

9.0

*Installing IBM MQ*



**Note**

Before using this information and the product it supports, read the information in [“Notices” on page 355](#).

This edition applies to version 9 release 0 of IBM® MQ and to all subsequent releases and modifications until otherwise indicated in new editions.

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# Contents

<b>Installing and uninstalling.....</b>	<b>5</b>
IBM MQ installation overview.....	5
IBM MQ components and features.....	6
License requirements.....	8
Where to find product requirements and support information.....	9
Installation with a download image.....	10
Planning considerations for installation on Multiplatforms.....	10
Redistributable clients.....	23
Installing and uninstalling IBM MQ on AIX.....	26
IBM MQ components for AIX.....	27
Checking requirements on AIX.....	30
Planning to install IBM MQ on AIX.....	31
Preparing the system on AIX.....	32
Installing IBM MQ server on AIX.....	36
Converting a trial license on AIX.....	41
Displaying messages in your national language on AIX.....	41
Installing an IBM MQ client on AIX.....	42
Verifying an IBM MQ installation on AIX.....	44
Uninstalling or modifying IBM MQ on AIX.....	58
Installing and uninstalling IBM MQ on HP-UX.....	60
IBM MQ components for HP-UX.....	60
Checking requirements on HP-UX.....	63
Planning to install IBM MQ on HP-UX.....	64
Preparing the system on HP-UX.....	65
Installing IBM MQ server on HP-UX.....	70
Converting a trial license on HP-UX.....	74
Displaying messages in your national language on HP-UX.....	75
Installing an IBM MQ client on HP-UX.....	75
Verifying an IBM MQ installation on HP-UX.....	78
Uninstalling or modifying IBM MQ on HP-UX.....	91
Installing and uninstalling IBM MQ on IBM i.....	93
IBM MQ components for IBM i.....	93
Hardware and software requirements on IBM i systems.....	94
Planning to install IBM MQ on IBM i.....	96
Preparing the system on IBM i.....	96
Installing IBM MQ server on IBM i.....	98
Converting a trial license on IBM i.....	110
Installing an IBM MQ client on IBM i.....	110
Installing IBM MQ Java messaging and web services for IBM i.....	113
Verifying an IBM MQ installation on IBM i.....	115
Uninstalling IBM MQ for IBM i.....	119
Installing and uninstalling IBM MQ on Linux.....	124
Checking requirements on Linux.....	124
Planning to install IBM MQ on Linux.....	127
Preparing the system on Linux.....	128
Installing IBM MQ on Linux using rpm.....	135
Installing IBM MQ on Linux Ubuntu using Debian.....	158
Redistributable clients on Linux.....	171
Converting a trial license on Linux.....	172
Displaying messages in your national language on Linux.....	173
Verifying an IBM MQ installation on Linux.....	174
Uninstalling or modifying IBM MQ on Linux.....	190

Installing and uninstalling IBM MQ on Solaris.....	194
IBM MQ components for Solaris systems.....	195
Checking requirements on Solaris.....	200
Planning to install IBM MQ on Solaris.....	201
Preparing the system on Solaris.....	202
Installing IBM MQ server on Solaris.....	206
Converting a trial license on Solaris.....	211
Displaying messages in your national language on Solaris systems.....	211
Installing an IBM MQ client on Solaris.....	212
Verifying an IBM MQ installation on Solaris.....	215
Uninstalling IBM MQ on Solaris.....	229
Installing and uninstalling IBM MQ on Windows.....	230
IBM MQ features for Windows systems.....	231
Checking requirements on Windows.....	240
Planning to install IBM MQ on Windows.....	242
Installing IBM MQ server on Windows.....	248
Installing an IBM MQ client on Windows.....	275
Converting a trial license on Windows.....	287
Displaying messages in your national language on Windows systems.....	288
Redistributable clients on Windows.....	289
Verifying an IBM MQ installation on Windows.....	291
Uninstalling IBM MQ on Windows.....	308
Installing IBM MQ Advanced for Multiplatforms.....	314
Installing and uninstalling AMS on Multiplatforms.....	315
Installing Managed File Transfer .....	323
Installing MQ Telemetry.....	331
Installing RDQM (replicated data queue managers).....	338
Installing IBM MQ for z/OS.....	340
z/OS installation overview.....	341
Checking requirements on z/OS.....	343
Planning to install IBM MQ for z/OS.....	343
Delivery media.....	346
Customizing IBM MQ and its adapters.....	346
Verifying your installation of IBM MQ for z/OS.....	347
Macros intended for customer use.....	347
Product usage recording with IBM MQ for z/OS products.....	348
IBM MQ for z/OS Value Unit Edition (VUE) .....	349
Installing Managed File Transfer for z/OS.....	350
Installing Advanced Message Security on z/OS.....	351
Installing IBM MQ Advanced for z/OS.....	352
Installing IBM MQ Advanced for z/OS, Value Unit Edition.....	352
<b>Notices.....</b>	<b>355</b>
Programming interface information.....	356
Trademarks.....	356

# Installing and uninstalling IBM MQ

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Before you start installing IBM MQ, consider how you want to use it. Use these topics 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.

## About this task

To get started with installing IBM MQ, see the topics for the platform, or platforms, that your enterprise uses. For concepts and considerations relating to installation, see [“IBM MQ installation overview” on page 5](#).

You can also apply and remove maintenance to IBM MQ. See [Applying maintenance to IBM MQ](#).



**Attention:** The information in this section applies to both Continuous Delivery (CD) and Long Term Support (LTS) releases.

Any information that applies specifically to an LTS or CD release is marked with the appropriate icon.

## Procedure

1. To find information on installing IBM MQ, see the appropriate sections for the platform, or platforms, that your enterprise uses:
  - ▶ **AIX** [“Installing and uninstalling IBM MQ on AIX” on page 26](#)
  - ▶ **HP-UX** [“Installing and uninstalling IBM MQ on HP-UX” on page 60](#)
  - ▶ **Linux** [“Installing IBM MQ on Linux using rpm” on page 135](#)
  - ▶ **Solaris** [“Installing and uninstalling IBM MQ on Solaris” on page 194](#)
  - ▶ **Windows** [“Installing and uninstalling IBM MQ on Windows” on page 230](#)
  - ▶ **z/OS** [“Installing IBM MQ for z/OS” on page 340](#)
2. To find out about concepts and considerations relating to installation, see [“IBM MQ installation overview” on page 5](#).

## IBM MQ installation overview

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An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Installation considerations for MQ Telemetry” on page 332](#)

From IBM WebSphere MQ 7.1, MQ Telemetry is a component of the main IBM MQ product, and is no longer a separate plugin. You can choose to install MQ Telemetry when you first install IBM MQ, or when you modify an existing IBM MQ installation.

[Managed File Transfer product options](#)

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. These options are Managed File Transfer Agent, Managed File Transfer Service, Managed File Transfer Logger, or Managed File Transfer Tools.

### Related tasks

Maintaining and migrating

[Installing Advanced Message Security](#)

Use the information for your platform to guide you through installing the Advanced Message Security (AMS) component.

## IBM MQ components and features

You can select the components or features that you require when you install IBM MQ.

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

Also review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Where to find product requirements and support information” on page 9](#).

### Installation of IBM MQ on Multiplatforms



IBM MQ can be installed as a server or a client. The installation images can be downloaded (see [“Installation with a download image” on page 10](#)), or IBM MQ can be installed from a DVD.

As an alternative to installing a client from a DVD or installation image, you can download the IBM MQ V9 Clients SupportPac from [Fix Central](#) (see [MQC9: IBM MQ V9 Clients](#)).

An IBM MQ server is an installation of one or more queue managers that provide queuing services to one or more clients. All the IBM MQ objects, for example queues, exist only on the queue manager machine (the IBM MQ server machine), and not the client. An IBM MQ server can also support local IBM MQ applications.


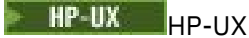







An IBM MQ MQI client is a component that allows an application running on one system to communicate with a queue manager running on another system. The output from the call is sent back to the client, which passes it back to the application.


For detailed explanations of all the components that you can install, see:

- [“IBM MQ components for AIX” on page 27](#)
- [“IBM MQ components for HP-UX” on page 60](#)
- [“IBM MQ components for IBM i” on page 93](#)
- [“IBM MQ rpm components for Linux systems” on page 136](#)
- [“IBM MQ Debian components for Linux Ubuntu systems” on page 159](#)
- [“IBM MQ components for Solaris systems” on page 195](#)
- [“IBM MQ features for Windows systems” on page 231](#)

For information about how to install IBM MQ on each supported platform, see the links in the following table:

Table 1. Where to find IBM MQ installation information for each platform

Platform	IBM MQ server	IBM MQ client
 AIX	<a href="#">“Installing IBM MQ server on AIX” on page 36</a>	<a href="#">“Installing an IBM MQ client on AIX” on page 42</a>
 HP-UX	<a href="#">“Installing IBM MQ server on HP-UX” on page 70</a>	<a href="#">“Installing an IBM MQ client on HP-UX” on page 75</a>
 IBM i	<a href="#">“Installing IBM MQ server on IBM i” on page 98</a>	<a href="#">“Installing an IBM MQ client on IBM i” on page 110</a>
 Linux	<a href="#">“Installing IBM MQ server on Linux” on page 140</a>	<a href="#">“Installing an IBM MQ client on Linux” on page 150</a>
   Linux	<a href="#">“Installing an IBM MQ server on Linux Ubuntu using Debian packages” on page 163</a>	<a href="#">“Installing an IBM MQ client on Linux Ubuntu using Debian packages” on page 168</a>
 Solaris	<a href="#">“Installing IBM MQ server on Solaris” on page 206</a>	<a href="#">“Installing an IBM MQ client on Solaris” on page 212</a>
 Windows	<a href="#">“Installing IBM MQ server on Windows” on page 248</a>	<a href="#">“Installing an IBM MQ client on Windows” on page 275</a>

**Note:**  Up to and including IBM MQ 8.0, IBM WebSphere MQ for HP NonStop Server was also a component platform. Since then, this component has been supplied and supported separately as IBM MQ for HPE NonStop V8.1, which provides IBM MQ on HPE NonStop L-series and J-series platforms. The documentation is here: [IBM MQ for HPE NonStop V8.1](#).

## Installing IBM MQ clients and servers on the same system

### Multi

A client can be installed on its own, on a separate machine from the base product and server. It is also possible to have both a server and a client installation on the same system.

If you install from a DVD, to install an IBM MQ client on a system that is already running an IBM MQ server, you must use the appropriate Server DVD. You can use a Client DVD to install an IBM MQ client only on a system that is not running an IBM MQ server.

If you install an IBM MQ client from a Client DVD and later decide to install the IBM MQ server on the same system, you must first remove all the client components from the system, then use the appropriate Server DVD to install both the server and client components. You cannot install an IBM MQ server on a system that already has client components installed from a Client DVD.

Remember that even if your client and server are installed on the same system, you must still define the MQI channel between them. See [Defining MQI channels](#) for details.


## Advanced Message Security, Managed File Transfer and MQ Telemetry



Advanced Message Security, Managed File Transfer and MQ Telemetry are separately installed components of IBM MQ. Make sure that you purchase a license for using IBM MQ Advanced before installing any of these components (see [IBM MQ license information](#)).

## Installation of IBM MQ on z/OS

### z/OS

For information on installation options for IBM MQ for z/OS, see [“Installing IBM MQ for z/OS” on page 340](#).

 For information on installation options for IBM MQ Advanced for z/OS, see [“Installing IBM MQ Advanced for z/OS” on page 352](#).

  For information on installation options for IBM MQ Advanced for z/OS, Value Unit Edition, see [“Installing IBM MQ Advanced for z/OS, Value Unit Edition” on page 352](#).

### Related concepts

[“Installation location on Multiplatforms” on page 11](#)

You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the `MQ_INSTALLATION_PATH`.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

[“Installation name on UNIX, Linux, and Windows” on page 10](#)

Each installation of IBM MQ on UNIX, Linux, and Windows, has a unique identifier known as an installation name. The installation name is used to associate things such as queue managers and configuration files with an installation.

### Related tasks

[“Installing IBM MQ Advanced for Multiplatforms” on page 314](#)

Installation tasks associated with IBM MQ Advanced for Multiplatforms are grouped in this section.

## License requirements

You must have purchased sufficient licenses for your installation. The details of the license agreement is stored on your system at installation time so that you can read it at any time. IBM MQ supports IBM License Metric Tool (ILMT).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. See [IBM MQ license information](#) for more details.

### License files

At installation, the license agreement files are copied into the `/licenses` directory under the `MQ_INSTALLATION_PATH`. You can read them at any time.

 On IBM i, you can use the `WRKSWAGR` command to view the software licenses.

### ILMT

ILMT automatically detects IBM MQ, if you are using it, and checks with it each time a queue manager is started. You do not need to take any further action. You can install ILMT before or after IBM MQ.

The automatic detection applies to both the IBM MQ server and IBM MQ Java products.

### Related concepts

[“Hardware and software requirements on Linux systems” on page 125](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“Hardware and software requirements on Windows systems” on page 240](#)



Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

#### **Related tasks**

[“Checking requirements on Windows” on page 240](#)

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

## **Where to find product requirements and support information**

Before you install IBM MQ, you must check for the latest information and system requirements.

You can consult the following sources to check that you have the information that you need to help you with planning your installation, including information on hardware and software requirements:

#### **IBM MQ System Requirements website**

For details of the supported operating systems, and the prerequisites, supported software, and hardware requirements for each supported operating system, go to the [System Requirements for IBM MQ](#) website and follow the links to the Detailed System Requirements report for the version of IBM MQ that you are installing. You can select a report for a specific operating system or for a specific component. In both cases, there are separate reports for Long Term Support and Continuous Delivery.

#### **Product readme file**

The product readme file includes information about last minute changes and known problems and workarounds. The latest version is available at the IBM MQ, WebSphere MQ, and MQSeries® product [readmes](#) web page. Always check to see that you have the latest version of the product readme file.

#### **Support information**

The IBM MQ support web page is regularly updated with the latest product support information. For example, if you are migrating from an earlier version, look under the heading *Solve a problem* for the document *Problems and solutions when migrating*.

#### **Related concepts**

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

[“Hardware and software requirements on AIX systems” on page 30](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on HP-UX systems” on page 64](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“Hardware and software requirements on Linux systems” on page 125](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on Solaris systems” on page 200](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on Windows systems” on page 240](#)

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

#### **Related tasks**

[Applying maintenance to IBM MQ](#)

[“Installing IBM MQ for z/OS” on page 340](#)

Installation tasks that are associated with installing IBM MQ on z/OS systems are grouped in this section.

## Multi Installation with a download image

You can perform an installation of IBM MQ from an installation image downloaded from Passport Advantage.

You can download an eAssembly for a full release of IBM MQ on all supported platforms from Passport Advantage. 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 9.0](#).

Go to the [Passport Advantage and Passport Advantage Express web site](#) for further information on how you:

- Acquire new IBM software licenses.
- Renew Software Subscription and Support and Fixed Term Licenses.
- Buy and renew technical support for some [Selected Open Source](#) and other non-warranted applications.
- Subscribe to IBM SaaS offerings and acquire IBM Appliances.

Passport Advantage is designed for larger enterprises and enterprises with multiple sites.


Passport Advantage Express is designed for smaller enterprises and single-site enterprises.

## Multi Planning considerations for installation on Multiplatforms

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

Before you start installing, consider how you want to use IBM MQ and review the information in this section, and also the information in the general [Planning](#) section.

When planning your installation, make sure that you check the hardware and software requirements for your system. For more information, see [“Where to find product requirements and support information”](#) on page 9.

**Note:**  This information is about planning an installation on IBM MQ for Multiplatforms. For information about planning an installation on z/OS, see [“Planning to install IBM MQ for z/OS”](#) on page 343.

## ULW Installation name on UNIX, Linux, and Windows

Each installation of IBM MQ on UNIX, Linux, and Windows, has a unique identifier known as an installation name. The installation name is used to associate things such as queue managers and configuration files with an installation.

You can choose the installation name and make it meaningful to you. For example, you might call a test system *testMQ*.

If you do not specify an installation name when the product is installed, a default installation name is automatically assigned. For the first installation, this name is *Installation1*. For the second installation, the name is *Installation2*, and so on. The installation name cannot be changed after the product is installed.

### Linux UNIX

On UNIX and Linux systems, the first IBM MQ installation is automatically given an installation name of *Installation1*. For subsequent installations, you can use the **crtmqinst** command to set the installation name before installing the product.

### Windows

On Windows systems, you can choose the installation name during the installation process.

The installation name can be up to 16 bytes and must be a combination of alphabetic and numeric characters in the ranges a-z, A-Z, and 0-9. You cannot use blank characters. The installation name must be unique, regardless of whether uppercase or lowercase characters are used. For example, the names INSTALLATIONNAME and InstallationName are not unique.

You can find out what installation name is assigned to an installation in a particular location using the **dspmqinst** command.

## Installation descriptions

Each installation can also have an installation description. This description can give more detailed information about an installation in cases where the installation name cannot provide enough information. These descriptions can be up to 64 single-byte characters, or 32 double-byte characters. The default installation description is blank. You can set the installation description using the **setmqinst** command.

### Related concepts

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

[“Installation location on Multiplatforms” on page 11](#)

You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the *MQ\_INSTALLATION\_PATH*.

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

### Related reference

[dspmqinst](#)

[setmqinst](#)








[crtmqinst](#)


## Installation location on Multiplatforms


You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the *MQ\_INSTALLATION\_PATH*.



### Default location

The default location for the IBM MQ product code is shown in the following table:

Table 2. Installation location of IBM MQ	
Platform	Installation location
 AIX	/usr/mqm
 HP-UX	/opt/mqm
 IBM i	/QIBM/ProdData/mqm
 Linux	/opt/mqm
 Solaris	/opt/mqm
 Windows	C:\Program Files\IBM\MQ
 Windows	C:\ProgramData\IBM\MQ




**Important:**  For Windows installations, the directories are as stated, unless there is a previous installation of the product that still contains registry entries or queue managers, or both. In this situation, the new installation uses the old data directory location. For more information, see [Program and data directory locations](#).

 On IBM i, IBM MQ can only be installed in the default location. For more information about the directory structure of IBM i, see [Directory structure on IBM i](#)

  On UNIX and Linux systems, working data is stored in `/var/mqm`, but you cannot change this location. For more information about the directory structure of UNIX and Linux systems, see [Directory structure on UNIX and Linux systems](#).

## Custom location installation

For an installation into a custom location, the path specified must either be an empty directory, or a path that does not exist. The length of the path is limited to 256 bytes. Permissions on the path must be such that the user `mqm` and users in the `mqm` group can access the directories.

-   On UNIX and Linux systems, the path must not contain spaces.
-  On AIX, the product is installed into a User Specified Installation Location (USIL), which can be either an existing USIL or a new USIL that is automatically created by the installation process. If a custom location is specified, the product location is the path specified during installation, plus `/usr/mqm`.

For example, the path specified is `/usr/custom_location`. The `MQ_INSTALLATION_PATH` is `/usr/custom_location/usr/mqm`.

Access permissions for the USIL directory should be set to `rwX` for user and `r-x` for group and others (755).

- On the following platforms, the product location is the same path as specified during installation:

-  HP-UX
-  Linux
-  Solaris
-  Windows

For example, on Linux, the path specified is `/opt/custom_location`. The `MQ_INSTALLATION_PATH` is `/opt/custom_location`.

- On the following platforms, you can install IBM MQ into a non empty `MQ_INSTALLATION_PATH` directory:

-  HP-UX
-  Linux
-  Solaris

On Linux and Solaris, you do this by setting the environment variable `AMQ_OVERRIDE_EMPTY_INSTALL_PATH` to 1 before starting the installation.

On HP-UX you need to create the file `/tmp/AMQ_OVERRIDE_EMPTY_INSTALL_PATH` before starting the installation.

Note, that a non empty directory in this context, indicates a directory which contains system files and directories.

For each installation, all of the IBM MQ components that you require must be installed in the same location.

For more information about how to install to a custom location, see the installation topics for the appropriate platform.





## Additional location restrictions

New IBM MQ installations should not be located in the following paths:

- In a path that is a subdirectory of another existing installation.
- In a path that is part of the direct path to an existing installation.

If IBM MQ is installed in `/opt/IBM/MQ/installations/1`, you cannot install in `/opt/IBM/MQ/installations/1/a`. Additionally, you should not install a new installation to `/opt/IBM/MQ`. However, you can install a new installation in `/opt/IBM/MQ/installations/2` or `/opt/IBM/MQnew` because neither of these is a part of the direct path `/opt/IBM/MQ/installations/1`.

- In a path that is a subdirectory of the default location, for example:

-  `/usr/mqm` on AIX.
-  `/opt/mqm` on HP-UX.
-  `/opt/mqm` on Linux.
-  `/opt/mqm` on Solaris.

The reason an installation should not be located in a path that is a subdirectory of the default location is to avoid the risk if you later decide to install IBM MQ into the default location, and cannot then do so. If you do subsequently install into the default location, because IBM MQ has full access rights over the installation directory, existing files might be replaced or deleted. Scripts that you might subsequently run to uninstall IBM MQ might remove the installation directory at the end of the script.

- In a directory or subdirectory that is, or might later be used by another product, for example, an IBM Db2® installation, or operating system component.

You must not install to any directory located under `/opt/IBM/db2` where `/opt/IBM/db2` is an example.

- In a directory or subdirectory that the mqm user or mqm group does not have authority to write to.

## Related concepts

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

[“Installation name on UNIX, Linux, and Windows” on page 10](#)

Each installation of IBM MQ on UNIX, Linux, and Windows, has a unique identifier known as an installation name. The installation name is used to associate things such as queue managers and configuration files with an installation.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

## Multiple installations on UNIX, Linux, and Windows

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

You can choose where each copy of IBM MQ is installed, but each copy must be in a separate installation location. A maximum of 128 installations of IBM MQ can exist on a single machine at a time. You have a choice:

- Keep the simplicity of maintaining and managing a single installation of IBM MQ on a machine.
- Take advantage of the flexibility that is offered by enabling multiple IBM MQ installations.

## Decisions to make before installing

Before you install multiple copies of IBM MQ, you must make several decisions:

### Where will you install each copy of IBM MQ?

You can choose the installation location for your installations at IBM WebSphere MQ 7.1, or later. For more information, see [“Installation location on Multiplatforms” on page 11.](#)

### Do you need a primary installation?

A primary installation is an installation to which system-wide locations refer.

For more information, see [“Primary installation on UNIX, Linux, and Windows” on page 15.](#)

### How will your applications connect?

You need to consider how your applications locate the appropriate IBM MQ libraries. For more information, see [Connecting applications in a multiple installation environment](#), and [Connecting .NET applications in a multiple installation environment](#).

### Do your existing exits need changing?

If IBM MQ is not installed in the default location, your exits need to be updated. For more information, see [Writing exits and installable services on UNIX, Linux, and Windows](#).

### Which queue manager will be associated with which installation?

Each queue manager is associated with a particular installation. The installation that a queue manager is associated with limits that queue manager so that it can be administered only by commands from that installation. For more information, see [Associating a queue manager with an installation](#).

### How will you set up your environment to work with each installation?

With multiple installations on a system, you need to consider how you will work with particular installations, and how you will issue commands from that installation. You can either specify the full path to the command, or you can use the **setmqenv** or **crtmqenv** command to set environment variables. Setting the environment variables allows you to omit the path to the commands for that installation. For more information, see [setmqenv](#), and [crtmqenv](#).

When you have answered these questions, you can install IBM MQ after you have read [“IBM MQ installation overview” on page 5.](#)

If you have existing installations of IBM MQ and you want to use the multiple installation capability to migrate from one version of IBM MQ to another version, see one of the following platform-specific topics:

-  [Multi-installation queue manager coexistence on UNIX, Linux, and Windows](#)

## The IBM message service client for .NET support pack and multiple installations

For multiple version support, on IBM WebSphere MQ 7.1 or later, the *Java and .NET Messaging and Web Services* feature must be installed with the IBM MQ product. For more information about installing the .NET feature, see [Installing IBM MQ classes for .NET](#).

### Related tasks

[Configuring multiple installations](#)

[Finding installations of IBM MQ on a system](#)

[Migrating on UNIX and Linux: side-by side](#)

[Migrating on UNIX and Linux: multi-stage](#)

[“Choosing MSI Instance IDs for multiple server installations” on page 257](#)

For multiple silent installations, for each version that is installed you must find an MSI instance ID that is available to use for that installation.

[“Choosing MSI Instance IDs for multiple client installations” on page 281](#)

For multiple silent installations, for each version that is installed you must find an MSI instance ID that is available to use for that installation.

## ULW Primary installation on UNIX, Linux, and Windows

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

From IBM WebSphere MQ 7.1, you can install multiple versions of IBM MQ on UNIX, Linux, and Windows. It is possible to have more than one installation of IBM MQ on one of these systems at any time and, optionally, to configure one of these installations as the primary installation. Environment variables and symbolic links pointing to a single installation are less meaningful when multiple versions exist. However, some functions require these system-wide locations to work. For example, custom user scripts for administering IBM MQ, and third party products. These functions work only on the primary installation.

**Linux** **UNIX** On UNIX and Linux systems, if you set an installation as the primary installation, symbolic links to the external libraries and control commands of that installation are added into `/usr/lib`, and `/usr/bin`. If you do not have a primary installation, the symbolic links are not created. For a list of the symbolic links that are made to the primary installation, see [“External library and control command links to primary installation on UNIX and Linux”](#) on page 18.

**Windows** On Windows systems, the global environmental variables point to the directories into which the primary installation was installed. These environment variables are used to locate IBM MQ libraries, control commands, and header files. Additionally, on Windows systems, some features of the operating system require the central registration of interface libraries that are then loaded into a single process. With multiple versions of IBM MQ, there would be conflicting sets of IBM MQ libraries. The features would try to load these conflicting sets of libraries into a single process. Therefore, such features can be used only with the primary installation. For details about some of the features that are limited to use with the primary installation, see [“Features that can be used only with the primary installation on Windows”](#) on page 21.

If all the installations on the system are at IBM WebSphere MQ 7.1, or later, you can choose whether to have a primary installation. Consider the options in [Table 3 on page 15](#).

Table 3. Primary installation options			
Options	Valid installation configurations		More information
	Primary	Non-primary	
Single installation of IBM WebSphere MQ 7.1, or later.	IBM WebSphere MQ 7.1, or later.	None	If you want to continue working with a single installation in the same way as previous releases, configure your installation as the primary installation. For information about this option, see <a href="#">“Single installation of IBM MQ configured as the primary installation”</a> on page 16
	None	IBM WebSphere MQ 7.1, or later.	If you want to continue working with a single installation, but do not want symbolic links or global environment variables created for you, configure your installation as non-primary. For information about the implications of this option, see <a href="#">“Single installation of IBM MQ configured as non-primary”</a> on page 17



Table 3. Primary installation options (continued)

Options	Valid installation configurations		More information
Multiple installations: IBM WebSphere MQ 7.1, or later.	IBM WebSphere MQ 7.1, or later.	IBM WebSphere MQ 7.1, or later.	If you want to have multiple installations of IBM MQ, you can choose whether to make one of the installations primary. For information about this option, see <a href="#">“Multiple installations of IBM MQ” on page 18</a>
	None	IBM WebSphere MQ 7.1, or later.	

### Related concepts

[“Single installation of IBM MQ configured as the primary installation” on page 16](#)

Marking an IBM MQ installation as primary adds symbolic links, or global environment variables to the system so that the IBM MQ commands and libraries used by applications are automatically available with minimum system setup required.

[“Single installation of IBM MQ configured as non-primary” on page 17](#)

If you install IBM MQ, or later, as non-primary you might have to configure a library path for applications to load IBM MQ libraries. On Windows, some product capabilities are available only when IBM MQ is configured as primary.

[“Multiple installations of IBM MQ” on page 18](#)

You can choose to have one of the IBM MQ installations configured as the primary installation. Your choice depends on how applications locate libraries.

[“Installation location on Multiplatforms” on page 11](#)

You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the `MQ_INSTALLATION_PATH`.

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

[“Installation name on UNIX, Linux, and Windows” on page 10](#)

Each installation of IBM MQ on UNIX, Linux, and Windows, has a unique identifier known as an installation name. The installation name is used to associate things such as queue managers and configuration files with an installation.

### Related tasks

[Changing the primary installation](#)

## **Single installation of IBM MQ configured as the primary installation**

Marking an IBM MQ installation as primary adds symbolic links, or global environment variables to the system so that the IBM MQ commands and libraries used by applications are automatically available with minimum system setup required.

You decide where to install IBM MQ.

Where possible, configure applications and scripts to use the system search path to find the IBM MQ control commands or IBM MQ libraries. This configuration of applications and scripts provides maximum flexibility for undertaking future tasks such as migrating to the next release of IBM MQ, or installing a second installation. For more information about options for connecting your applications, see [Connecting applications in a multiple installation environment](#).



## Windows

On Windows, the first installation is automatically configured as the primary installation.

## Linux

## UNIX

On UNIX and Linux platforms, the first installation onto a system must be manually configured to be the primary installation.

Set the primary installation using the **setmqinst** command. For more information, see [Uninstalling, upgrading, and maintaining the primary installation](#).

### Related tasks

[Changing the primary installation](#)

[Choosing an installation location](#)

[Planning your installation](#)

[Choosing an installation name](#)

## ULW

### Single installation of IBM MQ configured as non-primary

If you install IBM MQ, or later, as non-primary you might have to configure a library path for applications to load IBM MQ libraries. On Windows, some product capabilities are available only when IBM MQ is configured as primary.

## UNIX and Linux systems

## Linux

## UNIX

The implications of running a non-primary installation on UNIX and Linux are:

- Applications that locate their IBM MQ libraries using an embedded library path, for example, RPATH, cannot find those libraries if the following conditions are true:
  - IBM MQ is installed in a different directory from the directory specified in the RPATH
  - There are no symbolic links in /usr
- Where applications locate their libraries using an external library path, for example, LD\_LIBRARY\_PATH, you must configure the external library path to include the `MQ_INSTALLATION_PATH/lib` or `MQ_INSTALLATION_PATH/lib64` directory. The **setmqenv** and **crtmqenv** commands can configure a number of environment variables in the current shell, including the external library path.
- Most IBM MQ processes run as setuid/setgid. As a result, when loading user exits they ignore the external library path. User exits that reference IBM MQ libraries can find those libraries only if they are found in the library path embedded within them. They would be resolved if there were a symbolic link in /usr. User exits that are intended to be run on IBM WebSphere MQ 7.1, or later can now be built so that they do not refer to IBM MQ libraries at all. Instead they rely on IBM MQ to pass in function pointers to the IBM MQ functions that the exit can then use. For more information, see [Writing exits and installable services on UNIX, Linux, and Windows](#).

For more information about options for connecting your applications, see [Connecting applications in a multiple installation environment](#).

On UNIX and Linux platforms, the first installation onto a system is not automatically configured as the primary installation. However, a single symbolic link is included in /usr/bin to locate the **dspmqr** command. If you do not want any symbolic links, you must remove this link using the following command:

```
setmqinst -x -p MQ_INSTALLATION_PATH
```

## Windows systems

## Windows

The implications of running a non-primary installation on Windows are:

- Applications normally find their libraries using the external library path, PATH. There is no concept of an embedded library path or explicit library location. If the installation is non-primary, the global PATH environment variable does not contain the IBM MQ installation directory. For applications to find IBM

MQ libraries, update the PATH environment variable to reference the IBM MQ installation directory. The **setmqenv** and **crtmqenv** commands can configure a number of environment variables in the current shell, including the external library path.

- Some product capabilities are available only when an installation is configured as the primary installation; see [Features that can be used only with the primary installation on Windows](#).

By default, on Windows, the first installation is automatically configured as primary. You must manually deselect it as the primary installation.

#### **Related tasks**

[Changing the primary installation](#)

[Choosing an installation location](#)

[Planning your installation](#)

[Choosing an installation name](#)

#### **Related reference**

[setmqenv](#)

[crtmqenv](#)

### **Multiple installations of IBM MQ**

You can choose to have one of the IBM MQ installations configured as the primary installation. Your choice depends on how applications locate libraries.

The IBM MQ libraries, such as mqm, which ship with the product automatically use libraries of the level required by the queue manager to which they are connecting. This means that provided an application locates its IBM MQ libraries from an IBM MQ installation, it can connect to any queue manager on that system. Having one installation configured as primary ensures that if the application finds its IBM MQ interface library, the application can connect to any queue manager.

For more information about connecting applications in a multiple installation environment, see [Connecting applications in a multiple installation environment](#).

The primary installation is not automatically changed when you uninstall the primary installation. If you want another installation to be the primary installation, you must manually set the primary installation using the **setmqinst** command. For more information, see [Uninstalling, upgrading, and maintaining the primary installation](#).

#### **Related concepts**

[Multiple installations](#)

#### **Related tasks**

[Changing the primary installation](#)

[Choosing an installation location](#)

[Planning your installation](#)

[Choosing an installation name](#)

### **External library and control command links to primary installation on UNIX and Linux**

On UNIX and Linux platforms the primary installation is the one to which links from the /usr file system are made. However, only a subset of those links created with previous releases are now made.

No links are created from /usr/include to any installation and only links to external libraries and documented control commands are made from /usr/lib, and where appropriate, /usr/lib64 (external libraries) and /usr/bin (control commands).

In order to run these commands you must complete the following steps:

1. provide a full path to the command in an available IBM MQ installation,
2. use the setmqenv script to update your shell environment,
3. manually add the bin directory from an IBM MQ installation directory to your PATH,

4. run the **setmqinst** command as root to make one of your existing IBM MQ installations the primary installation.

## External libraries

Links are made to the following external libraries, both 32-bit and 64-bit:

- libmqm
- libmqm\_r
- libmqmxa
- libmqmxa\_r
- libmqmax
- libmqmax\_r
- libmqmcb
- libmqmcb\_r
- libmqic
- libmqic\_r
- libmqcxa
- libmqcxa\_r
- libmqicb
- libmqicb\_r
- libimqb23ia
- libimqb23ia\_r
- libimqc23ia
- libimqc23ia\_r
- libimqs23ia
- libimqs23ia\_r
- libmqmzf
- libmqmzf\_r

The following 64-bit only libraries are also linked to:

- libmqmxa64
- libmqmxa64\_r
- libmqcxa64
- libmqcxa64\_r

## Control commands

The following control commands are linked to from `/usr/bin`:

- addmqinf
- amqcrs6a
- amqcrsta
- amqmfscck
- crtmqinst
- dltmqinst
- dspmqinst
- setmqinst

- crtmcvix
- crtmm
- dltmm
- dmpmqaut
- dmpmqlog
- dspmq
- dspmqaut
- dspmqcsv
- dspmqfls
- dspmqinf
- dspmqrte
- dspmqtrc
- dspmqtrn
- dspmqver
- endmqcsv
- endmqslr
- endmqm
- endmqtrc
- rcdmqimg
- rcrmqobj
- rmvmqinf
- rsvmqtrn
- runmqchi
- runmqchl
- runmqckm
- runmqdlq
- runmqslr
- runmqsc
- runmqtmc
- runmqtrm
- setmqaut
- setmqenv
- setmqm
- setmqprd
- strmqcsv
- strmqikm
- strmqm
- strmqtrc

### **Related concepts**

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

[“Features that can be used only with the primary installation on Windows” on page 21](#)

Some Windows operating-system features can be used only with the primary installation. This restriction is due to the central registration of interface libraries, which might conflict as a result of multiple versions of IBM MQ being installed.

### **Features that can be used only with the primary installation on Windows**

Some Windows operating-system features can be used only with the primary installation. This restriction is due to the central registration of interface libraries, which might conflict as a result of multiple versions of IBM MQ being installed.

## **The .NET monitor**

The IBM MQ .NET monitor can run in two different modes: transactional and non-transactional. The transactional mode uses MSDTC transaction coordination and requires that the .NET monitor is registered with COM+. The .NET monitor from the primary installation is the only .NET monitor that is registered with COM+.

Any attempt to run the .NET monitor in transactional mode with a non-primary installation results in the failure of the .NET monitor to enlist with MSDTC. The .NET monitor receives an MQRC\_INSTALLATION\_MISMATCH error, which in turn results in an AMQ8377 error message on the console.

## **COM/ActiveX interface classes**

The COM/ActiveX interface classes are registered only for the primary installation. If there is an installation of IBM WebSphere MQ 7.0.1 on the system, the COM/ActiveX interface classes registered are not capable of connecting to queue managers running under other installations. If the primary installation is an installation of IBM WebSphere MQ 7.1 or later, the interface classes can connect to queue managers associated with any installation. Server COM/ActiveX applications are limited by this restriction, but client applications can connect to any queue manager.

Any attempt to start a COM/ActiveX application that uses libraries from installations other than the primary installation results in failure with an MQRC\_Q\_MGR\_NOT\_AVAILABLE error.

### **Related concepts**

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

[“External library and control command links to primary installation on UNIX and Linux” on page 18](#)

On UNIX and Linux platforms the primary installation is the one to which links from the /usr file system are made. However, only a subset of those links created with previous releases are now made.

### **Uninstalling, upgrading, and maintaining the primary installation**

On all platforms, if you uninstall the primary installation, it ceases to be the primary installation. You must run the **setmqinst** command to select a new primary installation. On Windows, if you update the primary installation, it continues to be the primary installation. If you apply a fix pack to the primary installation, it continues to be the primary installation.

Be cautious about the effect uninstalling or upgrading the primary installation has on applications. Applications might be using the linkage library of the primary installation to switch to the linkage library of another installation. If such an application is running, you might not be able to uninstall the primary installation. The operating system might have locked the link library of the primary installation on behalf of the application. If the primary installation has been uninstalled, an application that loads the IBM MQ libraries it requires by linking to the primary installation is not able to start.

The solution is to switch the primary installation to another installation before uninstalling. Stop, and restart applications that are linked through the previous primary installation before uninstalling it.

## Windows

### Windows

If you update the primary installation, it stops being the primary installation at the beginning of the update procedure. If, by the end of the update procedure, you have not made another installation primary, the upgraded installation is made primary again.

## Maintenance

If you apply a fix pack to the primary installation, it stops being the primary installation at the beginning of the maintenance procedure. If, by the end of the maintenance procedure, you have not made another installation primary, the upgraded installation is made primary again.

### Related concepts

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[Changing the primary installation](#)

[Applying maintenance to IBM MQ](#)

## ULW

## Server-to-server links on UNIX, Linux, and Windows

For verifying a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must ensure that the communications protocol is installed and configured on both systems.

The examples used in the verification tasks listed in this topic for UNIX, Linux, and Windows use TCP/IP.

The various communication protocols used by the supported platforms are as follows.

### UNIX

#### UNIX

IBM MQ supports both TCP and SNA. If you do not use TCP, see [Setting up communication on UNIX and Linux systems](#).

### Linux

#### Linux

IBM MQ for Linux supports TCP on all Linux platforms. On x86 platforms and Power platforms, SNA is also supported. If you want to use the SNA LU6.2 support on these platforms, you need the IBM Communications Server for Linux 6.2. The Communications Server is available as a PRPQ product from IBM. For more details, see [Communications Server](#).

If you do not use TCP, see [Setting up communication on UNIX and Linux systems](#).

### Windows

#### Windows

IBM MQ for Windows supports TCP, SNA, NetBios, and SPX. If you do not use TCP, see [Setting up communication for Windows](#).

### Related tasks

[“Verifying an IBM MQ installation on AIX” on page 44](#)

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on AIX systems.

[“Verifying an IBM MQ installation on HP-UX” on page 78](#)

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on HP-UX systems.

[“Verifying an IBM MQ installation on Linux” on page 174](#)

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Linux systems.

[“Verifying an IBM MQ installation on Solaris” on page 215](#)

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Solaris systems.

[“Verifying an IBM MQ installation on Windows” on page 291](#)

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Windows systems.

## **Redistributable clients**

The IBM MQ redistributable client is a collection of runtime files that are provided in a .zip or .tar file that can be redistributed to third parties under redistributable license terms, which provides a simple way of distributing applications and the runtime files that they require in a single package.

### **What are the IBM MQ redistributable clients?**

From IBM MQ 8.0.0 Fix Pack 4, native redistributable client runtime libraries are provided for Linux x86-64 and Windows 64-bit platforms to make it simple to distribute both applications and the required IBM MQ runtime libraries. A third package, which is not platform-specific, contains the runtime files that are required for the Java/JMS applications, including the IBM MQ resource adapter for JMS applications that are running under an application server.


The redistributable client that is supplied with IBM MQ is also a non-installed and relocatable image. Maintenance of a redistributable, non-installed image, is achieved through replacement; that is, you download newer versions of the runtime components when they are shipped.

A *redistributable* client implies distributing the required run time with an application both inside and outside of your environment.

A *relocatable* client implies putting the files somewhere else other than a fixed default location. For example, instead of installing into /opt/ installing into /usr/local.

A *non-installed* client implies that you are not required to lay down client files, and that these files can be copied as required.

The IBM IPLA license agreement is extended for IBM MQ to enable you to download a number of additional runtime files from [Fix Central](#).

 From IBM MQ 9.0.5, XMS .NET is shipped as part of the redistributable client. XMS .NET requires the IBM MQ .NET client (amqmdnet.dll). If unmanaged mode is to be used, then the IBM MQ C client libraries are also needed along with amqmdnet.dll.

### **Supported languages**

You can use the files that are contained in the redistributable images to run the following client applications:

- C
- C++
- COBOL
- Java
- Java JMS
- Both fully managed and unmanaged .NET

## Limitations

### IBM Global Security Kit (GSKit) objects

No new GSKit objects are being shipped. Only the runtime files are shipped, both in a regular installation and with the redistributable client.

### IBM JREs

No IBM JREs are being provided with the redistributable client.

If you want to run Java/JMS applications, you must provide your own runtime environment. Your JRE, that applications run under, must meet the current SOE requirements and are bound by any restrictions or limitations that apply.

### Developing applications

All other files that support the development and distribution of applications (including copybooks, header files, and sample source code) are not included in the redistributable client and are not licensed for redistribution.

If you need to develop IBM MQ applications, you still need to perform a traditional installation so that you obtain the SDK files that are required to build client applications.



### Windows C runtime libraries

You might have these libraries on your machine already, but if you do not, you need to download and install the following Microsoft C/C++ runtime libraries:

- Microsoft Visual C++ Redistributable 2008
- Microsoft Visual C++ Redistributable 2012

The download links for the redistributable downloads for each of these libraries can be found at [The latest supported Visual C++ downloads](#).

For more information about installing redistributable clients, see:

-  [“Redistributable clients on Linux” on page 171](#)
-  [“Redistributable clients on Windows” on page 289](#)

### Related concepts

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

[“Installation location on Multiplatforms” on page 11](#)

You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the `MQ_INSTALLATION_PATH`.

[“.NET application runtime - Windows only” on page 290](#)

Considerations when using the .NET application.

### Related tasks


[Configuring the Redistributable Managed File Transfer Agent](#)

### Installation considerations for redistributable clients

The Linux x86-64 image is shipped in a `LinuxX64.tar.gz` file, and the Windows 64-bit image is shipped in a `Win64.zip` file.

### File names

The archive or .zip file names describe the file contents and equivalent maintenance levels.

 For example, for Continuous Delivery, in IBM MQ 9.0.4 the client images are available under the following file names:



**Linux Linux x86-64**  
9.0.4.0-IBM-MQC-Redist-LinuxX64.tar.gz

**Windows Windows**  
9.0.4.0-IBM-MQC-Redist-Win64.zip

**Windows z/OS Linux Java**  
9.0.4.0-IBM-MQC-Redist-Java.zip

**LTS** For Long Term Support, in IBM MQ 9.0.0 Fix Pack 2 the client images are available under the following file names:

**Linux Linux x86-64**  
9.0.0.2-IBM-MQC-Redist-LinuxX64.tar.gz

**Windows Windows**  
9.0.0.2-IBM-MQC-Redist-Win64.zip

**Java**  
9.0.0.2-IBM-MQC-Redist-Java.zip

## Choosing the runtime files to distribute with an application

A script file named **genmqpkg** is provided by the redistributable client under the bin directory.

You can use the **genmqpkg** script to generate a smaller subset of files that are tailored to the needs of the application, for which the files are intended to be distributed.

You are asked a series of interactive Yes or No questions to determine the runtime requirements for an IBM MQ application.

Finally, **genmqpkg** asks you to supply a new target directory, where the script duplicates the required directories and files.

**Important:** IBM support is only able to provide assistance with the full, unmodified set of files contained within the redistributable client packages.

## Other considerations

The default data path of a non-installed client is:

**Linux Linux x86-64**  
\$HOME/IBM/MQ/data

**Windows Windows**  
%HOMEDRIVE%\%HOMEPATH%\IBM\MQ\data

On UNIX and Linux systems, the length of the path must not contain spaces.

**Important:** A redistributable client runtime co-exists with a full IBM MQ client or server installation, provided that they are installed in different locations. However, unpacking a redistributable image into the same location as a full IBM MQ installation is not supported.

On Linux the `ccsid.tbl` used to define the supported CCSID conversions is traditionally expected to be found in the `UserData` directory structure, along with error logs, trace files, and so on. The `UserData` directory structure is populated by unpacking the redistributable client, and so, if the file is not found in its usual location, the redistributable client falls back to locate the file in the `/lib` subdirectory of the installation.

## Classpath changes

The classpath used by **dspmqver**, **setmqenv**, and **crtmqenv** commands adds the `com.ibm.mq.allclient.jar` to the environment, immediately following the `com.ibm.mq.jar` and `com.ibm.mqjms.jar`.

An example of **dspmqver** output from the redistributable client on Linux:

```
Name:      IBM MQ
Version:   8.0.0.4
Level:     p800-804-L150909
BuildType: IKAP - (Production)
Platform:  IBM MQ for Linux (x86-64 platform)
Mode:      64-bit
O/S:       Linux 2.6.32.59-0.7-default
InstName:  MQNI08000004
InstDesc:  IBM MQ 8.0.0.4 (Redistributable)
Primary:   No
InstPath:  /Development/johndoe/unzip/unpack
DataPath:  /u/johndoe/IBM/MQ/data
MaxCmdLevel: 802
```

An example of **dspmqver** output from the redistributable client on Windows:

```
Name:      IBM MQ
Version:   8.0.0.4
Level:     p800-804-L150909
BuildType: IKAP - (Production)
Platform:  IBM MQ for Windows (x64 platform)
Mode:      64-bit
O/S:       Windows 7 Professional x64 Edition, Build 7601: SP1
InstName:  MQNI08000004
InstDesc:  IBM MQ 8.0.0.4 (Redistributable)
Primary:   No
InstPath:  C:\Users\johndoe\Desktop\Redist
DataPath:  C:\Users\johndoe\IBM\MQ\data
MaxCmdLevel: 802
```

### Related concepts

[“Redistributable clients” on page 23](#)

The IBM MQ redistributable client is a collection of runtime files that are provided in a `.zip` or `.tar` file that can be redistributed to third parties under redistributable license terms, which provides a simple way of distributing applications and the runtime files that they require in a single package.

[“.NET application runtime - Windows only” on page 290](#)

Considerations when using the .NET application.

## AIX

## Installing and uninstalling IBM MQ on AIX

Installation tasks that are associated with installing IBM MQ on AIX systems are grouped in this section.

### About this task

To prepare for installation and to install the IBM MQ components, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling or modifying IBM MQ on AIX” on page 58](#).

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

1. Check the system requirements.  
See [“Checking requirements on AIX” on page 30](#).
2. Plan your installation.

- As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ components for AIX” on page 27](#).
  - You must also make some platform-specific choices. See [“Planning to install IBM MQ on AIX” on page 31](#).
3. Prepare your system for installation of IBM MQ.  
See [“Preparing the system on AIX” on page 32](#).
  4. Install IBM MQ server.  
See [“Installing IBM MQ server on AIX” on page 36](#).
  5. Optional: Install an IBM MQ client.  
See [“Installing an IBM MQ client on AIX” on page 42](#).
  6. Verify your installation. See [“Verifying an IBM MQ installation on AIX” on page 44](#).

## AIX IBM MQ components for AIX

You can select the components that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

On AIX each component of IBM MQ is represented by a fileset. [Table 4 on page 27](#) shows the filesets that are available when installing an IBM MQ server or client on an AIX system:

Table 4. IBM MQ filesets for AIX systems				
Component	Description	Server media	Client media	Fileset name
<b>Runtime</b>	Contains files that are common to both server and client installations. <b>Note:</b> This component must be installed.	✓	✓	mqm.base.runtime
<b>Server</b>	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.	✓		mqm.server.rte
<b>Standard Client</b>	The IBM MQ MQI client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and the server can be on the same system if required.	✓	✓	mqm.client.rte
<b>SDK</b>	The SDK is required for compiling applications. It includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ.	✓	✓	mqm.base.sdk
<b>Sample programs</b>	The sample application programs are needed if you want to check your IBM MQ installation using the verification procedures.	✓	✓	mqm.base.samples

Table 4. IBM MQ filesets for AIX systems (continued)

Component	Description	Server media	Client media	Fileset name
<b>Java messaging</b>	The files needed for messaging using Java (includes Java Message Service).	✓	✓	mqm.java.rte
<b>Man pages</b>	UNIX man pages, in U.S. English, for: control commands MQI calls MQSC commands	✓	✓	mqm.man.en_US.data
<b>Java JRE</b>	A Java Runtime Environment that is used by those parts of IBM MQ that are written in Java.	✓	✓	mqm.jre.rte
<b>Message Catalogs</b>	For available languages, see the table of <a href="#">message catalogs</a> that follows.	✓	✓	
<b>IBM Global Security Kit (GSKit)</b>	GSKit 8 Certificate and TLS, Base Runtime.	✓	✓	mqm.gskit.rte
<b>Telemetry Service</b>	MQ Telemetry supports the connection of Internet Of Things (IOT) devices (that is, remote sensors, actuators and telemetry devices) that use the IBM MQ Telemetry Transport (MQTT) protocol. The telemetry (MQXR) service enables a queue manager to act as an MQTT server, and communicate with MQTT client apps.  A set of MQTT clients is available from the <a href="#">Eclipse Paho downloads page</a> . These sample clients help you write your own MQTT client apps that IOT devices use to communicate with MQTT servers.  See also “ <a href="#">Installation considerations for MQ Telemetry</a> ” on page 332.	✓		mqm.xr.service
<b>Managed File Transfer</b>	MQ Managed File Transfer transfers files between systems in a managed and auditable way, regardless of file size or the operating systems used. For information about the function of each component, see <a href="#">Managed File Transfer product options</a> .	✓		mqm.ft.agent mqm.ft.base mqm.ft.logger mqm.ft.service mqm.ft.tools

Table 4. IBM MQ filesets for AIX systems (continued)





Component	Description	Server media	Client media	Fileset name
<b>Advanced Message Security</b>	<p>Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.</p> <p>You must install the GSKit component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.</p> <p>You must install the <b>Java JRE</b> component to install this component.</p>	✓		mqm.ams.rte
 <b>V9.0.0</b>  <b>V9.0.0</b> <b>AMQP Service</b>	<p>Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.</p>	✓		mqm.amqp.rte
 <b>V9.0.4</b>  <b>V9.0.4</b> <b>REST API and Console</b>	<p>Adds HTTP based administration for IBM MQ through the REST API and IBM MQ Console.</p>	✓		mqm.web.rte

Table 5. IBM MQ message catalogs for AIX systems

Message catalog language	Component name
Brazilian Portuguese	mqm.msg.pt_BR
Czech	mqm.msg.cs_CZ
French	mqm.msg.fr_FR
German	mqm.msg.de_DE
Hungarian	mqm.msg.hu_HU
Italian	mqm.msg.it_IT
Japanese	mqm.msg.ja_JP, mqm.msg.Ja_JP
Korean	mqm.msg.ko_KR
Polish	mqm.msg.pl_PL
Russian	mqm.msg.ru_RU
Spanish	mqm.msg.es_ES
Simplified Chinese	mqm.msg.zh_CN, mqm.msg.Zh_CN
Traditional Chinese	mqm.msg.zh_TW, mqm.msg.Zh_TW

Table 5. IBM MQ message catalogs for AIX systems (continued)

Message catalog language	Component name
U.S. English	mqm.msg.en_US

### Related concepts

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

## AIX

### Checking requirements on AIX

Before you install IBM MQ on AIX, you must check for the latest information and system requirements.

### About this task

A summary of the tasks that you must complete to check system requirements is listed here with links to further information.

### Procedure

1. Check that you have the latest information, including information on hardware and software requirements.

See [“Where to find product requirements and support information” on page 9](#).

2. Check that your systems meet the initial hardware and software requirements for AIX.

See [“Hardware and software requirements on AIX systems” on page 30](#).

The supported hardware and software environments are occasionally updated. See [System Requirements for IBM MQ](#) for the latest information.

3. Check that your systems have sufficient disk space for the installation.

See [Disk space requirements](#).

4. Check that you have the correct licenses.

See [“License requirements” on page 8](#) and [IBM MQ license information](#).

### What to do next

When you have completed these tasks, you are ready to start preparing your system for installation. For the next steps in installing IBM MQ, see [“Preparing the system on AIX” on page 32](#).

### Related concepts

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### Related tasks

[Applying maintenance to IBM MQ](#)

## AIX

### Hardware and software requirements on AIX systems

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

For hardware and software requirements, see [System Requirements for IBM MQ](#).

IBM MQ does not support host names that contain spaces. If you install IBM MQ on a system with a host name that contains spaces, you are unable to create any queue managers.

## 32-bit client support



**Attention:** From IBM MQ 9.0.0, there is no separate 32-bit client installation package. The client installation package and redistributable client contain both 32-bit and 64-bit IBM MQ client libraries. The included 32-bit libraries can be used by 32-bit applications on supported platforms where 32-bit support is offered by the operating system.

## Java Message Service and SOAP transport

If you want to use Java Message Service and SOAP support, you need a Java 7 SDK and Runtime Environment from IBM at version 7.0 or later.

**V 9.0.0** Java 8 is bundled with IBM MQ 9.0 but client components are built with Java 7 compatibility flags on.

For development, a JDK is required, and a JRE is required for running. The JRE does not need to be the JRE installed with IBM MQ, but has to be one from the supported list.

For a list of supported JDKs, see [System Requirements for IBM MQ](#).

For further information about SOAP with IBM MQ, see [IBM MQ transport for SOAP](#).

You can check the version installed using the following command:

```
java -version
```

## Transport Layer Security (TLS)

If you want to use the TLS support, you need the IBM Global Security Kit (GSKit) version 8 package. This package is supplied with IBM MQ as one of the components available for installation.

## Unicode support on AIX

If you need to convert data to and from Unicode on your system, you must install the following file sets:

```
bos.iconv.ucs.com    Unicode converters for AIX sets
bos.iconv.ucs.ebcdic Unicode converters for EBCDIC sets
bos.iconv.ucs.pc     Unicode converters for PC sets
```

### Related concepts

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“Hardware and software requirements on Windows systems” on page 240](#)

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

### Related tasks

[“Checking requirements on Windows” on page 240](#)

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

**AIX**

## Planning to install IBM MQ on AIX

Before you install IBM MQ on AIX, you must choose which components to install and where to install them. You must also make some platform-specific choices.

## About this task

The following steps provide links to additional information to help you with planning your installation of IBM MQ on AIX.

As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Checking requirements on AIX” on page 30](#).

## Procedure

- Decide which IBM MQ components and features to install.

See [“IBM MQ components and features” on page 6](#).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

- Review the options for naming your installation.

In some cases, you can choose an installation name to use instead of the default name. See [“Installation name on UNIX, Linux, and Windows” on page 10](#).

- Review the options and restrictions for choosing an installation location for IBM MQ.

For more information, see [“Installation location on Multiplatforms” on page 11](#).

- If you plan to install multiple copies of IBM MQ, see [“Multiple installations on UNIX, Linux, and Windows” on page 13](#).

- If you already have a primary installation, or plan to have one, see [“Primary installation on UNIX, Linux, and Windows” on page 15](#).

- Make sure that the communications protocol needed for server-to-server verification is installed and configured on both systems that you plan to use.

For more information, see [“Server-to-server links on UNIX, Linux, and Windows” on page 22](#).

## AIX

## Preparing the system on AIX

On AIX systems, you might have to complete several tasks before you install IBM MQ. You might also want to complete other tasks, depending on your installation intentions.

### About this task

The tasks that you perform to prepare your systems for installation are listed here. Complete the appropriate tasks for your platform before installing.

## Procedure

1. Set up a user ID of the name mqm, with a primary group of mqm.

See [“Setting up the user and group on AIX” on page 33](#).

**Note:** If the group mqm and/or user mqm do not exist, during the installation of the product, the installer creates group mqm and user mqm with a home directory of `/var/mqm`.

2. Create file systems for both the product code and working data to be stored. See [“Creating file systems on AIX” on page 34](#).

3. Configure any additional settings needed for your AIX system.

See [“Configuring and tuning the operating system on AIX” on page 35](#).

### What to do next

When you have completed the tasks to prepare the system, you are ready to start installing IBM MQ. To install a server, see [“Installing IBM MQ server on AIX” on page 36](#). To install a client, see [“Installing an IBM MQ client on AIX” on page 42](#).

### Related tasks

[Planning](#)

[Maintaining and migrating](#)

[Applying maintenance to IBM MQ](#)



## Setting up the user and group on AIX

On AIX systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

### Creating the user ID and group

Set the primary group of the `mqm` user to the group `mqm`.

**Note:** If the group `mqm` and/or user `mqm` do not exist, during the installation of the product, the installer creates group `mqm` and user `mqm` with a home directory of `/var/mqm`

If you are installing IBM MQ on multiple systems you might want to ensure each UID and GID of `mqm` has the same value on all systems. If you are planning to configure multi-instance queue managers, it is essential the UID and GID are the same from system to system. It is also important to have the same UID and GID values in virtualization scenarios.

You can use the System Management Interface Tool ( `smit` ), for which you require root authority.

1. To create the `mqm` group, display the required window using this sequence:

```
Security & Users
Groups
Add a Group
```

Set the group name field to `mqm`.

2. To create the user `mqm`, display the required window using this sequence:

```
Security & Users
Users
Add a User
```

Set the user name field to `mqm`.

3. To add a password to the new user ID, display the required window using this sequence:

```
Security & Users
Passwords
Change a User's Password
```

Set the password as required.

### Adding existing user IDs to the group

If you want to run administration commands, for example `crtmqm` (create queue manager) or `strmqm` (start queue manager), your user ID must be a member of the `mqm` group. This user ID must not be longer than 12 characters.

Users do not need `mqm` group authority to run applications that use the queue manager; it is needed only for the administration commands.

You can use `smit` to add an existing user ID to the `mqm` group. Display the required menu using this sequence:

```
Security & Users
Users
Change / Show Characteristics of a User
```

Type the name of the user in the **User Name** field and press **Enter**. Add `mqm` to the **Group SET** field, which is a comma-separated list of the groups to which the user belongs. Users do not need to have their primary group set to `mqm`. If `mqm` is in their set of groups, they can use the administration commands.

## Log files created by MQ Telemetry service

The **umask** setting of the user ID that creates a queue manager will determine the permissions of the Telemetry log files generated for that queue manager. Even though the ownership of the log files will be set to mqm.

### Related concepts

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

[“Configuring and tuning the operating system on HP-UX” on page 68](#)

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

[“Configuring and tuning the operating system on Linux” on page 131](#)

Use this topic when you are configuring IBM MQ on Linux systems.

### Related tasks

[“Configuring and tuning the operating system on AIX” on page 35](#)

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

### Related reference

[“Configuring and tuning the operating system on Solaris” on page 205](#)

Configure Solaris systems with the resource limits required by IBM MQ.

## Creating file systems on AIX

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

## Determining the size of a server installations file system

To determine the size of the `/var/mqm` file system for a server installation, consider:

- The maximum number of messages in the system at one time.
- Contingency for message buildups, if there is a system problem.
- The average size of the message data, plus 500 bytes for the message header.
- The number of queues.
- The size of log files and error messages.
- The amount of trace that is written to the `/var/mqm/trace` directory.

Storage requirements for IBM MQ also depend on which components you install, and how much working space you need. For more details, see [Disk space requirements](#).

## Creating a file system for the working data

Before you install IBM MQ, create and mount a file system called `/var/mqm` which is owned by the user mqm in the group mqm; see [“Setting up the user and group on AIX” on page 33](#). This file system is used by all installations of IBM MQ on a system. If possible, use a partition strategy with a separate volume for the IBM MQ data. This means that other system activity is not affected if a large amount of IBM MQ work builds up. Configure the directory permissions to permit the mqm user to have full control, for example, file mode 755. These permissions will then be updated during the IBM MQ installation to match the permissions required by the queue manager.

## Creating separate file systems for errors and logs

You can also create separate file systems for your log data ( `/var/mqm/log` ) and error files ( `/var/mqm/errors` ). If possible, place these directories on different physical disks from the queue manager data ( `/var/mqm/qmgrs` ) and from each other.

If you create separate file systems the `/var/mqm/errors` directory can be NFS mounted. However, if you choose to NFS-mount `/var/mqm/errors`, the error logs might be lost if the network fails.

You can protect the stability of your queue manager by having separate file systems for:

- `/var/mqm/errors`
- `/var/mqm/trace`
- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the case of `/var/mqm/errors`, it is rare that this directory receives large quantities of data. But it is sometimes seen, particularly if there is a severe system problem leading to IBM MQ writing a lot of diagnostic information in to `.FDC` files. In the case of `/var/mqm/trace`, files are only written here when you use **strmqtrc** to start tracing IBM MQ.

You can obtain better performance of normal IBM MQ operations (for example, syncpoints, MQPUT, MQGET of persistent messages) by placing the following on separate disks:

- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the rare event that you need to trace an IBM MQ system for problem determination, you can reduce performance impact by placing the `/var/mqm/trace` file system on a separate disk.

If you are creating separate file systems, allow a minimum of 30 MB of storage for `/var/mqm`, 100 MB of storage for `/var/mqm/log`, and 10 MB of storage for `/var/mqm/errors`. The 100 MB minimum allowance of storage for `/var/mqm/log` is the absolute minimum required for a single queue manager and is not a recommended value. The size of a file system must be scaled according to the number of queue managers that you intend to use, the number of pages per log file, and the number of log files per queue manager.

For more information about file systems, see [File system support](#).

The size of the log file depends on the log settings that you use. The minimum sizes are for circular logging using the default settings. For more information about log sizes, see [Calculating the size of the log](#).

### Related concepts

[“Setting up the user and group on AIX” on page 33](#)

On AIX systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

### Related tasks

[“Configuring and tuning the operating system on AIX” on page 35](#)

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

## **Configuring and tuning the operating system on AIX**

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

### About this task

When you install IBM MQ on AIX systems, you must configure the following operating system settings:

- File descriptors
- System resource limits

## Procedure

- Increase the process limit for the number of file descriptors.

When running a multi-threaded process such as the agent process, you might reach the soft limit for file descriptors. This limit gives you the IBM MQ reason code MQRC\_UNEXPECTED\_ERROR (2195) and, if there are enough file descriptors, an IBM MQ FFST file.

To avoid this problem, increase the process limit for the number of file descriptors. You must alter the `nofiles` attribute in `/etc/security/limits` to 10,000 for the `mqm` user ID, or in the default stanza. To alter the number of file descriptors, complete the following steps:

- a) Check the maximum number of file descriptors available to a process running as `mqm`:

```
lsuser -a nofiles mqm
```

- b) Set the value to at least 10240:

```
chuser nofiles=10240 mqm  
chuser nofiles_hard=10240 mqm
```

- Set the system resource limit for data segment and stack segment to unlimited using the following commands in a command prompt:

```
ulimit -d unlimited  
ulimit -s unlimited
```



**Attention:** For an `mqm` user ID other than `root`, the value `unlimited` might not be permitted.

## What to do next

You can check your system configuration using the `mqconfig` command.

During high load IBM MQ can use virtual memory (swap space). If virtual memory becomes full it could cause IBM MQ processes to fail or become unstable, affecting the system.

To prevent this situation your IBM MQ administrator should ensure that the system has been allocated enough virtual memory as specified in the operating system guidelines.

For more information on configuring your system, see the technote [How to configure UNIX and Linux systems for IBM MQ](#).

### Related concepts

[“Setting up the user and group on AIX” on page 33](#)

On AIX systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

AIX

## Installing IBM MQ server on AIX

You can install an IBM MQ server on AIX either interactively or silently.

### Before you begin

- Before you start the installation procedure, make sure that you complete the necessary steps that are outlined in [“Preparing the system on AIX” on page 32](#).
- IBM MQ can be installed into System Workload Partitions (WPARs) with both shared and private file systems. For installation into private file systems, IBM MQ can be installed directly into the System

WPAR by using the procedure that is outlined in this topic. There are some limitations for shared /usr file systems:

- The **dspmqinst** and **dspmqver** commands might report the primary installation incorrectly when compared with the symbolic links in /usr/bin. To synchronize the reporting of the primary installation in a System WPAR and the global environment, run **setmqinst** with the **-i** or **-x** parameter, on the individual zones.
- You cannot change the primary installation within a WPAR. You must change the primary installation through the global environment, which has appropriate write access to /usr/bin.

**Note:** During installation to a non-default location, ATTENTION messages that relate to **errupdate** or **trcupdate** are produced. These messages are not errors. However, AIX system trace for IBM MQ is not supported for installations in a non-default location, and IBM MQ trace must be used for problem determination.

- If you install a copy of IBM MQ server for AIX by using [Electronic Software Download](#), obtained from Passport Advantage, you need to:
  1. Use the **gunzip** command to remove the gz from tar.gz, as the installation files use the Linux style of compression:

```
gunzip MQ_V9.0_F_AIX_EIMAGE.tar.gz
```

2. Extract the installation files from the tar file, by using the following command:

```
tar -xvf MQ_V9.0_F_AIX_EIMAGE.tar
```

**Note:** You can use the **-c** command line option on the **gunzip** command so that instead of replacing the whatever.tar.gz with whatever.tar, the output of the command is sent to the standard output file, that is, stdout.

This allows you to use a command filter as shown in the following code to:

- Decompress the compressed tar file (leaving the compressed file unchanged), and
- Expand the tar file to the current directory.

```
gunzip -c  
MQ_V9.0_F_AIX_EIMAGE.tar.gz | tar  
-xvf -
```

where the **-f** tar command line option tells the tar command to read its input from the standard input file, that is stdin.

3. Use the installation tools **installp** or **smit** to install the IBM MQ server for AIX.

**Tip:** If you find that the Function keys do not work in SMIT, try pressing Esc and the Function key number to emulate the required Function key.

## About this task

IBM MQ is supplied as a set of filesets that are installed by using the standard AIX installation tools. The procedure uses the system management interface tool (SMIT), but you can choose to use **installp**, **geninstall** or the web-based System Manager. You can select which components you want to install. The components and file sets are listed in [“IBM MQ components for AIX”](#) on page 27.

This procedure installs IBM MQ into the default location of /usr/mqm.

If you want to install IBM MQ in any one of the following situations:

- As the first installation on your system by using **installp**
- As the first installation on your system, and you are installing the product to a location that is not the default location
- Alongside an existing installation

Use the procedure that is described in [“Installing the IBM MQ server silently on AIX”](#) on page 39.

If you want to carry out a side-by-side installation, alongside an existing installation of IBM MQ in the default location, you must install the second version of the product in a location that is not the default. To create the non-default installation location you must use the **mkusil** command, which is available only from the command line.

You can then use **installp** (see “Installing the IBM MQ server silently on AIX” on page 39), or SMIT if you select the **Relocatable Software Installation** menu item.

If you want to carry out a single stage migration, refer to [Single-stage migration from IBM WebSphere MQ 7.0.1 or later to the latest version on UNIX, Linux, and Windows](#).

## Procedure

1. Log in as root, or switch to the superuser by using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Select the required smit window by using the following sequence:

```
Software Installation and Maintenance
Install and Update Software
Install and Update from ALL Available Software
```

4. Specify the input directory in the **INPUT device / directory for software** field.
  - a) Enter a period character .
  - b) Press the **Enter** key
5. List the software in the **SOFTWARE to install** field:
  - a) Enter .
  - b) Press **F4**
6. Select the filesets to install from the list. If you require messages in a language different from the language that is specified by the locale that is selected on your system, ensure that you include the appropriate message catalog. Enter **ALL** to install all applicable filesets.
7. View the license agreement:
  - a) Change **Preview new LICENSE agreements?** to **yes**
  - b) Press **Enter**
8. Accept the license agreements and install IBM MQ:
  - a) Change **ACCEPT new license agreements?** to **yes**
  - b) Change **Preview new LICENSE agreements?** to **no**
  - c) Press **Enter**

## What to do next

- If you chose this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where **MQ\_INSTALLATION\_PATH** represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. For more information, see [“Verifying an IBM MQ installation on AIX” on page 44](#).

## Related concepts

[“Installation location on Multiplatforms” on page 11](#)

You can install IBM MQ into the default location. Alternatively, you can install into a custom location during the installation process. The location where IBM MQ is installed is known as the `MQ_INSTALLATION_PATH`.

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Installing the IBM MQ server silently on AIX” on page 39](#)

You can carry out a non-interactive installation of the IBM MQ server from the command line using the AIX **installp** command. A non-interactive installation is also known as a silent, or unattended installation.

[“Uninstalling or modifying IBM MQ on AIX” on page 58](#)

On AIX, you can uninstall the IBM MQ server or client using the System Management Interface Tool (SMIT) or the **installp** command. You can also modify an installation by uninstalling a subset of the file sets.

[Changing the primary installation](#)

## Related reference

[setmqinst](#)

## Installing the IBM MQ server silently on AIX

You can carry out a non-interactive installation of the IBM MQ server from the command line using the AIX **installp** command. A non-interactive installation is also known as a silent, or unattended installation.

## Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on AIX” on page 32](#).

**Note:** During installation, errors relating to **errupdate** or **trcupdate** might occur. This can be caused by installing to a non-default location, if so these errors can be safely ignored. However, native trace for IBM MQ is only supported when installed in the default location.

