions

For Continuous Delivery release content, the icon is light blue and contains the CD release and Fix Pack number. For example:

 V 9.2.1

EUS versions

From IBM MQ 9.2.1, Extended Update Support releases apply to some configurations of the IBM MQ Advanced container. There are no version-specific icons for EUS information.

Initial release icons

For IBM MQ 9.2, the initial release was both an LTS and a CD release.

LTS initial release

Product features that are new to LTS customers in the initial release of IBM MQ 9.2 are indicated by a dark blue icon that contains the initial release number. Note that features that are new to LTS customers includes all features that were introduced throughout the lifetime of the previous release for CD customers.

 V 9.2.0

CD initial release

Product features that are new to CD customers in the initial release of IBM MQ 9.2 are indicated by a light blue icon that contains the initial release number.

 V 9.2.0

Platform icons

Platform icons are used to identify information that applies only to a specific platform, or group of platforms.











Table 5. Icons for MQ core platforms	
Icon	Platform
	AIX
	All supported UNIX platforms. That is, all platforms listed previously in this table.  From IBM MQ 9.2.0, AIX is the only supported UNIX platform.
	Linux
	Windows
	AIX, Linux, and Windows
	All supported UNIX, Linux, and Windows platforms. That is, all platforms listed previously in this table.
	IBM i. Not supported for CD releases.

Table 5. Icons for MQ core platforms (continued)

Icon	Platform
	Multiplatforms. That is, all platforms listed previously in this table. <ul style="list-style-type: none"> For CD releases, this means AIX, Linux, and Windows. For LTS releases, this means AIX, Linux, Windows, and IBM i.
	z/OS

Note:





- The supported platforms for CD releases are AIX, Linux, Windows, and z/OS.
- The supported platforms for LTS releases are AIX, Linux, Windows, IBM i, and z/OS.
- Any information not explicitly flagged as IBM i or z/OS also applies to the IBM MQ Appliance.
-  Support for Solaris for all IBM MQ components, including server and clients, is removed from IBM MQ 9.2.
- Support for HP-UX for all IBM MQ components, including server and clients, is removed from IBM MQ 9.1.




Table 6. Icons for MQ in containers

Icon	Platform
	Red Hat OpenShift. A containers platform. Runs on Linux
	Kubernetes. An open source containers platform.
	IBM Cloud Pak for Integration. Brings together a range of IBM integration products, including IBM MQ in containers.

Icons for product features that are deprecated, stabilized or removed

For IBM WebSphere MQ 7.1 and later versions, [Deprecations, stabilizations, and removals in IBM MQ](#) provides a list of product features that are deprecated, stabilized, or removed. From IBM MQ 9.3, information about each of these features is flagged with one of the following icons.

Table 7. Deprecated, stabilized or removed features

Icon	Description
	Used to highlight information for an IBM MQ feature that is deprecated.
	Used to highlight information for an IBM MQ feature that is stabilized.
	Used to highlight information for an IBM MQ feature that is removed.

Related concepts

“What’s new and changed in IBM MQ 9.2.0 ” on page 25

IBM MQ 9.2.0 is the follow-on Long Term Support (LTS) release to IBM MQ 9.1. It is also the follow-on Continuous Delivery (CD) release to IBM MQ 9.1.5, which is the final CD release for IBM MQ 9.1. IBM MQ

9.2.0 includes the features and enhancements that were previously delivered in the CD releases of IBM MQ 9.1.0 through IBM MQ 9.1.5 along with some features and enhancements that are new at IBM MQ 9.2.0.

[“What's new and changed in IBM MQ 9.2.x Continuous Delivery” on page 87](#)

Following the initial release of IBM MQ 9.2.0, new function and enhancements are made available by incremental updates within the same version and release as modification releases, for example IBM MQ 9.2.1.

[“What's changed in IBM MQ 9.2.0 Long Term Support” on page 151](#)

The Long Term Support (LTS) release is a recommended product level for which support, including defect and security updates, is provided over a specified period of time.

[“What was new and changed in earlier versions” on page 170](#)

Links to information about new features and changes to functions and resources, including stabilizations, deprecations and removals, that occurred in versions of the product before IBM MQ 9.2.

Related reference

[IBM MQ release types](#)

Readme for IBM MQ 9.2 and its maintenance

This document contains the readme information for IBM MQ 9.2.0 Long Term Support release and its maintenance, and also for IBM MQ 9.2.x Continuous Delivery releases.

A PDF copy of this document, in English and in translation, is available for download here: <https://public.dhe.ibm.com/software/integration/wmq/docs/V9.2/Readme/>.

The English version of this document is the most up-to-date version.

Content

The main sections of this document describe product limitations and known problems.

In addition to this document, you can find more information on the IBM MQ website: <https://www.ibm.com/products/mq>.

The SupportPac web page is here: <https://ibm.biz/mqsupportpacs>.

For current information about known problems and available fixes, see the IBM MQ Support page: https://www.ibm.com/mysupport/s/topic/OTO5000000024cJGAQ/mq?language=en_US&productId=01t0z000006zdYXAAY.

Product documentation for all supported versions of IBM MQ is available through IBM Documentation: <https://www.ibm.com/docs/ibm-mq>. Specifically, the IBM MQ 9.2 product information is available in IBM Documentation: <https://www.ibm.com/docs/ibm-mq/9.2>.

[Announcement letters](#)

The announcement letters for IBM MQ 9.2 (US English) are available at the following locations. The announcement letters provide these types of information:

- Detailed product description, including description of new function.
- Product-positioning statement.
- Ordering details.
- Hardware and software requirements.
- Hourly pricing.

[Announcement letters for Continuous Delivery Releases](#)

IBM MQ 9.2.5 for Multiplatforms, IBM MQ Appliance firmware, and IBM MQ on Cloud
There are no announcement letters for IBM MQ 9.2.5.

IBM MQ 9.2.4 for Multiplatforms, IBM MQ Appliance firmware, and IBM MQ on Cloud
<https://www.ibm.com/docs/en/announcements/221-231/index.html>

IBM MQ for z/OS Value Unit Edition 9.2.4, IBM MQ Advanced for z/OS, 9.2.4, and IBM MQ Advanced for z/OS Value Unit Edition 9.2.4
<https://www.ibm.com/docs/en/announcements/221-355/index.html>
 IBM MQ for z/OS, 9.2.4
<https://www.ibm.com/docs/en/announcements/221-356/index.html>
 IBM MQ 9.2.3 for Multiplatforms, IBM MQ Appliance firmware, and IBM MQ on Cloud
<https://www.ibm.com/docs/en/announcements/221-186/index.html>
 IBM MQ for z/OS Value Unit Edition 9.2.3, IBM MQ Advanced for z/OS, 9.2.3, and IBM MQ Advanced for z/OS Value Unit Edition 9.2.3
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<https://www.ibm.com/docs/en/announcements/220-448/index.html>
 IBM MQ for z/OS Value Unit Edition 9.2.1, IBM MQ Advanced for z/OS, 9.2.1, and IBM MQ Advanced for z/OS Value Unit Edition 9.2.1
<https://www.ibm.com/docs/en/announcements/220-449/index.html>
 IBM MQ for z/OS, 9.2.1
<https://www.ibm.com/docs/en/announcements/220-450/index.html>

Announcement letters for IBM MQ 9.2.0

IBM MQ Advanced for z/OS includes the Connector Pack
<https://www.ibm.com/docs/en/announcements/223-0578/index.html>
 IBM MQ 9.2 and IBM MQ on Cloud
<https://www.ibm.com/docs/en/announcements/220-238/index.html>
 IBM MQ for z/OS Value Unit Edition 9.2, IBM MQ Advanced for z/OS, 9.2, and IBM MQ Advanced for z/OS Value Unit Edition 9.2
<https://www.ibm.com/docs/en/announcements/220-239/index.html>
 IBM MQ for z/OS, 9.2
<https://www.ibm.com/docs/en/announcements/220-240/index.html>

Update history

Date	Summary
02 May 2025	Updates for IBM MQ 9.2.0.35
17 Dec 2024	Updates for IBM MQ 9.2.0.30
26 Apr 2024	Updates for IBM MQ 9.2.0.25
14 Dec 2023	Updates for IBM MQ 9.2.0.21 CSU
30 Oct 2023	Updates for IBM MQ 9.2.0.20
01 Aug 2023	Link to the IBM MQ Advanced for z/OS Connector Pack announcement letter
28 Jun 2023	Updates for IBM MQ 9.2.0.15
28 Feb 2023	Updates for IBM MQ 9.2.0.10
01 Dec 2022	Updates for IBM MQ 9.2.0.7
29 Jun 2022	Updates for IBM MQ 9.2.0.6
24 Feb 2022	Updates for IBM MQ 9.2.5

Date	Summary
22 Feb 2022	Updates for IBM MQ 9.2.0.5
18 Nov 2021	Updates for IBM MQ 9.2.4
11 Nov 2021	Updates for IBM MQ 9.2.0.4
22 Jul 2021	Updates for IBM MQ 9.2.3 and 9.2.0.3
18 Mar 2021	Updates for IBM MQ 9.2.2 and 9.2.0.2
07 Dec 2020	Extra item for IBM MQ 9.2.0.1
03 Dec 2020	Updates for IBM MQ 9.2.1
01 Oct 2020	Updates for IBM MQ 9.2.0.1
23 Jul 2020	Created for IBM MQ 9.2.0

Installation instructions

Installation instructions are available as part of the IBM MQ 9.2 product information published in IBM Documentation: https://www.ibm.com/docs/SSFKSJ_9.2.0/com.ibm.mq.ins.doc/q008250_.html

Limitations and known problems for Long Term Support releases

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 35

New statistics might affect custom administrative tools

As described in [What's changed in IBM MQ 9.2.0 Fix Pack 35](#), this fix pack adds the **mqperfck** command and new system resource statistics. The new statistics are added to the resource statistics metadata that are published by the queue manager. If you developed your own administrative tool, it can automatically discover and display these new statistics, as described in [Developing your own resource monitoring application](#) in the IBM MQ product documentation. If the new statistics cause a problem for an administrative tool, you can suppress the statistics for a queue manager by setting the **AMQ_NO_MQPERFCK_STATS** environment variable to any value before you start the queue manager. For example, to suppress the new statistics for a queue manager named QMGR1 on a Linux operating system, then start the queue manager, run the following commands:

```
export AMQ_NO_MQPERFCK_STATS=1
strmqm QMGR1
```

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 30

Channel loops if a message on the transmit queue exceeds the MAXMSGL attribute of the queue manager

This fix pack adds the following return code (2491) that can appear in messages that are moved to the dead letter queue: *A message was put to a remote queue but the channel was unable to process the full message from the transmission queue because the message has properties that cause its total size to exceed the maximum message length that is allowed by the queue manager. The message has been moved to the dead-letter queue.*

Where possible, you should configure a dead letter queue handler to process any such messages. Or you can write an application to process each message. The application must use **MQGET** with option **MQGMO_PROPERTIES_IN_HANDLE** to get the message with properties in a message handle and the message payload in the message buffer.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 25

Support is removed for RSA key exchange in FIPS mode

The IBM Java 8 JRE removes support for RSA key exchange when operating in FIPS mode. This removal applies to the following CipherSuites:

- TLS_RSA_WITH_AES_256_GCM_SHA384
- TLS_RSA_WITH_AES_256_CBC_SHA256
- TLS_RSA_WITH_AES_256_CBC_SHA
- TLS_RSA_WITH_AES_128_GCM_SHA256
- TLS_RSA_WITH_AES_128_CBC_SHA256
- TLS_RSA_WITH_AES_128_CBC_SHA
- TLS_RSA_WITH_3DES_EDE_CBC_SHA

To continue using FIPS mode, the following IBM MQ components should be changed to use a CipherSuite that is still supported:

- AMQP server
- Managed File Transfer (MFT)
- IBM MQ Console / web console
- IBM MQ Explorer
- IBM MQ REST API
- IBM MQ Telemetry service

For details of supported CipherSuites, see [TLS CipherSpecs and CipherSuites in IBM MQ classes for JMS](#) in the IBM MQ product documentation.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0.21 CSU

IBM MQ Bridge to blockchain is removed

The IBM MQ Bridge to blockchain was deprecated across all releases from November 22 2022, and is removed from the product at IBM MQ 9.2.0.21. If your system has the MQSeriesBCBridge component installed, remove it manually after this maintenance update has completed.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACKS 15 AND 20

There are no new limitations or known problems.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 10

IBM MQ AMQP channel does not start automatically with AMQP service after upgrade

When a queue manager with a running AMQP channel is upgraded to IBM MQ 9.2, and the queue manager and associated AMQP service are restarted, the previously running AMQP channel does not start automatically.

This issue is fixed by APAR IT37842, which is included in IBM MQ 9.2.0 Fix Pack 10.

Note that migration runs only once; the first time the queue manager is started after an upgrade. Therefore, after you apply IBM MQ 9.2.0 Fix Pack 10:

- If, prior to installing IBM MQ 9.2.0 Fix Pack 10, you have started the queue manager and AMQP channel on any previous IBM MQ 9.2 level, then the AMQP channel will start automatically. You do not need to take any additional action.
- If, prior to installing IBM MQ 9.2.0 Fix Pack 10, you have not started the queue manager and AMQP channel on any previous IBM MQ 9.2 level, then any previously running AMQP channels must be restarted manually when the queue manager and associated AMQP service are restarted.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 7

There are no new limitations or known problems.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACKS 5 AND 6

On Linux, after installing IBM MQ Explorer, a java.security.SignatureException error is displayed when viewing the error log

To recreate this error on the Linux 64-bit platform, complete the following steps:

1. Install the IBM MQ 9.2 initial release, then apply either Fix Pack 9.2.0.5 or Fix Pack 9.2.0.6.
2. Launch the IBM MQ Explorer using the VNC viewer.
3. Go to **Help tab > About Explorer**, then click "Installation details".
4. Go to **Configuration tab > View error log**.

A message similar to the following is displayed:

```
!ENTRY org.eclipse.osgi 4 0 2022-05-23 07:19:44.214
!MESSAGE Either the manifest file or the signature file has been tampered in this
jar: /opt/mqm/mqexplorer/eclipse/plugins/org.apache.ant_1.10.11.v20210720-1445
!STACK 0
java.security.SignatureException: Either the manifest file or the signature file has been
tampered in this jar: /opt/mqm/mqexplorer/eclipse/plugins/
org.apache.ant_1.10.11.v20210720-1445
    at
    org.eclipse.osgi.internal.signedcontent.SignatureBlockProcessor.verifyManifestAndSignatureFi
le(SignatureBlockProcessor.java:172)
    at
    org.eclipse.osgi.internal.signedcontent.SignatureBlockProcessor.processSigner(SignatureBlock
Processor.java:120)
    at
    org.eclipse.osgi.internal.signedcontent.SignatureBlockProcessor.process(SignatureBlockProces
sor.java:76)
    at
    org.eclipse.osgi.internal.signedcontent.SignedBundleFile.initializeSignedContent(SignedBundl
eFile.java:47)
    at
    org.eclipse.osgi.internal.signedcontent.SignedBundleHook.getSignedContent(SignedBundleHook.j
ava:223)
    at
    org.eclipse.osgi.internal.signedcontent.SignedBundleHook.getSignedContent(SignedBundleHook.j
ava:247)
    at org.eclipse.ui.internal.about.AboutBundleData.isSigned(AboutBundleData.java:103)
    at
    org.eclipse.ui.internal.about.AboutPluginsPage$BundleTableLabelProvider$1.run(AboutPluginsPa
ge.java:130)
    at org.eclipse.core.internal.jobs.Worker.run(Worker.java:63)
```

The error message can be ignored.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 4

Error message in the IBM MQ Explorer log after IBM MQ 9.2.0.4 is installed on Windows

After IBM MQ 9.2.0, Fix Pack 4 is installed on Windows, you might see the following error message in the IBM MQ Explorer log file the first time the IBM MQ Explorer is started.

The error message can be ignored.

The log file is here:

```
USER_Home\IBM\WebSphereMQ\workspace-installation_name\metadata\.log
```

```
!ENTRY org.eclipse.equinox.http.jetty 4 0 2021-10-22 05:53:58.909
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:
org.eclipse.equinox.http.jetty [302]
    Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
name="org.eclipse.jetty.servlet"; bundle-version="9.4.35.v20201120"; version="9.4.35";
uses="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
.eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
ource"
    org.eclipse.jetty.servlet [385]
    Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
```

```

version="[9.4.35,10.0.0)"; resolution:="optional"
    Unresolved requirement: Import-Package: org.eclipse.jetty.util.ajax;
version="[9.4.35,10.0.0)"
    at org.eclipse.osgi.container.Module.start(Module.java:462)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel$2.run(ModuleContainer.java:1844)
    at
org.eclipse.osgi.internal.framework.EquinoxContainerAdaptor$1$1.execute(EquinoxContainerAdaptor.java:136)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer.java:1837)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer.java:1778)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleContainer.java:1742)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer.java:1664)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer.java:1)
    at
org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:234)
    at
org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:345)

```

This issue is also seen in fix packs 9.2.0.2 and 9.2.0.3.

For Fix Pack 9.2.0.4 this issue is addressed by APAR IT38604.

IBM MQ Explorer installation details are not updated after IBM MQ 9.2.0.4 is uninstalled on Windows

After IBM MQ 9.2.0, Fix Pack 4 is uninstalled on Windows, the information displayed on the **Installed Software** tab of the **IBM MQ Explorer Installation Details** panel still includes the following entry:

```

- HELP Patch (bugzillas
564984,562440,562843,564747,568292,569227,569855,569406,573066,576203)

```

This information is not correct. The HELP patch is no longer installed.

This issue is also seen in fix packs 9.2.0.1 and 9.2.0.2.

For Fix Pack 9.2.0.4, this issue is addressed by APAR IT38604.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 3

Error when you apply IBM MQ 9.2.0, Fix Pack 3 on Windows

When you apply this fix pack from the Windows **Start** button, you get the following message: Unable to access the specified device, path, or file. You might not have the proper permissions to access these items.

To work around this issue, run an elevated command prompt and launch the **Apply fix pack** option directly.

Error message in the IBM MQ Explorer log after IBM MQ 9.2.0.3 is installed on Windows

After IBM MQ 9.2.0, Fix Pack 3 is installed on Windows, you might see the following error message in the IBM MQ Explorer log file the first time the IBM MQ Explorer is started.

The error message can be ignored.