## About this task

You can use this method to install to a non-default location, and can select which components you want to install. The components and filesets are listed in [“IBM MQ components and features” on page 6](#).

## Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the CD, a network location, or a local file system directory.
3. Install the product in one of the following ways:

- Install the whole product in the default location:

```
installp -acgXYd . all
```

- Install selected file sets in the default location:

```
installp -acgXYd . list of file sets
```

- Install the whole product in a non-default location using the -R flag:

```
installp -R USIL_Directory -acgXYd . all
```

- Install selected file sets in a non-default location using the -R flag:

```
installp -R USIL_Directory -acgXYd . list of file sets
```

where *USIL\_Directory* is a directory which exists before the command is run; it must not contain any spaces or `usr/mqm`. IBM MQ is installed underneath the directory specified. For example, if `/USIL1` is specified, the IBM MQ product files are located in `/USIL1/usr/mqm`. This location is known as the *MQ\_INSTALLATION\_PATH*.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where *MQ\_INSTALLATION\_PATH* represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on AIX” on page 44](#), for more information.

## Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Installing IBM MQ server on AIX” on page 36](#)

You can install an IBM MQ server on AIX either interactively or silently.

[“Uninstalling or modifying IBM MQ on AIX” on page 58](#)

On AIX, you can uninstall the IBM MQ server or client using the System Management Interface Tool (SMIT) or the **installp** command. You can also modify an installation by uninstalling a subset of the file sets.

[Changing the primary installation](#)

## Related reference

[setmqinst](#)

[User Specified Installation Location \(USIL\)](#)



## Converting a trial license on AIX

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the **strmqm** command informs you the license has expired, and the command does not run.

### Before you begin

1. IBM MQ is installed with a trial license.
2. You have access to the installation media of a fully licensed copy of IBM MQ.

### About this task

Run the **setmqprd** command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

### Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On AIX, it is in the `/MediaRoot/licenses` directory on the installation media.

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH/bin/setmqprd /MediaRoot/licenses/amqpcert.lic
```

### Related reference

[setmqprd](#)

## Displaying messages in your national language on AIX

To display messages from a different national language message catalog, you must install the appropriate catalog and set the **LANG** environment variable.

### About this task

Messages in the language specified by the locale selected on your machine at installation time are installed by default.

To find out which language is currently in use, run the **locale** command.

If this returns a language which is not one of the national languages provided by IBM MQ, you must select a national language, otherwise you will not get a message catalog installed on your system.

Message catalogs for all languages are installed in `MQ_INSTALLATION_PATH/msg/language identifier`, where *language identifier* is one of the identifiers in [Table 6 on page 41](#). If you require messages in a different language, perform the following steps:

### Procedure

1. Install the appropriate message catalog (see [“IBM MQ components and features” on page 6](#)).
2. To select messages in a different language, ensure the **LANG** environment variable is set to the identifier for the language you want to install:

Table 6. Language identifiers	
Identifier	Language
cs_CZ	Czech

Table 6. Language identifiers (continued)	
Identifier	Language
de_DE	German
es_ES	Spanish
fr_FR	French
hu_HU	Hungarian
it_IT	Italian
ja_JP	Japanese
ko_KR	Korean
pl_PL	Polish
pt_BR	Brazilian Portuguese
zh_CN	Simplified Chinese
zh_TW	Traditional Chinese

AIX has some additional message catalogs:

Table 7. AIX specific language identifiers	
Identifier	Language
Ja_JP	Japanese
Zh_CN	Simplified Chinese
Zh_TW	Traditional Chinese

## Installing an IBM MQ client on AIX

You can interactively install the IBM MQ client for AIX using `smit`.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on AIX”](#) on page 32.

### About this task

IBM MQ is supplied as a set of filesets that are installed using the standard AIX installation tools. The procedure uses the System Management Interface Tool ( `smit` ), but you can choose to use **installp**, **geninstall** or the web-based System Manager. You can select which components you want to install. The components and filesets are listed in [“IBM MQ components for AIX”](#) on page 27. You must install at least the Runtime and Client components.

This procedure installs IBM MQ into the default location. If you want to install to a non-default location, you must use **installp**, see [“Installing an IBM MQ client silently on AIX”](#) on page 43.

### Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Make your current directory the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Select the required `smit` window using the following sequence:

4. Click **List** to display the input device or directory for the software and select the location that contains the installation images.
5. Select the **SOFTWARE to install** field to obtain a list of available filesets, and select the filesets you want to install. Ensure that you include the appropriate message catalog if you require messages in a language different from the language specified by the locale specified on your system. Enter **ALL** to install all applicable filesets.
6. Change **Preview new LICENSE agreements?** to **yes** and press Enter to view the license agreements.
7. If you have a previous version of the product on your system, change the **Automatically install requisite software** to **no**.
8. Change **ACCEPT new license agreements?** to **yes** and press Enter to accept the license agreements.
9. Change **Preview new LICENSE agreements?** to **no** and press Enter to install IBM MQ.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on AIX” on page 57](#).

## Related tasks

[“Uninstalling or modifying IBM MQ on AIX” on page 58](#)

On AIX, you can uninstall the IBM MQ server or client using the System Management Interface Tool (SMIT) or the **installp** command. You can also modify an installation by uninstalling a subset of the file sets.

## Installing an IBM MQ client silently on AIX

You can carry out a non-interactive, or silent, installation of an IBM MQ client from the command line using the AIX **installp** command.

## Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on AIX” on page 32](#).

**Note:** Installation to a non-default location is not supported on systems that have the AIX Trusted Computing Base (TCB) enabled.

## About this task

You can use this method to install to a non-default location, and can select which components you want to install. The components and filesets are listed in [“IBM MQ components and features” on page 6](#). You must install at least the Runtime and Client components.

## Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Install the product in one of the following ways:

- Install the whole product in the default location:

```
installp -acgXYd . all
```

- Install selected filesets in the default location:

```
installp -acgXYd . list of file sets
```

- Install the whole product in a non-default location using the -R flag:

```
installp -R USIL_Directory -acgXYd . all
```

- Install selected filesets in a non-default location using the -R flag:

```
installp -R USIL_Directory -acgXYd . list of file sets
```

where the directory specified with the -R flag is an AIX User Specified Installation Location (USIL) directory which exists before the command is run; it must not contain any spaces or `usr/mqm`.

IBM MQ is installed underneath the directory specified. For example, if `/USIL1` is specified, the IBM MQ product files are located in `/USIL1/usr/mqm`. This location is known as the `MQ_INSTALLATION_PATH`.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on AIX”](#) on page 57.

### AIX

## Verifying an IBM MQ installation on AIX

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on AIX systems.

### About this task

You can verify a local (stand-alone) server installation or a server-to-server installation of the IBM MQ server:

- A local server installation has no communication links with other IBM MQ installations.
- A server-to-server installation does have links to other installations.

You can also verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

## Procedure

- To verify a local server installation, see [“Verifying a local server installation on AIX” on page 45](#).
- To verify a server-to-server installation, see [“Verifying a server-to-server installation on AIX” on page 48](#).
- To verify a client installation, see [“Verifying a client installation using the command line on AIX” on page 53](#).

### **Verifying a local server installation on AIX**

You can use either the command line or the postcard application to verify a local (stand-alone) installation on HP-UX.

## About this task

You can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

## Procedure

- To use the command line to verify an installation, see [“Verifying a local server installation using the command line on AIX” on page 45](#).
- To use the postcard application to verify an installation, see [“Verifying a local server installation using the command line on AIX” on page 45](#).

### **Verifying a local server installation using the command line on AIX**

On AIX systems, you can verify a local server installation by using the command line to create a simple configuration of one queue manager and one queue. You can also verify an installation using the postcard application.

## Before you begin

To verify the installation, you must first install the samples package.

Before beginning the verification procedure, you might want to check that you have the latest fixes for your system. For more information about where to find the latest updates, see [“Checking requirements on AIX” on page 30](#).

## About this task

Use the following steps to configure your default queue manager from the command line. After the queue manager is configured, use the `amqspu` sample program to put a message on the queue. You then use the `amqsget` sample program to get the message back from the queue.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. On an AIX system, log in as a user in the `mqm` group.
2. Set up your environment:
  - a) Set up environment variables for use with a particular installation by entering one the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

b) Check that the environment is set up correctly by entering the following command:

```
dspmqr
```

If the command completes successfully, and the expected version number and installation name are returned, the environment is set up correctly.

3. Create a queue manager called QMA by entering the following command:

```
crtmqm QMA
```

Messages indicate when the queue manager is created, and when the default IBM MQ objects are created.

4. Start the queue manager by entering the following command:

```
strmqm QMA
```

A message indicates when the queue manager starts.

5. Start MQSC by entering the following command:

```
runmqsc QMA
```

A message indicates when MQSC starts. MQSC has no command prompt.

6. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL (QUEUE1)
```

A message indicates when the queue is created.

7. Stop MQSC by entering the following command:

```
end
```

Messages are shown, followed by the command prompt.

**Note:** Subsequent steps require that the samples package is installed.

8. Change into the *MQ\_INSTALLATION\_PATH/samp/bin* directory, which contains the sample programs.

*MQ\_INSTALLATION\_PATH* represents the high-level directory in which IBM MQ is installed.

9. Put a message on the queue by entering the following commands

```
./amqspout QUEUE1 QMA
```

The following messages are shown:

```
Sample AMQSPUT0 start  
target queue is QUEUE1
```

10. Type some message text on one or more lines, where each line is a different message. Enter a blank line to end the message input.

The following message is shown:

```
Sample AMQSPUT0 end
```

Your messages are now on the queue and the command prompt is shown.

11. Get the messages from the queue, by entering the following command:

```
./amqsget QUEUE1 QMA
```

The sample program starts, and your messages are displayed.

## Results

You have successfully verified your local installation.

 **Verifying a local server installation using the Postcard application on AIX**  
Sending messages successfully between two Postcard applications verifies a local installation.

## Before you begin

The postcard application is Java based and requires a system with the ability to view a graphical display.

You must ensure that you are a member of the IBM MQ administrators group ( **mqm** ).

**Note:** Using Postcard to verify an IBM MQ installation is only possible if there is one IBM MQ installation on that box. The Default Configuration wizard will not create a default configuration if a queue manager already exists on the box. The Default Configuration wizard will run on any installation on a box but only one default configuration can be created per box. Using Postcard to verify second and subsequent installations of IBM MQ on the same box is not possible.

To verify that the local installation is working, you can run two instances of the Postcard application on the same server. The postcard application can send messages to, and receive messages from, other postcard applications. Successful sending and receiving of messages verifies that IBM MQ is installed and working correctly on the server.

## Procedure

1. Log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```
  - b) From the IBM MQ Explorer:
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type in a nickname to use to send messages within the Postcard application (for example, User1).
4. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration creates a default queue manager.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK** to display your first Postcard window.

5. Run a second instance of the Postcard application by following the steps used to open the first instance of the Postcard application.
6. The **Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, `User2`).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 4).  
The queue manager you select for this second Postcard must be the same queue manager as used for the first instance of the Postcard application.
8. In the first Postcard, (`User1`), enter the nickname (`User2`) for the second Postcard application in the **To:** field. Because the sender and receiver are on the same server, you can leave the **On:** field blank.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as sent. In the receiving Postcard, the message is displayed as received.
11. In the receiving Postcard, (`User2`), double-click the message in the **Postcards sent and received** area to view it.

When this message arrives, it verifies that IBM MQ is correctly installed.

## What to do next

Depending on your situation, you might want to do the following tasks:

- Install IBM MQ on other servers. Follow the installation procedure for the appropriate platform. Ensure that you use the **Join Default Cluster** window in the Default Configuration wizard to add the other servers to the cluster on your first server.
- Install the IBM MQ MQI client on other servers.
- Continue with further administration tasks, see [Administering IBM MQ](#).

## Verifying a server-to-server installation on AIX

You can use either the command line or the postcard application to verify a server-to-server installation on AIX.

## Before you begin

For a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must therefore ensure that the communications protocol is installed and configured on both systems.

On AIX, IBM MQ supports both TCP and SNA.

The examples in this task use TCP/IP. If you do not use TCP, see [Setting up communication on UNIX and Linux](#).

## About this task

For a server-to-server installation, you can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.



## Procedure

- To use the command line to verify an installation, see [“Verifying a server-to-server installation using the command line on AIX” on page 49](#).
- To use the postcard application to verify an installation, see [“Verifying a server-to-server installation using the Postcard application on AIX” on page 52](#).

### **Verifying a server-to-server installation using the command line on AIX**

You can verify a server-to-server installation using two servers, one as a sender and one as a receiver.

## Before you begin

- Make sure that TCP/IP and IBM MQ are installed on both servers (see [“Verifying a server-to-server installation on AIX” on page 48](#)).
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Decide which installation is the sender server and which installation is the receiver server. The installations might be on the same system, or on different systems.

## About this task

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. On the **receiver** server:

- a) On AIX, log in as a user in the mqm group.
- b) Check which ports are free, for example by running **netstat**. For more information about this command, see the documentation of your operating system.

If port 1414 is not in use, make a note of 1414 to use as the port number in step 2 h. Use the same number for the port for your listener later in the verification. If it is in use, note a port that is not in use; for example 1415.

- c) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- d) Create a queue manager called QMB by entering the following command at the command prompt:

```
crtmqm QMB
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- e) Start the queue manager by entering the following command:

```
strmqm QMB
```

A message tells you when the queue manager has started.

- f) Start MQSC by entering the following command:

```
runmqsc QMB
```

A message tells you that MQSC has started. MQSC has no command prompt.

- g) Define a local queue called RECEIVER.Q by entering the following command:

```
DEFINE QLOCAL (RECEIVER.Q)
```

A message tells you the queue has been created.

h) Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT ( PORT_NUMBER )
```

Where *port\_number* is the name of the port the listener runs on. This number must be the same as the number used when defining your sender channel.

i) Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

**Note:** Do not start the listener in the background from any shell that automatically lowers the priority of background processes.

j) Define a receiver channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (RCVR) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

k) End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

2. On the **sender** server:

a) As the sender server is an AIX system, log in as a user in the mqm group.

b) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

c) Create a queue manager called QMA by entering the following command at the command prompt:

```
crtmqm QMA
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

d) Start the queue manager, by entering the following command:

```
strmqm QMA
```

A message tells you when the queue manager has started.

e) Start MQSC by entering the following command:

```
runmqsc QMA
```

A message tells you that an MQSC session has started. MQSC had no command prompt.

f) Define a local queue called QMB (to be used as a transmission queue) by entering the following command:

```
DEFINE QLOCAL (QMB) USAGE (XMITQ)
```

A message tells you when the queue has been created.

g) Define a local definition of the remote queue with by entering the following command:

```
DEFINE QREMOTE (LOCAL.DEF.OF.REMOTE.QUEUE) RNAME (RECEIVER.Q) RQMNAME ('QMB') XMITQ (QMB)
```

- h) Define a sender channel by entering one of the following commands:

*con-name* is the TCP/IP address of the receiver system. If both installations are on the same system, the *con-name* is `localhost`. *port* is the port you noted in [1 b](#). If you do not specify a port, the default value of 1414 is used.

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (SDR) CONNAME ('CON-NAME(PORT)') XMITQ (QMB) TRPTYPE (TCP)
```

- i) Start the sender channel by entering the following command:

```
START CHANNEL(QMA.QMB)
```

The receiver channel on the receiver server starts automatically when the sender channel starts.

- j) Stop MQSC by entering the following command:

```
end
```

Some messages are displayed, followed by the command prompt.

- k) If the sender server is a UNIX or Linux system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory. This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- l) If both the sender server and receiver server are installations on the same system, check that the queue managers have been created on different installations by entering the following command:

```
dspmq -o installation
```

If the queue managers are on the same installation, move either QMA to the sender installation or QMB to the receiver installation by using the **setmqm** command. For more information, see [setmqm](#).

- m) Put a message on the local definition of the remote queue, which in turn specifies the name of the remote queue. Enter one of the following commands:

- On Windows:

```
amqsput LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

- On UNIX and Linux:

```
./amqsput LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

A message tells you that `amqsput` has started.

- n) Type some message text on one or more lines, followed by a blank line.

A message tells you that `amqsput` has ended. Your message is now on the queue and the command prompt is displayed again.

### 3. On the **receiver** server:

- a) As your receiver server is an AIX system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory.

This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- b) Get the message from the queue on the receiver by entering the following command:

```
./amqsget RECEIVER.Q QMB
```

The sample program starts, and your message is displayed. After a pause, the sample ends. Then the command prompt is displayed.

## Results

You have now successfully verified the server-to-server installation.

### **Verifying a server-to-server installation using the Postcard application on AIX**

You can use two instances of the Postcard application to verify that a server-to-server installation is working.

## Before you begin

You can use the Postcard application on two servers, one instance of the Postcard application on each server, to verify that a server-to-server installation is working. Successful sending and receiving of messages verifies that IBM MQ is successfully installed, and that communication between the two servers is working correctly.

### Note:

- If the system has multiple IBM MQ installations, ensure that Postcard has not been run before on any installations on that server. As the default configuration can only exist on one IBM MQ installation per system, the Default Configuration wizard and Postcard can not be used for verification of a second or any subsequent installation.
- The two server installations must be on different systems to do a server-to-server verification using the postcard application. To verify a server-to-server installation on the same machine, you can use the command line.
- Make sure that TCP/IP and IBM MQ are installed on both servers.
- Make sure that your systems are able to view a graphical display.
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Check that one of the following scenarios applies:
  - Neither server has had any queue managers created.
  - Use the Default Configuration wizard to create default queue managers on each server and link them to the default cluster.

Details on how to use the Default Configuration wizard are provided in this topic.

- Both servers have existing queue managers and these queue managers are in the same cluster.

If your queue managers are not in the same cluster, create new queue managers on both servers. Then create a cluster, and ensure that the queue managers that you create on each server belong to that cluster.

- You have configured channels to communicate between the two servers.

For instructions on how to set up the channels, see [“Verifying a server-to-server installation using the command line on AIX” on page 49](#). After you have set up the channels, follow the instructions in this topic to verify your server-to-server installation.

## Procedure

1. On the first server, log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```

- b) From the IBM MQ Explorer:

- i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
  3. At the **Postcard - Sign On** window, type a nickname to use to send messages within the Postcard application. For example, User1 for the first server, and User2 for the second server.
  4. When you have completed the wizard, you are taken back to the **Postcard - Sign On** window.
  5. Select the queue manager to use as the mailbox:
    - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
      - For the first server, select **yes, make it the repository for the cluster**.
      - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
    - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
    - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
    - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
    - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.
  - When your selection is complete, click **OK**.
  6. Complete steps 1 - 5 for the second server.
  7. In the Postcard on the first server:
    - a) Enter the nickname ( user2) for the Postcard application on the second server in the **To:** field.
    - b) Enter the queue manager on the second server in the **On:** field.
    - c) Type a message in the **Message:** field and click **Send**.
  8. In the Postcard on the second server:
    - a) In the **Postcards sent and received**, double-click the message marked as received to view the message from the first server.
    - b) Optional: Send a postcard to the first server by adapting the instructions in step 7. You must enter details of the first server in the **To:** field and the **On:** field.
- The messages verify that IBM MQ is correctly installed and that your communication link between the two servers is working correctly.

## **Verifying a client installation using the command line on AIX**

You can verify a client installation using the command line. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel, and then use the sample PUT and GET programs to complete the verification procedure.

### **About this task**

The verification procedure shows how to create a queue manager called queue.manager.1, a local queue called QUEUE1, and a server-connection channel called CHANNEL1 on the server.

It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.
- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

## Procedure

1. Set up the server using the command line, using the instructions in [“Setting up the server using the command line on AIX”](#) on page 54.
2. Set up the client, using the instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on AIX”](#) on page 56.
3. Test the communications between client and server, using the instructions in [“Testing communication between a client and a server on AIX”](#) on page 57.

### **Setting up the server using the command line on AIX**

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

## About this task

These instructions assume that no queue manager or other IBM MQ objects have been defined.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. Log in as a user in the mqm group.
3. You must set various environment variables so that the installation can be used in the current shell.  
You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

4. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

5. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

6. Start MQSC by entering the following command:

```
runmqsc QUEUE.MANAGER.1
```

A message tells you that an MQSC session has started. MQSC has no command prompt.

7. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL(QUEUE1)
```

A message tells you when the queue has been created.

8. Allow the user ID that you created in step 1 to use QUEUE1 by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(QUEUE) PRINCIPAL(' non_mqm_user ') AUTHADD(PUT,GET)
```

where *non\_mqm\_user* is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(CONNECT)
```

If this command is not run, a 2305 stop error is returned.

9. Define a server-connection channel by entering the following command:

```
DEFINE CHANNEL (CHANNEL1) CHLTYPE (SVRCONN) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

10. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(ADDRESSMAP) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

11. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on AIX” on page 42](#).

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

12. Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

13. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on AIX” on page 56](#).

## **Connecting to a queue manager, using the MQSERVER environment variable on AIX**

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

### **Before you begin**

Before you start this task, you must complete the task, [“Setting up the server using the command line on AIX”](#) on page 54, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

### **About this task**

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

You can give the client access to the generated client channel definition table, `amqc1chl.tab` instead; see [Accessing client-connection channel definitions](#).

### **Procedure**

1. Log in as the userid that you created in Step 1 of [“Verifying a client installation using the command line on AIX”](#) on page 53.
2. Check the TCP/IP connection. From the client, enter one of the following commands:
  - `ping server-hostname`
  - `ping n.n.n.n`

`n.n.n.n` represents the network address. You can set the network address in IPv4 dotted decimal form, for example, `192.0.2.0`. Alternatively, set the address in IPv6 hexadecimal form, for example `2001:0DB8:0204:acff:fe97:2c34:fde0:3485`.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter the following command:

```
export MQSERVER=CHANNEL1/TCP/'server-address (port)'
```

Where:

- `CHANNEL1` is the server-connection channel name.
- `server-address` is the TCP/IP host name of the server.
- `port` is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the `qm.ini` file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If an `MQSeries` entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

### **What to do next**

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on AIX”](#) on page 57.



## **Testing communication between a client and a server on AIX**

On the IBM MQ MQI client workstation, use the `amqsputc` sample program to put a message on the queue at the server workstation. Use the `amqsgetc` sample program to get the message from the queue back to the client.

### **Before you begin**

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

### **About this task**

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### **Procedure**

1. Change to the `MQ_INSTALLATION_PATH/samp/bin` directory, which contains the sample programs.  
`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
2. You must set certain environment variables so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

3. Start the PUT program for `QUEUE1` on `QUEUE.MANAGER.1` by entering the following command:

```
./amqsputc QUEUE1 QUEUE.MANAGER.1
```

If the command is successful, the following messages are displayed:

Sample AMQSPUT0 start target queue is QUEUE1

**Tip:** You might get the error, `MQRC_NOT_AUTHORIZED (2035)`. By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

4. Type some message text, then press **Enter** twice.

The following message is displayed:

Sample AMQSPUT0 end

Your message is now on the queue that is on the server queue manager.

5. Start the GET program for `QUEUE1` on `QUEUE.MANAGER.1` by entering the following command:

```
./amqsgetc QUEUE1 QUEUE.MANAGER.1
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. You must set various environment variables on the server so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

2. On the server, stop the queue manager by entering the following command:

```
endmqm QUEUE.MANAGER.1
```

3. On the server, delete the queue manager by entering the following command:

```
dltmqm QUEUE.MANAGER.1
```

## AIX

## Uninstalling or modifying IBM MQ on AIX

On AIX, you can uninstall the IBM MQ server or client using the System Management Interface Tool (SMIT) or the **installp** command. You can also modify an installation by uninstalling a subset of the file sets.

## Before you begin

If any updates have been applied, remove them before starting the uninstallation or modification procedure. For more information, see [Reverting to the previous maintenance level on AIX](#).

**Important:** You must stop all IBM MQ queue managers, other objects, and applications, before you begin the process to uninstall or modify IBM MQ.

## Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling or modifying, if you have not already done so.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling or modifying:
  - a) Log in as a user in the group mqm.
  - b) Set up your environment to work with the installation you want to uninstall or modify. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall or modify. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.

4. Uninstall or modify IBM MQ using either **installp** or **smit**. If IBM MQ was installed in a non-default location, you must use **installp**.

- To uninstall or modify IBM MQ by using **installp**, enter one of the following commands:

- To uninstall an installation in the default location `/usr/mqm`:

```
installp -u mqm
```

- To uninstall an installation in a non-default location:

```
installp -R usil -u mqm
```

where *usil* is the path of the User Specified Installation Location (USIL) specified when the product was installed.

- To modify an installation in a non-default location:

```
installp -R usil -u list of file sets
```

where *usil* is the path of the User Specified Installation Location (USIL) specified when the product was installed.

- To uninstall or modify IBM MQ by using **smit**, complete the following steps:

- a. Select the required **smit** window using the following sequence:

```
Software Installation and Maintenance
Software Maintenance and Utilities
Remove Installed Software
```

- b. List the software in the **SOFTWARE name** field:

- i) Enter **.**
- ii) Press **F4**

- c. Select the file sets to uninstall from the list (those beginning with mqm):

- For a complete uninstall, select all file sets.
- To modify the installation, select a subset of the file sets.

After selecting the file sets, press **Enter**. There is an option at this stage to do a preview. Leave the option set to the default value of **Yes** to preview the file sets you are uninstalling, or select **No** to not preview these file sets.

- d. Press **Enter** on the **Remove Installed Software** panel, it asks whether you are sure, press **Enter**.

## Results

After uninstallation, certain files under the directory trees `/var/mqm` and `/etc/opt/mqm` are not removed. These files contain user data and remain so subsequent installations can reuse the data. Most of the remaining files contain text, such as INI files, error logs, and FDC files. The directory tree `/var/mqm/shared` contains files that are shared across installations, including the executable shared libraries `libmqzsd.a` and `libmqzsd_r.a`.

## What to do next

- If the product successfully uninstalled, you can delete any files and directories contained in the `/usr/mqm` directory under the User Specified Installation Location (USIL) specified in the **installp** uninstallation command.
- Use the **ls1pp** command to check for other products installed in the USIL. If there are no other products installed in the USIL and you do not intend to use it again, you can delete the USIL using the **rmusil** command.

- If there are no other IBM MQ installations on the system, and you are not planning to reinstall or migrate, you can delete the `/var/mqm` and `/etc/opt/mqm` directory trees, including the files `libmqzsd.a` and `libmqzsd_r.a`. Deleting these directories destroys all queue managers and their associated data.
- You can optionally remove installations, once IBM MQ is uninstalled, from the [Installation configuration file, mqinst.ini](#) using the commands listed.

**Note:** If you are not going to install another version of IBM MQ, you can delete the existing installations using the **dlmqinst** command. Otherwise, if you install IBM MQ to the same location, the old installation name is applied.

## HP-UX Installing and uninstalling IBM MQ on HP-UX

Installation tasks that are associated with installing IBM MQ on HP-UX systems are grouped in this section.

### About this task

To prepare for installation and to install the IBM MQ components, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling or modifying IBM MQ on HP-UX”](#) on page 91.

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

1. Check the system requirements.  
See [“Checking requirements on HP-UX”](#) on page 63.
2. Plan your installation.
  - As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ components for HP-UX”](#) on page 60.
  - You must also make some platform-specific choices. See [“Planning to install IBM MQ on HP-UX”](#) on page 64.
3. Prepare your system for installation of IBM MQ.  
See [“Preparing the system on HP-UX”](#) on page 65.
4. Install IBM MQ server.  
See [“Installing IBM MQ server on HP-UX”](#) on page 70.
5. Optional: Install an IBM MQ client.  
See [“Installing an IBM MQ client on HP-UX”](#) on page 75.
6. Verify your installation. See [“Verifying an IBM MQ installation on HP-UX”](#) on page 78.

## HP-UX IBM MQ components for HP-UX

You can select the components that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

Table 8 on page 61 shows the components that are available when installing an IBM MQ server or client on an HP-UX system:

Table 8. IBM MQ components for HP-UX systems

Component	Description	Server media	Client media	Component name
<b>Runtime</b>	Contains files that are common to both server and client installations. <b>Note:</b> This component must be installed.	✓	✓	MQSERIES.MQM-RUNTIME
<b>Server</b>	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.	✓		MQSERIES.MQM-SERVER
<b>Standard Client</b>	The IBM MQ MQI client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and the server can be on the same system if required.	✓	✓	MQSERIES.MQM-CL-HPUX
<b>SDK</b>	The SDK is required for compiling applications. It includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ.	✓	✓	MQSERIES.MQM-BASE
<b>Sample programs</b>	The sample application programs are needed if you want to check your IBM MQ installation using the verification procedures.	✓	✓	MQSERIES.MQM-SAMPLES
<b>Java messaging</b>	The files needed for messaging using Java (includes Java Message Service).	✓	✓	MQSERIES.MQM-JAVA
<b>Man pages</b>	UNIX man pages, in U.S. English, for:  control commands MQI calls MQSC commands	✓	✓	MQSERIES.MQM-MAN
<b>Java JRE</b>	A Java Runtime Environment that is used by those parts of IBM MQ that are written in Java.	✓	✓	MQSERIES.MQM-JAVAJRE
<b>Message Catalogs</b>	For available languages, see the table of <a href="#">message catalogs</a> that follows.	✓	✓	
<b>IBM Global Security Kit (GSKit)</b>	GSKit 8 Certificate and TLS, Base Runtime.	✓	✓	MQSERIES.MQM-GSKIT



Table 8. IBM MQ components for HP-UX systems (continued)				
Component	Description	Server media	Client media	Component name
<b>Managed File Transfer</b>	MQ Managed File Transfer transfers files between systems in a managed and auditable way, regardless of file size or the operating systems used. For information about the function of each component, see <a href="#">Managed File Transfer product options</a> .	✓		MQSERIES.MQM-FTAGENT MQSERIES.MQM-FTBASE MQSERIES.MQM-FTLOGGER MQSERIES.MQM-FTSERVICE MQSERIES.MQM-FTTOOLS
<b>Advanced Message Security</b>	Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.  You must install the GSKit component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.  You must install the <b>Java JRE</b> component to install this component.	✓		MQSERIES.MQM-AMS
  <b>AMQP Service</b>	Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.	✓		MQSERIES.MQM-AMQP

Table 9. IBM MQ message catalogs for HP-UX systems	
Message catalog language	Component name
Brazilian Portuguese	MQSERIES.MQM-MC-PORT
Czech	MQSERIES.MQM-MC-CZECH
French	MQSERIES.MQM-MC-FRENCH
German	MQSERIES.MQM-MC-GERMAN
Hungarian	MQSERIES.MQM-MC-HUNGARIAN
Italian	MQSERIES.MQM-MC-ITALIAN
Japanese	MQSERIES.MQM-MC-JAPAN
Korean	MQSERIES.MQM-MC-KOREAN
Polish	MQSERIES.MQM-MC-POLISH
Russian	MQSERIES.MQM-MC-RUSSIAN
Spanish	MQSERIES.MQM-MC-SPANISH

Table 9. IBM MQ message catalogs for HP-UX systems (continued)

Message catalog language	Component name
Simplified Chinese	MQSERIES.MQM-MC-CHINES
Traditional Chinese	MQSERIES.MQM-MC-CHINET
U.S. English	not applicable

### Related concepts

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

## HP-UX

### Checking requirements on HP-UX

Before you install IBM MQ on HP-UX, you must check for the latest information and system requirements.

### About this task

A summary of the tasks that you must complete to check system requirements are listed here with links to further information.

### Procedure

1. Check that you have the latest information, including information on hardware and software requirements.

See [“Where to find product requirements and support information” on page 9](#).

2. Check that your systems meet the initial hardware and software requirements for HP-UX.

See [“Hardware and software requirements on HP-UX systems” on page 64](#).

The supported hardware and software environments are occasionally updated. See [System Requirements for IBM MQ](#) for the latest information.

3. Check that your systems have sufficient disk space for the installation.

See [Disk space requirements](#).

4. Check that you have the correct licenses.

See [“License requirements” on page 8](#) and [IBM MQ license information](#).

### What to do next

When you have completed these tasks, you are ready to start preparing your system for installation. For the next steps in installing IBM MQ, see [“Preparing the system on HP-UX” on page 65](#).

### Related concepts

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### Related tasks

[Applying maintenance to IBM MQ](#)

## Hardware and software requirements on HP-UX systems

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

For hardware and software requirements, see [System Requirements for IBM MQ](#).

IBM MQ does not support host names that contain spaces. If you install IBM MQ on a system with a host name that contains spaces, you are unable to create any queue managers.

### Java Message Service and SOAP transport

If you want to use Java Message Service and SOAP support, you need an IBM Java 7 SDK and Runtime Environment IBM WebSphere MQ 7.0 or later.

**V 9.0.0**

Java 8 is bundled with IBM MQ 9.0 but client components are built with Java 7 compatibility flags on.

For development, a JDK is required, and a JRE is required for running. The JRE does not need to be the JRE installed with IBM MQ, but has to be one from the supported list.

For a list of supported JDKs, see [System Requirements for IBM MQ](#).

For further information about SOAP with IBM MQ, see [IBM MQ transport for SOAP](#).

On HP-UX : To run a 64-bit or 32-bit JVM use the -d64 or -d32 parameters on the command line when running a Java application to ensure the correct JVM is used.

You can check the version installed using the following command:

```
java -version
```

### Transport Layer Security (TLS)

If you want to use the TLS support, you need the IBM Global Security Kit (GSKit) version 8 package. This package is supplied with IBM MQ as one of the components available for installation.

#### HP-UX

To use TLS, IBM MQ clients on HP-UX must be built using POSIX threads.

#### Related concepts

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“Hardware and software requirements on Windows systems” on page 240](#)

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

#### Related tasks

[“Checking requirements on Windows” on page 240](#)

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

## Planning to install IBM MQ on HP-UX

Before you install IBM MQ on HP-UX, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### About this task

The following steps provide links to additional information to help you with planning your installation of IBM MQ on HP-UX.



As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Checking requirements on HP-UX” on page 63](#).

## Procedure

1. Decide which IBM MQ components and features to install.

See [“IBM MQ components and features” on page 6](#).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

2. Review the options for naming your installation.

In some cases, you can choose an installation name to use instead of the default name. See [“Installation name on UNIX, Linux, and Windows” on page 10](#).

3. Review the options and restrictions for choosing an installation location for IBM MQ.

For more information, see [“Installation location on Multiplatforms” on page 11](#).

4. If you plan to install multiple copies of IBM MQ, see [“Multiple installations on UNIX, Linux, and Windows” on page 13](#).

5. If you already have a primary installation, or plan to have one, see [“Primary installation on UNIX, Linux, and Windows” on page 15](#).

6. Make sure that the communications protocol needed for server-to-server verification is installed and configured on both systems that you plan to use.

For more information, see [“Server-to-server links on UNIX, Linux, and Windows” on page 22](#).

### HP-UX

## Preparing the system on HP-UX

On HP-UX systems, you might have to complete several tasks before you install IBM MQ. You might also want to complete other tasks, depending on your installation intentions.

### About this task

The tasks that you perform to prepare your systems for installation are listed here. Complete the appropriate tasks for your platform before installing.

## Procedure

1. Set up a user ID of the name mqm, with a primary group of mqm.

See [“Setting up the user and group on HP-UX” on page 66](#).

2. Create file systems for both the product code and working data to be stored. See [“Creating file systems on HP-UX” on page 66](#).

3. Configure any additional settings needed for your HP-UX system.

See [“Configuring and tuning the operating system on HP-UX” on page 68](#).

### What to do next

When you have completed the tasks to prepare the system, you are ready to start installing IBM MQ. To install a server, see [“Installing IBM MQ server on HP-UX” on page 70](#). To install a client, see [“Installing an IBM MQ client on HP-UX” on page 75](#).

### Related tasks

[Planning](#)

[Maintaining and migrating](#)

[Applying maintenance to IBM MQ](#)

## Setting up the user and group on HP-UX

On HP-UX systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

### Creating the user ID and groups

Set the primary group of the `mqm` user to the group `mqm`.

If you are installing IBM MQ on multiple systems you might want to ensure each UID and GID of `mqm` has the same value on all systems. If you are planning to configure multi-instance queue managers, it is essential the UID and GID are the same from system to system. It is also important to have the same UID and GID values in virtualization scenarios.

#### HP-UX

The user ID value for user `mqm` must be less than 60,000 to avoid problems with the maintenance update process.

You can use the System Management Homepage (SMH), or the **`groupadd`** and **`useradd`** commands to work with user IDs.

### Adding existing user IDs to the group

If you want to run administration commands, for example **`crtmqm`** (create queue manager) or **`strmqm`** (start queue manager), your user ID must be a member of the `mqm` group. This user ID must not be longer than 12 characters.

Users do not need `mqm` group authority to run applications that use the queue manager; it is needed only for the administration commands.

### Log files created by MQ Telemetry service

The **`umask`** setting of the user ID that creates a queue manager will determine the permissions of the Telemetry log files generated for that queue manager. Even though the ownership of the log files will be set to `mqm`.

#### Related concepts

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

[“Configuring and tuning the operating system on HP-UX” on page 68](#)

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

[“Configuring and tuning the operating system on Linux” on page 131](#)

Use this topic when you are configuring IBM MQ on Linux systems.

#### Related tasks

[“Configuring and tuning the operating system on AIX” on page 35](#)

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

#### Related reference

[“Configuring and tuning the operating system on Solaris” on page 205](#)

Configure Solaris systems with the resource limits required by IBM MQ.

## Creating file systems on HP-UX

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation

directory for the product code can be changed at installation time, but the working data location cannot be changed.

## Determining the size of a server installations file system

To determine the size of the `/var/mqm` file system for a server installation, consider:

- The maximum number of messages in the system at one time.
- Contingency for message buildups, if there is a system problem.
- The average size of the message data, plus 500 bytes for the message header.
- The number of queues.
- The size of log files and error messages.
- The amount of trace that is written to the `/var/mqm/trace` directory.

Storage requirements for IBM MQ also depend on which components you install, and how much working space you need. For more details, see [Disk space requirements](#).

## Creating a file system for the working data

Before you install IBM MQ, create and mount a file system called `/var/mqm` which is owned by the user `mqm` in the group `mqm`; see “Setting up the user and group on Linux” on page 129. This file system is used by all installations of IBM MQ on a system. If possible, use a partition strategy with a separate volume for the IBM MQ data. This means that other system activity is not affected if a large amount of IBM MQ work builds up. Configure the directory permissions to permit the `mqm` user to have full control, for example, file mode 755. These permissions will then be updated during the IBM MQ installation to match the permissions required by the queue manager.

## Creating separate file systems for errors and logs

You can also create separate file systems for your log data (`/var/mqm/log`) and error files (`/var/mqm/errors`). If possible, place these directories on different physical disks from the queue manager data (`/var/mqm/qmgrs`) and from each other.

If you create separate file systems the `/var/mqm/errors` directory can be NFS mounted. However, if you choose to NFS-mount `/var/mqm/errors`, the error logs might be lost if the network fails.

You can protect the stability of your queue manager by having separate file systems for:

- `/var/mqm/errors`
- `/var/mqm/trace`
- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the case of `/var/mqm/errors`, it is rare that this directory receives large quantities of data. But it is sometimes seen, particularly if there is a severe system problem leading to IBM MQ writing a lot of diagnostic information in to `.FDC` files. In the case of `/var/mqm/trace`, files are only written here when you use **strmqtrc** to start tracing IBM MQ.

You can obtain better performance of normal IBM MQ operations (for example, syncpoints, MQPUT, MQGET of persistent messages) by placing the following on separate disks:

- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the rare event that you need to trace an IBM MQ system for problem determination, you can reduce performance impact by placing the `/var/mqm/trace` file system on a separate disk.

If you are creating separate file systems, allow a minimum of 30 MB of storage for `/var/mqm`, 100 MB of storage for `/var/mqm/log`, and 10 MB of storage for `/var/mqm/errors`. The 100 MB minimum allowance of storage for `/var/mqm/log` is the absolute minimum required for a single queue manager

and is not a recommended value. The size of a file system must be scaled according to the number of queue managers that you intend to use, the number of pages per log file, and the number of log files per queue manager.

For more information about file systems, see [File system support](#).

The size of the log file depends on the log settings that you use. The minimum sizes are for circular logging using the default settings. For more information about log sizes, see [Calculating the size of the log](#).

### Related concepts

[“Setting up the user and group on HP-UX” on page 66](#)

On HP-UX systems, IBM MQ requires a user ID of the name mqm, with a primary group of mqm. The mqm user ID owns the directories and files that contain the resources associated with the product.

[“Configuring and tuning the operating system on HP-UX” on page 68](#)

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

## Configuring and tuning the operating system on HP-UX

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

### Kernel configuration

It is possible that the default kernel configuration is not adequate because IBM MQ uses semaphores and shared memory.

Before installation, review the configuration of the machine and increase the values if necessary. Consider using the values of the tunable kernel parameters given in [Table 10 on page 68](#). These values might need to be increased if you obtain any First Failure Support Technology (FFST) records.

#### Note:

1. Semaphore and swap usage do not vary significantly with message rate or message persistence.
2. IBM MQ queue managers are independent of each other. Therefore system tunable kernel parameters, for example shmmni, semmni, semmns, and semmnu need to allow for the number of queue managers in the system.

See the HP-UX documentation for information about changing these values.

Table 10. Minimum tunable kernel parameters values			
Name	Value	Increase	Description
shmmax	268435456	No	Maximum size of a shared-memory segment (bytes)
shmseg	1024	No	Maximum number of shared memory segments per process
shmmni	1024	Yes	Maximum number of shared memory segments
semaem	128	No	Maximum undo value for a semaphore for a single process
semvmx	32767	No	Maximum value of a semaphore
semmns	4096	Yes	Maximum number of semaphores
semmni	128	Yes	Maximum number of semaphore sets
semmnu	16384	Yes	Maximum number of process having semaphore operations that can be undone

Table 10. Minimum tunable kernel parameters values (continued)			
Name	Value	Increase	Description
semume	32	No	Maximum number of semaphore undo operations per process
max_thread_proc	66	No	Maximum number of threads in a process
maxfiles	10000	No	Maximum number of file handles per process (soft limit)
maxfiles_lim	10000	No	Maximum number of file handles per process (hard limit)

#### Notes:

- These values are sufficient to run two moderate sized queue managers on the system. If you intend to run more than two queue managers, or the queue managers are to process a significant workload, you might need to increase the values displayed as *Yes* in the *Increase* column.
- You must restart the system after you change any of the tunable kernel parameters.

### System resource limits

You can set global limits for the size of process data segments and the size of process stack segments for the whole system. These limits are set by altering the tunable kernel parameters.

The tunable kernel parameters are:

Parameter	What it controls	Consider minimum value
maxdsiz	Maximum size of the data segment for 32-bit processes	1073741824
maxdsiz_64bit	Maximum size of the data segment for 64-bit processes	1073741824
maxssiz	Maximum size of the stack segment for 32-bit processes	8388608
maxssiz_64bit	Maximum size of the stack segment for 64-bit processes	8388608

If other software on the same machine needs higher values, then the operation of IBM MQ is not adversely affected if those higher values are used.

For the full documentation for these parameters see the HP-UX product documentation.

To apply the settings to an HP-UX 11i system which has the System Administration Manager (SAM) utility, you can use SAM to achieve the following steps:

- Select and alter the parameters
- Process the new kernel
- Apply the changes and restart the system

Other releases of HP-UX might provide different facilities to set the tunable kernel parameters. Consult your HP-UX product documentation for the relevant information.

### The `ulimit` shell command

On a per-shell basis, the available limits can be tuned down from the values stored for the “[System resource limits](#)” on page 69 preceding parameters. Use the `ulimit` shell command to tune the values of the parameters with a combination of the following switches:

Switch	Meaning
-H	The hard limit
-S	The soft limit
-d	The data segments size
-s	The stack segment size

## Verifying that the kernel settings are applied

You can verify that the resource limits have not been lowered by a **ulimit** command and that the queue manager has the correct limits. To verify the limits, go to the shell from which the queue manager is started and enter the following command:

```
ulimit -Ha
ulimit -Sa
```

Among the console output you see:

```
data(kbytes) 1048576
stack(kbytes) 8192
```

If the lowered numbers are returned, then a **ulimit** command has been issued in the current shell to reduce the limits. Consult with your system administrator to resolve the issue.

You can check your system configuration using the **mqconfig** command.

For more information on configuring your system, see [How to configure UNIX and Linux systems for IBM MQ](#).

## Related concepts

[“Setting up the user and group on HP-UX” on page 66](#)

On HP-UX systems, IBM MQ requires a user ID of the name mqm, with a primary group of mqm. The mqm user ID owns the directories and files that contain the resources associated with the product.

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

## HP-UX Installing IBM MQ server on HP-UX

You can install an IBM MQ server on HP-UX either interactively or silently.

## Before you begin

- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on HP-UX” on page 65](#).
- If you install a copy of IBM MQ server for HP-UX using Electronic Software Download, obtained from Passport Advantage, you need to decompress the tar .gz file, and extract the installation files from the tar file, by using the following command:

```
tar -xvf WS_MQ_8.0_TRIAL_FOR_HP-UX_ML.tar
```

**Important:** You must use GNU tar (also known as gtar) to unpack any tar images.

## About this task

This task describes the installation of a server, using the `swinstall` program to select which components you want to install. The components are listed in [“IBM MQ components for HP-UX” on page 60](#).

**Note:** If you are using a screen reader, use the non-interactive installation option [“Installing the IBM MQ server silently on HP-UX” on page 72](#), so that you can accept the license without viewing it.

If you are installing IBM MQ from a depot that contains service update packages, read [Applying maintenance level updates on IBM MQ on HP-UX](#) before installing the service update packages.

## Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Accept the license by running the `mqlicense` script:

```
./mqlicense.sh
```

The license is displayed. If you accept the license, you can continue the installation.

4. Start the interactive installation procedure by typing the following command,

```
swinstall -s /installation_file
```

`/installation_file` is the absolute path to the installation file. The path must begin with a `/` and end with the name of the installation file. The installation file has a file name extension of `.v11`.

In the resulting menu screen, select **MQSERIES**.

- a) If you do not want to install all IBM MQ components, open **MQSERIES**
    - i) Mark the components you want to install. The installer resolves dependencies automatically.
    - ii) Review the information displayed by the installer.
5. Optional: To install IBM MQ to a non-default location, select **MQSERIES** from the lower part of the user interface, then select **Actions > Change Product Location**. The default installation location is `/opt/mqm`.

For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.

**Note:** Ensure that you do not select **Actions > Change Target** by accident, they are not the same.

6. If this installation is not the first installation on the system, select **Options > Allow creation of multiple versions**
7. Select **Actions > Install**. The log file tells you if there are any problems that need fixing.
8. Fix any problems, then click **OK** to install.

The system tells you when the installation has finished.

9. If this installation is not the first installation on the system, you must enter the following command to configure IBM MQ.

**Note:** `MQ_INSTALLATION_PATH` is the path where you have just installed IBM MQ and the character defining the path is a lower case L.

```
swconfig -x allow_multiple_versions=true MQSERIES,l=MQ_INSTALLATION_PATH
```

If you do not enter this command, the **swlist** command reports the installation as installed instead of configured. You must not use IBM MQ unless the installation is configured.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on HP-UX” on page 78](#), for more information.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Installing the IBM MQ server silently on HP-UX” on page 72](#)

You can perform a non-interactive installation of the IBM MQ server using the **swinstall** command. A non-interactive installation is also known as a silent, or unattended installation.

[“Uninstalling or modifying IBM MQ on HP-UX” on page 91](#)

On HP-UX, you can uninstall the IBM MQ server or client using the **swremove** command. You can also modify an IBM MQ installation by uninstalling selected IBM MQ components.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

## Installing the IBM MQ server silently on HP-UX

You can perform a non-interactive installation of the IBM MQ server using the **swinstall** command. A non-interactive installation is also known as a silent, or unattended installation.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on HP-UX” on page 65](#).

### About this task

This topic describes the non-interactive installation of a server, using the **swinstall** program to select which components you want to install. The components and are listed in [“IBM MQ components and features” on page 6](#).

### Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the CD, a network location, or a local file system directory.



3. Accept the IBM MQ license agreement without an interactive prompt by entering the following command:

```
./mqlicense.sh -accept
```

4. Install IBM MQ using the **swinstall** command:

- a) If this installation is not the first installation on the system, you must add `-x allow_multiple_versions=true` to the **swinstall** command.
- b) Add the names of the components to install as parameters of the **swinstall** command.  
The installer automatically resolves any dependencies.
- c) Optional: Identify the installation location by adding `,l= MQ_INSTALLATION_PATH` as a parameter of the **swinstall** command. For each installation, all of the IBM MQ components that you require must be installed in the same location.  
The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.

For example, to install all IBM MQ components, in a non-default location, as the first installation, enter the following command:

```
swinstall -s /installation_file.v11 MQSERIES,l=/opt/customLocation
```

To perform a partial installation, providing a list of components, in the default location, as the second installation, enter the following command:

```
swinstall -x allow_multiple_versions=true -s /installation_file.v11  
MQSERIES.MQM-RUNTIME MQSERIES.MQM-BASE MQSERIES.MQM-SERVER
```

`/installation_file.v11` is the absolute path to the installation file. The path must begin with a `/` and end with the name of the installation file. The installation file has the extension `.v11`.

5. If this installation is not the first installation on the system, you must enter the following command to configure the installation:

**Note:** `MQ_INSTALLATION_PATH` is the path where you have just installed IBM MQ and the character defining the path is a lower case `L`.

```
swconfig -x allow_multiple_versions=true MQSERIES,l=MQ_INSTALLATION_PATH
```

If you do not enter this command, the **swlist** command reports the installation as installed instead of configured. You must not use IBM MQ unless the installation is configured.

## Example

The example shows the command to run a silent, full installation in the default location, using the alternative form of specifying the source depot using `-x source_directory=` instead of `-s`. Notice that all the language features are installed. Run a partial installation to install your chosen languages.

```
cd /downloads/WMQInstallFiles  
swinstall -v -x source_directory=$PWD/hpUxxxxx.v11 MQSERIES
```

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on HP-UX” on page 78](#), for more information.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Installing IBM MQ server on HP-UX” on page 70](#)

You can install an IBM MQ server on HP-UX either interactively or silently.

[“Uninstalling or modifying IBM MQ on HP-UX” on page 91](#)

On HP-UX, you can uninstall the IBM MQ server or client using the **swremove** command. You can also modify an IBM MQ installation by uninstalling selected IBM MQ components.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

## HP-UX

## Converting a trial license on HP-UX

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the **strmqm** command informs you the license has expired, and the command does not run.

### Before you begin

1. IBM MQ is installed with a trial license.
2. You have access to the installation media of a fully licensed copy of IBM MQ.

### About this task

Run the **setmqprd** command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

### Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On HP-UX, it is in the `/MediaRoot/licenses` directory on the installation media.

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH/bin/setmqprd /MediaRoot/licenses/amqpcert.lic
```

### Related reference

[setmqprd](#)

## Displaying messages in your national language on HP-UX

To display messages from a different national language message catalog, you must install the appropriate catalog and set the **LANG** environment variable.

### About this task

Messages in U.S. English are automatically installed with IBM MQ

Message catalogs for all languages are installed in *MQ\_INSTALLATION\_PATH/msg/language identifier*, where *language identifier* is one of the identifiers in [Table 11 on page 75](#).

If you require messages in a different language, perform the following steps:

### Procedure

1. Install the appropriate message catalog (see [“IBM MQ components and features” on page 6](#) ).
2. To select messages in a different language, ensure the **LANG** environment variable is set to the identifier for the language you want to install:

Table 11. Language identifiers	
Identifier	Language
cs_CZ	Czech
de_DE	German
es_ES	Spanish
fr_FR	French
hu_HU	Hungarian
it_IT	Italian
ja_JP	Japanese
ko_KR	Korean
pl_PL	Polish
pt_BR	Brazilian Portuguese
zh_CN	Simplified Chinese
zh_TW	Traditional Chinese

## Installing an IBM MQ client on HP-UX

You can interactively install the IBM MQ client for HP-UX using `swinstall`.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on HP-UX” on page 65](#).

### About this task

This topic describes the installation of a client, using the `swinstall` program to select which components you want to install. The components and are listed in [“IBM MQ components for HP-UX” on page 60](#); you must install at least the Runtime and Client components.

## Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Make your current directory the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Accept the license by running the `mqlicense` script:

```
./mqlicense.sh
```

The license is displayed. If you accept the license, you can continue the installation.

4. Type the following command to start the interactive installation procedure:

```
swinstall -s installation_file
```

*installation\_file* is the absolute path to the installation file. The path must begin with a / and end with the name of the installation file. The installation file has the extension `.v11`.

If the files on your DVD are in uppercase with a ";1" suffix, use this name for the depot.

5. In the resulting menu screen, select **MQSERIES**.
  - a) If you do not want to install all IBM MQ components, open **MQSERIES**
    - i) Mark the components you want to install. The installer resolves dependencies automatically.
    - ii) Review the information displayed by the installer.
6. Optional: To install IBM MQ to a non-default location, select **Actions > Change Product Location**.

For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.
7. Select **Actions > Install**. The log file tells you if there are any problems that need fixing.
8. Fix any problems, and click **OK** to install. You are informed when the installation has finished.
9. If this installation is not the first installation on the system, you must enter the following command:

```
swconfig -x allow_multiple_versions=true MQSERIES,l= MQ_INSTALLATION_PATH
```

where *MQ\_INSTALLATION\_PATH* is the path where you have just installed IBM MQ. If you do not enter this command, the **swlist** command reports the installation as installed instead of configured. You must not use IBM MQ unless the installation is configured.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on HP-UX” on page 90](#).

## Related tasks

[“Uninstalling or modifying IBM MQ on HP-UX” on page 91](#)

On HP-UX, you can uninstall the IBM MQ server or client using the **swremove** command. You can also modify an IBM MQ installation by uninstalling selected IBM MQ components.

## Installing an IBM MQ client silently on HP-UX

You can perform a non-interactive installation of the IBM MQ client using the **swinstall** command. A non-interactive installation is also known as a silent, or unattended installation.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on HP-UX”](#) on page 65.

### About this task

This topic describes the non-interactive installation of a client, using the **swinstall** program to select which components you want to install. The components and are listed in [“IBM MQ components and features”](#) on page 6 ; you must install at least the Runtime and client components.

### Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Make your current directory the location of the installation file. The location might be the mount point of the CD, a network location, or a local file system directory.
3. Accept the IBM MQ license agreement without an interactive prompt by entering the following command:

```
./mqlicense.sh -accept
```

4. Install IBM MQ using the **swinstall** command:
  - a) If this installation is not the first installation on the system, you must add `-x allow_multiple_versions=true` to the **swinstall** command.
  - b) Add the names of the components to install as parameters of the **swinstall** command.  
The installer automatically resolves any dependencies.
  - c) Optional: Identify the installation location by adding `,l= MQ_INSTALLATION_PATH` as a parameter of the **swinstall** command. For each installation, all of the IBM MQ components that you require must be installed in the same location.  
The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.

For example, to install all IBM MQ components, in a non-default location, as the first installation, enter the following command:

```
swinstall -s /installation_file.v11 MQSERIES,l=/opt/customLocation
```

To perform a partial installation, providing a list of components, in the default location, as the second installation, enter the following command:

```
swinstall -s /installation_file.v11  
MQSERIES.MQM-RUNTIME MQSERIES.MQM-BASE MQSERIES.MQM-CL-HPUX -x allow_multiple_versions=true
```

*/installation\_file.v11* is the absolute path to the installation file. The path must begin with a / and end with the name of the installation file. The installation file has the extension .v11.

5. If this installation is not the first installation on the system, you must enter the following command:

```
swconfig -x allow_multiple_versions=true MQSERIES,l= MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` is the path where you have just installed IBM MQ. If you do not enter this command, the **swlist** command reports the installation as installed instead of configured. You must not use IBM MQ unless the installation is configured.

## What to do next

For instructions on how to verify your installation, see [“Testing communication between a client and a server on HP-UX”](#) on page 90.

### HP-UX

## Verifying an IBM MQ installation on HP-UX

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on HP-UX systems.

### About this task

You can verify a local (stand-alone) server installation or a server-to-server installation of the IBM MQ server:

- A local server installation has no communication links with other IBM MQ installations.
- A server-to-server installation does have links to other installations.

You can also verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

### Procedure

- To verify a local server installation, see [“Verifying a local server installation on HP-UX”](#) on page 78.
- To verify a server-to-server installation, see [“Verifying a server-to-server installation on HP-UX”](#) on page 82.
- To verify a client installation, see [“Verifying a client installation using the command line on HP-UX”](#) on page 87.

### HP-UX

## Verifying a local server installation on HP-UX

You can use either the command line or the postcard application to verify a local (stand-alone) installation on HP-UX.

### About this task

You can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### Procedure

- To use the command line to verify an installation, see [“Verifying a local server installation using the command line on HP-UX”](#) on page 79.
- To use the postcard application to verify an installation, see [“Verifying a local server installation using the Postcard application on HP-UX”](#) on page 80.

## **Verifying a local server installation using the command line on HP-UX**

On HP-UX systems, you can verify a local installation by using the command line to create a simple configuration of one queue manager and one queue. You can also verify an installation using the postcard application.

### **Before you begin**

To verify the installation, you must first install the samples package.

Before beginning the verification procedure, you might want to check that you have the latest fixes for your system. For more information about where to find the latest updates, see [“Checking requirements on Windows” on page 240](#).

### **About this task**

Use the following steps to configure your default queue manager from the command line. After the queue manager is configured, use the `amqspout` sample program to put a message on the queue. You then use the `amqsget` sample program to get the message back from the queue.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### **Procedure**

1. On an HP-UX system, log in as a user in the `mqm` group.
2. Set up your environment:
  - a) Set up environment variables for use with a particular installation by entering one the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- b) Check that the environment is set up correctly by entering the following command:

```
dspmqver
```

If the command completes successfully, and the expected version number and installation name are returned, the environment is set up correctly.

3. Create a queue manager called QMA by entering the following command:

```
crtmqm QMA
```

Messages indicate when the queue manager is created, and when the default IBM MQ objects are created.

4. Start the queue manager by entering the following command:

```
strmqm QMA
```

A message indicates when the queue manager starts.

5. Start MQSC by entering the following command:

```
runmqsc QMA
```

A message indicates when MQSC starts. MQSC has no command prompt.

6. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL (QUEUE1)
```

A message indicates when the queue is created.

7. Stop MQSC by entering the following command:

```
end
```

Messages are shown, followed by the command prompt.

**Note:** Subsequent steps require that the samples package is installed.

8. Change into the `MQ_INSTALLATION_PATH/samp/bin` directory, which contains the sample programs.

`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

9. Put a message on the queue by entering the following commands

```
./amqspout QUEUE1 QMA
```

The following messages are shown:

```
Sample AMQSPUT0 start  
target queue is QUEUE1
```

10. Type some message text on one or more lines, where each line is a different message. Enter a blank line to end the message input.

The following message is shown:

```
Sample AMQSPUT0 end
```

Your messages are now on the queue and the command prompt is shown.

11. Get the messages from the queue, by entering the following command:

```
./amqsget QUEUE1 QMA
```

The sample program starts, and your messages are displayed.

## Results

You have successfully verified your local installation.

## **Verifying a local server installation using the Postcard application on HP-UX**

Sending messages successfully between two Postcard applications verifies a local installation.

## Before you begin

The postcard application is Java based and requires a system with the ability to view a graphical display.

You must ensure that you are a member of the IBM MQ administrators group (`mqm`).

**Note:** Using Postcard to verify an IBM MQ installation is only possible if there is one IBM MQ installation on that box. The Default Configuration wizard will not create a default configuration if a queue manager already exists on the box. The Default Configuration wizard will run on any installation on a box but only one default configuration can be created per box. Using Postcard to verify second and subsequent installations of IBM MQ on the same box is not possible.

To verify that the local installation is working, you can run two instances of the Postcard application on the same server. The postcard application can send messages to, and receive messages from, other postcard applications. Successful sending and receiving of messages verifies that IBM MQ is installed and working correctly on the server.

## Procedure

1. Log on as a user in group `mqm`.
2. Start the postcard application in one of the following ways:



a) From the command line:

- i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
- ii) Run the postcard application by entering the following command:

```
./postcard
```

b) From the IBM MQ Explorer:

- i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
  - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type in a nickname to use to send messages within the Postcard application (for example, User1).
4. Select the queue manager to use as the mailbox:
- If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration creates a default queue manager.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK** to display your first Postcard window.

5. Run a second instance of the Postcard application by following the steps used to open the first instance of the Postcard application.
6. The **Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, User2).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 4).  
The queue manager you select for this second Postcard must be the same queue manager as used for the first instance of the Postcard application.
8. In the first Postcard, (User1), enter the nickname ( User2) for the second Postcard application in the **To:** field. Because the sender and receiver are on the same server, you can leave the **On:** field blank.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as sent. In the receiving Postcard, the message is displayed as received.
11. In the receiving Postcard, (User2), double-click the message in the **Postcards sent and received** area to view it.

When this message arrives, it verifies that IBM MQ is correctly installed.

## What to do next

Depending on your situation, you might want to do the following tasks:

- Install IBM MQ on other servers. Follow the installation procedure for the appropriate platform. Ensure that you use the **Join Default Cluster** window in the Default Configuration wizard to add the other servers to the cluster on your first server.
- Install the IBM MQ MQI client on other servers.
- Continue with further administration tasks, see [Administering IBM MQ](#).

## **Verifying a server-to-server installation on HP-UX**

You can use either the command line or the postcard application to verify a server-to-server installation on HP-UX.

### **Before you begin**

For a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must therefore ensure that the communications protocol is installed and configured on both systems.

On HP-UX, IBM MQ supports both TCP and SNA.

The examples in this task use TCP/IP. If you do not use TCP, see [Setting up communication on UNIX and Linux](#).

### **About this task**

For a server-to-server installation, you can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### **Procedure**

- To use the command line to verify an installation, see [“Verifying a server-to-server installation using the command line on HP-UX” on page 82](#).
- To use the postcard application to verify an installation, see [“Verifying a server-to-server installation using the Postcard application on HP-UX” on page 85](#).

## **Verifying a server-to-server installation using the command line on HP-UX**

You can verify a server-to-server installation using two servers, one as a sender and one as a receiver.

### **Before you begin**

- Make sure that TCP/IP and IBM MQ are installed on both servers (see [“Verifying a server-to-server installation on HP-UX” on page 82](#)).
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Decide which installation is the sender server and which installation is the receiver server. The installations might be on the same system, or on different systems.

### **About this task**

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### **Procedure**

1. On the **receiver** server:

a) On HP-UX, log in as a user in the mqm group.

b) Check which ports are free, for example by running **netstat**. For more information about this command, see the documentation of your operating system.

If port 1414 is not in use, make a note of 1414 to use as the port number in step 2 h. Use the same number for the port for your listener later in the verification. If it is in use, note a port that is not in use; for example 1415.

c) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

d) Create a queue manager called QMB by entering the following command at the command prompt:

```
crtmqm QMB
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

e) Start the queue manager by entering the following command:

```
strmqm QMB
```

A message tells you when the queue manager has started.

f) Start MQSC by entering the following command:

```
runmqsc QMB
```

A message tells you that MQSC has started. MQSC has no command prompt.

g) Define a local queue called RECEIVER.Q by entering the following command:

```
DEFINE QLOCAL (RECEIVER.Q)
```

A message tells you the queue has been created.

h) Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT ( PORT_NUMBER )
```

Where *port\_number* is the name of the port the listener runs on. This number must be the same as the number used when defining your sender channel.

i) Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

**Note:** Do not start the listener in the background from any shell that automatically lowers the priority of background processes.

j) Define a receiver channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (RCVR) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

k) End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

2. On the **sender** server:

a) As the sender server is an AIX system, log in as a user in the mqm group.

- b) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Create a queue manager called QMA by entering the following command at the command prompt:

```
crtmqm QMA
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- d) Start the queue manager, by entering the following command:

```
strmqm QMA
```

A message tells you when the queue manager has started.

- e) Start MQSC by entering the following command:

```
runmqsc QMA
```

A message tells you that an MQSC session has started. MQSC had no command prompt.

- f) Define a local queue called QMB (to be used as a transmission queue) by entering the following command:

```
DEFINE QLOCAL (QMB) USAGE (XMITQ)
```

A message tells you when the queue has been created.

- g) Define a local definition of the remote queue with by entering the following command:

```
DEFINE QREMOTE (LOCAL.DEF.OF.REMOTE.QUEUE) RNAME (RECEIVER.Q) RQMNAME ('QMB') XMITQ (QMB)
```

- h) Define a sender channel by entering one of the following commands:

*con-name* is the TCP/IP address of the receiver system. If both installations are on the same system, the *con-name* is `localhost`. *port* is the port you noted in [1 b](#). If you do not specify a port, the default value of 1414 is used.

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (SDR) CONNAME ('CON-NAME(PORT)') XMITQ (QMB) TRPTYPE (TCP)
```

- i) Start the sender channel by entering the following command:

```
START CHANNEL(QMA.QMB)
```

The receiver channel on the receiver server starts automatically when the sender channel starts.

- j) Stop MQSC by entering the following command:

```
end
```

Some messages are displayed, followed by the command prompt.

- k) If the sender server is a UNIX or Linux system, change into the *MQ\_INSTALLATION\_PATH/samp/bin* directory. This directory contains the sample programs. *MQ\_INSTALLATION\_PATH* represents the high-level directory in which IBM MQ is installed.

- l) If both the sender server and receiver server are installations on the same system, check that the queue managers have been created on different installations by entering the following command:

```
dspmqr -o installation
```

If the queue managers are on the same installation, move either QMA to the sender installation or QMB to the receiver installation by using the **setmqm** command. For more information, see [setmqm](#).

- m) Put a message on the local definition of the remote queue, which in turn specifies the name of the remote queue. Enter one of the following commands:

- On Windows:

```
amqsput LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

- On UNIX and Linux:

```
./amqsput LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

A message tells you that amqsput has started.

- n) Type some message text on one or more lines, followed by a blank line.

A message tells you that amqsput has ended. Your message is now on the queue and the command prompt is displayed again.

3. On the **receiver** server:

- a) As your receiver server is an AIX system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory.

This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- b) Get the message from the queue on the receiver by entering the following command:

```
./amqsget RECEIVER.Q QMB
```

The sample program starts, and your message is displayed. After a pause, the sample ends. Then the command prompt is displayed.

## Results

You have now successfully verified the server-to-server installation.

## **Verifying a server-to-server installation using the Postcard application on HP-UX**

You can use two instances of the Postcard application to verify that a server-to-server installation is working.

### Before you begin

You can use the Postcard application on two servers, one instance of the Postcard application on each server, to verify that a server-to-server installation is working. Successful sending and receiving of messages verifies that IBM MQ is successfully installed, and that communication between the two servers is working correctly.

#### Note:

- If the system has multiple IBM MQ installations, ensure that Postcard has not been run before on any installations on that server. As the default configuration can only exist on one IBM MQ installation per system, the Default Configuration wizard and Postcard can not be used for verification of a second or any subsequent installation.
- The two server installations must be on different systems to do a server-to-server verification using the postcard application. To verify a server-to-server installation on the same machine, you can use the command line.
- Make sure that TCP/IP and IBM MQ are installed on both servers.
- Make sure that your systems are able to view a graphical display.
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.

- Check that one of the following scenarios applies:
  - Neither server has had any queue managers created.
  - Use the Default Configuration wizard to create default queue managers on each server and link them to the default cluster.

Details on how to use the Default Configuration wizard are provided in this topic.

- Both servers have existing queue managers and these queue managers are in the same cluster.

If your queue managers are not in the same cluster, create new queue managers on both servers. Then create a cluster, and ensure that the queue managers that you create on each server belong to that cluster.

- You have configured channels to communicate between the two servers.

For instructions on how to set up the channels, see [“Verifying a server-to-server installation using the command line on HP-UX” on page 82](#). After you have set up the channels, follow the instructions in this topic to verify your server-to-server installation.

## Procedure

1. On the first server, log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:

- a) From the command line:

- i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- ii) Run the postcard application by entering the following command:

```
./postcard
```

- b) From the IBM MQ Explorer:

- i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.

- ii) Click **Launch Postcard** to start the Postcard.

3. At the **Postcard - Sign On** window, type a nickname to use to send messages within the Postcard application. For example, `User1` for the first server, and `User2` for the second server.
4. When you have completed the wizard, you are taken back to the **Postcard - Sign On** window.
5. Select the queue manager to use as the mailbox:

- If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
  - For the first server, select **yes, make it the repository for the cluster**.
  - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
- If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
- If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
- If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.

- If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK**.

6. Complete steps 1 - 5 for the second server.

7. In the Postcard on the first server:

- a) Enter the nickname ( user2) for the Postcard application on the second server in the **To:** field.
- b) Enter the queue manager on the second server in the **On:** field.
- c) Type a message in the **Message:** field and click **Send**.

8. In the Postcard on the second server:

- a) In the **Postcards sent and received**, double-click the message marked as received to view the message from the first server.
- b) Optional: Send a postcard to the first server by adapting the instructions in step 7. You must enter details of the first server in the **To:** field and the **On:** field.

The messages verify that IBM MQ is correctly installed and that your communication link between the two servers is working correctly.

## **Verifying a client installation using the command line on HP-UX**

You can verify a client installation using the command line. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel, and then use the sample PUT and GET programs to complete the verification procedure.

The verification procedure shows how to create a queue manager called `queue.manager.1`, a local queue called `QUEUE1`, and a server-connection channel called `CHANNEL1` on the server.

It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.
- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

First, set up the server using the command line, using the instructions in [“Setting up the server using the command line on HP-UX”](#) on page 88.

Once you have set up the server, you must set up the client, using the instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on HP-UX”](#) on page 89.

Finally, you can test the communications between client and server, using the instructions in [“Testing communication between a client and a server on HP-UX”](#) on page 90.

## HP-UX **Setting up the server using the command line on HP-UX**

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

### About this task

These instructions assume that no queue manager or other IBM MQ objects have been defined.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### Procedure

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. Log in as a user in the mqm group.
3. You must set various environment variables so that the installation can be used in the current shell.  
You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

4. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

5. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

6. Start MQSC by entering the following command:

```
runmqsc QUEUE.MANAGER.1
```

A message tells you that an MQSC session has started. MQSC has no command prompt.