The log file is here:

```

USER_Home\IBM\WebSphereMQ\workspace-installation_name\metadata\log

```

```

!ENTRY org.eclipse.equinox.http.jetty 4 0 2021-06-24 17:18:34.417
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:

```

```

org.eclipse.equinox.http.jetty [302]
  Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
  version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
    name="org.eclipse.jetty.servlet"; bundle-version="9.4.40.v20210413"; version="9.4.40";
    uses:="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
    map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
    .eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
    rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
    ource"
      org.eclipse.jetty.servlet [385]
        Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
        version="[9.4.40,10.0.0)"; resolution:="optional"
          Unresolved requirement: Import-Package: org.eclipse.jetty.util.ajax;
          version="[9.4.40,10.0.0)"
            at org.eclipse.osgi.container.Module.start(Module.java:462)
            at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel$2.run(ModuleContainer.java:18
            44)
              at
              org.eclipse.osgi.internal.framework.EquinoxContainerAdaptor$1$1.execute(EquinoxContainerAdap
              tor.java:136)
                at
                org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
                .java:1837)
                  at
                  org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
                  .java:1778)
                    at
                    org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleC
                    ontainer.java:1742)
                      at
                      org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
                      .java:1664)
                        at
                        org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
                        .java:1)
                          at
                          org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:234)
                          at
                          org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:345)

```

This issue is also seen in Fix Pack 9.2.0.2.

For Fix Pack 9.2.0.3, this issue is addressed by APAR IT37166.

GTK+ Messages issued by IBM MQ Explorer

In some Linux environments, messages from the GTK+ graphical user interface library might be seen in the UNIX console window from which IBM MQ Explorer was started. These messages are caused by errors in the gtk3 libraries, and do not cause any functional failures in IBM MQ Explorer.

This issue was discovered during testing of the initial IBM MQ 9.2.0 release, and also affects Fix Pack 9.2.0.2. For more information, see the readme entry for the initial IBM MQ 9.2.0 release.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 2

GTK+ Messages issued by IBM MQ Explorer

In some Linux environments, messages from the GTK+ graphical user interface library might be seen in the UNIX console window from which IBM MQ Explorer was started. These messages are caused by errors in the gtk3 libraries, and do not cause any functional failures in IBM MQ Explorer.

This issue was discovered during testing of the initial IBM MQ 9.2.0 release. For more information, see the readme entry for the initial IBM MQ 9.2.0 release.

Channel names are blank in MQSC and IBM MQ Explorer after direct migration from IBM MQ 8.0.0.1, 8.0.0.2, or 8.0.0.3

For more information, see LIMITATIONS AND KNOWN PROBLEMS FOR THE INITIAL IBM MQ 9.2.0 RELEASE.

This issue is fixed by APAR IT34332, which is included in IBM MQ 9.2.0 Fix Pack 2. You must apply the fix before you start a migrated queue manager for the first time.

Error messages in the IBM MQ Explorer log after IBM MQ 9.2.0.2 is installed on Windows

After IBM MQ 9.2.0, Fix Pack 2 is installed on Windows, you might see one of the following error messages in the IBM MQ Explorer log file the first time the IBM MQ Explorer is started.

In both cases, the error message can be ignored.

The log file is here:

```
<USER_Home>\IBM\WebSphereMQ\workspace-<installation_name>\.metadata\.log
```

The following error is being addressed by APAR IT36319:

```
!ENTRY org.eclipse.equinox.http.jetty 4 0 2021-03-24 15:01:50.304
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:
org.eclipse.equinox.http.jetty [302]
    Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
name="org.eclipse.jetty.servlet"; bundle-version="9.4.35.v20201120"; version="9.4.35";
uses:="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
.eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
ource"
        org.eclipse.jetty.servlet [385]
            Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
version="[9.4.35,10.0.0)"; resolution:="optional"
            Unresolved requirement: Import-Package: org.eclipse.jetty.util.ajax;
version="[9.4.35,10.0.0)"
                at org.eclipse.osgi.container.Module.start(Module.java:462)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel$2.run(ModuleContainer.java:18
44)
                    at
org.eclipse.osgi.internal.framework.EquinoxContainerAdaptor$1$1.execute(EquinoxContainerAdap
tor.java:136)
                        at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1837)
                            at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1778)
                                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleC
ontainer.java:1742)
                                    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1664)
                                        at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1)
                                            at
org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:234)
                                                at
org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:345)
```

The following error is being addressed by APAR IT34927:

```
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:
org.eclipse.equinox.http.jetty [298]
    Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
name="org.eclipse.jetty.servlet"; bundle-version="9.4.33.v20201020"; version="9.4.33";
uses:="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
.eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
ource"
        org.eclipse.jetty.servlet [615]
            Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
version="[9.4.33,10.0.0)"; resolution:="optional"
```

```

Unresolved requirement: Import-Package: org.eclipse.jetty.security;
version="[9.4.33,10.0.0)"
    at org.eclipse.osgi.container.Module.start(Module.java:444)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1634)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1613)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleC
ontainer.java:1585)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1528)
    at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1)
    at
org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:230)
    at
org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:340)

```

IBM MQ Explorer installation details are not updated after IBM MQ 9.2.0.2 is uninstalled on Windows

After IBM MQ 9.2.0, Fix Pack 2 is uninstalled on Windows, the information displayed on the **Installed Software** tab of the **IBM MQ Explorer Installation Details** panel still includes the following entry:

```
- HELP Patch (bugzillas 538020,547101,509819,568292)
```

This information is not correct. The HELP patch is no longer installed.

This issue is also seen in Fix Pack 9.2.0.1.

For Fix Pack 9.2.0.2, this issue is addressed by APAR IT35052.

An error message is displayed in the IBM MQ Explorer console after IBM MQ 9.2.0.2 is installed with RDQM on Linux 64

When IBM MQ Explorer is launched for the first time and you click the Help contents, the following Error sending IPC message: Broken pipe error is displayed:

```

2021-03-29 02:54:10.526:INFO::Start Help Server: Logging initialized @158546ms to
org.eclipse.jetty.util.log.StdErrLog
2021-03-29 02:54:10.739:INFO:oejs.session:Start Help Server: DefaultSessionIdManager
workerName=node0
2021-03-29 02:54:10.739:INFO:oejs.session:Start Help Server: No SessionScavenger set, using
defaults
2021-03-29 02:54:10.742:INFO:oejs.session:Start Help Server: node0 Scavenging every 660000ms
2021-03-29 02:54:10.804:INFO:oejs.session:Start Help Server: node0 Scavenging every 726000ms
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe
Error sending IPC message: Broken pipe

```

After you close and relaunch IBM MQ Explorer, then click the Help contents, only the following messages are displayed:

```

2021-03-29 02:58:57.631:INFO::Start Help Server: Logging initialized @37325ms to
org.eclipse.jetty.util.log.StdErrLog
2021-03-29 02:58:57.782:INFO:oejs.session:Start Help Server: DefaultSessionIdManager
workerName=node0
2021-03-29 02:58:57.782:INFO:oejs.session:Start Help Server: No SessionScavenger set, using
defaults
2021-03-29 02:58:57.783:INFO:oejs.session:Start Help Server: node0 Scavenging every 600000ms
2021-03-29 02:58:57.835:INFO:oejs.session:Start Help Server: node0 Scavenging every
600000ms

```

These error messages can be ignored.

Changes to default values for some ciphers

The JRE embedded into IBM MQ 9.2.0.2 is updated under APAR IT35540 to the following Java version:

- 8.0.6.26 - AIX, Linux (x86-64, ppcLE, zLinux), Windows

In this JRE, cipher suites that match "DES_CBC" have been disabled. For example, the following cipher suite is disabled:

- SSL_RSA_FIPS_WITH_DES_CBC_SHA

If an application is using this JRE, the application will no longer be able to use this cipher suite, for example if the application is connecting to the queue manager over an SSL/TLS secured channel.

This includes users own applications that use this JRE, and components of IBM MQ that use this JRE, such as:

- IBM MQ Explorer
- MQTT service
- AMQP service
- Managed File Transfer

If you understand the security risk associated with using these disabled cipher suites, and want to re-enable them, then update the following file:

AIX, Linux:

`MQ_INSTALL_ROOT/java/jre64/jre/lib/security/java.security`

Windows:

`MQ_INSTALL_ROOT\java\jre\lib\security\java.security`

and edit the entry for the following property:

```
jdk.tls.disabledAlgorithms
```

to remove the last entry:

```
", DES_CBC"
```

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.0, FIX PACK 1

IBM MQ Explorer installation details are not updated after IBM MQ 9.2.0.1 is uninstalled on Windows

After IBM MQ 9.2.0, Fix Pack 1 is uninstalled on Windows, the information displayed on the **Installed Software** tab of the **IBM MQ Explorer Installation Details** panel still includes the following entry:

```
- HELP Patch (bugzillas 564984)
```

This information is not correct. The HELP patch is no longer installed.

This issue is addressed by APAR IT35052.

Limitations and known problems for Continuous Delivery releases

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.5

There are no new limitations or known problems.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.4

On z/OS, QPST_MSGP020_PUTTIME is added to the QPST control block

As part of the z/OS System Management Facility (SMF) enhancements for IBM MQ 9.2.4, the **QPST_MSGP020_PUTTIME** parameter is added to the QPST control block. However **QPST_MSGP020_PUTTIME** is an internal parameter, and QPST is an externalized control block. In a future release, the **QPST_MSGP020_PUTTIME** parameter will move to an internal control block.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.3

Channel names are blank in MQSC and IBM MQ Explorer after direct migration from IBM MQ 8.0.0.1, 8.0.0.2, or 8.0.0.3

For more information, see LIMITATIONS AND KNOWN PROBLEMS FOR THE INITIAL IBM MQ 9.2.0 RELEASE.

This issue is fixed by APAR IT34332, which is included in IBM MQ 9.2.3. You must apply the fix before you start a migrated queue manager for the first time.

Error messages in the IBM MQ Explorer log after IBM MQ 9.2.3 is installed on Windows

After IBM MQ 9.2.3 is installed on Windows, you might see one of the following error messages in the IBM MQ Explorer log file the first time the IBM MQ Explorer is started.

In both cases, the error message can be ignored.

The log file is here:

```
<USER_Home>\IBM\WebSphereMQ\workspace-<installation_name>\.metadata\.log
```

The following error is being addressed by APAR IT36319:

```
!ENTRY org.eclipse.equinox.http.jetty 4 0 2021-06-24 15:01:50.304
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:
org.eclipse.equinox.http.jetty [302]
    Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
name="org.eclipse.jetty.servlet"; bundle-version="9.4.35.v20201120"; version="9.4.35";
uses:="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
.eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
ource"
        org.eclipse.jetty.servlet [385]
            Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
version="[9.4.35,10.0.0)"; resolution:="optional"
            Unresolved requirement: Import-Package: org.eclipse.jetty.util.ajax;
version="[9.4.35,10.0.0)"
                at org.eclipse.osgi.container.Module.start(Module.java:462)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel$2.run(ModuleContainer.java:18
44)
                at
org.eclipse.osgi.internal.framework.EquinoxContainerAdaptor$1$1.execute(EquinoxContainerAdap
tor.java:136)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1837)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
.java:1778)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleC
ontainer.java:1742)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1664)
                at
org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
.java:1)
                at
org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:234)
                at
org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:345)
```

The following error is being addressed by APAR IT37166:

```
!ENTRY org.eclipse.equinox.http.jetty 4 0 2021-06-24 17:18:34.417
!MESSAGE FrameworkEvent ERROR
!STACK 0
org.osgi.framework.BundleException: Could not resolve module:
```

```

org.eclipse.equinox.http.jetty [302]
  Unresolved requirement: Import-Package: org.eclipse.jetty.servlet;
  version="[9.4.0,10.0.0)"
    -> Export-Package: org.eclipse.jetty.servlet; bundle-symbolic-
  name="org.eclipse.jetty.servlet"; bundle-version="9.4.40.v20210413"; version="9.4.40";
  uses:="javax.servlet,javax.servlet.descriptor,javax.servlet.http,org.eclipse.jetty.http.path
  map,org.eclipse.jetty.security,org.eclipse.jetty.server,org.eclipse.jetty.server.handler,org
  .eclipse.jetty.server.handler.gzip,org.eclipse.jetty.server.session,org.eclipse.jetty.util,o
  rg.eclipse.jetty.util.annotation,org.eclipse.jetty.util.component,org.eclipse.jetty.util.res
  ource"
      org.eclipse.jetty.servlet [385]
        Unresolved requirement: Import-Package: org.eclipse.jetty.jmx;
        version="[9.4.40,10.0.0)"; resolution:="optional"
          Unresolved requirement: Import-Package: org.eclipse.jetty.util.ajax;
          version="[9.4.40,10.0.0)"
            at org.eclipse.osgi.container.Module.start(Module.java:462)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel$2.run(ModuleContainer.java:18
            44)
              at
            org.eclipse.osgi.internal.framework.EquinoxContainerAdaptor$1$1.execute(EquinoxContainerAdap
            tor.java:136)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
            .java:1837)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.incStartLevel(ModuleContainer
            .java:1778)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.doContainerStartLevel(ModuleC
            ontainer.java:1742)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
            .java:1664)
              at
            org.eclipse.osgi.container.ModuleContainer$ContainerStartLevel.dispatchEvent(ModuleContainer
            .java:1)
              at
            org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:234)
              at
            org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:345)

```

Native HA with replication over TLS 1.3: After a failover, replicas might repeatedly connect and disconnect from the active instance

When you run with TLS 1.3, after a failover you might get pairs of messages similar to the following pair:

```

2021-06-24T12:06:14.148Z AMQ3214I: Native HA inbound secure connection accepted from
'<hostname>'. [CommentInsert1(<hostname>), CommentInsert2(<ipaddress>),
CommentInsert3(TLS_CHACHA20_POLY1305_SHA256)]

```

```

2021-06-24T12:06:14.613Z AMQ3222E: Native HA network connection from '<hostname>' ended
unexpectedly. [CommentInsert1(<hostname>), CommentInsert2(<qmgrname>),
CommentInsert3(rrcE_SSL_BAD_RETURN_FROM_GSKIT (14) (????) (gsk_secure_soc_read)
(<ipaddress>))]

```

This issue is being investigated. Until a fix is available, use a plain text or TLS 1.2 connection for replication.

To configure TLS 1.2 for replication traffic, add the following setting to the NativeHALocalInstance stanza of `qm.ini` in each queue manager instance:

```
CipherSpec=ANY_TLS12
```

You can add this information by using the IBM MQ Operator and an ini configmap. See <https://www.ibm.com/docs/ibm-mq/9.2?topic=manager-example-supplying-mqsc-ini-files>.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.2

Changes to default values for some ciphers

The JRE is updated to 8.0.6.25 in this release. By default, this level of the JRE disables ciphers whose algorithms match DES_CBC. For example:

```
SSL_RSA_FIPS_WITH_DES_CBC_SHA
```

To re-enable these ciphers, update your `java/lib/security/java.security` file to remove the algorithm that your cipher uses from the `jdk.tls.disabledAlgorithms` name:value pair.

On Windows, clicking 'IBM MQ Explorer Help' might not open the help system

On Windows systems, some users cannot open IBM MQ Explorer Help, either by clicking **IBM MQ Explorer Help** in the main landing page, or by clicking **Help > Help Contents**.

If the user starting IBM MQ Explorer has write permissions on `MQ_INSTALLATION\MQExplorer\eclipse\configuration\org.eclipse.equinox.simplec`
`onfigurator\bundles.info`, IBM MQ Explorer can resolve the underlying issue.

CCDT Generation within the IBM MQ Console is not available on z/OS

Generating a client channel definition table (CCDT) file in the IBM MQ Console occasionally fails on z/OS when the system attempts to get a list of listeners, requiring the web console to be reloaded in the browser.

Generation of the CCDT file is disabled in the IBM MQ Console on z/OS systems.

LIMITATIONS AND KNOWN PROBLEMS FOR IBM MQ 9.2.1

IBM MQ Messaging Pool Blocking behavior can cause high CPU usage and impact functionality

If the Messaging Pool is configured with "blocking" behavior and the pool size is exhausted, incoming requests enter a "busy-wait" state, polling the pool continually for free connections. If messaging operations performed by requests take significant time, this busy-wait state might be maintained for a significant time. This is because fewer connections are returned to the pool than there are threads waiting.

Depending on operating system time sharing policies, this behavior could lead to excessive CPU consumption by the waiting threads, to the detriment of other activity on the system.

If sufficient requests enter this state, other operations might be impacted. For example, the Liberty server might become unresponsive to new requests, it might not detect and act on configuration changes, or other applications in the server might not be initialized successfully.

Unless you are confident that your pool size is sufficiently large and your messaging requests will complete in suitably short times, you should configure a full pool behavior other than BLOCK. Available options are ERROR and OVERFLOW.

On z/OS systems, if a queue manager restarts during an MFT transfer, the transfer does not complete

When a Managed File Transfer agent on z/OS is connecting to a queue manager on z/OS, and the queue manager is stopped, a connection broken error is received by the agent. However, the agent does not reconnect when the queue manager is restarted.

To resolve this issue, restart the MFT agent.

Limitations and known problems for the initial IBM MQ 9.2.0 release

GTK+ Messages issued by IBM MQ Explorer

In some Linux environments, messages from the GTK+ graphical user interface library might be seen in the UNIX console window from which IBM MQ Explorer was started. For example:

```
(:16073): Gtk-CRITICAL **: 17:09:00.159: gtk_box_gadget_distribute: assertion 'size >= 0'
failed in GtkScrollbar
(:4652): Gtk-WARNING **: 11:28:52.072: Negative content width -1 (allocation 1, extents
1x1) while allocating gadget (node scrolledwindow, owner GtkScrolledWindow)
```

These messages can be ignored. They are caused by errors in the gtk3 libraries, and do not cause any functional failures in IBM MQ Explorer.

Channel names are blank in MQSC and IBM MQ Explorer after direct migration from IBM MQ 8.0.0.1, 8.0.0.2, or 8.0.0.3

When you migrate from IBM MQ 8.0.0 Fix Pack 1, 2 or 3 directly to IBM MQ 9.1.5 or later, channel objects are not migrated correctly when the queue manager is started at the new code level. Channels continue to work normally, but channel names are not displayed by runmqsc or IBM MQ Explorer.

This issue is fixed by APAR IT34332, which is included in IBM MQ 9.2.0 Fix Pack 2 and IBM MQ 9.2.3. You must apply the fix before you start a migrated queue manager for the first time.

IBM MQ AMQP channel does not start automatically with AMQP service after upgrade

When a queue manager with a running AMQP channel is upgraded to IBM MQ 9.2, and the queue manager and associated AMQP service are restarted, the previously running AMQP channel does not start automatically.

This issue is fixed by APAR IT37842, which is included in IBM MQ 9.2.0 Fix Pack 10.