7. Define a local queue called `QUEUE1` by entering the following command:

```
DEFINE QLOCAL(QUEUE1)
```

A message tells you when the queue has been created.

8. Allow the user ID that you created in step 1 to use `QUEUE1` by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(Queue) PRINCIPAL(' non_mqm_user ') AUTHADD(PUT,GET)
```

where *non\_mqm\_user* is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(CONNECT)
```

If this command is not run, a 2305 stop error is returned.

9. Define a server-connection channel by entering the following command:

```
DEFINE CHANNEL (CHANNEL1) CHLTYPE (SVRCONN) TRPTYPE (TCP)
```



A message tells you when the channel has been created.

10. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(ADDRESSMAP) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

11. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on HP-UX”](#) on page 75.

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

12. Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

13. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on HP-UX”](#) on page 89.

### **Connecting to a queue manager, using the MQSERVER environment variable on HP-UX**

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

## Before you begin

Before you start this task, you must complete the task, [“Setting up the server using the command line on HP-UX”](#) on page 88, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

## About this task

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

You can give the client access to the generated client channel definition table, `amqc1chl.tab` instead; see [Accessing client-connection channel definitions](#).

## Procedure

1. Log in as the userid that you created in Step 1 of [“Setting up the server using the command line on HP-UX”](#) on page 88.

2. Check the TCP/IP connection. From the client, enter one of the following commands:

- `ping server-hostname`
- `ping n.n.n.n`

`n.n.n.n` represents the network address. You can set the network address in IPv4 dotted decimal form, for example, `192.0.2.0`. Alternatively, set the address in IPv6 hexadecimal form, for example `2001:0DB8:0204:acff:fe97:2c34:fde0:3485`.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter the following command:

```
export MQSERVER=CHANNEL1/TCP/' server-address (port) '
```

Where:

- `CHANNEL1` is the server-connection channel name.
- `server-address` is the TCP/IP host name of the server.
- `port` is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the `qm.ini` file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If an `MQSeries` entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

## What to do next

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on HP-UX”](#) on page 90.

### HP-UX

## Testing communication between a client and a server on HP-UX

On the IBM MQ MQI client workstation, use the `amqsputc` sample program to put a message on the queue at the server workstation. Use the `amqsgetc` sample program to get the message from the queue back to the client.

## Before you begin

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

## About this task

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Change to the `MQ_INSTALLATION_PATH/samp/bin` directory, which contains the sample programs.

`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

2. You must set certain environment variables so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

3. Start the PUT program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
./amqsputc QUEUE1 QUEUE.MANAGER.1
```

If the command is successful, the following messages are displayed:

Sample AMQSPUT0 start target queue is QUEUE1

**Tip:** You might get the error, MQRC\_NOT\_AUTHORIZED (2035). By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

4. Type some message text, then press **Enter** twice.

The following message is displayed:

Sample AMQSPUT0 end

Your message is now on the queue that is on the server queue manager.

5. Start the GET program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
./amqsgetc QUEUE1 QUEUE.MANAGER.1
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. You must set various environment variables on the server so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

2. On the server, stop the queue manager by entering the following command:

```
endmqm QUEUE.MANAGER.1
```

3. On the server, delete the queue manager by entering the following command:

```
dltmqm QUEUE.MANAGER.1
```

### HP-UX

## Uninstalling or modifying IBM MQ on HP-UX

On HP-UX, you can uninstall the IBM MQ server or client using the **swremove** command. You can also modify an IBM MQ installation by uninstalling selected IBM MQ components.

### Before you begin

If any updates have been applied, remove them before starting the uninstallation procedure. For more information, see [Restoring the previous maintenance level on IBM MQ on HP-UX](#).

**Important:** You must stop all IBM MQ queue managers, other objects, and applications, before you begin the process to uninstall or modify IBM MQ.

## Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling or modifying, if you have not already done so.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling or modifying:
  - a) Log in as a user in the group mqm.
  - b) Set up your environment to work with the installation you want to uninstall or modify. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall or modify. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.

4. Uninstall IBM MQ using **swremove**:

- To uninstall all IBM MQ components, enter the following command:

```
swremove MQSERIES,l= MQ_INSTALLATION_PATH
```

where *MQ\_INSTALLATION\_PATH* is the path where IBM MQ is installed.

- To modify an IBM MQ installation and uninstall selected IBM MQ components, enter the following command:

```
swremove componentname,l= MQ_INSTALLATION_PATH
```

where *componentname* is the name of the component to uninstall, and *MQ\_INSTALLATION\_PATH* is the path where IBM MQ is installed.

For example:

- To uninstall the client component, from an installation in */opt/myLocation*, enter the following command:

```
swremove MQSERIES.MQM-CL-HPUX,l=/opt/myLocation
```

- To uninstall the client and the telemetry client components, from an installation in */opt/myLocation*, enter the following command:

```
swremove MQSERIES.MQM-CL-HPUX,l=/opt/myLocation MQSERIES.MQM-TXCLIENT,l=/opt/myLocation
```

## Results

After uninstallation, certain files under the directory trees `/var/mqm` and `/etc/opt/mqm` are not removed. These files contain user data and remain so subsequent installations can reuse the data. Most of the remaining files contain text, such as INI files, error logs, and FDC files. The directory tree `/var/mqm/shared` contains files that are shared across installations, including the executable shared libraries `libmqzsd.so` and `libmqzsd_r.so`.

## What to do next

- If the product successfully uninstalled, you can delete any files and directories contained in the installation directory.
- If there are no other IBM MQ installations on the system, and you are not planning to reinstall or migrate, you can delete the `/var/mqm` and `/etc/opt/mqm` directory trees, including the files `libmqzsd.so` and `libmqzsd_r.so`. Deleting these directories destroys all queue managers and their associated data.

## IBM i Installing and uninstalling IBM MQ on IBM i

Installation tasks that are associated with installing IBM MQ on IBM i systems are grouped in this section.

### About this task

To prepare for installation and to install the IBM MQ components, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling IBM MQ for IBM i” on page 119](#).

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

1. Check the system requirements.  
See [“Hardware and software requirements on IBM i systems” on page 94](#).
2. Plan your installation.
  - As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ components for IBM i” on page 93](#).
  - You must also make some platform-specific choices. See [“Planning to install IBM MQ on IBM i” on page 96](#).
3. Prepare your system for installation of IBM MQ.  
See [“Preparing the system on IBM i” on page 96](#).
4. Install IBM MQ server.  
See [“Installing IBM MQ server on IBM i” on page 98](#).
5. Optional: Install an IBM MQ client.  
See [“Installing an IBM MQ client on IBM i” on page 110](#).
6. Verify your installation. See [“Verifying an IBM MQ installation on IBM i” on page 115](#).

## IBM i IBM MQ components for IBM i

The IBM MQ components that are available for IBM i.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

The components are as follows:

**Server (Base)**

Support to enable you to create and support your own applications. This includes the runtime component that provides support for external applications. It also includes support for client connections from IBM MQ installations on other computers.

**Command Reference**

Help for the CL commands is provided in HTML format and installed with the product in the /QIBM/ProdData/mqm/doc directory.

**Samples (Option 1)**

Sample application programs. The source is supplied in the QMQMSAMP library and executable files are supplied in the QMQM library.

**AMS (Option 2)**

The AMS component.

**Documentation**

The full product documentation is supplied on the IBM MQ Documentation CD.

**Readme file**

Latest information about the product that became available after publication of this product documentation or the full documentation. You can find the readme file in the root of the product or documentation CD. Review it before starting to install IBM MQ for IBM i.

**Managed File Transfer (MFT) components****\*BASE**

Support to enable you to create and support your own MFT applications. It also includes support for client connections from IBM MQ MFT installations on other computers.

**2**

Tools support

**3**

Agent

**4**

Services

You must install \*BASE first because the other three options depend on \*BASE. Note that option 4 requires that option 3 is installed.

**Related concepts**

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

**IBM i****Hardware and software requirements on IBM i systems**

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

Before installation, you must check that your system meets the hardware and software requirements set out in the IBM MQ system requirements page. See [System Requirements for IBM MQ](#). You must also review the release notes file, which are on the product CD in the \Readmes folder for each national language, and check the READADD.txt file for any changes made between translation and the manufacturing of the installation CD. READADD.txt is found in the root directory of the server installation CD.

During installation, the release notes file is copied to the IBM MQ program files folder (default /QIBM/ProdData/mqm).

**Storage requirements for IBM MQ server**

The storage requirements for IBM i depend on which components you install, and how much working space you need. The storage requirements also depend on the number of queues that you use, the number and size of the messages on the queues, and whether the messages are persistent. You also

require archiving capacity on disk, tape, or other media. For more information, see [System Requirements for IBM MQ](#).

Disk storage is also required:

- Prerequisite software
- Optional software
- Your application programs

## Installing prerequisite software

To install the prerequisite software provided on the IBM MQ Server CD (which does not include service packs or web browsers), do one of the following:

- Use the IBM MQ installation procedure.

When you install using the IBM MQ Server CD, there is a **Software Prerequisites** option in the IBM MQ Installation Launchpad window. You can use this option to check what prerequisite software is already installed and which is missing, and to install any missing software.

## Using TLS 1.2

TLS version 1.2 is the latest version of the Transport Layer Security (TLS) protocol. The core System TLS v1.2 functionality is included in IBM i 7.1 Technology Refresh 6 (TR6). To enable and use the new protocols, program temporary fixes (PTFs) from multiple areas of the operating system are also required.

Provided DCM (5770SS1 option 34) is installed on your system, requesting and applying [SI48659](#) obtains all of the enablement PTFs.

### System value changes

The new support is installed, but dormant in System SSL after applying SI48659.

In order to activate the new protocols for System SSL, use Change System Value (CHGSYSVAL) to modify The QSSLPCL system value.

Change the default value of \*OPSYS to:

- \*TLSV1.2
- \*TLSV1.1
- \*TLSV1
- \*SSLV3

If QSSLPCL is set to something other than \*OPSYS, add \*TLSV1.2 and \*TLSV1.1 to the existing setting.

## Prerequisite PTFs for multiple certificate support

You are not limited to a single certificate for TLS channels. To use multiple certificates on IBM i platforms, you must install the following program temporary fixes (PTFs):

- [MF57749](#)
- [MF57889](#)
- [SI52214](#)
- [MF58003](#)

See [Digital certificate labels: understanding the requirements](#) for details about how to select certificates by using certificate labels.

### Related concepts

[“License requirements” on page 8](#)

You must have purchased sufficient licenses for your installation. The details of the license agreement is stored on your system at installation time so that you can read it at any time. IBM MQ supports IBM License Metric Tool (ILMT).

[“Where to find product requirements and support information” on page 9](#)

Before you install IBM MQ, you must check for the latest information and system requirements.

## Planning to install IBM MQ on IBM i

Before you install IBM MQ on IBM i, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### About this task

The following steps provide links to additional information to help you with planning your installation of IBM MQ on IBM i.

### Procedure

1. As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ.  
For more information, see [“Hardware and software requirements on IBM i systems” on page 94](#).
2. Decide which IBM MQ components and features to install.  
See [“IBM MQ components and features” on page 6](#).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

## Preparing the system on IBM i

On IBM i systems, you might have to complete several tasks before you install IBM MQ. You might also want to complete other tasks, depending on your installation intentions.

### About this task

The tasks that you perform to prepare your systems for installation are listed here. Complete the appropriate tasks for your platform before installing.

### Procedure

Configure any additional settings needed for your IBM i system.

See [“Configuring and tuning the operating system on IBM i” on page 97](#).

### What to do next

When you have completed the tasks to prepare the system, you are ready to start installing IBM MQ. To install a server, see [“Installing IBM MQ server on IBM i” on page 98](#). To install a client, see [“Installing an IBM MQ client on IBM i” on page 110](#).

### Related tasks

[Planning](#)

[Maintaining and migrating](#)

[Applying maintenance to IBM MQ](#)



Before installing IBM MQ for IBM i, there are several system values which need to be checked using the DSPSYSVAL command. If necessary, reset the values using the CHGSYSVAL command.

Check the following values and change if required:

**QCCSID**

Every message has a coded-character set identifier (CCSID) in its header. The CCSID tag identifies the code page and character set of the source.

A queue manager obtains its CCSID from the job that created it. If the job CCSID is not a valid value in the range 1-65534, the queue manager uses the default CCSID value (65535) instead. You can change the CCSID used by the IBM MQ queue manager by using the CL command **CHGMQM**.

**Note:** The CCSID must be either single-byte character set (SBCS), or mixed, that is SBCS and DBCS. It must not be DBCS only.

**QSYSLIBL**

Ensure that QSYS2 is included in the list of libraries that make up the system part of the library list. IBM MQ uses programs in this library for data conversion and SNA LU 6.2 communication.

**Note:** Do not have QMQM as part of the system or user portion of the library list.

**QALWOBJRST**

Ensure that the QALWOBJRST system value is set to \*ALL or \*ALWPGMADP before you install MQ. If it is set to \*NONE, installation fails.

After installation, reset QALWOBJRST to its original value to maintain system security.

**QSHRMEMCTL**

Ensure that the QSHRMEMCTL system value is set to 1 (Allowed).

A value of 1 is used in environments where pointers can be shared amongst programs between different jobs.

IBM MQ requires this setting to use the shared memory APIs shmat and shmget and to share its pointers across jobs.

If it is not set correctly, initialization of IBM MQ fails with system return code "3401" (Permission denied), and commands such as CRTMQM, STRMQM, ENDMQM, TRCMQM fail.

**QFRCCVNRST**

Ensure that the QFRCCVNRST system value is set to 0 (Restore all objects without conversion), or 1 (Objects with validation errors are converted), before you install MQ. If it is not set, installation fails.

**QMLTTHDACN**

Optionally set this to control the generation of messages into joblogs. Set QMLTTHDACN to 2 to get messages generated in a joblog; set it to 1 to avoid the messages. For example, the message CPD000D is an informational message that is generated when a command that is not thread-safe is issued from a multi-threaded application. Setting QMLTTHDACN to 1 avoids the message.

**Related concepts**

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“License requirements” on page 8](#)

You must have purchased sufficient licenses for your installation. The details of the license agreement is stored on your system at installation time so that you can read it at any time. IBM MQ supports IBM License Metric Tool (ILMT).

**Related tasks**

[“Installing IBM MQ server on IBM i” on page 98](#)

Install IBM MQ for IBM i by installing the IBM MQ server in its primary language, installing samples and installing additional languages.

## IBM i Installing IBM MQ server on IBM i

Install IBM MQ for IBM i by installing the IBM MQ server in its primary language, installing samples and installing additional languages.

### Before you begin

**Note:** Installing the latest version of the IBM MQ server includes client capabilities. Only install the stand-alone client if you do not need the server capabilities.

You have completed planning the installation, obtained the installation CDs and set the system values, see [“Configuring and tuning the operating system on IBM i” on page 97](#). For a complete list of IBM MQ installable services and components for IBM i systems, see [Installable services and components for IBM i](#)

### About this task

How to install the base IBM MQ server in its primary language, install samples, and install translated versions from a choice of national-languages.

You can install only one instance of IBM MQ for IBM i in each partition of your server.

### Procedure

1. Sign on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Install the IBM MQ for IBM i base product, and primary language.

```
RSTLICPGM LICPGM (5724H72) DEV (installation device) OPTION (*BASE) OUTPUT (*PRINT)
```

where the parameters of RSTLICPGM are,

**LICPGM(5724H72)**

The product identifier for IBM i.

**DEV(installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

**OPTION (\*BASE)**

Install the IBM MQ for IBM i base product.

**Unspecified parameters**

Unspecified parameters, such as **RSTOBJ (\*ALL)**, revert to defaults. The command installs both IBM MQ and the language files for the primary language of your system. For installing additional languages, see step 4.

3. Optional: Install the samples using the command:

```
RSTLICPGM LICPGM (5724H72) DEV (installation device) OPTION (1) OUTPUT (*PRINT)
```

Where the parameters of RSTLICPGM are,

**LICPGM (5724H72)**

The product identifier for IBM i.

**DEV (installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

**OPTION (1)**

Install the samples for IBM i.

**OUTPUT (\*PRINT)**

The output is printed with the spooled output of the job.

4. Optional: To install additional languages, sign on to the system with a user profile that has \*ALLOBJ special authority. Choose a language code from the table.

<i>Table 12. Globalizations of IBM MQ for IBM i.</i>	
<b>Language ID</b>	<b>Language</b>
2909	Belgian English
2966	Belgian French MNCS (Multi-National Character Set)
2980	Brazilian Portuguese
2981	Canadian French MNCS
2975	Czech
2924	English uppercase and lowercase
2984	English US DBCS
2938	English US uppercase DBCS
2928	French
2940	French MNCS
2929	German
2939	German MNCS
2976	Hungarian
2932	Italian
2942	Italian MNCS
2962	Japanese
2930	Japanese Universal
2986	Korean
2978	Polish
2979	Russian
2989	Simplified Chinese
2931	Spanish

- If installing Japanese language feature code 2962, ensure the CCSID of the job installing the product is set to 939 and not 930. Do this to avoid problems with invariant lowercase characters in CCSID 930

```
CHGJOB CCSID(939)
```

- If the language feature code is not in the table then the product has not been translated into your language. You must choose one of the available language feature codes and install that version instead. You must manually change the system library list to use IBM MQ in that language load.

```
CHGSYSLIBL LIB(QSYS2924)
```

See also *How a language of your choice is displayed for licensed programs* in [How a language is displayed for IBM i functions](#) in the IBM i product documentation.

- If you are using Korean DBCS and you configure your terminal emulators to 24\*80 sessions you might find that EDTF incorrectly displays DBCS characters in MQ error log messages that extend

beyond 80 columns. To avoid this, configure your terminal emulators to use sessions capable of displaying 132 columns, for example 27\*132.

- Issue the following command specifying the appropriate language ID:

```
RSTLICPGM LICPGM(5724H72) DEV( installation device ) RSTOBJ(*LNG) LNG( language ID )
```

This installs the commands, message file, and panel groups into the relevant QSYS library for the language. For example, library QSYS2928 is used for French. If this QSYS29nn library does not exist, it is created by the RSTLICPGM command.

5. To ensure that the product has loaded correctly, issue the Display Software Resources (DSPSFWRSC) command and check that the licensed program 5724H72 is listed. If you have installed the base and the optional samples, you see:

```
Resource
ID    Option Feature Description
5724H72 *BASE 5050 IBM MQ for IBM i
5724H72 *BASE 2924 IBM MQ for IBM i
5724H72 1    5050 IBM MQ for IBM i - Samples
```

6. Press F11, while viewing the Display Software Resources screen, and you see the library and version number of the products installed:

```
Resource          Feature
ID    Option Feature Type Library Release
5724H72 *BASE 5050 *CODE QMQM V9R0M0
5724H72 *BASE 2924 *LNG QMQM V9R0M0
5724H72 1    5050 *CODE QMQMSAMP V9R0M0
```

7. If you have installed additional language versions, you also see entries for these versions. For example, if you have installed the French version, for which the language ID is 2928, you see:

a)

```
Resource
ID    Option Feature Description
5724H72 *BASE 2928 IBM MQ for IBM i
```

b) and when you press F11:

```
Resource          Feature
ID    Option Feature Type Library Release
5724H72 *BASE 2928 *LNG QSYS2928 V9R0M0
```

8. Use the command DSPMQMVER to check exactly what version you have installed. For V9R0M0, it reports:

```
Version: 9.0.0.0
```

9. Do the post installation tasks of checking for updates, checking program authorities and starting the IBM MQ subsystem, see [“Performing post installation tasks for IBM MQ on IBM i” on page 108](#).

## What to do next

If you want to see how the installation went in more detail, perform one or more of the following tasks:

- View the log file using the DSPJOBLOG command.
- View the spoolfile generated from the RSTLICPGM command.

If the installation of IBM MQ fails, see [“Handling installation failures for IBM i” on page 109](#).

## Related concepts

[“Uninstalling IBM MQ for IBM i” on page 119](#)

There are two ways of uninstalling IBM MQ for IBM i.

## Installing IBM MQ server silently on IBM i

You can perform a non-interactive installation of IBM MQ using the CALL PGM(QSYS/QLPACAGR) command. A non-interactive installation is also known as a silent, or unattended installation.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on IBM i”](#) on page 96.

### About this task

This topic describes the non-interactive installation of a server.

### Procedure

1. Pre-agree the license terms and conditions for the base by running the command,

```
CALL PGM ( QSYS/QLPACAGR) PARM ('5724H72' 'V8R0M0' '0000' 0)
```

Where the parameters of **PARM** are,

**5724H72**

The product identifier for IBM i.

**V9R0M0**

The version, release, and modification level.

**0000**

The option number for the IBM MQ product.

**0**

Unused error structure.

2. Optionally pre-agree the license terms and conditions for the samples by running the command,

```
CALL PGM (QSYS/QLPACAGR) PARM ('5724H72' 'V8R0M0' '0001' 0)
```

Where the parameters of **PARM** are,

**5724H72**

The product identifier for IBM i.

**V9R0M0**

The version, release, and modification level.

**0001**

The option number for the IBM MQ product.

**0**

Unused error structure.

3. Install the IBM MQ for IBM i base product, and primary language.

```
RSTLICPGM LICPGM (5724H72) DEV (installation device) OPTION (*BASE) OUTPUT (*PRINT)
```

where the parameters of RSTLICPGM are,

**LICPGM(5724H72)**

The product identifier for IBM i.

**DEV(installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

**OPTION (\*BASE)**

Install the IBM MQ for IBM i base product.

### Unspecified parameters

Unspecified parameters, such as **RSTOBJ** (\*ALL), revert to defaults. The command installs both IBM MQ and the language files for the primary language of your system. For installing additional languages, see step 4.

4. Optional: Install the samples using the command:

```
RSTLICPGM LICPGM (5724H72) DEV (installation device) OPTION (1) OUTPUT (*PRINT)
```

Where the parameters of RSTLICPGM are,

#### **LICPGM (5724H72)**

The product identifier for IBM i.

#### **DEV (installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

#### **OPTION (1)**

Install the samples for IBM i.

#### **OUTPUT (\*PRINT)**

The output is printed with the spooled output of the job.

5. Optional: To install additional languages, sign on to the system with a user profile that has \*ALLOBJ special authority. Choose a language code from the table.

Table 13. Globalizations of IBM MQ for IBM i.	
Language ID	Language
2909	Belgian English
2966	Belgian French MNCS (Multi-National Character Set)
2980	Brazilian Portuguese
2981	Canadian French MNCS
2975	Czech
2924	English uppercase and lowercase
2984	English US DBCS
2938	English US uppercase DBCS
2928	French
2940	French MNCS
2929	German
2939	German MNCS
2976	Hungarian
2932	Italian
2942	Italian MNCS
2962	Japanese
2930	Japanese Universal
2986	Korean
2978	Polish
2979	Russian
2989	Simplified Chinese

Table 13. Globalizations of IBM MQ for IBM i. (continued)	
Language ID	Language
2931	Spanish

- If installing Japanese language feature code 2962, ensure the CCSID of the job installing the product is set to 939 and not 930. Do this to avoid problems with invariant lowercase characters in CCSID 930

```
CHGJOB CCSID(939)
```

- If the language feature code is not in the table then the product has not been translated into your language. You must choose one of the available language feature codes and install that version instead. You must manually change the system library list to use IBM MQ in that language load.

```
CHGSYSLIBL LIB(QSYS2924)
```

See also *How a language of your choice is displayed for licensed programs* in [How a language is displayed for IBM i functions](#) in the IBM i product documentation.

- If you are using Korean DBCS and you configure your terminal emulators to 24\*80 sessions you might find that EDTF incorrectly displays DBCS characters in MQ error log messages that extend beyond 80 columns. To avoid this, configure your terminal emulators to use sessions capable of displaying 132 columns, for example 27\*132.
- Issue the following command specifying the appropriate language ID:

```
RSTLICPGM LICPGM(5724H72) DEV( installation device ) RSTOBJ(*LNG) LNG( language ID )
```

This installs the commands, message file, and panel groups into the relevant QSYS library for the language. For example, library QSYS2928 is used for French. If this QSYS29nn library does not exist, it is created by the RSTLICPGM command.

6. To ensure that the product has loaded correctly, issue the Display Software Resources (DSPSFWRSC) command and check that the licensed program 5724H72 is listed. If you have installed the base and the optional samples, you see:

```
Resource
ID   Option Feature Description
5724H72 *BASE 5050 IBM MQ for IBM i
5724H72 *BASE 2924 IBM MQ for IBM i
5724H72 1    5050 IBM MQ for IBM i - Samples
```

7. Press F11, while viewing the Display Software Resources screen, and you see the library and version number of the products installed:

```
Resource          Feature
ID   Option Feature Type Library Release
5724H72 *BASE 5050 *CODE QMQM V9R0M0
5724H72 *BASE 2924 *LNG  QMQM V9R0M0
5724H72 1    5050 *CODE QMQMSAMP V9R0M0
```

8. If you have installed additional language versions, you also see entries for these versions. For example, if you have installed the French version, for which the language ID is 2928, you see:

a)

```
Resource
ID   Option Feature Description
5724H72 *BASE 2928 IBM MQ for IBM i
```

b) and when you press F11:

```
Resource          Feature
ID   Option Feature Type Library Release
5724H72 *BASE 2928 *LNG  QSYS2928 V9R0M0
```

9. Use the command DSPMQMVER to check exactly what version you have installed. For V9R0M0, it reports:

Version: 9.0.0.0

10. Do the post installation tasks of checking for updates, checking program authorities and starting the IBM MQ subsystem, see [“Performing post installation tasks for IBM MQ on IBM i”](#) on page 108.

## What to do next

If you want to see how the installation went in more detail, perform one or more of the following tasks:

- View the log file using the DSPJOBLOG command.
- View the spoolfile generated from the RSTLICPGM command.

If the installation of IBM MQ fails, see [“Handling installation failures for IBM i”](#) on page 109.

## IBM i Installing Managed File Transfer for IBM i

Install IBM MQ Managed File Transfer for IBM i by installing IBM MQ Java Messaging and Web Services server in its primary language, and installing additional options.

### Before you begin

**Note:** Installing the latest version of IBM MQ Managed File Transfer includes client capabilities.

You have completed planning the installation, obtained the installation CDs and set the system values, see [“Configuring and tuning the operating system on IBM i”](#) on page 97.

You have installed the following components:

Table 14. Software requirements for IBM MQ Managed File Transfer		
Program	Option	Description
5761JV1	14 or 15	Java SE 7 32 bit or Java SE 7 64 bit
5770SS1	39	International Components for Unicode
5724L26	*BASE	IBM MQ Java Messaging and Web Services

### About this task

How to install base Managed File Transfer in its primary language, and install the other options.

You can install only one instance of Managed File Transfer for IBM i in each partition of your server.

### Procedure

1. Sign on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Install Managed File Transfer for IBM i 9.0 base product.

```
RSTLICPGM LICPGM (5725M50) DEV (installation device) OPTION (*BASE) OUTPUT (*PRINT)
```

where the parameters of RSTLICPGM are,

#### **LICPGM (5725M50)**

The product identifier for Managed File Transfer for IBM i.

#### **DEV (installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

#### **OPTION (\*BASE)**

Install Managed File Transfer for IBM i for the IBM MQ base product.



### Unspecified parameters

Unspecified parameters such as **RSTOBJ** (\*ALL), revert to defaults. The command installs both IBM MQ and the language files for the primary language of your system.

- Optional: Install the tools using the command:

```
RSTLICPGM LICPGM(5725M50) DEV(installation device) OPTION(2) OUTPUT(*PRINT)
```

Where the parameters of RSTLICPGM are,

#### **LICPGM (5725M50)**

The product identifier for Managed File Transfer for IBM i.

#### **DEV (*installation device*)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

#### **OPTION (2)**

Install the tools for Managed File Transfer for IBM i.

#### **OUTPUT (\*PRINT)**

The output is printed with the spooled output of the job.

Repeat step “3” on page 105 for options 3 (agent) and 4 (services)

- To ensure that the product has loaded correctly, issue the Display Software Resources (DSPSFWRSC) command and check that the licensed program 5725M50 is listed. If you have installed the base and the optional tools, you see:

Resource ID	Option	Feature	Description
5725M50	*BASE	5050	Managed File Transfer for IBM i
5725M50	*BASE	2924	Managed File Transfer for IBM i
5725M50	2	5050	Managed File Transfer for IBM i - Tools

- Press F11, while viewing the Display Software Resources screen, and you see the library and version number of the products installed:

Resource ID	Option	Feature	Type	Library	Release
5725M50	*BASE	5050	*CODE	QMOMMFT	V9R0M0
5725M50	*BASE	2924	*LNG	QMOMMFT	V9R0M0
5725M50	2	5050	*CODE	MFTT00L	V9R0M0

- Do the post installation tasks of checking for updates, checking program authorities, and starting the Managed File Transfer subsystem.

## What to do next

If you want to see how the installation went in more detail, perform one or more of the following tasks:

- View the log file using the DSPJOBLOG command.
- View the spoolfile generated from the RSTLICPGM command.

If the installation of IBM MQ fails, see “[Handling installation failures for IBM i](#)” on page 109.

## Installing IBM MQ for IBM i from an Electronic Software Download

You can perform an installation of IBM MQ for IBM i 9.0 from an installation image downloaded from IBM.

## Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in “[Preparing the system on IBM i](#)” on page 96.

## About this task

Two installation images are provided as zip files, a client and server image. These images contain all the licensed programs, and a client only image for the clients only.

The client and server image contains all seven compressed IBM i save files ( **SAVF** ), while the client image contains four save files. The save files are:

- MQ90BASE - IBM MQ client and server base program objects
- MQ90SAMP - IBM MQ client & server samples
- MQ90EN24 - IBM MQ client and server English US (2924) language objects

plus the client only images:

- MQ90CBASE - IBM MQ client
- MQ90CSAMP - IBM MQ client samples
- MQ90JBASE - IBM MQ Java
- MQ90JSAMP - IBM MQ Java samples

## Procedure

1. Download one of the installation images and extract it to a temporary directory.
2. On IBM i, create a library containing sufficient empty save files to hold the uploaded files by using the commands:

```
CRTLIB LIB(MQ90PROD)
CRTSAVF FILE(MQ90PROD/MQ90BASE) /* Server and Client */
CRTSAVF FILE(MQ90PROD/MQ90SAMP) /* Server and Client Samples */
CRTSAVF FILE(MQ90PROD/MQ90EN24) /* 2924 English */
CRTSAVF FILE(MQ90PROD/MQ90CBASE) /* Standalone Client */
CRTSAVF FILE(MQ90PROD/MQ90CSAMP) /* Standalone Client Samples */
CRTSAVF FILE(MQ90PROD/MQ90JBASE) /* Java and JMS Classes */
CRTSAVF FILE(MQ90PROD/MQ90JSAMP) /* Java and JMS Samples */
```

For additional languages

```
CRTSAVF FILE(MQ90PROD/MQ90EN09) /* 2909 Belgian English */
CRTSAVF FILE(MQ90PROD/MQ90FR28) /* 2928 French */
CRTSAVF FILE(MQ90PROD/MQ90JA30) /* 2930 Japanese */
CRTSAVF FILE(MQ90PROD/MQ90ES31) /* 2931 Spanish */
CRTSAVF FILE(MQ90PROD/MQ90IT32) /* 2932 Italian */
CRTSAVF FILE(MQ90PROD/MQ90EN38) /* 2938 English DBCS UPPERCASE */
CRTSAVF FILE(MQ90PROD/MQ90FR40) /* 2940 French MNCS */
CRTSAVF FILE(MQ90PROD/MQ90IT42) /* 2942 Italian MNCS */
CRTSAVF FILE(MQ90PROD/MQ90FR66) /* 2966 French MNCS */
CRTSAVF FILE(MQ90PROD/MQ90FR81) /* 2981 French MNCS */
CRTSAVF FILE(MQ90PROD/MQ90EN84) /* 2984 English DBCS */
CRTSAVF FILE(MQ90PROD/MQ90CZ75) /* 2975 Czech */
CRTSAVF FILE(MQ90PROD/MQ90HU76) /* 2976 Hungarian */
CRTSAVF FILE(MQ90PROD/MQ90PL78) /* 2978 Polish */
CRTSAVF FILE(MQ90PROD/MQ90RU79) /* 2979 Russian */
CRTSAVF FILE(MQ90PROD/MQ90PT80) /* 2980 Portugese/Brazilian */
CRTSAVF FILE(MQ90PROD/MQ90JA62) /* 2962 Japanese */
CRTSAVF FILE(MQ90PROD/MQ90K086) /* 2986 Korean */
CRTSAVF FILE(MQ90PROD/MQ90ZH89) /* 2989 Chinese */
CRTSAVF FILE(MQ90PROD/MQ90DE29) /* 2929 German */
CRTSAVF FILE(MQ90PROD/MQ90DE39) /* 2939 German */
```

3. Start an ftp session to your IBM i machine and upload the required save files with the commands:

```
ftp (your_ibmi_hostname)
bin
put MQ90BASE MQ90PROD/MQ90BASE
put MQ90SAMP MQ90PROD/MQ90SAMP
put MQ90EN24 MQ90PROD/MQ90EN24
put MQ90CBASE MQ90PROD/MQ90CBASE
put MQ90CSAMP MQ90PROD/MQ90CSAMP
put MQ90JBASE MQ90PROD/MQ90JBASE
put MQ90JSAMP MQ90PROD/MQ90JSAMP
```

For additional language loads:

```
put MQ90EN09 MQ90PROD/MQ90EN09
put MQ90FR28 MQ90PROD/MQ90FR28
put MQ90JA30 MQ90PROD/MQ90JA30
put MQ90ES31 MQ90PROD/MQ90ES31
put MQ90IT32 MQ90PROD/MQ90IT32
put MQ90EN38 MQ90PROD/MQ90EN38
put MQ90FR40 MQ90PROD/MQ90FR40
put MQ90IT42 MQ90PROD/MQ90IT42
put MQ90FR66 MQ90PROD/MQ90FR66
put MQ90FR81 MQ90PROD/MQ90FR81
put MQ90EN84 MQ90PROD/MQ90EN84
put MQ90CZ75 MQ90PROD/MQ90CZ75
put MQ90HU76 MQ90PROD/MQ90HU76
put MQ90PL78 MQ90PROD/MQ90PL78
put MQ90RU79 MQ90PROD/MQ90RU79
put MQ90PT80 MQ90PROD/MQ90PT80
put MQ90JA62 MQ90PROD/MQ90JA62
put MQ90K086 MQ90PROD/MQ90K086
put MQ90ZH89 MQ90PROD/MQ90ZH89
put MQ90DE29 MQ90PROD/MQ90DE29
put MQ90DE39 MQ90PROD/MQ90DE39
```

4. To prepare for installation of IBM MQ for IBM i, sign on to your IBM i machine and ensure that you have followed the instructions detailed in [“Preparing the system on IBM i”](#) on page 96.
5. Enter the **RSTLICPGM** commands, specifying the installation device as \*SAVF and naming the save file containing the options that you want to install.

The IBM MQ Java licensed program can be installed stand-alone or can coexist with any of the other licensed programs.

The IBM MQ client can be installed standalone, but it can only coexist with the IBM MQ Java on the same system.

Attempting to install the IBM MQ server on a system where the IBM MQ client is already installed performs a slip installation upgrade, replacing the client with the server licensed program.

Attempting to install the IBM MQ client stand-alone over the top of an existing server licensed program is not possible, and the installation fails.

For example:

```

/* IBM MQ Client and Server program objects */
RSTLCPGM LICPGM(5724H72) DEV(*SAVF) SAVF(MQ90PROD/MQ90BASE) +
RSTOBJ(*PGM) OPTION(*BASE) OUTPUT(*PRINT)

/* IBM MQ Client & Server English 2924 Language Load */
RSTLCPGM LICPGM(5724H72) DEV(*SAVF) SAVF(MQ90PROD/MQ90EN24) +
RSTOBJ(*LNG) LNG(2924) OUTPUT(*PRINT)

/* Additional languages - alter SAVF and LNG parameters... */
/* IBM MQ Client & Server Japanese 2930 Language Load */
RSTLCPGM LICPGM(5724H72) DEV(*SAVF) SAVF(MQ90PROD/MQ90JA30) +
RSTOBJ(*LNG) LNG(2930) OUTPUT(*PRINT)

/* IBM MQ Client & Server Samples */
RSTLCPGM LICPGM(5724H72) DEV(*SAVF) SAVF(MQ90PROD/MQ90SAMP) +
OPTION(1) OUTPUT(*PRINT)

/* IBM MQ Java */
RSTLCPGM LICPGM(5724L26) DEV(*SAVF) SAVF(MQ90PROD/MQ90JBASE) +
OPTION(*BASE) OUTPUT(*PRINT)

/* IBM MQ Java Samples */
RSTLCPGM LICPGM(5724L26) DEV(*SAVF) SAVF(MQ90PROD/MQ90JSAMP) +
OPTION(1) OUTPUT(*PRINT)

/* IBM MQ Client */
RSTLCPGM LICPGM(5725A49) DEV(*SAVF) SAVF(MQ90PROD/MQ90CBASE) +
OPTION(*BASE) OUTPUT(*PRINT)

/* IBM MQ Client Samples */
RSTLCPGM LICPGM(5725A49) DEV(*SAVF) SAVF(MQ90PROD/MQ90CSAMP) +
OPTION(1) OUTPUT(*PRINT)

```

6. Do the post installation tasks of checking for updates, checking program authorities and starting the IBM MQ subsystem, see [“Performing post installation tasks for IBM MQ on IBM i” on page 108.](#)

## What to do next

If you want to see how the installation went in more detail, perform one or more of the following tasks:

- View the log file using the DSPJOBLOG command.
- View the spoolfile generated from the RSTLCPGM command.

If the installation of IBM MQ fails, see [“Handling installation failures for IBM i” on page 109.](#)

## Performing post installation tasks for IBM MQ on IBM i

Tasks to perform after you have installed IBM MQ for IBM i, and before using it.

### About this task

When you have correctly installed IBM MQ for IBM i on your system:

### Procedure

1. See the IBM MQ website at: <https://www.ibm.com/software/products/ibm-mq> for the latest product information.
2. Install and apply all fix packs.
3. Where you have more than one system and a mixture of releases of OS/400 or IBM i, and IBM MQ, you must take care when compiling CL programs. You must compile CL programs either on the system they are to run on, or on one with an identical combination of releases of OS/400 or IBM i, and IBM MQ. When you install later versions of IBM MQ, delete all IBM MQ commands from previous releases in any QSYSVvRrMm libraries using the QSYS/DLTCMD command.
4. If you have not installed IBM MQ on your system before, you must add user profiles to the QMQMADM group profile. Make all user profiles that are to be used for creating and administering queue managers members of the QMQMADM group profile, using the command CHGUSRPRF.
  - a) Start the IBM MQ subsystem, by issuing the command:

STRSBS SBSD (QMQM/QMQM)

**Note:** The subsystem must be started after each IPL of the system, so you might choose to start it as part of your system startup process.

5. Create the system-default objects. The system-default objects are created automatically when you issue the CRTMQM command to create a queue manager. For example: CRTMQM MQMNAME (QMGRNAME) ASP (\*SYSTEM). You can refresh them using the STRMQM command (Warning: this command will replace any existing default objects). For example: STRMQM MQMNAME (QMGRNAME) RDEFSYS (\*YES). Refer to the onscreen help for information about using this command.

**Note:** on the command STRMQM MQMNAME (QMGRNAME) RDEFSYS (\*YES):

- The command does not re-create the objects, it performs a CRTxxxx REPLACE(\*YES) for all of the SYSTEM.\* objects.
- This means that it refreshes the parameters on the objects back to their defaults. So if, for example, on the SYSTEM.DEFAULT.LOCAL.QUEUE object, TRGENBL had previously been changed to \*YES, then, when the command is run, it is changed back to TRGENBL(\*NO).
- If any messages exist on a queue, they are not removed, because the queues are not physically deleted.
- The contents of the SYSTEM.AUTH.DATA.QUEUE are untouched when this command is run.
- So, if the contents of this (or any other significant queue) become corrupt, it must be physically deleted and re-created either from scratch, or from a backup.

## Results

You are now ready to start using IBM MQ for IBM i.

**Note:** When you install IBM MQ for IBM i, two user profiles are created:

- QMQM
- QMQMADM

These two objects are central to the correct running of IBM MQ for IBM i. Do not alter or delete them. If you do, IBM cannot guarantee correct behavior of your product.

If you uninstall IBM MQ and data, these profiles are deleted. If you uninstall IBM MQ only, these profiles are retained.

## IBM i Handling installation failures for IBM i

If the installation of IBM MQ Server or Client for IBM i fails, you must remove the installed and partially installed objects before attempting reinstallation.

## Procedure

1. Delete installed options using DLTLICPGM LICPGM(5725A49)OPTION(\*ALL).
2. Delete partially installed options by deleting the QMQM library (and the QMQMSAMP libraries if necessary).
3. Delete the IFS directory /QIBM/ProdData/mqm and its subdirectories using the EDTF command, for example: EDTF STMF ('/QIBM/ProdData') and select **option 9** for the mqm directory.

If the installation of IBM MQ Java fails, remove the partly installed objects before attempting reinstallation:

- a. Delete the QMQMJAVA library.

- b. Delete the IFS directory /QIBM/ProdData/mqm/java and its subdirectories using the **EDTF** command, for example:

```
EDTF STMF ('/QIBM/ProdData/mqm')
```

Select option 9 against the Java directory.

## IBM i **Converting a trial license on IBM i**

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the **strmqm** command informs you the license has expired, and the command does not run.

### Before you begin

1. IBM MQ is installed with a trial license.
2. You have access to the installation media of a fully licensed copy of IBM MQ.

### About this task

Run the **setmqprd** command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

### Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On IBM i, issue the command

```
CALL PGM(QMQM/SETMQPRD) PARM('/QOPT/OPT01/amqpcert.lic')
```

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH/bin/setmqprd /MediaRoot/licenses/amqpcert.lic
```

### Related reference

[setmqprd](#)

## IBM i **Installing an IBM MQ client on IBM i**

The IBM MQ client for IBM i is a part of the IBM MQ product.

### Before you begin



**Attention:** If you have already installed the IBM MQ server, you already have a client and must not attempt to install the stand-alone client.

You can install only one instance of IBM MQ client for IBM i in each partition of your server.

When you install IBM MQ client for IBM i two user profiles are created:

- QMQM
- QMQMADM

These two objects are central to the correct running of IBM MQ for IBM i. Do not alter or delete them. If you do, IBM cannot guarantee correct behavior of your product. These profiles are retained when the product is deleted.

## About this task

This procedure covers the installation of both the client and the client samples. If you do not want to install the client samples, then do not complete the steps specific to the samples.

After following the optional step to pre-agree the license, and then issuing the **RSTLICPGM** command, the installation runs without requiring any interactive input.

## Procedure

1. Sign on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Optional: Pre-agree the license terms and conditions. If you do not choose to pre-agree the license, the license agreement is displayed for you to accept. Run the following commands to pre-agree the license terms and conditions:

- a) For the client:

```
CALL PGM (QSYS/QLPACAGR) PARM ('5725A49' 'V8R0M0' '0000' 0)
```

The parameters of **PARM** are:

**5725A49**

The product identifier for IBM MQ client for IBM i

**V8R0M0**

The version, release, and modification level

**0000**

The option number for the base IBM MQ client for IBM i product

**0**

Unused error structure

- b) For the client samples:

```
CALL PGM (QSYS/QLPACAGR) PARM ('5725A49' 'V8R0M0' '0001' 0)
```

The parameters of **PARM** are:

**5725A49**

The product identifier for IBM MQ client for IBM i

**V8R0M0**

The version, release, and modification level

**0001**

The option number for the samples

**0**

Unused error structure

3. Issue the installation command to run the installation without requiring any interactive input:

- a) Install the client by issuing the following command:

```
RSTLICPGM LICPGM (5725A49) DEV (installation device) OPTION (*BASE) OUTPUT (*PRINT)
```

The parameters of RSTLICPGM are:

**LICPGM (5725A49)**

The product identifier for IBM MQ client for IBM i

**DEV (*installation device*)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01

**OPTION (\*BASE)**

The level of IBM MQ client for IBM i product installed

### OUTPUT (\*PRINT)

Whether the spooled output of the job is printed

- b) Install the samples by issuing the following command:

```
RSTLICPGM LICPGM (5725A49) DEV (installation device) OPTION (1) OUTPUT (*PRINT)
```

The parameters of RSTLICPGM are:

### LICPGM (5725A49)

The product identifier for IBM MQ client for IBM i

### DEV (installation device)

The device from which the product is to be loaded, typically an optical drive, for example, OPT01

### OPTION (1)

The samples option

### OUTPUT (\*PRINT)

Whether the spooled output of the job is printed

4. To ensure that the product has loaded correctly, issue the Display Software Resources ( **DSPSFWRSC** ) command and check that the licensed program 5725A49 is listed. If you have installed the base and the optional samples, you see:

```
Resource
ID    Option Feature Description
5725A49 *BASE 5050 IBM MQ client for IBM i
5725A49 1 5050 IBM MQ client for IBM i -Samples
```

5. To see the library and version number of the products installed, press **F11**, while viewing the Display Software Resources screen. The following screen is displayed:

```
Resource          Feature
ID    Option Feature Type Library Release
5725A49 *BASE 5050 *CODE QMQM V8R0M0
5725A49 1 5050 *CODE QMQMSAMP V8R0M0
```

6. To check exactly what version you have installed, use the **DSPMQMVER** program.  
For example, CALL PGM(QMQM/DSPMQVER) from the command line or /QSYS.LIB/QMQM.LIB/DSPMQVER.PGM -a in a qshell.

## What to do next

If you want to see how the installation went in more detail, perform one or more of the following tasks:

- View the log file using the DSPJOBLOG command.
- View the spoolfile generated from the RSTLICPGM command.

If the installation of IBM MQ client for IBM i failed, see [“Handling installation failures for IBM i” on page 109](#)

### Related concepts

[“Uninstalling IBM MQ for IBM i” on page 119](#)

There are two ways of uninstalling IBM MQ for IBM i.

## IBM i Installation of IBM MQ client and IBM MQ server for IBM i

When you install an IBM MQ server on an IBM i system, the client is also automatically installed.

The installed version of the IBM MQ client for IBM i can be refreshed by using a "slip installation" which replaces an existing installation with a fresh image.

Installing a client over an existing client results in a successful installation.



Installing a client over an existing server results in a failure with a CPDB6A4 error.

Installing a server over an existing client results in a successful upgrade of the client to both server and client capabilities.

## Installing IBM MQ Java messaging and web services for IBM i

Install IBM MQ Java messaging and web services for IBM i from either product CD, using the **RSTLICPGM** command.

### Before you begin

You can install only one instance of IBM MQ Client for IBM i in each partition of your server.

If you have Java messaging and web services 7.0 or 7.1 installed and want to install 8.0, you can install the new version without uninstalling the old one.

If you have MA88 installed, and try to install anyway, the installation fails with a warning requesting you to uninstall the old client. To uninstall MA88, issue the following command:

```
DLTLICPGM LICPGM(5648C60) OPTION(*ALL)
```

If this command fails to delete the IFS directory /QIBM/ProdData/mqm/java and its subdirectories, use the EDTF command and select option 9 against the Java directory. For example:

```
EDTF STMF ('/QIBM/ProdData/mqm')
```

### About this task

This procedure covers the installation of both the Java messaging and web services, and the Java messaging and web services samples. If you do not want to install the samples, then do not complete the steps specific to the samples.

After following the optional step to pre-agree the license, and then issuing the **RSTLICPGM** command, the installation runs without requiring any interactive input.

### Procedure

1. Sign on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Optional: Pre-agree the license terms and conditions. If you do not choose to pre-agree the license, the license agreement is displayed for you to accept. Run the following commands to pre-agree the license terms and conditions:

- a) For Java messaging and web services:

```
CALL PGM (QSYS/QLPACAGR) PARM ('5724L26' 'V8R0M0' '0000' 0)
```

The parameters of **PARM** are:

#### **5724L26**

The product identifier for IBM MQ Java messaging and web services for IBM i

#### **V8R0M0**

The version, release, and modification level

#### **0000**

The option number for the base IBM MQ Java messaging and web services product.

#### **0**

Unused error structure

- b) For the samples:

```
CALL PGM (QSYS/QLPACAGR) PARM ('5724L26' 'V8R0M0' '0001' 0)
```

The parameters of **PARM** are:

**5724L26**

The product identifier for IBM MQ Java messaging and web services for IBM i

**V8R0M0**

The version, release, and modification level

**0001**

The option number for the samples.

**0**

Unused error structure

3. Issue the installation command to run the installation without requiring any interactive input:

- a) Install the IBM MQ Java messaging and web services by issuing the following command:

```
RSTLICPGM LICPGM (5724L26) DEV (installation device) OPTION (*BASE) OUTPUT (*PRINT)
```

The parameters of RSTLICPGM are:

**LICPGM (5724L26)**

The product identifier for IBM MQ Java messaging and web services for IBM i

**DEV (*installation device*)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01

**OPTION (\*BASE)**

Install the base IBM MQ Java messaging and web services for IBM i

**OUTPUT (\*PRINT)**

Whether the spooled output of the job is printed

- b) Install the samples by issuing the following command:

```
RSTLICPGM LICPGM (5724L26) DEV (installation device) OPTION (1) OUTPUT (*PRINT)
```

The parameters of RSTLICPGM are:

**LICPGM (5724L26)**

The product identifier for IBM MQ Java messaging and web services for IBM i

**DEV (*installation device*)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01

**OPTION (1)**

Install the samples

**OUTPUT (\*PRINT)**

Whether the spooled output of the job is printed

4. To ensure that the product has loaded correctly, issue the Display Software Resources (DSPSFWRSC) command and check that the licensed program 5724L26 is listed. If you have installed the base and the optional samples, you see:

```
Resource
ID   Option Feature Description
5724L26 *BASE 5050 IBM MQ Java Messaging and Web Services
5724L26 1    5050 IBM MQ Java Messaging and Web Services - Samp
```

5. Press **F11** while viewing the Display Software Resources screen, and you see the library and version number of the products installed:

```
Resource          Feature
ID   Option Feature Type  Library Release
5724L26 *BASE 5050  *CODE QMQMJAVA V8R0V0
5724L26 1    5050  *CODE QMQMJAVA V8R0V0
```

6. Check what versions you have installed by using the following commands:

IBM MQ Classes for Java:

```
java com.ibm.mq.MQJavaLevel
```

**Note:** For this command to work, you might have to set your environment classpath to:

- /QIBM/ProdData/mqm/java/lib/com.ibm.mq.jar

IBM MQ Classes for Java Message Service:

```
java com.ibm.mq.jms.MQJMSLevel
```

**Note:** For this command to work, you might need to set your environment classpath to:

- /QIBM/ProdData/mqm/java/lib/com.ibm.mqjms.jar

See [Environment variables relevant to IBM MQ classes for Java](#) and [Environment variables used by IBM MQ classes for JMS](#).

For IBM MQ 9.0, both report:

```
Version: 9.0.0.0
```

**Note:** The command uses the Java classes, and so it reports the version and also performs some verification that the classes are installed and working.

7. See the following topics for full details of verification of both:

- [Using IBM MQ classes for Java](#)
- [Using IBM MQ classes for JMS](#)

## IBM i Verifying an IBM MQ installation on IBM i

The topics in this section provide instructions on how to verify a client installation of IBM MQ on IBM i systems.

### IBM i Verifying a client installation using the command line on IBM i

You can verify a client installation using the command line. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel, and then use the sample PUT and GET programs to complete the verification procedure.

The verification procedure shows how to create a queue manager called `queue.manager.1`, a local queue called `QUEUE1`, and a server-connection channel called `CHANNEL1` on the server.

It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.
- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

First, set up the server using the command line, using the instructions in [“Setting up the server using the command line IBM i”](#) on page 116.

Once you have set up the server, you must set up the client, using the instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on IBM i”](#) on page 117.

Finally, you can test the communications between client and server, using the instructions in [“Testing communication between a client and a server on IBM i”](#) on page 118.

## **Setting up the server using the command line IBM i**

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

### About this task

These instructions assume that no queue manager or other IBM MQ objects have been defined.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### Procedure

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. Log in as a user in the MQM group.
3. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

4. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

5. Define a local queue called `QUEUE1` by entering the following command:

```
CRTMQMQ QNAME(QUEUE1) QTYPE(*LCL)
```

A message tells you when the queue has been created.

6. Allow the user ID that you created in step 1 to use `QUEUE1` by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(Queue) PRINCIPAL(' non_mqm_user ') AUTHADD(put,get)
```

where `non_mqm_user` is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(connect)
```

If this command is not run, a 2305 stop error is returned.

7. Define a server-connection channel by entering the following command:

```
CRTMQMCHL CHLNAME(CHANNEL1) CHLTYPE(*SVRCN) TRPTYPE(*TCP)  
MCAUSRID('QMCM')
```

A message tells you when the channel has been created.

8. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(ADDRESSMAP) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

9. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on IBM i”](#) on page 110.

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

10. Start the listener by entering the following command:

```
STRMQMLSR MQMNAME(' QUEUE.MANAGER.1 ') PORT(1414)
```

11. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on IBM i”](#) on page 117.

## **Connecting to a queue manager, using the MQSERVER environment variable on IBM i**

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

## Before you begin

Before you start this task, you must complete the task, [“Setting up the server using the command line IBM i”](#) on page 116, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

## About this task

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

## Procedure

1. Log in as the userid that you created in Step 1 of [“Setting up the server using the command line IBM i”](#) on page 116.
2. Check the TCP/IP connection. From the client, enter one of the following commands:
  - `ping server-hostname`
  - `ping n.n.n.n`

n.n.n.n represents the network address. You can set the network address in IPv4 dotted decimal form, for example, 192.0.2.0. Alternatively, set the address in IPv6 hexadecimal form, for example 2001:0DB8:0204:acff:fe97:2c34:fde0:3485.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter one the following command:

```
ADDENVVAR ENVVAR(MQSERVER) VALUE('CHANNEL1/TCP/server-address (port)')
```

Where:

- *CHANNEL1* is the server-connection channel name.
- *server-address* is the TCP/IP host name of the server.
- *port* is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the *qm.ini* file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name MQSeries. If an MQSeries entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

## What to do next

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on IBM i”](#) on page 118.

### **Testing communication between a client and a server on IBM i**

On the IBM MQ MQI client workstation, use the *amqsputc* sample program to put a message on the queue at the server workstation. Use the *amqsgetc* sample program to get the message from the queue back to the client.

## Before you begin

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

## About this task

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Start the PUT program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
CALL PGM(QMQM/AMQSPUTC) PARM(QUEUE1 QUEUE.MANAGER.1)
```

If the command is successful, the following messages are displayed:

Sample AMQSPUT0 start target queue is QUEUE1

**Tip:** You might get the error, MQRC\_NOT\_AUTHORIZED ( 2035 ). By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either

change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

2. Type some message text, then press **Enter** twice.

The following message is displayed:

```
Sample AMQSPUT0 end
```

Your message is now on the queue that is on the server queue manager.

3. Start the GET program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
CALL PGM(QMQM/AMQSGETC) PARM(QUEUE1 QUEUE.MANAGER.1)
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. On the server, stop the queue manager by entering the following command:

```
ENDMQM MQMNAME(QUEUE.MANAGER.1)
```

2. On the server, delete the queue manager by entering the following command:

```
DLTMQM MQMNAME(QUEUE.MANAGER.1)
```

## Uninstalling IBM MQ for IBM i

There are two ways of uninstalling IBM MQ for IBM i.

To uninstall IBM MQ for IBM i, perform one of the following tasks:

- A *standard* deletion removes IBM MQ product code but preserves user data.
- An *entire* deletion removes both IBM MQ product code and user data.

Both types of deletion require you to be signed on to the system with a user profile that has \*ALLOBJ special authority, for example, QSECOFR. Security administrator (\*SECADM) special authority is also required to delete the QMQM and QMQMADM user profiles.

### Related concepts

[“Reinstalling IBM MQ for IBM i” on page 124](#)

You can reinstall IBM MQ for IBM i without losing any of your data.

### Related tasks

[“Uninstalling IBM MQ but retaining data on IBM i” on page 120](#)

If you want to retain your user data, for example, because you intend to reinstall IBM MQ for IBM i at a later date, you must perform a standard deletion of the product.

[“Uninstalling IBM MQ and data on IBM i” on page 121](#)

You can delete IBM MQ entirely, including all user data.

[“Uninstalling IBM MQ Java Messaging and Web Services on IBM i” on page 122](#)

Follow these instructions to uninstall IBM MQ Java.

[“Uninstalling IBM MQ MQI client for IBM i” on page 123](#)

If the IBM MQ MQI client for IBM i must be uninstalled, follow the correct procedure to ensure that all the relevant directories and files are removed.

## Uninstalling IBM MQ but retaining data on IBM i

If you want to retain your user data, for example, because you intend to reinstall IBM MQ for IBM i at a later date, you must perform a standard deletion of the product.

### About this task

To perform a standard deletion of IBM MQ for IBM i, so that your user data is retained, complete the following steps:

### Procedure

1. Quiesce IBM MQ for IBM i.  
For more information, see [Quiescing IBM MQ for IBM i](#).
2. End the IBM MQ subsystem, by issuing the command:

```
ENDSBS SBS(QMQM)
```

3. Ensure that no locks are held on the library QMQM, by issuing the command:

```
WRKOBJLCK OBJ(QMQM) OBJTYPE(*LIB)
```

4. Use the Delete Licensed Program (DLTLICPGM) command to delete the base product (and also the samples if you chose to install them).

To delete only the samples, issue the command:

```
DLTLICPGM LICPGM( 5724H72 ) OPTION(1)
```

To delete only extra language versions installed, issue the command:

```
DLTLICPGM LICPGM(5724H72) LNG(nnnn)
```

where *nnnn* is the language number, as in the list here:

Table 15. Globalizations of IBM MQ for IBM i.	
Language ID	Language
2909	Belgian English
2966	Belgian French MNCS (Multi-National Character Set)
2981	Canadian French MNCS
2975	Czech
2950	English uppercase
2924	English uppercase and lowercase
2984	English US DBCS
2938	English US uppercase DBCS
2928	French
2940	French MNCS



Table 15. Globalizations of IBM MQ for IBM i. (continued)	
Language ID	Language
2929	German
2939	German MNCS
2976	Hungarian
2932	Italian
2942	Italian MNCS
2962	Japanese
2986	Korean
2978	Polish
2979	Russian
2989	Simplified Chinese
2931	Spanish

To delete the base product and the samples, issue the command:

```
DLTLICPGM LICPGM( 5724H72 ) OPTION(*ALL)
```

## Results

Deleting IBM MQ for IBM i in this way deletes only the objects that belong to IBM MQ: the QMQM library, the QMQM samp library, and the subdirectories that belong to IBM MQ server within the /QIBM/ProdData/mqm directory.

If that leaves no other subdirectories (for example, if IBM MQ Java is installed it uses subdirectories there) then the /QIBM/ProdData/mqm directory itself is deleted.

None of the queue manager journal libraries, or IFS directories based upon /QIBM/UserData are removed.

## IBM i Uninstalling IBM MQ and data on IBM i

You can delete IBM MQ entirely, including all user data.

## About this task

**Important:** If you are going to delete IBM MQ entirely, including all user data, save your user data first. It cannot be recovered.

To delete IBM MQ for IBM i entirely, complete the following steps:

## Procedure

1. Quiesce IBM MQ for IBM i.

For more information, see [Quiescing IBM MQ for IBM i](#).

2. Delete each queue manager in turn by using the command WRKMQM and selecting option 4.
3. End the IBM MQ subsystem, by issuing the command:

```
ENDSBS SBS(QMQM)
```

4. Ensure that no locks are held on the library QMQM, by issuing the command:

```
WRKOBJLCK OBJ(QMQM) OBJTYPE(*LIB)
```

5. Optional: If you want to also uninstall IBM MQ Java, you can do it now, using the command:

```
DLTLICPGM LICPGM( 5724L26 ) OPTION(*ALL)
```

This will also uninstall the Java Samples, if they were installed.

6. Use the Delete Licensed Program (DLTLICPGM) command to delete the base product (and also the samples if you chose to install them). To delete the base product and the samples issue the command:

```
DLTLICPGM LICPGM( 5724H72 ) OPTION(*ALL)
```

7. Delete the directory /QIBM/UserData/mqm and its subdirectories. Do this using the EDTF command and selecting option 9 (recursive delete) for the mqm directory, as follows,

**Note:** If you do this, you no longer have any information regarding your installation. Use this command with extreme caution.

The format of the command is:

```
EDTF STMF(' /QIBM/UserData')
```

Alternatively, you can delete the /QIBM/UserData/mqm directory and its subdirectories by repeated use of the RMVLNK and RMVDIR commands.

8. Identify all the users who belong to the QMQMADM group. Use the DSPUSRPRF command to display a list of them. You must remove the QMQMADM group profile from their user profiles before you can delete the QMQMADM user profile. The format of the command is:

```
DSPUSRPRF USRPRF(QMQMADM) TYPE(*GRPMBR)
```

9. You must alter the ownership or delete the objects. For each of the user profiles QMQM and QMQMADM, use the WRKOBJOWN command to list all the objects owned by the profile. The format of the command is:

```
WRKOBJOWN USRPRF( PROFILE )
```

10. Delete the two user profiles. The format of the command is:

```
DLTUSRPRF USRPRF(QMQM) OWNNOBJOPT(*DLT)  
DLTUSRPRF USRPRF(QMQMADM) OWNNOBJOPT(*DLT)
```

## Uninstalling IBM MQ Java Messaging and Web Services on IBM i

Follow these instructions to uninstall IBM MQ Java.

### About this task

To uninstall the IBM MQ Java product.

### Procedure

1. Make sure you are signed on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Issue the command:

```
DLTLICPGM LICPGM(5724L26) OPTION(*ALL)
```

## Results

Deleting IBM MQ Java for IBM i deletes the objects that belong to it: the QMQMJAVA library, and the subdirectories that belong to IBM MQ Java within the /QIBM/ProdData/mqm directory.

If that leaves no other subdirectories (for example if the IBM MQ Server is installed it uses subdirectories there) then the /QIBM/ProdData/mqm directory itself is deleted.

### Uninstalling IBM MQ MQI client for IBM i

If the IBM MQ MQI client for IBM i must be uninstalled, follow the correct procedure to ensure that all the relevant directories and files are removed.

## Procedure

1. Make sure you are signed on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Use the Delete Licensed Program ( **DLTLICPGM** ) command to delete the IBM MQ MQI client for IBM i product (and also the samples if you chose to install them):

To delete only the samples, issue the command

```
DLTLICPGM LICPGM(5725A49) OPTION(1)
```

To delete IBM MQ MQI client and the samples, issue the command:

```
DLTLICPGM LICPGM(5725A49) OPTION(*ALL)
```

## Results

Deleting IBM MQ MQI client for IBM i deletes the objects that belong to it - the QMQM library, and the subdirectories that belong to IBM MQ MQI client for IBM i within the /QIBM/ProdData/mqm directory. If that leaves no other subdirectories (for example if the IBM MQ Java Client for IBM i is installed it uses subdirectories there) then the /QIBM/ProdData/mqm directory itself is deleted.

### Uninstalling Managed File Transfer on IBM i

Follow these instructions to uninstall Managed File Transfer on IBM i.

## Before you begin

To uninstall IBM MQ Managed File Transfer for IBM i, perform one of the following tasks:

- A *standard* deletion removes Managed File Transfer product code but preserves user data.
- An *entire* deletion removes both Managed File Transfer product code and user data.

Note that an entire deletion requires that you manually remove the configuration data in the /QIBM/UserData/mqm/mqft directory.

Both types of deletion require you to be signed on to the system with a user profile that has \*ALLOBJ special authority, for example, QSECOFR.

## About this task

To uninstall the Managed File Transfer product.

## Procedure

1. Make sure you are signed on to the system with a user profile that has \*ALLOBJ special authority, for example QSECOFR.
2. Issue the command:

## Results

Deleting Managed File Transfer for IBM i deletes the objects that belong to it: the QMQMMFT library, and the subdirectories that belong to Managed File Transfer within the /QIBM/ProdData/mqm directory.

Note that licence files are copied to /QIBM/ProdData/mqm/properties/version, and an uninstallation will delete files in this directory. However, files are left in /QIBM/ProdData/mqm/properties/5725M50 as trash. For a clean uninstallation, you must delete the files in this directory.

## IBM i Reinstalling IBM MQ for IBM i

You can reinstall IBM MQ for IBM i without losing any of your data.

When you reinstall IBM MQ for IBM i, the system checks whether the IBM MQ configuration file (mq5.ini) exists. If the file exists, it is kept and used with the newly installed system. If the file does not exist, an empty mq5.ini file is placed in the directory /QIBM/UserData/mqm.

All data that you have in the UserData directory is referenced by the newly installed system. In addition, all the queue manager-associated libraries containing journal and receiver information are referenced by the new system.

### Related tasks

[“Installing IBM MQ server on IBM i” on page 98](#)

Install IBM MQ for IBM i by installing the IBM MQ server in its primary language, installing samples and installing additional languages.

## Linux Installing and uninstalling IBM MQ on Linux

Installation tasks that are associated with installing IBM MQ on Linux are grouped in this section.

### About this task

To prepare for installation and to install IBM MQ, complete the following tasks.

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

- To install IBM MQ on Linux using rpm, see [“Installing IBM MQ on Linux using rpm” on page 135](#).
- **V 9.0.2**  
To install IBM MQ on Linux Ubuntu using a Debian installer, see [“Installing IBM MQ on Linux Ubuntu using Debian” on page 158](#).

## Linux Checking requirements on Linux

Before you install IBM MQ on Linux, you must check for the latest information and system requirements.

### About this task

A summary of the tasks that you must complete to check system requirements are listed here with links to further information.

## Procedure

1. Check that you have the latest information, including information on hardware and software requirements.  
See [“Where to find product requirements and support information” on page 9](#).
2. Check that your systems meet the initial hardware and software requirements for Linux.  
See [“Hardware and software requirements on Linux systems” on page 125](#).  
The supported hardware and software environments are occasionally updated. See [System Requirements for IBM MQ](#) for the latest information.
3. Check that your systems have sufficient disk space for the installation.  
See [Disk space requirements](#).
4. Check that you have the correct licenses.  
See [“License requirements” on page 8](#) and [IBM MQ license information](#).

## What to do next

When you have completed these tasks, you are ready to start preparing your system for installation. For the next steps in installing IBM MQ, see [“Preparing the system on Linux” on page 128](#).

### Related concepts

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### Related tasks

[Applying maintenance to IBM MQ](#)

## Hardware and software requirements on Linux systems

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

For basic hardware and software requirements, see [System Requirements for IBM MQ](#).

## Host names

IBM MQ does not support host names that contain spaces. If you install IBM MQ on a system with a host name that contains spaces, you are unable to create any queue managers.

## 64-bit Linux distributions might no longer support 32-bit applications by default



**Attention:** From IBM MQ 9.0.0, there is no separate 32-bit client installation package. The client installation package and redistributable client contain both 32-bit and 64-bit IBM MQ client libraries. The included 32-bit libraries can be used by 32-bit applications on supported platforms where 32-bit support is offered by the operating system.

On 64-bit Linux distributions, when you run the **dspmquer** command to display the version of IBM Global Security Kit (GSKit), you might get a message suggesting that the 32-bit version of GSKit is not installed. For more information see the "Command failure" section of [dspmquer \(display version information\)](#).

If the 32-bit support libraries are not installed, any applications dependent on 32-bit GSKit will not run. If you need this functionality, install the 32-bit support libraries. Here are the names of the packages that contain the required libraries:

For Red Hat®.

```
Red Hat Enterprise Linux for System x (64 bit):
glibc.i686
libstdc++.i686
Red Hat Enterprise Linux Server for IBM Z:
```

```
glibc.s390  
libstdc++.s390
```

For Ubuntu.

```
Ubuntu Linux for System x (64 bit):  
libc6:i386  
libstdc++6:i386  
Ubuntu Linux for IBM Z:  
libc6-s390  
lib32stdc++6
```


For SUSE Linux.