Note that migration runs only once; the first time the queue manager is started after an upgrade. Therefore, after you apply IBM MQ 9.2.0 Fix Pack 10:

- If, prior to installing IBM MQ 9.2.0 Fix Pack 10, you have started the queue manager and AMQP channel on any previous IBM MQ 9.2 level, then the AMQP channel will start automatically. You do not need to take any additional action.
- If, prior to installing IBM MQ 9.2.0 Fix Pack 10, you have not started the queue manager and AMQP channel on any previous IBM MQ 9.2 level, then any previously running AMQP channels must be restarted manually when the queue manager and associated AMQP service are restarted.

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IBM MQ 9.2 Quick Start Guide (Long Term Support)

Use this guide to get started with IBM MQ 9.2.

National Language Version

To obtain the Quick Start Guide in other languages, print the language-specific PDF from the installation media.

Product overview

IBM MQ is robust messaging middleware that simplifies and accelerates the integration of diverse applications and business data across multiple platforms. IBM MQ facilitates the assured, secure and reliable exchange of information between applications, systems, services and files by sending and receiving message data via messaging queues, thereby simplifying the creation and maintenance of business applications. It delivers Universal Messaging with a broad set of offerings to meet enterprise-wide messaging needs, and can be deployed across a range of different environments including on-premises, in cloud environments and supporting hybrid cloud deployments.

IBM MQ supports a number of different application programming interfaces (APIs) including Message Queue Interface (MQI), Java Message Service (JMS), .NET, AMQP, MQTT, and the messaging REST API.

Access the software and documentation

This product offering includes the following items:

- A Quick Start DVD that contains this Quick Start Guide in US English and other national languages.
- For each supported platform, a DVD that contains the code for runtime components and other required products.

If you download your product from Passport Advantage, see [Downloading IBM MQ 9.2 \(https://www.ibm.com/support/pages/downloading-ibm-mq-92\)](https://www.ibm.com/support/pages/downloading-ibm-mq-92) and the [Passport Advantage and Passport Advantage Express \(https://www.ibm.com/software/passportadvantage/\)](https://www.ibm.com/software/passportadvantage/) website for more information.

Note:

1. The non-install packages are provided only for building container images and are not supported for any other use cases. The packages are made available on IBM Fix Central at <http://ibm.biz/mq92noninstallqmgr>.

Product documentation for all supported versions of IBM MQ is available through [IBM Documentation \(https://www.ibm.com/docs/ibm-mq\)](https://www.ibm.com/docs/ibm-mq). Specifically, the IBM MQ 9.2 product documentation is also available in [IBM Documentation \(https://www.ibm.com/docs/ibm-mq/9.2\)](https://www.ibm.com/docs/ibm-mq/9.2).

Service and support information is provided in the documentation.

Information about how to use IBM MQ Explorer can be accessed either from within IBM MQ Explorer or in the product documentation.

Evaluate the hardware and system configuration

For details of hardware and software requirements on all supported platforms, see the [System Requirements](https://www.ibm.com/support/pages/node/318077) web page (<https://www.ibm.com/support/pages/node/318077>).

Review the installation architecture

IBM MQ architectures range from simple architectures that use a single queue manager, to more complex networks of interconnected queue managers. For more information about planning your IBM MQ architecture, see the Planning section of the IBM MQ 9.2 documentation (https://www.ibm.com/docs/SSFKSJ_9.2.0/com.ibm.mq.pla.doc/q004690_.html).

For links to additional information, see the IBM MQ family information roadmap (https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html).

Installing the product on a server

For installation instructions for IBM MQ on all supported platforms, and for details of the hardware and software configurations that are required, see the Installing section of the IBM MQ 9.2 documentation (https://www.ibm.com/docs/SSFKSJ_9.2.0/com.ibm.mq.ins.doc/q008250_.html).

Get started

For information to help you get started with IBM MQ, see the IBM MQ family information roadmap (https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html).

More information

For more information about IBM MQ, see the following resources:

IBM FAQ for Long Term Support and Continuous Delivery releases

From IBM MQ 9.0, IBM MQ introduced a Continuous Delivery (CD) support model. Following the initial release of a new version, new function and enhancements are made available by incremental updates within the same version and release. There is also a Long Term Support release available for deployments that require security and defect fixes only. For more information, see [IBM MQ FAQ for Long Term Support and Continuous Delivery releases](https://www.ibm.com/support/pages/node/713169) (<https://www.ibm.com/support/pages/node/713169>).

Online product readme file

The latest version of the online product readme file is available on the [IBM MQ product readmes web page](https://www.ibm.com/support/pages/node/317955) (<https://www.ibm.com/support/pages/node/317955>).

IBM Support information

Support information includes the following resources:

- [IBM Support website](https://www.ibm.com/mysupport/) (<https://www.ibm.com/mysupport/>)
- [IBM Support Assistant](https://www.ibm.com/support/home/product/C100515X13178X21/other_software/ibm_support_assistant) (https://www.ibm.com/support/home/product/C100515X13178X21/other_software/ibm_support_assistant)
- [Social Media Channels within Cloud Technical Support](https://www.ibm.com/support/pages/node/131651#2) (<https://www.ibm.com/support/pages/node/131651#2>)

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IBM MQ 9.2.x Quick Start Guide (Continuous Delivery)

Use this guide to get started with IBM MQ 9.2.

National Language Version

The Quick Start Guide is available in other languages from the Quick Start Guide eImage.

Product overview

IBM MQ is robust messaging middleware that simplifies and accelerates the integration of diverse applications and business data across multiple platforms. IBM MQ facilitates the assured, secure and reliable exchange of information between applications, systems, services and files by sending and receiving message data via messaging queues, thereby simplifying the creation and maintenance of business applications. It delivers Universal Messaging with a broad set of offerings to meet enterprise-wide messaging needs, and can be deployed across a range of different environments including on-premises, in cloud environments and supporting hybrid cloud deployments.

IBM MQ supports a number of different application programming interfaces (APIs) including Message Queue Interface (MQI), Java Message Service (JMS), .NET, IBM MQ Light, MQTT, and the messaging REST API.

Access the software and documentation

For distributed platforms, this product offering provides the following items, which are available from Passport Advantage:

- Server and Trial eAssemblies for the full release on all supported platforms. The eImages that make up the full release can be downloaded individually if you do not need the full release. For more information, see [Downloading IBM MQ 9.2 \(https://www.ibm.com/support/pages/node/6027838\)](https://www.ibm.com/support/pages/node/6027838).
- A Quick Start Guide eImage. A Quick Start Guide PDF file can also be downloaded from https://public.dhe.ibm.com/software/integration/wmq/docs/V9.2/QuickStartGuide/mq92cdr_qsg_en.pdf. Alternatively, the Quick Start Guide is available in HTML format from [IBM Documentation \(https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-92x-quick-start-guide-continuous-delivery\)](https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-92x-quick-start-guide-continuous-delivery).

For more information about downloading the product from Passport Advantage, see [Downloading IBM MQ 9.2 \(https://www.ibm.com/support/pages/node/6027838\)](https://www.ibm.com/support/pages/node/6027838) and the [Passport Advantage and Passport Advantage Express website \(https://www.ibm.com/software/passportadvantage/\)](https://www.ibm.com/software/passportadvantage/).

Online documentation for all supported versions of IBM MQ is available through [IBM Documentation \(https://www.ibm.com/docs/ibm-mq\)](https://www.ibm.com/docs/ibm-mq). Specifically, the IBM MQ 9.2 documentation is available in [IBM Documentation \(https://www.ibm.com/docs/ibm-mq/9.2\)](https://www.ibm.com/docs/ibm-mq/9.2).

The IBM MQ 9.2 documentation is also available as a set of PDF files that can be downloaded from <https://public.dhe.ibm.com/software/integration/wmq/docs/V9.2/PDFs/>.

Information about how to use IBM MQ Explorer can be accessed either from within IBM MQ Explorer or in the IBM MQ 9.2 product information.

Evaluate the hardware and system configuration

For details of hardware and software requirements on all supported platforms, see the [System Requirements for IBM MQ web page \(https://www.ibm.com/support/pages/node/318077\)](https://www.ibm.com/support/pages/node/318077).

Review the installation architecture

IBM MQ architectures range from simple architectures that use a single queue manager, to more complex networks of interconnected queue managers. For more information about planning your IBM MQ architecture, see the [Planning section](https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-planning) of the IBM MQ 9.2 documentation (<https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-planning>).

For links to additional information, see the IBM MQ family information roadmap (https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html).

Installing the product on a server

For installation instructions for IBM MQ on all supported platforms, and for details of the hardware and software configurations that are required, see the [Installing section](https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-installing-uninstalling) of the IBM MQ 9.2 documentation (<https://www.ibm.com/docs/ibm-mq/9.2?topic=mq-installing-uninstalling>).

Get started

For information to help you get started with IBM MQ, see the IBM MQ family information roadmap (https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html).

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Online product readme file

The latest version of the online product readme file is available on the [IBM MQ product readmes web page](https://www.ibm.com/support/pages/node/317955) (<https://www.ibm.com/support/pages/node/317955>).

IBM Support information

Support information includes the following resources:

- [IBM MQ for Multiplatforms Support web page](http://ibm.biz/mqsupport) (<http://ibm.biz/mqsupport>)
- [IBM MQ for z/OS Support web page](https://www.ibm.com/mysupport/s/topic/0TO0z0000006k52GAA/mq-for-zos) (<https://www.ibm.com/mysupport/s/topic/0TO0z0000006k52GAA/mq-for-zos>)
- [IBM Cloud Pak for Integration Support web page](https://www.ibm.com/mysupport/s/topic/0TO0z000000YsIrGAK/cloud-pak-for-integration) (<https://www.ibm.com/mysupport/s/topic/0TO0z000000YsIrGAK/cloud-pak-for-integration>)
- [IBM Support Assistant](https://www.ibm.com/support/home/product/C100515X13178X21/other_software/ibm_support_assistant) (https://www.ibm.com/support/home/product/C100515X13178X21/other_software/ibm_support_assistant)
- [Social Media Channels within Cloud Technical Support](https://www.ibm.com/support/pages/node/131651#2) (<https://www.ibm.com/support/pages/node/131651#2>)

Notices

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IBM MQ family information roadmap

This roadmap helps you navigate through high-level information about IBM MQ. The roadmap has moved to the latest version of the product.

Note: THIS ROADMAP HAS MOVED. To see the latest version, click here: [IBM MQ family information roadmap \(https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html\)](https://www.ibm.com/docs/SSFKSJ_latest/overview/mq-family-roadmap.html).

IBM MQ 9.2 information roadmap

This roadmap provides two sets of maps that help you navigate particular aspects of IBM MQ 9.2. There is a map for each product-level task (for example Installing; Securing; Configuring; Troubleshooting), and a map for each product feature (for example Managed File Transfer; Internet Pass-Thru; Aspera gateway).

For product-level tasks, click the following links to see what resources are available. For product features, click the subtopic links at the end of this roadmap.

- [Product overview](#)
- [Technical overview](#)
- [Scenarios](#)
- [Planning](#)
- [Migrating and upgrading](#)
- [Installing](#)
- [Security](#)
- [Configuring](#)
- [Administering](#)
- [Developing applications](#)
- [Monitoring and performance](#)
- [Troubleshooting and support](#)
- [Reference](#)



Table 8. IBM MQ information roadmap for product-level categories

Category	Information resources
About IBM MQ	<p>Overview of the overall purpose, capabilities, and new features of IBM MQ.</p> <p>❄️ <u>“About IBM MQ” on page 5</u> Introductory information to help you get started with IBM MQ 9.2, including an introduction to the product and an overview of what is new and what is changed for this version of the product.</p> <p><u>Learning path: IBM MQ Developer Essentials Badge on the IBM Developer website</u> Tutorials to help you get started with IBM MQ.</p> <p><u>IBM MQ product web page</u> Product web page with links to resources and additional information.</p> <p><u>IBM MQ system requirements</u> Web page with links to the system requirements for the different releases of IBM MQ.</p> <p><u>“IBM MQ 9.2 in the IBM Documentation Offline app” on page 203</u> You can download IBM MQ 9.2 messaging documentation into an offline version of IBM Documentation that you install locally.</p> <p><u>IBM MQ 9.2 PDF documentation</u> You can download IBM MQ 9.2 product documentation as a series of PDF files.</p>
Technical overview	<p>❄️ <u>Technical overview</u> Information to help you to find out about message queuing and other features that IBM MQ provides.</p>
Scenarios	<p>Each scenario takes you through a significant set of tasks, and helps you to configure a major product feature. The scenarios include useful links to other content to help you to gain a better understanding of the area in which you are interested. The <i>Getting started</i> scenario explains how to get started with IBM MQ. Use this scenario if you have not used IBM MQ before and want to get started quickly. Further scenarios help you to configure or use product features by taking you through the appropriate task steps.</p>
Planning	<p>❄️ <u>Planning</u> When planning your IBM MQ environment, consider the support that IBM MQ provides for single and multiple queue manager architectures, and for point-to-point and publish/subscribe messaging styles. Also plan your resource requirements, and your use of logging and backup facilities.</p>

Table 8. IBM MQ information roadmap for product-level categories (continued)

Category	Information resources
Migrating and upgrading	<p>❄ <u>Maintaining and migrating</u> Migration is the process of updating queue managers, and other objects, such as applications or administrative procedures. To migrate a queue manager to run on a new level of code, you must first upgrade IBM MQ to install the new code level. When you have verified that the upgrade is successful, migrate the queue manager and all the applications and resources that are associated with it. Before you start this process, create a migration plan, based on the information in this documentation.</p> <p>► Multi</p> <p><u>IBM WebSphere MQ / IBM MQ Migration Guide</u> This guide provides information to help you plan the process of migrating from an older version to a new version of IBM MQ for Multiplatforms. You can either view the guide in your web browser or download it as a PDF file.</p> <p>► z/OS</p> <p><u>IBM WebSphere MQ / IBM MQ for z/OS Migration Guide</u> This guide provides information to help you plan the process of migrating from an older version to a new version on z/OS. You can either view the guide in your web browser or download it as a PDF file.</p>
Installing	<p>❄ <u>Installing and uninstalling</u> Information to help you to prepare for installation, install the product, and verify the installation. There is also information to help you to uninstall the product.</p>
Security	<p>❄ <u>Securing</u> Aspects of security to consider in your IBM MQ installation including identification and authentication, authorization, auditing, confidentiality, and data integrity.</p>
Configuring	<p>❄ <u>Configuring</u> Create one or more queue managers on one or more computers, and configure them and their related resources on your development, test, and production systems to process messages that contain your business data.</p>
Administering	<p>❄ <u>Administering IBM MQ</u> Administer your queue managers and associated resources.</p>
Developing applications	<p>❄ <u>Developing applications</u> Develop applications to send and receive messages, and to manage your queue managers and related resources. IBM MQ support applications written in procedural languages, and object oriented languages and frameworks.</p>
Monitoring and performance	<p>❄ <u>Monitoring and performance</u> Monitoring information and guidance to help improve the performance of your queue manager network and tuning tips to help improve the performance of your queue manager network.</p>

Table 8. IBM MQ information roadmap for product-level categories (continued)

Category	Information resources
Troubleshooting and support	<p> Troubleshooting and support Techniques to help you diagnose and solve problems with your queue manager network or IBM MQ applications.</p> <p>IBM Support Assistant web page The IBM Support Assistant (ISA) helps you to resolve questions and problems with IBM software products by providing access to support-related information and troubleshooting tools.</p> <p>IBM Support Portal web page IBM Support Portal for IBM MQ.</p> <p>IBM Support Forums Search for "MQ".</p>
Reference	<p> Reference Reference information for configuration, administration, developing applications, telemetry, security, monitoring, troubleshooting and support, and diagnostic messages.</p>

[Windows](#) [Linux](#) [MQ Adv.](#) [MQ Adv. VUE](#) **Aspera gateway roadmap**

This roadmap provides a clickable index to the Aspera gateway topics in this documentation set. The aim is to help you find all topics that describe this feature, no matter how scattered those topics are across the product-level tasks in the IBM Documentation main navigation tree.

Aspera gateway-specific topics in the IBM MQ documentation:

- [Defining an Aspera gateway connection on Linux or Windows](#)
- [Aspera gateway can improve performance over high latency networks](#)

Full Aspera gateway documentation is in a separate collection in IBM Documentation:

- [IBM Aspera fasp.io Gateway V1.0.0 documentation](#)

All the following IBM MQ topics refer to the Aspera gateway, and link to [Defining an Aspera gateway connection on Linux or Windows](#):

- [Which communication type to use](#)
- [Message channel planning example for UNIX, Linux, and Windows](#)
- [Message channel planning example for IBM i](#)
- [Message channel planning example for z/OS](#)
- [Setting up communication on UNIX and Linux](#)
- [Setting up communication on Windows](#)
- [Setting up communication for IBM i](#)
- [Setting up communication for z/OS](#)
- [Defining a TCP connection on Windows](#)
- [Defining a TCP connection on UNIX and Linux](#)
- [Defining a TCP connection on IBM i](#)
- [Defining a TCP connection on z/OS](#)

IBM MQ Internet Pass-Thru roadmap

This roadmap provides a clickable index to the IBM MQ Internet Pass-Thru topics in this documentation set. The aim is to help you find all topics that describe this feature, no matter how scattered those topics are across the product-level tasks in the IBM Documentation main navigation tree.

- About IBM MQ
 - [“IBM MQ license information” on page 9](#) (entitlement for installing IBM MQ Internet Pass-Thru)
- Technical overview
 - [IBM MQ Internet Pass-Thru](#) (and subtopics)
- Scenarios
 - [Getting started with IBM MQ Internet Pass-Thru](#) (and subtopics)
- Maintaining and migrating
 - [Migrating IBM MQ Internet Pass-Thru](#)
- Installing and uninstalling
 - [Installing and uninstalling IBM MQ Internet Pass-Thru](#) (and subtopics)
- Securing
 - Planning for your security requirements
 - [Firewalls and Internet pass-thru](#) (and subtopics)
- Configuring
 - [Configuring IBM MQ Internet Pass-Thru](#) (and subtopics)
- Administering
 - [Administering and configuring IBM MQ Internet Pass-Thru](#) (and subtopics)
- Troubleshooting and support
 - [Troubleshooting IBM MQ Internet Pass-Thru](#) (and subtopics)
- Reference
 - Configuration reference
 - [IBM MQ Internet Pass-Thru configuration reference](#) (and subtopics)
 - Administration reference
 - [IBM MQ Internet Pass-Thru commands reference](#) (and subtopics)
 - Messages
 - [IBM MQ Internet Pass-Thru messages](#) (and subtopics)

Managed File Transfer roadmap

This roadmap provides a clickable index to the Managed File Transfer topics in this documentation set. The aim is to help you find all topics that describe this feature, no matter how scattered those topics are across the product-level tasks in the IBM Documentation main navigation tree.

- About IBM MQ
 - [“IBM MQ license information” on page 9](#) (entitlement for installing Managed File Transfer)
- Technical overview
 - [Managed File Transfer introduction](#) (and subtopics)
- Scenarios
 - [Managed File Transfer scenario](#) (and subtopics)
- Maintaining and migrating

- Migrating IBM MQ
 - Changes that affect migration
 - [Considerations when migrating from FTE to MFT](#)
 - [Migrating an FTE V7.0 database logger to MQ V7.5 or later](#)
 - [Migrating MFT: Increasing the log db page size for Db2 on UNIX, Linux, and Windows](#)
 - [Migrating Managed File Transfer agents from an earlier version](#)
 - [Migrating MFT to a new machine with a different operating system](#)
- Installing and uninstalling
 - Installing IBM MQ Advanced for Multiplatforms
 - [Installing Managed File Transfer \(and subtopics\)](#)
 - Installing IBM MQ Advanced for z/OS
 - [Installing IBM MQ Advanced for z/OS \(includes instructions for installing MFT on z/OS\)](#)
- Securing
 - [Securing Managed File Transfer \(and subtopics\)](#)
- Configuring
 - [Configuring Managed File Transfer \(and subtopics\)](#)
- Administering
 - [Administering Managed File Transfer \(and subtopics\)](#)
- Developing applications
 - [Developing applications for Managed File Transfer \(and subtopics\)](#)
- Troubleshooting and support
 - [Troubleshooting Managed File Transfer \(and subtopics\)](#)
- Reference
 - Configuration reference
 - [Managed File Transfer configuration reference \(and subtopics\)](#)
 - Administration reference
 - [Managed File Transfer administration reference \(and subtopics\)](#)
 - The topic [Tracing MFT commands](#) has been moved from the Troubleshooting and Support section of the documentation.
 - Developing applications reference
 - [Managed File Transfer developing applications reference \(and subtopics\)](#)
 - Security reference
 - [Managed File Transfer security reference \(and subtopics\)](#)
 - Messages
 - [MFT messages \(and subtopics\)](#)

IBM MQ Telemetry roadmap

This roadmap provides a clickable index to the MQ Telemetry topics in this documentation set. The aim is to help you find all topics that describe this feature, no matter how scattered those topics are across the product-level tasks in the IBM Documentation main navigation tree.

- About IBM MQ
 - [“IBM MQ license information” on page 9 \(entitlement for installing MQ Telemetry\)](#)

- Technical overview
 - [IBM MQ Telemetry](#) (and subtopics)
- Installing and uninstalling
 - Installing IBM MQ Advanced for Multiplatforms
 - [Installing MQ Telemetry](#) (and subtopics)
- Administering
 - [Administering MQ Telemetry](#) (and subtopics)
- Developing applications
 - [Developing applications for MQ Telemetry](#) (and subtopics)
- Troubleshooting and support
 - [MQ Telemetry troubleshooting](#) (and subtopics)
- Reference
 - Administration reference
 - MQSC commands
 - [ALTER CHANNEL \(MQTT\)](#)
 - [DEFINE CHANNEL \(MQTT\)](#)
 - [DELETE CHANNEL \(MQTT\)](#)
 - [DISPLAY CHANNEL \(MQTT\)](#)
 - [DISPLAY CHSTATUS \(MQTT\)](#)
 - [START CHANNEL \(MQTT\)](#)
 - [STOP CHANNEL \(MQTT\)](#)
 - Programmable command formats reference
 - Definitions of the Programmable Command Formats
 - [Change, Copy, and Create Channel \(MQTT\)](#)
 - [Delete Channel \(MQTT\)](#)
 - [Inquire Channel \(MQTT\)](#)
 - [Inquire Channel Status \(MQTT\)](#)
 - [Inquire Channel Status \(Response\) \(MQTT\)](#)
 - [Start Channel \(MQTT\)](#)
 - [Stop Channel \(MQTT\)](#)
 - [MQ Telemetry Reference](#) (and subtopics)
 - Messages
 - [Telemetry messages](#)

IBM MQ 9.2 in the IBM Documentation Offline app

If you are in an airgap environment without access to the internet, use our Dark Shop app "IBM Documentation Offline" to view downloads of the IBM MQ 9.2 product documentation.

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- **The documentation packages that you install into the IBM Documentation Offline app.** These packages contain the same documentation as is published online in IBM Documentation.

To download the app, and the IBM MQ 9.2 documentation package, you need to log in to IBM Documentation. For more information, see [IBM Documentation Offline](#).

IBM MQ 9.2 PDF files for product documentation and Program Directories

You can download the IBM MQ 9.2 product documentation, and the IBM MQ for z/OS Program Directories, in PDF format.

IBM MQ 9.2 product documentation PDF files

The IBM MQ 9.2 PDF files contain the same information as the HTML version of the product documentation published in IBM Documentation. You can download them by clicking the links in the following table.

Note: You can also download the IBM MQ 9.2 product documentation in HTML format into an offline version of IBM Documentation that you install locally. For more information, see [“IBM MQ 9.2 in the IBM Documentation Offline app”](#) on page 203.



Table 9. PDF files for the product documentation and how they correspond to the sections in IBM Documentation	
PDF file name and download link	Equivalent section in IBM Documentation
mq92_readme_en.pdf Translations of this readme file are available to download here .	Readme for IBM MQ 9.2 and its maintenance
 mq92_qsg_en.pdf Translations of this Quick Start Guide are available to download here .	IBM MQ 9.2.0 Quick Start Guide (Long Term Support)
 mq92cdr_qsg_en.pdf Translations of this Quick Start Guide are available to download here .	IBM MQ 9.2.x Quick Start Guide (Continuous Delivery)
mq92.overview.pdf Translations of this PDF, and the PDFs in subsequent rows in this table, are available to download here .	About IBM MQ
mq92.techoview.pdf	Technical overview
mq92.scenarios.pdf	Scenarios
mq92.plan.pdf	Planning for IBM MQ
mq92.migrate.pdf	Maintaining and migrating IBM MQ
mq92.install.pdf	Installing and uninstalling IBM MQ
mq92.secure.pdf	Securing IBM MQ
mq92.configure.pdf	Configuring IBM MQ
mq92.administer.pdf	Administering IBM MQ
mq92.develop.pdf	Developing applications for IBM MQ
mq92.monitor.pdf	Monitoring and performance for IBM MQ

Table 9. PDF files for the product documentation and how they correspond to the sections in IBM Documentation (continued)

PDF file name and download link	Equivalent section in IBM Documentation
mq92.troubleshoot.pdf	Troubleshooting and support for IBM MQ
mq92.reference.pdf	IBM MQ Reference
mq92.refconfig.pdf	IBM MQ Configuration reference
mq92.refadmin.pdf	IBM MQ Administration reference
mq92.refdev.pdf	IBM MQ Developing applications reference
mq92.explorer.pdf	IBM MQ Explorer
mq92.container.pdf	IBM MQ in containers

Note: The PDF files must be in the same folder for links between PDF files to function correctly.

IBM MQ for z/OS Program Directory PDF files



The following IBM MQ for z/OS 9.2.0 Program Directory documents for Long Term Support are available for download as PDF files :

- [Program directory for IBM MQ for z/OS Long Term Support 9.2.0 \(GI13-4449-01\)](#)
- [Program directory for IBM MQ for z/OS Value Unit Edition Long Term Support 9.2.0 \(GI13-4450-00\)](#)
- [Program directory for IBM MQ Advanced for z/OS Long Term Support 9.2.0 \(GI13-4451-01\)](#)
- [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Long Term Support 9.2.0 \(GI13-4452-02\)](#)



The following IBM MQ for z/OS 9.2.x Program Directory documents for Continuous Delivery are available for download as PDF files:

- Program directory for IBM MQ for z/OS Continuous Delivery 9.2.x
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.0 \(GI13-4453-00\)](#)
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.1 \(GI13-4453-01\)](#)
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.2 \(GI13-4453-02\)](#)
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.3 \(GI13-4453-03\)](#)
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.4 \(GI13-4453-04\)](#)
 - [Program directory for IBM MQ for z/OS Continuous Delivery 9.2.5 \(GI13-4453-05\)](#)
- Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.x
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.0 \(GI13-4454-00\)](#)
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.1 \(GI13-4454-01\)](#)
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.2 \(GI13-4454-02\)](#)
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.3 \(GI13-4454-03\)](#)
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.4 \(GI13-4454-04\)](#)
 - [Program directory for IBM MQ for z/OS Value Unit Edition Continuous Delivery 9.2.5 \(GI13-4454-05\)](#)
- Program directory for IBM MQ Advanced for z/OS Continuous Delivery 9.2.x
 - [Program directory for IBM MQ Advanced for z/OS Continuous Delivery 9.2.0 \(GI13-4455-00\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Continuous Delivery 9.2.1 \(GI13-4455-01\)](#)
 - [Program directory for IBM MQ Advanced for z/OS 9.3.x Continuous Delivery 9.2.2 \(GI13-4455-02\)](#)

- [Program directory for IBM MQ Advanced for z/OS 9.3.x Continuous Delivery 9.2.3 \(GI13-4455-03\)](#)
- [Program directory for IBM MQ Advanced for z/OS 9.3.x Continuous Delivery 9.2.4 \(GI13-4455-04\)](#)
- [Program directory for IBM MQ Advanced for z/OS 9.3.x Continuous Delivery 9.2.5 \(GI13-4455-05\)](#)
- Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.x
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.0 \(GI13-4456-00\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.1 \(GI13-4456-01\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.2 \(GI13-4456-02\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.3 \(GI13-4456-03\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.4 \(GI13-4456-04\)](#)
 - [Program directory for IBM MQ Advanced for z/OS Value Unit Edition Continuous Delivery 9.2.5 \(GI13-4456-05\)](#)

Glossary

This glossary provides terms and definitions for the IBM MQ software and products.

The following cross-references are used in this glossary:

- *See* refers you from a nonpreferred term to the preferred term or from an abbreviation to the spelled-out form.
- *See also* refers you to a related or contrasting term.

[“A” on page 206](#) [“B” on page 209](#) [“C” on page 210](#) [“D” on page 215](#) [“E” on page 217](#) [“F” on page 218](#) [“G” on page 219](#) [“H” on page 220](#) [“I” on page 220](#) [“J” on page 223](#) [“K” on page 224](#) [“L” on page 224](#) [“M” on page 226](#) [“N” on page 230](#) [“O” on page 231](#) [“P” on page 232](#) [“Q” on page 235](#) [“R” on page 236](#) [“S” on page 239](#) [“T” on page 244](#) [“U” on page 246](#) [“V” on page 247](#) [“W” on page 247](#) [“X” on page 247](#)

A

abend reason code

A 4-byte hexadecimal code that uniquely identifies a problem with a program that runs on the z/OS operating system.

abstract class

In object-oriented programming, a class that represents a concept; classes derived from it represent implementations of the concept. An object cannot be constructed from an abstract class; that is, it cannot be instantiated. See also [parent class](#).

Abstract Syntax Notation One (ASN.1)

The international standard for defining the syntax of information data. It defines a number of simple data types and specifies a notation for referencing these types and for specifying values of these types. The ASN.1 notations can be applied whenever it is necessary to define the abstract syntax of information without constraining in any way how the information is encoded for transmission.

access control

In computer security, the process of ensuring that users can access only those resources of a computer system for which they are authorized.

access control list (ACL)

In computer security, a list associated with an object that identifies all the subjects that can access the object and their access rights.

ACL

See [access control list](#).

active log

A data set with a fixed size where recovery events are recorded as they occur. When the active log is full, the contents of the active log are copied to the archive log.

active queue manager instance

The instance of a running multi-instance queue manager that is processing requests. There is only one active instance of a multi-instance queue manager.

adapter

An intermediary software component that allows two other software components to communicate with one another.

address space

The range of addresses available to a computer program or process. Address space can refer to physical storage, virtual storage, or both. See also [allied address space](#), [buffer pool](#).

administration bag

In the IBM MQ Administration Interface (MQAI), a type of data bag that is created for administering IBM MQ by implying that it can change the order of data items, create lists, and check selectors within a message.

administrative topic object

An object that allows you to assign specific, non-default attributes to topics.

administrator command

A command used to manage IBM MQ objects, such as queues, processes, and namelists.

Advanced Message Queuing Protocol (AMQP)

An open-source wire protocol that is used to receive, queue, route, and deliver messages.

Advanced Program-to-Program Communication (APPC)

An implementation of the SNA LU 6.2 protocol that allows interconnected systems to communicate and share the processing of programs.

affinity

An association between objects that have some relationship or dependency upon each other.

alert

A message or other indication that signals an event or an impending event that meets a set of specified criteria.

alert monitor

In IBM MQ for z/OS, a component of the CICS® adapter that handles unscheduled events occurring as a result of connection requests to IBM MQ for z/OS.

alias queue

An IBM MQ object, the name of which is an alias for a base queue or topic that is defined to the local queue manager. When an application or a queue manager uses an alias queue, the alias name is resolved and the requested operation is performed on the associated base object. For further information, see [Alias queues](#).

alias queue object

An IBM MQ object, the name of which is an alias for a base queue defined to the local queue manager. When an application or a queue manager uses an alias queue, the alias name is resolved and the requested operation is performed on the associated base queue.

allied address space

A z/OS address space that is connected to IBM MQ for z/OS.

ally

See [allied address space](#).

alternate user authority

The ability of a user ID to supply a different user ID for security checks. When an application opens an IBM MQ object, it can supply a user ID on the MQOPEN, MQPUT1, or MQSUB call that the queue manager uses for authority checks instead of the one associated with the application. For further information, see the topic [Alternate user authority](#).

alternate user security

On z/OS, the authority checks that are performed when an application requests alternate user authority when opening an IBM MQ object.

AMQP

See [Advanced Message Queuing Protocol](#).

AMQP channel

A type of channel that provides a level of support for AMQP 1.0-compliant applications. MQ Light clients or other AMQP 1.0 compatible clients can be connected to an IBM MQ AMQP channel.

APAR

See [authorized program analysis report](#).

APF

See [authorized program facility](#).

API-crossing exit

A user written program that is similar in concept to an API exit. It is supported only for CICS applications on IBM MQ for z/OS.

API exit

A user-written program that monitors or modifies the function of an MQI call. For each MQI call issued by an application, the API exit is called before the queue manager starts to process the call and again after the queue manager has completed processing the call. The API exit can inspect and modify any of the parameters on the MQI call.

APPC

See [Advanced Program-to-Program Communication](#).

application-defined format

Application data in a message for which the user application defines the meaning. See also [built-in format](#).

application environment

The environment that includes the software and the server or network infrastructure that supports it.

application level security

The security services that are started when an application issues an MQI call.

application log

In Windows systems, a log that records significant application events.

application queue

A local queue that is used by applications for messaging, through the Message Queue Interface (MQI). Application queues are often set up as triggered queues.

archive log

A data set on a storage device to which IBM MQ copies the contents of each active log data set when the active log reaches its size limit. See also [recovery log](#).

ARM

See [automatic restart manager](#).

ASN.1

See [Abstract Syntax Notation One](#).

asymmetric key cryptography

A system of cryptography that uses two keys: a public key known to everyone and a private key known only to the receiver or sender of the message. See also [symmetric key cryptography](#). For further information, see the topic [Cryptography](#).

asynchronous consumption

A process that uses a set of MQI calls that allow an application to consume messages from a set of queues. Messages are delivered to the application by using a unit of code identified by the application, passing either the message or a token representing the message.

asynchronous messaging

A method of communication between programs in which a program places a message on a message queue, then proceeds with its own processing without waiting for a reply to its message. See also [synchronous messaging](#).

asynchronous put

A put of a message by an application, without waiting for a response from the queue manager.

attribute

1. A characteristic or trait of an entity that describes the entity; for example, the telephone number of an employee is one of the employee attributes. See also [entity](#).
2. In object-oriented programming, a property of an object or class that can be distinguished distinctly from any other properties. Attributes often describe state information.

authentication

A security service that provides proof that a user of a computer system is genuinely who that person claims to be. Common mechanisms for implementing this service are passwords and digital signatures.

authentication information object

An object that provides the definitions needed to check certificate revocation lists (CRLs) using LDAP servers, in support for Secure Sockets Layer (SSL) security.

authority check

See [authorization check](#).

authorization

The process of granting a user, system, or process either complete or restricted access to an object, resource, or function.

authorization check

A security check that is performed when a user or application attempts to access a system resource; for example, when an administrator attempts to issue a command to administer IBM MQ or when an application attempts to connect to a queue manager.

authorization file

A file that provides security definitions for an object, a class of objects, or all classes of objects.

authorization service

In IBM MQ on AIX and Linux systems and IBM MQ for Windows, a service that provides authority checking of commands and MQI calls for the user identifier associated with the command or call.

authorized program analysis report (APAR)

A request for correction of a defect in a supported release of a program supplied by IBM.

authorized program facility (APF)

In a z/OS environment, a facility that permits the identification of programs that are authorized to use restricted functions.

automatic restart manager (ARM)

A z/OS recovery function that can automatically restart batch jobs and started tasks after they or the system on which they are running end unexpectedly.

B

backout

An operation that reverses all changes to resources made during the current unit of work. See also [commit](#).

bag

See [data bag](#).

bar

A z/OS memory limit, which in 64-bit systems is set at 2 GB. The bar separates storage below the 2-gigabyte address from storage above the 2 GB address. The area above the bar is intended for data; no programs run above the bar.

basic mapping support (BMS)

An interface between CICS and application programs that formats input and output display data and routes multiple-page output messages without regard for control characters used by various terminals.

behavior

In object-oriented programming, the functionality embodied within a method.

BMS

See [basic mapping support](#).

Booch methodology

An object-oriented methodology that helps users design systems using the object-oriented paradigm.

bootstrap data set (BSDS)

A VSAM data set that contains an inventory of all active and archived log data sets known to IBM MQ for z/OS, and a wrap-around inventory of all recent IBM MQ for z/OS activity. The BSDS is required to restart the IBM MQ for z/OS subsystem.

browse

In message queuing, to copy a message without removing it from the queue. See also [get](#), [put](#).

browse cursor

In message queuing, an indicator used when browsing a queue to identify the message that is next in sequence.

BSDS

See [bootstrap data set](#).

buffer pool

An area of memory into which data pages are read and in which they are modified and held during processing. See also [address space](#).

built-in format

Application data in a message for which the queue manager defines the meaning. See also [application-defined format](#).

C

CA

See [certificate authority](#).

CAF

See [client attachment feature](#).

callback

A message consumer or an event handler routine.

CCDT

See [client channel definition table](#).