```
SUSE Linux Enterprise Server for System x (64 bit):  
glibc-32bit  
libstdc++6-32bit  
SUSE Linux Enterprise Server for IBM Z:  
glibc-32bit  
libstdc++6-32bit
```

Check the [System Requirements for IBM MQ](#) to see which Linux distributions are supported on IBM MQ. For example there is no 32-bit support for SUSE Linux Enterprise Server 15 (all architectures), or for Red Hat Enterprise Linux Server 8 for IBM Z®.

## Java Message Service and SOAP transport

If you want to use Java Message Service and SOAP support, you need a Java 7 SDK and Runtime Environment from IBM at version 7.0 or later.

 Java 8 is bundled with IBM MQ 9.0 but client components are built with Java 7 compatibility flags on.

For development, a JDK is required, and a JRE is required for running. The JRE does not need to be the JRE installed with IBM MQ, but has to be one from the supported list.

For a list of supported JDKs, see [System Requirements for IBM MQ](#).

On Linux : Apache Axis V1.4 provides support for SOAP and is shipped on the server DVD, but not installed.

For further information about SOAP with IBM MQ , see [IBM MQ transport for SOAP](#).

On Linux: On the Power platform, the 32-bit and 64-bit JDKs are typically installed to different locations, for example, the 32-bit JDK is located in /opt/IBMJava2-ppc-50 and the 64-bit JDK is located in /opt/IBMJava2-ppc64-50. Ensure that the PATH variable is correctly set for your applications that use Java. To use the Postcard application described in [“Verifying a local server installation using the Postcard application on Linux”](#) on page 176, you must use a 32-bit JDK.

You can check the version installed using the following command:

```
java -version
```

## Transport Layer Security (TLS)

If you want to use the TLS support, you need the GSKit 8 package. This package is supplied with IBM MQ as one of the components available for installation.

### Linux

#### Installing the g++ version runtime support

If you intend to run TLS channels then you must have the g++ runtime libraries installed. The GNU g++ libraries are called libgcc\_s.so and libstdc++.so.6. On RPM based systems these are installed as part of the libgcc and libstdc++ software packages.

The version of these libraries installed must be compatible with g++ version 3.4.

See [System Requirements for IBM MQ](#) for further details on the required packages for TLS support.

On 64 bit platforms, install both the 32 bit and the 64 bit versions of the package so that 32 bit and 64 bit processes can both use TLS functions.

## IBM MQ Explorer requirements

### Linux

IBM MQ Explorer can be installed either as part of the product installation, or from the stand-alone IBM MQ Explorer support pack MS0T. See [IBM MQ Explorer Requirements](#) for the minimum requirements that your system needs, if you want to use the IBM MQ Explorer .

Note that IBM MQ Explorer is available for use only with IBM MQ for Linux, x86 and x86-64 platforms.

## RDQM (replicated data queue manager)

**V 9.0.4** Pacemaker is one of the prerequisites for RDQM. Pacemaker requires that the following Linux packages are installed on the system:

- OpenIPMI-libs.x86\_64
- OpenIPMI-modalias.x86\_64
- PyYAML.x86\_64
- libesmtplib.x86\_64
- libyaml.x86\_64
- net-snmp-agent-libs.x86\_64
- openhpi-libs.x86\_64

### Related concepts

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[“Hardware and software requirements on Windows systems” on page 240](#)

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

### Related tasks

[“Checking requirements on Windows” on page 240](#)

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

## Linux Planning to install IBM MQ on Linux

Before you install IBM MQ on Linux, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### About this task

The following steps provide links to additional information to help you with planning your installation of IBM MQ on Linux.

As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Checking requirements on Linux” on page 124](#).

### Procedure

1. Decide which IBM MQ components and features to install.

See [“IBM MQ components and features”](#) on page 6.

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements”](#) on page 8 and [IBM MQ license information](#).

2. Review the options for naming your installation.

In some cases, you can choose an installation name to use instead of the default name. See [“Installation name on UNIX, Linux, and Windows”](#) on page 10.

3. Review the options and restrictions for choosing an installation location for IBM MQ.

For more information, see [“Installation location on Multiplatforms”](#) on page 11.

4. If you plan to install multiple copies of IBM MQ, see [“Multiple installations on UNIX, Linux, and Windows”](#) on page 13.

5. If you already have a primary installation, or plan to have one, see [“Primary installation on UNIX, Linux, and Windows”](#) on page 15.

6. Make sure that the communications protocol needed for server-to-server verification is installed and configured on both systems that you plan to use.

For more information, see [“Server-to-server links on UNIX, Linux, and Windows”](#) on page 22.

## Linux Preparing the system on Linux

On Linux systems, you might have to complete several tasks before you install IBM MQ. You might also want to complete other tasks, depending on your installation intentions.

### About this task

The tasks that you perform to prepare your systems for installation are listed here. Complete the appropriate tasks for your platform before installing.

### Procedure

1. Set up a user ID of the name mqm, with a primary group of mqm.

See [“Setting up the user and group on Linux”](#) on page 129.

**Note:** If the group mqm and/or user mqm do not exist, during the installation of the product, the installer creates group mqm and user mqm with a home directory of /var/mqm.

2. Create file systems for both the product code and working data to be stored. See [“Creating file systems on Linux”](#) on page 130.

3. Configure any additional settings needed for your Linux system.

See [“Configuring and tuning the operating system on Linux”](#) on page 131.

### What to do next

When you have completed the tasks to prepare the system, you are ready to start installing IBM MQ. To install a server using rpm, see [“Installing IBM MQ server on Linux”](#) on page 140. To install a client using rpm, see [“Installing an IBM MQ client on Linux”](#) on page 150.

**V 9.0.2** To install a server using a Debian installer, see [“Installing an IBM MQ server on Linux Ubuntu using Debian packages”](#) on page 163. To install a client using a Debian installer, see [“Installing an IBM MQ client on Linux Ubuntu using Debian packages”](#) on page 168

**V 9.0.2**

**Important:** Having both Debian and rpm installed versions of IBM MQ on the same system is not supported.

### Related tasks

[Planning](#)



## Linux

### Setting up the user and group on Linux

On Linux systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

#### Using Active Directory

If you are using Active Directory to provide centralized user and group definitions to your Linux system, it is not possible to have both an `mqm` user and `mqm` group definition in Active Directory because that service does not permit users and groups to have the same name.

You should:

- Put an `mqm` group definition in the Active Directory before installing IBM MQ, so that other users in the directory can later be made part of the shared group definition.
- Create the `mqm` user locally, or allow it to be created during the installation process.

#### Creating the user ID and group

Set the primary group of the `mqm` user to the group `mqm`.

If you are installing IBM MQ on multiple systems you might want to ensure each UID and GID of `mqm` has the same value on all systems. If you are planning to configure multi-instance queue managers, it is essential the UID and GID are the same from system to system. It is also important to have the same UID and GID values in virtualization scenarios.

RPM creates the `mqm` user ID and group `mqm`, with a home directory of `/var/mqm`, as part of the installation procedure if they do not exist.

If you have special requirements for these IDs (for example they need to have the same values as other machines you are using, or your users and group ID are centrally managed) you should create the IDs before running the installation procedure, using the **`groupadd`** and **`useradd`** commands to set the UID and GID the same on each machine.

**Note:** The only IBM MQ requirement, is that the `mqm` user should have the `mqm` group as its primary group.

#### Adding existing user IDs to the group on Linux systems

If you want to run administration commands, for example **`crtmqm`** (create queue manager) or **`strmqm`** (start queue manager), your user ID must be a member of the `mqm` group. This user ID must not be longer than 12 characters.

Users do not need `mqm` group authority to run applications that use the queue manager; it is needed only for the administration commands.

#### Log files created by MQ Telemetry service

The **`umask`** setting of the user ID that creates a queue manager will determine the permissions of the Telemetry log files generated for that queue manager. Even though the ownership of the log files will be set to `mqm`.

#### Related concepts

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

[“Configuring and tuning the operating system on HP-UX” on page 68](#)

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

[“Configuring and tuning the operating system on Linux” on page 131](#)

Use this topic when you are configuring IBM MQ on Linux systems.

#### **Related tasks**

[“Configuring and tuning the operating system on AIX” on page 35](#)

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

#### **Related reference**

[“Configuring and tuning the operating system on Solaris” on page 205](#)

Configure Solaris systems with the resource limits required by IBM MQ.

## **Creating file systems on Linux**

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

### **Determining the size of a server installations file system**

To determine the size of the `/var/mqm` file system for a server installation, consider:

- The maximum number of messages in the system at one time.
- Contingency for message buildups, if there is a system problem.
- The average size of the message data, plus 500 bytes for the message header.
- The number of queues.
- The size of log files and error messages.
- The amount of trace that is written to the `/var/mqm/trace` directory.

Storage requirements for IBM MQ also depend on which components you install, and how much working space you need. For more details, see [Disk space requirements](#).

### **Creating a file system for the working data**

Before you install IBM MQ, create and mount a file system called `/var/mqm` which is owned by the user `mqm` in the group `mqm`; see [“Setting up the user and group on Linux” on page 129](#). This file system is used by all installations of IBM MQ on a system. If possible, use a partition strategy with a separate volume for the IBM MQ data. This means that other system activity is not affected if a large amount of IBM MQ work builds up. Configure the directory permissions to permit the `mqm` user to have full control, for example, file mode 755. These permissions will then be updated during the IBM MQ installation to match the permissions required by the queue manager.

### **Creating separate file systems for errors and logs**

You can also create separate file systems for your log data (`/var/mqm/log`) and error files (`/var/mqm/errors`). If possible, place these directories on different physical disks from the queue manager data (`/var/mqm/qmgrs`) and from each other.

If you create separate file systems the `/var/mqm/errors` directory can be NFS mounted. However, if you choose to NFS-mount `/var/mqm/errors`, the error logs might be lost if the network fails.

You can protect the stability of your queue manager by having separate file systems for:

- `/var/mqm/errors`
- `/var/mqm/trace`
- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the case of `/var/mqm/errors`, it is rare that this directory receives large quantities of data. But it is sometimes seen, particularly if there is a severe system problem leading to IBM MQ writing a lot of diagnostic information in to `.FDC` files. In the case of `/var/mqm/trace`, files are only written here when you use **strmqtrc** to start tracing IBM MQ.

You can obtain better performance of normal IBM MQ operations (for example, syncpoints, MQPUT, MQGET of persistent messages) by placing the following on separate disks:

- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the rare event that you need to trace an IBM MQ system for problem determination, you can reduce performance impact by placing the `/var/mqm/trace` file system on a separate disk.

If you are creating separate file systems, allow a minimum of 30 MB of storage for `/var/mqm`, 100 MB of storage for `/var/mqm/log`, and 10 MB of storage for `/var/mqm/errors`. The 100 MB minimum allowance of storage for `/var/mqm/log` is the absolute minimum required for a single queue manager and is not a recommended value. The size of a file system must be scaled according to the number of queue managers that you intend to use, the number of pages per log file, and the number of log files per queue manager.

For more information about file systems, see [File system support](#).

The size of the log file depends on the log settings that you use. The minimum sizes are for circular logging using the default settings. For more information about log sizes, see [Calculating the size of the log](#).

## Linux

For a client installation, the file system can be mounted on a remote network device, for example NFS.

If you are performing both a client and a server installation, the requirements of the server installation take precedence over the requirements of the client installation.

Allow 15 MB as a minimum for an IBM MQ client.

A new sample IBM MQ MQI client configuration file is created in the `var/mqm` directory, by the client package, during installation, but only if this file does not exist. This file contains the `ClientExitPath` stanza. An example `mqclient.ini` file is shown in [Configuring a client using a configuration file](#).

If you are using a common configuration file for multiple clients, either in the IBM MQ installation directory or in another location using the `MQCLNTCF` environment variable, you must grant read access to all user identifiers under which the IBM MQ client applications run. If, for any reason, the file cannot be read the failure is traced, and the search logic continues as if the file had not existed.

## Related concepts

[“Setting up the user and group on Linux” on page 129](#)

On Linux systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

[“Configuring and tuning the operating system on Linux” on page 131](#)

Use this topic when you are configuring IBM MQ on Linux systems.

## **Configuring and tuning the operating system on Linux**

Use this topic when you are configuring IBM MQ on Linux systems.



**Attention:** The information in this topic applies only if the queue manager is started by the `mqm` user ID.

If any other user ID starts the queue manager, ensure that the **NOFILE** and **NPROC** entries, shown for `mqm`, are duplicated for that user ID.

## Shell interpreter

Ensure that `/bin/sh` shell is a valid shell interpreter compatible with the Bourne shell, otherwise the post-installation configuration of IBM MQ does not complete successfully. If the shell was not installed

using RPM, you might see a prerequisites failure of `/bin/sh` shell when you try to install IBM MQ . The failure is because the RPM tables do not recognize that a valid shell interpreter is installed. If the failure occurs, you can reinstall the `/bin/sh` shell by using RPM, or specify the RPM option `--nodeps` to disable dependency checking during installation of IBM MQ .

**Note:** The `--dbpath` option is not supported when installing IBM MQ on Linux.

## Swap space

During high load IBM MQ can use virtual memory (swap space). If virtual memory becomes full it could cause IBM MQ processes to fail or become unstable, affecting the system.

To prevent this situation your IBM MQ administrator should ensure that the system has been allocated enough virtual memory as specified in the operating system guidelines.

## System V IPC kernel configuration

IBM MQ uses System V IPC resources, in particular shared memory. However, a limited number of semaphores are also used.

The minimum configuration for IBM MQ for these resources is as follows:

Table 16. Minimum tunable kernel parameters values				
Name	Kernel-name	Value	Increase <sup>1</sup>	Description
shmmni	kernel.shmmni	4096	Yes	Maximum number of shared memory segments
shmmax	kernel.shmmax	268435456	No	Maximum size of a shared-memory segment (bytes)
shmall	kernel.shmall	2097152	Yes	Maximum amount of shared memory (pages)
semmsl	kernel.sem	32 <sup>2</sup>	No	Maximum amount of semaphores permitted per set
semmns	kernel.sem	4096 <sup>2</sup>	Yes	Maximum number of semaphores
semopm	kernel.sem	32 <sup>2</sup>	No	Maximum number of operations in single operations
semmni	kernel.sem	128 <sup>2</sup>	Yes	Maximum number of semaphore sets
thrmax	kernel.threads-max	32768	Yes	Maximum number of threads
pidmax	kernel.pid_max	32768	Yes	Maximum number of process identifiers

### Notes:

1. In the *Increase* column:

- **Yes** means that the *Value* shown is sufficient to run two moderate sized queue managers on the system. If you intend to run more than two queue managers, or the queue managers are to process a significant workload, you might need to increase the *Value*.
- **No** means that, when you run more than two queue managers, you do not need to increase the *Value* and doing so gives little or no extra benefit.

2. The **kernel.sem** values are contained within a single kernel parameter containing the four values in order.

To view the current value of the parameter log on, as a user with root authority, and type:

```
sysctl Kernel-name
```

To add or alter these values, log on as a user with root authority. Open the file `/etc/sysctl.conf` with a text editor, then add or change the following entries to your chosen values:

```
kernel.shmmni = 4096
kernel.shmall = 2097152
kernel.shmmax = 268435456
kernel.sem = 32 4096 32 128
```

Then save and close the file.

To load these **sysctl** values immediately, enter the following command `sysctl -p`.

If you do not issue the `sysctl -p` command, the new values are loaded when the system is rebooted.

By default the Linux kernel has a maximum process identifier, that can also be used with threads, and might limit the allowed number of threads.

The operating system reports when the system lacks the necessary resources to create another thread, or the system-imposed limit on the total number of threads in a process {`PTHREAD_THREADS_MAX`} would be exceeded.

For more information on `kernel.threads-max` and `kernel.pid-max`, see [Resource shortage in IBM MQ queue manager when running a large number of clients](#)

## Setting RemoveIPC on IBM MQ



**Attention:** Leaving the setting of **RemoveIPC** on its default value of Yes in the login manager configuration files (`logind.conf` and `logind.conf.d`) might cause IBM MQ owned IPC resources being removed outside the control of IBM MQ.

You should set the value to No. For more information on **RemoveIPC** see the [login.conf](#) man page.

## TCP/IP configuration

If you want to use **keepalive** for IBM MQ channels, you can configure the operation of the `KEEPALIVE` using the kernel parameters:

```
net.ipv4.tcp_keepalive_intvl
net.ipv4.tcp_keepalive_probes
net.ipv4.tcp_keepalive_time
```

See [Using the TCP/IP SO\\_KEEPALIVE option](#) for further information.

To view the current value of the parameter log on, as a user with root authority, and type `sysctl Kernel-name`.

To add or alter these values, log on as a user with root authority. Open the file `/etc/sysctl.conf` with a text editor, then add or change the following entries to your chosen values.

To load these **sysctl** values immediately, enter the following command `sysctl -p`.

If you do not issue the `sysctl -p` command, the new values are loaded when the system is rebooted.

## Maximum open files



**Attention:** The term *mqm user* applies to the *mqm user*, and any other user ID that is used to start the queue manager.

The maximum number of open file-handles in the system is controlled by the parameter **fs.file-max**

The minimum value for this parameter for a system with two moderate sized queue managers is 524288.

**Note:** If the operating system default is higher, you should leave the higher setting, or consult your operating system provider.

You are likely to need a higher value if you intend to run more than two queue managers, or the queue managers are to process a significant workload.

To view the current value of a parameter, log on as a user with root authority, and type `sysctl fs.file-max`.

To add or alter these values, log on as a user with root authority. Open the file `/etc/sysctl.conf` with a text editor, then add or change the following entry to your chosen value:

```
fs.file-max = 524288
```

Then save and close the file.

To load these **sysctl** values immediately, enter the following command `sysctl -p`.

If you do not issue the `sysctl -p` command, the new values are loaded when the system is rebooted.

If you are using a pluggable security module such as PAM (Pluggable Authentication Module), ensure that this module does not unduly restrict the number of open files for the mqm user. To report the maximum number of open file descriptors per process for the mqm user, login as the mqm user and enter the following values:

```
ulimit -n
```

For a standard IBM MQ queue manager, set the *nofile* value for the mqm user to 10240 or more. To set the maximum number of open file descriptors for processes running under the mqm user, add the following information to the `/etc/security/limits.conf` file:

mqm	hard	nofile	10240
mqm	soft	nofile	10240

## Maximum processes



**Attention:** The term *mqm user* applies to the *mqm user*, and any other user ID that is used to start the queue manager.

A running IBM MQ queue manager consists of a number of thread programs. Each connected application increases the number of threads running in the queue manager processes. It is normal for an operating system to limit the maximum number of processes that a user runs. The limit prevents operating system failures due to an individual user or subsystem creating too many processes. You must ensure that the maximum number of processes that the mqm user is allowed to run is sufficient. The number of processes must include the number of channels and applications that connect to the queue manager.

The following calculation is useful when determining the number of processes for the mqm user:

```
nproc = 2048 + clientConnections * 4 + qmgrChannels * 4 +  
localBindingConnections
```

where:

- *clientConnections* is the maximum number of connections from clients on other machines connecting to queue managers on this machine.
- *qmgrChannels* is the maximum number of running channels (as opposed to channel definitions) to other queue managers. This includes cluster channels, sender/receiver channels, and so on.
- *localBindingConnections* does not include application threads.

The following assumptions are made in this algorithm:

- 2048 is a large enough contingency to cover the queue manager threads. This might need to be increased if a lot of other applications are running.
- When setting *nproc*, take into account the maximum number of applications, connections, channels and queue managers that might be run on the machine in the future.

- This algorithm takes a pessimistic view and the actual nproc needed might be slightly lower for later versions of IBM MQ and fastpath channels.
- **V9.0.0.1** **V9.0.2** In Linux, each thread is implemented as a light-weight process (LWP) and each LWP is counted as one process against nproc.

You can use the PAM\_limits security module to control the number of processes that users run. You can configure the maximum number of processes for the mqm user as follows:

mqm	hard	nproc	4096
mqm	soft	nproc	4096

For more details on how to configure the PAM\_limits security module type, enter the following command:

```
man limits.conf
```

You can check your system configuration using the `mqconfig` command.

For more information on configuring your system, see [How to configure UNIX and Linux systems for IBM MQ](#).

## 32-bit support on 64-bit Linux platforms

Some 64-bit Linux distributions no longer support 32-bit applications by default, and when you run the `dspmquer` command to display the version of IBM Global Security Kit (GSKit), you might get a message suggesting that the 32-bit version of GSKit is not installed. For details of affected platforms, and guidance on enabling 32-bit applications to run on these platforms, see [“Hardware and software requirements on Linux systems” on page 125](#).

### Related concepts

[“Setting up the user and group on Linux” on page 129](#)

On Linux systems, IBM MQ requires a user ID of the name mqm, with a primary group of mqm. The mqm user ID owns the directories and files that contain the resources associated with the product.

[“Creating file systems on Linux” on page 130](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

### Related reference

[mqconfig](#)

## Linux Installing IBM MQ on Linux using rpm

Installation tasks that are associated with installing IBM MQ on Linux systems using rpm are grouped in this section.

### About this task

To install IBM MQ using rpm, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#).

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

1. Check the system requirements.

See [“Checking requirements on Linux”](#) on page 124.

2. Plan your installation.

- As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ rpm components for Linux systems”](#) on page 136.
- You must also make some platform-specific choices. See [“Planning to install IBM MQ on Linux”](#) on page 127.

3. Prepare your system for installation of IBM MQ.

See [“Preparing the system on Linux”](#) on page 128.

4. Install IBM MQ server.

See [“Installing IBM MQ server on Linux”](#) on page 140.

5. Optional: Install an IBM MQ client.

See [“Installing an IBM MQ client on Linux”](#) on page 150.

6. Verify your installation. See [“Verifying an IBM MQ installation on Linux”](#) on page 174.

## IBM MQ rpm components for Linux systems

You can select the components that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

To display these components you can use, for example, the following command:

```
rpm -qa | grep MQ | xargs rpm -q --info
```

Table 17 on page 136 shows the components that are available when installing an IBM MQ server or client on a Linux system:

Table 17. IBM MQ components for Linux systems				
Component	Description	Server media	Client media	RPM package name
Runtime	Contains files that are common to both server and client installations. <b>Note:</b> MQSeriesRuntime component must be installed.	✓	✓	MQSeriesRuntime
Server	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.	✓		MQSeriesServer
Standard Client	The IBM MQ MQI client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and the server can be on the same system if required.	✓	✓	MQSeriesClient



Table 17. IBM MQ components for Linux systems (continued)

Component	Description	Server media	Client media	RPM package name
<b>SDK</b>	The SDK is required for compiling applications. It includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ.	✓	✓	MQSeriesSDK
<b>Sample programs</b>	The sample application programs are needed if you want to check your IBM MQ installation using the verification procedures.	✓	✓	MQSeriesSamples
<b>Java messaging</b>	The files needed for messaging using Java (includes Java Message Service).	✓	✓	MQSeriesJava
<b>Man pages</b>	Linux man pages, in U.S. English, for: control commands MQI calls MQSC commands	✓	✓	MQSeriesMan
<b>Java JRE</b>	A Java Runtime Environment that is used by those parts of IBM MQ that are written in Java.	✓	✓	MQSeriesJRE
<b>Message Catalogs</b>	For available languages, see the table of <a href="#">message catalogs</a> that follows.	✓	✓	
<b>IBM Global Security Kit (GSKit)</b>	GSKit 8 Certificate and TLS, Base Runtime.	✓	✓	MQSeriesGSKit
<b>Telemetry Service</b>	<p>MQ Telemetry supports the connection of Internet Of Things (IOT) devices (that is, remote sensors, actuators and telemetry devices) that use the IBM MQ Telemetry Transport (MQTT) protocol. The telemetry (MQXR) service enables a queue manager to act as an MQTT server, and communicate with MQTT client apps.</p> <p>The telemetry service is only available on Linux for System x (64 bit) and Linux for IBM Z .</p> <p>A set of MQTT clients is available from the <a href="#">Eclipse Paho downloads page</a>. These sample clients help you write your own MQTT client apps that IOT devices use to communicate with MQTT servers.</p> <p>See also “<a href="#">Installation considerations for MQ Telemetry</a>” on page 332.</p>	✓		MQSeriesXRService

Table 17. IBM MQ components for Linux systems (continued)




Component	Description	Server media	Client media	RPM package name
<b>IBM MQ Explorer</b>	Use IBM MQ Explorer to administer and monitor resources on Linux x86-64 systems. Also available using a stand-alone installer from MSOT.	✓		MQSeriesExplorer
<b>Managed File Transfer</b>	MQ Managed File Transfer transfers files between systems in a managed and auditable way, regardless of file size or the operating systems used. For information about the function of each component, see <a href="#">Managed File Transfer product options</a> .	✓		MQSeriesFTAgent MQSeriesFTBase MQSeriesFTLogger MQSeriesFTService MQSeriesFTTools
<b>Advanced Message Security</b>	Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.  You must install the GSKit component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.  You must install the <b>Java JRE</b> component to install this component.	✓		MQSeriesAMS
 <b>AMQP Service</b>	Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.	✓		MQSeriesAMQP
 <b>REST API and Console</b>	Adds HTTP based administration for IBM MQ through the REST API and IBM MQ Console.	✓		MQSeriesWeb
 <b>IBM MQ Bridge to Salesforce</b>	Install this component to configure the connections to Salesforce and IBM MQ, then run the <b>runmqsfb</b> command to subscribe to events from Salesforce and publish them to an IBM MQ network.  <b>Note:</b> The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).	✓	✓	MQSeriesSFBridge

Table 17. IBM MQ components for Linux systems (continued)

Component	Description	Server media	Client media	RPM package name
<b>V9.0.4</b> <b>IBM MQ Bridge to blockchain</b>	<p>Install this component to configure the connections to your blockchain network and IBM MQ. You can then run the <b>runmqbcb</b> command to start the bridge and send queries and updates to, and receive responses from your blockchain network. The queue manager that the bridge connects to must be an IBM MQ Advanced queue manager. For more information, see <a href="#">What is IBM MQ Advanced?</a>.</p> <p><b>Note:</b></p> <p>The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).</p> <p>This component is not supported for use with Docker.</p>	✓	✓	MQSeriesBCBridge
<b>V9.0.4</b> <b>RDQM (replicated data queue manager)</b>	<p>Install this component to make the replicated data queue manager high availability configuration available. See <a href="#">“Installing RDQM (replicated data queue managers)”</a> on page 338 for more information.</p> <p>This component is available only on Linux for System x (64 bit), on RHEL 7.3 or later.</p> <p><b>Note:</b> This component is not supported for use with Docker.</p>	✓		MQSeriesRDQM

Table 18. IBM MQ message catalogs for Linux systems

Message catalog language	RPM package name
Brazilian Portuguese	MQSeriesMsg_pt
Czech	MQSeriesMsg_cs
French	MQSeriesMsg_fr
German	MQSeriesMsg_de
Hungarian	MQSeriesMsg_hu
Italian	MQSeriesMsg_it
Japanese	MQSeriesMsg_ja
Korean	MQSeriesMsg_ko
Polish	MQSeriesMsg_pl

Table 18. IBM MQ message catalogs for Linux systems (continued)

Message catalog language	RPM package name
Russian	MQSeriesMsg_ru
Spanish	MQSeriesMsg_es
Simplified Chinese	MQSeriesMsg_Zh_CN
Traditional Chinese	MQSeriesMsg_Zh_TW
U.S. English	not applicable

## Related concepts

“IBM MQ components and features” on page 6

You can select the components or features that you require when you install IBM MQ.

“Planning considerations for installation on Multiplatforms” on page 10

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

## Linux Installing IBM MQ server on Linux

You can install an IBM MQ server on a 64-bit Linux system.

## Before you begin

- If you install a copy of IBM MQ server for Linux using [Electronic Software Download](#), obtained from Passport Advantage, you need to decompress the tar .gz file by using the **gunzip** command:

```
gunzip IBM_MQ_V9.0_TRIAL_FOR_LINUX_ML.tar.gz
```

and extract the installation files from the tar file, by using the following command:

```
tar -xvf IBM_MQ_V9.0_TRIAL_FOR_LINUX_ML.tar
```

**Important:** You must use GNU tar (also known as **gtar**) to unpack any tar images.

- Before you start the installation procedure, ensure that you have completed the necessary steps outlined in “Preparing the system on Linux” on page 128.
- If this installation is not the first installation on the system, you must ensure that the **crtmqpkg** command can write to a temporary location. By default, the **crtmqpkg** command will write to the `/var/tmp` directory. To use a different location, you can set the `TMPDIR` environment variable before you run the **crtmqpkg** command.
- To run the **crtmqpkg** command used in this task, you must have the **pax** command or **rpmbuild** installed.



**Attention:** **pax** and **rpmbuild** are not supplied as part of the product. You must obtain these from your Linux distribution supplier.

## About this task

Install the server by using the RPM Package Manager installer to select the components you want to install. The components and package names are listed in “Installing IBM MQ server on Linux Ubuntu or Linux on POWER Systems - Little Endian” on page 144.



**Attention:** If you install the packages using the wildcard character, that is, using the command `rpm -ivh MQ*.rpm`, you should install the packages in the following order:

- MQSeriesRuntime
- MQSeriesJRE

- MQSeriesJava
- MQSeriesServer
- MQSeriesWeb
- MQSeriesFTBase
- MQSeriesFTAgent
- MQSeriesFTService
- MQSeriesFTLogger
- MQSeriesFTTools
-  MQSeriesAMQP
- MQSeriesAMS
- MQSeriesXRService
- MQSeriesExplorer
- MQSeriesGSKit
- MQSeriesClient
- MQSeriesMan
- MQSeriesMsg
- MQSeriesSamples
- MQSeriesSDK
-  MQSeriesSFBridge
-  MQSeriesBCBridge

## Procedure

1. Log in as `root`, or switch to the superuser by using the **su** command.
2. Set your current directory to the location of the installation file. The location might be the mount point of the server DVD, a network location, or a local file system directory.
3. You must accept the terms of the license agreement before you can proceed with the installation. To do this run the `mqlicense.sh` script:

```
./mqlicense.sh
```

The license agreement is displayed in a language appropriate to your environment and you are prompted to accept or decline the terms of the license.

If possible, `mqlicense.sh` opens an X-window to display the license.

If you need the license to be presented as text in the current shell, which can be read by a screen reader, type the following command, `./mqlicense.sh -text_only`

4. If this installation is not the only installation of IBM MQ on the system, you must run the **crtmqpkg** command to create a unique set of packages to install on the system. To run the **crtmqpkg** command to run on Linux, you must install the **pax** command and **rpmbuild**, which is located in the `rpm-build` package.

**Note:** The **crtmqpkg** command is required only if this is not the first installation of IBM MQ on the system. If you have earlier versions of IBM MQ installed on your system, then installing the latest version works correctly if you install it in a different location.

To run the **crtmqpkg** command on a Linux system:

- a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing that uniquely identifies the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

**Note:** This command creates a full copy of the installation packages in a temporary directory. By default, the temporary directory is located at `/var/tmp`. You must ensure that the system has enough free space before you run this command. To use a different location, you can set the `TMPDIR` environment variable before you run the **crtmqpkg** command. For example:

```
$ TMPDIR=/test ./crtmqpkg suffix
```

- b) Set your current directory to the location specified when the **crtmqpkg** command operation completes successfully.

This directory is a subdirectory of the `/var/tmp/mq_rpms` directory, in which the unique set of packages is created. The packages have the *suffix* value contained within the file name. For example, using a suffix of "1":

```
./crtmqpkg 1
```

means there is a subdirectory named `/var/tmp/mq_rpms/1/x86_64`.

The packages are renamed according to the subdirectory, for example:

```
From: MQSeriesRuntime-8.0.0-0.x86_64.rpm  
To: MQSeriesRuntime-1-8.0.0-0.x86_64.rpm
```

## 5. Install IBM MQ.

To support the running of a queue manager, you must install at least the the MQSeriesRuntime and the MQSeriesServer components.

- To install to the default location, `/opt/mqm`, use the **rpm -ivh** command to install each component that you require.

For example, to install the runtime and server components to the default location, use the following command:

```
rpm -ivh MQSeriesRuntime-*.rpm MQSeriesServer-*.rpm
```

To install all components that are available in your current location on the installation media to the default location, use the following command:

```
rpm -ivh MQSeries*.rpm
```

**Important:** The components that you need to install might not all be in the same folder on the installation media. Some components might be under the `/Advanced` folder. For more information about installing IBM MQ Advanced components, see [“Installing IBM MQ Advanced for Multiplatforms” on page 314](#).

- To install to a non-default location, use the **rpm --prefix** option. For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must be either an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.

For example, enter the following installation path to install the runtime and server components to the `/opt/customLocation` directory on a 64-bit Linux system:

```
rpm --prefix /opt/customLocation -ivh MQSeriesRuntime-*.rpm MQSeriesServer-*.rpm
```

## Results

You installed IBM MQ on your Linux system.

## What to do next

- If required, you can now set this installation to be the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on Linux” on page 174](#), for more information.
- Only a user with a UID that is a member of the **mqm** group can issue administration commands. If you want to enable users to issue administration commands, they must be added to the **mqm** group. For more information, see [“Setting up the user and group on Linux” on page 129](#) and [Authority to administer IBM MQ on UNIX, Linux, and Windows systems](#).

## Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **xpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

## Related reference

[setmqinst](#)

## Linux **Checking the availability of rpm on your Linux Ubuntu machine**

If you are using an rpm installer, you must ensure that rpm is installed on your Linux Ubuntu machine before installing IBM MQ. **V 9.0.2** From IBM MQ 9.0.2 you can use a Debian installer as an alternative to rpm.

## Before you begin

**V 9.0.2** If you choose to use the Debian installer, see [“Installing IBM MQ on Linux Ubuntu using Debian” on page 158](#).

## About this task

**Important:** The installation procedure uses the same rpm packages that are used by the other rpm based distributions. Technologies that convert these rpm packages into other forms, such as alien to convert rpms to Debian packages, are not compatible with the IBM MQ rpm packages and must not be used.

## Procedure

1. To determine if the correct rpm package is installed on your system use the following command:

```
dpkg-query -W --showformat '${Status}\n' rpm
```

If you receive a response that is of the form:

```
install ok installed
```

rpm is installed on your system and no further action is required.

If you receive a response that is of the form:

```
unknown ok not-installed
```

rpm is not installed on your system and you must install the rpm package before attempting to install IBM MQ, using the command described in step “2” on [page 144](#).

2. Run the following command, using root authority.

In the example, you obtain root authority using the sudo command:

```
sudo apt-get install rpm
```



**Attention:** If this command does not complete successfully, consult your system administrator for instructions specific to your system on how to install the rpm package.

## What to do next

You are now ready to install IBM MQ.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

## **Installing IBM MQ server on Linux Ubuntu or Linux on POWER Systems - Little Endian**

You can install an IBM MQ server on a Linux Ubuntu system, or Linux on POWER Systems - Little Endian system, in accordance with the system requirements web page.

## Before you begin

You can install IBM MQ on a Linux Ubuntu system by using the RPM installer or by using the Debian installer. For more information about using the Debian installer, see [“Installing IBM MQ on Linux Ubuntu using Debian” on page 158](#).

See [System Requirements for IBM MQ](#) for details of the supported software levels.



- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in “Preparing the system on Linux” on page 128.
- If you install a copy of IBM MQ server for Linux Ubuntu using [Electronic Software Download](#), obtained from Passport Advantage, you need to decompress the `tar.gz` file, and extract the installation files from the tar file, by using the following command:

```
tar -xvf WS_MQ_V9.0_TRIAL_FOR_LINUXUbuntu_ML.tar
```

**Important:** You must use GNU tar (also known as `gtar`) to unpack any `tar` images.

- Ensure that RPM is installed on your system, as RPM is not installed by default on this platform.

To determine if the correct RPM package is installed on your system, see “[Checking the availability of rpm on your Linux Ubuntu machine](#)” on page 143.

- Once RPM is installed on your system, carry out the following procedure, as root:

1. Create directory `/etc/rpm`
2. Add file `etc/rpm/macros`, containing the following lines:

```
%_dbpath /var/lib/rpm
%_build_id_links none
```



**Attention:** You should only set up a `/macros` file if you are not already using RPM, as the previous instruction changes the default system-wide RPM database.

## About this task

Install the server by using the RPM Package Manager installer to select the components that you want to install. The components and package names are listed in “[IBM MQ components and features](#)” on page 6.

## Procedure

1. Open a shell terminal and set your current directory to the location of the installation packages. The location might be the mount point of the server DVD, a network location, or a local file system directory. You must have root authority to run the following commands. You can do so by adding **sudo** before the following commands, or by changing to the root user in the shell with the **su** command.

2. Run the `mqlicense.sh` script.

If you want to view a text-only version of the license, which can be read by a screen reader, type the following message:

```
./mqlicense.sh -text_only
```

The license is displayed.

You must accept the license agreement before you can proceed with the installation.

3. If this installation is not the first installation of IBM MQ on the system, you must run the **crtmqpkg** command to create a unique set of packages to install on the system.

For the **crtmqpkg** command to run on Linux, you must install the **pax** command and **rpmbuild**, which is located in the `rpm` package.

- a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that uniquely identifies the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

**Note:** This command creates a full copy of the installation packages in a temporary directory. By default, the temporary directory is located at `/var/tmp`. You must ensure that the system has

enough free space before you run this command. To use a different location, you can set the `TMPDIR` environment variable before you run the **crtmqpkg** command. For example:

```
TMPDIR=/test ./crtmqpkg
```

- b) Set your current directory to the location specified when the **crtmqpkg** command completes. This directory is a subdirectory of the `/var/tmp/mq_rpms` directory, in which the unique set of packages is created. The packages have the *suffix* value contained within the file name. In the following example, the suffix of "1" `./crtmqpkg 1` means that there is a subdirectory named `/var/tmp/mq_rpms/1/i386`.

The packages are renamed according to the subdirectory, for example, on Linux for System x (64-bit):

```
From: MQSeriesRuntime-8.0.0-0.x86_64.rpm  
To: MQSeriesRuntime_1-8.0.0-0.x86_64.rpm
```

#### 4. Install IBM MQ.

At a minimum, you must install the `MQSeriesRuntime` and the `MQSeriesServer` components.

If you are installing a subset of components, you must ensure that any dependencies are first installed, as listed in [Table 19 on page 147](#).

An additional flag is required when installing on Ubuntu 14.04 on Linux on POWER Systems - Little Endian:

- **--ignorearch**: You must include this option to prevent problems with some levels of rpm not recognizing the Linux on POWER Systems - Little Endian architecture

An additional flag is required when installing on Linux Ubuntu:

- **--force-debian**: You must include this option to prevent warning messages from the version of RPM for your platform, which indicates that the RPM packages are not intended to be directly installed using RPM.

To install the IBM MQ Explorer on Linux Ubuntu (x86-64 only):

- a. Install all the components that you want, except for the IBM MQ Explorer component.
- b. Install the IBM MQ Explorer component with the **--nodeps** flag. If you do not include the **--nodeps** flag, the installation fails with a dependency error. The dependency error occurs because the GTK2 packages are not installed by RPM and therefore cannot be found as package dependencies.

#### Notes:

- To install to the default location, `/opt/mqm`, use the rpm **-ivh** command to install each component that you require.

To install the runtime and server components to the default location on Ubuntu Linux for System x (64-bit), use the following command:

```
rpm -ivh --force-debian MQSeriesRuntime-*.rpm MQSeriesServer-*.rpm
```

To install the runtime and server components to the default location on Linux on POWER Systems - Little Endian, use the following command:

```
rpm -ivh --ignorearch MQSeriesRuntime-*.rpm MQSeriesServer-*.rpm
```

To install all components to the default location on Linux on POWER Systems - Little Endian use the following command:

```
rpm -ivh --ignorearch MQSeries*.rpm
```

- To install to a nondefault location, use the rpm **--prefix** option. For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must be, either an empty directory, the root of an unused file system, or a path that does not exist.



**Attention:** The length of the path is limited to 256 bytes and must not contain spaces.

For example, enter the following installation path to install the runtime and server components to the /opt/customLocation directory on Linux on POWER Systems - Little Endian:



```
rpm --prefix /opt/customLocation -ivh --ignorearch
MQSeriesRuntime-*.rpm MQSeriesServer-*.rpm
```

Table 19 on page 147 lists all available packages on Ubuntu, together with all the associated dependencies.

To install and use the package listed in the *Package Name* column, you must also install the components listed in the *Package Dependencies* column.

Table 19. Package component dependencies		
Package Name	Component Function	Dependencies
MQSeriesRuntime	Common function for all other components	None
MQSeriesServer	Queue Manager	MQSeriesRuntime
MQSeriesClient	C IBM MQ client libraries	MQSeriesRuntime
MQSeriesJava	Java and JMS IBM MQ APIs	MQSeriesRuntime
MQSeriesJRE	Java Runtime Environment	MQSeriesRuntime
MQSeriesExplorer	IBM MQ Explorer  IBM MQ Explorer is only available on Linux for System x (64-bit).  There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2 (or later).	MQSeriesRuntime MQSeriesJRE GTK2 version 2.2.4-0 or later, including the GTK2 engines that contain the GTK2 themes Bitstream-vera-fonts
MQSeriesGSKit	IBM Global Security Kit (GSKit)  <b>Note:</b> There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2 (or later).	MQSeriesRuntime MQSeriesJRE
MQSeriesWeb	REST API and IBM MQ Console.	MQSeriesRuntime MQSeriesServer MQSeriesJava MQSeriesJRE
MQSeriesSDK	Header files and libraries for non-Java APIs	MQSeriesRuntime

Table 19. Package component dependencies (continued)		
Package Name	Component Function	Dependencies
MQSeriesMan	UNIX man pages for IBM MQ	MQSeriesRuntime
MQSeriesSamples	IBM MQ application samples	MQSeriesRuntime
MQSeriesMsg_cz MQSeriesMsg_de MQSeriesMsg_es MQSeriesMsg_fr MQSeriesMsg_hu MQSeriesMsg_it MQSeriesMsg_ja MQSeriesMsg_ko MQSeriesMsg_pl MQSeriesMsg_pt MQSeriesMsg_ru MQSeriesMsg_Zh_CN MQSeriesMsg_Zh_TW	Additional language message catalog files. English message catalog files are installed by default. For more information about these message catalogs, see <a href="#">“Displaying messages in your national language on Linux” on page 173</a>	MQSeriesRuntime
MQSeriesFTBase	Managed File Transfer component	MQSeriesRuntime MQSeriesJava MQSeriesJRE
MQSeriesFTLogger	Managed File Transfer component	MQSeriesRuntime MQSeriesServer MQSeriesFTBase MQSeriesJava MQSeriesJRE
MQSeriesFTTools MQSeriesFTAgent	Managed File Transfer components	MQSeriesRuntime MQSeriesFTBase MQSeriesJava MQSeriesJRE
MQSeriesFTService	Managed File Transfer component	MQSeriesRuntime MQSeriesServer MQSeriesFTAgent MQSeriesFTBase MQSeriesJava MQSeriesJRE

Table 19. Package component dependencies (continued)		
Package Name	Component Function	Dependencies
MQSeriesAMS	Advanced Message Security component  <b>Note:</b> There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2 (or later).	MQSeriesRuntime MQSeriesServer
 MQSeriesSFBridge	Install the IBM MQ Bridge to Salesforce to subscribe to Salesforce push topics and platform events.   From IBM MQ 9.0.4 you can also use the bridge to create event messages for Salesforce platform events.  <b>Note:</b> The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre
MQSeriesBCBridge	Install the IBM MQ Bridge to blockchain to send queries and updates to, and receive responses from your blockchain network.  <b>Note:</b> The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre

## Results

You have installed the packages you require.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where *MQ\_INSTALLATION\_PATH* represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ . For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on Linux” on page 174](#), for more information.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

## Installing an IBM MQ client on Linux

Installing an IBM MQ client on a 64 bit Linux system.

### Before you begin

- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Linux” on page 128](#).
- If this installation is not the only installation on the system, you must ensure that you have write access to `/var/tmp`.

### About this task

This task describes the installation of the client, using the RPM Package Manager installer to select which components you want to install. You must install at least the Runtime and Client components. The components are listed in [“IBM MQ rpm components for Linux systems” on page 136](#).

### Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Make your current directory the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Run the `mqlicense.sh` script.

If you want to view a text-only version of license, which can be read by a screen-reader, type:

```
./mqlicense.sh -text_only
```

The license is displayed.

If want to accept the license without it being displayed, you can run the `mqlicense.sh` script with the `-accept` option.

```
./mqlicense.sh -accept
```

You must accept the license agreement before you can proceed with the installation.

4. If you have multiple installations on this system, you must run **crtmqpkg** to create a unique set of packages to install on the system:

a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that will uniquely identify the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

b) Set your current directory to the location specified when the **crtmqpkg** command completes.

This directory is a sub-directory of `/var/tmp/mq_rpms`, in which the unique set of packages is created. The packages have the *suffix* value contained within the filename.

#### 5. Install IBM MQ.

The minimum components you must install are the MQSeriesRuntime and the MQSeriesClient.

- To install to the default location, `/opt/mqm`, use the **rpm -ivh** command to install each component that you require.

For example, to install all components to the default location use the following command:

```
rpm -ivh MQSeries*.rpm
```

If you are using Ubuntu, add the **--force-debian** attribute. For example, to install all components to the default location use the following command:

```
rpm --force-debian -ivh MQSeries*.rpm
```

You must include this option to prevent seeing warning messages from the version of RPM for your platform, which indicates that the RPM packages are not intended to be directly installed using RPM.

- To install to a non-default location use the **rpm --prefix** option. For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.

For example, to install the runtime and server components to `/opt/customLocation` on a 64-bit Linux system:

```
rpm --prefix /opt/customLocation -ivh MQSeriesRuntime-V.R.M-F.x86_64.rpm MQSeriesClient-V.R.M-F.x86_64.rpm
```

where:

**V**

Represents the version of the product that you are installing

**R**

Represents the release of the product that you are installing

**M**

Represents the modification of the product that you are installing

**F**

Represents the fix pack level of the product that you are installing

### What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Linux” on page 189](#)

### Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)


On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

### *Checking the availability of RPM on your machine*

You must ensure that RPM is installed on your Linux machine before installing IBM MQ. From IBM MQ 9.0.2 you can use a Debian installer as an alternative to rpm.

 V 9.0.2

### Before you begin

 V 9.0.2 If you choose to use the Debian installer, see [“Installing IBM MQ on Linux Ubuntu using Debian” on page 158](#).

### About this task

**Important:** The installation procedure uses the same rpm packages that are used by the other rpm based distributions. Technologies that convert these rpm packages into other forms, such as alien to convert rpms to Debian packages, are not compatible with the IBM MQ rpm packages and must not be used.

### Procedure

1. To determine if the correct rpm package is installed on you system use the following command:

```
dpkg-query -W --showformat '${Status}\n' rpm
```

If you receive a response that is of the form:

```
install ok installed
```

rpm is installed on your system and no further action is required.

If you receive a response that is of the form:

```
unknown ok not-installed
```

rpm is not installed on your system and you must install the rpm package before attempting to install IBM MQ, using the command described in step [“2” on page 144](#).

2. Run the following command, using root authority.

In the example, you obtain root authority using the sudo command:

```
sudo apt-get install rpm
```



**Attention:** If this command does not complete successfully, consult your system administrator for instructions specific to your system on how to install the rpm package.



## What to do next

You are now ready to install IBM MQ.

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

## **Installing IBM MQ client on Linux Ubuntu or Linux on POWER Systems - Little Endian**

You can install an IBM MQ client on a Linux Ubuntu , or Linux on POWER Systems - Little Endian, system in accordance with the system requirements web page.

## Before you begin

See [System Requirements for IBM MQ](#) for details of the supported software levels.

- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Linux” on page 128](#).

- Ensure that RPM is installed on your system, as RPM is not installed by default on this platform.

To determine if the correct RPM package is installed on you system, see [“Checking the availability of RPM on your machine” on page 152](#).

- Once RPM is installed on your system, carry out the following procedure, as root:

1. Create directory `/etc/rpm`
2. Add file `/macros`, containing the following code, `%_dbpath /var/lib/rpm`, to the `/etc/rpm` directory.



**Attention:** You should only set up a `/macros` file if you are not already using RPM, as the previous instruction changes the default system-wide RPM database.

## About this task

Install the client by using the RPM Package Manager installer to select the components that you want to install. The components and package names are listed in [“IBM MQ components and features” on page 6](#).

## Procedure

1. Open a shell terminal and set your current directory to the location of the installation packages. The location might be the mount point of the client DVD, a network location, or a local file system directory. You must have root authority to run the following commands. You can do so by adding **sudo** before the following commands, or by changing to the root user in the shell with the **su** command.
2. Run the `mqlicense.sh` script.

If you want to view a text-only version of the license, which can be read by a screen reader, type the following message:

```
./mqlicense.sh -text_only
```

The license is displayed.

You must accept the license agreement before you can proceed with the installation.

3. If this installation is not the first installation of IBM MQ on the system, you must run the **crtmqpkg** command to create a unique set of packages to install on the system.

For the **crtmqpkg** command to run on Linux, you must install the **pax** command and **rpmbuild**, which is located in the rpm package.

- a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that uniquely identifies the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

**Note:** This command creates a full copy of the installation packages in a temporary directory. By default, the temporary directory is located at `/var/tmp`. You must ensure that the system has enough free space before you run this command. To use a different location, you can set the `TMPDIR` environment variable before you run the **crtmqpkg** command. For example:

```
TMPDIR=/test ./crtmqpkg
```

- b) Set your current directory to the location specified when the **crtmqpkg** command completes.

This directory is a subdirectory of the `/var/tmp/mq_rpms` directory, in which the unique set of packages is created. The packages have the *suffix* value contained within the file name. In the following example, the suffix of "1" `./crtmqpkg 1` means that there is a subdirectory named `/var/tmp/mq_rpms/1/i386`.

The packages are renamed according to the subdirectory, for example, on Linux for System x (64-bit):

```
From: MQSeriesRuntime-8.0.0-0.x86_64.rpm  
To: MQSeriesRuntime_1-8.0.0-0.x86_64.rpm
```

4. Install IBM MQ.

At a minimum, you must install the MQSeriesRuntime component.

An additional flag is required when installing on Linux Ubuntu:

- **--force-debian:** You must include this option to prevent warning messages from the version of RPM for your platform, which indicates that the RPM packages are not intended to be directly installed using RPM.

An additional flag is required when installing on Ubuntu 14.04 on Linux on POWER Systems - Little Endian:

- **--ignorearch:** You must include this option to prevent problems with some levels of rpm not recognizing the Linux on POWER Systems - Little Endian architecture

If you are installing a subset of components, you must ensure that any dependencies are first installed, as listed in [Table 20 on page 155](#).

#### Notes:

- To install to the default location, `/opt/mqm`, use the rpm **-ivh** command to install each component that you require.

To install the runtime component to the default location on Ubuntu Linux for System x (64-bit), use the following command:

```
rpm -ivh --force-debian MQSeriesRuntime-*.rpm
```

To install the runtime component to the default location on Ubuntu Linux on POWER Systems - Little Endian, use the following command:

```
rpm -ivh --force-debian --ignorearch MQSeriesRuntime-*.rpm
```

To install all components to the default location on Ubuntu Linux on POWER Systems - Little Endian use the following command:

```
rpm -ivh --force-debian --ignorearch MQSeries*.rpm
```

- To install to a nondefault location, use the **rpm --prefix** option. For each installation, all of the IBM MQ components that you require must be installed in the same location.

The installation path specified must be, either an empty directory, the root of an unused file system, or a path that does not exist.



**Attention:** The length of the path is limited to 256 bytes and must not contain spaces.

For example, enter the following installation path to install the runtime component to the /opt/customLocation directory on Ubuntu Linux on POWER Systems - Little Endian:



```
rpm --prefix /opt/customLocation -ivh --force-debian --ignorearch  
MQSeriesRuntime-*.rpm
```

Table 20 on page 155 lists all available packages on Ubuntu, together with all the associated dependencies.

To install and use the package listed in the *Package Name* column, you must also install the components listed in the *Package Dependencies* column.

Table 20. Package component dependencies		
Package Name	Component Function	Package Dependencies
MQSeriesRuntime	Common function for all other components	None
MQSeriesClient	C IBM MQ client libraries	MQSeriesRuntime
MQSeriesJava	Java and JMS IBM MQ APIs	MQSeriesRuntime
MQSeriesJRE	Java Runtime Environment	MQSeriesRuntime
MQSeriesExplorer	<p>IBM MQ Explorer</p> <p>IBM MQ Explorer is only available on Linux for System x (64-bit).</p> <p><b>Note:</b> There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2.</p>	<p>MQSeriesRuntime</p> <p>MQSeriesJRE</p> <p>GTK2 version 2.2.4-0 or later, including the GTK2 engines that contain the GTK2 themes</p> <p>Bitstream-vera-fonts</p>
MQSeriesGSKit	<p>IBM Global Security Kit (GSKit)</p> <p><b>Note:</b> There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2.</p>	MQSeriesRuntime MQSeriesJRE

Table 20. Package component dependencies (continued)		
Package Name	Component Function	Package Dependencies
MQSeriesSDK	Header files and libraries for non-Java APIs	MQSeriesRuntime
MQSeriesMan	UNIX man pages for IBM MQ	MQSeriesRuntime
MQSeriesSamples	IBM MQ application samples	MQSeriesRuntime
MQSeriesMsg_cs MQSeriesMsg_de MQSeriesMsg_es MQSeriesMsg_fr MQSeriesMsg_hu MQSeriesMsg_it MQSeriesMsg_ja MQSeriesMsg_ko MQSeriesMsg_pl MQSeriesMsg_pt MQSeriesMsg_ru MQSeriesMsg_Zh_CN MQSeriesMsg_Zh_TW	Language specific message catalog files	MQSeriesRuntime
MQSeriesFTBase	Managed File Transfer component	MQSeriesRuntime MQSeriesJava MQSeriesJRE
MQSeriesFTLogger	Managed File Transfer component	MQSeriesRuntime MQSeriesFTBase MQSeriesJava MQSeriesJRE
MQSeriesFTTools MQSeriesFTAgent	Managed File Transfer components	MQSeriesRuntime MQSeriesFTBase MQSeriesJava MQSeriesJRE
MQSeriesFTService	Managed File Transfer component	MQSeriesRuntime MQSeriesFTAgent MQSeriesFTBase MQSeriesJava MQSeriesJRE

Table 20. Package component dependencies (continued)		
Package Name	Component Function	Package Dependencies
MQSeriesAMS	Advanced Message Security component  <b>Note:</b> There is no IBM support for this component on Ubuntu, unless you are running on Ubuntu 14.04 (or later) and have installed IBM MQ 8.0.0 Fix Pack 2.	MQSeriesRuntime
 MQSeriesSFBridge	Install the IBM MQ Bridge to Salesforce to subscribe to Salesforce push topics and platform events.   From IBM MQ 9.0.4 you can also use the bridge to create event messages for Salesforce platform events.  <b>Note:</b> The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre
MQSeriesBCBridge	Install the IBM MQ Bridge to blockchain to send queries and updates to, and receive responses from your blockchain network.  <b>Note:</b> The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre

## Results

You have installed the packages you require.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).

- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Linux” on page 189](#)

### Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

### Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

### Related reference

[setmqinst](#)

Linux

V 9.0.2

## Installing IBM MQ on Linux Ubuntu using Debian

Installation tasks that are associated with installing IBM MQ on Linux systems using a Debian installer are grouped in this section.

### Before you begin

**Important:** Using both Debian and rpm to install IBM MQ on the same system is not supported.

### About this task

To install IBM MQ using a Debian installer, complete the following tasks.

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure


1. Check the system requirements.  
See [“Checking requirements on Linux” on page 124](#).
2. Plan your installation.  
As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ Debian components for Linux Ubuntu systems” on page 159](#).
3. Prepare your system for installation of IBM MQ.  
See [“Preparing the system on Linux” on page 128](#).
4. Install IBM MQ server.  
See [“Installing an IBM MQ server on Linux Ubuntu using Debian packages” on page 163](#).
5. Optional: Install an IBM MQ client.  
See [“Installing an IBM MQ client on Linux Ubuntu using Debian packages ” on page 168](#).
6. Verify your installation. See [“Verifying an IBM MQ installation on Linux” on page 174](#).

Ubuntu

An overview of the concepts and considerations for installing IBM MQ, on Linux Ubuntu, using the Debian installer.

Installation tools

Use **apt**, **dpkg**, or a higher level installation tool, to install and uninstall the product. The installed product on disk appears identical to an rpm-installed copy.



**Attention:** The Debian installation tools have no provision for overriding the installation directory. This means that there is *no relocatable or multi-version support*. Therefore the product will be installed to /opt/mqm, but this can be set as the primary installation if you require.

Package names

The package names have been changed to use an IBM MQ derived name.

For example, the Debian equivalent of the existing rpm server component, MQSeriesServer, is `ibmmq-server`.

Coexistence

Having both Debian and rpm installed versions of IBM MQ on the same system is not supported.

Therefore, on a single system, you can have a single version of IBM MQ installed by Debian, or multiple versions of IBM MQ installed by rpm.

However, you can achieve multi-version installation with Debian through the use of container based technologies, such as Docker.

Related tasks

“Installing IBM MQ server on Linux Ubuntu or Linux on POWER Systems - Little Endian” on page 144

You can install an IBM MQ server on a Linux Ubuntu system, or Linux on POWER Systems - Little Endian system, in accordance with the system requirements web page.

You can select the components that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

Table 21 on page 159 shows the components that are available when installing an IBM MQ server or client on a Linux Ubuntu system using the Debian installer:

Table 21. IBM MQ Debian components for Linux Ubuntu systems				
Component	Description	Server media	Client media	Debian package name
Runtime	Contains files that are common to both server and client installations.  <b>Note:</b> <code>ibmmq-runtime</code> component must be installed.	✓	✓	<code>ibmmq-runtime</code>

Table 21. IBM MQ Debian components for Linux Ubuntu systems (continued)

Component	Description	Server media	Client media	Debian package name
<b>Server</b>	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.	✓		ibmmq-server
<b>Standard Client</b>	The IBM MQ MQI client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and the server can be on the same system if required.	✓	✓	ibmmq-client
<b>SDK</b>	The SDK is required for compiling applications. It includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ.	✓	✓	ibmmq-sdk
<b>Sample programs</b>	The sample application programs are needed if you want to check your IBM MQ installation using the verification procedures.	✓	✓	ibmmq-samples
<b>Java messaging</b>	The files needed for messaging using Java (includes Java Message Service).	✓	✓	ibmmq-java
<b>Man pages</b>	UNIX man pages, in U.S. English, for: control commands MQI calls MQSC commands	✓	✓	ibmmq-man
<b>Java JRE</b>	A Java Runtime Environment that is used by those parts of IBM MQ that are written in Java.	✓	✓	ibmmq-jre
<b>Message Catalogs</b>	For available languages, see the table of <a href="#">message catalogs</a> that follows.	✓	✓	
<b>IBM Global Security Kit (GSKit)</b>	GSKit 8 Certificate and TLS, Base Runtime.	✓	✓	ibmmq-gskit



Table 21. IBM MQ Debian components for Linux Ubuntu systems (continued)

Component	Description	Server media	Client media	Debian package name
<b>Telemetry Service</b>	<p>MQ Telemetry supports the connection of Internet Of Things (IOT) devices (that is, remote sensors, actuators and telemetry devices) that use the IBM MQ Telemetry Transport (MQTT) protocol. The telemetry service, which is also known as the MQXR service, enables a queue manager to act as an MQTT server, and communicate with MQTT client apps.</p> <p><b>Note:</b> The telemetry service is only available on Linux for System x (64 bit) and Linux for IBM Z.</p> <p>The <a href="#">Eclipse Paho</a> project, and <a href="#">MQTT.org</a>, have free downloads of the latest telemetry clients and samples for a range of programming languages. Use these resources to help you write the MQTT client apps that IOT devices use to communicate with MQTT servers.</p> <p>See also “<a href="#">Installation considerations for MQ Telemetry</a>” on page 332.</p>	✓		ibmmq-xrservice
<b>IBM MQ Explorer</b>	Use IBM MQ Explorer to administer and monitor resources on Linux x86-64 systems. Also available using a stand-alone installer from MSOT.	✓		ibmmq-explorer
<b>Managed File Transfer</b>	MQ Managed File Transfer transfers files between systems in a managed and auditable way, regardless of file size or the operating systems used. For information about the function of each component, see <a href="#">Managed File Transfer product options</a> .	✓		ibmmq-ftagent ibmmq-ftbase ibmmq-ftlogger ibmmq-ftservice ibmmq-fttools

Table 21. IBM MQ Debian components for Linux Ubuntu systems (continued)




Component	Description	Server media	Client media	Debian package name
<b>Advanced Message Security</b>	<p>Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.</p> <p>You must install the GSKit component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.</p> <p>You must install the <b>Java JRE</b> component to install this component.</p>	✓		ibmmq-ams
 <b>AMQP Service</b>	Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.	✓		ibmmq-amqp
<b>REST API and Console</b>	Adds HTTP based administration for IBM MQ through the REST API and IBM MQ Console.	✓		ibmmq-web
 <b>IBM MQ Bridge to Salesforce</b>	<p>Install the IBM MQ Bridge to Salesforce to configure the connections to Salesforce and IBM MQ, then run the command <b>runmqsfb</b> to subscribe to events from Salesforce and publish them to an IBM MQ network.</p> <p><b>Note:</b></p> <p>The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).</p>	✓	✓	ibmmq-sfbridge
 <b>IBM MQ Bridge to blockchain</b>	<p>Install the IBM MQ Bridge to blockchain to send queries and updates to, and receive responses from your blockchain network.</p> <p><b>Note:</b></p> <p>The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).</p>	✓	✓	ibmmq-bcbridge

Table 22. IBM MQ message catalogs for Linux systems

Message catalog language	Component name
Brazilian Portuguese	ibmmq-msg-pt
Czech	ibmmq-msg-cs
French	ibmmq-msg-fr
German	ibmmq-msg-de
Hungarian	ibmmq-msg-hu
Italian	ibmmq-msg-it
Japanese	ibmmq-msg-ja
Korean	ibmmq-msg-ko
Polish	ibmmq-msg-pl
Russian	ibmmq-msg-ru
Spanish	ibmmq-msg-es
Simplified Chinese	ibmmq-msg-zh-cn
Traditional Chinese	ibmmq-msg-zh-tw
U.S. English	not applicable

### Related concepts

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

## Linux V 9.0.2 Installing an IBM MQ server on Linux Ubuntu using Debian packages

You can install an IBM MQ server on a Linux Ubuntu system, using a Debian installer, in accordance with the system requirements web page.

### Before you begin

See [System Requirements for IBM MQ](#) for details of the supported software levels.

Before you start the installation procedure, make sure that you first complete the necessary steps that are outlined in [“Preparing the system on Linux” on page 128](#).

If you have installed IBM MQ 9.0.2, or earlier, on Ubuntu using rpm, you must uninstall all rpm versions of the product before installing the Debian version of the product.

### About this task

Install the server by using a Debian installer to select the components that you want to install. The components and package names are listed in [“IBM MQ Debian components for Linux Ubuntu systems” on page 159](#).



**Attention:** Ensure that you download the Ubuntu version of the `tar.gz` package, before you install the product, as this version contains the deb files you need for the **apt** tool.

You can use various installers. This topic describes the use of the **apt** and **dpkg** installers.

## apt

Install the packages that you need by following instructions in step “3” on page 164. The **apt** tool installs dependency packages for the package that you require. The **apt** management tool orders the **dpkg** commands.

You must make your files accessible to the **apt** tool, in order to use it.

To do this, issue the command, `chmod -R a+rx DIRNAME`, where `DIRNAME` is the directory into which you unpacked the `tar.gz` package.



**Attention:** If you do not make your files accessible to the **apt** tool, you receive the following errors:

- N: Download is performed unsandboxed as root as file '/sw/9001deb/./InRelease' couldn't be accessed by user '\_apt'. - pkgAcquire::Run (13: Permission denied)
- E: Failed to fetch file:/sw/9001deb/./Packages File not found - /sw/9001deb/./Packages (2: No such file or directory)
- E: Some index files failed to download. They have been ignored, or old ones used instead.

where `/sw/9001deb` is the directory from which you are installing IBM MQ.

## dpkg

Install the packages that you need by following instructions in step “4” on page 167. You can install multiple packages with the same command but take care to place the packages in the correct order as **dpkg** does not sort them according to dependency.

## Procedure

1. Open a shell terminal and set your current directory to the location of the installation packages.

The location might be the mount point of the server DVD, a network location, or a local file system directory. You must have root authority to run the following commands. You can do so by adding **sudo** before the following commands, or by changing to the root user in the shell with the **su** command.

2. Run the `mqlicense.sh` script.

If you want to view a text-only version of the license, which can be read by a screen reader, type the following message:

```
./mqlicense.sh -text_only
```

The license is displayed.

You must accept the license agreement before you can proceed with the installation.

3. Complete this step if you want to use the **apt** management tool to install the IBM MQ packages that you want along with their dependency packages.

**apt** is a higher-level package management tool that is a front end to **dpkg**.

**Important:** **apt** operations, unlike **dpkg**, are dependency aware, and automatically select and install the required packages. Therefore, the **apt** management tool orders the **dpkg** commands appropriately.

**apt** is configured with a list of repositories that can include local directories. To add a local, or nfs-mounted, directory that contains the IBM MQ packages:

- a) Create a file with the suffix `.list`, for example, `IBM_MQ.list`, in the `/etc/apt/sources.list.d` directory.

This file should contain a deb entry for the location of the directory that contains the IBM MQ packages.

For example:

```
# Local directory containing IBM MQ packages
deb [trusted=yes] file:/var/tmp/mq ./
```

**Note:** The inclusion of the [trusted=yes] statement (including the brackets) is optional and suppresses warnings and prompts during subsequent operations.

- b) Run the command **apt update** to add this directory, and the list of packages the directory contains, to the apt cache.

You can now carry out various operations. For example, issuing the command:

```
apt install "ibmmq-*
```

installs the complete product, and issuing the command:

```
apt install ibmmq-server
```

selects and installs the server package and all its dependencies.



**Attention:** Do not run the `apt install ibmmq-*` command in the directory which holds the `.deb` files, unless you are using quotation characters in the shell.

If you are using tools such as aptitude or synaptic, the install packages can be found in the `misc/non-free` category.



To support the running of a queue manager, you must install at least the `ibmmq-runtime` and the `ibmmq-server` components.

If you are installing a subset of components, you must ensure that any dependencies are first installed, as listed in [Table 23 on page 165](#). To install and use a package listed in the *Package Name* column, you must also install the corresponding components that are listed in the *Package Dependencies* column.

*Table 23. Package component dependencies*

Package Name	Component Function	Package Dependencies
ibmmq-runtime	Common function for all other components	None
ibmmq-server	Queue Manager	ibmmq-runtime
ibmmq-client	C IBM MQ client libraries	ibmmq-runtime
ibmmq-java	Java and JMS IBM MQ APIs	ibmmq-runtime
ibmmq-jre	Java Runtime Environment	ibmmq-runtime
ibmmq-sdk	Header files and libraries for non-Java APIs	ibmmq-runtime
ibmmq-man	UNIX man pages for IBM MQ	ibmmq-runtime
ibmmq-samples	IBM MQ application samples	ibmmq-runtime

Table 23. Package component dependencies (continued)		
Package Name	Component Function	Package Dependencies
ibmmq-msg-cs ibmmq-msg-de ibmmq-msg-es ibmmq-msg-fr ibmmq-msg-hu ibmmq-msg-it ibmmq-msg-ja ibmmq-msg-ko ibmmq-msg-pl ibmmq-msg-pt ibmmq-msg-ru ibmmq-msg-zh-cn ibmmq-msg-zh-tw	Additional language message catalog files. English message catalog files are installed by default. For more information about these message catalogs, see <a href="#">“Displaying messages in your national language on Linux” on page 173</a>	ibmmq-runtime
ibmmq-mqexplorer	IBM MQ Explorer. Only on Linux x86-64 systems.	ibmmq-runtime ibmmq-jre
ibmmq-gskit	IBM Global Security Kit (GSKit)	ibmmq-runtime ibmmq-jre
ibmmq-web	REST API and IBM MQ Console.	ibmmq-runtime ibmmq-server ibmmq-java ibmmq-jre
ibmmq-ftbase	Managed File Transfer component	ibmmq-runtime ibmmq-java ibmmq-jre
ibmmq-ftlogger	Managed File Transfer component	ibmmq-runtime ibmmq-server ibmmq-ftbase ibmmq-java ibmmq-jre
ibmmq-fttools ibmmq-ftagent	Managed File Transfer components	ibmmq-runtime ibmmq-ftbase ibmmq-java ibmmq-jre

Table 23. Package component dependencies (continued)		
Package Name	Component Function	Package Dependencies
ibmmq-ftservice	Managed File Transfer component	ibmmq-runtime ibmmq-server ibmmq-ftagent ibmmq-ftbase ibmmq-java ibmmq-jre
ibmmq-ams	Advanced Message Security component	ibmmq-runtime ibmmq-server
 ibmmq-sfb	Install the IBM MQ Bridge to Salesforce to configure the connections to Salesforce and IBM MQ, then run the command <b>runmqsfb</b> to subscribe to events from Salesforce and publish them to an IBM MQ network.  <b>Note:</b> The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre
 ibmmq-bcb	Install the IBM MQ Bridge to blockchain to send queries and updates to, and receive responses from your blockchain network.  <b>Note:</b> The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre

4. Complete this step if you want to use the **dpkg** command and install packages individually. Issue the **dpkg** command for each IBM MQ package.

For example, issue the following command:

```
dpkg -i ibmmq-runtime_9.0.2.0_amd64.deb
```

To support the running of a queue manager, you must install at least the **ibmmq-runtime** and the **ibmmq-server** components.

**Important:** You can specify multiple package files in the same command but unlike **rpm**, **dpkg** does not sort the package files into dependency order.

You must place the package file names in the following order when you issue your command:

- **ibmmq-runtime**
- **ibmmq-jre**
- **ibmmq-java**
- **ibmmq-server**
- **ibmmq-web**
- **ibmmq-ftbase**
- **ibmmq-ftagent**

- `ibmmq-ftservice`
- `ibmmq-ftlogger`
- `ibmmq-fttools`
- `ibmmq-amqp`
- `ibmmq-ams`
- `ibmmq-xrservice`
- `ibmmq-explorer`
- `ibmmq-gskit`
- `ibmmq-client`
- `ibmmq-man`
- `ibmmq-msg_language`
- `ibmmq-samples`
- `ibmmq-sdk`
- `ibmmq-sfbridge`
- `ibmmq-bcbridge`

If you are installing a subset of components by using **dpkg**, you must ensure that any dependencies are first installed, as listed in [Table 23 on page 165](#).

## Results

You have installed the packages you require.

## What to do next

- If required, you can now set this installation to be the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` represents the directory where IBM MQ is installed.

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on Linux” on page 174](#), for more information.

## Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

## Installing an IBM MQ client on Linux Ubuntu using Debian packages

You can install an IBM MQ client on a Linux Ubuntu system, using a Debian package, in accordance with the system requirements web page.

## Before you begin

See [System Requirements for IBM MQ](#) for details of the supported software levels.

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Linux” on page 128](#).



## About this task

Install the client by using a Debian installer to select the components that you want to install. The components and package names are listed in [“IBM MQ Debian components for Linux Ubuntu systems” on page 159](#).

## Procedure

1. Open a shell terminal and set your current directory to the location of the installation packages. The location might be the mount point of the client DVD, a network location, or a local file system directory. You must have root authority to run the following commands. You can do so by adding **sudo** before the following commands, or by changing to the root user in the shell with the **su** command.

2. Run the `mqlicense.sh` script.

If you want to view a text-only version of the license, which can be read by a screen reader, type the following message:

```
./mqlicense.sh -text_only
```

The license is displayed.

You must accept the license agreement before you can proceed with the installation.

3. Install the IBM MQ client.



You can use any Debian installer. [“Installing an IBM MQ server on Linux Ubuntu using Debian packages” on page 163](#) describes the use of the **apt** and **dpkg** packages to install a server.

At a minimum, you must install the `ibmmq-runtime` component.

If you are installing a subset of components, you must ensure that any dependencies are first installed, as listed in [Table 24 on page 169](#).

To install and use the package listed in the *Package Name* column, you must also install the components listed in the *Package Dependencies* column.

Table 24. Package component dependencies		
Package Name	Component Function	Package Dependencies
ibmmq-runtime	Common function for all other components	None
ibmmq-client	C IBM MQ client libraries	ibmmq-runtime
ibmmq-java	Java and JMS IBM MQ APIs	ibmmq-runtime
ibmmq-jre	Java Runtime Environment	ibmmq-runtime
ibmmq-sdk	Header files and libraries for non-Java APIs	ibmmq-runtime
ibmmq-man	UNIX man pages for IBM MQ	ibmmq-runtime
ibmmq-samples	IBM MQ application samples	ibmmq-runtime

Table 24. Package component dependencies (continued)		
Package Name	Component Function	Package Dependencies
ibmmq-msg-cs ibmmq-msg-de ibmmq-msg-es ibmmq-msg-fr ibmmq-msg-hu ibmmq-msg-it ibmmq-msg-ja ibmmq-msg-ko ibmmq-msg-pl ibmmq-msg-pt ibmmq-msg-ru ibmmq-msg-zh-cn ibmmq-msg-zh-tw	Language specific message catalog files	ibmmq-runtime
ibmmq-gskit	IBM Global Security Kit (GSKit)	ibmmq-runtime ibmmq-jre
 ibmmq-sfbridge	IBM MQ Bridge to Salesforce <b>Note:</b> The IBM MQ Bridge to Salesforce is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre
 ibmmq-bcbridge	IBM MQ Bridge to blockchain <b>Note:</b> The IBM MQ Bridge to blockchain is available only on Linux for System x (64 bit).	ibmmq-runtime ibmmq-java ibmmq-jre

## Results

You have installed the packages you require.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Linux” on page 189](#)

## Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

[Changing the primary installation](#)

## Related reference

[setmqinst](#)

## Linux Redistributable clients on Linux

The Linux x86-64 image is shipped in a `LinuxX64.tar.gz` file.

## File names

The archive or .zip file names describe the file contents and equivalent maintenance levels.

**CD** For example, for Continuous Delivery, in IBM MQ 9.0.4 the client images are available under the following file names:

**Linux Linux x86-64**  
`9.0.4.0-IBM-MQC-Redist-LinuxX64.tar.gz`

**Windows z/OS Linux Java**  
`9.0.4.0-IBM-MQC-Redist-Java.zip`

**LTS** For Long Term Support, in IBM MQ 9.0.0 Fix Pack 2 the client images are available under the following file names:

**Linux Linux x86-64**  
`9.0.0.2-IBM-MQC-Redist-LinuxX64.tar.gz`

**Java**  
`9.0.0.2-IBM-MQC-Redist-Java.zip`

## Choosing the runtime files to distribute with an application

A script file named **genmqpkg** is provided by the redistributable client under the `bin` directory.

You can use the **genmqpkg** script to generate a smaller subset of files that are tailored to the needs of the application, for which the files are intended to be distributed.

You are asked a series of interactive Yes or No questions to determine the runtime requirements for an IBM MQ application.

Finally, **genmqpkg** asks you to supply a new target directory, where the script duplicates the required directories and files.

**Important:** A fully qualified path should be supplied to **genmqpkg**, as **genmqpkg** will not expand or evaluate shell variables.

**Important:** IBM support is only able to provide assistance with the full, unmodified set of files contained within the redistributable client packages.

## Other considerations

The default data path of a non-installed client, on Linux x86-64 is `$HOME/IBM/MQ/data`.

You can change the default directory of the data path, by using the `MQ_OVERRIDE_DATA_PATH` environment variable.

**Note:** You must create the directory first, as the directory is not created automatically.

A redistributable client runtime co-exists with a full IBM MQ client or server installation, provided that they are installed in different locations.

**Important:** Unpacking a redistributable image into the same location as a full IBM MQ installation is not supported.

On Linux the `ccsid.tbl` used to define the supported CCSID conversions is traditionally expected to be found in the `UserData` directory structure, along with error logs, trace files, and so on.

The `UserData` directory structure is populated by unpacking the redistributable client, and so, if the file is not found in its usual location, the redistributable client falls back to locate the file in the `/lib` subdirectory of the installation.

## Classpath changes

The classpath used by `dspmqver`, `setmqenv`, and `crtmqenv` commands, add the `com.ibm.mq.allclient.jar` to the environment, immediately following the `com.ibm.mq.jar` and `com.ibm.mqjms.jar`.

An example of `dspmqver` output from the redistributable client on Linux:

```
Name:      IBM MQ
Version:   8.0.0.4
Level:     p800-804-L150909
BuildType: IKAP - (Production)
Platform:  IBM MQ for Linux (x86-64 platform)
Mode:      64-bit
O/S:       Linux 2.6.32.59-0.7-default
InstName:  MQNI08000004
InstDesc:  IBM MQ 8.0.0.4 (Redistributable)
Primary:   No
InstPath:  /Development/johndoe/unzip/unpack
DataPath:  /u/johndoe/IBM/MQ/data
MaxCmdLevel: 802
```

## Related concepts

[“Redistributable clients” on page 23](#)

The IBM MQ redistributable client is a collection of runtime files that are provided in a `.zip` or `.tar` file that can be redistributed to third parties under redistributable license terms, which provides a simple way of distributing applications and the runtime files that they require in a single package.

## Linux

## Converting a trial license on Linux

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the `strmqm` command informs you the license has expired, and the command does not run.

## Before you begin

1. IBM MQ is installed with a trial license.
2. You have access to the installation media of a fully licensed copy of IBM MQ.

## About this task

Run the `setmqprf` command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

## Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On Linux, it is in the `/MediaRoot/licenses` directory on the installation media.

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH/bin/setmqprd /MediaRoot/licenses/amqpcert.lic
```

## Related reference

[setmqprd](#)

## Linux

## Displaying messages in your national language on Linux

To display messages from a different national language message catalog, you must install the appropriate catalog and set the **LANG** environment variable.