CCF

See [channel control function](#).

CCSID

See [coded character set identifier](#).

CDF

See [channel definition file](#).

certificate authority (CA)

A trusted third-party organization or company that issues the digital certificates. The certificate authority typically verifies the identity of the individuals who are granted the unique certificate. See also [Secure Sockets Layer](#). For further information, see the topic [Certificate Authorities](#).

certificate chain

A hierarchy of certificates that are cryptographically related to one another, starting with the personal certificate and ending with root at the top of the chain.

certificate expiration

A digital certificate contains a date range when the certificate is valid. Outside the valid date range, the certificate is said to be "expired".

certificate request (CR)

Synonym for [certificate signing request](#).

certificate revocation list (CRL)

A list of certificates that have been revoked before their scheduled expiration date. Certificate revocation lists are maintained by the certificate authority and used, during a Secure Sockets Layer (SSL) handshake to ensure that the certificates involved have not been revoked. For further information, see the topic [Certificate management](#).

certificate signing request (CSR)

An electronic message that an organization sends to a certificate authority (CA) to obtain a certificate. The request includes a public key and is signed with a private key; the CA returns the certificate after signing with its own private key.

certificate store

The Windows name for a key repository. For further information, see the topic [Personal certificate store](#).

CF

See [coupling facility](#).

CFSTRUCT

An IBM MQ object used to describe the queue manager's use of a Coupling Facility list structure

channel

An IBM MQ object that defines a communication link between two queue managers (message channel) or between a client and a queue manager (MQI channel). See also [message channel](#), [MQI channel](#), [queue manager](#).

channel callback

A mechanism that ensures that the channel connection is established to the correct machine. In a channel callback, a sender channel calls back the original requester channel using the sender's definition.

channel control function (CCF)

A program to move messages from a transmission queue to a communication link, and from a communication link to a local queue, together with an operator panel interface to allow the setup and control of channels.

channel definition file (CDF)

A file containing communication channel definitions that associate transmission queues with communication links.

channel event

An event reporting conditions detected during channel operations, such as when a channel instance is started or stopped. Channel events are generated on the queue managers at both ends of the channel.

channel exit program

A user-written program that is called from one of a defined number of places in the processing sequence of a message channel agent (MCA).

channel initiator

A component of IBM MQ distributed queuing that monitors the initiation queue and starts the sender channel when triggering criteria are met.

channel listener

A component of IBM MQ distributed queuing that monitors the network for a startup request and then starts the receiving channel.

checkpoint

A place in a program at which a check is made, or at which a recording of data is made to allow the program to be restarted in case of interruption.

CI

See [control interval](#).

CipherSpec

The combination of encryption algorithm and hash function applied to an SSL message after authentication completes.

cipher suite

The combination of authentication, key exchange algorithm, and the Secure Sockets Layer (SSL) cipher specification used for the secure exchange of data.

ciphertext

Data that is encrypted. Ciphertext is unreadable until it is converted into plaintext (decrypted) with a key. See also [cleartext](#).

circular logging

In IBM MQ on AIX and Linux systems and IBM MQ for Windows, the process of keeping all restart data in a ring of log files. See also [linear logging](#). For further information, see the topic [Types of logging](#).

CL

See [Command Language](#).

class

In object-oriented design or programming, a model or template that can be used to create objects with a common definition and common properties, operations, and behavior. An object is an instance of a class.

class hierarchy

The relationships between classes that share a single inheritance.

class library

In object-oriented programming, a collection of prewritten classes or coded templates, any of which can be specified and used by a programmer when developing an application.

cleartext

A string of characters sent over a network in readable form. It might be encoded for the purposes of compression, but it can easily be decoded. See also [ciphertext](#).

client

A runtime component that provides access to queuing services on a server for local user applications. The queues used by the applications reside on the server. See also [IBM MQ fully managed .NET client](#), [IBM MQ Java client](#), [IBM MQ MQI client](#).

client application

An application, running on a workstation and linked to a client, that gives the application access to queuing services on a server.

client attachment feature (CAF)

An option that supports the attachment of clients to z/OS.

client channel definition table (CCDT)

A file that contains one or more client-connection channel definitions. For further information, see the topic [Client channel definition table](#).

client-connection channel type

The type of MQI channel definition associated with an IBM MQ client. See also [server-connection channel type](#).

CLUSRCVR

See [cluster-receiver channel](#).

CLUSSDR

See [cluster-sender channel](#).

cluster

In IBM MQ, a group of two or more queue managers on one or more computers, providing automatic interconnection, and allowing queues and topics to be advertised among them for load balancing and redundancy.

cluster queue

A local queue that is hosted by a cluster queue manager, and defined as a target for messages being put from an application connected to any queue manager within the cluster. All applications retrieving messages must be locally connected.

cluster queue manager

A queue manager that is a member of a cluster. A queue manager can be a member of more than one cluster.

cluster-receiver channel (CLUSRCVR)

A channel on which a cluster queue manager can receive messages from other queue managers in the cluster, and cluster information from the repository queue managers.

cluster-sender channel (CLUSSDR)

A channel on which a cluster queue manager can send messages to other queue managers in the cluster, and cluster information to the repository queue managers.

cluster topic

An administrative topic that is defined on a cluster queue manager and made available to other queue managers in the cluster.

cluster transmission queue

A transmission queue that holds all messages from a queue manager destined for another queue manager that is in the same cluster. The queue is called `SYSTEM.CLUSTER.TRANSMIT.QUEUE`.

CMS key database

A CMS key database is the format of the Database supported by AIX, Linux, and Windows platforms, and the clients of those platforms. Files ending with ".kdb" are CMS format. The ".kdb" files contain the certificates and the keys.

coded character set identifier (CCSID)

A 16-bit number that includes a specific set of encoding scheme identifiers, character set identifiers, code page identifiers, and other information that uniquely identifies the coded graphic-character representation.

coexistence

The ability of two or more different versions of IBM MQ to function on the same computer.

command

A statement used to initiate an action or start a service. A command consists of the command name abbreviation, and its parameters and flags if applicable.

command bag

In the MQAII, a type of bag that is created for administering IBM MQ objects, but cannot change the order of data items or create lists within a message.

command event

A notification that an MQSC or PCF command has run successfully.

Command Language (CL)

In IBM MQ for IBM i, a language that can be used to issue commands, either at the command line or by writing a CL program.

command prefix (CPF)

1. In IBM MQ for z/OS, a character string that identifies the queue manager to which IBM MQ for z/OS commands are directed, and from which IBM MQ for z/OS operator messages are received.
2. A 1-character to 8-character command identifier. The command prefix distinguishes the command as belonging to an application or subsystem rather than to z/OS.

command server

The IBM MQ component that reads commands from the system-command input queue, verifies them, and passes valid commands to the command processor.

commit

To apply all the changes made during the current unit of recovery (UR) or unit of work (UOW). After the operation is complete, a new UR or UOW can begin.

common name (CN)

The component in a Distinguished Name (DN) attribute of an X.509 certificate that represents the name normally associated with the owner of the certificate. For people, the CN is usually their actual name. For web servers, the CN is the fully qualified host and domain name of the server. For IBM MQ there are no specific requirements on this field, however many administrators use the name of the queue manager. See also "Distinguished Name"

completion code

A return code indicating how a message queue interface (MQI) call has ended.

confidentiality

The security service that protects sensitive information from unauthorized disclosure. Encryption is a common mechanism for implementing this service.

configuration event

Notifications about the attributes of an object. The notifications are generated when the object is created, changed, or deleted and also by explicit requests.

connection affinity

A channel attribute that specifies the client channel definition that client applications use to connect to the queue manager, if multiple connections are available.

connection factory

A set of configuration values that produces connections that enable a Java EE component to access a resource. Connection factories provide on-demand connections from an application to an enterprise information system (EIS) and allow an application server to enroll the EIS in a distributed transaction.

connection handle

The identifier or token by which a program accesses the queue manager to which it is connected.

constructor

In object-oriented programming, a special method used to initialize an object.

consume

To remove a message from a queue and return its contents to the calling application.

consumer

An application that receives and processes messages. See also [message consumer](#).

context security

On z/OS, the authority checks that are performed when an application opens a queue and specifies that it will set the context in messages that it puts on the queue, or pass the context from messages that it has received to messages that it puts on the queue.

control command

In IBM MQ on AIX and Linux systems and IBM MQ for Windows, a command that can be entered interactively from the operating system command line. Such a command requires only that the IBM MQ product be installed; it does not require a special utility or program to run it.

control interval (CI)

A fixed-length area of direct access storage in which VSAM stores records and creates distributed free space. The control interval is the unit of information that VSAM transmits to or from direct-access storage. A control interval always includes an integral number of physical records.

controlled shutdown

See [quiesced shutdown](#).

correlation identifier

A field in a message that provides a means of identifying related messages. Correlation identifiers are used, for example, to match request messages with their corresponding reply message.

coupling facility (CF)

A special logical partition that provides high-speed caching, list processing, and locking functions in a sysplex.

CPF

See [command prefix](#).

CRL

See [certificate revocation list](#).

cross-system coupling facility (XCF)

A component of z/OS that provides functions to support cooperation between authorized programs running within a sysplex.

cryptography

A method for protecting information by transforming it (encrypting it) into an unreadable format, called ciphertext. Only users who possess a secret key can decipher (or decrypt) the message into plaintext.

D**DAE**

See [dump analysis and elimination](#).

daemon

A program that runs unattended to perform continuous or periodic functions, such as network control.

data bag

A container of object properties that the MQAI uses in administering queue managers. There are three types of data bag: user (for user data), administration (for administration with assumed options), and command (for administration with no options assumed).

data-conversion interface (DCI)

The IBM MQ interface to which customer-written or vendor-written programs that convert application data between different machine encodings and CCSIDs must conform.

data-conversion service

A service that converts application data to the character set and encoding that are required by applications on other platforms.

datagram

A form of asynchronous messaging in which an application sends a message, but does not require a response. See also [request/reply](#).

data integrity

The security service that detects whether there has been unauthorized modification of data, or tampering. The service detects only whether data has been modified; it does not restore data to its original state if it has been modified.

data item

In the MQAI, an integer or character-string item that is contained within a data bag. A data item can be either a user item or a system item.

DCE

See [Distributed Computing Environment](#).

DCE principal

A user ID that uses the distributed computing environment.

DCI

See [data-conversion interface](#).

DCM

See [Digital Certificate Manager](#).

dead-letter queue (DLQ)

A queue to which a queue manager or application sends messages that cannot be delivered to their correct destination.

dead-letter queue handler

A utility that monitors a dead-letter queue (DLQ) and processes messages on the queue in accordance with a user-written rules table. A sample dead letter queue handler is provided by IBM MQ.

decryption

The process of decoding data that has been encrypted into a secret format. Decryption requires a secret key or password.

default object

A definition of an object (for example, a queue) with all attributes defined. If a user defines an object but does not specify all possible attributes for that object, the queue manager uses default attributes in place of any that were not specified.

deferred connection

A pending event that is activated when a CICS subsystem tries to connect to IBM MQ for z/OS before it has started.

derivation

In object-oriented programming, the refinement or extension of one class from another.

destination

1. An end point to which messages are sent, such as a queue or topic.
2. In JMS, an object that specifies where and how messages should be sent and received.

Diffie-Hellman key exchange

A public, key-exchange algorithm that is used for securely establishing a shared secret over an insecure channel.

digital certificate

An electronic document used to identify an individual, a system, a server, a company, or some other entity, and to associate a public key with the entity. A digital certificate is issued by a certification authority and is digitally signed by that authority.

Digital Certificate Manager (DCM)

On IBM i systems, the method of managing digital certificates and using them in secure applications on the IBM i server. Digital Certificate Manager requests and processes digital certificates from certification authorities (CAs) or other third-parties.

digital signature

Information that is encrypted with a private key and is appended to a message or object to assure the recipient of the authenticity and integrity of the message or object. The digital signature proves that the message or object was signed by the entity that owns, or has access to, the private key or shared-secret symmetric key.

direct routing

An option for routing publications in a publish/subscribe cluster. With direct routing, every queue manager in the cluster sends publications from any publishing queue manager direct to any other queue manager in the cluster with a matching subscription.

disconnect

To break the connection between an application and a queue manager.

distinguished name (DN)

A set of name-value pairs (such as CN=person name and C=country or region) that uniquely identifies an entity in a digital certificate.

distributed application

In message queuing, a set of application programs that can each be connected to a different queue manager, but that collectively comprise a single application.

Distributed Computing Environment (DCE)

In network computing, a set of services and tools that supports the creation, use, and maintenance of distributed applications across heterogeneous operating systems and networks.

distributed publish/subscribe

Publish/subscribe messaging performed in a multiple queue manager environment.

distributed queue management

In message queuing, the setup and control of message channels between distributed queue managers.

distributed queuing

Sending messages from one queue manager to another. The receiving queue manager could be on the same machine or on a remote one.

distribution list

A list of queues to which a message can be put with a single statement.

DLQ

See [dead-letter queue](#).

DN

See [distinguished name](#).

dual logging

A method of recording IBM MQ for z/OS activity, where each change is recorded on two data sets, so that if a restart is necessary and one data set is unreadable, the other can be used. See also [single logging](#).

dual mode

See [dual logging](#).

dump analysis and elimination (DAE)

A z/OS service that enables an installation to suppress SVC dumps and ABEND SYSUDUMP dumps that are not needed because they duplicate previously written dumps.

durable subscription

A subscription that is retained when the connection from a subscribing application to the queue manager is closed. When the subscribing application disconnects, the durable subscription remains in place and publications continue to be delivered. When the application reconnects, it can use the same subscription by specifying the unique subscription name. See also [nondurable subscription](#).

dynamic queue

A local queue created when a program opens a model queue object.

E

eavesdropping

A breach of communication security in which the information remains intact, but its privacy is compromised. See also [impersonation](#), [tampering](#).

Eclipse

An open-source initiative that provides independent software vendors (ISVs) and other tool developers with a standard platform for developing plug-compatible application development tools.

encapsulation

In object-oriented programming, the technique that is used to hide the inherent details of an object, function, or class from client programs.

encryption

In computer security, the process of transforming data into an unintelligible form in such a way that the original data either cannot be obtained or can be obtained only by using a decryption process.

enqueue

To put a message or item in a queue.

entity

A user, group, or resource that is defined to a security service, such as RACF®.

environment variable

A variable that specifies how an operating system or another program runs, or the devices that the operating system recognizes.

ESM

See [external security manager](#).

ESTAE

See [extended specify task abnormal exit](#).

event data

In an event message, the part of the message data that contains information about the event (such as the queue manager name, and the application that gave rise to the event). See also [event header](#).

event header

In an event message, the part of the message data that identifies the event type of the reason code for the event. See also [event data](#).

event message

A message that contains information (such as the category of event, the name of the application that caused the event, and queue manager statistics) relating to the origin of an instrumentation event in a network of IBM MQ systems.

event queue

The queue onto which the queue manager puts an event message after it detects an event. Each category of event (queue manager, performance, configuration, instrumentation, or channel event) has its own event queue.

Event Viewer

A tool provided by Windows systems to examine and manage log files.

exception listener

An instance of a class that can be registered by an application and for which the `onException()` method is called to pass a JMS exception to the application asynchronously.

exclusive method

In object-oriented programming, a method that is not intended to exhibit polymorphism; one with specific effect.

extended specify task abnormal exit (ESTAЕ)

A z/OS macro that provides recovery capability and gives control to the user-specified exit routine for processing, diagnosing an abend, or specifying a retry address.

external security manager (ESM)

A security product that performs security checking on users and resources. RACF is an example of an ESM.

F

failover

An automatic operation that switches to a redundant or standby system or node in the event of a software, hardware, or network interruption.

FAP

See [Formats and Protocols](#).

Federal Information Processing Standard

A standard produced by the National Institute of Standards and Technology when national and international standards are nonexistent or inadequate to satisfy the U.S. government requirements.

FFDC

See [first-failure data capture](#).

FFST

See [First Failure Support Technology](#).

FFST file

See [First Failure Support Technology file](#).

FIFO

See [first-in first-out](#).

FIPS

See [Federal Information Processing Standard](#).

first-failure data capture (FFDC)

1. The i5/OS implementation of the FFST architecture providing problem recognition, selective dump of diagnostic data, symptom string generation, and problem log entry.

2. A problem diagnosis aid that identifies errors, gathers and logs information about these errors, and returns control to the affected runtime software.

First Failure Support Technology (FFST)

An IBM architecture that defines a single approach to error detection through defensive programming techniques. These techniques provide proactive (passive until required) problem recognition and a description of diagnostic output required to debug a software problem.

First Failure Support Technology file (FFST file)

A file containing information for use in detecting and diagnosing software problems. In IBM MQ, FFST files have a file type of FDC.

first-in first-out (FIFO)

A queuing technique in which the next item to be retrieved is the item that has been in the queue for the longest time.

forced shutdown

A type of shutdown of the CICS adapter where the adapter immediately disconnects from IBM MQ for z/OS, regardless of the state of any currently active tasks. See also [quiesced shutdown](#).

format

In message queuing, a term used to identify the nature of application data in a message.

Formats and Protocols (FAP)

In message queuing, a definition of how queue managers communicate with each other, and of how clients communicate with server queue managers.

Framework

In IBM MQ, a collection of programming interfaces that allow customers or vendors to write programs that extend or replace certain functions provided in IBM MQ products. The interfaces are the following: data conversion interface (DCI), message channel interface (MCI), name service interface (NSI), security enabling interface (SEI), trigger monitor interface (TMI).

friend class

A class in which all member functions are granted access to the private and protected members of another class. It is named in the declaration of another class and uses the keyword friend as a prefix to the class.

FRR

See [functional recovery routine](#).

full repository

A complete set of information about every queue manager in a cluster. This set of information is called the repository or sometimes the full repository and is usually held by two of the queue managers in the cluster. See also [partial repository](#).

function

A named group of statements that can be called and evaluated and can return a value to the calling statement.

functional recovery routine (FRR)

A z/OS recovery and termination manager that enables a recovery routine to gain control in the event of a program interrupt.

G

gateway queue manager

A cluster queue manager that is used to route messages from an application to other queue managers in the cluster.

generalized trace facility (GTF)

A z/OS service program that records significant system events such as I/O interrupts, SVC interrupts, program interrupts, and external interrupts.

Generic Security Services API

See [Generic Security Services application programming interface](#).

Generic Security Services application programming interface (Generic Security Services API, GSS API)

A common application programming interface (API) for accessing security services.

get

In message queuing, to use the MQGET call to remove a message from a queue and return its contents to the calling application. See also [browse](#), [put](#).

globally defined object

On z/OS, an object whose definition is stored in the shared repository. The object is available to all queue managers in the queue sharing group. See also [locally defined object](#).

global trace

An IBM MQ for z/OS trace option where the trace data comes from the entire IBM MQ for z/OS subsystem.

global transaction

A recoverable unit of work performed by one or more resource managers in a distributed transaction environment and coordinated by an external transaction manager.

GSS API

See [Generic Security Services application programming interface](#).

GTF

See [generalized trace facility](#).

H

handshake

The exchange of messages at the start of a Secure Sockets Layer session that allows the client to authenticate the server using public key techniques (and, optionally, for the server to authenticate the client) and then allows the client and server to cooperate in creating symmetric keys for encryption, decryption, and detection of tampering.

hardened message

A message that is written to auxiliary (disk) storage so that the message is not lost in the event of a system failure.

header

See [message header](#).

heartbeat

A signal that one entity sends to another to convey that it is still active.

heartbeat flow

A pulse that is passed from a sending message channel agent (MCA) to a receiving MCA when there are no messages to send. The pulse unblocks the receiving MCA, which would otherwise remain in a wait state until a message arrived or the disconnect interval expired.

heartbeat interval

The time, in seconds, that is to elapse between heartbeat flows.

hierarchy

In publish/subscribe messaging topology, a local queue manager connected to a parent queue manager.

HTTP

See [Hypertext Transfer Protocol](#).

Hypertext Transfer Protocol (HTTP)

An Internet protocol that is used to transfer and display hypertext and XML documents on the web.

I

IBM MQ

A family of IBM licensed programs that provides message queuing services.

IBM MQ Administration Interface (MQAI)

A programming interface that performs administration tasks on an IBM MQ queue manager through the use of data bags. Data bags allow the user to handle properties (or parameters) of IBM MQ objects.

IBM MQ classes for .NET

A set of classes that allow a program written in the .NET programming framework to connect to IBM MQ as an IBM MQ client or to connect directly to an IBM MQ server.

IBM MQ classes for C++

A set of classes that encapsulate the IBM MQ Message Queue Interface (MQI) in the C++ programming language.

IBM MQ classes for Java

A set of classes that encapsulate the IBM MQ Message Queue Interface (MQI) in the Java programming language.

IBM MQ fully managed .NET client

Part of an IBM MQ product that can be installed on a system without installing the full queue manager. The IBM MQ .NET client is used by fully-managed .NET applications and communicates with a queue manager on a server system. A .NET application that is not fully managed uses the IBM MQ MQI client. See also [client](#), [IBM MQ Java client](#), [IBM MQ MQI client](#).

IBM MQ Java client

Part of an IBM MQ product that can be installed on a system without installing the full queue manager. The IBM MQ Java client is used by Java applications (both IBM MQ classes for Java and IBM MQ classes for JMS) and communicates with a queue manager on a server system. See also [client](#), [IBM MQ fully managed .NET client](#), [IBM MQ MQI client](#).

IBM MQ MQI client

Part of an IBM MQ product that can be installed on a system without installing the full queue manager. The IBM MQ MQI client accepts MQI calls from applications and communicates with a queue manager on a server system. See also [client](#), [IBM MQ fully managed .NET client](#), [IBM MQ Java client](#).

IBM MQ script commands (MQSC)

Human readable commands, uniform across all platforms, that are used to manipulate IBM MQ objects. See also [programmable command format](#).

IBM MQ server

A queue manager that provides queuing services to one or more clients. All the IBM MQ objects, for example queues, exist only on the queue manager system, that is, on the MQI server machine. A server can support normal local MQI applications as well.

IBM MQ Telemetry

Supports small client libraries that can be embedded into smart devices running on a number of different device platforms. Applications built with the clients use the MQ Telemetry Transport (MQTT) protocol and the IBM MQ telemetry service to publish and subscribe messages reliably with IBM MQ.

IBM MQ Telemetry daemon for devices

See [MQTT daemon for devices](#).

identification

The security service that enables each user of a computer system to be identified uniquely. A common mechanism for implementing this service is to associate a user ID with each user.

identity context

Information that identifies the user of the application that first puts the message on a queue

IFCID

See [instrumentation facility component identifier](#).

ILE

See [Integrated Language Environment®](#).

immediate shutdown

In IBM MQ, a shutdown of a queue manager that does not wait for applications to disconnect. Current message queue interface (MQI) calls are allowed to complete, but new MQI calls fail after an immediate shutdown has been requested. See also [preemptive shutdown](#), [quiesced shutdown](#).

impersonation

A breach of communication security in which the information is passed to a person posing as the intended receiver or information is sent by a person posing as someone else. See also [eavesdropping](#), [tampering](#).

inbound channel

A channel that receives messages from another queue manager.

in-built format

See [built-in format](#).

index

In the IBM MQ Administration Interface (MQAI), a means of referencing data items.

indoubt unit of recovery

The status of a unit of recovery for which a sync point has been requested but not yet confirmed.

inflight

The state of a resource or unit of recovery that has not yet completed the prepare phase of the commit process.

inheritance

An object-oriented programming technique in which existing classes are used as a basis for creating other classes. Through inheritance, more specific elements incorporate the structure and behavior of more general elements.

initialization input data set

A data set that is used by IBM MQ for z/OS when it starts.

initiation queue

A local queue on which the queue manager puts trigger messages.

initiator

In distributed queuing, a program that requests network connections on another system. See also [responder](#).

input parameter

A parameter of an MQI call in which information is supplied.

insertion order

In the IBM MQ Administration Interface (MQAI), the order that data items are placed into a data bag.

installable service

In IBM MQ on UNIX and Linux systems and IBM MQ for Windows, additional functionality provided as independent component. The installation of each component is optional: in-house or third-party components can be used instead.

instance

A specific occurrence of an object that belongs to a class. See also [object](#).

instance data

In object-oriented programming, state information associated with an object.

intermediate certificate

A signer certificate that is not the root certificate. It is issued by the trusted root specifically to issue end-entity server certificates. The result is a certificate chain that begins at the trusted root CA, through a number of intermediates, and ends with the SSL certificate issued to the organization.

instrumentation event

A way of monitoring queue manager resource definitions, performance conditions, and channel conditions in a network of IBM MQ systems.

instrumentation facility component identifier (IFCID)

In Db2 for z/OS, a value that names and identifies a trace record of an event. As a parameter on the START TRACE and MODIFY TRACE commands, it specifies that the corresponding event is to be traced.

Integrated Language Environment (ILE)

A set of constructs and interfaces that provides a common runtime environment and runtime bindable application programming interfaces (APIs) for all ILE-conforming high-level languages.

Interactive Problem Control System (IPCS)

A component of MVS and z/OS that permits online problem management, interactive problem diagnosis, online debugging for disk-resident abend dumps, problem tracking, and problem reporting.

Interactive System Productivity Facility (ISPF)

An IBM licensed program that serves as a full-screen editor and dialog manager. Used for writing application programs, it provides a means of generating standard screen panels and interactive dialogs between the application programmer and the terminal user.

interface

In object-oriented programming, an abstract model of behavior; a collection of functions or methods.

Internet Protocol (IP)

A protocol that routes data through a network or interconnected networks. This protocol acts as an intermediary between the higher protocol layers and the physical network. See also [Transmission Control Protocol](#).

interprocess communication (IPC)

The process by which programs send messages to each other. Sockets, semaphores, signals, and internal message queues are common methods of interprocess communication. See also [client](#).

intersystem communication (ISC)

A CICS facility that provides inbound and outbound support for communication from other computer systems.

IP

See [Internet Protocol](#).

IPC

See [interprocess communication](#).

IPCS

See [Interactive Problem Control System](#).

ISC

See [intersystem communication](#).

ISPF

See [Interactive System Productivity Facility](#).

J**JAAS**

See [Java Authentication and Authorization Service](#).

Java Authentication and Authorization Service (JAAS)

In Java EE technology, a standard API for performing security-based operations. Through JAAS, services can authenticate and authorize users while enabling the applications to remain independent from underlying technologies.

Java Message Service (JMS)

An application programming interface that provides Java language functions for handling messages. See also [Message Queue Interface](#).

Java runtime environment (JRE)

A subset of a Java developer kit that contains the core executable programs and files that constitute the standard Java platform. The JRE includes the Java virtual machine (JVM), core classes, and supporting files.

JMS

See [Java Message Service](#).

JMSAdmin

An administration tool that enables administrators to define the properties of JMS objects and to store them within a JNDI namespace

journal

A feature of OS/400® that IBM MQ for IBM i uses to control updates to local objects. Each queue manager library contains a journal for that queue manager.

JRE

See [Java runtime environment](#).

K

keepalive

A TCP/IP mechanism where a small packet is sent across the network at predefined intervals to determine whether the socket is still working correctly.

Kerberos

A network authentication protocol that is based on symmetric key cryptography. Kerberos assigns a unique key, called a ticket, to each user who logs on to the network. The ticket is embedded in messages that are sent over the network. The receiver of a message uses the ticket to authenticate the sender.

key authentication

See [authentication](#).

key repository

A store for digital certificates and their associated private keys.

key ring

In computer security, a file that contains public keys, private keys, trusted roots, and certificates.

keystore

In security, a file or a hardware cryptographic card where identities and private keys are stored, for authentication and encryption purposes. Some keystores also contain trusted or public keys. See also [truststore](#).

L

last will and testament

An object that is registered with a monitor by a client, and used by the monitor if the client ends unexpectedly.

LDAP

See [Lightweight Directory Access Protocol](#).

Lightweight Directory Access Protocol (LDAP)

An open protocol that uses TCP/IP to provide access to directories that support an X.500 model and that does not incur the resource requirements of the more complex X.500 Directory Access Protocol (DAP). For example, LDAP can be used to locate people, organizations, and other resources in an Internet or intranet directory.

linear logging

In IBM MQ on UNIX and Linux systems, and IBM MQ for Windows, the process of keeping restart data in a sequence of files. New files are added to the sequence as necessary. The space in which the data is written is not reused. See also [circular logging](#). For further information, see the topic [Types of logging](#).

link level security

The security services that are started, directly or indirectly, by a message channel agent (MCA), the communications subsystem, or a combination of the two working together.

listener

A program that detects incoming requests and starts the associated channel.

local definition of a remote queue

An IBM MQ object belonging to a local queue manager that defines the attributes of a queue that is owned by another queue manager. In addition, it is used for queue manager aliasing and reply-to-queue aliasing.

locale

A setting that identifies language or geography and determines formatting conventions such as collation, case conversion, character classification, the language of messages, date and time representation, and numeric representation.

locally defined object

On z/OS, an object whose definition is stored on page set zero. The definition can be accessed only by the queue manager that defined it. See also [globally defined object](#).

local queue

A queue that belongs to the local queue manager. A local queue can contain a list of messages waiting to be processed. See also [remote queue](#).

local queue manager

The queue manager to which the program is connected and that provides message queuing services to the program. See also [remote queue manager](#).

log

In IBM MQ, a file recording the work done by queue managers while they receive, transmit, and deliver messages, to enable them to recover in the event of failure.

log control file

In IBM MQ on UNIX and Linux systems, and IBM MQ for Windows, the file containing information needed to monitor the use of log files (for example, their size and location, and the name of the next available file).

log file

In IBM MQ on UNIX and Linux systems, and IBM MQ for Windows, a file in which all significant changes to the data controlled by a queue manager are recorded. If the primary log files become full, IBM MQ allocates secondary log files.

logical unit (LU)

An access point through which a user or application program accesses the SNA network to communicate with another user or application program.

logical unit 6.2 (LU 6.2)

An SNA logical unit that supports general communication between programs in a distributed processing environment.

logical unit of work identifier (LUWID)

A name that uniquely identifies a thread within a network. This name consists of a fully qualified logical unit network name, a logical unit of work instance number, and a logical unit of work sequence number.

log record

A set of data that is treated as a single unit in a log file.

log record sequence number (LRSN)

A unique identifier for a log record that is associated with a data sharing member. Db2 for z/OS uses the LRSN for recovery in the data sharing environment.

LRSN

See [log record sequence number](#).

LU

See [logical unit](#).

LU 6.2

See [logical unit 6.2](#).

LU 6.2 conversation

In SNA, a logical connection between two transaction programs over an LU 6.2 session that enables them to communicate with each other.

LU 6.2 conversation level security

In SNA, a conversation level security protocol that enables a partner transaction program to authenticate the transaction program that initiated the conversation.

LU 6.2 session

In SNA, a session between two logical units (LUs) of type 6.2.

LU name

The name by which VTAM® refers to a node in a network.

LUWID

See [logical unit of work identifier](#).

M

managed destination

A queue that is provided by the queue manager, as the destination to which published messages are to be sent, for an application that elects to use a managed subscription. See also [managed subscription](#).

managed handle

An identifier that is returned by the MQSUB call when a queue manager is specified to manage the storage of messages that are sent to the subscription.

managed subscription

A subscription for which the queue manager creates a subscriber queue to receive publications because the application does not require a specific queue to be used. See also [managed destination](#).

marshalling

See [serialization](#).

MCA

See [message channel agent](#).

MCI

See [message channel interface](#).

media image

In IBM MQ on UNIX and Linux systems and IBM MQ for Windows, the sequence of log records that contain an image of an object. The object can be re-created from this image.

message

1. In system programming, information intended for the terminal operator or system administrator.
2. A string of bytes that is passed from one application to another. Messages typically comprise a message header (used for message routing and identification) and a payload (containing the application data being sent). The data has a format that is compatible with both the sending and receiving application.

message affinity

The relationship between conversational messages that are exchanged between two applications, where the messages must be processed by a particular queue manager or in a particular sequence.

message channel

In distributed message queuing, a mechanism for moving messages from one queue manager to another. A message channel comprises two message channel agents (a sender at one end and a receiver at the other end) and a communication link. See also [channel](#).

message channel agent (MCA)

A program that transmits prepared messages from a transmission queue to a communication link, or from a communication link to a destination queue. See also [Message Queue Interface](#).

message channel interface (MCI)

The IBM MQ interface to which customer-written or vendor-written programs that transmit messages between an IBM MQ queue manager and another messaging system must conform. See also [Message Queue Interface](#).

message consumer

1. In JMS, an object that is created within a session to receive messages from a destination.
2. A program, function, or organization that gets and processes messages. See also [consumer](#).

message context

Information about the originator of a message that is held in fields in the message descriptor. There are two categories of context information: identity context and origin context.

message descriptor

Control information describing the message format and presentation that is carried as part of a IBM MQ message. The format of the message descriptor is defined by the MQMD structure.

message exit

A type of channel exit program that is used to modify the contents of a message. Message exits usually work in pairs, one at each end of a channel. At the sending end of a channel, a message exit is called after the message channel agent (MCA) has got a message from the transmission queue. At the receiving end of a channel, a message exit is called before the message channel agent (MCA) puts a message on its destination queue.

message flow control

A distributed queue management task that involves setting up and maintaining message routes between queue managers.

Message Format Service (MFS)

An IMS editing facility that allows application programs to deal with simple logical messages instead of device-dependent data, thus simplifying the application development process.

message group

A logical group of related messages. The relationship is defined by the application putting the messages, and ensures that the messages are retrieved in the sequence put if both the producer and consumer honor the grouping.

message handle

A reference to a message. The handle can be used to obtain access to the message properties of the message.

message header

The part of a message that contains control information such as a unique message ID, the sender and receiver of the message, the message priority, and the type of message.

message input descriptor (MID)

The Message Format Service (MFS) control block that describes the format of the data presented to the application program. See also [message output descriptor](#).

message listener

An object that acts as an asynchronous message consumer.

message output descriptor (MOD)

The Message Format Service (MFS) control block that describes the format of the output data produced by the application program. See also [message input descriptor](#).

message priority

In IBM MQ, an attribute of a message that can affect the order in which messages on a queue are retrieved, and whether a trigger event is generated.

message producer

In JMS, an object that is created by a session and that is used to send messages to a destination. See also [producer](#).

message property

Data associated with a message, in name-value pair format. Message properties can be used as message selectors to filter publications or to selectively get messages from queues. Message

properties can be used to include business data or state information about processing without having to alter the message body.

Message Queue Interface (MQI)

The programming interface provided by IBM MQ queue managers. The programming interface allows application programs to access message queuing services. See also [Java Message Service](#), [message channel agent](#), [message channel interface](#).

message queue management (MQM)

In IBM MQ for HP NonStop Server, a facility that provides access to PCF command formats and control commands to manage queue managers, queues, and channels.

message queuing

A programming technique in which each program within an application communicates with the other programs by putting messages on queues.

message-retry

An option available to an MCA that is unable to put a message. The MCA can wait for a predefined amount of time and then try to put the message again.

message segment

One of a number of segments of a message that is too large either for the application or for the queue manager to handle.

message selector

In application programming, a variable-length string that is used by an application to register its interest in only those messages whose properties satisfy the Structured Query Language (SQL) query that the selection string represents. The syntax of a message selector is based on a subset of the SQL92 conditional expression syntax.

message sequence numbering

A programming technique in which messages are given unique numbers during transmission over a communication link. This number enables the receiving process to check whether all messages are received, to place them in a queue in the original order, and to discard duplicate messages.

message token

A unique identifier of a message within an active queue manager.

method

In object-oriented design or programming, the software that implements the behavior specified by an operation.

MFS

See [Message Format Service](#).

MGAS

See [mostly global address space](#).

Microsoft Cluster Server (MSCS)

A technology that provides high availability by grouping computers running Windows into MSCS clusters. If one of the computers in the cluster hits any one of a range of problems, MSCS shuts down the disrupted application in an orderly manner, transfers its state data to another computer in the cluster, and re-initiates the application there. For further information, see the topic [Supporting the Microsoft Cluster Service \(MSCS\)](#).

Microsoft Transaction Server (MTS)

A facility that helps Windows users run business logic applications in a middle tier server. MTS divides work up into activities, which are short independent chunks of business logic.

MID

See [message input descriptor](#).

MOD

See [message output descriptor](#).

model queue object

A set of queue attributes that act as a template when a program creates a dynamic queue.

mostly global address space (MGAS)

A flexible virtual address space model that preserves most of the address space for shared applications. This model can enhance performance for processes that share a lot of data. See also [mostly private address space](#).

mostly private address space (MPAS)

A flexible virtual address space model that can allocate larger address space blocks to processes. This model can enhance performance for processes that require a lot of data space. See also [mostly global address space](#).

MPAS

See [mostly private address space](#).

MQAI

See [IBM MQ Administration Interface](#).

MQI

See [Message Queue Interface](#).

MQI channel

A connection between an IBM MQ client and a queue manager on a server system. An MQI channel transfers only MQI calls and responses in a bidirectional manner. See also [channel](#).

MQM

See [message queue management](#).

MQSC

See [IBM MQ script commands](#).