## About this task

Messages in U.S. English are automatically installed with IBM MQ

Message catalogs for all languages are installed in `MQ_INSTALLATION_PATH/msg/language identifier`, where *language identifier* is one of the identifiers in [Table 25 on page 173](#).

If you require messages in a different language, perform the following steps:

## Procedure

1. Install the appropriate message catalog (see [“IBM MQ components and features” on page 6](#) ).
2. To select messages in a different language, ensure the **LANG** environment variable is set to the identifier for the language you want to install:

Table 25. Language identifiers	
Identifier	Language
cs_CZ	Czech
de_DE	German
es_ES	Spanish
fr_FR	French
hu_HU	Hungarian
it_IT	Italian
ja_JP	Japanese
ko_KR	Korean
pl_PL	Polish
pt_BR	Brazilian Portuguese
zh_CN	Simplified Chinese
zh_TW	Traditional Chinese

## **Verifying an IBM MQ installation on Linux**

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Linux systems.

### **About this task**

You can verify a local (stand-alone) server installation or a server-to-server installation of the IBM MQ server:

- A local server installation has no communication links with other IBM MQ installations.
- A server-to-server installation does have links to other installations.

You can also verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

### **Procedure**

- To verify a local server installation, see [“Verifying a local server installation on Linux” on page 174](#).
- To verify a server-to-server installation, see [“Verifying a server-to-server installation on Linux” on page 178](#).
- To verify a client installation, see [“Verifying a client installation on Linux” on page 183](#).

## **Verifying a local server installation on Linux**

You can use either the command line or the postcard application to verify a local (stand-alone) installation on Linux.

### **About this task**

You can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### **Procedure**

- To use the command line to verify an installation, see [“Verifying a local server installation using the command line on Linux” on page 174](#).
- To use the postcard application to verify an installation, see [“Verifying a local server installation using the Postcard application on Linux” on page 176](#).

## **Verifying a local server installation using the command line on Linux**

On Linux systems, you can verify a local installation by using the command line to create a simple configuration of one queue manager and one queue. You can also verify an installation using the postcard application.

### **Before you begin**

To verify the installation, you must first install the samples package.

Before beginning the verification procedure, you might want to check that you have the latest fixes for your system. For more information about where to find the latest updates, see [“Checking requirements on Linux” on page 124](#).

## About this task

Use the following steps to configure your default queue manager from the command line. After the queue manager is configured, use the `amqsput` sample program to put a message on the queue. You then use the `amqsget` sample program to get the message back from the queue.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. On a Linux system, log in as a user in the `mqm` group.
2. Set up your environment:
  - a) Set up environment variables for use with a particular installation by entering one the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- b) Check that the environment is set up correctly by entering the following command:

```
dspmqr
```

If the command completes successfully, and the expected version number and installation name are returned, the environment is set up correctly.

3. Create a queue manager called QMA by entering the following command:

```
crtmqm QMA
```

Messages indicate when the queue manager is created, and when the default IBM MQ objects are created.

4. Start the queue manager by entering the following command:

```
strmqm QMA
```

A message indicates when the queue manager starts.

5. Start MQSC by entering the following command:

```
runmqsc QMA
```

A message indicates when MQSC starts. MQSC has no command prompt.

6. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL (QUEUE1)
```

A message indicates when the queue is created.

7. Stop MQSC by entering the following command:

```
end
```

Messages are shown, followed by the command prompt.

**Note:** Subsequent steps require that the samples package is installed.

8. Change into the `MQ_INSTALLATION_PATH/samp/bin` directory, which contains the sample programs.

`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

9. Put a message on the queue by entering the following commands

```
./amqsput QUEUE1 QMA
```

The following messages are shown:

```
Sample AMQSPUT0 start  
target queue is QUEUE1
```

10. Type some message text on one or more lines, where each line is a different message. Enter a blank line to end the message input.

The following message is shown:

```
Sample AMQSPUT0 end
```

Your messages are now on the queue and the command prompt is shown.

11. Get the messages from the queue, by entering the following command:

```
./amqsget QUEUE1 QMA
```

The sample program starts, and your messages are displayed.

## Results

You have successfully verified your local installation.

### **Verifying a local server installation using the Postcard application on Linux**

Sending messages successfully between two Postcard applications verifies a local installation.

## Before you begin

The postcard application is Java based and requires a system with the ability to view a graphical display.

You must ensure that you are a member of the IBM MQ administrators group ( **mqm** ).

**Note:** Using Postcard to verify an IBM MQ installation is only possible if there is one IBM MQ installation on that box. The Default Configuration wizard will not create a default configuration if a queue manager already exists on the box. The Default Configuration wizard will run on any installation on a box but only one default configuration can be created per box. Using Postcard to verify second and subsequent installations of IBM MQ on the same box is not possible.

To verify that the local installation is working, you can run two instances of the Postcard application on the same server. The postcard application can send messages to, and receive messages from, other postcard applications. Successful sending and receiving of messages verifies that IBM MQ is installed and working correctly on the server.

## Procedure

1. Log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```

- b) From the IBM MQ Explorer: On Linux (x86-64 platforms), you can start IBM MQ Explorer by using the system menu, the **MQExplorer** command (preferred command), or the `MQExplorer` executable file. The **strmqcfcg** command is still usable.
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.



3. At the **Postcard - Sign On** window, type in a nickname to use to send messages within the Postcard application (for example, User1).
4. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration creates a default queue manager.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK** to display your first Postcard window.

5. Run a second instance of the Postcard application by following the steps used to open the first instance of the Postcard application.
6. The **Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, User2).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 4).

The queue manager you select for this second Postcard must be the same queue manager as used for the first instance of the Postcard application.
8. In the first Postcard, (User1), enter the nickname ( User2) for the second Postcard application in the **To:** field. Because the sender and receiver are on the same server, you can leave the **On:** field blank.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as sent. In the receiving Postcard, the message is displayed as received.
11. In the receiving Postcard, (User2), double-click the message in the **Postcards sent and received** area to view it.

When this message arrives, it verifies that IBM MQ is correctly installed.

## What to do next

Depending on your situation, you might want to do the following tasks:

- Install IBM MQ on other servers. Follow the installation procedure for the appropriate platform. Ensure that you use the **Join Default Cluster** window in the Default Configuration wizard to add the other servers to the cluster on your first server.
- Install the IBM MQ MQI client on other servers.
- Continue with further administration tasks, see [Administering IBM MQ](#).

## Verifying a server-to-server installation on Linux

You can use either the command line or the postcard application to verify a server-to-server installation on Linux.

### Before you begin

For a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must therefore ensure that the communications protocol is installed and configured on both systems.

On Linux, IBM MQ supports TCP on all Linux platforms. On x86 platforms and Power platforms, SNA is also supported. If you want to use the SNA LU6.2 support on these platforms, you need the IBM Communications Server for Linux 6.2. The Communications Server is available as a PRPQ product from IBM. For more details, see [Communications Server](#).

The examples in this task use TCP/IP. If you do not use TCP, see [Setting up communication on UNIX and Linux](#).

### About this task

For a server-to-server installation, you can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### Procedure

- To use the command line to verify an installation, see [“Verifying a server-to-server installation using the command line on Linux”](#) on page 178.
- To use the postcard application to verify an installation, see [“Verifying a server-to-server installation using the Postcard application on Linux”](#) on page 181.

## Verifying a server-to-server installation using the command line on Linux

You can verify a server-to-server installation using two servers, one as a sender and one as a receiver.

### Before you begin

- Make sure that TCP/IP and IBM MQ are installed on both servers (see [“Verifying a server-to-server installation on Linux”](#) on page 178).
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Decide which installation is the sender server and which installation is the receiver server. The installations might be on the same system, or on different systems.

### About this task

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### Procedure

1. On the **receiver** server:
  - a) On Linux, log in as a user in the mqm group.
  - b) Check which ports are free, for example by running **netstat**. For more information about this command, see the documentation of your operating system.

If port 1414 is not in use, make a note of 1414 to use as the port number in step 2 h. Use the same number for the port for your listener later in the verification. If it is in use, note a port that is not in use; for example 1415.

- c) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- d) Create a queue manager called QMB by entering the following command at the command prompt:

```
crtmqm QMB
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- e) Start the queue manager by entering the following command:

```
strmqm QMB
```

A message tells you when the queue manager has started.

- f) Start MQSC by entering the following command:

```
runmqsc QMB
```

A message tells you that MQSC has started. MQSC has no command prompt.

- g) Define a local queue called RECEIVER.Q by entering the following command:

```
DEFINE QLOCAL (RECEIVER.Q)
```

A message tells you the queue has been created.

- h) Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT ( PORT_NUMBER )
```

Where *port\_number* is the name of the port the listener runs on. This number must be the same as the number used when defining your sender channel.

- i) Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

**Note:** Do not start the listener in the background from any shell that automatically lowers the priority of background processes.

- j) Define a receiver channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (RCVR) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

- k) End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

## 2. On the **sender** server:

- a) As the sender server is an AIX system, log in as a user in the mqm group.
- b) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Create a queue manager called QMA by entering the following command at the command prompt:

```
crtmqm QMA
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- d) Start the queue manager, by entering the following command:

```
strmqm QMA
```

A message tells you when the queue manager has started.

- e) Start MQSC by entering the following command:

```
runmqsc QMA
```

A message tells you that an MQSC session has started. MQSC had no command prompt.

- f) Define a local queue called QMB (to be used as a transmission queue) by entering the following command:

```
DEFINE QLOCAL (QMB) USAGE (XMITQ)
```

A message tells you when the queue has been created.

- g) Define a local definition of the remote queue with by entering the following command:

```
DEFINE QREMOTE (LOCAL.DEF.OF.REMOTE.QUEUE) RNAME (RECEIVER.Q) RQMNAME ('QMB') XMITQ (QMB)
```

- h) Define a sender channel by entering one of the following commands:

*con-name* is the TCP/IP address of the receiver system. If both installations are on the same system, the *con-name* is `localhost`. *port* is the port you noted in [1 b](#). If you do not specify a port, the default value of 1414 is used.

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (SDR) CONNAME ('CON-NAME(PORT)') XMITQ (QMB) TRPTYPE (TCP)
```

- i) Start the sender channel by entering the following command:

```
START CHANNEL(QMA.QMB)
```

The receiver channel on the receiver server starts automatically when the sender channel starts.

- j) Stop MQSC by entering the following command:

```
end
```

Some messages are displayed, followed by the command prompt.

- k) Change into the *MQ\_INSTALLATION\_PATH*/samp/bin directory. This directory contains the sample programs. *MQ\_INSTALLATION\_PATH* represents the high-level directory in which IBM MQ is installed.

- l) If both the sender server and receiver server are installations on the same system, check that the queue managers have been created on different installations by entering the following command:

```
dspmq -o installation
```

If the queue managers are on the same installation, move either QMA to the sender installation or QMB to the receiver installation by using the **setmqm** command. For more information, see [setmqm](#).

- m) Put a message on the local definition of the remote queue, which in turn specifies the name of the remote queue. Enter the following command:

```
./amqspout LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

A message tells you that amqspout has started.

- n) Type some message text on one or more lines, followed by a blank line.

A message tells you that amqspout has ended. Your message is now on the queue and the command prompt is displayed again.

3. On the **receiver** server:

- a) As your receiver server is an AIX system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory.

This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- b) Get the message from the queue on the receiver by entering the following command:

```
./amqsget RECEIVER.Q QMB
```

The sample program starts, and your message is displayed. After a pause, the sample ends. Then the command prompt is displayed.

## Results

You have now successfully verified the server-to-server installation.

## **Verifying a server-to-server installation using the Postcard application on Linux**

You can use two instances of the Postcard application to verify that a server-to-server installation is working.

### Before you begin

You can use the Postcard application on two servers, one instance of the Postcard application on each server, to verify that a server-to-server installation is working. Successful sending and receiving of messages verifies that IBM MQ is successfully installed, and that communication between the two servers is working correctly.

#### Note:

- If the system has multiple IBM MQ installations, ensure that Postcard has not been run before on any installations on that server. As the default configuration can only exist on one IBM MQ installation per system, the Default Configuration wizard and Postcard can not be used for verification of a second or any subsequent installation.
- The two server installations must be on different systems to do a server-to-server verification using the postcard application. To verify a server-to-server installation on the same machine, you can use the command line.
- Make sure that TCP/IP and IBM MQ are installed on both servers.
- Make sure that your systems are able to view a graphical display.
- Make sure that you are a member of the IBM MQ administrators group (`mqm`) on each server.
- Check that one of the following scenarios applies:
  - Neither server has had any queue managers created.
  - Use the Default Configuration wizard to create default queue managers on each server and link them to the default cluster.

Details on how to use the Default Configuration wizard are provided in this topic.

- Both servers have existing queue managers and these queue managers are in the same cluster.

If your queue managers are not in the same cluster, create new queue managers on both servers. Then create a cluster, and ensure that the queue managers that you create on each server belong to that cluster.

- You have configured channels to communicate between the two servers.

For instructions on how to set up the channels, see [“Verifying a server-to-server installation using the command line on Linux” on page 178](#). After you have set up the channels, follow the instructions in this topic to verify your server-to-server installation.

## Procedure

1. On the first server, log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```
  - b) From the IBM MQ Explorer: On Linux systems (x86-64 platforms), you can start IBM MQ Explorer by using the system menu, the MQExplorer executable file, or the **strmqcfcg** command.
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type a nickname to use to send messages within the Postcard application. For example, `User1` for the first server, and `User2` for the second server.
4. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
    - For the first server, select **yes, make it the repository for the cluster**.
    - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK**.
5. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:

- For the first server, select **yes, make it the repository for the cluster**.
- For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
- If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
- If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
- If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
- If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK**.

6. Complete steps 1 - 5 for the second server.

7. In the Postcard on the first server:

- a) Enter the nickname ( user12) for the Postcard application on the second server in the **To:** field.
- b) Enter the queue manager on the second server in the **On:** field.
- c) Type a message in the **Message:** field and click **Send**.

8. In the Postcard on the second server:

- a) In the **Postcards sent and received**, double-click the message marked as received to view the message from the first server.
- b) Optional: Send a postcard to the first server by adapting the instructions in step 7. You must enter details of the first server in the **To:** field and the **On:** field.

The messages verify that IBM MQ is correctly installed and that your communication link between the two servers is working correctly.

## **Verifying a client installation on Linux**

You can verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

### **About this task**

The verification procedure shows how to create a queue manager called `queue.manager.1`, a local queue called `QUEUE1`, and a server-connection channel called `CHANNEL1` on the server.

It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.

- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

## Procedure

1. Set up the server and client:

- To set up the server and client by using the command line, follow the instructions in [“Setting up the server and client using the command line on Linux” on page 184](#).
- To set up the server and client by using IBM MQ Explorer, follow the instructions in [“Setting up the server and client using IBM MQ Explorer on Linux” on page 187](#).

2. Test the communications between client and server, using the instructions in [“Testing communication between a client and a server on Linux” on page 189](#).

## Related tasks

[“Installing an IBM MQ client on Linux ” on page 150](#)

[Installing an IBM MQ client on a 64 bit Linux system.](#)

### **Setting up the server and client using the command line on Linux**

You can use the command line to create the objects that you need to use to verify a client installation on Linux. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel. After setting up the server and client, you can then use the sample programs to complete the verification procedure.

## Before you begin

Before starting this task, review the information in [“Verifying a client installation on Linux” on page 183](#).

## About this task

This task explains how to use the command line to set up the server and client so that you can verify your client installation.

If you prefer to use IBM MQ Explorer, see [“Setting up the server and client using IBM MQ Explorer on Linux” on page 187](#).

## Procedure

1. Set up the server by following the instructions in [“Setting up the server using the command line on Linux” on page 184](#).
2. Set up the client by following instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on Linux” on page 186](#).

## What to do next

Test the communications between client and server by following the instructions in [“Testing communication between a client and a server on Linux” on page 189](#).

### **Setting up the server using the command line on Linux**

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

## About this task

These instructions assume that no queue manager or other IBM MQ objects have been defined.



IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. Log in as a user in the mqm group.
3. You must set various environment variables so that the installation can be used in the current shell.  
You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

4. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

5. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

6. Start MQSC by entering the following command:

```
runmqsc QUEUE.MANAGER.1
```

A message tells you that an MQSC session has started. MQSC has no command prompt.

7. Define a local queue called `QUEUE1` by entering the following command:

```
DEFINE QLOCAL(QUEUE1)
```

A message tells you when the queue has been created.

8. Allow the user ID that you created in step 1 to use `QUEUE1` by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(Queue) PRINCIPAL(' non_mqm_user ') AUTHADD(put,get)
```

where *non\_mqm\_user* is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(connect)
```

If this command is not run, a 2305 stop error is returned.

9. Define a server-connection channel by entering the following command:

```
DEFINE CHANNEL (CHANNEL1) CHLTYPE (SVRCONN) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

10. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(AUTHENTICATION) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

11. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on Linux”](#) on page 150.

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

12. Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

13. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on Linux”](#) on page 186.

### Linux

*Connecting to a queue manager, using the MQSERVER environment variable on Linux*

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

## Before you begin

Before you start this task, you must complete the task, [“Setting up the server using the command line on Linux”](#) on page 184, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

## About this task

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

You can give the client access to the generated client channel definition table, `amqc1chl1.tab` instead; see [Accessing client-connection channel definitions](#).

## Procedure

1. Log in as the userid that you created in Step 1 of [“Setting up the server using the command line on Linux”](#) on page 184.

2. Check the TCP/IP connection. From the client, enter one of the following commands:

- `ping server-hostname`
- `ping n.n.n.n`

`n.n.n.n` represents the network address. You can set the network address in IPv4 dotted decimal form, for example, `192.0.2.0`. Alternatively, set the address in IPv6 hexadecimal form, for example `2001:0DB8:0204:acff:fe97:2c34:fde0:3485`.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter the following command:

```
export MQSERVER=CHANNEL1/TCP/'server-address (port)'
```

Where:

- *CHANNEL1* is the server-connection channel name.
- *server-address* is the TCP/IP host name of the server.
- *port* is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the `qm.ini` file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If an `MQSeries` entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

## What to do next

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on Linux”](#) on page 189.

Linux

## Setting up the server and client using IBM MQ Explorer on Linux

You can use IBM MQ Explorer to create the objects that you need to use to verify a client installation on Linux. On the server, you create a queue manager, a local queue, a listener and a server-connection channel. On the client system you create a client-connection channel. Then from the command line you use the sample PUT and GET programs to complete the verification procedure.

## Before you begin

Before starting this task, review the information in [“Verifying a client installation on Linux”](#) on page 183.

## About this task

This task explains how to use IBM MQ Explorer to set up the server and client so that you can verify your client installation.

If you prefer to use the command line, see [“Setting up the server and client using the command line on Linux”](#) on page 184.

## Procedure

1. Set up the server by following the instructions in [“Setting up the server using IBM MQ Explorer on Linux”](#) on page 188.
2. Set up the client by following instructions in [“Setting up the client using IBM MQ Explorer on Linux”](#) on page 188.

## What to do next

Test the communications between client and server by following the instructions in [“Testing communication between a client and a server on Linux”](#) on page 189.

## Related tasks

[“Installing an IBM MQ client on Linux”](#) on page 150

Installing an IBM MQ client on a 64 bit Linux system.

### *Setting up the server using IBM MQ Explorer on Linux*

You can use the IBM MQ Explorer to create the server objects that you need to verify your client installation.

## About this task

To verify your installation, you must first create a queue manager, a local queue, a listener and a server-connection channel on the server.

## Procedure

1. Create a queue manager:
  - a) Open IBM MQ Explorer.
  - b) Right-click the folder called **Queue Managers**, select **New > Queue Manager**.
  - c) In the first entry field, type the queue manager name, *QUEUE.MANAGER.1*, and click **Finish**.
2. Create a local queue:
  - a) Expand the queue manager you have just created and right-click **queues**.
  - b) Select **New > Local Queue**.
  - c) Enter the queue name, *QUEUE1*, and click **Finish**.
3. Define the server-connection channel:
  - a) Right-click **Channels**.
  - b) Select **New > Server Connection Channel**.
  - c) Enter the channel name, *CHANNEL1*, and click **Next**.
  - d) In the dialog navigation pane, click **MCA** to open the MCA page.
  - e) In the MCA User ID field, enter a userid that is a member of the mqm group, typically your own.
  - f) Click **Finish**.
4. Run the listener.

The listener is automatically started when the queue manager is configured. To check that the listener is running, open **Listeners** and look for *LISTENER.TCP*.

## What to do next

Set up the client. See [“Setting up the client using IBM MQ Explorer on Linux” on page 188](#).

### Related tasks

[“Installing an IBM MQ client on Linux ” on page 150](#)

Installing an IBM MQ client on a 64 bit Linux system.

### *Setting up the client using IBM MQ Explorer on Linux*

You can use IBM MQ Explorer to define the client-connection if you are setting up the client and server on the same workstation on a Linux system.

## Procedure

1. Select the queue manager, *QUEUE.MANAGER.1*
2. Open the **Channels** folder, then right-click **Client Connections > New > Client-connection Channel...**
3. Enter the channel name, *CHANNEL1*, for the client connection, and click **Next**.
4. Enter the queue manager name, *QUEUE.MANAGER.1*
5. Enter the following string as the connection name:

```
server-address (port)
```

Where:

- *server-address* is the TCP/IP host name of the server
- *port* is the TCP/IP port number the server is listening on

6. Click Finish.

7. From the command line, set the MQCHLLIB environment variable:

Enter the following command:

```
export MQCHLLIB=var/mqm/qmgrs/QUEUE!MANAGER!1/@ipcc
```

**Note:** The queue manager name contains ". ". IBM MQ creates the queue manager directory with the name, QUEUE!MANAGER!1

## What to do next

Use the sample programs to test communication between the client and server. See [“Testing communication between a client and a server on Linux”](#) on page 189.

### Related tasks

[“Installing an IBM MQ client on Linux ”](#) on page 150

Installing an IBM MQ client on a 64 bit Linux system.

## **Testing communication between a client and a server on Linux**

On the IBM MQ MQI client workstation, use the amqsputc sample program to put a message on the queue at the server workstation. Use the amqsgetc sample program to get the message from the queue back to the client.

## Before you begin

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

## About this task

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

You must be logged in with the appropriate authority. For example, user ivtid in the mqm group.

## Procedure

1. Change to the *MQ\_INSTALLATION\_PATH*/samp/bin directory, which contains the sample programs.

*MQ\_INSTALLATION\_PATH* represents the high-level directory in which IBM MQ is installed.

2. You must set certain environment variables so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

3. Start the PUT program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
./amqsputc QUEUE1 QUEUE.MANAGER.1
```

If the command is successful, the following messages are displayed:

```
Sample AMQSPUT0 start
target queue is QUEUE1
```

**Tip:** You might get the error, MQRC\_NOT\_AUTHORIZED (2035). By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

4. Type some message text, then press **Enter** twice.

The following message is displayed:

```
Sample AMQSPUT0 end
```

Your message is now on the queue that is on the server queue manager.

5. Start the GET program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
./amqsgetc QUEUE1 QUEUE.MANAGER.1
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. You must set various environment variables on the server so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

2. On the server, stop the queue manager by entering the following command:

```
endmqm QUEUE.MANAGER.1
```

3. On the server, delete the queue manager by entering the following command:

```
dltmqm QUEUE.MANAGER.1
```

## Linux Uninstalling or modifying IBM MQ on Linux

You can uninstall an IBM MQ server or client. You can also modify an installation by removing selected packages (components) currently installed on your system.

### Procedure

- For information on how to uninstall or modify IBM MQ on Linux, see the following subtopics:
  - [“Uninstalling or modifying IBM MQ on Linux using rpm” on page 191](#)
  - [“Uninstalling or modifying IBM MQ on Linux Ubuntu using Debian packages” on page 193](#)

On Linux, you can uninstall the IBM MQ server or client using the **rpm** command. You can also modify an installation by removing selected packages (components) currently installed on your system.

## Before you begin

If you have applied one or more fix packs to the version of IBM MQ that you want to uninstall, you need to remove the fix packs in reverse chronological installation order before you remove the base packages.

You must remove any updates before starting the uninstallation procedure. For more information, see [Restoring the previous maintenance level on IBM MQ on Linux](#).

**Important:** You must stop all IBM MQ queue managers, other objects, and applications, before you begin the process to uninstall or modify IBM MQ.

## Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling or modifying, if you have not already done so.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling or modifying:
  - a) Log in as a user in the group mqm.
  - b) Set up your environment to work with the installation you want to uninstall or modify. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall or modify. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.
4. Uninstall or modify IBM MQ using the **rpm** command:
  - a) On a system with a single installation:

- Find out the names of the packages (components) currently installed on your system, by entering the following command:

```
rpm -qa | grep MQSeries
```

- Remove all components by appending all the package names to the **rpm** command arguments. For example:

```
rpm -qa | grep MQSeries | xargs rpm -ev
```

- Modify your installation by appending individual package names to the rpm command arguments. For example, to remove the runtime, Server and SDK components enter the following command:

```
rpm -ev MQSeriesRuntime MQSeriesServer MQSeriesSDK
```

- If you are using Ubuntu, add the **--force-debian** attribute. For example, to remove the runtime, Server and SDK components enter the following command:

```
rpm --force-debian -ev MQSeriesRuntime MQSeriesServer MQSeriesSDK
```

b) On a system with multiple installations:

- Find out the names of the packages (components) currently installed on your system, by entering the following command:

```
rpm -qa | grep suffix
```

where *suffix* is the unique name given to the packages when **crtmqpkg** was run at installation time. *suffix* is included in each of the package names that belong to a particular installation.

- Remove all components by appending all the package names to the **rpm** command arguments. For example, to remove all components from an installation with the suffix MQ80 enter the following command:

```
rpm -qa | grep '\<MQSeries.*MQ80\>' | xargs rpm -ev
```

- Modify your installation by appending individual package names to the **rpm** command arguments. For example, to remove the runtime, Server and SDK components from an installation with the suffix MQ80 enter the following command:

```
rpm -ev MQSeriesRuntime-MQ80 MQSeriesServer-MQ80 MQSeriesSDK-MQ80
```

- If you are using Ubuntu, add the **--force-debian** attribute. For example, to remove the runtime, Server and SDK components for an installation with the *suffix* MQ80, enter the following command:

```
rpm --force-debian -ev MQSeriesRuntime-MQ80 MQSeriesServer-MQ80 MQSeriesSDK-MQ80
```

## Results

After uninstallation, certain files under the directory trees `/var/mqm` and `/etc/opt/mqm` are not removed. These files contain user data and remain so subsequent installations can reuse the data. Most of the remaining files contain text, such as INI files, error logs, and FDC files. The directory tree `/var/mqm/shared` contains files that are shared across installations, including the executable shared libraries `libmqzsd.so` and `libmqzsd_r.so`.

## What to do next

- If the product successfully uninstalled, you can delete any files and directories contained in the installation directory.
- If there are no other IBM MQ installations on the system, and you are not planning to reinstall or migrate, you can delete the `/var/mqm` and `/etc/opt/mqm` directory trees, including the files `libmqzsd.so` and `libmqzsd_r.so`. Deleting these directories destroys all queue managers and their associated data.



## Uninstalling or modifying IBM MQ on Linux Ubuntu using Debian packages

You can uninstall an IBM MQ server or client that was installed using the Debian package manager. You can also modify an installation by removing selected packages (components) currently installed on your system.

### Before you begin

If you have applied one or more fix packs to the version of IBM MQ that you want to uninstall, you need to remove the fix packs in reverse chronological installation order before you remove the base packages.

You must remove any updates before starting the uninstallation procedure. For more information, see [Restoring the previous maintenance level on IBM MQ on Linux](#).

**Important:** You must stop all IBM MQ queue managers, other objects, and applications, before you begin the process to uninstall or modify IBM MQ.

### Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling or modifying, if you have not already done so.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling or modifying:

- a) Log in as a user in the group mqm.
- b) Set up your environment to work with the installation you want to uninstall or modify. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall or modify. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.
4. Uninstall or modify IBM MQ using a Debian installation command:

- Using **apt**.

Issuing the command:

```
apt remove "ibmmq-★"
```

removes the product but leaves the package definition cached.

Issuing the command:

```
apt purge "ibmmq-★"
```

purges the cached definition of the product.

- Using **dpkg**.

Issuing the command:

```
dpkg -r packagename
```

removes the product but leaves the package definition cached.

Issuing the command:

```
dpkg -P packagename
```

purges the cached definition of the product.

## Results

After uninstallation, certain files under the directory trees `/var/mqm` and `/etc/opt/mqm` are not removed. These files contain user data and remain so subsequent installations can reuse the data. Most of the remaining files contain text, such as INI files, error logs, and FDC files. The directory tree `/var/mqm/shared` contains files that are shared across installations, including the executable shared libraries `libmqzsd.so` and `libmqzsd_r.so`.

## What to do next

- If the product successfully uninstalled, you can delete any files and directories contained in the installation directory.
- If there are no other IBM MQ installations on the system, and you are not planning to reinstall or migrate, you can delete the `/var/mqm` and `/etc/opt/mqm` directory trees, including the files `libmqzsd.so` and `libmqzsd_r.so`. Deleting these directories destroys all queue managers and their associated data.

## Solaris

## Installing and uninstalling IBM MQ on Solaris

Installation tasks that are associated with installing IBM MQ on Solaris systems are grouped in this section.

## About this task

To prepare for installation and to install the IBM MQ components, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling IBM MQ on Solaris” on page 229](#).

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

## Procedure

1. Check the system requirements.  
See [“Checking requirements on Solaris” on page 200](#).
2. Plan your installation.
  - As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ components for Solaris systems” on page 195](#).
  - You must also make some platform-specific choices. See [“Planning to install IBM MQ on Solaris” on page 201](#).
3. Prepare your system for installation of IBM MQ.  
See [“Preparing the system on Solaris” on page 202](#).
4. Install IBM MQ server.  
See [“Installing IBM MQ server on Solaris” on page 206](#).

5. Optional: Install an IBM MQ client.

See [“Installing an IBM MQ client on Solaris”](#) on page 212.

6. Verify your installation. See [“Verifying an IBM MQ installation on Solaris”](#) on page 215.

## **IBM MQ components for Solaris systems**

You can select the components that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

Table 26 on page 195 shows the components that are available when installing an IBM MQ server or client on a Solaris system.

**Note:** When you install interactively on Solaris systems, the options that are available install various combinations of the components listed in this table. Details are given in the [“Interactive installation”](#) on page 197 section.

Table 26. IBM MQ components for Solaris systems				
Component	Description	Server media	Client media	Component name
<b>Runtime</b>	Contains files that are common to both server and client installations. <b>Note:</b> This component must be installed.	✓	✓	runtime
<b>Server</b>	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.	✓		server
<b>Standard Client</b>	The IBM MQ MQI client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and the server can be on the same system if required.	✓	✓	sol_client
<b>SDK</b>	The SDK is required for compiling applications. It includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ.	✓	✓	base
<b>Sample programs</b>	The sample application programs are needed if you want to check your IBM MQ installation using the verification procedures.	✓	✓	samples
<b>Java messaging</b>	The files needed for messaging using Java (includes Java Message Service).	✓	✓	java

Table 26. IBM MQ components for Solaris systems (continued)



Component	Description	Server media	Client media	Component name
<b>Man pages</b>	UNIX man pages, in U.S. English, for: control commands MQI calls MQSC commands	✓	✓	man
<b>Java JRE</b>	A Java Runtime Environment that is used by those parts of IBM MQ that are written in Java.	✓	✓	jre
<b>Message Catalogs</b>	For available languages, see the table of <a href="#">message catalogs</a> that follows.	✓	✓	
<b>IBM Global Security Kit (GSKit)</b>	GSKit 8 Certificate and TLS, Base Runtime.	✓	✓	gskit
<b>Managed File Transfer</b>	MQ Managed File Transfer transfers files between systems in a managed and auditable way, regardless of file size or the operating systems used. For information about the function of each component, see <a href="#">Managed File Transfer product options</a> .	✓		ftagent ftbase ftlogger ftservice fttools
<b>Advanced Message Security</b>	Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.  You must install the GSKit component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.  You must install the <b>Java JRE</b> component to install this component.	✓		mqams
  <b>AMQP Service</b>	Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.	✓		amqp

Table 27. IBM MQ message catalogs for Solaris systems.

A two-column table listing the available message catalogs.

Message catalog language	Component name
Brazilian Portuguese	Pt_BR
Czech	Cs_CZ

*Table 27. IBM MQ message catalogs for Solaris systems.*

A two-column table listing the available message catalogs.

(continued)

<b>Message catalog language</b>	<b>Component name</b>
French	Fr_FR
German	De_DE
Hungarian	Hu_HU
Italian	It_IT
Japanese	Ja_JP
Korean	Ko_KR
Polish	Pl_PL
Russian	Ru_RU
Spanish	Es_ES
Simplified Chinese	Zh_CN
Traditional Chinese	Zh_TW
U.S. English	not applicable

## Interactive installation

The options available with interactive installation install various combinations of the product components described in the previous tables. The following table shows you what will be installed for each option, together with the option number on the server and client DVDs:

*Table 28. IBM MQ interactive installation options for Solaris systems.*

A four-column table listing interactive installation options and the components installed with each one. Server and client option numbers are also listed.

<b>Interactive installation option</b>	<b>Components installed</b>
IBM MQ Server	base runtime server java gskit
Man pages	runtime man
Sample programs	base runtime samples

*Table 28. IBM MQ interactive installation options for Solaris systems.*

A four-column table listing interactive installation options and the components installed with each one. Server and client option numbers are also listed.

(continued)




Interactive installation option	Components installed
IBM MQ MQI client libraries (including Java, JMS, and Web Services support)	base runtime sol_client java gskit
IBM Java runtime for Solaris, Java 2 Technology Edition, Version 6	jre runtime
GSKit	gskit jre runtime
Managed File Transfer Service	ftservice ftbase jre java runtime ftagent
Managed File Transfer Tools	fttools ftbase jre java runtime
Managed File Transfer Agent	ftagent ftbase jre java runtime
Managed File Transfer Logger	ftlogger ftbase jre java runtime server
Advanced Message Security	runtime mqams
  AMQP Service	runtime jre java amqp

Table 28. IBM MQ interactive installation options for Solaris systems.

A four-column table listing interactive installation options and the components installed with each one. Server and client option numbers are also listed.

(continued)

Interactive installation option	Components installed
 REST API and Console	runtime jre java web
Spanish message catalog	runtime Es_ES
French message catalog	runtime Fr_FR
German message catalog	runtime De_DE
Japanese message catalog	runtime Ja_JP
Italian message catalog	runtime It_IT
Brazilian Portuguese message catalog	runtime Pt_BR
Traditional Chinese message catalog	runtime Zh_TW
Simplified Chinese message catalog	runtime Zh_CN
Korean message catalog	runtime Ko_KR
Russian message catalog	runtime Ru_RU
Hungarian message catalog	runtime Hu_HU
Polish message catalog	runtime Pl_PL
Czech message catalog	runtime Cs_CZ

## Related concepts

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

## **Checking requirements on Solaris**

Before you install IBM MQ on Solaris, you must check for the latest information and system requirements.

### About this task

A summary of the tasks that you must complete to check system requirements are listed here with links to further information.

### Procedure

1. Check that you have the latest information, including information on hardware and software requirements.

See [“Where to find product requirements and support information” on page 9](#).

2. Check that your systems meet the initial hardware and software requirements for Solaris.

See [“Hardware and software requirements on Solaris systems” on page 200](#).

The supported hardware and software environments are occasionally updated. See [System Requirements for IBM MQ](#) for the latest information.

3. Check that your systems have sufficient disk space for the installation.

See [Disk space requirements](#).

4. Check that you have the correct licenses.

See [“License requirements” on page 8](#) and [IBM MQ license information](#).

### What to do next

When you have completed these tasks, you are ready to start preparing your system for installation. For the next steps in installing IBM MQ, see [“Preparing the system on Solaris” on page 202](#).

### Related concepts

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### Related tasks

[Applying maintenance to IBM MQ](#)

## **Hardware and software requirements on Solaris systems**

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

For hardware and software requirements, see [System Requirements for IBM MQ](#).

IBM MQ does not support host names that contain spaces. If you install IBM MQ on a system with a host name that contains spaces, you are unable to create any queue managers.

### Java Message Service and SOAP transport

If you want to use Java Message Service and SOAP support, you need a Java 7 SDK and Runtime Environment from IBM at version 7.0 or later.



**V 9.0.0** Java 8 is bundled with IBM MQ 9.0 but client components are built with Java 7 compatibility flags on.

For development, a JDK is required, and a JRE is required for running. The JRE does not need to be the JRE installed with IBM MQ, but has to be one from the supported list.

For a list of supported JDKs, see [System Requirements for IBM MQ](#).

For further information about SOAP with IBM MQ, see [IBM MQ transport for SOAP](#).

On Solaris : The 32-bit and 64-bit JDKs are typically installed to the same directory. To run a 64-bit JVM use the -d64 or -d32 parameters on the command line when running a Java application to ensure the correct JVM is used.

You can check the version installed using the following command:

```
java -version
```

## Transport Layer Security (TLS)

If you want to use the TLS support, you need the IBM Global Security Kit (GSKit) version 8 package. This package is supplied with IBM MQ as one of the components available for installation.

## Solaris 11 operating system

If you are installing on the Solaris 11 operating system, ensure that the IPS package (package/svr4) that supports pkgadd and equivalent utilities is installed.

### Related concepts

“Hardware and software requirements on IBM i systems” on page 94

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

“Hardware and software requirements on Windows systems” on page 240

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

### Related tasks

“Checking requirements on Windows” on page 240

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

## Planning to install IBM MQ on Solaris

Before you install IBM MQ on Solaris, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### About this task

The following steps provide links to additional information to help you with planning your installation of IBM MQ on Solaris.

As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Checking requirements on Solaris” on page 200](#).

### Procedure

1. Decide which IBM MQ components and features to install.  
See [“IBM MQ components and features” on page 6](#).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

2. Review the options for naming your installation.

In some cases, you can choose an installation name to use instead of the default name. See [“Installation name on UNIX, Linux, and Windows” on page 10](#).

3. Review the options and restrictions for choosing an installation location for IBM MQ.

For more information, see [“Installation location on Multiplatforms” on page 11](#).

4. If you plan to install multiple copies of IBM MQ, see [“Multiple installations on UNIX, Linux, and Windows” on page 13](#).

5. If you already have a primary installation, or plan to have one, see [“Primary installation on UNIX, Linux, and Windows” on page 15](#).

6. Make sure that the communications protocol needed for server-to-server verification is installed and configured on both systems that you plan to use.

For more information, see [“Server-to-server links on UNIX, Linux, and Windows” on page 22](#).

## **Preparing the system on Solaris**

On Solaris systems, you might have to complete several tasks before you install IBM MQ. You might also want to complete other tasks, depending on your installation intentions.

### **About this task**

The tasks that you perform to prepare your systems for installation are listed here. Complete the appropriate tasks for your platform before installing.

### **Procedure**

1. Set up a user ID of the name mqm, with a primary group of mqm.

See [“Setting up the user and group on Solaris” on page 202](#).

2. Create file systems for both the product code and working data to be stored. See [“Creating file systems on Linux” on page 130](#).

3. Configure any additional settings needed for your Solaris system.

See [“Configuring and tuning the operating system on Solaris” on page 205](#).

### **What to do next**

When you have completed the tasks to prepare the system, you are ready to start installing IBM MQ. To install a server, see [“Installing IBM MQ server on Solaris” on page 206](#). To install a client, see [“Installing an IBM MQ client on Solaris” on page 212](#).

### **Related tasks**

[Planning](#)

[Maintaining and migrating](#)

[Applying maintenance to IBM MQ](#)

## **Setting up the user and group on Solaris**

On Solaris systems, IBM MQ requires a user ID of the name mqm, with a primary group of mqm. The mqm user ID owns the directories and files that contain the resources associated with the product.

### **Creating the user ID and group**

Set the primary group of the mqm user to the group mqm.

If you are installing IBM MQ on multiple systems you might want to ensure each UID and GID of mqm has the same value on all systems. If you are planning to configure multi-instance queue managers, it is

essential the UID and GID are the same from system to system. It is also important to have the same UID and GID values in virtualization scenarios.

### **Solaris**

The user ID value for user mqm must be less than 262,143 to avoid problems with the maintenance update process.

Create the IDs using the **groupadd** and **useradd** commands to set the UID and GID the same on each machine.

## **Adding existing user IDs to the group on Solaris systems**

If you want to run administration commands, for example **crtmqm** (create queue manager) or **strmqm** (start queue manager), your user ID must be a member of the mqm group. This user ID must not be longer than 12 characters.

Users do not need mqm group authority to run applications that use the queue manager; it is needed only for the administration commands.

## **Log files created by MQ Telemetry service**

The **umask** setting of the user ID that creates a queue manager will determine the permissions of the Telemetry log files generated for that queue manager. Even though the ownership of the log files will be set to mqm.

### **Related concepts**

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

[“Configuring and tuning the operating system on HP-UX” on page 68](#)

Before you install IBM MQ on an HP-UX system, you must check that the kernel is configured correctly.

[“Configuring and tuning the operating system on Linux” on page 131](#)

Use this topic when you are configuring IBM MQ on Linux systems.

### **Related tasks**

[“Configuring and tuning the operating system on AIX” on page 35](#)

When installing IBM MQ on AIX systems, there are some additional settings that must be configured.

### **Related reference**

[“Configuring and tuning the operating system on Solaris” on page 205](#)

Configure Solaris systems with the resource limits required by IBM MQ.

## **Solaris Creating file systems on Solaris**

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

## **Determining the size of a server installations file system**

To determine the size of the `/var/mqm` file system for a server installation, consider:

- The maximum number of messages in the system at one time.
- Contingency for message buildups, if there is a system problem.
- The average size of the message data, plus 500 bytes for the message header.
- The number of queues.

- The size of log files and error messages.
- The amount of trace that is written to the `/var/mqm/trace` directory.

Storage requirements for IBM MQ also depend on which components you install, and how much working space you need. For more details, see [Disk space requirements](#).

## Creating a file system for the working data

Before you install IBM MQ, create and mount a file system called `/var/mqm` which is owned by the user `mqm` in the group `mqm`; see [“Setting up the user and group on Linux” on page 129](#). This file system is used by all installations of IBM MQ on a system. If possible, use a partition strategy with a separate volume for the IBM MQ data. This means that other system activity is not affected if a large amount of IBM MQ work builds up. Configure the directory permissions to permit the `mqm` user to have full control, for example, file mode 755. These permissions will then be updated during the IBM MQ installation to match the permissions required by the queue manager.

## Creating separate file systems for errors and logs

You can also create separate file systems for your log data (`/var/mqm/log`) and error files (`/var/mqm/errors`). If possible, place these directories on different physical disks from the queue manager data (`/var/mqm/qmgrs`) and from each other.

If you create separate file systems the `/var/mqm/errors` directory can be NFS mounted. However, if you choose to NFS-mount `/var/mqm/errors`, the error logs might be lost if the network fails.

You can protect the stability of your queue manager by having separate file systems for:

- `/var/mqm/errors`
- `/var/mqm/trace`
- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the case of `/var/mqm/errors`, it is rare that this directory receives large quantities of data. But it is sometimes seen, particularly if there is a severe system problem leading to IBM MQ writing a lot of diagnostic information in to `.FDC` files. In the case of `/var/mqm/trace`, files are only written here when you use **strmqtrc** to start tracing IBM MQ.

You can obtain better performance of normal IBM MQ operations (for example, syncpoints, MQPUT, MQGET of persistent messages) by placing the following on separate disks:

- `/var/mqm/qmgrs`
- `/var/mqm/log`

In the rare event that you need to trace an IBM MQ system for problem determination, you can reduce performance impact by placing the `/var/mqm/trace` file system on a separate disk.

If you are creating separate file systems, allow a minimum of 30 MB of storage for `/var/mqm`, 100 MB of storage for `/var/mqm/log`, and 10 MB of storage for `/var/mqm/errors`. The 100 MB minimum allowance of storage for `/var/mqm/log` is the absolute minimum required for a single queue manager and is not a recommended value. The size of a file system must be scaled according to the number of queue managers that you intend to use, the number of pages per log file, and the number of log files per queue manager.

For more information about file systems, see [File system support](#).

The size of the log file depends on the log settings that you use. The minimum sizes are for circular logging using the default settings. For more information about log sizes, see [Calculating the size of the log](#).

## Solaris

For a client installation, the file system can be mounted on a remote network device, for example NFS.

If you are performing both a client and a server installation, the requirements of the server installation take precedence over the requirements of the client installation.

Allow 15 MB as a minimum for an IBM MQ client.

A new sample IBM MQ MQI client configuration file is created in the `var/mqm` directory, by the client package, during installation, but only if this file does not exist. This file contains the `ClientExitPath` stanza. An example `mqclient.ini` file is shown in [Configuring a client using a configuration file](#).

If you are using a common configuration file for multiple clients, either in the IBM MQ installation directory or in another location using the `MQCLNTCF` environment variable, you must grant read access to all user identifiers under which the IBM MQ client applications run. If, for any reason, the file cannot be read the failure is traced, and the search logic continues as if the file had not existed.

### Related concepts

[“Setting up the user and group on Solaris” on page 202](#)

On Solaris systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

### Related reference

[“Configuring and tuning the operating system on Solaris” on page 205](#)

Configure Solaris systems with the resource limits required by IBM MQ.

## **Configuring and tuning the operating system on Solaris**

Configure Solaris systems with the resource limits required by IBM MQ.

IBM MQ uses semaphores, shared memory, and file descriptors, and it is probable that the default resource limits are not adequate.

For further information on **maxusers**, and other process-sizing parameters, see [Process sizing parameters](#).

To set new default limits for all users in the `mqm` group, set up a project for the `mqm` group in each zone.

To find out if you already have a project for the `mqm` group, log in as root and enter the following command:

```
projects -l
```

If you do not already have a `group.mqm` project defined, enter the following command:

```
projadd -c "IBM MQ default settings"
-K "process.max-file-descriptor=(basic,10000,deny)"
-K "project.max-shm-memory=(priv,4GB,deny)"
-K "project.max-shm-ids=(priv,1024,deny)"
-K "project.max-sem-ids=(priv,128,deny)" group.mqm
```

If a project called `group.mqm` is listed, review the attributes for that project. The attributes must include the following minimum values:

```
process.max-file-descriptor=(basic,10000,deny)
project.max-sem-ids=(priv,128,deny)
project.max-shm-ids=(priv,1024,deny)
project.max-shm-memory=(priv,4294967296,deny)
```

If you need to change any of these values, enter the following command:

```
projmod -s -K "process.max-file-descriptor=(basic,10000,deny)"
-K "project.max-shm-memory=(priv,4GB,deny)"
-K "project.max-shm-ids=(priv,1024,deny)"
-K "project.max-sem-ids=(priv,128,deny)" group.mqm
```

Note that you can omit any attributes from this command that are already correct.

For example, to change only the number of file descriptors, enter the following command:

```
projmod -s -K "process.max-file-descriptor=(basic,10000,deny)" group.mqm
```

(To set only the limits for starting the queue manager under the mqm user, login as mqm and enter the command `projects`. The first listed project is likely to be default, and so you can use default instead of `group.mqm`, with the `projmod` command.)

To ensure that the attributes for the project `group.mqm` are used by a user session when running IBM MQ, make sure that the primary group of that user ID is mqm. In the examples in this topic, the `group.mqm` project ID will be used.

For further information on how projects are associated with user sessions, see [System Administration Guide: Oracle Solaris Containers-Resource Management and Oracle Solaris Zones](#) for your release of Solaris.

You can check your system configuration using the `mqconfig` command.

For more information on configuring your system, see [How to configure UNIX and Linux systems for IBM MQ](#).

### Related concepts

[“Setting up the user and group on Solaris” on page 202](#)

On Solaris systems, IBM MQ requires a user ID of the name `mqm`, with a primary group of `mqm`. The `mqm` user ID owns the directories and files that contain the resources associated with the product.

[“Creating file systems on AIX” on page 34](#)

Before installing IBM MQ, you might need to create file systems for both the product code and working data to be stored. There are minimum storage requirements for these file systems. The default installation directory for the product code can be changed at installation time, but the working data location cannot be changed.

## Installing IBM MQ server on Solaris

You can install an IBM MQ server on Solaris either interactively or silently.

### Before you begin

- Before you start the installation procedure, make sure that you complete the necessary steps that are outlined in [“Preparing the system on Solaris” on page 202](#).
- If you install a copy of IBM MQ server for Solaris by using [Electronic Software Download](#), obtained from Passport Advantage, you need to decompress the `tar.gz` file, and extract the installation files from the tar file, by using the following command:

```
tar -xvf WS_MQ_8.0_TRIAL_FOR_SOLARIS_ML.tar
```

**Important:** You must use GNU tar (also known as `gtar`) to unpack the `tar` images.

- If you are using Solaris zones, you have a choice between installing IBM MQ into the global zone, or installing IBM MQ into a non-global zone.

For more information on how to install IBM MQ into Solaris zones, see the following technote: [WebSphere MQ support position regarding Solaris zones](#). The technote is applicable to IBM WebSphere MQ 7.1 or later with the following changes:

- You do not need the `-G` option on the **pkgadd** command as IBM Global Security Kit (GSKit) is now installed as part of the IBM MQ installation.
- If you install IBM MQ into the global zone for use in sparse zones, you must copy the `/var/mqm` file system into the sparse zone. You must also copy the `/etc/opt/mqm/mqinst.ini` installation entry into the sparse zone.
- Limitations for shared `/usr` file systems: the **dspmqinst** and **dspmqver** commands might report the primary installation incorrectly when compared with the symbolic links in `/usr/bin`. To synchronize the reporting of the primary installation in a Solaris zone and the global zone, run **setmqinst** with the **-i** or **-x** parameter, on the individual zones.

- You cannot change the primary installation within a non-global zone. You must change the primary installation through the global zone, which has the appropriate write access to `/usr/bin`.

## About this task

This task describes the installation of the IBM MQ for Solaris server, by using the `pkgadd` program. You can choose which components you want to install. The components are listed in [“IBM MQ components for Solaris systems” on page 195](#).

**Note:** If you are installing on the Solaris 11 operating system, ensure that the IPS package (package/svr4) that supports `pkgadd` and equivalent utilities is installed.

## Procedure

1. Log in as root, or switch to the superuser by using the **su** command.
2. Set your current directory to the location of the installation file.  
The location might be the mount point of the server DVD, a network location, or a local file system directory.
3. Run the `mqlicense.sh` script to accept the license:

```
./mqlicense.sh
```

If you want to view a text-only version of the license, which can be read by a screen reader, type:

```
./mqlicense.sh -text_only
```

The license is displayed. Follow the instructions to accept the license. If you accept the license, the installation continues. If you do not accept the license, you cannot continue the installation process.

4. If this installation is not the first installation on the system, run **crtmqpkg** to create a unique set of packages to install on the system:
  - a) Enter the following command:

```
./crtmqpkg  
suffix
```

where *suffix* is a name of your choosing that uniquely identifies the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

The **crtmqpkg** script can use two environment variables that are useful when you are installing from a non-disk media location:

- **CDROOT**, the root of the installation media or downloaded installation files.
- **TMPDIR**, the output location of the modified installation files.

No environment variables are required if you are running the image as `./crtmqpkg`.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes.  
This directory is a subdirectory of `/var/spool`, in which the unique set of packages is created. The packages have the *suffix* value contained within the file name.
5. Start the installation process:
    - If the installation is the first installation on the system, enter the following command to start the installation process:

```
pkgadd -d.
```

where `" . "` means use the current directory.

- If the installation is not the first installation on the system, enter the following command to start the installation process:



```
pkgadd mqm-suffix
```

where *suffix* is the suffix that is chosen in the previous step.

6. When prompted, choose a location for installation.

- To install to the default location, /opt/mqm, enter y.
- To install to a non-default directory, enter n then enter the required installation path, and confirm your choice.

7. When the list of components is displayed, enter the numbers of the components that you require, separated by spaces or commas.

If you are installing (adding) an IBM MQ component to an existing installation, choose option yes when you are asked whether to overwrite.

**Note:** During the IBM MQ base version installation, you can choose to install all components or a subset of the components. When you install a fix pack, only the currently installed components are upgraded. If, at a later stage, you want to add further IBM MQ components that are not already installed, these components can be installed (added) to the IBM MQ base version only. If your current version of IBM MQ is not the base version, you must first uninstall all the fix packs before you add the required components to the existing installation, and then install the required fix packs. Also, when you are adding IBM MQ components to an existing installation, you must choose option yes when you are asked whether to overwrite by the installation process.

8. If the path chosen in step 6 does not exist, and you are asked if you want to create it, enter y to proceed.

9. Answer any questions appropriately for your system.

If you are prompted to choose whether to install certain IBM MQ files as setuid/setgid files, you must enter y.

10. When a message informing you that the installation is complete appears, enter q to exit the pkgadd program.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation by entering the following command at the command line:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where *MQ\_INSTALLATION\_PATH* represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. For more information, see [“Verifying an IBM MQ installation on Solaris” on page 215](#).

## Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Installing the server silently on Solaris” on page 209](#)



You can perform a non-interactive installation of the IBM MQ server using the installation script `silent.sh`. A non-interactive installation is also known as a silent, or unattended installation.

[“Uninstalling IBM MQ on Solaris” on page 229](#)

On Solaris, you can uninstall the IBM MQ server or client using the **pkgrm** command.

[Changing the primary installation](#)

#### Related reference

[setmqinst](#)

## Installing the server silently on Solaris

You can perform a non-interactive installation of the IBM MQ server using the installation script `silent.sh`. A non-interactive installation is also known as a silent, or unattended installation.

### Before you begin

Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Solaris” on page 202](#).

### About this task

You can perform a silent installation of IBM MQ. A sample script file called `silent.sh` is supplied in the `silent` directory on the DVD. You can use this script to perform a non-interactive installation that requires no input and shows nothing on the screen. It must be run as root.

The installation script `silent.sh` uses an admin file and a response file, both of which are supplied in the `silent` directory. You can use these files as supplied to perform a silent installation of all the components, including all the national language features, to the default location.

**Note:** If you are installing on the Solaris 11 operating system, ensure that the IPS package (package/svr4) that supports `pkgadd` and equivalent utilities is installed.

### Procedure

1. Copy the `silent.sh` script into a writeable directory.
2. If this installation is not the first installation on the system, run **crtmqpkg** to create a unique set of packages to install on the system:
  - a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that will uniquely identify the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes.

This directory is a sub-directory of `/var/spool`, in which the unique set of packages is created.

The packages have the *suffix* value contained within the filename.

Once a new package has been generated for the second installation the `silent.sh` script needs to have its `MQ_PACKAGE_NAME` variable modified so that its value is not `mqm` but the new package name.

Also the `MQ_PACKAGE_LOCATION` variable needs to be modified so that its value is not `$MQ_MEDIA_LOCATION` but the location of the new package (which by default is `/var/spool/pkg`).

3. Optional: If you want to change where the IBM MQ server DVD is mounted, update the values in the `silent.sh` script.

By default, the script assumes that the server DVD has been mounted at `/CD7FVML`.

4. Optional: If you want to change where the output and logs are written to, update the values in the `silent.sh` script.

By default, output and logs are written to the file `/var/tmp/mq.install`.

- Optional: If you want to install to a non-default location, update the `MQ_INSTALLATION_PATH` variable in the `silent.sh` script.

**Note:**

- The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.
  - If the directory you specified does not exist, the installation script creates that directory.
- Optional: If you want to change the components that are installed, edit the response file.  
A list of all the installable IBM MQ components can be found at: [“IBM MQ components and features” on page 6](#).  
  
Solaris does not check, during a silent installation, that prerequisite components are installed. You can use the following procedure to create a response file interactively, before using it to install the product. **pkgask** prompts you for the names of the components to install.
    - Run the **mqlicense.sh** command to accept the license agreement for the product.
    - pkgask -d path\_to\_install\_image -r response\_file mqm**The inputs to **pkgask** are the same as those inputs documented for **pkgadd**, but instead of the product being installed a response file is created.
  - Optional: If you have edited the response file, you must then edit the `silent.sh` to use your custom response file.
  - To start the installation, run `silent.sh`.
  - Check the log file for any errors.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation by entering the following command at the command line:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

where `MQ_INSTALLATION_PATH` represents the directory where IBM MQ is installed.

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- If you want to confirm that the installation was successful, you can verify your installation. See [“Verifying an IBM MQ installation on Solaris” on page 215](#), for more information.

## Related concepts

[“Multiple installations on UNIX, Linux, and Windows” on page 13](#)

On UNIX, Linux, and Windows, it is possible to have more than one copy of IBM MQ on a system.

[“Primary installation on UNIX, Linux, and Windows” on page 15](#)

On systems that support multiple installations of IBM MQ ( UNIX, Linux, and Windows ), the primary installation is the one to which IBM MQ system-wide locations refer. Having a primary installation is optional, but convenient.

## Related tasks

[“Installing IBM MQ server on Solaris” on page 206](#)

You can install an IBM MQ server on Solaris either interactively or silently.

[“Uninstalling IBM MQ on Solaris” on page 229](#)

On Solaris, you can uninstall the IBM MQ server or client using the **pkgrm** command.

[Changing the primary installation](#)

#### Related reference

[setmqinst](#)

## Solaris **Converting a trial license on Solaris**

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the **strmqm** command informs you the license has expired, and the command does not run.

### Before you begin

1. IBM MQ is installed with a trial license.
2. You have access to the installation media of a fully licensed copy of IBM MQ.

### About this task

Run the **setmqprd** command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

### Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On Solaris, it is in the `/MediaRoot/licenses` directory on the installation media.

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH/bin/setmqprd /MediaRoot/licenses/amqpcert.lic
```

#### Related reference

[setmqprd](#)

## Solaris **Displaying messages in your national language on Solaris systems**

To display messages from a different national language message catalog, you must install the appropriate catalog and set the **LANG** environment variable.

### About this task

Messages in U.S. English are automatically installed with IBM MQ

Message catalogs for all languages are installed in `MQ_INSTALLATION_PATH/msg/language identifier`, where *language identifier* is one of the identifiers in [Table 29 on page 212](#).

If you require messages in a different language, perform the following steps:

### Procedure

1. Install the appropriate message catalog (see [“IBM MQ components and features” on page 6](#) ).
2. To select messages in a different language, ensure the **LANG** environment variable is set to the identifier for the language you want to install:

Table 29. Language identifiers	
Identifier	Language
cs_CZ	Czech
de_DE	German
es_ES	Spanish
fr_FR	French
hu_HU	Hungarian
it_IT	Italian
ja_JP	Japanese
ko_KR	Korean
pl_PL	Polish
pt_BR	Brazilian Portuguese
zh_CN	Simplified Chinese
zh_TW	Traditional Chinese

## Installing an IBM MQ client on Solaris

You can interactively install the IBM MQ client for Solaris using `pkgadd`.

### Before you begin

- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Solaris”](#) on page 202.
- This procedure is for the installation of a standard IBM MQ client, from the client DVD. If you are installing an IBM MQ client on a system that is already running an IBM MQ server, are therefore using a server DVD to install the client, follow the steps in [“Installing IBM MQ server on Solaris”](#) on page 206, and select the appropriate client components in step 8.

### About this task

This task describes the installation of the IBM MQ for Solaris client, using the **pkgadd** program. You can choose which components you want to install. The components (or file sets) are listed in [“IBM MQ components for Solaris systems”](#) on page 195; you must install at least the Client component.

**Note:** If you are installing on the Solaris 11 operating system, ensure that the IPS package (package/svr4) that supports `pkgadd` and equivalent utilities is installed.

### Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. Make your current directory the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Run the `mqlicense.sh` script to accept the license:

```
./mqlicense.sh
```

If you want to view a text-only version of the license, which can be read by a screen-reader, type:

```
./mqlicense.sh -text_only
```

The license is displayed. Follow the instructions to accept the license. If you accept the license, the installation continues. If you do not accept the license, you cannot continue the installation process.

4. If this installation is not the first installation on the system, you must run **crtmqpkg** to create a unique set of packages to install on the system:

- a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that will uniquely identify the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes.

This directory is a sub-directory of `/var/spool`, in which the unique set of packages is created. The packages have the *suffix* value contained within the filename.

5. Start the installation process:

- If the installation is the first installation on the system, enter the following command to start the installation process:

```
pkgadd -d.
```

where `" . "` means use the current directory.

- If the installation is not the first installation on the system, enter the following command to start the installation process:

```
pkgadd mqm-suffix
```

where *suffix* is the suffix chosen in the previous step.

6. You are presented with a list of the packages that are available. Enter the number of the mqm package.

7. You are prompted to choose a location for installation.

- To install to the default location, enter y.
- To install to a non-default directory, enter n. Then enter the required installation path, and confirm your choice.

8. You receive a number of messages, after which a list of components is displayed. Enter the numbers of the components that you require separated by spaces or commas.

9. If the path chosen in step 7 does not exist, you are asked if you want to create it. You must enter y to proceed.

10. Answer any questions appropriately for your system.

11. A message tells you when installation is complete. Enter q to exit the pkgadd program.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Solaris” on page 228](#).

## Related tasks

[“Uninstalling IBM MQ on Solaris” on page 229](#)

On Solaris, you can uninstall the IBM MQ server or client using the **pkgrm** command.

## Installing a client silently on Solaris

You can perform a non-interactive installation of the IBM MQ client using the installation script `silent.sh`. A non-interactive installation is also known as a silent, or unattended installation.

### Before you begin

- Before you start the installation procedure, make sure that you have completed the necessary steps outlined in [“Preparing the system on Solaris” on page 202](#).
- This procedure is for the installation of a standard IBM MQ client, from the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
- This procedure is for the installation of a standard IBM MQ client, from the client DVD. If you are installing an IBM MQ client on a system that is already running an IBM MQ server, are therefore using a server DVD to install the client, follow the steps in [“Installing IBM MQ server on Solaris” on page 206](#), and select the appropriate client components in step 8.

### About this task

You can perform a silent installation of IBM MQ. A sample script file called `silent.sh` is supplied in the `silent` directory on the DVD. You can use this script to perform a non-interactive installation that requires no input and shows nothing on the screen. It must be run as root.

The installation script `silent.sh` uses an admin file and a response file, both of which are supplied in the `silent` directory. You can use these files as supplied to perform a silent installation of all the components, including all the national language features, to the default location.

**Note:** If you are installing on the Solaris 11 operating system, ensure that the IPS package (package/svr4) that supports pkgadd and equivalent utilities is installed.

### Procedure

1. Copy the `silent.sh` script into a writeable directory.
2. If this installation is not the first installation on the system, run **crtmqpkg** to create a unique set of packages to install on the system:
  - a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that will uniquely identify the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes.

This directory is a sub-directory of `/var/spool`, in which the unique set of packages is created. The packages have the *suffix* value contained within the filename.

Once a new package has been generated for the second installation the `silent.sh` script needs to have its `MQ_PACKAGE_NAME` variable modified so that its value is not `mqm` but the new package name.

Also the `MQ_PACKAGE_LOCATION` variable needs to be modified so that its value is not `$MQ_MEDIA_LOCATION` but the location of the new package (which by default is `/var/spool/pkg`).

3. Optional: If you want to change where the IBM MQ client DVD is mounted, you must update the values in the `silent.sh` script. By default, the script assumes that the DVD has been mounted at `/CD7FVML`.

4. Optional: If you want to change where the output and logs are written to, update the values in the `silent.sh` script.

By default, output and logs are written to the file `/var/tmp/mq.install`.

5. Optional: If you want to install to a non-default location, update the `MQ_INSTALLATION_PATH` variable in the `silent.sh` script.

**Note:**

- The installation path specified must either be an empty directory, the root of an unused file system, or a path that does not exist. The length of the path is limited to 256 bytes and must not contain spaces.
  - If the directory you specified does not exist, the installation script creates that directory.
6. Optional: If you want to change the components that are installed, edit the response file.  
A list of all the installable IBM MQ components can be found at: [“IBM MQ components and features” on page 6](#).

Solaris does not check, during a silent installation, that prerequisite components are installed. You can use the following procedure to create a response file interactively, before using it to install the product. **pkgask** prompts you for the names of the components to install.

- a. Run the **mqlicense.sh** command to accept the license agreement for the product.
- b. **pkgask -d path\_to\_install\_image -r response\_file mqm**

The inputs to **pkgask** are the same as those inputs documented for **pkgadd**, but instead of the product being installed a response file is created.

7. Optional: If you have edited the response file, you must then edit the `silent.sh` to use your custom response file.
8. To start the installation, run `silent.sh`.
9. Check the log file for any errors.

## What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH/bin/setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Solaris” on page 228](#).

## Verifying an IBM MQ installation on Solaris

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Solaris systems.

### About this task

You can verify a local (stand-alone) server installation or a server-to-server installation of the IBM MQ server:

- A local server installation has no communication links with other IBM MQ installations.
- A server-to-server installation does have links to other installations.

You can also verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

## Procedure

- To verify a local server installation, see [“Verifying a local server installation on Solaris” on page 216.](#)
- To verify a server-to-server installation, see [“Verifying a server-to-server installation on Solaris” on page 219.](#)
- To verify a client installation, see [“Verifying a client installation using the command line on Solaris” on page 224.](#)

### **Verifying a local server installation on Solaris**

You can use either the command line or the postcard application to verify a local (stand-alone) installation on Solaris.

## About this task

You can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

## Procedure

- To use the command line to verify an installation, see [“Verifying a local server installation using the command line on Solaris ” on page 216.](#)
- To use the postcard application to verify an installation, see [“Verifying a local server installation using the Postcard application on Solaris” on page 218.](#)

### **Verifying a local server installation using the command line on Solaris**

On Solaris systems, you can verify a local installation by using the command line to create a simple configuration of one queue manager and one queue. You can also verify an installation using the postcard application.

## Before you begin

To verify the installation, you must first install the samples package.

Before beginning the verification procedure, you might want to check that you have the latest fixes for your system. For more information about where to find the latest updates, see [“Checking requirements on Windows” on page 240.](#)

## About this task

Use the following steps to configure your default queue manager from the command line. After the queue manager is configured, use the amqsput sample program to put a message on the queue. You then use the amqsget sample program to get the message back from the queue.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. If you are verifying an installation on a Solaris system, log in as a user in the mqm group.
2. Set up your environment:



- a) Set up environment variables for use with a particular installation by entering one the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- b) Check that the environment is set up correctly by entering the following command:

```
dspmqr
```

If the command completes successfully, and the expected version number and installation name are returned, the environment is set up correctly.

3. Create a queue manager called QMA by entering the following command:

```
crtmqm QMA
```

Messages indicate when the queue manager is created, and when the default IBM MQ objects are created.

4. Start the queue manager by entering the following command:

```
strmqm QMA
```

A message indicates when the queue manager starts.

5. Start MQSC by entering the following command:

```
runmqsc QMA
```

A message indicates when MQSC starts. MQSC has no command prompt.

6. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL (QUEUE1)
```

A message indicates when the queue is created.