MQSeries

A previous name for IBM MQ and IBM WebSphere MQ.

MQ Telemetry Transport (MQTT)

An open, lightweight publish/subscribe messaging protocol flowing over TCP/IP to connect large numbers of devices such as servos, actuators, smart phones, vehicles, homes, health, remote sensors, and control devices. MQTT is designed for constrained devices and low-bandwidth, high-latency or unreliable networks. The protocol minimises network bandwidth and device resource requirements, while ensuring some degree of reliability and assured delivery. It is used increasingly in the *machine-to-machine* (M2M) or *Internet of Things* world of connected devices, and for mobile applications where bandwidth and battery power are at a premium.

MQTT

See [MQ Telemetry Transport](#).

MQTT client

An MQTT client application connects to MQTT capable servers such as IBM MQ Telemetry channels. You can write your own clients to use the published protocol, or download the free Paho clients. A typical client is responsible for collecting information from a telemetry device and publishing the information to the server. It can also subscribe to topics, receive messages, and use this information to control the telemetry device.

MQTT daemon for devices

The MQTT daemon for devices was an advanced MQTT V3 client. It was a very small footprint MQTT server designed for embedded systems. Its primary use was to store and forward messages from telemetry devices and other MQTT clients, including other MQTT daemons for devices.

MQTT server

A messaging server that supports the MQ Telemetry Transport protocol. It enables mobile apps and devices, supported by MQTT clients, to exchange messages. It typically allows many MQTT clients to connect to it at the same time, and provides a hub for messages distribution to the MQTT clients. MQTT servers are available from IBM and others. IBM MQ Telemetry is an MQTT server from IBM.

MQXR service

See [telemetry service](#).

MSCS

See [Microsoft Cluster Server](#). For further information, see the topic [Supporting the Microsoft Cluster Service \(MSCS\)](#).

MTS

See [Microsoft Transaction Server](#).

multi-hop

To pass through one or more intermediate queue managers when there is no direct communication link between a source queue manager and the target queue manager.

multi-instance queue manager

A queue manager that is configured to share the use of queue manager data with other queue manager instances. One instance of a running multi-instance queue manager is active, other instances are on standby ready to take over from the active instance. See also [queue manager](#), [single instance queue manager](#).

N

namelist

An IBM MQ object that contains a list of object names, for example, queue names.

name service

In IBM MQ on UNIX and Linux systems and IBM MQ for Windows, the facility that determines which queue manager owns a specified queue.

name service interface (NSI)

The IBM MQ interface to which customer-written or vendor-written programs that resolve queue-name ownership must conform.

name transformation

In IBM MQ on UNIX and Linux systems and IBM MQ for Windows, an internal process that changes a queue manager name so that it is unique and valid for the system being used. Externally, the queue manager name remains unchanged.

nested bag

In the IBM MQ Administration Interface (MQAI), a system bag that is inserted into another data bag

nesting

In the IBM MQ Administration Interface (MQAI), a means of grouping information returned from IBM MQ.

NetBIOS (Network Basic Input/Output System)

A standard interface to networks and personal computers that is used on local area networks to provide message, print-server, and file-server functions. Application programs that use NetBIOS do not have to handle the details of LAN data link control (DLC) protocols.

Network Basic Input/Output System

See [NetBIOS](#).

New Technology File System (NTFS)

One of the native file systems in Windows operating environments.

node

In Microsoft Cluster Server (MSCS), each computer in the cluster.

nondurable subscription

A subscription that exists only while the connection from the subscribing application to the queue manager remains open. The subscription is removed when the subscribing application disconnects from the queue manager either deliberately or by loss of connection. See also [durable subscription](#).

nonpersistent message

A message that does not survive a restart of the queue manager. See also [persistent message](#).

NSI

See [name service interface](#).

NTFS

See [New Technology File System](#).

NUL

See [null character](#).

null character (NUL)

A control character with the value of X'00' that represents the absence of a displayed or printed character.

O**OAM**

See [object authority manager](#).

object

1. In IBM MQ, a queue manager, queue, process definition, channel, namelist, authentication information object, administrative topic object, listener, service object, or (on z/OS only) a CF structure object or storage class.
2. In object-oriented design or programming, a concrete realization (instance) of a class that consists of data and the operations associated with that data. An object contains the instance data that is defined by the class, but the class owns the operations that are associated with the data.

object authority manager (OAM)

In IBM MQ on UNIX and Linux systems, IBM MQ for IBM i, and IBM MQ for Windows, the default authorization service for command and object management. The OAM can be replaced by, or run in combination with, a customer-supplied security service.

object descriptor

A data structure that identifies a particular IBM MQ object. Included in the descriptor are the name of the object and the object type.

object handle

The identifier or token by which a program accesses the IBM MQ object with which it is working.

object-oriented programming

A programming approach based on the concepts of data abstraction and inheritance. Unlike procedural programming techniques, object-oriented programming concentrates not on how something is accomplished but instead on what data objects compose the problem and how they are manipulated.

OCSP

See [Online Certificate Status Protocol](#).

offloading

In IBM MQ for z/OS, an automatic process whereby a queue manager's active log is transferred to its archive log.

Online Certificate Status Protocol

A method of checking if a certificate is revoked.

one way authentication

In this method of authentication, the queue manager presents the certificate to the client, but the authentication is not checked from the client to the queue manager.

open

To establish access to an object, such as a queue, topic, or hyperlink.

open systems interconnection (OSI)

The interconnection of open systems in accordance with standards of the International Organization for Standardization (ISO) for the exchange of information.

Open Transaction Manager Access (OTMA)

A component of IMS that implements a transaction-based, connectionless client/server protocol in an MVS sysplex environment. The domain of the protocol is restricted to the domain of the z/OS Cross-System Coupling Facility (XCF). OTMA connects clients to servers so that the client can support a large network (or a large number of sessions) while maintaining high performance.

OPM

See [original program model](#).

original program model (OPM)

The set of functions for compiling source code and creating high-level language programs before the Integrated Language Environment (ILE) model was introduced.

OSGi Alliance

A consortium of more than 20 companies, including IBM, that creates specifications to outline open standards for the management of voice, data and multimedia wireless and wired networks.

OSI

See [open systems interconnection](#).

OSI directory standard

The standard, known as X.500, that defines a comprehensive directory service, including an information model, a namespace, a functional model, and an authentication framework. X.500 also defines the Directory Access Protocol (DAP) used by clients to access the directory. The Lightweight Directory Access Protocol (LDAP) removes some of the burden of X.500 access from directory clients, making the directory available to a wider variety of machines and applications.

OTMA

See [Open Transaction Manager Access](#).

outbound channel

A channel that takes messages from a transmission queue and sends them to another queue manager.

output log-buffer

In IBM MQ for z/OS, a buffer that holds recovery log records before they are written to the archive log.

output parameter

A parameter of an MQI call in which the queue manager returns information when the call completes or fails.

overloading

In object-oriented programming, the capability of an operator or method to have different meanings depending on the context. For example, in C++, a user can redefine functions and most standard operators when the functions and operators are used with class types. The method name or operator remains the same, but the method parameters differ in type, number, or both. This difference is collectively called the function's or the operator's signature and each signature requires a separate implementation.

P

page set

A VSAM data set used when IBM MQ for z/OS moves data (for example, queues and messages) from buffers in main storage to permanent backing storage (DASD).

parent class

A class from which another class inherits instance methods, attributes, and instance variables. See also [abstract class](#).

partial repository

A partial set of information about queue managers in a cluster. A partial repository is maintained by all cluster queue managers that do not host a full repository. See also [full repository](#).

partner queue manager

See [remote queue manager](#).

PassTicket

In RACF secured sign-on, a dynamically generated, random, one-time-use, password substitute that a workstation or other client can use to sign on to the host rather than sending a RACF password across the network.

PCF

See [programmable command format](#).

pending event

An unscheduled event that occurs as a result of a connect request from a CICS adapter.

percolation

In error recovery, the passing along a preestablished path of control from a recovery routine to a higher-level recovery routine.

performance event

A category of event indicating that a limit condition has occurred.

performance trace

An IBM MQ trace option where the trace data is to be used for performance analysis and tuning.

permanent dynamic queue

A dynamic queue that is deleted when it is closed only if deletion is explicitly requested. Permanent dynamic queues are recovered if the queue manager fails, so they can contain persistent messages. See also [temporary dynamic queue](#).

persistent message

A message that survives a restart of the queue manager. See also [nonpersistent message](#).

personal certificate

Certificate for which you own the corresponding private key. Associated with queue managers or applications.

PGM

See [Pragmatic General Multicast](#).

PID

See [process ID](#).

ping

The command that sends an Internet Control Message Protocol (ICMP) echo-request packet to a gateway, router, or host with the expectation of receiving a reply.

PKCS

Public Key Cryptography Standards. A set of standards for cryptography, of which:

- 7 is for messages
- 11 is for hardware security modules
- 12 is for the file format used in the key repository

PKI

See [public key infrastructure](#).

plain text

See [cleartext](#).

point of recovery

In IBM MQ for z/OS, a set of backup copies of IBM MQ for z/OS page sets and the corresponding log data sets required to recover these page sets. These backup copies provide a potential restart point in the event of page set loss (for example, page set I/O error).

poison message

In a queue, an incorrectly formatted message that the receiving application cannot process. The message can be repeatedly delivered to the input queue and repeatedly backed out by the application.

polymorphism

An object-oriented programming characteristic that allows a method to perform differently, depending on the class that implements it. Polymorphism allows a subclass to override an inherited method without affecting the method of the parent class. Polymorphism also enables a client to access two or more implementations of an object from a single interface.

Pragmatic General Multicast (PGM)

A reliable multicast transport protocol that provides a reliable sequence of packets to multiple recipients simultaneously.

preemptive shutdown

In IBM MQ, a shutdown of a queue manager that does not wait for connected applications to disconnect, or for current MQI calls to complete. See also [immediate shutdown](#), [quiesced shutdown](#).

preferred computer

The primary computer used by an application running under Microsoft Cluster Server control. After a failover to another computer, MSCS monitors the preferred computer until it is repaired, and as soon as it is running correctly again, moves the application back to it.

principal

An entity that can communicate securely with another entity. A principal is identified by its associated security context, which defines its access rights.

privately defined object

See [locally defined object](#).

private methods and instance data

In object-oriented programming, methods and instance data that are only accessible to the implementation of the same class.

process definition object

An IBM MQ object that contains the definition of an IBM MQ application. For example, a queue manager uses the definition when it works with trigger messages.

process ID (PID)

The unique identifier that represents a process. A process ID is a positive integer and is not reused until the process lifetime ends.

producer

An application that creates and sends messages. See also [message producer](#), [publisher](#).

programmable command format (PCF)

A type of IBM MQ message used by the following applications: user administration applications, to put PCF commands onto the system command input queue of a specified queue manager, user administration applications, to get the results of a PCF command from a specified queue manager, and a queue manager, as a notification that an event has occurred. See also [IBM MQ script commands](#).

program temporary fix (PTF)

For System i, System p, and IBM Z products, a package containing individual or multiple fixes that is made available to all licensed customers. A PTF resolves defects and might provide enhancements.

property

A characteristic of an object that describes the object. A property can be changed or modified. Properties can describe an object name, type, value, or behavior, among other things.

protected methods and instance data

In object-oriented programming, methods and instance data that are only accessible to the implementations of the same or derived classes, or from friend classes.

proxy subscription

A proxy subscription is a subscription made by one queue manager for topics published on another queue manager. A proxy subscription flows between queue managers for each individual topic string that is subscribed to by a subscription. You do not create proxy subscriptions explicitly, the queue manager does so on your behalf.

PTF

See [program temporary fix](#).

public key cryptography

A cryptography system that uses two keys: a public key known to everyone and a private or secret key known only to the recipient of the message. The public and private keys are related in such a way that only the public key can be used to encrypt messages and only the corresponding private key can be used to decrypt them.

public key infrastructure (PKI)

A system of digital certificates, certification authorities, and other registration authorities that verify and authenticate the validity of each party involved in a network transaction.

public methods and instance data

In object oriented programming, methods and instance data that are accessible to all classes.

public-private key cryptography

See [public key cryptography](#).

publish

To make information about a specified topic available to a queue manager in a publish/subscribe system.

publisher

An application that makes information about a specified topic available to a broker in a publish/subscribe system. See also [producer](#).

publish/subscribe

A type of messaging interaction in which information, provided by publishing applications, is delivered by an infrastructure to all subscribing applications that registered to receive that type of information.

publish/subscribe cluster

A set of queue managers that are fully interconnected and that form part of a multi queue manager network for publish/subscribe applications.

put

In message queuing, to use the MQPUT or MQPUT1 calls to place messages on a queue. See also [browse](#), [get](#).

Q

queue

An object that holds messages for message-queuing applications. A queue is owned and maintained by a queue manager.

queue index

In IBM MQ for z/OS, a list of message identifiers or a list of correlation identifiers that can be used to increase the speed of MQGET operations on the queue.

queue-manager

A component of a message queuing system that provides queuing services to applications. See also [channel](#), [multi-instance queue manager](#).

queue-manager-event

An event that indicates that an error condition has occurred in relation to the resources used by a queue manager (for example, a queue is unavailable), or a significant change has occurred in the queue manager (for example, a queue manager has stopped or started).

queue-manager-group

In a client channel definition table (CCDT), the group of queue managers a client tries to connect to when a connection is established to a server.

queue-manager-level-security

In IBM MQ for z/OS, the authorization checks that are performed using RACF profiles specific to a queue manager.

queue-manager-set

A grouping of queue managers in IBM MQ Explorer that allows a user to perform actions on all of the queue managers in the group.

queue sharing group

In IBM MQ for z/OS, a group of queue managers in the same sysplex that can access a single set of object definitions stored in the shared repository, and a single set of shared queues stored in the coupling facility. See also [shared queue](#).

queue sharing group level security

In IBM MQ for z/OS, the authorization checks that are performed using RACF profiles that are shared by all queue managers in a queue sharing group.

quiesce

To end a process or shut down a system after allowing normal completion of active operations.

quiesced shutdown

1. In IBM MQ, a shutdown of a queue manager that allows all connected applications to disconnect. See also [immediate shutdown](#), [preemptive shutdown](#).
2. A type of shutdown of the CICS adapter where the adapter disconnects from IBM MQ, but only after all the currently active tasks have been completed. See also [forced shutdown](#).

quiescing

In IBM MQ, the state of a queue manager before it stops. In this state, programs are allowed to finish processing, but no new programs are allowed to start.

quorum disk

The disk accessed exclusively by Microsoft Cluster Server to store the cluster recovery log, and to determine whether a server is up or down. Only one server can own the quorum disk at a time. Servers in the cluster can negotiate for the ownership.

R

RACF

See [Resource Access Control Facility](#).

RAID

See [Redundant Array of Independent Disks](#).

RAS

Reliability, Availability, and Serviceability.

RBA

See [relative byte address](#).

RC

See [return code](#).

read ahead

An option that allows messages to be sent to a client before an application requests them.

reason code

A return code that describes the reason for the failure or partial success of a Message Queue Interface (MQI) call.

receive exit

A type of channel exit program that is called just after the message channel agent (MCA) has regained control following a communications receive and has received a unit of data from a communications connection. See also [send exit](#).

receiver channel

In message queuing, a channel that responds to a sender channel, takes messages from a communication link, and puts them on a local queue.

recovery log

In IBM MQ for z/OS, data sets containing information needed to recover messages, queues, and the IBM MQ subsystem. See also [archive log](#).

recovery termination manager (RTM)

A program that handles all normal and abnormal termination of tasks by passing control to a recovery routine associated with the terminating function.

Redundant Array of Independent Disks (RAID)

A collection of two or more physical disk drives that present to the host an image of one or more logical disk drives. In the event of a physical device failure, the data can be read or regenerated from the other disk drives in the array due to data redundancy.

reference message

A message that refers to a piece of data that is to be transmitted. The reference message is handled by message exit programs, which attach and detach the data from the message so allowing the data to be transmitted without having to be stored on any queues.

registry

A repository that contains access and configuration information for users, systems, and software.

Registry Editor

In Windows systems, the program that allows the user to edit the registry.

registry hive

In Windows systems, the structure of the data stored in the registry.

relative byte address (RBA)

The offset of a data record or control interval from the beginning of the storage space that is allocated to the data set or file to which it belongs.

reliable multicast messaging (RMM)

A high-throughput low-latency transport fabric designed for one-to-many data delivery or many-to-many data exchange, in a message-oriented middleware publish/subscribe fashion. RMM uses the IP multicast infrastructure to ensure scalable resource conservation and timely information distribution.

remote queue

A queue that belongs to a remote queue manager. Programs can put messages on remote queues, but they cannot get messages from remote queues. See also [local queue](#).

remote queue manager

A queue manager to which a program is not connected, even if it is running on the same system as the program. See also [local queue manager](#).

remote queue object

An IBM MQ object belonging to a local queue manager. This object defines the attributes of a queue that is owned by another queue manager. In addition, it is used for queue manager aliasing and reply-to-queue aliasing.

remote queuing

In message queuing, the provision of services to enable applications to put messages on queues belonging to other queue managers.

reply message

A type of message used for replies to request messages. See also [report message](#), [request message](#).

reply-to queue

The name of a queue to which the program that issued an MQPUT call wants a reply message or report message sent.

report message

A type of message that gives information about another message. A report message can indicate that a message has been delivered, has arrived at its destination, has expired, or could not be processed for some reason. See also [reply message](#), [request message](#).

repository

A collection of information about the queue managers that are members of a cluster. This information includes queue manager names, their locations, their channels, and what queues they host.

repository queue manager

A queue manager that hosts the full repository of information about a cluster.

requester channel

In message queuing, a channel that can be started locally to initiate operation of a server channel. See also [server channel](#).

request message

A type of message used to request a reply from another program. See also [reply message](#), [report message](#).

request/reply

A type of messaging application in which a request message is used to request a reply from another application. See also [datagram](#).

RESLEVEL

In IBM MQ for z/OS, an option that controls the number of user IDs checked for API-resource security.

resolution path

The set of queues that are opened when an application specifies an alias or a remote queue on input to an MQOPEN call.

resource

A facility of a computing system or operating system required by a job, task, or running program. Resources include main storage, input/output devices, the processing unit, data sets, files, libraries, folders, application servers, and control or processing programs.

Resource Access Control Facility (RACF)

An IBM licensed program that provides access control by identifying users to the system; verifying users of the system; authorizing access to protected resources; logging unauthorized attempts to enter the system; and logging accesses to protected resources.

resource adapter

An implementation of the Java Enterprise Edition Connector Architecture that allows JMS applications and message driven beans, running in an application server, to access the resources of an IBM MQ queue manager.

resource manager

An application, program, or transaction that manages and controls access to shared resources such as memory buffers and data sets. IBM MQ, CICS, and IMS are resource managers.

Resource Recovery Services (RRS)

A component of z/OS that uses a sync point manager to coordinate changes among participating resource managers.

responder

In distributed queuing, a program that replies to network connection requests from another system. See also [initiator](#).

resynch

In IBM MQ, an option to direct a channel to start and resolve any in-doubt status messages, but without restarting message transfer.

return code (RC)

A value returned by a program to indicate the result of its processing. Completion codes and reason codes are examples of return codes.

return-to-sender

An option available to an MCA that is unable to deliver a message. The MCA can send the message back to the originator.

Rivest-Shamir-Adleman algorithm (RSA)

A public-key encryption technology developed by RSA Data Security, Inc, and used in the IBM implementation of SSL.

RMM

See [reliable multicast messaging](#).

rollback

See [backout](#).

root certificate

The top certificate in the chain. If this is a self-signed certificate, it is used only for signing other certificates. See also [self-signed certificate](#).

RRS

See [Resource Recovery Services](#).

RSA

See [Rivest-Shamir-Adleman algorithm](#).

RTM

See [recovery termination manager](#).

rules table

A control file containing one or more rules that the dead-letter queue handler applies to messages on the dead letter queue (DLQ).

S

SAF

See [store and forward](#).

Scalable Parallel 2 (SP2)

IBM's parallel UNIX system: effectively parallel AIX systems on a high-speed network.

SDK

See [software development kit](#).

SDWA

See [system diagnostic work area](#).

SECMEC

See [security mechanism](#).

Secure Sockets Layer (SSL)

A security protocol that provides communication privacy. With SSL, client/server applications can communicate in a way that is designed to prevent eavesdropping, tampering, and message forgery. See also [certificate authority](#).

security enabling interface (SEI)

The IBM MQ interface to which customer-written or vendor-written programs that check authorization, supply a user identifier, or perform authentication must conform.

security exit

A channel exit program that is called immediately after the initial data negotiation has completed on channel startup. Security exits normally work in pairs and can be called on both message channels and MQI channels. The primary purpose of the security exit is to enable the message channel agent (MCA) at each end of a channel to authenticate its partner.

security identifier (SID)

On Windows systems, a supplement to the user ID that identifies the full user account details on the Windows security account manager database where the user is defined.

security mechanism (SECMEC)

A technical tool or technique that is used to implement a security service. A mechanism might operate by itself, or in conjunction with others, to provide a particular service. Examples of security mechanisms include access control lists, cryptography, and digital signatures.

security message

One of the messages, sent by security exits that are called at both ends of a channel, to communicate with each other. The format of a security message is not defined and is determined by the user.

security service

A service within a computer system that protect its resources. Access control is an example of a security service.

Security Support Provider Interface (SSI)

The means for networked applications to call one of several security support providers (SSPs) to establish authenticated connections and to exchange data securely over those connections. It is available for use on Windows systems.

segmentation

The division of a message that is too large for a queue manager, queue, or application, into a number of smaller physical messages, which are then reassembled by the receiving queue manager or application.

SEI

See [security enabling interface](#).

selector

An identifier for a data item. In the IBM MQ Administration Interface (MQAI), there are two types of selector: a user selector and a system selector.

self-signed certificate

A certificate that is constructed like a digital certificate, but is signed by its subject. Unlike a digital certificate, a self-signed certificate cannot be used in a trustworthy manner to authenticate a public key to other parties.

semaphore

In UNIX and Linux systems, a general method of communication between two processes that extends the features of signals.

sender channel

In message queuing, a channel that initiates transfers, removes messages from a transmission queue, and moves them over a communication link to a receiver or requester channel.

send exit

A type of channel exit program that is called just before a message channel agent (MCA) issues a communications send to send a unit of data over a communications connection. See also [receive exit](#).

Sequenced Packet Exchange protocol (SPX)

A session-oriented network protocol that provides connection-oriented services between two nodes on the network, and is used primarily by client/server applications. It relies on the Internet Packet Exchange (IPX) protocol, provides flow control and error recovery, and guarantees reliability of the physical network.

sequence number wrap value

In IBM MQ, a method of ensuring that both ends of a communication link reset their current message sequence numbers at the same time. Transmitting messages with a sequence number ensures that the receiving channel can reestablish the message sequence when storing the messages.

serialization

In object-oriented programming, the writing of data in sequential fashion to a communications medium from program memory.

server

1. A software program or a computer that provides services to other software programs or other computers. See also [client](#).
2. A queue manager that provides queue services to client applications running on a remote workstation.

server channel

In message queuing, a channel that responds to a requester channel, removes messages from a transmission queue, and moves them over a communication link to the requester channel. See also [requester channel](#).

server-connection channel type

The type of MQI channel definition associated with the server that runs a queue manager. See also [client-connection channel type](#).

service interval

A time interval, against which the elapsed time between a put or a get and a subsequent get is compared by the queue manager in deciding whether the conditions for a service interval event have been met. The service interval for a queue is specified by a queue attribute.

service interval event

An event related to the service interval.

service object

An object that can start additional processes when the queue manager starts and can stop the processes when the queue manager stops.

session

A logical or virtual connection between two stations, software programs, or devices on a network that allows the two elements to communicate and exchange data for the duration of the session.

session ID

See [session identifier](#).

session identifier (session ID)

In IBM MQ for z/OS, the identifier, unique to CICS, that defines the communication link to be used by a message channel agent when moving messages from a transmission queue to a link.

session-level authentication

In Systems Network Architecture (SNA), a session level security protocol that enables two logical units (LUs) to authenticate each other while they are activating a session. Session level authentication is also known as LU-LU verification.

session-level cryptography

In Systems Network Architecture (SNA), a method of encrypting and decrypting data that flows on a session between two logical units (LUs).

shared inbound channel

In IBM MQ for z/OS, a channel that was started by a listener using the group port. The channel definition of a shared channel can be stored either on page set zero (private) or in the shared repository (global).

shared outbound channel

In IBM MQ for z/OS, a channel that moves messages from a shared transmission queue. The channel definition of a shared channel can be stored either on page set zero (private) or in the shared repository (global).

shared queue

In IBM MQ for z/OS, a type of local queue. The messages on the queue are stored in the coupling facility and can be accessed by one or more queue managers in a queue sharing group. The definition of the queue is stored in the shared repository. See also [queue sharing group](#).

shared repository

In IBM MQ for z/OS, a shared Db2 database that is used to hold object definitions that have been defined globally.

sharing conversations

The facility for more than one conversation to share a channel instance, or the conversations that share a channel instance.

shell

A software interface between users and an operating system. Shells generally fall into one of two categories: a command line shell, which provides a command line interface to the operating system; and a graphical shell, which provides a graphical user interface (GUI).

SID

See [security identifier](#).

signal

A mechanism by which a process can be notified of, or affected by, an event occurring in the system. Examples of such events include hardware exceptions and specific actions by processes.

signaling

In IBM MQ for z/OS and IBM MQ, a feature that allows the operating system to notify a program when an expected message arrives on a queue.

signature

The collection of types associated with a method. The signature includes the type of the return value, if any, as well as the number, order, and type of each of the method's arguments.

signer certificate

The digital certificate that validates the issuer of a certificate. For a CA, the signer certificate is the root CA certificate. For a user who creates a self-signed certificate for testing purposes, the signer certificate is the user's personal certificate.

single instance queue manager

A queue manager that does not have multiple instances. See also [multi-instance queue manager](#).

single logging

A method of recording IBM MQ for z/OS activity where each change is recorded on one data set only. See also [dual logging](#).

single-phase backout

A method in which an action in progress must not be allowed to finish, and all changes that are part of that action must be undone.

single-phase commit

A method in which a program can commit updates to a commitment resource without coordinating those updates with updates the program has made to resources controlled by another resource manager.

SIT

See [system initialization table](#).

SMF

See [System Management Facilities](#).

SNA

See [Systems Network Architecture](#).

software development kit (SDK)

A set of tools, APIs, and documentation to assist with the development of software in a specific computer language or for a particular operating environment.

source queue manager

See [local queue manager](#).

SP2

See [Scalable Parallel 2](#).

SPX

See [Sequenced Packet Exchange protocol](#).

SSI

See [Security Support Provider Interface](#).

SSL

See [Secure Sockets Layer](#).

SSLPeer

The value in the issuer represents the distinguished name of the remote personal certificate.

SSL or TLS client

The initiating end of the connection. One outbound channel from a queue manager is also an SSL or TLS client.

standby queue manager instance

An instance of a running multi-instance queue manager ready to take over from the active instance. There are one or more standby instances of a multi-instance queue manager.

stanza

A group of lines in a file that together have a common function or define a part of the system. Stanzas are usually separated by blank lines or colons, and each stanza has a name.

star-connected communications network

A network in which all nodes are connected to a central node.

storage class

In IBM MQ for z/OS, the page set that is to hold the messages for a particular queue. The storage class is specified when the queue is defined.

store and forward (SAF)

The temporary storing of packets, messages, or frames in a data network before they are retransmitted toward their destination.

streaming

In object-oriented programming, the serialization of class information and object instance data.

subscribe

To request information about a topic.

subsystem

In z/OS, a service provider that performs one or many functions but does nothing until a request is made. For example, each IBM MQ for z/OS queue manager or instance of a Db2 for z/OS database management system is a z/OS subsystem.

supervisor call (SVC)

An instruction that interrupts the program being run and passes control to the supervisor so that it can perform the specific service indicated by the instruction.

SVC

See [supervisor call](#).

switchover

The change from the active multi-instance queue manager instance to a standby instance. A switchover results from an operator intentionally stopping the active multi-instance queue manager instance.

switch profile

In IBM MQ for z/OS, a RACF profile used when IBM MQ starts up or when a refresh security command is issued. Each switch profile that IBM MQ detects turns off checking for the specified resource.

symmetric key cryptography

A system of cryptography in which the sender and receiver of a message share a single, common, secret key that is used to encrypt and decrypt the message. See also [asymmetric key cryptography](#).

symptom string

Diagnostic information displayed in a structured format designed for searching the IBM software support database.

synchronous messaging

A method of communication between programs in which a program places a message on a message queue and then waits for a reply to its message before resuming its own processing. See also [asynchronous messaging](#).

sync point

A point during the processing of a transaction at which protected resources are consistent.

sysplex

A set of z/OS systems that communicate with each other through certain multisystem hardware components and software services.

system bag

A type of data bag that is created by the MQAI.

system control commands

Commands used to manipulate platform-specific entities such as buffer pools, storage classes, and page sets.

system diagnostic work area (SDWA)

In a z/OS environment, the data that is recorded in a SYS1.LOGREC entry that describes a program or hardware error.

system initialization table (SIT)

A table containing parameters used by CICS at startup.

system item

A type of data item that is created by the MQAI.

System Management Facilities (SMF)

A component of z/OS that collects and records a variety of system and job-related information.

system selector

In the IBM MQ Administration Interface (MQAI), a system item identifier that is included in the data bag when it is created.

Systems Network Architecture (SNA)

The description of the logical structure, formats, protocols, and operational sequences for transmitting information through and controlling the configuration and operation of networks.

T

tampering

A breach of communication security in which information in transit is changed or replaced and then sent on to the recipient. See also [eavesdropping](#), [impersonation](#).

target library high-level qualifier (thlqual)

A high-level qualifier for z/OS target data set names.

target queue manager

See [remote queue manager](#).

task control block (TCB)

A z/OS control block that is used to communicate information about tasks within an address space that is connected to a subsystem.

task switching

The overlapping of I/O operations and processing between several tasks.

TCB

See [task control block](#).

TCP

See [Transmission Control Protocol](#).

TCP/IP

See [Transmission Control Protocol/Internet Protocol](#).

technote

A short document about a single topic.

telemetry channel

A communication link between a queue manager on IBM MQ, and MQTT clients. Each channel might have one or more telemetry devices connected to it.

telemetry service

The telemetry service is an IBM MQ service that handles the server side of the MQTT protocol (see *MQTT Server*). The telemetry service hosts telemetry channels. It is sometimes referred to as the MQXR (MQ extended reach) service.

temporary dynamic queue

A dynamic queue that is deleted when it is closed. Temporary dynamic queues are not recovered if the queue manager fails, so they can contain nonpersistent messages only. See also [permanent dynamic queue](#).

teraspace

A one terabyte temporary storage area that provides storage that is private to a process.

termination notification

A pending event that is activated when a CICS subsystem successfully connects to IBM MQ for z/OS.

thlqual

See [target library high-level qualifier](#).

thread

A stream of computer instructions that is in control of a process. In some operating systems, a thread is the smallest unit of operation in a process. Several threads can run concurrently, performing different jobs.

TID

See [transaction identifier](#).

time-independent messaging

See [asynchronous messaging](#).

TLS

See [Transport Layer Security](#).

TMF

See [Transaction Manager Facility](#).

TMI

See [trigger monitor interface](#).

topic host routing

An option for routing publications in a publish/subscribe cluster. With topic host routing, only selected cluster queue managers host the topic definitions. Publications from non-hosting queue managers are routed through the hosting queue managers to any queue manager in the cluster with a matching subscription.

TP

See [transaction program](#).

trace

A record of the processing of a computer program or transaction. The information collected from a trace can be used to assess problems and performance.

transaction ID

See [transaction identifier](#).

transaction identifier (TID, transaction ID, XID)

A unique name that is assigned to a transaction and is used to identify the actions associated with that transaction.

transaction manager

A software unit that coordinates the activities of resource managers by managing global transactions and coordinating the decision to commit them or roll them back.

Transaction Manager Facility (TMF)

In IBM MQ for HP NonStop Server, a subsystem to protect business transactions and the integrity of databases.

transaction program (TP)

A program that processes transactions in an SNA network.

Transmission Control Protocol (TCP)

A communication protocol used in the Internet and in any network that follows the Internet Engineering Task Force (IETF) standards for internetwork protocol. TCP provides a reliable host-to-host protocol in packet-switched communication networks and in interconnected systems of such networks. See also [Internet Protocol](#).

Transmission Control Protocol/Internet Protocol (TCP/IP)

An industry-standard, nonproprietary set of communication protocols that provides reliable end-to-end connections between applications over interconnected networks of different types.

transmission program

See [message channel agent](#).

transmission queue

A local queue on which prepared messages destined for a remote queue manager are temporarily stored.

transmission segment

The data sent in each single flow between a pair of message channel agents or a pair of client-server connection MQI agents.

Transport Layer Security

A set of encryption rules that uses verified certificates and encryption keys to secure communications over the Internet. TLS is an update to the SSL protocol.

triggered queue

A local queue, usually an application queue, that has triggering enabled so that a message is written when a trigger event occurs. The trigger message is often written to an initiation queue.

trigger event

An event, such as a message arriving on a queue, that causes a queue manager to create a trigger message on an initiation queue.

triggering

In IBM MQ, a facility that allows a queue manager to start an application automatically when predetermined conditions on a queue are satisfied.

trigger message

A message that contains information about the program that a trigger monitor is to start.

trigger monitor

A continuously running application that serves one or more initiation queues. When a trigger message arrives on an initiation queue, the trigger monitor retrieves the message. It uses the information in the trigger message to start a process that serves the queue on which a trigger event occurred.

trigger monitor interface (TMI)

The IBM MQ interface to which customer-written or vendor-written trigger monitor programs must conform.

truststore

In security, a storage object, either a file or a hardware cryptographic card, where public keys are stored in the form of trusted certificates, for authentication purposes. In some applications, these trusted certificates are moved into the application keystore to be stored with the private keys.

two-phase commit

A two-step process by which recoverable resources and an external subsystem are committed. During the first step, the database manager subsystems are polled to ensure that they are ready to commit. If all subsystems respond positively, the database manager instructs them to commit.

two way authentication

In this method of authentication, the queue manager and the client, present the certificate to each other. Also known as mutual authentication.

type

A characteristic that specifies the internal format of data and determines how the data can be used.

U

UDP

See [User Datagram Protocol](#).

unauthorized access

Gaining access to resources within a computer system without permission.

undelivered message queue

See [dead-letter queue](#).

undo/redo record

A log record used in recovery. The redo part of the record describes a change to be made to an IBM MQ object. The undo part describes how to back out the change if the work is not committed.

unit of recovery

A recoverable sequence of operations within a single resource manager, such as an instance of Db2 for z/OS. See also [unit of work](#).

unit of work (UOW)

A recoverable sequence of operations performed by an application between two points of consistency. A unit of work begins when a transaction starts or at a user-requested sync point. It ends either at a user-requested sync point or at the end of a transaction.

UOW

See [unit of work](#).

user bag

In the MQAI, a type of data bag that is created by the user.

User Datagram Protocol (UDP)

An Internet protocol that provides unreliable, connectionless datagram service. It enables an application program on one machine or process to send a datagram to an application program on another machine or process.

user item

In the MQAI, a type of data item that is created by the user.

user selector

In the IBM MQ Administration Interface (MQAI), the identifier that is placed with a data item into a data bag to identify the data item. IBM MQ provides predefined user selectors for IBM MQ objects.

user token (UTOKEN)

The RACF security token that encapsulates or represents the security characteristics of a user. RACF assigns a UTOKEN to each user in the system.

utility

In IBM MQ, a supplied set of programs that provide the system operator or system administrator with facilities in addition to those provided by the IBM MQ commands.

UTOKEN

See [user token](#).

V

value

The content of a data item. The value can be an integer, a string, or the handle of another data bag.

virtual method

In object-oriented programming, a method that exhibits polymorphism.

W

WCF custom channel

Microsoft Windows Communication Foundation (WCF) custom channel for IBM MQ.

IBM WebSphere MQ

A previous name for IBM MQ.

wiretapping

The act of gaining access to information that is flowing along a wire or any other type of conductor used in communications. The objective of wiretapping is to gain unauthorized access to information without being detected.

X

X509

International Telecommunications Union standard for PKI. Specifies the format of the public key certificate and the public key cryptography.

XCF

See [cross-system coupling facility](#).

XID

See [transaction identifier](#).

X/Open XA

The X/Open Distributed Transaction Processing XA interface. A proposed standard for distributed transaction communication. The standard specifies a bidirectional interface between resource managers that provide access to shared resources within transactions, and between a transaction service that monitors and resolves transactions.

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Programming interface information, if provided, is intended to help you create application software for use with this program.

This book contains information on intended programming interfaces that allow the customer to write programs to obtain the services of WebSphere MQ.

However, this information may also contain diagnosis, modification, and tuning information. Diagnosis, modification and tuning information is provided to help you debug your application software.

Important: Do not use this diagnosis, modification, and tuning information as a programming interface because it is subject to change.

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