7. Stop MQSC by entering the following command:

```
end
```

Messages are shown, followed by the command prompt.

**Note:** Subsequent steps require that the samples package is installed.

8. Change into the *MQ\_INSTALLATION\_PATH/samp/bin* directory, which contains the sample programs.

*MQ\_INSTALLATION\_PATH* represents the high-level directory in which IBM MQ is installed.

9. Put a message on the queue by entering the following commands

```
./amqspout QUEUE1 QMA
```

The following messages are shown:

```
Sample AMQSPUT0 start  
target queue is QUEUE1
```

10. Type some message text on one or more lines, where each line is a different message. Enter a blank line to end the message input.

The following message is shown:

```
Sample AMQSPUT0 end
```

Your messages are now on the queue and the command prompt is shown.

11. Get the messages from the queue, by entering the following command:

```
./amqsget QUEUE1 QMA
```

The sample program starts, and your messages are displayed.

## Results

You have successfully verified your local installation.

## *Verifying a local server installation using the Postcard application on Solaris*

Sending messages successfully between two Postcard applications verifies a local installation.

## Before you begin

The postcard application is Java based and requires a system with the ability to view a graphical display.

You must ensure that you are a member of the IBM MQ administrators group (**mqm**).

**Note:** Using Postcard to verify an IBM MQ installation is only possible if there is one IBM MQ installation on that box. The Default Configuration wizard will not create a default configuration if a queue manager already exists on the box. The Default Configuration wizard will run on any installation on a box but only one default configuration can be created per box. Using Postcard to verify second and subsequent installations of IBM MQ on the same box is not possible.

To verify that the local installation is working, you can run two instances of the Postcard application on the same server. The postcard application can send messages to, and receive messages from, other postcard applications. Successful sending and receiving of messages verifies that IBM MQ is installed and working correctly on the server.

## Procedure

1. Log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```
  - b) From the IBM MQ Explorer:
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type in a nickname to use to send messages within the Postcard application (for example, `User1`).
4. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration creates a default queue manager.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.

- If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
- If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK** to display your first Postcard window.

5. Run a second instance of the Postcard application by following the steps used to open the first instance of the Postcard application.
6. The **Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, `User2`).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 4).  
The queue manager you select for this second Postcard must be the same queue manager as used for the first instance of the Postcard application.
8. In the first Postcard, (`User1`), enter the nickname (`User2`) for the second Postcard application in the **To:** field. Because the sender and receiver are on the same server, you can leave the **On:** field blank.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as sent. In the receiving Postcard, the message is displayed as received.
11. In the receiving Postcard, (`User2`), double-click the message in the **Postcards sent and received** area to view it.

When this message arrives, it verifies that IBM MQ is correctly installed.

## What to do next

Depending on your situation, you might want to do the following tasks:

- Install IBM MQ on other servers. Follow the installation procedure for the appropriate platform. Ensure that you use the **Join Default Cluster** window in the Default Configuration wizard to add the other servers to the cluster on your first server.
- Install the IBM MQ MQI client on other servers.
- Continue with further administration tasks, see [Administering IBM MQ](#).

## Verifying a server-to-server installation on Solaris

You can use either the command line or the postcard application to verify a server-to-server installation on Solaris.

### Before you begin

For a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must therefore ensure that the communications protocol is installed and configured on both systems.

On Solaris, IBM MQ supports both TCP and SNA.

The examples in this task use TCP/IP. If you do not use TCP, see [Setting up communication on UNIX and Linux](#).

### About this task

For a server-to-server installation, you can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

## Procedure

- To use the command line to verify an installation, see [“Verifying a server-to-server installation using the command line on Solaris ” on page 220.](#)
- To use the postcard application to verify an installation, see [“Verifying a server-to-server installation using the Postcard application on Solaris” on page 223.](#)

**Solaris** ***Verifying a server-to-server installation using the command line on Solaris***  
You can verify a server-to-server installation using two servers, one as a sender and one as a receiver.

## Before you begin

- Make sure that TCP/IP and IBM MQ are installed on both servers (see [“Verifying a server-to-server installation on Solaris” on page 219\).](#)
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Decide which installation is the sender server and which installation is the receiver server. The installations might be on the same system, or on different systems.

## About this task

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. On the **receiver** server:

- a) On AIX, log in as a user in the mqm group.
- b) Check which ports are free, for example by running **netstat**. For more information about this command, see the documentation of your operating system.

If port 1414 is not in use, make a note of 1414 to use as the port number in step 2 h. Use the same number for the port for your listener later in the verification. If it is in use, note a port that is not in use; for example 1415.

- c) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- d) Create a queue manager called QMB by entering the following command at the command prompt:

```
crtmqm QMB
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- e) Start the queue manager by entering the following command:

```
strmqm QMB
```

A message tells you when the queue manager has started.

- f) Start MQSC by entering the following command:

```
runmqsc QMB
```

A message tells you that MQSC has started. MQSC has no command prompt.

- g) Define a local queue called RECEIVER.Q by entering the following command:

```
DEFINE QLOCAL (RECEIVER.Q)
```

A message tells you the queue has been created.

- h) Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT ( PORT_NUMBER )
```

Where *port\_number* is the name of the port the listener runs on. This number must be the same as the number used when defining your sender channel.

- i) Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

**Note:** Do not start the listener in the background from any shell that automatically lowers the priority of background processes.

- j) Define a receiver channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (RCVR) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

- k) End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

## 2. On the **sender** server:

- a) As the sender server is an AIX system, log in as a user in the mqm group.  
b) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Create a queue manager called QMA by entering the following command at the command prompt:

```
crtmqm QMA
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- d) Start the queue manager, by entering the following command:

```
strmqm QMA
```

A message tells you when the queue manager has started.

- e) Start MQSC by entering the following command:

```
runmqsc QMA
```

A message tells you that an MQSC session has started. MQSC had no command prompt.

- f) Define a local queue called QMB (to be used as a transmission queue) by entering the following command:

```
DEFINE QLOCAL (QMB) USAGE (XMITQ)
```

A message tells you when the queue has been created.

- g) Define a local definition of the remote queue with by entering the following command:

```
DEFINE QREMOTE (LOCAL.DEF.OF.REMOTE.QUEUE) RNAME (RECEIVER.Q) RQMNAME ('QMB') XMITQ (QMB)
```

- h) Define a sender channel by entering one of the following commands:

*con-name* is the TCP/IP address of the receiver system. If both installations are on the same system, the *con-name* is `localhost`. *port* is the port you noted in [1 b](#). If you do not specify a port, the default value of 1414 is used.

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (SDR) CONNAME ('CON-NAME(PORT)') XMITQ (QMB) TRPTYPE (TCP)
```

- i) Start the sender channel by entering the following command:

```
START CHANNEL (QMA.QMB)
```

The receiver channel on the receiver server starts automatically when the sender channel starts.

- j) Stop MQSC by entering the following command:

```
end
```

Some messages are displayed, followed by the command prompt.

- k) If the sender server is a UNIX or Linux system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory. This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
- l) If both the sender server and receiver server are installations on the same system, check that the queue managers have been created on different installations by entering the following command:

```
dspmqr -o installation
```

If the queue managers are on the same installation, move either QMA to the sender installation or QMB to the receiver installation by using the **setmqm** command. For more information, see [setmqm](#).

- m) Put a message on the local definition of the remote queue, which in turn specifies the name of the remote queue. Enter one of the following commands:

- On Windows:

```
amqspu LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

- On UNIX and Linux:

```
./amqspu LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

A message tells you that `amqspu` has started.

- n) Type some message text on one or more lines, followed by a blank line.

A message tells you that `amqspu` has ended. Your message is now on the queue and the command prompt is displayed again.

### 3. On the **receiver** server:

- a) As your receiver server is an AIX system, change into the `MQ_INSTALLATION_PATH/samp/bin` directory.

This directory contains the sample programs. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- b) Get the message from the queue on the receiver by entering the following command:

```
./amqsget RECEIVER.Q QMB
```

The sample program starts, and your message is displayed. After a pause, the sample ends. Then the command prompt is displayed.

## Results

You have now successfully verified the server-to-server installation.

## **Verifying a server-to-server installation using the Postcard application on Solaris**

You can use two instances of the Postcard application to verify that a server-to-server installation is working.

### Before you begin

You can use the Postcard application on two servers, one instance of the Postcard application on each server, to verify that a server-to-server installation is working. Successful sending and receiving of messages verifies that IBM MQ is successfully installed, and that communication between the two servers is working correctly.

#### Note:

- If the system has multiple IBM MQ installations, ensure that Postcard has not been run before on any installations on that server. As the default configuration can only exist on one IBM MQ installation per system, the Default Configuration wizard and Postcard can not be used for verification of a second or any subsequent installation.
- The two server installations must be on different systems to do a server-to-server verification using the postcard application. To verify a server-to-server installation on the same machine, you can use the command line.
- Make sure that TCP/IP and IBM MQ are installed on both servers.
- Make sure that your systems are able to view a graphical display.
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Check that one of the following scenarios applies:
  - Neither server has had any queue managers created.
  - Use the Default Configuration wizard to create default queue managers on each server and link them to the default cluster.

Details on how to use the Default Configuration wizard are provided in this topic.

- Both servers have existing queue managers and these queue managers are in the same cluster.

If your queue managers are not in the same cluster, create new queue managers on both servers. Then create a cluster, and ensure that the queue managers that you create on each server belong to that cluster.

- You have configured channels to communicate between the two servers.

For instructions on how to set up the channels, see [“Verifying a server-to-server installation using the command line on Solaris”](#) on page 220. After you have set up the channels, follow the instructions in this topic to verify your server-to-server installation.

## Procedure

1. On the first server, log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH/java/bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
./postcard
```

- b) From the IBM MQ Explorer:
- If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
  - Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type a nickname to use to send messages within the Postcard application. For example, User1 for the first server, and User2 for the second server.
4. When you have completed the wizard, you are taken back to the **Postcard - Sign On** window.
5. Select the queue manager to use as the mailbox:
- If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
    - For the first server, select **yes, make it the repository for the cluster**.
    - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.
- When your selection is complete, click **OK**.
6. Complete steps 1 - 5 for the second server.
7. In the Postcard on the first server:
- Enter the nickname ( user2) for the Postcard application on the second server in the **To:** field.
  - Enter the queue manager on the second server in the **On:** field.
  - Type a message in the **Message:** field and click **Send**.
8. In the Postcard on the second server:
- In the **Postcards sent and received**, double-click the message marked as received to view the message from the first server.
  - Optional: Send a postcard to the first server by adapting the instructions in step 7. You must enter details of the first server in the **To:** field and the **On:** field.

### Solaris

## Verifying a client installation using the command line on Solaris

You can verify a client installation using the command line. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel, and then use the sample PUT and GET programs to complete the verification procedure.

The verification procedure shows how to create a queue manager called queue.manager.1, a local queue called QUEUE1, and a server-connection channel called CHANNEL1 on the server.



It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.
- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

First, set up the server using the command line, using the instructions in [“Setting up the server using the command line on Solaris”](#) on page 225.

Once you have set up the server, you must set up the client, using the instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on Solaris”](#) on page 227.

Finally, you can test the communications between client and server, using the instructions in [“Testing communication between a client and a server on Solaris”](#) on page 228.

### **Setting up the server using the command line on Solaris**

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

## **About this task**

These instructions assume that no queue manager or other IBM MQ objects have been defined.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## **Procedure**

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. Log in as a user in the mqm group.
3. You must set various environment variables so that the installation can be used in the current shell.  
You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

4. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

5. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

6. Start MQSC by entering the following command:

```
runmqsc QUEUE.MANAGER.1
```

A message tells you that an MQSC session has started. MQSC has no command prompt.

7. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL(QUEUE1)
```

A message tells you when the queue has been created.

8. Allow the user ID that you created in step 1 to use QUEUE1 by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(Queue) PRINCIPAL(' non_mqm_user ') AUTHADD(put,get)
```

where *non\_mqm\_user* is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(connect)
```

If this command is not run, a 2305 stop error is returned.

9. Define a server-connection channel by entering the following command:

```
DEFINE CHANNEL (CHANNEL1) CHLTYPE (SVRCONN) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

10. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(AUTHMAP) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

11. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on Solaris” on page 212](#).

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

12. Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

13. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on Solaris” on page 227](#).

## Connecting to a queue manager, using the MQSERVER environment variable on Solaris

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

### Before you begin

Before you start this task, you must complete the task, [“Setting up the server using the command line on Solaris”](#) on page 225, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

### About this task

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

You can give the client access to the generated client channel definition table, `amqc1chl.tab` instead; see [Accessing client-connection channel definitions](#).

### Procedure

1. Log in as the userid that you created in Step 1 of [“Setting up the server using the command line on Solaris”](#) on page 225.
2. Check the TCP/IP connection. From the client, enter one of the following commands:
  - `ping server-hostname`
  - `ping n.n.n.n`

`n.n.n.n` represents the network address. You can set the network address in IPv4 dotted decimal form, for example, `192.0.2.0`. Alternatively, set the address in IPv6 hexadecimal form, for example `2001:0DB8:0204:acff:fe97:2c34:fde0:3485`.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter the following command:

```
export MQSERVER=CHANNEL1/TCP/' server-address (port)'
```

Where:

- `CHANNEL1` is the server-connection channel name.
- `server-address` is the TCP/IP host name of the server.
- `port` is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the `qm.ini` file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If an `MQSeries` entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

### What to do next

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on Solaris”](#) on page 228.

On the IBM MQ MQI client workstation, use the `amqsputc` sample program to put a message on the queue at the server workstation. Use the `amqsgetc` sample program to get the message from the queue back to the client.

## Before you begin

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

## About this task

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Change to the `MQ_INSTALLATION_PATH/samp/bin` directory, which contains the sample programs.  
`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
2. You must set certain environment variables so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

3. Start the PUT program for `QUEUE1` on `QUEUE.MANAGER.1` by entering the following command:

```
./amqsputc QUEUE1 QUEUE.MANAGER.1
```

If the command is successful, the following messages are displayed:

```
Sample AMQSPUT0 start target queue is QUEUE1
```

**Tip:** You might get the error, `MQRC_NOT_AUTHORIZED (2035)`. By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

4. Type some message text, then press **Enter** twice.

The following message is displayed:

```
Sample AMQSPUT0 end
```

Your message is now on the queue that is on the server queue manager.

5. Start the GET program for `QUEUE1` on `QUEUE.MANAGER.1` by entering the following command:

```
./amqsgetc QUEUE1 QUEUE.MANAGER.1
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. You must set various environment variables on the server so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

2. On the server, stop the queue manager by entering the following command:

```
endmqm QUEUE.MANAGER.1
```

3. On the server, delete the queue manager by entering the following command:

```
dltmqm QUEUE.MANAGER.1
```

## Solaris Uninstalling IBM MQ on Solaris

On Solaris, you can uninstall the IBM MQ server or client using the **pkgrm** command.

### Before you begin

If any updates have been applied, remove them before starting this uninstallation procedure. For more information, see [Restoring the previous maintenance level on IBM MQ on Solaris](#).

**Restriction:** On Solaris, you cannot remove components from an installation. There is no supported method of doing this.

**Important:** You must stop all IBM MQ queue managers, other objects, and applications, before you begin the process to uninstall or modify IBM MQ.

### Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling or modifying, if you have not already done so.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling:
  - a) Log in as a user in the group mqm.
  - b) Set up your environment to work with the installation you want to uninstall. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmq
```

- d) Stop all running queue managers associated with the installation you want to uninstall. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqlsr -m QMgrName
```

3. Log in as root.

4. Uninstall IBM MQ using **pkgrm**:

a) On a system with a single installation, enter the following command:

```
pkgrm mqm
```

b) On a system with multiple installations:

```
pkgrm mqm-suffix
```

where *suffix* is the unique name given to the packages when **crtmqpkg** was run at installation time. *suffix* is included in each of the package names that belong to a particular installation. The first installation on the system does not have a *suffix*, and is uninstalled using the same method as for a single installation.

If a package has a dependency on mqm, **pkgrm** returns the name of the package. Uninstall the dependent packages first.

## Results

After uninstallation, certain files under the directory trees `/var/mqm` and `/etc/opt/mqm` are not removed. These files contain user data and remain so subsequent installations can reuse the data. Most of the remaining files contain text, such as INI files, error logs, and FDC files. The directory tree `/var/mqm/shared` contains files that are shared across installations, including the executable shared library `libmqzsd.so`.

## What to do next

- If the product successfully uninstalled, you can delete any files and directories contained in the installation directory.
- If there are no other IBM MQ installations on the system, and you are not planning to reinstall or migrate, you can delete the `/var/mqm` and `/etc/opt/mqm` directory trees, including the file `libmqzsd.so`. Deleting these directories destroys all queue managers and their associated data.

## Windows Installing and uninstalling IBM MQ on Windows

Installation tasks that are associated with installing IBM MQ on Windows systems are grouped in this section.

### About this task

To prepare for installation and to install the IBM MQ components, complete the following tasks.

For information about how to uninstall IBM MQ, see [“Uninstalling IBM MQ on Windows” on page 308](#).

If product fixes or updates are made available, see [Applying maintenance to IBM MQ](#) for information about how to apply these changes.

### Procedure

1. Check the system requirements.

See [“Checking requirements on Windows” on page 240](#).

2. Plan your installation.

- As part of the planning process, you must choose which components to install and where to install them. See [“IBM MQ features for Windows systems” on page 231](#).
- You must also make some platform-specific choices. See [“Planning to install IBM MQ on Windows” on page 242](#).

3. Install IBM MQ server.

See [“Installing IBM MQ server on Windows”](#) on page 248.

4. Optional: Install an IBM MQ client.

See [“Installing an IBM MQ client on Windows”](#) on page 275.

5. Verify your installation. See [“Verifying an IBM MQ installation on Windows”](#) on page 291.


## Windows IBM MQ features for Windows systems

You can select the features that you require when you install IBM MQ.

**Important:** See [IBM MQ license information](#) for details of what each purchase of IBM MQ entitles you to install.

If you choose an interactive installation, before you install, you must decide what type of installation you require. For more information about the available types of installation and the features that are installed with each option, see [“Installation methods for Windows”](#) on page 243.








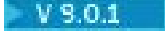


The following table shows the features that are available when installing an IBM MQ server or client on a Windows system.

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Server	Server	You can use the server to run queue managers on your system and connect to other systems over a network. Provides messaging and queuing services to applications, and support for IBM MQ client connections.   From IBM MQ 9.0.2, additional prerequisite checking is performed on this option. See <a href="#">Prerequisite checking</a> for more information.	✓	
IBM MQ Explorer	Explorer	IBM MQ Explorer allows you to administer and monitor resources in IBM MQ.	✓	

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Managed File Transfer Service	MFT Service	<p>The Managed File Transfer Service install option installs a file transfer agent that has additional capabilities beyond those provided by the file transfer agent installed using the Managed File Transfer Agent install option. These additional capabilities are:-</p> <ul style="list-style-type: none"> <li>• Create protocol bridge agents which are used to send and receive files with legacy FTP, FTPS or SFTP servers</li> </ul> <p>The Managed File Transfer Service install option must be installed on systems where the IBM MQ Server install option is already installed.</p>	✓	
Managed File Transfer Logger	MFT Logger	<p>The Managed File Transfer Logger install option installs a file transfer logger which connects to an IBM MQ queue manager, often the queue manager designated as the coordination queue manager. It logs file transfer audit related data to either a database or a file. It must be installed on systems where the IBM MQ Server install option is already installed.</p>	✓	



Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Managed File Transfer Agent	MFT Agent	The Managed File Transfer Agent install option installs a file transfer agent which connects to an IBM MQ queue manager and transfers file data, as messages, to other file transfer agents. These must be installed either as part of the Managed File Transfer Agent or Managed File Transfer Service install options.	✓	
Managed File Transfer Tools	MFT Tools	The Managed File Transfer Tools install option installs command line tools that are used to interact with file transfer agents. You can use these tools to start file transfers, schedule file transfers and create resource monitors from the command line. The Managed File Transfer Tools can be installed and used on either a system where file transfer agents are installed, or on a system where no file transfer agents are installed.	✓	

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
 Windows Client  MQI Client	Client	<p>The Windows client is a small subset of IBM MQ, without a queue manager, that uses the queue manager and queues on other (server) systems. It can be used only when the system it is on is connected to another system that is running a full server version of IBM MQ. The client and server can be on the same system if required.</p> <p> From IBM MQ 9.0.1, this feature is named MQI Client.</p>	✓	✓
 Java and .NET Messaging and Web Services  Extended Messaging APIs	JavaMsg	<p>The files needed for messaging using Java. This feature includes support for JMS, XMS, .NET, and IBM MQ web services.</p> <p> From IBM MQ 9.0.1, this feature is named Extended Messaging APIs.</p>	✓	✓
 Web Administration	 Web	<p> Adds HTTP based administration for IBM MQ through the REST API and IBM MQ Console. If you want to install the Web Administration feature you must also install the Extended Messaging APIs (JavaMsg) feature.</p>	 ✓	

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Development Toolkit	Toolkit	This feature includes sample source files, and the bindings (files .H, .LIB, .DLL, and others), that you need to develop applications to run on IBM MQ. Bindings and samples are provided for the following languages: C, C++, Visual Basic, ActiveX, Cobol, and .NET (including C#). Java and Java Message Service support is included and samples are provided for MTS (COM+), and MQSC.	✓	✓

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Telemetry Service	XR Service	<p>MQ Telemetry supports the connection of Internet Of Things (IOT) devices (that is, remote sensors, actuators and telemetry devices) that use the IBM MQ Telemetry Transport (MQTT) protocol. The telemetry (MQXR) service enables a queue manager to act as an MQTT server, and communicate with MQTT client apps.</p> <p>A set of MQTT clients is available from the <a href="#">Eclipse Paho downloads page</a>. These sample clients help you write your own MQTT client apps that IOT devices use to communicate with MQTT servers.</p> <p>The XR Service install option must be installed on systems where the IBM MQ Server install option is already installed.</p> <p>See also <a href="#">“Installation considerations for MQ Telemetry”</a> on page 332.</p>	✓	





Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
Advanced Message Security	AMS	<p>Provides a high level of protection for sensitive data flowing through the IBM MQ network, while not impacting the end applications. You must install this component on all IBM MQ installations that host queues you want to protect.</p> <p>You must install the IBM Global Security Kit (GSKit) component on any IBM MQ installation that is used by a program that puts or gets messages to or from a protected queue, unless you are using only Java client connections.</p> <p>The AMS install option must be installed on systems where the IBM MQ Server install option is already installed.</p>	✓	

Interactive displayed name	Non-interactive displayed name	Description	Server media	Client media
AMQP Service	AMQP	<p>Install this component to make AMQP channels available. AMQP channels support MQ Light APIs. You can use AMQP channels to give AMQP applications access to the enterprise-level messaging facilities provided by IBM MQ.</p> <p>The AMQP Service install option must be installed on systems where the IBM MQ Server install option is already installed.</p>	✓	
<div> <div>▶ V 9.0.2</div> <div>▶ V 9.0.2</div> </div> <p>Java Runtime Environment</p>	JRE	<p>The Java Runtime Environment (JRE) has become a separate feature at IBM MQ 9.0.2.</p> <p>The JRE feature installs a JRE that has been tailored for IBM MQ use, and is a required feature for all other features that use Java. That is:</p> <ul style="list-style-type: none"> <li>• IBM MQExplorer</li> <li>• Web Administration</li> <li>• Telemetry Service</li> <li>• AMQP Service</li> <li>• Managed File Transfer</li> </ul> <p>Additional prerequisite checking is performed on this option. See <a href="#">Prerequisite checking</a> for more information.</p>	✓	✓

## Windows standard installation features

V 9.0.2

The following features are part of the Windows standard installation feature set. They are the features installed by the GUI installer for a "typical installation".

Interactive displayed name	Non-interactive displayed name	Notes
Server	Server	
MQ Explorer	Explorer	
 LTS Java and .NET messaging and Web Services  V 9.0.1 Extended Messaging APIs	JavaMsg	Feature renamed for Continuous Delivery at IBM MQ 9.0.1
 V 9.0.1 Web Administration (IBM MQ 9.0.1)	Web	Feature added at IBM MQ 9.0.1
Development Toolkit	Toolkit	
 V 9.0.2 Java Runtime Environment	JRE	Feature added at IBM MQ 9.0.2. Prior to IBM MQ 9.0.2 JRE was always installed.

When you install an IBM MQ server, using **msiexec**, the features that are included in a *typical installation* are added to the list of features that you specify in the **ADDLOCAL** directive.

If you specify **ADDLOCAL=""** all these features will be installed.

If you do not want specific features added, you must add those specific features to the **REMOVE** directive.

For example, suppose that you specify the following settings for an **msiexec** installation:

```
ADDLOCAL="Client"  
REMOVE="Web,Toolkit"
```

This results in the following features being installed:

```
Server,Explorer,JavaMsg,JRE,Client
```

### Related concepts

[“IBM MQ components and features” on page 6](#)

You can select the components or features that you require when you install IBM MQ.

[“Planning considerations for installation on Multiplatforms” on page 10](#)

Before you install IBM MQ, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### Related tasks

[“Installing the server using the Launchpad” on page 249](#)

This topic describes how to install IBM MQ server on Windows systems by using the Launchpad. This procedure can be used for installing a first or a subsequent installation.

[“Installing the server using msiexec” on page 250](#)

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

## **Checking requirements on Windows**

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

### **About this task**

A summary of the tasks that you must complete to check system requirements are listed here with links to further information.

### **Procedure**

1. Check that you have the latest information, including information on hardware and software requirements.

See [“Where to find product requirements and support information” on page 9](#).

2. Check that your systems meet the initial hardware and software requirements for Windows.

See [“Hardware and software requirements on Windows systems” on page 240](#).

The supported hardware and software environments are occasionally updated. See [System Requirements for IBM MQ](#) for the latest information.

3. Check that your systems have sufficient disk space for the installation.

See [Disk space requirements](#).

4. Check that you have the correct licenses.

See [“License requirements” on page 8](#) and [IBM MQ license information](#).

### **Related concepts**

[“IBM MQ installation overview” on page 5](#)

An overview of concepts and considerations for installing IBM MQ, with links to instructions on how to install, verify, and uninstall IBM MQ on each of the supported platforms.

### **Related tasks**

[Applying maintenance to IBM MQ](#)

## **Hardware and software requirements on Windows systems**

Check that the server environment meets the prerequisites for installing IBM MQ for Windows and install any prerequisite software that is missing from your system from the server DVD.

Before you install IBM MQ, you must check that your system meets the hardware and software requirements. For the latest details of hardware and software requirements on all supported platforms, see [System Requirements for IBM MQ](#).

You must also review the product readme file, which includes information about last-minute changes and known problems and workarounds. For the latest version of the product readme file, see the [IBM MQ, WebSphere MQ, and MQSeries product readmes](#) web page.

### **Storage requirements for IBM MQ server**

The storage requirements depend on which components you install, and how much working space you need. The storage requirements also depend on the number of queues that you use, the number and size of the messages on the queues, and whether the messages are persistent. You also require archiving capacity on disk, tape, or other media. For more information, see [System Requirements for IBM MQ](#).

Disk storage is also required:

- Prerequisite software



- Optional software
- Your application programs

## Requirements for IBM MQ Explorer


IBM MQ Explorer can be installed either as part of the product installation, or from the stand-alone IBM MQ Explorer support pack MS0T.

- The product version is available for Windows x86\_64.
- The support pack version is available for Windows x86 and x86\_64.

The requirements for installing IBM MQ Explorer as part of the product installation, and not as the stand-alone IBM MQ Explorer support pack MS0T, include:

- A 64-bit (x86\_64) processor
- 64-bit Windows operating system



**Attention:**  From IBM MQ 9.0.0, the 32-bit version of IBM MQ Explorer is no longer supported.

For further information about Windows requirements, see [IBM MQ Explorer Requirements](#) and the following web pages:

- [Windows 7 system requirements](#)
- [Windows 8 system requirements](#)

## Installation directories used for Windows operating systems

The 64-bit IBM MQ server or client, by default, installs its program directories into the 64-bit installation location: C:\Program Files\IBM\MQ.



**Attention:** From IBM MQ 9.0.0, there is no separate 32-bit client installation package. The client installation package and redistributable client contain both 32-bit and 64-bit IBM MQ client libraries. The included 32-bit libraries can be used by 32-bit applications on supported platforms where 32-bit support is offered by the operating system.

The default data directory that is used by IBM MQ changed in IBM MQ 8.0 to C:\ProgramData\IBM\MQ. This change affects both servers, in 32 and 64 bits and clients in 64 bits. However, if there has been a previous installation of IBM MQ on the machine on which you are installing, the new installation continues to use the existing data directory location. For more information, see [Program and data directory locations](#).

## Installing prerequisite software

To install the prerequisite software that is provided on the IBM MQ Server DVD (which does not include service packs or web browsers), choose one of the following options:

- Use the IBM MQ installation procedure.

When you install using the IBM MQ Server DVD, there is a **Software Prerequisites** option in the IBM MQ Installation Launchpad window. You can use this option to check what prerequisite software is already installed and what is missing, and then install any missing software.

- Use Windows Explorer:
  1. Use Windows Explorer to select the Prereqs folder on the IBM MQ Server DVD.
  2. Select the folder for the software item to be installed.
  3. Start the installation program.

## Related concepts

[“Hardware and software requirements on Linux systems” on page 125](#)

Before you install IBM MQ, check that your system meets the hardware and operating system software requirements for the particular components you intend to install.

[“Hardware and software requirements on IBM i systems” on page 94](#)

Check that the server environment meets the prerequisites for installing IBM MQ for IBM i. Check the product readme files and install missing prerequisite software supplied on the server CD.

[IBM MQ Explorer Requirements](#)

#### **Related tasks**

[“Checking requirements on Windows” on page 240](#)

Before you install IBM MQ on Windows, you must check for the latest information and system requirements.

## **Planning to install IBM MQ on Windows**

Before you install IBM MQ on Windows, you must choose which components to install and where to install them. You must also make some platform-specific choices.

### **About this task**

The following steps provide links to additional information to help you with planning your installation of IBM MQ on Windows.

As part of your planning activities, make sure that you review the information on hardware and software requirements for the platform on which you are planning to install IBM MQ. For more information, see [“Checking requirements on Windows” on page 240](#).

### **Procedure**

1. Decide which IBM MQ components and features to install.

See [“IBM MQ components and features” on page 6](#).

**Important:** Ensure that your enterprise has the correct license, or licenses, for the components that you are going to install. For more information, see [“License requirements” on page 8](#) and [IBM MQ license information](#).

2. Review the options for naming your installation.

In some cases, you can choose an installation name to use instead of the default name. See [“Installation name on UNIX, Linux, and Windows” on page 10](#).

3. Review the options and restrictions for choosing an installation location for IBM MQ.

For more information, see [“Installation location on Multiplatforms” on page 11](#).

4. If you plan to install multiple copies of IBM MQ, see [“Multiple installations on UNIX, Linux, and Windows” on page 13](#).

5. If you already have a primary installation, or plan to have one, see [“Primary installation on UNIX, Linux, and Windows” on page 15](#).

6. Make sure that the communications protocol needed for server-to-server verification is installed and configured on both systems that you plan to use.

For more information, see [“Server-to-server links on UNIX, Linux, and Windows” on page 22](#).

## **Additional Windows features prerequisite checking**

There are two Windows installation features that have additional prerequisite checking enabled in the Windows IBM MQ installer from IBM MQ 9.0.2. These are the Server feature and the Java Runtime Environment (JRE) feature. These features are required by other features and installing those features, without these prerequisite checks, would cause those features to be unusable.

If you perform a Graphical User Interface installation, and select the **custom install** option, you can deselect the JRE or Server features.



**Attention:** Dialog panels prevent you from completing the installation, until you have resolved any issues.

If you perform a silent installation, and you elect to **REMOVE** the Server or JRE features while installing any other features that require those features, the Server and JRE features, as appropriate, will be added to your selected installation features.

Table Table 30 on page 243 describes how the selection of certain installation features requires the Server or JRE to be added automatically.

<i>Table 30. Installation features requiring either the Server or JRE feature</i>		
	<b>Required by</b>	<b>Non-interactive name</b>
Server	Web Administration	Web
JRE	IBM MQ Explorer Telemetry Service Managed File Transfer Service Managed File Transfer Agent Managed File Transfer Logger Managed File Transfer Tools AMQP Service Web Administration	Explorer XR Service MFT Service MFT Agent MFT Logger MFT Tools AMQP Service Web

To check whether the JRE or Server features have been installed, look in the [INSTALLDIR]\swidtag directory. If the:

- `ibm.com_IBM_MQ-9.0.x.swidtag` file is present, the Server has been installed
- `IBM_MQ_JRE-1.8.0.mqtag` file is present, the JRE has been installed.

If this is not what you require, consult the installation log.

**Important:** Each of the JRE and Server features are part of the set of Windows standard IBM MQ installation features. To remove the JRE (or the Server) when installing silently, add the feature to the **REMOVE** directive, do not merely omit it from the **ADDLOCAL** directive. See [“Windows standard installation features” on page 239](#) for further details.

## **Windows** Installation methods for Windows

When you install IBM MQ on Windows, there are several different installation types to choose from. This topic also describes how you can clear the installation settings of your enterprise, including the use of the **ResetMQ** command script.

If you are migrating from an earlier version of IBM MQ, see [Migration planning before moving to the latest version of IBM MQ](#). To modify an existing installation, see [“Modifying a server installation” on page 273](#).

### **Interactive or Non-Interactive installation**

IBM MQ for Windows is installed using the Microsoft Installer (MSI). You can use the Installation Launchpad to invoke MSI, this process is called an attended or interactive installation. Or, you can invoke MSI directly for a silent installation, without using the IBM MQ Installation Launchpad. This means that you can install IBM MQ on a system without interaction. This process is called unattended, silent, or non-interactive installation, and is useful for installing IBM MQ over a network on a remote system.

For a list of interactive and non-interactive features, see [“IBM MQ features for Windows systems” on page 231](#).

## Interactive installation

If you choose an interactive installation, before you install, you must decide what type of installation you require. Table 31 on page 244 shows the installation types available, and the features that are installed with each option. For the prerequisites required for each feature, see [System Requirements for IBM MQ](#).

The installation types are:

- Typical installation
- Compact installation
- Custom Installation

You can also:

- Specify the installation location, name, and description.
- Have multiple installations on the same computer.

See “Primary installation on UNIX, Linux, and Windows” on page 15 for important information about these features, including whether to designate your installation as the *primary installation*.




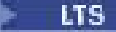














Table 31. Features installed with each type of interactive installation			
Installation type	Server Features installed	Client Features installed	Comments
Typical	<ul style="list-style-type: none"> <li>• Server</li> <li>• IBM MQ Explorer</li> <li>• Development Toolkit</li> <li>•  Java and .NET Messaging and Web Services</li> <li>•  Extended Messaging APIs</li> <li>•  Web Administration</li> </ul>	<ul style="list-style-type: none"> <li>•  Windows Client</li> <li>•  MQI Client</li> <li>• Development Toolkit</li> <li>•  Java and .NET Messaging and Web Services</li> <li>•  Extended Messaging APIs</li> </ul>	<p>The default option. Features are installed to default locations with a default installation name.</p> <p>Java and .NET Messaging and Web Services (known as Extended Messaging APIs from IBM MQ 9.0.1) includes IBM MQ classes for .NET, support for the Microsoft Windows Communication Foundation (WCF) for use with Microsoft.NET 3.</p>
Compact	<ul style="list-style-type: none"> <li>• Server only</li> </ul>	<ul style="list-style-type: none"> <li>•  Windows Client</li> <li>•  MQI Client</li> </ul> <p>only</p>	<p>The feature is installed to the default location with a default installation name.</p>

Table 31. Features installed with each type of interactive installation (continued)			
Installation type	Server Features installed	Client Features installed	Comments
Custom	<p>By default, the following features are preselected:</p> <ul style="list-style-type: none"> <li>• Server</li> <li>• IBM MQ Explorer</li> <li>• Development Toolkit</li> <li>•  Java and .NET Messaging and Web Services</li> <li>•  Extended Messaging APIs</li> <li>•  Web Administration</li> </ul> <p>A custom installation can also install:</p> <ul style="list-style-type: none"> <li>• Telemetry Service</li> <li>• Advanced Message Security</li> <li>• Managed File Transfer Service</li> <li>• Managed File Transfer Logger</li> <li>• Managed File Transfer Agent</li> <li>• Managed File Transfer Tools</li> <li>•  Windows Client</li> <li>•  MQI Client</li> </ul>	<p>By default, the following features are preselected:</p> <ul style="list-style-type: none"> <li>•  Windows Client</li> <li>•  MQI Client</li> <li>• Development Toolkit</li> <li>•  Java and .NET Messaging and Web Services</li> <li>•  Extended Messaging APIs</li> </ul>	<p>A server custom installation can be used if you want to install the Windows client from within the server image.</p> <p>All the available features are listed and you can select which ones to install, and where to install them. You can also name and provide a description for the installation.</p> <p>Use a custom installation when you want to specify that the installation is primary.</p> <p>Java and .NET Messaging and Web Services (known as Extended Messaging APIs from IBM MQ 9.0.1) includes IBM MQ classes for .NET, support for the Microsoft Windows Communication Foundation (WCF) for use with Microsoft.NET 3 or later.</p>

If Microsoft.NET is not installed before IBM MQ and you add it, rerun **setmqinst -i -n **Installationname**** if this is a primary installation.

The following table describes which level of .NET is required for which function:

Table 32. Required levels of Microsoft.NET	
IBM MQ function	.NET version required
IBM MQ classes for .NET. For more information, see: <a href="#">Getting started with IBM MQ classes for .NET 2</a>	.NET 2
<p>The IBM MQ custom channel for WCF. For more information, see <a href="#">Developing WCF applications with IBM MQ</a>.</p> <p>To build the sample solution files, either the Microsoft.NET 3.5 SDK, or Microsoft Visual Studio 2008 is needed. For more information, see: <a href="#">Software requirements for the WCF custom channel for IBM MQ</a></p>	.NET framework 3.5 or later

For instructions on how to install IBM MQ on Windows systems, see [Installing IBM MQ Server on Windows systems](#) and [“Installing an IBM MQ client on Windows”](#) on page 275.

## Non-interactive installation

If you choose a non-interactive installation the system on which you want to install must be able to access the IBM MQ image, or a copy of the files, and you must be able to access the system.

If you are running IBM WebSphere MQ 7.5 or later, with User Account Control (UAC) enabled, you must invoke the non-interactive installation from an elevated command prompt. Elevate a command prompt by using a right-click to start the command prompt and choose **Run as administrator**. If you try to silently install from a non-elevated command prompt, the installation fails with an error of AMQ4353 in the installation log.

There are several ways to invoke MSI:

- Using the `msiexec` command with command-line parameters.
- Using the `msiexec` command with a parameter that specifies a response file. The response file contains the parameters that you normally supply during an interactive installation. See [“Installing the server using msiexec”](#) on page 250.
- Use the `MQParms` command with command-line parameters, a parameter file, or both. The parameter file can contain many more parameters than a response file. See [“Installing the server using the MQParms command”](#) on page 259.

If the system belongs to a Windows domain you may need a special domain ID for the IBM MQ service, see [“Considerations when installing IBM MQ server on Windows”](#) on page 247 for more information.

## Clearing IBM MQ installation settings

When you install IBM MQ on Windows, various values, such as the location of the data directory for IBM MQ, are stored in the registry.

In addition, the data directory contains configuration files that are read at installation time. To provide a trouble free re-installation experience, these values and files persist even after the last IBM MQ installation has been removed from the machine.

This is designed to assist you, and

- Allows you to easily uninstall and reinstall
- Ensures that you do not lose any previously defined queue managers in the process.

However in some cases this feature can be an annoyance. For example, if you want to:

- Move the data directory
- Pick up the default data directory for IBM MQ 9.0. See [Windows: changes for IBM MQ 8.0](#) for further information.
- Install as if installing on a new machine, for example, for test purposes.
- Remove IBM MQ permanently.

To assist you in these situations, IBM MQ 8.0 onwards supplies a Windows command file, on the root directory of the installation media, called **ResetMQ.cmd**.

To run the command, enter the following:

```
ResetMQ.cmd [LOSEDATA] [NOPROMPT]
```



**Attention:** The parameters **LOSEDATA** and **NOPROMPT** are optional. If you supply either, or both, of these parameters, the following action results:

### **LOSEDATA**

Existing queue managers become unusable. However, the data remains on disk.

## **NOPROMPT**

Configuration information is permanently removed without further prompting.

You can run this command only after the last IBM MQ installation has been removed.

**Important:** You should use this script with caution. The command, even without specifying the optional parameter **LOSEDATA**, can irrecoverably remove queue manager configuration.

## **Related concepts**

[“Considerations when installing IBM MQ server on Windows” on page 247](#)

There are some considerations relating to security that you should take into account when installing an IBM MQ server on Windows. There are some additional considerations relating to the object naming rules and logging.

## **Windows**

## **Considerations when installing IBM MQ server on Windows**

There are some considerations relating to security that you should take into account when installing an IBM MQ server on Windows. There are some additional considerations relating to the object naming rules and logging.

## **Security considerations when installing IBM MQ server on a Windows system**

- If you are installing IBM MQ on a Windows domain network running Active Directory Server, you probably need to obtain a special domain account from your domain administrator. For further information, and the details that the domain administrator needs to set up this special account, see [“Configuring IBM MQ with the Prepare IBM MQ Wizard” on page 265](#) and [“Creating and setting up Windows domain accounts for IBM MQ” on page 269](#).
- When you are installing IBM MQ server on a Windows system you must have local administrator authority .
- In order to administer any queue manager on that system, or to run any of the IBM MQ control commands your user ID must belong to the *local* mqm or Administrators group . If the local mqm group does not exist on the local system, it is created automatically when IBM MQ is installed. A user ID can either belong to the local mqm group directly, or belong indirectly through the inclusion of global groups in the local mqm group.
- Windows versions with a User Account Control (UAC) feature restricts the actions users can perform on certain operating system facilities, even if they are members of the Administrators group. If your user ID is in the Administrators group but not the mqm group you must use an elevated command prompt to issue IBM MQ admin commands such as crtmqm, otherwise the error AMQ7077 is generated. To open an elevated command prompt, right-click the start menu item, or icon, for the command prompt, and select **Run as administrator**
- Some commands can be run without being a member of the mqm group (see [Authority to administer IBM MQ](#)).
- If you intend to administer queue managers on a remote system, your user ID must be authorized on the target system.
- As with other versions of Windows, the object authority manager (OAM) gives members of the Administrators group the authority to access all IBM MQ objects even when UAC is enabled.

## **Naming considerations**

Windows has some rules regarding the naming of objects created and used by IBM MQ. These naming considerations apply to IBM WebSphere MQ 7.5 or later.

- Ensure that the machine name does not contain any spaces. IBM MQ does not support machine names that include spaces. If you install IBM MQ on such a machine, you cannot create any queue managers.
- For IBM MQ authorizations, names of user IDs and groups must be no longer than 64 characters (spaces are not allowed).

- An IBM MQ for Windows server does not support the connection of a Windows client if the client is running under a user ID that contains the @ character, for example, abc@d. Similarly, the client user ID should not be the same as local group.
- A user account that is used to run the IBM MQ Windows service is set up by default during the installation process; the default user ID is MUSR\_MQADMIN. This account is reserved for use by IBM MQ. For more information, see [Configuring an IBM MQ server](#) and [Local and domain user accounts for the IBM MQ Windows service](#).
- When an IBM MQ client connects to a queue manager on the server, the username under which the client runs must not be same as the domain or machine name. If the user has the same name as the domain or machine, the connection fails with return code 2035(MQRC\_NOT\_AUTHORIZED).

## Logging

You can set up logging during installation which assists you in troubleshooting any problems you might have with the installation.

From IBM WebSphere MQ 7.5, logging is enabled by default from the Launchpad. You can also enable complete logging, for more information, see [How to enable Windows Installer logging](#).

## Digital signatures

The IBM MQ programs and installation image are digitally signed on Windows to confirm that they are genuine and unmodified. From IBM MQ 8.0 the SHA-256 with RSA algorithm is used to sign the IBM MQ product.

## Installing IBM MQ server on Windows

This topic describes how to install IBM MQ server on Windows systems either by using the Launchpad, or by using the MSI technology.

### About this task

To install IBM MQ server on Windows systems, you can choose either to install with the Launchpad or to install using MSI technology. MSI provides both an interactive installation and a non interactive installation.

### Procedure

- To install IBM MQ server by using the Launchpad, see [“Installing the server using the Launchpad” on page 249](#).
- To install IBM MQ server on by using the MSI technology, see [“Installing the server using msixec” on page 250](#).

### Related concepts

[“Modifying a server installation” on page 273](#)

You can modify an IBM MQ server installation interactively using the launchpad or non-interactively using msixec.

### Related tasks

[“Configuring an IBM MQ server” on page 265](#)

After installing IBM MQ server, you must configure the IBM MQ service before you can start any queue managers.

[“Uninstalling IBM MQ on Windows” on page 308](#)



You can uninstall the IBM MQ MQI clients and servers on Windows systems by using the control panel, the command line ( **msiexec** ), **MQParms**, or by using the installation media, in which case you can optionally remove queue managers as well.

## Installing the server using the Launchpad

This topic describes how to install IBM MQ server on Windows systems by using the Launchpad. This procedure can be used for installing a first or a subsequent installation.

### About this task

These instructions cover how to display the installation Launchpad window. You can use the launchpad to make a compact, typical, or custom installation of IBM MQ. You can reuse the launchpad multiple times to install further installations. It automatically selects the next available installation name, instance, and location to use. To view all the installation types and the features that are installed with each option, see [“Installation methods for Windows” on page 243](#).

Note that if you have previously uninstalled IBM MQ from your system (see [“Uninstalling IBM MQ on Windows” on page 308](#) ), some configuration information might remain, and some default values might be changed.

### Procedure

1. Access the IBM MQ installation image. The location might be the mount point of the DVD, a network location, or a local file system directory.
2. Locate `setup.exe` in the base directory of the IBM MQ installation image.
  - From a DVD, this location might be `E:\setup.exe`
  - From a network location, this location might be `m:\instmq\setup.exe`
  - From a local file system directory, this location might be `C:\instmq\setup.exe`
3. Double-click the **Setup** icon to start the installation process. It is possible to run either by:
  - Running `setup.exe` from the command prompt. Or
  - Double-clicking `setup.exe` from Windows Explorer.

If you are installing on a Windows system with UAC enabled, accept the Windows prompt to allow the launchpad to run as elevated. During installation, you might also see **Open File - Security Warning** dialog boxes that list International Business Machines Limited as the publisher. Click **Run** to allow the installation to continue.

The IBM MQ Installation Launchpad window is displayed.

4. Continue to follow the Launchpad instructions as shown on screen.

### What to do next

- If you have chosen this installation to be the primary installation on the system, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH\bin\setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Verifying an IBM MQ installation on Windows” on page 291](#).

**Known problem:** The installation of IBM MQ on Windows might fail while installing Microsoft Visual C++ runtime due to a conflict between the runtime merge modules that are installed by IBM MQ and the runtime that is already installed on the machine by another product.

If this issue occurs, a message like the one shown in the following example is recorded in the IBM MQ installation logs:

```
MSI (s) (34:48) [12:07:26:083]: Product: IBM WebSphere MQ 64bitSupport -- Error 1935.  
An error occurred during the installation of assembly component {844EFBA7-1C24-93B2-A01F-  
C8B3B9A1E18E}. HRESULT: 0x80073715. assembly interface: IAssemblyCacheItem, function: Commit,  
assembly name:  
Microsoft.VC80.CRT,type="win32",version="8.0.50727.4053",publicKeyToken="1fc8b3b9a1e18e3b",process  
orArchitecture="amd64"
```

This problem is due to a known Microsoft issue that is documented in the following Microsoft Support article: <https://support.microsoft.com/kb/2643995>.

The solution is to download and install latest Microsoft Visual C++ 2005 from <https://www.microsoft.com/en-us/download/details.aspx?id=26347> and then try the IBM MQ installation again.

### Related concepts

[“Modifying a server installation” on page 273](#)

You can modify an IBM MQ server installation interactively using the launchpad or non-interactively using `msiexec`.

### Related tasks

[“Installing the server using msiexec” on page 250](#)

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

[“Configuring an IBM MQ server” on page 265](#)

After installing IBM MQ server, you must configure the IBM MQ service before you can start any queue managers.

[“Uninstalling IBM MQ on Windows” on page 308](#)

You can uninstall the IBM MQ MQI clients and servers on Windows systems by using the control panel, the command line (`msiexec`), `MQParms`, or by using the installation media, in which case you can optionally remove queue managers as well.

## Installing the server using msiexec

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

### Before you begin

If you are running IBM MQ on Windows systems with User Account Control (UAC) enabled, you must invoke the installation with elevated privileges. If you are using the Command prompt or IBM MQ Explorer elevate privileges by using a right-click to start the program and selecting Run as administrator. If you try to run `msiexec` without using elevated privileges, the installation fails with an error of AMQ4353 in the installation log.

### About this task

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation. An interactive installation displays panels and ask questions.

The `msiexec` command uses parameters to give MSI some or all of the information that can also be specified through panels during an interactive installation. This means that a user can create a reusable automated or semi-automated installation configuration. Parameters can be given through the command line, a transform file, a response file, or a combination of the three.

## Procedure

To install using `msiexec`, at the command line, enter the **msiexec** command in the following format:

```
msiexec parameters [USEINI="response-file"] [TRANSFORMS="transform_file"]
```

Where:

### **parameters**

are either command-line parameters preceded by a / character, or property=value pairs (if using both forms of parameter always put the command-line parameters first). For further information, see [“Specifying command line parameters with msiexec” on page 251](#), which contains a link to the web site that lists all the command line parameters that are available.

For an unattended installation, you must include the /q or /qn parameter in the command line. Without this parameter, the installation is interactive.

**Note:** You must include the /i parameter and the file location of the IBM MQ installer package.

### **response-file**

is the full path and file name of the file that contains the [Response] stanza and the required property=value pairs, for example C:\MyResponseFile.ini. An example response file, Response.ini, is supplied with IBM MQ. This file contains default installation parameters. For further information, see [“Using a response file with msiexec” on page 253](#).

### **transform\_file**

is the full path and file name of a transform file. For further information, see [“Using transforms with msiexec for server installation” on page 257](#) and [“Choosing MSI Instance IDs for multiple server installations” on page 257](#).

**Note:** For a silent installation to succeed, the AGREETOLICENSE="yes" property must be defined either on the command line or in the response file.

## Results

After the command has been entered, the command prompt immediately reappears. IBM MQ is installing as a background process. If you have entered parameters to produce a log, check this file to see how the installation is progressing. If the installation completes successfully, you see the message Installation operation completed successfully in the log file.

## Specifying command line parameters with msiexec

### About this task

The **msiexec** command can accept two types of parameters on the command line, as follows:

- Standard command line parameters, preceded by a / character.

For a table of the **msiexec** command line parameters, see the [MSDN Command-Line Options web page](#).

- Property=value pair parameters on the command line. All the parameters available for use in a response file can be used on the command line, for a list of these, see [Table 34 on page 253](#). In addition there are some extra property=value pair parameters that are only for use on the command line, for details see [Table 33 on page 252](#).

When using the property=value pair parameters note that:

- Property strings must be in uppercase.
- Value strings are not case-sensitive, except for feature names. You can enclose value strings in double quotation marks. If a value string includes a blank, enclose the blank value string in double quotation marks.
- For a property that can take more than one value, use the format:

```
ADDLOCAL="Server,Client"
```

- For properties taking paths and filenames, for example PGMFOLDER, you must supply the paths as absolute paths and not relative; that is, C:\folder\file and not ".\folder\file".

When using property=value pair and command line parameters with the **msiexec** command, enter command line parameters first.

If a parameter is specified both on the command line and in a response file, the setting on the command line takes precedence.

### Example

Here is an example of a typical **msiexec** command. All parameters, separated by one or more spaces, must be typed on the same line as the **msiexec** call.

```
msiexec
/i "path\MSI\IBM MQ.msi"
/l*v c:\install.log
/q
TRANSFORMS="1033.mst"
AGREETOLICENSE="yes"
ADDLOCAL="Server"
```

Here is an example of a typical **msiexec** command when you are installing a second copy of IBM WebSphere MQ 7.5, or later. All parameters, separated by one or more spaces, must be typed on the same line as the **msiexec** call.

```
msiexec
/i "path\MSI\IBM MQ.msi"
/l*v c:\install.log
/q
TRANSFORMS=":InstanceId2.mst;1033.mst"
AGREETOLICENSE="yes"
ADDLOCAL="Server"
MSINewInstance=1
```

Where /l\*v c:\install.log writes installation log to file c:\install.log.

The following table shows the parameters which can only be provided on the command line and not in a response file.

Table 33. msiexec property=value parameters		
Property	Values	Meaning
USEINI	path \file_name	Use the specified response file. See <a href="#">“Using a response file with msiexec” on page 253</a>
SAVEINI	path \file_name	Generate a response file during installation. The file contains those parameters selected for this installation that a user might make during an interactive installation.
ONLYINI	1 yes  ""	1, yes or any value other than null. End the installation before updating the target system, but after generating a response file, if this is specified. "" . Continue the installation and update the target system (the default).
TRANSFORMS	:InstanceId x.mst  path \file_name   :InstanceId x.mst; path \file_name	The :InstanceId x.mst value is only required for a subsequent installation of IBM MQ. The path \file_name specifies what transform (.mst) files must be applied to the product. For example, "1033.mst" specifies the supplied U.S. English transform file.

Table 33. <i>msiexec</i> property=value parameters (continued)		
Property	Values	Meaning
MSINewInstanCE	1	This property is only required for subsequent installations of IBM MQ

## Using a response file with *msiexec*

### About this task

You can use the **msiexec** command with a parameter which specifies additional properties that are defined in a response file. You can combine the *msiexec* command-line parameters described in [“Specifying command line parameters with \*msiexec\*”](#) on page 251.

A response file is an ASCII text file, with a format like a Windows .ini file, that contains the stanza [Response]. The [Response] stanza contains some or all the parameters that would normally be specified as part of an interactive installation. The parameters are given in a property=value pair format. Any other stanzas in the response file are ignored by **msiexec**. An example response file, Response.ini, is supplied with IBM MQ. It contains the default installation parameters.

### Procedure

A typical example of an *msiexec* command is: `msiexec /i "path\MSI\IBM MQ.msi" /l*v c:\install.log TRANSFORMS= "1033.mst" USEINI= "C:\MQ\Responsefile"`

If a parameter is specified both on the command line and in a response file, the setting on the command line takes precedence. All the parameters available for use in a response file can also be used on the command line, for a list of these see [Table 34 on page 253](#).

In the response file, all text is in English, and comments begin with a ; character.

For information about creating a response file, see [“Creating a response file for server installation”](#) on page 258.

### Example

An example of a typical response file:

```
[Response]
PGMFOLDER="c:\mqm"
DATFOLDER="c:\mqm\data"
LOGFOLDER="c:\mqm\log"
AGREETOLICENSE="yes"
LAUNCHWIZ=""
WIZPARMFILE="d:\MQParms.ini"
ADDLOCAL="Server,Client"
REMOVE="Toolkit"
```

Table 34. Response file parameters		
Property	Values	Meaning
PGMFOLDER	<i>path</i>	Folder for the IBM MQ program files. For example, c:\mqm.
DATFOLDER	<i>path</i>	Folder for the IBM MQ data files. For example, c:\mqm\data.  <b>Note:</b> Multiple installations of IBM MQ all use the same <b>DATFOLDER</b> .

Table 34. Response file parameters (continued)

Property	Values	Meaning
LOGFOLDER	<i>path</i>	Folder for the IBM MQ queue manager log files. For example, c : \mqm\log.  <b>Note:</b> Multiple installations of IBM MQ all use the same <b>LOGFOLDER</b> .
USERCHOICE	0 no	If the command line or response file specifies parameters to install features, a dialog can be displayed to prompt the user to accept the preselected options, or review and possibly change them.  0 or no. Suppresses display of the dialog. Anything else. Dialog is displayed. Not used for a silent installation.
AGREETOLICENSE	yes	Accept the terms of the license. Set to yes before a silent installation.  If the installation is not silent, this parameter is ignored.
KEEPQMDATA	<b>keep</b>  delete	If the Server feature is to be uninstalled, whether to delete any existing queue managers. delete removes any existing queue managers. keep, or any other value, keeps them.  <b>Note:</b> This property is only valid on a final server uninstallation. Otherwise this property is ignored.
LAUNCHWIZ	0 1 yes no  ""	0 or no. Do not launch the Prepare IBM MQ wizard after IBM MQ is installed.  1 or yes. Launch the Prepare IBM MQ wizard if the Server feature is installed.  "". Launch the Prepare IBM MQ wizard to install the Server (the default).  If this option is to launch the Prepare IBM MQ wizard, you can specify the WIZPARMFILE, either in this file, or on the command line.  The Prepare IBM MQ wizard must be run to make your IBM MQ installation operational. If you choose not to launch it here, you must run it before using IBM MQ.
WIZPARMFILE	<i>path \file_name</i>	When specified, the file that contains the parameters to pass to the Prepare IBM MQ wizard when it is launched. These are in the [Services].

Table 34. Response file parameters (continued)

Property	Values	Meaning
ADDLOCAL	<i>feature, feature, All</i>   ""	<p>A comma-separated list of features to install locally. For a list of valid feature names, see <a href="#">“IBM MQ features for Windows systems” on page 231</a>.</p> <p>All installs all features</p> <p>"" installs the typical features. If you do not want a feature use REMOVE="feature"</p> <p><b>Note:</b> If this is a new installation the typical features <a href="#">“1” on page 256</a> are installed by default irrespective of the feature list provided in the <b>ADDLOCAL</b> property. If you do not want a feature use REMOVE="feature"</p>
REMOVE	<i>feature, feature,  All</i>   ""	<p>A comma-separated list of features to remove. For a list of valid feature names, see <a href="#">“IBM MQ features for Windows systems” on page 231</a>. <a href="#">“2” on page 256</a></p> <p>All uninstalls all features</p> <p>"" uninstalls no features (the default).</p>
STARTSERVICE	0 no  ""	<p>0 or no. Do not start the IBM MQ Service at the end of installation.</p> <p>"" (the default). Start the IBM MQ Service at the end of installation if it was running at the start, or if this is a new installation.</p> <p>Anything else. Start the Service at the end of the installation.</p> <p>Ignored if the server feature is not installed.</p> <p>If you do not start the IBM MQ Service, IBM MQ will not be operational and queue managers will not start. You must run the Prepare IBM MQ wizard for the service to be correctly configured.</p> <p>This parameter is only valid if LAUNCHWIZ is set to no.</p>
STARTTASKBAR	0 no  ""	<p>0 or no. Do not start the IBM MQ taskbar application at the end of installation.</p> <p>"" (the default). Start the IBM MQ taskbar application at the end of installation if it was running at the start, or if this is a new installation.</p> <p>Anything else. Start the taskbar application at the end of the installation.</p> <p>Ignored if the server feature is not installed.</p> <p>This parameter is only valid if LAUNCHWIZ is set to no.</p>


Table 34. Response file parameters (continued)

Property	Values	Meaning
INSTALLATIONDESC	"Description of installation"	Sets the installation description from the command line. Subject to the documented installation description length limitations
INSTALLATIONNAME	[INSTALLATION0,]Name	Sets the installation name from the command line. Subject to the documented installation name character and length limitations.  <b>Note:</b> Supply INSTALLATION0,Name only when upgrading from versions of the product before IBM WebSphere MQ 7.1.
MAKEPRIMARY	0 1  ""	Makes the installation primary, if possible, or removes the primary flag. 1 = Make primary, 0 = Make non-primary, - use default algorithm  <b>Note:</b> This option is ignored if a version of the product before IBM WebSphere MQ 7.1 is installed, or if another installation of IBM WebSphere MQ 7.1, or later, is present and set as the primary.

#### Notes:

1. The typical features include the following features:

- Server
- MQ Explorer
- Java and .NET Messaging and Web Services  Renamed to Extended Messaging APIs from IBM MQ 9.0.1
-  Web Administration
- Development Toolkit
-  Java Runtime Environment

2.  When specifying which features to remove with the **REMOVE** parameter:

- If you want to silently uninstall the Server feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying REMOVE="Web, Server".
- If you want to silently uninstall the Java Runtime Environment (JRE) feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying REMOVE="Web, JRE".

#### Related tasks

[“Choosing MSI Instance IDs for multiple server installations” on page 257](#)

For multiple silent installations, for each version that is installed you must find an MSI instance ID that is available to use for that installation.

[“Creating a response file for server installation” on page 258](#)

A response file is used with **msiexec**. You can create it in three ways.

[“Installing the server using the MQParms command” on page 259](#)

You can use the **MQParms** command to invoke installation or uninstallation of the IBM MQ server.

#### Related reference

[“Using transforms with msiexec for server installation” on page 257](#)



## Windows *Choosing MSI Instance IDs for multiple server installations*

For multiple silent installations, for each version that is installed you must find an MSI instance ID that is available to use for that installation.

### About this task

In order to support silent, or non-interactive, multiple installations, you need to find out whether the instance ID you want to use is already in use or not and choose the appropriate one. For each installation media (for example, each client and server), Instance ID 1 is the default ID which is used for single installations. If you want to install alongside Instance ID 1 you need to specify which instance you want to use. If you have already installed instance 1, 2, and 3 then you need to find out what the next available instance is, for instance, Instance ID 4. Similarly, if instance 2 has been removed, you need to find out that there is a gap that can be reused. You can find out which Instance ID is currently in use by using the **dspmqinst** command.

### Procedure

1. Type **dspmqinst** to find a free MSI Instance in the media being installed by reviewing the MSIMedia and MSIInstanceId values for the versions already installed. For example:

```
InstName: Installation1
InstDesc:
Identifier: 1
InstPath: C:\Program Files\IBM\MQ
Version: 9.0.0.0
Primary: Yes
State: Available
MSIProdCode: {74F6B169-7CE6-4EFB-8A03-2AA7B2DBB57C}
MSIMedia: 9.0 Server
MSIInstanceId: 1
```

2. If MSI Instance ID 1 is in use and you want to use MSI Instance ID 2, the following parameters must be added to the msiexec call:

```
MSINEWINSTANCE=1 TRANSFORMS=":instanceId7.mst;1033.mst"
```

### What to do next

For multiple installations, the **INSTALLATIONNAME** or **PGMFOLDER** must be supplied as an additional parameter on any non-interactive installation command. Supplying the **INSTALLATIONNAME** or **PGMFOLDER** ensures that you do not work with the wrong installation in case you omit or incorrectly specify the **TRANSFORMS** parameter.

## Windows *Using transforms with msiexec for server installation*

MSI can use transforms to modify an installation. During IBM MQ installation, transforms can be used to support different national languages. IBM MQ is supplied with transform files in the \MSI folder of the Server image. These files are also embedded in the IBM MQ Windows installer package, IBM MQ.msi.

On the **msiexec** command line, you can specify the required language by using the TRANSFORMS property in a property=value pair. For example:

```
TRANSFORMS="1033.mst"
```

You can also specify the full path and file name of the transform file. Again, the quotation marks surrounding the value are optional. For example:

```
TRANSFORMS="D:\Msi\1033.mst"
```

Table 35 on page 258 shows the locale identifier, language, and the transform file name to use in the **msiexec** command line.

You might need to merge transforms to install multiple installations of the same version, for example:

```
TRANSFORMS=":InstanceId2.mst;D:\Msi\1033.mst"
```

You can also specify the required language by using the MQLANGUAGE property with the **MQParms** command. For information about the msiexec property=value parameters, see [“MQParms parameter file - server installation”](#) on page 260.

## Parameters

*Table 35. Supplied transform files for various language support.* This table shows the supplied transform files, the resulting language, and the numeric value to use in the **msiexec** command line.

Language	Transform File name	Value
U.S. English	1033.mst	1033
German	1031.mst	1031
French	1036.mst	1036
Spanish	1034.mst	1034
Italian	1040.mst	1040
Brazilian Portuguese	1046.mst	1046
Japanese	1041.mst	1041
Korean	1042.mst	1042
Simplified Chinese	2052.mst	2052
Traditional Chinese	1028.mst	1028
Czech	1029.mst	1029
Russian	1049.mst	1049
Hungarian	1038.mst	1038
Polish	1045.mst	1045

## **Creating a response file for server installation**

A response file is used with **msiexec**. You can create it in three ways.

### About this task

A response file is used with the **msiexec** command. For further information, see [“Using a response file with msiexec”](#) on page 253.

## Procedure

There are three ways to create a response file for installation:

- Copy and edit the file `Response.ini` that is supplied on the IBM MQ Windows Server DVD, using an ASCII file editor.
- Create your own response file using an ASCII file editor.
- Use the **msiexec** command with the **SAVEINI** (and optionally, the **ONLYINI**) command line parameters to generate a response file that contains the same installation options. See [Table 33 on page 252](#).

## Example

A typical example of using **msiexec** with the **SAVEINI** parameter is here:

```
msiexec /i "path\IBM MQ.msi" /q SAVEINI="response_file"  
TRANSFORMS="1033.mst" AGREETOLICENSE="yes"
```

## Windows *Installing the server using the MQParms command*

You can use the **MQParms** command to invoke installation or uninstallation of the IBM MQ server.

## Before you begin

The **MQParms** command can use parameters on a command line, or those specified in a parameter file. The parameter file is an ASCII text file that contains the parameter values that you want to set for the installation. The **MQParms** command takes the specified parameters and generates the corresponding **msiexec** command line.

This means that you can save all the parameters that you want to use with the **msiexec** command in a single file.

If you are running IBM MQ on Windows systems with User Account Control (UAC) enabled, you must invoke the installation with elevated privileges. If you are using the Command prompt or IBM MQ Explorer elevate privileges by using a right-click to start the program and selecting **Run as administrator**. If you try to run the **MQParms** program without using elevated privileges, the installation fails with an error of AMQ4353 in the installation log.

For silent operations, this must include the **/q** or **/qn** parameter, either on the command line, or in the [MSI] stanza of the parameter file. You must also set the AGREETOLICENSE parameter to "yes".

You can specify many more parameters in the parameter file that you use with the **MQParms** command than you can in the response file that you use directly with the **msiexec** command. Also, as well as parameters that the IBM MQ installation uses, you can specify parameters that can be used by the Prepare IBM MQ wizard.

If you do not complete the **Prepare IBM MQ Wizard** directly after IBM MQ installations or if for any reason your machine is rebooted between completing IBM MQ installation and completing the **Prepare IBM MQ Wizard**, ensure that the wizard is run with Administrator privilege afterward, otherwise the installation is incomplete, and might fail. You might also see **Open File - Security Warning** dialog boxes that list International Business Machines Limited as the publisher. Click **Run** to allow the wizard to continue

An example of the file **MQParms.ini** is supplied with IBM MQ. This file contains default installation parameters.

There are two ways to create a parameter file for installation:

- Copy and edit the file **MQParms.ini** that is supplied with the product, using an ASCII file editor.
- Create your own parameter file using an ASCII file editor.

## About this task

To invoke installation using the **MQParms** command:

## Procedure

1. From a command line, change to the root folder of the IBM MQ Server DVD (that is, the location of the file **MQParms.exe**).
2. Enter the following command:

```
MQParms parameter_file parameters ]
```

where:

### ***parameter\_file***

is the file that contains the required parameter values. If this file is not in the same folder as MQParms.exe, specify the full path and file name. If you do not specify a parameter file, the default is MQParms.ini. For silent installation, the MQParms\_silent.ini parameter file can be used. For further details, see [“MQParms parameter file - server installation”](#) on page 260.

### ***parameters***

are one or more command-line parameters, for a list of these, see the [MSDN Command-Line Options web page](#).

## **Example**

A typical example of an **MQParms** command is:

```
MQParms "c:\MyParamsFile.ini" /l*v c:\install.log
```

A typical example of an **MQParms** command when you are installing a second copy of IBM MQ is:

```
MQParms "c:\MyParamsFile.ini" /l*v c:\install.log TRANSFORMS=":InstanceId2.mst;1033.mst"  
MSINEWINSTANCE=1
```

Alternatively, TRANSFORMS and MSINEWINSTANCE can be specified in the MSI stanza of the parameter file.

If you specify a parameter both on the command line and in the parameter file, the setting on the command line takes precedence.

If you specify a parameter file, you might want to run the encryption utility before you use the **MQParms** command (see [“Encrypting a parameter file”](#) on page 263 ).

If you do not specify /i, /x, /a, or /j, **MQParms** defaults to standard installation using the IBM MQ Windows Installer package, IBM MQ.msi. That is, it generates the following part of the command line:

```
/i " current_folder \MSI\IBM MQ.msi"
```

If you do not specify a WIZPARMFILE parameter, **MQParms** defaults to the current parameter file. That is, it generates the following part of the command:

```
WIZPARMFILE=" current_folder \ current_parameter_file "
```

## **MQParms parameter file - server installation**

A parameter file is an ASCII text file that contains sections (stanzas) with parameters that can be used by the **MQParms** command. Typically, this is an initialization file such as MQParms.ini.

The **MQParms** command takes parameters from the following stanzas in the file:

### **[MSI]**

Contains general properties related to how the **MQParms** command runs and to the installation of IBM MQ.

The properties that you can set in this stanza are listed in [“Installing the server using msixec”](#) on page 250, and [Table 36 on page 261](#).

### **[Services]**

Contains properties related to IBM MQ account configuration, in particular, the user account required for IBM MQ Services. If you are installing IBM MQ on a network where the domain controller is on a Windows 2003 server, you probably need details of a special domain account. For more information, see [“Configuring IBM MQ with the Prepare IBM MQ Wizard”](#) on page 265 and [“Creating and setting up Windows domain accounts for IBM MQ”](#) on page 269.

The properties that you can set in this stanza are listed in [Table 38 on page 262](#).

**MQParms** ignores any other stanzas in the file.

The stanza parameters are in the form `property=value`, where `property` is always interpreted as uppercase, but `value` is case sensitive. If a value string includes a blank, it must be enclosed in double quotation marks. Most other values can be enclosed in double quotation marks. Some properties can take more than one value, for example:

```
ADDLOCAL="Server,Client"
```

To clear a property, set its value to an empty string, for example:

```
REINSTALL=""
```

The following tables show the properties that you can set. The default is shown in bold.

For the [MSI] stanza, you can enter standard MSI command line options and properties. For example:

```
- /q
- ADDLOCAL="server"
- REBOOT=Suppress
```

Refer to [Table 36 on page 261](#), [Table 37 on page 262](#), and [Table 38 on page 262](#) for the properties used to install IBM MQ.

[Table 36 on page 261](#) shows additional properties in the stanza that affect how the `MQPARMS` command runs, but that do not affect the installation.

Table 36. Properties used by MQPARMS in the MSI stanza		
Property	Values	Description
MQPLOG	<i>path   file_name</i>	<b>MQPARMS</b> generates a text log file with the specified name and location.
MQPLANGUAGE	<b>system</b>  user  <i>transform_value</i>  existing	The installation language.  system. Install using the language of the default system locale (the default).  user. Install using the language of the default locale of the user.  <i>transform_value</i> . Install using the language specified by this value. See <a href="#">Table 37 on page 262</a> .  existing. If IBM MQ already exists on the system, the same language will be used by default, otherwise system is used.
MQPSMS	<b>0</b>  no	0 or no. <b>MQPARMS</b> does not wait for the <b>msiexec</b> command to end (the default).  Any other value. <b>MQPARMS</b> waits for the <b>msiexec</b> command to end.
MQPINUSE	<b>0</b>  1	If MQPINUSE is set to 1, <b>MQPARMS</b> continues installing even if IBM MQ files are in use. If this option is used a reboot will be required to complete the installation.

Table 37. Valid values for the MQPLANGUAGE property

Language	Valid values		
U.S. English	English	en_us	1033
German	German	de_de	1031
French	French	fr_fr	1036
Spanish	Spanish	es_es	1034
Italian	Italian	it_it	1040
Brazilian Portuguese	Brazilian Portuguese	pt_br	1046
Japanese	Japanese	ja_jp	1041
Korean	Korean	ko_kr	1042
Simplified Chinese	Simplified Chinese	zh_cn	2052
Traditional Chinese	Traditional Chinese	zh_tw	1028
Czech	Czech	cs_cz	1029
Russian	Russian	ru_ru	1049
Hungarian	Hungarian	hu_hu	1038
Polish	Polish	pl_pl	1045

For the [Services] stanza, you can enter parameters in property=value format. You might want to encrypt the values in this stanza. See [“Encrypting a parameter file”](#) on page 263.

Table 38. Properties used in the Services stanza

Property	Values	Description
USERTYPE	<b>local</b>   domain   onlydomain	<p>The type of user account to use:</p> <p><b>local</b> Creates a local user account.</p> <p><b>domain</b> Creates a local user account. If this does not have the required security authorities, it uses the domain user account specified by DOMAINNAME, USERNAME, and PASSWORD.</p> <p><b>onlydomain</b> Does not create a local user account, but immediately uses the domain user account specified by DOMAINNAME, USERNAME and PASSWORD. If any of these three properties are missing, a USERTYPE of local is assumed.</p> <p>The properties DOMAINNAME, USERNAME, and PASSWORD are required if USERTYPE is set to onlydomain.</p>
DOMAINNAME	<i>domain_name</i> <sup>1</sup>	<p>The domain for the domain user account.</p> <p>Required if USERTYPE is set to domain or onlydomain.</p>

Table 38. Properties used in the Services stanza (continued)

Property	Values	Description
USERNAME	<i>user_name</i> <sup>1</sup>	The user name for the domain user account. Required if USERTYPE is set to domain or onlydomain..
PASSWORD	<i>password</i> <sup>1</sup>	The password for the domain user account. Required if USERTYPE is set to domain or onlydomain.
1. Do not enclose this value in double quotation marks.		

A typical example of a parameter file is:

```
[MSI]
MQPLANGUAGE=1033
MQPLOG=%temp%\MQParms.log
MQPSMS=no
ADDLOCAL=Server
/m miffile
REMOVE=""
/l*v c:\install.log

[Services]
USERTYPE=domain
DOMAINNAME=mqm*df349edfcab12
USERNAME=mqm*a087ed4b9e9c
PASSWORD=mqm*d7eba3463bd0a3
```

## Windows *Encrypting a parameter file*

If the DOMAINNAME, USERNAME, and PASSWORD values in the [Services] stanza of a parameter file are not already encrypted, you can encrypt them by running the setmqipw utility.

### About this task

Use the setmqipw utility to encrypt the DOMAINNAME, USERNAME, and PASSWORD values in the [Services] stanza of a parameter file, if they are not already encrypted. (These values might be encrypted if you have run the utility before.) setmqipw will also encrypt the QMGRPASSWORD and CLIENTPASSWORD values in the [SSLMigration] stanza of a parameter file.

This encryption means that, if you need a special domain account to configure IBM MQ (see [“Configuring IBM MQ with the Prepare IBM MQ Wizard”](#) on page 265 and [“Creating and setting up Windows domain accounts for IBM MQ”](#) on page 269), or you need to keep key database passwords secret, details are kept secure. Otherwise, these values, including the domain account password, flow across the network as clear text. You do not have to use this utility, but it is useful if security in your network is an issue.

To run the script:

### Procedure

1. From a command line, change to the folder that contains your parameter file.
2. Enter the following command:

```
CD_drive:\setmqipw
```

**Note:** You can run the command from a different folder, by entering the following command, where *parameter\_file* is the full path and file name of the parameter file:

```
CD_drive:\setmqipw parameter_file
```

## Results

If you view the resulting parameter file, the encrypted values start with the string `mqm*`. Do not use this prefix for any other values; passwords or names that begin with this prefix are not supported.

The utility creates a log file, `setmqipw.log`, in the current directory. This file contains messages related to the encryption process. When encryption is successful, messages are similar to:

```
Encryption complete
Configuration file closed
Processing complete
```

## What to do next

After you encrypt the parameter file, you can use it in the normal way with the `MQPAIRMS` command (see [“Installing the server using the MQPAIRMS command” on page 259](#)).

### Windows

## Checking for problems after installing

There are some optional tasks that you can use to check the installation if you believe there was a problem, or to verify installation messages after an unattended (silent) installation for example.

## About this task

Use these steps as a guide to check the following files for messages:

## Procedure

1. `MSI nnnnnn.LOG`. This file is in your user Temp folder. It is an application log that contains English messages written during installation. The log includes a message indicating whether the installation was successful and complete.  
  
This file is created if you have set up default logging.
2. If you used the launchpad to install IBM MQ, check `MQv7_Install_YYYY-MM-DDTHH-MM-SS.log` in your user Temp folder, where:

### YYYY

This is the year that you installed IBM WebSphere MQ 7.0

### MM

This is the month that you installed IBM MQ, for example this would be 09 if you installed in September

### DD

This is the day that you installed IBM MQ

### HH-MM-SS

This is the time at which IBM MQ was installed

You can get to your user Temp directory by entering the following command at the command prompt:

```
cd %TEMP%
```

3. `amqmjpse.txt`. This file is in the IBM MQ data files folder (default `C:\ProgramData\IBM\MQ`). It is an application log that contains English messages written during installation by the Prepare IBM MQ wizard.

## What to do next

1. Verify your installation, as described in *Verifying your IBM MQ installation* for the platform, or platforms, that your enterprise use.



## **Configuring an IBM MQ server**

After installing IBM MQ server, you must configure the IBM MQ service before you can start any queue managers.

### **About this task**

When you install IBM MQ using the graphical user interface, you are guided through several screens that help you to apply the relevant options and settings. You use the Launchpad to check software requirements, specify network information, and then start the IBM MQ installation wizard and use it to install the software.

After the installation of IBM MQ completes, you can use the Prepare IBM MQ Wizard to configure IBM MQ before starting any queue managers. You can optionally use the Default Configuration wizard to create, view, or alter your default configuration.

The configuration described in this section is for an environment that uses TCP/IP. The configuration procedure is the same for environments that use other communications protocols (for example, SNA, SPX, or NetBIOS). However, not all of the functions and facilities of IBM MQ for Windows are available in these environments. The items that are not available are:

- IBM MQ Postcard
- IBM MQ Explorer

If you are setting up IBM MQ for use with the Microsoft Cluster Service (MSCS), see [Supporting the Microsoft Cluster Service \(MSCS\)](#) for more information.

## **Configuring IBM MQ with the Prepare IBM MQ Wizard**

The Prepare IBM MQ Wizard helps you to configure IBM MQ with a user account for your network. You must run the wizard to configure the IBM MQ Service before you can start any queue managers.

### **Before you begin**

When IBM MQ is running, it must check that only authorized users can access queue managers or queues. Whenever any user attempts such access, IBM MQ uses its own local account to query information about the user.

Most networked Windows systems are members of a Windows domain where user accounts, other security principals, and security groups are maintained and managed by a directory service, Active Directory, running on a number of domain controllers. IBM MQ checks that only authorized users can access queue managers or queues.

In such networks, IBM MQ queue manager processes access the Active Directory information to find the security group membership of any users attempting to use IBM MQ resources. The accounts under which IBM MQ services run must be authorized to look up such information from the directory. In most Windows domains, local accounts defined at individual Windows servers cannot access directory information, so the IBM MQ services must run under a domain account that has the appropriate permission.

If the Windows server is not a member of a Windows domain or the domain has a reduced security or functional level, then the IBM MQ services can run under a local account that was created during installation.

If a special domain account is needed for your installation of IBM MQ, the Prepare IBM MQ Wizard asks you to enter details of this account (domain, user name, and password), so make sure that you have this information available before you start this task. Ask your domain administrator to set up an account, if one does not already exist, and provide you with the necessary details. For more information about configuring a domain account, see [“Creating and setting up Windows domain accounts for IBM MQ” on page 269](#).

**Important:** If a domain account is needed and you install IBM MQ without a special account (or without entering its details), many or all parts of IBM MQ will not work, depending on the particular user accounts

involved. Also, IBM MQ connections to queue managers that run under domain accounts on other systems might fail. The account can be changed by running the Prepare IBM MQ Wizard and specifying the details of the account to be used.

For information about the user rights required to take advantage of the Active Directory support, see [Local and domain user accounts for the IBM MQ Windows service](#).

For information about the user rights required to take advantage of the Kerberos authentication support, see [Securing](#).

## About this task

The Prepare IBM MQ Wizard window is displayed when the IBM MQ installation completes. You can also start the wizard at any time by running **amqmjpse.exe** in the `.. \bin64` directory of the installation.

You can use the Prepare IBM MQ Wizard (AMQMJPSE.EXE) with the following parameters:

Table 39. Startup parameters that can be used for the Prepare IBM MQ Wizard			
Parameter Name	Parameter description	How parameter is used	Default action if parameter not supplied
-l <i>file</i>	Create log file	The Prepare IBM MQ Wizard appends to a log file with the program actions and results.  This parameter specifies the file name to use for this log. If the path is not provided, the IBM MQ Data directory is assumed. If the file name is not provided, <code>amqmjpse.txt</code> is assumed.	Append to log file <code>amqmjpse.txt</code> in IBM MQ Data directory.
-r	Reset MQSeriesService user account	When the Prepare IBM MQ Wizard is first run it creates a local user account <code>MUSR_MQADMIN</code> , with specific settings and permissions. The MQSeriesService component is configured to run under this account. Depending on the LAN configuration, the wizard might reconfigure the MQSeriesService component to run under a domain user account instead.  When this parameter is specified, the local user account <code>MUSR_MQADMIN</code> is re-created with all the default settings and permissions. The MQSeriesService component is configured to run under this account.	User account not reset.
-s	silent installation mode	Process silently. Nothing is displayed and there is no user input.	Not silent mode.

Table 39. Startup parameters that can be used for the Prepare IBM MQ Wizard (continued)

Parameter Name	Parameter description	How parameter is used	Default action if parameter not supplied
-p <i>file</i>	User parameters from file	Load and use parameters from the parameter file. If the path is not provided, the IBM MQ Data directory is assumed. If the file name is not provided, AMQMJPSE.INI is assumed.  The following stanzas are loaded:  [Services] [SSLMigration]	When in silent mode, the parameter file AMQMJPSE.INI is loaded from IBM MQ Data directory.  When not in silent mode, a parameter file is not used.
-m <i>file</i>	Generate a Microsoft System Management Server (SMS) status .MIF file.	When the Prepare IBM MQ Wizard closes, generate a status .MIF file with the specified name. If the path is not provided, the Data directory is assumed. If the file name is not provided, AMQMJPSE.MIF is assumed.  The file ISMIF32.DLL (installed as part of SMS) must be in the path.  The InstallStatus field in the file will contain either Success or Failed.	.MIF file not created.

On Windows systems, you must carry out this task under a Windows administrator account, or domain administrator account in case your workstation is a member of a Windows domain.

On Windows systems with User Account Control (UAC) enabled, if you do not complete the Prepare IBM MQ Wizard directly after IBM MQ is installed, or if for any reason your machine is rebooted between completing IBM MQ installation and completing the Prepare IBM MQ Wizard, you must accept the Windows prompt when it appears to allow the wizard to run as elevated.

## Procedure

1. When the IBM MQ installation completes, the Prepare IBM MQ Wizard window is displayed with a welcome message. You can start the wizard at any time by running **amqmjpse.exe** in the `.. \bin64` directory of the installation.

To continue, click **Next**.

2. If you have run the Prepare IBM MQ Wizard before, this step is skipped. If you have not run the Prepare IBM MQ Wizard before, the Prepare IBM MQ Wizard window displays a progress bar with the following message:

Status: Setting up IBM MQ Configuration

Wait until the progress bar completes.

3. The Prepare IBM MQ Wizard window displays a progress bar with the following message:

Status: Setting up the IBM MQ Service.

Wait until the progress bar completes.

4. IBM MQ attempts to detect whether you must configure IBM MQ for use with Windows Active Directory Server or Windows domain users. Depending on the results of the detection, IBM MQ does one of the following things:

- If IBM MQ detects that you need to configure IBM MQ for Windows Active Directory Server or Windows domain users, the Prepare IBM MQ Wizard window displays a message that starts:

IBM MQ does not have the authority to query information about your user account

Click **Next**, and go to step [5](#).

- If you are not installing on a Windows Active Directory Server or Windows domain server and IBM MQ cannot detect whether you need to configure IBM MQ for Windows Active Directory Server or Windows domain users, the Prepare IBM MQ Wizard window displays the following message:

Are any of the domain controllers in your network running Windows 2000 or later domain server?

If you select Yes, click **Next**, then go to step [5](#).

If you select No, click **Next**, then go to step [9](#).

If you select **Don't know**, you cannot continue. Select one of the other options, or click **Cancel** and contact your domain administrator.

- If IBM MQ detects that you do not need to configure IBM MQ for Windows Active Directory Server or Windows domain users, go to step [9](#).

5. The Prepare IBM MQ Wizard window displays the following message:

Do you need to configure IBM MQ for users defined on Windows 2000 or later domain controllers?

If you select Yes, click **Next**, then go to step [6](#).

If you select No, click **Next**, then go to step [9](#).

If you select Don't know, you cannot continue. Select one of the other options, or click **Cancel** and contact your domain administrator. For more information about domain accounts, see [“Creating and setting up Windows domain accounts for IBM MQ” on page 269](#).

6. Give the domain user that you obtained from your domain administrator the access to run as a service.

- a) Click **Start > Run...**, type the command **secpol.msc** and click **OK**.
- b) Open **Security Settings > Local Policies > User Rights Assignments**. In the list of policies, right-click **Log on as a service > Properties**.
- c) Click **Add User or Group...** and type the name of the user you obtained from your domain administrator, and click **Check Names**
- d) If prompted by a Windows Security window, type the user name and password of an account user or administrator with sufficient authority, and click **OK > Apply > OK**. Close the Local Security Policy window.

7. In the next window, enter the Domain and user ID of the domain user account that you obtained from your domain administrator. Either enter the Password for this account, or select the option **This account does not have a password**. Click **Next**.

8. The Prepare IBM MQ Wizard window displays a progress bar with the following message:

Status: Configuring IBM MQ with the special domain user account

Wait until the progress bar completes. If there are any problems with the domain user account, a further window is displayed. Follow the advice on this window before you continue with this procedure.

9. The Prepare IBM MQ Wizard window displays a progress bar with the following message:

Status: Starting IBM MQ services

Wait until the progress bar completes.

10. Next, select the options that you require.

The Prepare IBM MQ Wizard window displays the following message:

You have completed the Prepare IBM MQ Wizard

Select the options that you require, then click **Finish**. Select one or more from:

- **Remove the shortcut to this wizard from the desktop**

This option is available only if you have previously attempted installation, but you canceled the procedure from the Prepare IBM MQ Wizard and you created a desktop shortcut to this wizard. Select this option to remove the shortcut. You do not need it now that you have completed the Prepare IBM MQ wizard.

- **Launch IBM MQ Explorer**

The IBM MQ Explorer allows you to view and administer your IBM MQ network. You can use the items in the Welcome to IBM MQ Explorer **Content** view page to explore the facilities in IBM MQ. This page is launched the first time that the IBM MQ Explorer is launched. The Welcome page can be viewed at any time from the IBM MQ Explorer by clicking **IBM MQ** in the **Navigator** view.

- **Launch Notepad to view the release notes**

The release notes contain information about installing IBM MQ and also late-breaking news that is available after the published documentation is produced.

## What to do next

Optionally, follow the procedure described in [“Checking for problems after installing”](#) on page 264.

For information on how to verify an installation, see [“Verifying an IBM MQ installation on Windows”](#) on page 291.

### Related concepts

[User rights required for an IBM MQ Windows Service](#)

### **Creating and setting up Windows domain accounts for IBM MQ**

The following information is intended for Domain Administrators. Use this information to create and set up a special domain account for the IBM MQ service if IBM MQ is to be installed on a Windows domain where local accounts do not have the authority to query the group membership of the domain user accounts.

## About this task

When you add a local user to the mqm group, this allows that user to administer IBM MQ on the system. This task describes how to do the same using Windows domain user ids.

IBM MQ has a component, running as a Windows service under a local user account created by IBM MQ at installation, that checks that the account under which the IBM MQ services are run has the ability to query group memberships of domain accounts and has the authority to administer IBM MQ. Without the ability to query group memberships, the access checks made by the services fail.

Windows domain controllers running Windows Active Directory can be set up so that local accounts do not have the authority to query the group membership of the domain user accounts. This prevents IBM MQ from completing its checks, and access fails. If you are using Windows on a domain controller that has been set up in this way, a special domain user account with the required permissions must be used instead.

Each installation of IBM MQ on the network must be configured to run its service under a domain user account that has the required authority to check that users who are defined on the domains are authorized to access queue managers or queues. Typically, this special account has the IBM MQ administrator rights through membership of the domain group DOMAIN\Domain\mqm. The domain group is automatically nested by the installation program under the local mqm group of the system on which IBM MQ is being installed.

**Important:** The IBM MQ installer must be given the userid and password details of this special domain user account so that they can use this information to configure the IBM MQ service after the product is installed. If an installer continues and configures IBM MQ without a special account, many or all parts of IBM MQ will not work, depending upon the particular user accounts involved, as follows:

- IBM MQ connections to queue managers running under Windows domain accounts on other computers might fail.
- Typical errors include AMQ8066: Local mqm group not found and AMQ8079: Access was denied when attempting to retrieve group membership information for user 'abc@xyz'.

You must repeat steps “1” on page 270 and “8” on page 271 of the following procedure for each domain that has user names that will administer IBM MQ, to create an account for IBM MQ on each domain.

## Procedure

Create a domain group with a special name that is known to IBM MQ (see “4” on page 270) and give members of this group the authority to query the group membership of any account.

1. Log on to the domain controller as an account with domain administrator authority.
2. From the Start menu, open Active Directory Users and Computers.
3. Find the domain name in the navigation pane, right-click it and select **New Group**.
4. Type a group name into the **Group name** field.

**Note:** The preferred group name is `Domain\mqm`. Type it exactly as shown.

- Calling the group `Domain\mqm` modifies the behavior of the "Prepare IBM MQ" wizard on a domain workstation or server. It causes the "Prepare IBM MQ" wizard automatically to add the group `Domain\mqm` to the local mqm group on each new installation of IBM MQ in the domain.
  - You can install workstations or servers in a domain with no `Domain\mqm` global group. If you do so, you must define a group with the same properties as `Domain\mqm` group. You must make that group, or the users that are members of it, members of the local mqm group wherever IBM MQ is installed in a domain. You can place domain users into multiple groups. Create multiple domain groups, each group corresponding to a set of installations that you want to manage separately. Split domain users, according to the installations they manage, into different domain groups. Add each domain group or groups to the local mqm group of different IBM MQ installations. Only domain users in the domain groups that are members of a specific local mqm group can create, administer, and run queue managers for that installation.
  - The domain user that you nominate when installing IBM MQ on a workstation or server in a domain must be a member of the `Domain\mqm` group, or of an alternative group you defined with same properties as the `Domain\mqm` group.
5. Leave **Global** clicked as the **Group scope**, or change it to **Universal**. Leave **Security** clicked as the **Group type**. Click **OK**.
  6. Follow these steps to assign permissions to the group based on the Windows version of the domain controller:

On Windows Server 2012 and Windows Server 2012 R2:

- a. In the Server Manager, click **Tools** then select **Active Directory Users and Computers** from the list box.
- b. Select **View > Advanced Features**.
- c. Expand your domain name, then click **Users**.
- d. In the **Users** window, right-click **Domain\mqm > Properties**.
- e. On the **Security** tab, click **Advanced > Add...**
- f. Click **Select principle**, then type `Domain\mqm` and click **Check names > OK**.

The **Name** field is prefilled with the string `Domain\mqm (domain name\Domain\mqm)`.

- g. In the **Applies to** list, select **Descendant User Objects**.
- h. In the **Permissions** list, select the **Read group membership** and **Read groupMembershipSAM** check boxes.
- i. Click **OK > Apply > OK > OK**.

On Windows Server 2008 and Windows Server 2008 R2:

- a. In the Server Manager navigation tree, click **Users**.
- b. In the Server Manager action bar, click **View > Advanced features**.
- c. In the **Users** window, right-click **Domain mqm > Properties**.
- d. On the **Security** tab, click **Advanced > Add**, then type Domain mqm and click **Check names > OK**.

The **Name** field is prefilled with the string Domain mqm (*domain name\Domain mqm*)

- e. Click **Properties**. In the **Apply to** list, select **Descendant User Objects**.
- f. In the **Permissions** list, select the **Read group membership** and **Read groupMembershipSAM** check boxes.
- g. Click **OK > Apply > OK > OK**.

Create one or more accounts, and add them to the group.

7. Open **Active Directory Users and Computers**.
8. Create one or more user accounts with names of your choosing.

In the **Server Manager** navigation tree, right click **Users** to create a new user account.

9. Add each new account to the group Domain mqm or a group that is a member of the local mqm group.



**Attention:** You cannot use a user domain named mqm on Windows.

Create an account for IBM MQ on each domain.

10. Repeat step sections [“1” on page 270](#) and [“8” on page 271](#) for each domain that has user names that will administer IBM MQ.

Use the accounts to configure each installation of IBM MQ.

11. Either use the same domain user account (as created in Step [“1” on page 270](#) ) for each installation of IBM MQ, or create a separate account for each one, adding each to the Domain mqm group (or a group that is a member of the local mqm group).
12. When you have created the account or accounts, give one to each person configuring an installation of IBM MQ. They must enter the account details (domain name, user name, and password) into the Prepare IBM MQ wizard. Give them the account that exists on the same domain as their installing userid.
13. When you install IBM MQ on any system on the domain, the IBM MQ installation program detects the existence of the Domain mqm group on the LAN, and automatically adds it to the local mqm group. (The local mqm group is created during installation; all user accounts in it have authority to manage IBM MQ ). Thus all members of the "Domain mqm " group will have authority to manage IBM MQ on this system.
14. However, you do still need to provide a domain user account (as created in Step [“1” on page 270](#) ) for each installation, and configure IBM MQ to use it when making its queries. The account details must be entered into the Prepare IBM MQ wizard that runs automatically at the end of installation (the wizard can also be run at any time from the **start** menu).

Set the password expiry periods.

15. Choices:
  - If you use just one account for all users of IBM MQ, consider making the password of the account never expire, otherwise all instances of IBM MQ will stop working at the same time when the password expires.
  - If you give each user of IBM MQ their own user account you will have more user accounts to create and manage, but only one instance of IBM MQ will stop working at a time when the password expires.

If you set the password to expire, warn the users that they will see a message from IBM MQ each time it expires - the message warns that the password has expired, and describes how to reset it.

Use a Windows domain account as the user ID for the IBM MQ service.

16. Click **Start > Run...**



Type the command `secpol.msc` and click **OK**.

17. Open **Security Settings > Local Policies > User Rights Assignments**.

In the list of policies, right-click **Log on as a service > Properties**.

18. Click **Add User or Group...**

Type the name of the user you obtained from your domain administrator, then click **Check Names**.

19. If prompted by a Windows Security window, type the user name and password of an account user or administrator with sufficient authority, then click **OK > Apply > OK**.

Close the Local Security Policy window.

**Note:** User Account Control (UAC) is enabled by default. The UAC feature restricts the actions users can perform on certain operating system facilities, even if they are members of the Administrators group. You must take appropriate steps to overcome this restriction.

### **Using the Default Configuration wizard**

You can use the Default Configuration wizard to add the first configured queue manager to this system. This enables you to connect easily with other queue managers in the same IBM MQ cluster.

#### **About this task**

You can use the Default Configuration wizard to create, view, or alter your default configuration. You can also use this wizard to alter or display details of an existing queue manager that was created by the default configuration.

For a new installation of IBM MQ, creating a default configuration enables you to explore features of IBM MQ using the Postcard application, and the IBM MQ Explorer.

The Postcard application provides a fast and simple way to verify that your IBM MQ installation completed successfully. It uses the default queue manager that is created during the default configuration. If you want to use the Postcard application for verification, and you do not have any existing queue managers, run the Default Configuration wizard first.

If you have migrated existing queue managers, or created any queue managers since installing IBM MQ, you might not want to run the Default Configuration wizard. This is because you cannot create the default configuration if other queue managers already exist. If you have previously created any other queue managers on this system and you still want to set up a default configuration, you must delete them before you run the Default Configuration wizard.

Start the Default Configuration wizard by selecting **Create the Default Configuration** on the Welcome to IBM MQ Explorer **Content** view page.

### **Using the Welcome to IBM MQ Explorer Content view page**

The Welcome to IBM MQ Explorer **Content** view page points you to any relevant applications, documentation, tutorials, and education. This page is displayed the first time you launch IBM MQ Explorer.

You can use the items in the Welcome to IBM MQ Explorer **Content** view page to explore the facilities in IBM MQ. This page is launched the first time the IBM MQ Explorer is launched. The Welcome page can be viewed at any time from the IBM MQ Explorer by clicking **IBM MQ** in the **Navigator** view. There are links to the following subjects from this page:

#### **Create the Default Configuration**

Allows you to add a configured queue manager to this system for connecting easily with other queue managers in the same IBM MQ cluster. You can also use it to alter or display details of an existing queue manager created by the default configuration. This feature is available only using TCP/IP.

**Note:** If you migrated existing queue managers, or if you have created any queue managers after you installed IBM MQ, you might not want to use this facility. This is because you can only set up a default



configuration if there are no queue managers already, and you might not want to delete your existing queue managers.

## Launch Postcard

Allows you to try out IBM MQ messaging quickly and easily. You can send a message either to your own machine or to another named user's machine. It is described in detail in [“Verifying a server-to-server installation using the Postcard application on Windows”](#) on page 298.

### **Using the Help Center**

The Help Center gives you access to all task-oriented help, information on the IBM website, and a link to the IBM MQ product documentation.

The IBM MQ Help Center can be accessed from the IBM MQ Explorer by selecting **Help > Help Contents**.

### **Modifying a server installation**

You can modify an IBM MQ server installation interactively using the launchpad or non-interactively using `msiexec`.

#### **Related tasks**

[“Modifying a server installation using the Installation Launchpad”](#) on page 273

You can interactively remove or install IBM MQ features on Windows by using IBM MQ Installation Launchpad.

[“Modifying a server installation silently using msiexec”](#) on page 274

You can silently remove or install IBM MQ features on Windows by using **msiexec**.

### **Modifying a server installation using the Installation Launchpad**

You can interactively remove or install IBM MQ features on Windows by using IBM MQ Installation Launchpad.

## **Before you begin**

To modify an installation, some features of IBM MQ must already be installed.

## **About this task**

To remove or install IBM MQ features follow the instructions. This procedure is the only way to interactively remove or install IBM MQ features on Windows Server 2008:

## **Procedure**

1. Insert the IBM MQ for Windows Server DVD into the DVD drive.
2. If autorun is installed, the installation process starts.  
Otherwise, double-click the **Setup** icon in the root folder of the DVD to start the installation process.  
The **IBM MQ Installation Launchpad** window is displayed.
3. Click the **IBM MQ Installation** option.
4. Click **Launch IBM MQ Installer**. Wait until the IBM MQ Setup window is displayed with a welcome message.
5. If you have multiple installations on your system, you must choose the installation you want to modify. Do this by selecting the **Maintain or upgrade an existing instance** option and choosing the appropriate instance.  
If you are upgrading an IBM WebSphere MQ 7.0.1 installation (or earlier) to IBM WebSphere MQ 7.1.0, and you already have an IBM WebSphere MQ 7.1.0 or greater installation, you need to select

**Install a new instance.** A subsequent panel then allows you to choose the installation you would like to upgrade.

6. Click **Next** to continue. The Program Maintenance panel is displayed.
7. Select **Modify**, then click **Next**.

The Features panel is displayed.

8. Click the **+** symbol next to a feature to show any dependent features (subfeatures).
9. To change the installation of a feature:
  - a) Click the symbol next to the feature name to display a menu.
  - b) Select the required option from:
    - Install this feature
    - Install this feature and all its subfeatures (if any)
    - Do not install this feature (remove if already installed)

The symbol next to the feature name changes to show the current installation option.

10. Stop the web server before removing the web feature.

If you do not do this, you receive an error message.

11. When your selections are complete, click **Next**. IBM MQ installation begins.

## What to do next

After modifying the installation, you might need to run **setmqenv** again as described in *What to do next* in [“Installing IBM MQ server on Windows”](#) on page 248.

### Windows **Modifying a server installation silently using msiexec**

You can silently remove or install IBM MQ features on Windows by using **msiexec**.

## About this task

You can silently modify an installation by using the **msiexec** command with the **ADDLOCAL** and **REMOVE** parameters.

## Procedure

- To silently modify an installation using **msiexec**, set the **ADDLOCAL** parameter to include the features you want to add, and set the **REMOVE** parameter to the features you want to remove.

For example, if you use **ADDLOCAL="JavaMsg"** and **REMOVE=""** it modifies the installation to include the JavaMsg feature but does not remove any currently installed features.

```
msiexec /i {product code} /q ADDLOCAL="JavaMsg" REMOVE="" INSTALLATIONNAME="Installation1"
```

where *product\_code* is the value shown for MSIProdCode in the output of the following command:

```
dspmqinst -n installation_name
```

An example of a product code is {0730749B-080D-4A2E-B63D-85CF09AE0EF0}.

**V 9.0.1** For Continuous Delivery from IBM MQ 9.0.1, the JavaMsg feature is named Extended Messaging APIs. For Long Term Support, this feature is still named Java and .NET Messaging and Web Services.

**Important:** **V 9.0.2** When specifying which features to remove with the **REMOVE** parameter:

- If you want to silently uninstall the Server feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying **REMOVE="Web, Server"**.

- If you want to silently uninstall the Java Runtime Environment (JRE) feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying REMOVE="Web, JRE".

### Related tasks

[“Installing the server using msixec” on page 250](#)

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

[“Uninstalling IBM MQ using msixec” on page 311](#)

You can uninstall IBM MQ by running the **msiexec** command from the command line to remove all currently installed features.

## Windows Installing an IBM MQ client on Windows

This topic describes how to install IBM MQ client on Windows systems. This procedure can be used for installing a first or a subsequent installation.

### Before you begin

To install an IBM MQ client, you must be logged on to Windows as an administrator.

### About this task

Follow these instructions to perform an interactive compact, typical, or custom installation of IBM MQ. To view all the installation types and the features that are installed with each option consult [Features installed with each type of interactive installation](#).



**Attention:** From IBM MQ 9.0, if you are using **msiexec** to install the client, the installation is automatically set to be the primary installation.

### Procedure

1. Access the IBM MQ installation image. The location might be the mount point of the DVD, a network location, or a local file system directory.
2. Locate `setup.exe` in the Windows directory of the IBM MQ installation image.

- From a DVD, this location might be:

```
E:\Windows\setup.exe
```

- From a network location, this location might be:

```
m:\instmq\Windows\setup.exe
```

- From a local file system directory, this location might be:

```
C:\instmq\Windows\setup.exe
```

3. Double-click the **Setup** icon to start the installation process. It is possible to run either by:

- Running `setup.exe` from the command prompt. Or
- Double-clicking `setup.exe` from Windows Explorer.

If you are installing on a Windows system with UAC enabled, accept the Windows prompt to allow the launchpad to run as elevated. During installation, you might also see **Open File - Security Warning** dialog boxes that list International Business Machines Limited as the publisher. Click **Run** to allow the installation to continue.

The IBM MQ Installation window is displayed.

4. Continue to follow the instructions as shown on screen.

## Results

A new sample IBM MQ MQI client configuration file is created in the IBM MQ installation directory (for example C:\Program Files\IBM\MQ\, by the IBM MQ MQI client package, during installation, but only if this file does not exist. This file contains the ClientExitPath stanza. An example mqclient.ini file is shown in [Configuring a client using a configuration file](#).

### Note:

If you are using a common configuration file for multiple clients, either in the IBM MQ installation directory or in another location using the MQCLNTCF environment variable, you must grant read access to all user identifiers under which the IBM MQ client applications run. If the file cannot be read, the failure is traced and the search logic continues as if the file had not existed.

## What to do next

- If you have chosen this installation to be the primary installation on the system, when using setup.exe, you must now set it as the primary installation. Enter the following command at the command prompt:

```
MQ_INSTALLATION_PATH\bin\setmqinst -i -p MQ_INSTALLATION_PATH
```

You can have only one primary installation on a system. If there is already a primary installation on the system, you must unset it before you can set another installation as the primary installation. For more information, see [Changing the primary installation](#).

- You might want to set up the environment to work with this installation. You can use the **setmqenv** or **crtmqenv** command to set various environment variables for a particular installation of IBM MQ. For more information, see [setmqenv](#) and [crtmqenv](#).
- For instructions on how to verify your installation, see [“Testing communication between a client and a server on Windows” on page 307](#).

### Related concepts

[“Modifying a client installation using Add/Remove Programs” on page 287](#)

On some versions of Windows, you can modify an installation by using Add/Remove Programs.

### Related tasks

[“Installing a client using msixec” on page 276](#)

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

[“Installing a client using the MQParms command” on page 283](#)

You can use the **MQParms** command to invoke installation or uninstallation of an IBM MQ client.

[“Uninstalling IBM MQ on Windows” on page 308](#)

You can uninstall the IBM MQ MQI clients and servers on Windows systems by using the control panel, the command line (**msiexec**), **MQParms**, or by using the installation media, in which case you can optionally remove queue managers as well.

### Windows

## Installing a client using msiexec

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

## About this task

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation. An interactive installation displays panels and ask questions.

The **msiexec** command uses parameters to give MSI some or all of the information that can also be specified through panels during an interactive installation. This means that a user can create a reusable automated or semi-automated installation configuration. Parameters can be given through the command line, a transform file, a response file, or a combination of the three.

## Procedure

To install using msiexec, at the command line, enter the **msiexec** command in the following format:

```
msiexec parameters [USEINI="response-file"] [TRANSFORMS="transform_file"]
```

Where:

### **parameters**

are either command-line parameters preceded by a / character, or property=value pairs (if using both forms of parameter always put the command-line parameters first). For further information, see [“Specifying command line parameters with msiexec” on page 277](#).

For an unattended installation, you must include the /q or /qn parameter in the command line. Without this parameter, the installation is interactive.

**Note:** You must include the /i parameter and the file location of the IBM MQ installer package.

### **response-file**

is the full path and file name of the file that contains the [Response] stanza and the required property=value pairs, for example C:\MyResponseFile.ini. An example response file, Response.ini, is supplied with IBM MQ. This file contains default installation parameters. For further information, see [“Using a response file with msiexec” on page 279](#).

### **transform\_file**

is the full path and file name of a transform file. For further information, see [“Using transforms with msiexec for client installation” on page 282](#) and [“Choosing MSI Instance IDs for multiple server installations” on page 257](#).

**Note:** For a silent installation to succeed, the AGREETOLICENSE="yes" property must be defined either on the command line or in the response file.

## Results

After the command has been entered, the command prompt immediately reappears. IBM MQ is installing as a background process. If you have entered parameters to produce a log, check this file to see how the installation is progressing. If the installation completes successfully, you see the message `Installation operation completed successfully` in the log file.

## **Specifying command line parameters with msiexec**

### **About this task**

The **msiexec** command can accept two types of parameters on the command line, as follows:

- Standard command line parameters, preceded by a / character.  
For a table of the **msiexec** command line parameters, see the [MSDN Command-Line Options web page](#).
- Property=value pair parameters on the command line. All the parameters available for use in a response file can be used on the command line, for a list of these, see [Table 41 on page 279](#). In addition there are some extra property=value pair parameters that are only for use on the command line, for details see [Table 40 on page 278](#).

When using the property=value pair parameters note that:

- Property strings must be in uppercase.

- Value strings are not case-sensitive, except for feature names. You can enclose value strings in double quotation marks. If a value string includes a blank, enclose the blank value string in double quotation marks.
- For a property that can take more than one value, use the format:

```
ADDLOCAL="Server,Client"
```

- For properties taking paths and filenames, for example PGMFOLDER, you must supply the paths as absolute paths and not relative; that is, C:\folder\file and not .\folder\file.

When using property=value pair and command line parameters with the **msiexec** command, enter command line parameters first.

If a parameter is specified both on the command line and in a response file, the setting on the command line takes precedence.

## Example

A typical example of an **msiexec** command is:

```
msiexec /i "path\MSI\IBM MQ.msi" /l*v c:\install.log
/q TRANSFORMS="1033.mst" AGREETOLICENSE="yes" ADDLOCAL="Client"
```

A typical example of an **msiexec** command when you are installing a second copy of the IBM MQ product is:

```
msiexec /i "path\MSI\IBM MQ.msi" /l*v c:\install.log
/q TRANSFORMS=":InstanceId2.mst;1033.mst" AGREETOLICENSE="yes"
ADDLOCAL="Client" MSINewInstance=1
```

The following table shows the parameters which can only be provided on the command line and not in a response file.

Table 40. msiexec property=value parameters		
Property	Values	Meaning
USEINI	<i>path \ file_name</i>	Use the specified response file. See <a href="#">“Using a response file with msiexec” on page 279</a>
SAVEINI	<i>path \ file_name</i>	Generate a response file during installation. The file contains those parameters selected for this installation that a user might make during an interactive installation.
ONLYINI	1 yes  ""	1, yes or any value other than null. End the installation before updating the target system, but after generating a response file, if this is specified.  "". Continue the installation and update the target system (the default).
TRANSFORMS	:InstanceId x.mst  <i>path \ file_name</i>   :InstanceId x.mst; <i>path \ file_name</i>	The :InstanceId x.mst value is only required for a subsequent installation of IBM WebSphere MQ 7.1 or later. The <i>path \ file_name</i> specifies what transform (.mst) files must be applied to the product. For example, "1033.mst" specifies the supplied U.S. English transform file.

Table 40. <i>msiexec</i> property=value parameters (continued)		
Property	Values	Meaning
MSINewInstanCE	1	This property is only required for subsequent installations of IBM WebSphere MQ 7.1 or later.
REMOVEFEATURES	yes	Required with value "yes" for a silent installation, otherwise ignored. Allows obsolete features, no longer part of IBM MQ, to be deleted.

## Using a response file with *msiexec*

### About this task

You can use the **msiexec** command with a parameter which specifies additional properties are defined in a response file. You can combine the *msiexec* command-line parameters described in [“Specifying command line parameters with \*msiexec\*”](#) on page 277.

A response file is an ASCII text file, with a format like a Windows .ini file, that contains the stanza [Response]. The [Response] stanza contains some or all the parameters that would normally be specified as part of an interactive installation. The parameters are given in a property=value pair format. Any other stanzas in the response file are ignored by **msiexec**. An example response file, Response.ini, is supplied with IBM MQ. It contains the default installation parameters.

### Procedure

A typical example of an *msiexec* command is: `msiexec /i "path\MSI\IBM MQ.msi" /l*v c:\install.log TRANSFORMS="1033.mst" USEINI="C:\MQ\Responsefile"`

If a parameter is specified both on the command line and in a response file, the setting on the command line takes precedence. All the parameters available for use in a response file can also be used on the command line, for a list of these see [Table 41 on page 279](#).

In the response file, all text is in English, and comments begin with a ; character.

For information about creating a response file, see [“Creating a response file for server installation”](#) on page 258.

### Example

An example of a typical response file:

```
[Response]
PGMFOLDER="c:\mqm"
DATFOLDER="c:\mqm\data"
AGREETOLICENSE="yes"
ADDLOCAL="Client"
REMOVE="Toolkit"
```

Table 41. Response file parameters		
Property	Values	Meaning
PGMFOLDER	<i>path</i>	Folder for the IBM MQ program files. For example, c:\mqm.
DATFOLDER	<i>path</i>	Folder for the IBM MQ data files. For example, c:\mqm\data.

Table 41. Response file parameters (continued)

Property	Values	Meaning
USERCHOICE	0 no	<p>If the command line or response file specifies parameters to install features, a dialog can be displayed to prompt you to accept the preselected options, or review and possibly change them.</p> <p>0 or no. Suppresses display of the dialog.</p> <p>Anything else. Dialog is displayed and you can amend the options.</p> <p>Not used for a silent installation.</p>
AGREETOLICENSE	yes	<p>Accept the terms of the license. Set to yes before a silent installation.</p> <p>If the installation is not silent, this parameter is ignored.</p>
ADDLOCAL	<i>feature, feature, All</i>   ""	<p>A comma-separated list of features to install locally. For a list of valid feature names, see <a href="#">“IBM MQ features for Windows systems”</a> on page 231.</p> <p>All installs all features</p> <p>"" installs the typical features. If you do not want a feature use REMOVE="<i>feature</i>"</p> <p><b>Note:</b> If this is a new installation the typical features (Client, Java, .NET Messaging, and Development Toolkit) are installed by default irrespective of the feature list provided in the ADDLOCAL property. If you do not want a feature use REMOVE="<i>feature</i>"</p>
REMOVE	<i>feature, feature, All</i>   ""	<p>A comma-separated list of features to remove. For a list of valid feature names, see <a href="#">“IBM MQ features for Windows systems”</a> on page 231.</p> <p>All uninstalls all features</p> <p>"" uninstalls no features (the default).</p>
INSTALLATIONDESC	"Description of installation"	Sets the installation description from the command line. Subject to the documented installation description length limitations
INSTALLATIONNAME	[INSTALLATION0,]Name	<p>Sets the installation name from the command line. Subject to the documented installation name character and length limitations.</p> <p><b>Note:</b> Supply INSTALLATION0,Name only when upgrading from a release earlier than IBM WebSphere MQ 7.1.</p>



Table 41. Response file parameters (continued)

Property	Values	Meaning
MAKEPRIMARY	0 1  ""	Makes the installation primary, if possible, or removes the primary flag. 1 = Make primary, 0 = Make non-primary, - use default algorithm  <b>Note:</b> This option is ignored if a release earlier than IBM WebSphere MQ 7.1 is installed, or if another IBM WebSphere MQ 7.1 or later installation is present and set as the primary.

### Related tasks

[“Installing a client using the MQParms command” on page 283](#)

You can use the **MQParms** command to invoke installation or uninstallation of an IBM MQ client.

### Related reference

[“Using transforms with msixec for client installation” on page 282](#)

## Choosing MSI Instance IDs for multiple client installations

For multiple silent installations, for each version that is installed you must find an MSI instance ID that is available to use for that installation.

### About this task

In order to support silent, or non-interactive, multiple installations, you need to find out whether the instance ID you want to use is already in use or not and choose the appropriate one. For each installation media (for example, each client and server), Instance ID 1 is the default ID which is used for single installations. If you want to install alongside Instance ID 1 you need to specify which instance you want to use. If you have already installed instance 1, 2, and 3 then you need to find out what the next available instance is, for instance, Instance ID 4. Similarly, if instance 2 has been removed, you need to find out that there is a gap that can be reused. You can find out which Instance ID is currently in use by using the **dspmqinst** command.

### Procedure

1. Type **dspmqinst** to find a free MSI Instance in the media being installed by reviewing the MSIMedia and MSIInstanceId values for the versions already installed. For example:

```
InstName: Installation1
InstDesc:
Identifier: 1
InstPath: C:\Program Files\IBM\MQ
Version: 9.0.0.0
Primary: Yes
State: Available
MSIProdCode: {74F6B169-7CE6-4EFB-8A03-2AA7B2DBB57C}
MSIMedia: 9.0 Server
MSIInstanceId: 1
```

2. If MSI Instance ID 1 is in use and you want to use MSI Instance ID 2, the following parameters must be added to the msixec call:

```
MSINEWINSTANCE=1 TRANSFORMS=":instanceId7.mst;1033.mst"
```

### What to do next

For multiple installations, the **INSTALLATIONNAME** or **PGMFOLDER** must be supplied as an additional parameter on any non-interactive installation command. Supplying the **INSTALLATIONNAME** or **PGMFOLDER** ensures that you do not work with the wrong installation in case you omit or incorrectly specify the **TRANSFORMS** parameter.

MSI can use transforms to modify an installation. During IBM MQ installation, transforms can be used to support different national languages. IBM MQ is supplied with transform files in the \MSI folder of the client image. These files are also embedded in the IBM MQ Windows installer package, IBM MQ.msi.

On the **msiexec** command line, you can specify the required language by using the TRANSFORMS property in a property=value pair. For example:

```
TRANSFORMS="1033.mst"
```

You can also specify the full path and file name of the transform file. Again, the quotation marks surrounding the value are optional. For example:

```
TRANSFORMS="D:\Msi\1033.mst"
```

Table 42 on page 282 shows the locale identifier, language, and the transform file name to use in the **msiexec** command line.

You might need to merge transforms to install multiple installations of the same version, for example:

```
TRANSFORMS=":InstanceId2.mst;D:\Msi\1033.mst"
```

You can also specify the required language by using the MQLANGUAGE property with the **MQParms** command. For information about the msiexec property=value parameters, see [“MQParms parameter file - client installation”](#) on page 284.

## Parameters

*Table 42. Supplied transform files for various language support.* This table shows the supplied transform files, the resulting language, and the numeric value to use in the **msiexec** command line.

Language	Transform File name	Value
U.S. English	1033.mst	1033
German	1031.mst	1031
French	1036.mst	1036
Spanish	1034.mst	1034
Italian	1040.mst	1040
Brazilian Portuguese	1046.mst	1046
Japanese	1041.mst	1041
Korean	1042.mst	1042
Simplified Chinese	2052.mst	2052
Traditional Chinese	1028.mst	1028
Czech	1029.mst	1029
Russian	1049.mst	1049
Hungarian	1038.mst	1038
Polish	1045.mst	1045

A response file is used with **msiexec** on a client. You can create it in three ways.

### About this task

A response file is used with the **msiexec** command. For further information, see [“Using a response file with msiexec”](#) on page 253.

### Procedure

There are three ways to create a response file for installation:

- Copy and edit the file `Response.ini` that is supplied on the IBM MQ Windows Server DVD, using an ASCII file editor.
- Create your own response file using an ASCII file editor.
- Use the **msiexec** command with the **SAVEINI** (and optionally, the **ONLYINI**) command line parameters to generate a response file that contains the same installation options. See [Table 33](#) on page 252.

### Example

A typical example of using **msiexec** with the **SAVEINI** parameter is here:

```
msiexec /i "path\IBM MQ.msi" /q SAVEINI="response_file"  
TRANSFORMS="1033.mst" AGREETOLICENSE="yes"
```

You can use the **MQParms** command to invoke installation or uninstallation of an IBM MQ client.

### Before you begin

The **MQParms** command can use parameters on a command line, or those specified in a parameter file. The parameter file is an ASCII text file that contains the parameter values that you want to set for the installation. The **MQParms** command takes the specified parameters and generates the corresponding **msiexec** command line.

This means that you can save all the parameters that you want to use with the **msiexec** command in a single file.

If you are running IBM MQ on Windows systems with User Account Control (UAC) enabled, you must invoke the installation with elevated privileges. If you are using the Command prompt or IBM MQ Explorer elevate privileges by using a right-click to start the program and selecting **Run as administrator**. If you try to run the **MQParms** program without using elevated privileges, the installation fails with an error of AMQ4353 in the installation log.

For silent operations, this must include the **/q** or **/qn** parameter, either on the command line, or in the [MSI] stanza of the parameter file. You must also set the **AGREETOLICENSE** parameter to "yes".

You can specify many more parameters in the parameter file that you use with the **MQParms** command than you can in the response file that you use directly with the **msiexec** command. Also, as well as parameters that the IBM MQ installation uses, you can specify parameters that can be used by the Prepare IBM MQ wizard.

If you do not complete the **Prepare IBM MQ Wizard** directly after IBM MQ installations or if for any reason your machine is rebooted between completing IBM MQ installation and completing the **Prepare IBM MQ Wizard**, ensure that the wizard is run with Administrator privilege afterward, otherwise the installation is incomplete, and might fail. You might also see **Open File - Security Warning** dialog boxes that list International Business Machines Limited as the publisher. Click **Run** to allow the wizard to continue

An example of the file `MQParms.ini` is supplied with IBM MQ. This file contains default installation parameters.

There are two ways to create a parameter file for installation:

- Copy and edit the file `MQParms.ini` that is supplied with the product, using an ASCII file editor.
- Create your own parameter file using an ASCII file editor.

## About this task

To invoke installation using the `MQParms` command:

## Procedure

1. From a command line, change to the root folder of the IBM MQ client CD (that is, the location of the file `MQParms.exe`).
2. Enter the following command:

```
MQParms [ parameter_file ] [ parameters ]
```

where:

### ***parameter\_file***

is the file that contains the required parameter values. If this file is not in the same folder as `MQParms.exe`, specify the full path and file name. If you do not specify a parameter file, the default is `MQParms.ini`. For further details, see [“MQParms parameter file - client installation” on page 284](#).

### ***parameters***

are one or more command-line parameters, for a list of these, see the [MSDN Command-Line Options web page](#).

## Example

A typical example of an `MQParms` command is:

```
MQParms "c:\MyParamsFile.ini" /l*v c:\install.log
```

If you specify a parameter both on the command line and in the parameter file, the setting on the command line takes precedence.

If you do not specify `/i`, `/x`, `/a`, or `/j`, `MQParms` defaults to standard installation using the IBM MQ Windows Installer package, `IBM MQ.msi`. That is, it generates the following part of the command line:

```
/i " current_folder \MSI\IBM MQ.msi"
```

## **MQParms parameter file - client installation**

A parameter file is an ASCII text file that contains sections (stanzas) with parameters that can be used by the **MQParms** command. Typically, this is an initialization file such as `MQParms.ini`.

The **MQParms** command takes parameters from the following stanzas in the file:

### **[MSI]**

Contains general properties related to how the **MQParms** command runs and to the installation of IBM MQ.

The properties that you can set in this stanza are listed in [“Installing a client using msixec” on page 276](#), and [Table 43 on page 285](#).

`MQParms` ignores any other stanzas in the file.

The stanza parameters are in the form `property=value`, where `property` is always interpreted as uppercase, but `value` is case sensitive. If a value string includes a blank, it must be enclosed in double quotation marks. Most other values can be enclosed in double quotation marks. Some properties can take more than one value, for example:

```
ADDLOCAL="Server,Client"
```

To clear a property, set its value to an empty string, for example:

```
REINSTALL=""
```

The following tables show the properties that you can set. The default is shown in bold.

For the [MSI] stanza, you can enter standard MSI command line options and properties. For example:

```
- /q  
- ADDLOCAL="client"  
- REBOOT=Suppress
```

Refer to [Table 43 on page 285](#), and [Table 44 on page 285](#) for the properties used to install IBM MQ.

[Table 43 on page 285](#) shows additional properties in the stanza that affect how the MQParms command runs, but that do not affect the installation.

Table 43. Properties used by MQParms in the MSI stanza		
Property	Values	Description
MQPLOG	<i>path</i>   <i>file_name</i>	<b>MQParms</b> generates a text log file with the specified name and location.
MQPLANGUAGE	<b>system</b>   <i>user</i>   <i>transform_value</i>   existing	The installation language.  system. Install using the language of the default system locale (the default).  user. Install using the language of the default locale of the user.  <i>transform_value</i> . Install using the language specified by this value. See <a href="#">Table 44 on page 285</a> .  existing. If MQ already exists on the system, the same language will be used by default, otherwise system is used.
MQPSMS	<b>0</b>   no	0 or no. <b>MQParms</b> does not wait for the msiexec command to end (the default).  Any other value. <b>MQParms</b> waits for the msiexec command to end.
MQPINUSE	<b>0</b>   1	If MQPINUSE is set to 1, <b>MQParms</b> continues installing even if IBM MQ files are in use. If this option is used a reboot will be required to complete the installation.

Table 44. Valid values for the MQPLANGUAGE property			
Language	Valid values		
U.S. English	English	en_us	1033
German	German	de_de	1031
French	French	fr_fr	1036
Spanish	Spanish	es_es	1034

Table 44. Valid values for the MQPLANGUAGE property (continued)

Language	Valid values		
Italian	Italian	it_it	1040
Brazilian Portuguese		pt_br	1046
Japanese	Japanese	ja_jp	1041
Korean	Korean	ko_kr	1042
Simplified Chinese		zh_cn	2052
Traditional Chinese		zh_tw	1028
Czech	Czech	cs_cz	1029
Russian	Russian	ru_ru	1049
Hungarian	Hungarian	hu_hu	1038
Polish	Polish	pl_pl	1045

A typical example of a parameter file is:

```
[MSI]
MQPLANGUAGE=1033
MQPLOG=%temp%\MQParms.log
MQPSMS=no
ADDLOCAL=CLIENT
/m mifile
REMOVE=""
/l*v c:\install.log
```

## Windows Modifying a client installation on Windows

You modify the installation when an IBM MQ for Windows client is installed and you want to remove or install some IBM MQ client features.

1. Insert the IBM MQ client DVD into the DVD drive.
2. If autorun is installed, the installation process starts.  
Otherwise, double-click **Setup** in the root folder of the DVD to start the installation process.  
The IBM MQ client Setup window is displayed. Click **Next** to continue.
3. Select **Modify**, then click **Next**.  
The Features panel is displayed.
4. To change the installation of a feature:
  - a. Click the symbol next to the feature name to display a menu.
  - b. Select the required option from:
    - Install this feature
    - Install this feature and all its subfeatures (if any)
    - Do not install this feature (remove if already installed).

The symbol next to the feature name changes to show the current installation option.
5. When your selections are complete, click **Next**.
6. The IBM MQ client Setup window displays a summary of the installation you selected.  
To continue, click **Modify**.

7. Wait until the progress bar is complete.

When the IBM MQ client is successfully installed, the IBM MQ client Setup window displays the following message:

Installation Wizard Completed Successfully

Click **Finish** to close the window.

### **Modifying a client installation using Add/Remove Programs**

On some versions of Windows, you can modify an installation by using Add/Remove Programs.

For Windows 7 follow these steps.

1. From the Windows taskbar, select **Start > Control Panel**.
2. Select **Add/Remove Programs**.
3. Select **IBM MQ**.
4. Select **Change**.

The IBM MQ Setup window with the Program Maintenance panel is displayed. Follow the procedure for modifying the installation by using the process from step [“3”](#) on page 286 to the end.

For Windows 8, the **Add/Remove Programs** option uninstalls the whole product.

You need to run the `setup.exe` file from the original installation media to make any modifications to the installation.

### **Modifying a client installation silently using msixexec**

You can use `msiexec` to modify an IBM MQ client installation.

To silently modify an IBM MQ client installation using `msiexec`, follow the instructions on the installation pages, but set the `ADDLOCAL` parameter to include the features you want to add, and set the `REMOVE` parameter to the features you want to remove.

For example if you used `ADDLOCAL="JavaMsg"` and `REMOVE=""` it would modify the installation to include the Java Messaging and Web Services feature.

The instructions for `msiexec` begin here: [“Installing a client using msiexec”](#) on page 276

### **Modifying a client installation silently using MQParms**

You can use the `MQParms` command to modify an IBM MQ client installation.

To silently modify an IBM MQ client installation using `MQParms`, follow the instructions on the installation pages, but set the `ADDLOCAL` parameter to include the features you want to add, and set the `REMOVE` parameter to the features you want to remove.

For example if you used `ADDLOCAL="JavaMsg"` and `REMOVE=""` it would modify the installation to include the Java Messaging and Web Services feature.

For details of the `MQParms` command, see [“Installing a client using the MQParms command”](#) on page 283.

## **Converting a trial license on Windows**

Convert a trial license to a full license without reinstalling IBM MQ.

When the trial license expires, the "count-down" displayed by the `strmqm` command informs you the license has expired, and the command does not run.

### **Before you begin**

1. IBM MQ is installed with a trial license.

2. You have access to the installation media of a fully licensed copy of IBM MQ.

## About this task

Run the **setmqprd** command to convert a trial license to a full license.

If you do not want to apply a full license to your trial copy of IBM MQ, you can uninstall it at any time.

## Procedure

1. Obtain the full license from the fully licensed installation media.

The full license file is `amqpcert.lic`. On Windows it is in the `\MediaRoot\licenses` directory on the installation media. It is installed into the `bin` directory on the IBM MQ installation path.

2. Run the **setmqprd** command from the installation that you are upgrading:

```
MQ_INSTALLATION_PATH\bin\setmqprd \MediaRoot\licenses\amqpcert.lic
```

## Related reference

[setmqprd](#)

## Displaying messages in your national language on Windows systems

To display messages from a different national language message catalog, you must either set the **MQS\_FORCE\_NTLANGID** environment variable, or change a regional setting.

## About this task

Messages in U.S. English are automatically installed with IBM MQ

Messages in the national languages that IBM MQ supports are automatically installed. Messages are displayed in the national language, based on the following order:

1. The value of the **MQS\_FORCE\_NTLANGID** environment variable, if set.
2. The regional format of the user that is displaying the message, if the language specified by the regional format is supported by IBM MQ.
3. The Administrative system locale if the language specified by the system locale is supported by IBM MQ.
4. US English, if no other supported language can be determined.

**Note:** The queue manager is usually launched by a service on the machine, and hence is running under its own user account (for example `MUSR_MQADMIN`) or a specific domain account provided during install time. See [Local and domain user accounts for the IBM MQ Windows service](#) for more information.

If you require messages in a language other than the one associated with the regional format of a user account, perform the following steps:

## Procedure

1. Globally set the **MQS\_FORCE\_NTLANGID** environment variable, to the language identifier of the desired language, for messages displayed by the queue manager.

You should set the **MQS\_FORCE\_NTLANGID** system wide. Otherwise, every user displaying messages needs to have the environment variable set individually.

The language identifier values, represented in hexadecimal notation, are listed in the following Microsoft document: [Language Identifier Constants and Strings](#)

2. Reboot machines where queue managers are running as a service, for the environment variable to take effect.





## **Redistributable clients on Windows**




The Windows 64-bit image is shipped in a `Win64.zip` file.


### **File names**


The archive or .zip file names describe the file contents and equivalent maintenance levels.

 For example, for Continuous Delivery, in IBM MQ 9.0.4 the client images are available under the following file names:

 **Windows**  
9.0.4.0-IBM-MQC-Redist-Win64.zip

   **Java**  
9.0.4.0-IBM-MQC-Redist-Java.zip

 For Long Term Support, in IBM MQ 9.0.0 Fix Pack 2 the client images are available under the following file names:

 **Windows**  
9.0.0.2-IBM-MQC-Redist-Win64.zip

**Java**  
9.0.0.2-IBM-MQC-Redist-Java.zip

### **Choosing the runtime files to distribute with an application**

A script file named **genmqpkg** is provided by the redistributable client under the `bin` directory.

You can use the **genmqpkg** script to generate a smaller subset of files that are tailored to the needs of the application, for which the files are intended to be distributed.

You are asked a series of interactive Yes or No questions to determine the runtime requirements for an IBM MQ application.

Finally, **genmqpkg** asks you to supply a new target directory, where the script duplicates the required directories and files.

**Important:** IBM support is only able to provide assistance with the full, unmodified set of files contained within the redistributable client packages.

### **Other considerations**

The default data path of a non-installed client on Windows is `%HOMEDRIVE%%HOMEPATH%\IBM\MQ\data`.

You can change the default directory of the data path, by using the `MQ_OVERRIDE_DATA_PATH` environment variable.

**Note:** You must create the directory first, as the directory is not created automatically.

A redistributable client runtime co-exists with a full IBM MQ client or server installation, provided that they are installed in different locations.

**Important:** Unpacking a redistributable image into the same location as a full IBM MQ installation is not supported.

### **Classpath changes**

The classpath used by **dspmqver**, **setmqenv**, and **crtmqenv** commands, add the `com.ibm.mq.allclient.jar` to the environment, immediately following the `com.ibm.mq.jar` and `com.ibm.mqjms.jar`.

An example of **dspmqver** output from the redistributable client on Windows:

```
Name:      IBM MQ
Version:   8.0.0.4
Level:     p800-804-L150909
BuildType: IKAP - (Production)
Platform:  IBM MQ for Windows (x64 platform)
Mode:      64-bit
O/S:       Windows 7 Professional x64 Edition, Build 7601: SP1
InstName:  MQNI08000004
InstDesc:  IBM MQ 8.0.0.4 (Redistributable)
Primary:   No
InstPath:  C:\Users\johndoe\Desktop\Redist
DataPath:  C:\Users\johndoe\IBM\MQ\data
MaxCmdLevel: 802
```

## Related concepts

[“Redistributable clients” on page 23](#)

The IBM MQ redistributable client is a collection of runtime files that are provided in a .zip or .tar file that can be redistributed to third parties under redistributable license terms, which provides a simple way of distributing applications and the runtime files that they require in a single package.

## .NET application runtime - Windows only

Considerations when using the .NET application.

The runtime DLL files laid down in the *redistributable* images on Windows for .NET applications are normally registered with the global assembly cache (GAC) by a user with system administrator privileges, when installing the primary installation. However, this severely limits the benefits of redistribution.

The *redistributable* package on the Windows platform does not provide any tooling to register DLLs with the GAC, so .NET applications have to locate the appropriate assemblies by other means. There are two options that work in this situation.

## Probing

After checking the GAC, the .NET runtime attempts to locate required assemblies through probing. The first location checked is the application base, which is the root location where the application is being run. See the information on *How the Runtime Locates Assemblies* on the Microsoft Web site for more information.

Note that when using this approach, the maintenance level of the assemblies used when building the .NET application must match those used at runtime - for example an application built at IBM MQ 8.0.0 Fix Pack 4 must be run with the IBM MQ 8.0.0 Fix Pack 4 redistributable client runtime.

Using this approach, a .NET application placed in the \bin directory alongside the IBM MQ assemblies picks up assemblies from a primary IBM MQ installation (if one exists), falling back to the redistributable copies.

1. Compile the .NET application under a full IBM MQ installation, that is `csc \t:exe \r:System.dll \r:amqmdnet.dll \lib: \out:nmqwrl.exe nmqwrl.cs`.
2. Copy the exe file in the redistributable client zip file into the \bin directory.

## DEVPATH environment variable

An alternative, that allows your application to be built, distributed, extracted and run as previously, is to use DEVPATH to locate the required assemblies. Unlike with the probing approach, this option overrides any matching assemblies from the GAC. However it is for this reason that Microsoft discourages its use in a production environment.

This approach can be effective where there is a possibility that a full IBM MQ installation is installed on the client. However, there is a good reason to always use the redistributable assemblies.

1. Compile the .NET application under a full IBM MQ installation, that is `csc \t:exe \r:System.dll \r:amqmdnet.dll \lib: \out:nmqwrl.exe nmqwrl.cs`

2. Copy the .exe file into, or alongside, the redistributable client zip file.
3. In the same directory as the .exe file, create an application configuration file with the name of the .exe file suffixed by .config, that is nmqwrld.exe.config with the following contents:

```
<configuration>
  <runtime>
    <developmentMode developerInstallation="true"/>
  </runtime>
</configuration>
```

4. Call **setmqenv -s** and set the *DEVPATH* environment variable to specify the \bin directory from the redistributable image before running the application, that is:

```
set DEVPATH=%MQ_INSTALLATION_PATH%\bin
```

## Starting and stopping trace for the .NET redistributable managed client

You generate trace for the .NET redistributable managed client in the same way as for the stand-alone .NET client. For more information, see [Using the stand-alone IBM MQ .NET client](#).

## More information on .NET

For more information on .NET, see [Writing and deploying IBM MQ .NET programs](#).

### Related concepts

[“Redistributable clients” on page 23](#)

The IBM MQ redistributable client is a collection of runtime files that are provided in a .zip or .tar file that can be redistributed to third parties under redistributable license terms, which provides a simple way of distributing applications and the runtime files that they require in a single package.

## Windows

## Verifying an IBM MQ installation on Windows

The topics in this section provide instructions on how to verify a server or a client installation of IBM MQ on Windows systems.

### About this task

You can verify a local (stand-alone) server installation or a server-to-server installation of the IBM MQ server:

- A local server installation has no communication links with other IBM MQ installations.
- A server-to-server installation does have links to other installations.

You can also verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

### Procedure

- To verify a local server installation, see [“Verifying a local server installation on Windows” on page 292](#).
- To verify a server-to-server installation, see [“Verifying a server-to-server installation on Windows” on page 295](#).
- To verify a client installation, see [“Verifying a client installation on Windows” on page 301](#).

## Verifying a local server installation on Windows

You can use either the command line or the postcard application to verify a local (stand-alone) installation on Windows.

### About this task

You can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### Procedure

- To use the command line to verify an installation, see [“Verifying a local server installation using the command line on Windows”](#) on page 292.
- To use the postcard application to verify an installation, see [“Verifying a local server installation using the Postcard application on Windows”](#) on page 293.

## Verifying a local server installation using the command line on Windows

On Windows systems, you can verify a local installation by using the command line to create a simple configuration of one queue manager and one queue. You can also verify an installation using the postcard application.

### Before you begin

To verify the installation, you must first install the samples package.

Before beginning the verification procedure, you might want to check that you have the latest fixes for your system. For more information about where to find the latest updates, see [“Checking requirements on Windows”](#) on page 240.

### About this task

Use the following steps to configure your default queue manager from the command line. After the queue manager is configured, use the `amqsput` sample program to put a message on the queue. You then use the `amqsget` sample program to get the message back from the queue.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### Procedure

1. Set up your environment:

- a) Set up environment variables for use with a particular installation by entering the following command:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- b) Check that the environment is set up correctly by entering the following command:

```
dspmqr
```

If the command completes successfully, and the expected version number and installation name are returned, the environment is set up correctly.

2. Create a queue manager called QMA by entering the following command:

```
crtmqm QMA
```

Messages indicate when the queue manager is created, and when the default IBM MQ objects are created.

3. Start the queue manager by entering the following command:

```
strmqm QMA
```

A message indicates when the queue manager starts.

4. Start MQSC by entering the following command:

```
runmqsc QMA
```

A message indicates when MQSC starts. MQSC has no command prompt.

5. Define a local queue called QUEUE1 by entering the following command:

```
DEFINE QLOCAL (QUEUE1)
```

A message indicates when the queue is created.

6. Stop MQSC by entering the following command:

```
end
```

Messages are shown, followed by the command prompt.

**Note:** Subsequent steps require that the samples package is installed.

7. Put a message on the queue by entering the following command:

```
amqsput QUEUE1 QMA
```

The following messages are shown:

```
Sample AMQSPUT0 start  
target queue is QUEUE1
```

8. Type some message text on one or more lines, where each line is a different message. Enter a blank line to end the message input.

The following message is shown:

```
Sample AMQSPUT0 end
```

Your messages are now on the queue and the command prompt is shown.

9. Get the messages from the queue, by entering the following command:

```
amqsget QUEUE1 QMA
```

The sample program starts, and your messages are displayed.

## Results

You have successfully verified your local installation.

## **Verifying a local server installation using the Postcard application on Windows**

Sending messages successfully between two Postcard applications verifies a local installation.

## Before you begin

The postcard application is Java based and requires a system with the ability to view a graphical display.

You must ensure that you are a member of the IBM MQ administrators group ( **mqm** ).

**Note:** Using Postcard to verify an IBM MQ installation is only possible if there is one IBM MQ installation on that box. The Default Configuration wizard will not create a default configuration if a queue manager already exists on the box. The Default Configuration wizard will run on any installation on a box but only one default configuration can be created per box. Using Postcard to verify second and subsequent installations of IBM MQ on the same box is not possible.

To verify that the local installation is working, you can run two instances of the Postcard application on the same server. The postcard application can send messages to, and receive messages from, other postcard applications. Successful sending and receiving of messages verifies that IBM MQ is installed and working correctly on the server.

## Procedure

1. Log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:
    - i) Change the directory to `MQ_INSTALLATION_PATH\java\bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
    - ii) Run the postcard application by entering the following command:

```
postcard
```
  - b) From the IBM MQ Explorer: On Windows systems, you can start IBM MQ Explorer by using the system menu, the **MQExplorer** command (preferred command), or the `MQExplorer` executable file. The **strmqcfig** command is still usable.
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type in a nickname to use to send messages within the Postcard application (for example, `User1`).
4. Select the queue manager to use as the mailbox:
  - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration creates a default queue manager.
  - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
  - If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
  - If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
  - If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK** to display your first Postcard window.
5. Run a second instance of the Postcard application by following the steps used to open the first instance of the Postcard application.
6. The **Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, `User2`).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 4).

The queue manager you select for this second Postcard must be the same queue manager as used for the first instance of the Postcard application.

8. In the first Postcard, (User1), enter the nickname ( User12) for the second Postcard application in the **To:** field. Because the sender and receiver are on the same server, you can leave the **On:** field blank.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as sent. In the receiving Postcard, the message is displayed as received.
11. In the receiving Postcard, (User2), double-click the message in the **Postcards sent and received** area to view it.

When this message arrives, it verifies that IBM MQ is correctly installed.

## What to do next

Depending on your situation, you might want to do the following tasks:

- Install IBM MQ on other servers. Follow the installation procedure for the appropriate platform. Ensure that you use the **Join Default Cluster** window in the Default Configuration wizard to add the other servers to the cluster on your first server.
- Install the IBM MQ MQI client on other servers.
- Continue with further administration tasks, see [Administering IBM MQ](#) .

## Verifying a server-to-server installation on Windows

You can use either the command line or the postcard application to verify a server-to-server installation on Windows.

### Before you begin

For a server-to-server verification, the communication links between the two systems must be checked. Before you can do the verification, you must therefore ensure that the communications protocol is installed and configured on both systems.

On Windows, IBM MQ supports TCP, SNA, NetBios, and SPX.

The examples in this task use TCP/IP. If you do not use TCP, see [Setting up communication for Windows](#).

### About this task

For a server-to server installation, you can use the command line to verify that IBM MQ is successfully installed, and that the associated communication links are working properly.

You can also verify an installation using the postcard application. The postcard application is Java based and requires a system with the ability to view a graphical display.

### Procedure

- To use the command line to verify an installation, see [“Verifying a server-to-server installation using the command line on Windows” on page 296](#).
- To use the postcard application to verify an installation, see [“Verifying a server-to-server installation using the Postcard application on Windows” on page 298](#).

## Verifying a server-to-server installation using the command line on Windows

You can verify a server-to-server installation using two servers, one as a sender and one as a receiver.

### Before you begin

- Make sure that TCP/IP and IBM MQ are installed on both servers (see [“Verifying a server-to-server installation on Windows”](#) on page 295).
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Decide which installation is the sender server and which installation is the receiver server. The installations might be on the same system, or on different systems.

### About this task

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### Procedure

1. On the **receiver** server:

- a) Check which ports are free, for example by running **netstat**. For more information about this command, see the documentation of your operating system.

If port 1414 is not in use, make a note of 1414 to use as the port number in step 2 g. Use the same number for the port for your listener later in the verification. If it is in use, note a port that is not in use; for example 1415.

- b) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- c) Create a queue manager called QMB by entering the following command at the command prompt:

```
crtmqm QMB
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- d) Start the queue manager by entering the following command:

```
strmqm QMB
```

A message tells you when the queue manager has started.

- e) Start MQSC by entering the following command:

```
runmqsc QMB
```

A message tells you that MQSC has started. MQSC has no command prompt.

- f) Define a local queue called RECEIVER.Q by entering the following command:

```
DEFINE QLOCAL (RECEIVER.Q)
```

A message tells you the queue has been created.

- g) Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT ( PORT_NUMBER )
```



Where *port\_number* is the name of the port the listener runs on. This number must be the same as the number used when defining your sender channel.

- h) Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

**Note:** Do not start the listener in the background from any shell that automatically lowers the priority of background processes.

- i) Define a receiver channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (RCVR) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

- j) End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

## 2. On the **sender** server:

- a) Set up the environment for the installation you are using by entering the following command at the command prompt:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

- b) Create a queue manager called QMA by entering the following command at the command prompt:

```
crtmqm QMA
```

Messages tell you that the queue manager has been created, and that the default IBM MQ objects have been created.

- c) Start the queue manager, by entering the following command:

```
strmqm QMA
```

A message tells you when the queue manager has started.

- d) Start MQSC by entering the following command:

```
runmqsc QMA
```

A message tells you that an MQSC session has started. MQSC had no command prompt.

- e) Define a local queue called QMB (to be used as a transmission queue) by entering the following command:

```
DEFINE QLOCAL (QMB) USAGE (XMITQ)
```

A message tells you when the queue has been created.

- f) Define a local definition of the remote queue by entering the following command:

```
DEFINE QREMOTE (LOCAL.DEF.OF.REMOTE.QUEUE) RNAME (RECEIVER.Q) RQMNAME ('QMB') XMITQ (QMB)
```

- g) Define a sender channel by entering the following command:

```
DEFINE CHANNEL (QMA.QMB) CHLTYPE (SDR) CONNAME ('CON-NAME(PORT)') XMITQ (QMB) TRPTYPE (TCP)
```

*con-name* is the TCP/IP address of the receiver system. If both installations are on the same system, the *con-name* is *localhost*. *port* is the port you noted in [1 a](#). If you do not specify a port, the default value of 1414 is used.

h) Start the sender channel by entering the following command:

```
START CHANNEL(QMA.QMB)
```

The receiver channel on the receiver server starts automatically when the sender channel starts.

i) Stop MQSC by entering the following command:

```
end
```

Some messages are displayed, followed by the command prompt.

j) If both the sender server and receiver server are installations on the same system, check that the queue managers have been created on different installations by entering the following command:

```
dspmq -o installation
```

If the queue managers are on the same installation, move either QMA to the sender installation or QMB to the receiver installation by using the **setmqm** command. For more information, see [setmqm](#).

k) Put a message on the local definition of the remote queue, which in turn specifies the name of the remote queue. Enter the following command:

```
amqsput LOCAL.DEF.OF.REMOTE.QUEUE QMA
```

A message tells you that amqsput has started.

l) Type some message text on one or more lines, followed by a blank line.

A message tells you that amqsput has ended. Your message is now on the queue and the command prompt is displayed again.

3. On the **receiver** server:

a) Get the message from the queue on the receiver by entering the following command:

```
amqsget RECEIVER.Q QMB
```

The sample program starts, and your message is displayed. After a pause, the sample ends. Then the command prompt is displayed.

## Results

You have now successfully verified the server-to-server installation.

## **Verifying a server-to-server installation using the Postcard application on Windows**

You can use two instances of the Postcard application to verify that a server-to-server installation is working.

### Before you begin

You can use the Postcard application on two servers, one instance of the Postcard application on each server, to verify that a server-to-server installation is working. Successful sending and receiving of messages verifies that IBM MQ is successfully installed, and that communication between the two servers is working correctly.

#### Note:

- If the system has multiple IBM MQ installations, ensure that Postcard has not been run before on any installations on that server. As the default configuration can only exist on one IBM MQ installation per system, the Default Configuration wizard and Postcard can not be used for verification of a second or any subsequent installation.

- The two server installations must be on different systems to do a server-to-server verification using the postcard application. To verify a server-to-server installation on the same machine, you can use the command line.
- Make sure that TCP/IP and IBM MQ are installed on both servers.
- Make sure that your systems are able to view a graphical display.
- Make sure that you are a member of the IBM MQ administrators group (**mqm**) on each server.
- Check that one of the following scenarios applies:
  - Neither server has had any queue managers created.
  - Use the Default Configuration wizard to create default queue managers on each server and link them to the default cluster.

Details on how to use the Default Configuration wizard are provided in this topic.

- Both servers have existing queue managers and these queue managers are in the same cluster.

If your queue managers are not in the same cluster, create new queue managers on both servers. Then create a cluster, and ensure that the queue managers that you create on each server belong to that cluster.

- You have configured channels to communicate between the two servers.

For instructions on how to set up the channels, see [“Verifying a server-to-server installation using the command line on Windows” on page 296](#). After you have set up the channels, follow the instructions in this topic to verify your server-to-server installation.

## Procedure

1. On the first server, log on as a user in group **mqm**.
2. Start the postcard application in one of the following ways:
  - a) From the command line:

- i) Change the directory to `MQ_INSTALLATION_PATH\java\bin`. `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.

- ii) Run the postcard application by entering the following command:

```
postcard
```

- b) From the IBM MQ Explorer: On Windows systems, you can start IBM MQ Explorer by using the system menu, the `MQExplorer` executable file, or the **strmqcfcg** command.
    - i) If the Welcome to IBM MQ Explorer Content view page does not show, click **IBM MQ** in the **Navigator** view to show the Welcome page.
    - ii) Click **Launch Postcard** to start the Postcard.
3. At the **Postcard - Sign On** window, type a nickname to use to send messages within the Postcard application. For example, `User1` for the first server, and `User2` for the second server.
  4. Select the queue manager to use as the mailbox:
    - If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
      - For the first server, select **yes, make it the repository for the cluster**.
      - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
    - If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard

- If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
- If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
- If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK**.

5. Select the queue manager to use as the mailbox:

- If you do not have any queue managers, you are prompted to either launch the Default Configuration or close the Postcard application. Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the check box. On the next screen:
  - For the first server, select **yes, make it the repository for the cluster**.
  - For the second server, select **No another computer has already joined the cluster as a repository**. When requested, enter the location of the repository, by typing the name of the sender server.
- If the only queue manager on your server is the default queue manager, this queue manager is used automatically for the postcard application. The default queue manager is created by running the Default Configuration wizard
- If you have created your own queue managers, but you have not run the Default Configuration wizard, select an appropriate queue manager from the list.
- If you have run the Default Configuration wizard and you want to use the default queue manager, but there are other queue managers on your server, select the **Advanced** check box. Then select **Use Default Configuration as mailbox**.
- If you have run the Default Configuration wizard and also created your own queue managers, and you do not want to use the default queue manager, select the **Advanced** check box. Then select **Choose queue manager as mailbox**, and then select the appropriate queue manager from the list.

When your selection is complete, click **OK**.

6. Complete steps 1 - 5 for the second server.

7. In the Postcard on the first server:

- a) Enter the nickname ( user12) for the Postcard application on the second server in the **To:** field.
- b) Enter the queue manager on the second server in the **On:** field.
- c) Type a message in the **Message:** field and click **Send**.

8. In the Postcard on the second server:

- a) In the **Postcards sent and received**, double-click the message marked as received to view the message from the first server.
- b) Optional: Send a postcard to the first server by adapting the instructions in step 7. You must enter details of the first server in the **To:** field and the **On:** field.

The messages verify that IBM MQ is correctly installed and that your communication link between the two servers is working correctly.

## Verifying a client installation on Windows

You can verify that your IBM MQ MQI client installation completed successfully and that the communication link is working.

### About this task

The verification procedure shows how to create a queue manager called `queue.manager.1`, a local queue called `QUEUE1`, and a server-connection channel called `CHANNEL1` on the server.

It shows how to create the client-connection channel on the IBM MQ MQI client workstation. It then shows how to use the sample programs to put a message onto a queue, and get the message from the queue.

The example does not address any client security issues. See [Setting up IBM MQ MQI client security](#) for details if you are concerned with IBM MQ MQI client security issues.

The verification procedure assumes that:

- The full IBM MQ server product has been installed on a server.
- The server installation is accessible on your network.
- The IBM MQ MQI client software has been installed on a client system.
- The IBM MQ sample programs have been installed.
- TCP/IP has been configured on the server and client systems. For more information, see [Configuring connections between the server and client](#).

### Procedure

1. Set up the server and client:
  - To set up the server and client by using the command line, follow the instructions in [“Setting up the server and client using the command line on Windows”](#) on page 301.
  - To set up the server and client by using IBM MQ Explorer, follow the instructions in [“Setting up the server and client using IBM MQ Explorer on Windows”](#) on page 304.
2. Test the communications between client and server, using the instructions in [“Testing communication between a client and a server on Windows”](#) on page 307.

### Related tasks

[“Installing an IBM MQ client on Windows”](#) on page 275

This topic describes how to install IBM MQ client on Windows systems. This procedure can be used for installing a first or a subsequent installation.

## Setting up the server and client using the command line on Windows

You can use the command line to create the objects that you need to use to verify a client installation on Linux. On the server you create a queue manager, a local queue, a listener, and a server-connection channel. You must also apply security rules to allow the client to connect and make use of the queue defined. On the client you create a client-connection channel. After setting up the server and client, you can then use the sample programs to complete the verification procedure.

### Before you begin

Before starting this task, review the information in [“Verifying a client installation on Windows”](#) on page 301.

### About this task

This task explains how to use the command line to set up the server and client so that you can verify your client installation.

If you prefer to use IBM MQ Explorer, see [“Setting up the server and client using IBM MQ Explorer on Windows”](#) on page 304.

## Procedure

1. Set up the server by following the instructions in [“Setting up the server using the command line on Windows”](#) on page 302.
2. Set up the client by following instructions in [“Connecting to a queue manager, using the MQSERVER environment variable on Windows”](#) on page 303.

## What to do next

Test the communications between client and server by following the instructions in [“Testing communication between a client and a server on Windows”](#) on page 307.

**Windows** *Setting up the server using the command line on Windows*

Follow these instructions to create a queue manager, queue, and channel on the server. You can then use these objects to verify the installation.

## About this task

These instructions assume that no queue manager or other IBM MQ objects have been defined.

IBM MQ object definitions are case-sensitive. Any text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

## Procedure

1. Create a user ID on the server that is not in the mqm group.  
This user ID must exist on the server and client. This is the user ID that the sample applications must be run as, otherwise a 2035 error is returned.
2. You must set various environment variables so that the installation can be used in the current shell.  
You can set the environment variables by entering the following command:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed

3. Create a queue manager called `QUEUE.MANAGER.1` by entering the following command:

```
crtmqm QUEUE.MANAGER.1
```

You see messages telling you that the queue manager has been created.

4. Start the queue manager by entering the following command:

```
strmqm QUEUE.MANAGER.1
```

A message tells you when the queue manager has started.

5. Start MQSC by entering the following command:

```
runmqsc QUEUE.MANAGER.1
```

A message tells you that an MQSC session has started. MQSC has no command prompt.

6. Define a local queue called `QUEUE1` by entering the following command:

```
DEFINE QLOCAL(QUEUE1)
```

A message tells you when the queue has been created.

7. Allow the user ID that you created in step 1 to use QUEUE1 by entering the following command:

```
SET AUTHREC PROFILE(QUEUE1) OBJTYPE(Queue) PRINCIPAL(' non_mqm_user ') AUTHADD(put,get)
```

where *non\_mqm\_user* is the user ID created in step 1. A message tells you when the authorization has been set. You must also run the following command to give the user ID authority to connect:

```
SET AUTHREC OBJTYPE(QMGR) PRINCIPAL(' non_mqm_user ') AUTHADD(CONNECT)
```

If this command is not run, a 2305 stop error is returned.

8. Define a server-connection channel by entering the following command:

```
DEFINE CHANNEL (CHANNEL1) CHLTYPE (SVRCONN) TRPTYPE (TCP)
```

A message tells you when the channel has been created.

9. Allow your client channel to connect to the queue manager and run under the user ID that you created in step 1, by entering the following MQSC command:

```
SET CHLAUTH(CHANNEL1) TYPE(ADDRESSMAP) ADDRESS(' client_ipaddr ') MCAUSER(' non_mqm_user ')
```

where *client\_ipaddr* is the IP address of the client system, and *non\_mqm\_user* is the user ID created in step 1. A message tells you when the rule has been set.

10. Define a listener by entering the following command:

```
DEFINE LISTENER (LISTENER1) TRPTYPE (TCP) CONTROL (QMGR) PORT (port_number)
```

where *port\_number* is the number of the port the listener is to run on. This number must be the same as the number used when defining your client-connection channel in [“Installing an IBM MQ client on Windows”](#) on page 275.

**Note:** If you omit the port parameter from the command, a default value of 1414 is used for the listener port. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

11. Start the listener by entering the following command:

```
START LISTENER (LISTENER1)
```

12. Stop MQSC by entering:

```
end
```

You see some messages, followed by the command prompt.

## What to do next

Follow the instructions to set up the client. See [“Connecting to a queue manager, using the MQSERVER environment variable on Windows”](#) on page 303.

**Windows** *Connecting to a queue manager, using the MQSERVER environment variable on Windows*

When an IBM MQ application is run on the IBM MQ MQI client, it requires the name of the MQI channel, the communication type, and the address of the server to be used. Provide these parameters by defining the MQSERVER environment variable.

## Before you begin

Before you start this task, you must complete the task, [“Setting up the server using the command line on Windows”](#) on page 302, and save the following information:

- The host name or IP address of the server and port number that you specified when creating the listener.
- The channel name of the server-connection channel.

## About this task

This task describes how to connect an IBM MQ MQI client, by defining the MQSERVER environment variable on the client.

You can give the client access to the generated client channel definition table, `amqc1chl1.tab` instead; see [Accessing client-connection channel definitions](#).

Alternatively, on Windows, if Active Directory support is enabled, the client discovers the client-connection information dynamically from the Active Directory.

## Procedure

1. Log in as the userid that you created in Step 1 of [“Setting up the server using the command line on Windows”](#) on page 302.
2. Check the TCP/IP connection. From the client, enter one of the following commands:
  - `ping server-hostname`
  - `ping n.n.n.n`

`n.n.n.n` represents the network address. You can set the network address in IPv4 dotted decimal form, for example, `192.0.2.0`. Alternatively, set the address in IPv6 hexadecimal form, for example `2001:0DB8:0204:acff:fe97:2c34:fde0:3485`.

If the **ping** command fails, correct your TCP/IP configuration.

3. Set the MQSERVER environment variable. From the client, enter the following command:

```
SET MQSERVER=CHANNEL1/TCP/server-address(port)
```

Where:

- `CHANNEL1` is the server-connection channel name.
- `server-address` is the TCP/IP host name of the server.
- `port` is the TCP/IP port number the server is listening on.

If you do not give a port number, IBM MQ uses the one specified in the `qm.ini` file, or the client configuration file. If no value is specified in these files, IBM MQ uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If an `MQSeries` entry in the services file does not exist, a default value of 1414 is used. It is important that the port number used by the client and the port number used by the server listener program are the same.

## What to do next

Use the sample programs to test communication between the client and server; see [“Testing communication between a client and a server on Windows”](#) on page 307.

### **Setting up the server and client using IBM MQ Explorer on Windows**

You can use IBM MQ Explorer to create the objects that you need to use to verify a client installation on Windows. On the server, you create a queue manager, a local queue, a listener and a server-connection channel. On the client system you create a client-connection channel. Then from the command line you use the sample PUT and GET programs to complete the verification procedure.

## Before you begin

Before starting this task, review the information in [“Verifying a client installation on Windows”](#) on page 301.

## About this task

This task explains how to use IBM MQ Explorer to set up the server and client so that you can verify your client installation.



If you prefer to use the command line, see [“Setting up the server and client using the command line on Windows” on page 301.](#)

## Procedure

1. Set up the server by following the instructions in [“Setting up the server using IBM MQ Explorer on Windows” on page 305.](#)
2. Set up the client by following instructions in [“Setting up the client using IBM MQ Explorer on Windows” on page 306.](#)

## What to do next

Test the communications between client and server by following the instructions in [“Testing communication between a client and a server on Windows” on page 307.](#)

## Related tasks

[“Installing an IBM MQ client on Windows” on page 275](#)

This topic describes how to install IBM MQ client on Windows systems. This procedure can be used for installing a first or a subsequent installation.

### *Setting up the server using IBM MQ Explorer on Windows*

On the server, you create a queue manager, a local queue, a listener and a server-connection channel. On the client system you create a client-connection channel. Then from the command line you use the sample PUT and GET programs to complete the verification procedure.

## About this task

You can use the IBM MQ Explorer to create a queue manager, queue and server-connection channel on Windows. This topic describes the tasks necessary to set up the server.

## Procedure

1. Create a queue manager:
  - a) Open IBM MQ Explorer.
  - b) Right-click the folder called **Queue Managers**, select **New > Queue Manager**.
  - c) In the first entry field, type the queue manager name, *QUEUE.MANAGER.1*, and click **Finish**.
2. Create a local queue:
  - a) Expand the queue manager you have just created and right-click **queues**.
  - b) Select **New > Local Queue**.
  - c) Enter the queue name, *QUEUE1*, and click **Finish**.
3. Define the server-connection channel:
  - a) Right-click **Channels**.
  - b) Select **New > Server Connection Channel**.
  - c) Enter the channel name, *CHANNEL1*, and click **Next**.
  - d) In the dialog navigation pane, click **MCA** to open the MCA page.
  - e) In the MCA User ID field, enter a userid that is a member of the mqm group, typically your own.
  - f) Click **Finish**.
4. Run the listener.

The listener is automatically started when the queue manager is configured. To check that the listener is running, open **Listeners** and look for *LISTENER.TCP*.

## What to do next

Set up the client. See [“Setting up the client using IBM MQ Explorer on Windows” on page 306.](#)

### Related tasks

[“Testing communication between a client and a server on Windows” on page 307](#)

On the IBM MQ MQI client workstation, use the `amqsputc` sample program to put a message on the queue at the server workstation. Use the `amqsgetc` sample program to get the message from the queue back to the client.

[“Installing an IBM MQ client on Windows” on page 275](#)

This topic describes how to install IBM MQ client on Windows systems. This procedure can be used for installing a first or a subsequent installation.

### Windows

*Setting up the client using IBM MQ Explorer on Windows*

You can use IBM MQ Explorer to define the client-connection if you are setting up the client and server on the same workstation on a Windows system.

## Procedure

1. Select the queue manager, `QUEUE.MANAGER.1`
2. Open the **Channels** folder, then right-click **Client Connections** > **New** > **Client-connection Channel...**
3. Enter the channel name, `CHANNEL1`, for the client connection, and click **Next**.
4. Enter the queue manager name, `QUEUE.MANAGER.1`
5. Enter the following string as the connection name:

```
server-address (port)
```

Where:

- `server-address` is the TCP/IP host name of the server
- `port` is the TCP/IP port number the server is listening on

6. Click Finish.
7. From the command line, set the `MQCHLLIB` environment variable.  
Enter the following command:

```
SET MQCHLLIB= MQ_INSTALLATION_PATH\qmgrs\QUEUE!MANAGER!1\@ipcc
```

where `MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed

**Note:** The queue manager name contains ". ". IBM MQ creates the queue manager directory with the name, `QUEUE!MANAGER!1`

## What to do next

Use the sample programs to test communication between the client and server. See [“Testing communication between a client and a server on Windows” on page 307.](#)

### Related tasks

[“Setting up the server and client using IBM MQ Explorer on Windows” on page 304](#)

You can use IBM MQ Explorer to create the objects that you need to use to verify a client installation on Windows. On the server, you create a queue manager, a local queue, a listener and a server-connection channel. On the client system you create a client-connection channel. Then from the command line you use the sample PUT and GET programs to complete the verification procedure.

[“Installing an IBM MQ client on Windows” on page 275](#)

This topic describes how to install IBM MQ client on Windows systems. This procedure can be used for installing a first or a subsequent installation.

## **Windows** *Testing communication between a client and a server on Windows*

On the IBM MQ MQI client workstation, use the amqsputc sample program to put a message on the queue at the server workstation. Use the amqsgetc sample program to get the message from the queue back to the client.

### **Before you begin**

Complete the previous topics in this section:

- Set up a queue manager, channels, and queue.
- Open a command window.
- Set system environment variables.

### **About this task**

Note that IBM MQ object definitions are case-sensitive. Text entered as an MQSC command in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. Make sure that you type the examples exactly as shown.

### **Procedure**

1. Change into the `MQ_INSTALLATION_PATH\Tools\C\Samples\Bin` directory for 32 bit systems or the `MQ_INSTALLATION_PATH\Tools\C\Samples\Bin64` directory for 64 bit systems.  
`MQ_INSTALLATION_PATH` represents the high-level directory in which IBM MQ is installed.
2. You must set certain environment variables so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where `MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed

3. Start the PUT program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
amqsputc QUEUE1 QUEUE.MANAGER.1
```

If the command is successful, the following messages are displayed:

```
Sample AMQSPUT0 start target queue is QUEUE1
```

**Tip:** You might get the error, MQRC\_NOT\_AUTHORIZED ( 2035 ). By default, channel authentication is enabled when a queue manager is created. Channel authentication prevents privileged users accessing a queue manager as an IBM MQ MQI client. For verifying the installation, you can either change the MCA user ID to a non-privileged user, or disable channel authentication. To disable channel authentication run the following MQSC command:

```
ALTER QMGR CHLAUTH(DISABLED)
```

When you finish the test, if you do not delete the queue manager, re-enable channel authentication:

```
ALTER QMGR CHLAUTH(ENABLED)
```

4. Type some message text, then press **Enter** twice.

The following message is displayed:

```
Sample AMQSPUT0 end
```

Your message is now on the queue that is on the server queue manager.

5. Start the GET program for QUEUE1 on QUEUE.MANAGER.1 by entering the following command:

```
amqsgetc QUEUE1 QUEUE.MANAGER.1
```

The sample program starts, and your message is displayed. After a short pause (approximately 30 seconds), the sample ends and the command prompt is displayed again.

## Results

You have now successfully verified the client installation.

## What to do next

1. You must set various environment variables on the server so that the installation can be used in the current shell. You can set the environment variables by entering the following command:

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* refers to the location where IBM MQ is installed.

2. On the server, stop the queue manager by entering the following command:

```
endmqm QUEUE.MANAGER.1
```

3. On the server, delete the queue manager by entering the following command:

```
dltmqm QUEUE.MANAGER.1
```

## Windows Uninstalling IBM MQ on Windows

You can uninstall the IBM MQ MQI clients and servers on Windows systems by using the control panel, the command line (**msiexec**), **MQParms**, or by using the installation media, in which case you can optionally remove queue managers as well.

### Before you begin



**CAUTION:** The Windows Registry contains critical information, including file locations, drivers, and start-up processes. IBM MQ relies on these specific registry settings to function correctly. Changing these settings without proper information can cause the IBM MQ application to become unusable or fail completely as incorrect changes can disrupt its essential functions.

By default, uninstallation logging is not enabled on Windows. To ensure that you receive an uninstallation log, carry out the following procedure:

1. In a command prompt, open the registry editor by issuing the command **regedit**.
2. Create, or edit, the appropriate registry key:  
HKEY\_LOCAL\_MACHINE\Software\Policies\Microsoft\Windows\Installer
3. Under this registry key add the following information:

**Name**

Logging

**Data type**

REG\_SZ

**Value**

voicewarmup

4. Save the updated registry key.

### Procedure

The first part of the procedure ensures that there are no IBM MQ programs or processes running:

1. If you are running IBM MQ with the Microsoft Cluster Service (MSCS), remove the queue managers from MSCS control before uninstalling IBM MQ. Perform the following steps for each queue manager currently under MSCS control :
  - a) Take the queue manager resource offline.
  - b) Destroy the resource instance.
  - c) Migrate the queue manager files back from shared drives. This step is shown as optional in [Removing a queue manager from MSCS control](#). However, it is mandatory in this case.
2. Stop all IBM MQ applications associated with the installation you are uninstalling.
3. Close all Managed File Transfer agents.
 

If any Managed File Transfer agents are running, you can use the **fteStopAgent** command to stop the agents in a controlled way. You can also stop the agents immediately, if necessary, using the **-i** parameter; see [fteStopAgent \(stop a Managed File Transfer Agent\)](#).
4. For a server installation, end all IBM MQ activity:
  - a) Log in as a user in the group mqm.
  - b) Stop all running queue managers and listeners by using the IBM MQ Explorer, or by entering the following commands:
    - i) Set up your environment to work with the installation you want to uninstall by entering the following command:
 

```
MQ_INSTALLATION_PATH\bin\setmqenv -s
```

where *MQ\_INSTALLATION\_PATH* is the location where IBM MQ is installed.
    - ii) For each queue manager, enter the following command to stop the queue manager:
 

```
endmqm queue_manager_name
```
    - iii) For each queue manager, enter the following command to stop any listeners associated with the queue manager:
 

```
endmqclsr -m queue_manager_name
```
5. Stop IBM MQ.
 

To do this right-click the **IBM MQ** icon in the system tray, then select **Stop IBM MQ**.
6. Close all IBM MQ windows.
7. Stop any monitoring service.

When all processes associated with IBM MQ are no longer running, you can uninstall IBM MQ:

8. Uninstall IBM MQ by using one of the following methods:
  - Use the Windows Control Panel. This process is described in: [“Uninstalling IBM MQ using the control panel” on page 310](#). This method does not remove the queue manager data.
  - Use the command line by running the **msiexec** command as described in: [“Uninstalling IBM MQ using msiexec” on page 311](#). This method does not remove the queue manager data.
  - Use the appropriate parameters with **MQParms**. This process is described in [“Uninstalling IBM MQ using MQParms” on page 313](#). This method does not remove the queue manager data.
  - Use the installation media, by selecting the appropriate option as described in: [“Uninstalling IBM MQ on Windows using the installation media” on page 313](#). The option to remove queue manager data is displayed in the **Removing Server feature** panel, if appropriate.

If you have to cancel the uninstallation process before it is finished, you might have to reconfigure IBM MQ with the Prepare IBM MQ wizard because the rollback of the deletion of the IBM MQ service is unable to set the service's user account password. Use the following command to reconfigure IBM MQ:

```
MQ_INSTALLATION_PATH\bin\amqmjpse.exe -r
```

For more information about the Prepare IBM MQ wizard, see [“Configuring IBM MQ with the Prepare IBM MQ Wizard”](#) on page 265.

9. Check the Windows event log and restart the system if necessary.

If event ID 10005 is written to the Windows event log, you must restart the system to complete the uninstallation process.

10. If you are uninstalling the last or only installation of IBM MQ, you can remove all the information about previous installations that is retained on the system, if you want to. You should use the **ResetMQ.cmd** for this purpose; see [“Clearing IBM MQ installation settings”](#) on page 246 for more information.

The following registry values remain after uninstallation:

- My Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\IBM\WebSphere MQ\LogDefaultPath
- My Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\IBM\WebSphere MQ\WorkPath
- My Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\WOW6432Node\IBM\WebSphere MQ\LogDefaultPath
- My Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\WOW6432Node\IBM\WebSphere MQ\WorkPath

Data folders will also remain and are located at *MQ\_DATA\_PATH*\Config, where *MQ\_DATA\_PATH* is the location of the IBM MQ data directory. Most of the remaining files contain text such as INI files, error logs, and FDC files. The executable shared library mqzsd.dll also remains.

If a client is installed on a system where the LogDefaultPath registry value remains from a previous server installation, a client installation will attempt to create this directory if it does not already exist. If this behavior is not wanted, remove the LogDefaultPath registry value before installing the client.

## Uninstalling IBM MQ using the control panel

You can uninstall IBM MQ by using the control panel to remove all currently installed features.

### Before you begin

Start the uninstalling process by following the steps described in [“Uninstalling IBM MQ on Windows”](#) on page 308.

If you no longer require the queue managers that are on the system, delete them by using the IBM MQ Explorer or the **dltmqm** command.

### Procedure

1. From the Windows taskbar, open the control panel by clicking **Start > Settings > Control Panel**, or **Start > Control Panel**.
2. Open **Programs and Features**.
3. Click **IBM MQ (installation\_name)**, where *installation\_name* is the name of the installation you want to remove.
4. Click **Remove** or **Uninstall** and click **Yes** to confirm.

If User Account Control (UAC) is enabled, accept the Windows prompt to allow the uninstallation to run as elevated. The program then begins and runs to completion.

### What to do next

Complete the steps that you started in [“Uninstalling IBM MQ on Windows”](#) on page 308.

## Windows Uninstalling IBM MQ using msixec

You can uninstall IBM MQ by running the **msiexec** command from the command line to remove all currently installed features.

### Before you begin

This task describes one of several uninstallation options that you can choose from when uninstalling IBM MQ as described in [“Uninstalling IBM MQ on Windows” on page 308](#). Before starting this task, refer to [“Uninstalling IBM MQ on Windows” on page 308](#) for more information.

If you no longer require the queue managers that are on the system, delete them by using the [IBM MQ Explorer](#) or the **dltmqm** command.

### About this task

You can use the **msiexec** command to uninstall IBM MQ either by running the **msiexec** command with a parameter that calls a response file, or by entering the required **msiexec** parameters on the command line.

**Important:** **V 9.0.2** When specifying which features to remove with the **REMOVE** parameter:

- If you want to silently uninstall the Server feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying **REMOVE="Web, Server"**.
- If you want to silently uninstall the Java Runtime Environment (JRE) feature, and the Web Administration (Web) feature is installed, you must also silently uninstall the Web feature at the same time by specifying **REMOVE="Web, JRE"**.

If you are running IBM MQ on Windows with User Account Control (UAC) enabled, you must invoke the silent uninstallation from an elevated command prompt. Elevate a command prompt by using a right-click to start the command prompt and choose **Run as administrator**.

In all of the examples of commands shown, the variable names used are as follows:

- *installation\_name* is the name of the installation you want to remove.
- *product\_code* is the value shown for MSIProdCode in the output of the following command:

```
dspmquist -n installation_name
```

An example of a product code is {0730749B-080D-4A2E-B63D-85CF09AE0EF0}.

### Procedure

- To silently uninstall IBM MQ by running the **msiexec** command with a parameter that calls a response file:
  - a) Set which features to uninstall, and whether to keep existing queue managers in the response file.

A response file is an ASCII text file that contains the parameter values that you want to set for the uninstallation. The response file has a format similar to a Windows `.ini` file, and contains the stanza `[Response]`. This stanza contains parameters that the **msiexec** command can use, in the form of *property = value* pairs. The **msiexec** command ignores any other stanzas in the file. This is an example of a simple uninstallation `[Response]` stanza:

```
[Response] REMOVE="ALL"
```

For more information about how to create a response file, including which parameters you can specify, see [“Creating a response file for server installation” on page 258](#).

- b) To silently uninstall IBM MQ using the response file, enter the following command: `msiexec /x {product_code} /! *v "c:\removal.log" /q USEINI="response_file" INSTALLATIONNAME="installation_name"`
- To uninstall IBM MQ by entering the required `msiexec` parameters on the command line, enter one of the following commands:
    - To invoke an interactive uninstallation giving you the option to remove queue manager data (providing there are no other IBM MQ installations remaining):

```
msiexec /x {product_code} /! *v "c:\removal.log" REMOVE="All"
INSTALLATIONNAME="installation_name"
```

If you are running IBM MQ on a Windows system with User Account Control (UAC) enabled, you might see **Open File - Security Warning** dialog boxes during uninstallation that list International Business Machines Limited as the publisher. Click **Run** to allow the uninstallation to continue.

- To invoke a silent uninstallation that does not remove any queue manager data:

```
msiexec /x {product_code} /! *v "c:\removal.log" /q REMOVE="All"
INSTALLATIONNAME="installation_name"
```

- To invoke a silent uninstallation and remove any queue manager data (only valid when removing the final server installation):

```
msiexec /x {product_code} /! *v "c:\removal.log" /q REMOVE="All" KEEPQMDATA="delete"
INSTALLATIONNAME="installation_name"
```

- To monitor the progress of the uninstalling process and not remove any queue manager data:

```
msiexec /x {product_code} /! *v "c:\removal.log" INSTALLATIONNAME="installation_name"
```

If you are running IBM MQ on a Windows system with User Account Control (UAC) enabled, you might see **Open File - Security Warning** dialog boxes during uninstallation that list International Business Machines Limited as the publisher. Click **Run** to allow the uninstallation to continue.

- To invoke a silent uninstallation and not remove any queue manager data:

```
msiexec /x {product_code} /! *v "c:\removal.log" /q INSTALLATIONNAME="installation_name"
```

## Results

After the command is entered, the command prompt immediately reappears and IBM MQ is uninstalled as a background process. If you entered parameters to produce a log, check this file to see how the uninstallation is progressing. If the uninstallation finishes successfully, you see the message `Removal completed successfully` in the log file.

## What to do next

Complete the steps that you started in [“Uninstalling IBM MQ on Windows” on page 308](#).

### Related concepts

[“IBM MQ features for Windows systems” on page 231](#)

You can select the features that you require when you install IBM MQ.

### Related tasks

[“Installing the server using msiexec” on page 250](#)

IBM MQ on Windows uses the MSI technology to install software. MSI provides both an interactive installation and a non interactive installation.

[“Modifying a server installation silently using msiexec” on page 274](#)



You can silently remove or install IBM MQ features on Windows by using **msiexec**.

## Uninstalling IBM MQ using MQParms

You can uninstall IBM MQ by running the **MQParms** command from the command line to remove all currently installed features.

### Before you begin

Start the uninstalling process by following the steps described in [“Uninstalling IBM MQ on Windows” on page 308](#).

### Procedure

1. Follow the instructions on the MQParms installation pages to uninstall IBM MQ non-interactively. See: [“Installing the server using the MQParms command” on page 259](#).
  - a) Set the ADDLOCAL parameter to empty (ADDLOCAL="").
  - b) Set the REMOVE parameter to "ALL" (REMOVE="ALL").
2. If you have multiple versions of IBM MQ installed on your system, specify the product code that identifies the installation you want to remove.

Type the following command:

```
MQParms.exe parameter_file/i "{product_code}"
```

where

- *parameter\_file* is the file that contains the required parameter values. If this file is not in the same folder as `MQParms.exe`, specify the full path and file name. If you do not specify a parameter file, the default is `MQParms.ini`.
- *product\_code* is the value shown for `MSIProdCode` in the output of the following command:

```
dspmqinst -n installation_name
```

where *installation\_name* is the name of the installation you want to remove. An example of a product code is `{0730749B-080D-4A2E-B63D-85CF09AE0EF0}`.

### What to do next

Complete the steps that you started in [“Uninstalling IBM MQ on Windows” on page 308](#).

## Uninstalling IBM MQ on Windows using the installation media

You can uninstall IBM MQ by using the installation media to remove all currently installed features and optionally remove existing queue managers and their data.

### Before you begin

Start the uninstalling process by following the steps described in [“Uninstalling IBM MQ on Windows” on page 308](#).

### Procedure

1. Insert the IBM MQ for Windows Server DVD into the DVD drive.
2. Start the installation process.
  - If autorun is enabled, the installation process starts automatically.
  - If autorun is not enabled, double-click the **Setup** icon in the root folder of the DVD to start the installation process.

The IBM MQ Installation Launchpad window opens.

3. Click **IBM MQ Installation**.
4. Click **Launch IBM MQ Installer** and click **Next** until the IBM MQ Program Maintenance panel is displayed with a welcome message.  
If this panel is not displayed, IBM MQ for Windows is not currently installed.
5. Click **Maintain or upgrade an existing instance** and if there is more than one installation of IBM MQ on the system, select which installation you want to remove. Click **Next** and in the Program Maintenance panel, click **Remove**, then **Next**.
6. If you are uninstalling the last or only server, and there are any queue managers on the system, the Removing Server feature panel is shown.  
Click one of the following options:
  - **Keep**: keep existing queue managers and their objects.
  - **Remove**: remove existing queue managers and their objects.Click **Next**.  
The Remove IBM MQ panel is displayed, with a summary of the installation to be removed.
7. Click **Remove** to continue.  
If there are any messages that state that locked files are found, ensure that there are no IBM MQ programs running; see [“Uninstalling IBM MQ on Windows” on page 308](#).  
When IBM MQ has been uninstalled, a message indicates completion.
8. Click **Finish**.

## What to do next

Complete the steps that you started in [“Uninstalling IBM MQ on Windows” on page 308](#).

Multi


MQ Adv.

## Installing IBM MQ Advanced for Multiplatforms

Installation tasks associated with IBM MQ Advanced for Multiplatforms are grouped in this section.


### About this task

IBM MQ Advanced is a single license entitlement that, in addition to IBM MQ itself, provides entitlement to:

- Advanced Message Security
- Managed File Transfer
- MQ Telemetry
-  Replicated data queue managers (RDQM)

For more information, see [IBM MQ license information](#).

### Procedure

- [“Installing and uninstalling AMS on Multiplatforms” on page 315](#).
- [“Installing Managed File Transfer ” on page 323](#).
- [“Installing MQ Telemetry” on page 331](#).
-  [“Installing RDQM \(replicated data queue managers\)” on page 338](#).

### Related tasks

[“Installing IBM MQ Advanced for z/OS” on page 352](#)

Use this topic to understand how you install IBM MQ Advanced for z/OS on your system.

[“Installing IBM MQ Advanced for z/OS, Value Unit Edition” on page 352](#)

Use this topic to understand how you install IBM MQ Advanced for z/OS, Value Unit Edition (VUE) on your system.

#### Related reference

**V 9.0.5** [DISPLAY QMGR ADVCAP](#)

**V 9.0.5** [MQCMD\\_INQUIRE\\_Q\\_MGR MQIA\\_ADVANCED\\_CAPABILITY](#)

### Multi

## Installing and uninstalling AMS on Multiplatforms

Installation and uninstallation, by platform, for Advanced Message Security (AMS) on Multiplatforms.

### About this task

Advanced Message Security is a separately installed component of IBM MQ and is another option on the IBM MQ installer. Make sure that you purchase a license for using IBM MQ Advanced before the installation (see [IBM MQ license information](#)).

### Procedure

- [“Installing AMS on Multiplatforms” on page 315](#)
- [“Uninstalling AMS on Multiplatforms” on page 320](#)

### Related tasks

[“Installing Advanced Message Security on z/OS” on page 351](#)

You can install Advanced Message Security on z/OS by using SMP/E.

### Multi

## Installing AMS on Multiplatforms

Use the information for your platform to guide you through installing the Advanced Message Security (AMS) component.

### Before you begin

Make sure the following IBM MQ components are installed in your environment:

- MQSeriesRuntime
- MQSeriesServer

### About this task

For information about installing Advanced Message Security follow the guidance for the appropriate platform.

### Procedure

- [“Installing Advanced Message Security on AIX” on page 316](#)
- [“Installing Advanced Message Security on HP-UX” on page 316](#)
- [“Installing Advanced Message Security on IBM i” on page 317](#)
- [“Installing Advanced Message Security on Linux” on page 317](#)
- [“Installing Advanced Message Security on Windows” on page 319](#)

## ***Installing Advanced Message Security on AIX***

You can install Advanced Message Security component on AIX platforms using either system management interface tool (SMIT) or the command line.

### *Installing using SMIT*

#### **Procedure**

1. Log on as root.
2. Change the directory to the location of the installation packages.
3. Start the system management interface tool (SMIT).  
The system management menu is displayed.
4. Select the required SMIT window using the following sequence:

```
Software Installation and Maintenance
Install and Update Software
Install Software
```

5. Enter the directory location of the installation package.
6. Press F4 to list the software in the **SOFTWARE name** option.
7. Select the `mqm.ams.rte` and press Enter.
8. Accept the default setting for the remaining options and press Enter.

#### **Results**

Advanced Message Security has been installed successfully.

### *Installing using command line*

#### **Procedure**

1. Log on as root.
2. Set your current directory to the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. Run the following command:

```
installp -a -c -Y -d. mqm.ams.rte
```

Note the period, signifying the current directory, following the **-d** parameter.

#### **Results**

Advanced Message Security component has been installed successfully.

## ***Installing Advanced Message Security on HP-UX***

You can install Advanced Message Security component on HP-UX platforms.

#### **Procedure**

1. Log on as root.
2. Set your current directory to the location of the installation file. The location might be the mount point of the DVD, a network location, or a local file system directory.
3. In the command line, issue the following command:

```
swinstall -s MQSERIES.MQM-AMS
```

## Results

Advanced Message Security component has been installed successfully.

### **Installing Advanced Message Security on IBM i**

You can install Advanced Message Security component on IBM i.

## Procedure

Install AMS using the command:

```
RSTLICPGM LICPGM(5724H72) DEV(installation device) OPTION(2) OUTPUT(*PRINT)
```

where the parameters of **RSTLICPGM** are:

### **LICPGM(5724H72)**

The product identifier for IBM MQ for IBM i.

### **DEV(installation device)**

The device from which the product is to be loaded, typically an optical drive, for example, OPT01.

### **OPTION(2)**

Install Advanced Message Security for IBM i

### **OUTPUT(\*PRINT)**

The output is printed with the spooled output of the job.

## Results

The AMS component has been installed successfully.

Once AMS is installed on an IBM MQ server installation, any:

- Queue managers that are subsequently started enable security policy management features.
- Applications that connect to the queue manager enable interceptors.

## What to do next

See [Setting up certificates and the keystore configuration file on IBM i](#) for details on setting up your security policy.

### **Installing Advanced Message Security on Linux**

You can install Advanced Message Security on Linux platforms.

## Procedure

1. Log on as root.
2. Set your current directory to the location of the installation file. The location might be the mount point of the server CD, a network share, or a local file system directory.
3. If this installation is not the first installation on the system, you must run the **crtmqpkg** command to create a unique set of packages to install on the system.

In order for the **crtmqpkg** command to run on Linux, the **pax** and **rpmbuild** commands must be installed.

**Important:** **pax** and **rpmbuild** are not supplied as part of the product. You must obtain these from your Linux distribution supplier.

- a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that uniquely identifies the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

**Note:** This command creates a full copy of the installation packages in a subdirectory of `/var/tmp`. You must ensure that the system has enough space before running the command.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes. This directory is a subdirectory of `/var/tmp/mq_rpms`, in which the unique set of packages is created. The packages have the *suffix* value contained within the filename. For example, using a suffix of "1":

```
./crtmqpkg 1
```

there is a subdirectory named `/var/tmp/mq_rpms/1/i386` and the packages are renamed, for example:

```
From: MQSeriesAMS-V.R.M-F.i386.rpm  
To: MQSeriesAMS_1-V.R.M-F.i386.rpm
```

where:

**V**

Represents the version of the product that you are installing

**R**

Represents the release of the product that you are installing

**M**

Represents the modification of the product that you are installing

**F**

Represents the fix pack level of the product that you are installing

4. In the command line, issue the following command:

This example shows a minimum installation:

```
rpm -iv package_name
```

where *package\_name* is one of the following:

- MQSeriesAMS-V.R.M-F.i386.rpm
- MQSeriesAMS-V.R.M-F.x86\_64.rpm
- MQSeriesAMS-V.R.M-F.ppc.rpm
- MQSeriesAMS-V.R.M-F.s390.rpm

## Results

Advanced Message Security has been installed successfully.

## Installing Advanced Message Security on Solaris

You can install Advanced Message Security component on Solaris platforms.

## Procedure

1. Log on as root.
2. If this installation is not the first installation on the system, you must run **crtmqpkg** to create a unique set of packages to install on the system:
  - a) Enter the following command:

```
./crtmqpkg suffix
```

where *suffix* is a name of your choosing, that will uniquely identify the installation packages on the system. *suffix* is not the same as an installation name, although the names can be identical. *suffix* is limited to 16 characters in the ranges A-Z, a-z, and 0-9.

- b) Set your current directory to the location specified when the **crtmqpkg** command completes. This directory is a sub-directory of `/var/spool`, in which the unique set of packages is created. The packages have the *suffix* value contained within the filename.
3. Start the installation process:

- If the installation is the first installation on the system, enter the following command to start the installation process:

```
pkgadd -d.
```

- If the installation is not the first installation on the system, enter the following command to start the installation process:

```
pkgadd mqm- suffix
```

where *suffix* is the suffix chosen in the previous step.

4. You are prompted to choose a location for installation.
  - To install to the default location, `/opt/mqm`, enter `y`.
  - To install to a non-default directory, enter `n`. Then enter the required installation path, and confirm your choice.
5. Choose the `mqams` component.
6. If the path chosen in step 4 does not exist, you are asked if you want to create it. You must enter `y` to proceed.
7. A message is issued when the installation is complete. Enter `q` to exit the `pkgadd` program.

## Results

Advanced Message Security component has been installed successfully.

## Installing Advanced Message Security on Windows

You can install the Advanced Message Security component on Windows platforms.

*Using the Launchpad*

## Procedure

1. Access the IBM MQ installation image. The location might be the mount point of the DVD, a network location, or a local file system directory.
2. Locate `setup.exe` in the base directory of the IBM MQ installation image.
  - From a DVD, this location might be:

```
E:\ setup.exe
```
  - From a network location, this location might be:

```
m:\instmq\ setup.exe
```
  - From a local file system directory, this location might be:

```
C:\instmq\ setup.exe
```
3. Double-click the **Setup** icon to start the installation process. It is possible to start the process by either:
  - Running `setup.exe` from the command prompt.

- Double-clicking `setup.exe` from IBM MQ Explorer.

**Note:** If you are installing on a Windows system with UAC enabled, accept the Windows prompt to allow the launchpad to run as elevated. During installation, you might also see **Open File - Security Warning** dialog boxes that list International Business Machines Limited as the publisher. Click **Run** to allow the installation to continue.

The IBM MQ Installation Launchpad window is displayed.

4. Continue to follow the Launchpad instructions as shown on screen.

## **Uninstalling AMS on Multiplatforms**

Use the information for your platform to uninstall the Advanced Message Security (AMS) component.

### **Procedure**

- [“Uninstalling AMS on AIX” on page 320](#)
- [“Uninstalling AMS on HP-UX” on page 321](#)
- [“Uninstalling AMS on Linux” on page 322](#)
- [“Uninstalling AMS on Windows” on page 323](#)

### **Related tasks**

[“Installing AMS on Multiplatforms” on page 315](#)

Use the information for your platform to guide you through installing the Advanced Message Security (AMS) component.

## **Uninstalling AMS on AIX**

On AIX platforms, you can remove Advanced Message Security component either using SMIT or the command line.

### **Procedure**

1. Stop all IBM MQ applications associated with the installation you are uninstalling.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling:
  - a) Log in as a user in the group `mqm`.
  - b) Set up your environment to work with the installation you want to uninstall. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where `. MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.
4. Uninstall AMS component using either **installp** or **smit**. If AMS component was installed in a non-default location, you must use **installp** to uninstall.



- Uninstall using **installp** by entering one of the following commands:

- For an installation in the default location `/usr/mqm`

```
installp -u mqm.ams.rte
```

- For an installation in a non-default location:

```
installp -R  
usil -u mqm.ams.rte
```

where *usil* is the path of the User Specified Installation Location (USIL) specified when the product was installed.

- Uninstall using **smit**:

- a. Select the required **smit** window using the following sequence:

```
Software Installation and Maintenance  
Software Maintenance and Utilities  
Remove Installed Software
```

- b. List the software in the **SOFTWARE name** field:

- i) Enter `.`
- ii) Press **F4**

- c. Select the file sets to uninstall from the list (those beginning with `mqm`), and press **Enter**. There is an option at this stage to do a preview. Leave the option set to the default value of **Yes** to preview the file sets you are uninstalling, or select **No** to not preview these file sets.

- d. Press **Enter** on the **Remove Installed Software** panel, it asks whether you are sure, press **Enter**.

## Results

The Advanced Message Security component has been uninstalled.

## HP-UX **Uninstalling AMS on HP-UX**

Use the `swremove` command to remove Advanced Message Security component on HP-UX platforms.

## Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling:
  - a) Log in as a user in the group `mqm`.
  - b) Set up your environment to work with the installation you want to uninstall. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where `. MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log on as root.
4. Run the following command:

```
swremove MQSERIES.MQM-AMS
```

## Results

The Advanced Message Security component has been uninstalled.

## Linux **Uninstalling AMS on Linux**

Use the `rpm` command to remove Advanced Message Security component on Linux platforms.

## Procedure

1. Stop all IBM MQ applications associated with the installation you are uninstalling.
2. For a server installation, end any IBM MQ activity associated with the installation you are uninstalling:
  - a) Log in as a user in the group `mqm`.
  - b) Set up your environment to work with the installation you want to uninstall. Enter the following command:

```
. MQ_INSTALLATION_PATH/bin/setmqenv
```

where `. MQ_INSTALLATION_PATH` refers to the location where IBM MQ is installed.

- c) Display the state of all queue managers on the system. Enter the following command:

```
dspmqr -o installation
```

- d) Stop all running queue managers associated with the installation you want to uninstall. Enter the following command for each queue manager:

```
endmqm QMgrName
```

- e) Stop any listeners associated with the queue managers. Enter the following command for each queue manager:

```
endmqclr -m QMgrName
```

3. Log in as root.
4. Run the following command:

```
rpm -e package_name
```

where `package_name` is `MQSeriesAMS-V.R.M-F`

### **V**

Represents the version of the product that you are uninstalling

### **R**

Represents the release of the product that you are uninstalling

### **M**

Represents the modification of the product that you are uninstalling

### **F**

Represents the fix pack level of the product that you are uninstalling

## Results

The Advanced Message Security component has been uninstalled.

## **Uninstalling on Solaris**

Use the `pkgrm` to uninstall IBM MQ on Solaris.

### About this task

**Restriction:** On Solaris, you cannot remove components from an installation. There is no supported method of doing this.

For information about uninstalling IBM MQ on Solaris, see [“Uninstalling IBM MQ on Solaris” on page 229](#).

## **Uninstalling AMS on Windows**

You can uninstall Advanced Message Security component using the GUI uninstallation wizard, or a command-line interface.

*Using the installation wizard*

### Procedure

1. Insert the IBM MQ Server DVD into the DVD-ROM drive.
2. If autorun is enabled, the installation process starts.  
Otherwise, double-click the **Setup** icon in the root folder of the DVD to start the installation process.  
The IBM MQ Installation Launchpad window is displayed.
3. Click the **IBM MQ Installation**.
4. Click **Launch IBM MQ Installer**. Click **Next** until the IBM MQ Program Maintenance panel is displayed with a welcome message.  
If this panel is not displayed, IBM WebSphere MQ for Windows 7.5 is not installed on this machine. When presented with the option, select to remove/maintain or upgrade.
5. Select **Maintain or upgrade an existing instance**, then click **Next**.
6. If there are any existing queue managers, the Removing Server feature panel is displayed.  
Click one of the following options, then click **Next**:
  - **Keep** - keep existing queue managers and their objects.
  - **Remove** - remove existing queue managers and their objects.The Program Maintenance panel is displayed, with a summary of the installation to be removed.
7. Click **Modify** and click **Next**.
8. On the list of available IBM MQ features, click Advanced Message Security, select **Do not install this feature (remove if already intalled)**, and click **Next**.  
The Ready to modify IBM MQ panel appears with the summary of your changes.
9. Click **Modify** and **Next** on the following panel to continue.

### Results

Selected features of Advanced Message Security component have been removed.

## **Installing Managed File Transfer**

From IBM WebSphere MQ 7.5 onwards, Managed File Transfer is installed as a component of IBM MQ on UNIX, Linux, and Windows. Managed File Transfer remains as a separate product on IBM i and z/OS.

### Before you begin

Before you install Managed File Transfer, check that your system meets both the hardware and software requirements of the product. See [System Requirements for IBM MQ](#).

For all platforms, you must have one IBM WebSphere MQ 7.0, or higher, queue manager available in your Managed File Transfer network to use as the coordination queue manager.

## About this task

**ULW** The following steps describe installing Managed File Transfer as a component of IBM MQ on UNIX, Linux, and Windows.

**Note:** You must update database logger instances before other parts of the Managed File Transfer network so that these instances can correctly process the latest versions of the transfer log messages that they receive.

## Procedure

1. Decide which Managed File Transfer components to install.

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. These options are Managed File Transfer Agent, Managed File Transfer Service, Managed File Transfer Logger, or Managed File Transfer Tools.

To decide which components to install, review the product options and topology information in the following topics:

- [Managed File Transfer product options](#)
- [Managed File Transfer topology overview](#)

2. Install IBM MQ, including Managed File Transfer components.

For information about which specific components to install for your platform, including Managed File Transfer, see [“IBM MQ components and features”](#) on page 6.

For more information about installing IBM MQ on UNIX, Linux, and Windows, see the appropriate information for your platform:

- **AIX** [“Installing and uninstalling IBM MQ on AIX”](#) on page 26
- **HP-UX** [“Installing and uninstalling IBM MQ on HP-UX”](#) on page 60
- **Linux** [“Installing and uninstalling IBM MQ on Linux”](#) on page 124
- **Solaris** [“Installing and uninstalling IBM MQ on Solaris”](#) on page 194
- **Windows** [“Installing and uninstalling IBM MQ on Windows”](#) on page 230

## Related concepts

[Managed File Transfer](#)

[Managed File Transfer topology overview](#)

## Related tasks

**IBM i** [Installing Managed File Transfer on IBM i](#)

**z/OS** [Installing IBM MQ for z/OS](#)

## Related reference

[Installed MFT command sets](#)

The following table shows which Managed File Transfer commands are installed with each component.

## **Managed File Transfer product options**

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. These options are Managed File Transfer Agent, Managed File Transfer Service, Managed File Transfer Logger, or Managed File Transfer Tools.

### **Managed File Transfer Agent**

A file transfer agent connects to an IBM MQ queue manager, and transfers file data, as messages, to other file transfer agents.

You install an agent through either the Managed File Transfer Agent or Managed File Transfer Service installation options.

The Managed File Transfer Agent option installs an agent that has the following capabilities:

- Make client or bindings mode connections to queue managers.

**Note:** When the file transfer agent and queue manager are on the same system, consider using the bindings mode connections.

- Transfer files to and from other Managed File Transfer agents.
- Transfer files to and from Connect:Direct® nodes.

The Managed File Transfer Service option, described in the next section, installs a file transfer agent that also has additional capability to transfer files to and from legacy FTP, FTPS, or SFTP protocol servers.

### **Managed File Transfer Service**

The Managed File Transfer Service option installs an agent that has the following capabilities:

- Make client or bindings mode connections to queue managers.

**Note:** When the file transfer agent and queue manager are on the same system, consider using the bindings mode connections.

- Transfer files to and from other Managed File Transfer agents.
- Transfer files to and from Connect:Direct nodes.
- Create protocol bridge agents that transfer files to and from legacy SFTP, FTP, or FTPS protocol servers.

Some capabilities are available on only a subset of supported platforms. For more information, see IBM MQ System Requirements.

A Managed File Transfer Service can only be installed on systems where the IBM MQ Server option is already installed.

### **Managed File Transfer Logger**

A file transfer logger connects to an MQ queue manager, often the queue manager that is designated as the coordination queue manager, and logs audit-related file transfer data to either a database or a file. A logger can only be installed on systems where the IBM MQ Server installation option is already installed.

### **Managed File Transfer Tools**

The Managed File Transfer Tools are command line tools that you use to interact with file transfer agents. The tools allow you to start file transfers, schedule file transfers and create resource monitors from the command line. The Managed File Transfer Tools need not be installed on the same system as the file transfer agents that they interact with.

## Managed File Transfer Base

### UNIX

On UNIX platforms, there is an additional Managed File Transfer Base installation component. This component contains files common to all of the installation options. You must install the Managed File Transfer Base component before installing any of the Agent, Logger, Service, or Tools components.

For more information about the IBM MQ components that are required for each product option on UNIX platforms, see the following topics:

- **AIX** [“Required MFT components on AIX” on page 326](#)
- **HP-UX** [“Required MFT components on HP-UX” on page 327](#)
- **Linux** [“Required MFT components on Linux” on page 328](#)
- **Solaris** [“Required MFT components on Solaris” on page 329](#)

### Related concepts

[Managed File Transfer introduction](#)

[Managed File Transfer topology overview](#)

### AIX *Required MFT components on AIX*

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. On AIX systems, these options are Managed File Transfer Agent, Managed File Transfer Logger, Managed File Transfer Service, and Managed File Transfer Tools, and each option requires specific components.

## Managed File Transfer Agent

mqm.base.runtime

mqm.java.rte

mqm.jre.rte

mqm.ft.base

mqm.ft.agent

## Managed File Transfer Logger

mqm.base.runtime

mqm.server.rte

mqm.java.rte

mqm.jre.rte

mqm.ft.base

mqm.ft.logger

## Managed File Transfer Service

mqm.base.runtime

mqm.server.rte

mqm.java.rte

mqm.jre.rte

mqm.ft.base

mqm.ft.agent  
mqm.ft.service

## Managed File Transfer Tools

mqm.base.runtime  
mqm.java.rte  
mqm.jre.rte  
mqm.ft.base  
mqm.ft.tools

### **Required MFT components on HP-UX**

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. On HP-UX systems, these options are Managed File Transfer Agent, Managed File Transfer Logger, Managed File Transfer Service, and Managed File Transfer Tools, and each option requires specific components.

## Managed File Transfer Agent

MQSERIES.MQM-RUNTIME  
MQSERIES.MQM-JAVA  
MQSERIES.MQM-JAVAJRE  
MQSERIES.MQM-FTBASE  
MQSERIES.MQM-FTAGENT

## Managed File Transfer Logger

MQSERIES.MQM-RUNTIME  
MQSERIES.MQM-SERVER  
MQSERIES.MQM-JAVA  
MQSERIES.MQM-JAVAJRE  
MQSERIES.MQM-FTBASE  
MQSERIES.MQM-FTLOGGER

## Managed File Transfer Service

MQSERIES.MQM-RUNTIME  
MQSERIES.MQM-SERVER  
MQSERIES.MQM-JAVA  
MQSERIES.MQM-JAVAJRE  
MQSERIES.MQM-FTBASE  
MQSERIES.MQM-FTAGENT  
MQSERIES.MQM-FTSERVICE

## Managed File Transfer Tools

MQSERIES.MQM-RUNTIME

MQSERIES.MQM-JAVA  
MQSERIES.MQM-JAVAJRE  
MQSERIES.MQM-FTBASE  
MQSERIES.MQM-FTTOOLS

### **Required MFT components on Linux**

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. On Linux systems, these options are Managed File Transfer Agent, Managed File Transfer Logger, Managed File Transfer Service, and Managed File Transfer Tools, and each option requires specific components.

#### **Managed File Transfer Agent**

MQSeriesRuntime  
MQSeriesJava  
MQSeriesJRE  
MQSeriesFTBase  
MQSeriesFTAgent

#### **Managed File Transfer Logger**

MQSeriesRuntime  
MQSeriesServer  
MQSeriesJava  
MQSeriesJRE  
MQSeriesFTBase  
MQSeriesFTLogger

#### **Managed File Transfer Service**

MQSeriesRuntime  
MQSeriesServer  
MQSeriesJava  
MQSeriesJRE  
MQSeriesFTBase  
MQSeriesFTAgent  
MQSeriesFTService

#### **Managed File Transfer Tools**

MQSeriesRuntime  
MQSeriesJava  
MQSeriesJRE  
MQSeriesFTBase  
MQSeriesFTTools



## **Required MFT components on Solaris**

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. On Solaris systems, these options are Managed File Transfer Agent, Managed File Transfer Logger, Managed File Transfer Service, and Managed File Transfer Tools, and each require specific components.

### **Managed File Transfer Agent**

runtime

java

jre

ftbase

ftagent

### **Managed File Transfer Logger**

runtime

server

java

jre

ftbase

ftlogger

### **Managed File Transfer Service**

runtime

server

java

jre

ftbase

ftagent

ftservice

### **Managed File Transfer Tools**

runtime

java

jre

ftbase

fttools

## Installed MFT command sets

The following table shows which Managed File Transfer commands are installed with each component.

Table 45. Managed File Transfer commands available in each command set					
Command	Agent command set	Service command set	Tools command set	Logger command set	<b>V 9.0.1</b> Redistributable Managed File Transfer Agent set
fteAnt			✓		✓
fteBundleConfiguration			✓ (UNIX, Linux, and Windows only)		✓
fteCancelTransfer			✓		✓
fteChangeDefaultConfigurationOptions	✓	✓	✓	✓	✓
fteCleanAgent	✓	✓			✓
fteCreateAgent	✓	✓			✓
fteCreateBridgeAgent		✓			✓
fteCreateCDAgent	✓ (UNIX, Linux, and Windows only)	✓ (UNIX, Linux, and Windows only)			
<b>V 9.0.1</b> <b>V 9.0.1</b> fteCreateEnvironment					✓
fteCreateLogger				✓	
fteCreateMonitor			✓		✓
fteCreateTemplate			✓		✓
fteCreateTransfer			✓		✓
fteDefine			✓ (UNIX, Linux, and Windows only)		✓
fteDelete			✓ (UNIX, Linux, and Windows only)		✓
fteDeleteAgent	✓	✓			✓
fteDeleteLogger				✓	
fteDeleteMonitor			✓		✓
fteDeleteScheduledTransfer			✓		✓
fteDeleteTemplates			✓		✓
fteDisplayVersion	✓	✓		✓	✓
fteListAgents	✓	✓	✓	✓	✓
fteListMonitors			✓		✓
fteListScheduledTransfers			✓		✓

Table 45. Managed File Transfer commands available in each command set (continued)

Command	Agent command set	Service command set	Tools command set	Logger command set	<b>V 9.0.1</b> Redistributable Managed File Transfer Agent set
fteListTemplates			✓		✓
fteMigrateAgent	✓	✓			✓
fteMigrateConfigurationOptions	✓	✓	✓	✓	✓
fteMigrateLogger				✓	
fteModifyAgent	✓ (Windows only)	✓ (Windows only)			✓
fteModifyLogger				✓ (Windows only)	
fteObfuscate	✓	✓		✓	✓
ftePingAgent			✓		✓
fteRAS		✓			✓
fteSetAgentLogLevel	✓				✓
fteSetAgentTraceLevel	✓	✓			✓
fteSetLoggerTraceLevel				✓	
fteSetupCommands	✓	✓	✓	✓	✓
fteSetupCoordination	✓	✓	✓	✓	✓
fteShowAgentDetails	✓	✓	✓	✓	✓
fteShowLoggerDetails				✓	
fteStartAgent	✓	✓			✓
fteStartLogger				✓	
fteStopAgent	✓	✓			✓
fteStopLogger				✓	

Windows

MQ Adv.

Linux

AIX

**Installing MQ Telemetry**

Installation tasks associated with MQ Telemetry are grouped in this section.

**About this task**

MQ Telemetry is installed as part of the IBM MQ server installation.




MQ Telemetry is a separately installed component of IBM MQ and is another option on the IBM MQ installer. Make sure that you purchase a license for using IBM MQ Advanced before the installation (see [IBM MQ license information](#)).

**Procedure**

- Install IBM MQ, including MQ Telemetry.

For information about which specific components to install for your platform, including MQ Telemetry, see [“IBM MQ components and features”](#) on page 6.

For more information about installing IBM MQ on AIX, Linux, or Windows, see the appropriate information for your platform:

-  [“Installing and uninstalling IBM MQ on AIX”](#) on page 26
-  [“Installing and uninstalling IBM MQ on Linux”](#) on page 124
-  [“Installing and uninstalling IBM MQ on Windows”](#) on page 230

## Installation considerations for MQ Telemetry

From IBM WebSphere MQ 7.1, MQ Telemetry is a component of the main IBM MQ product, and is no longer a separate plugin. You can choose to install MQ Telemetry when you first install IBM MQ, or when you modify an existing IBM MQ installation.

## MQ Telemetry overview

See [Introduction to MQ Telemetry](#) for general details about MQ Telemetry.

## Support for IBM MQ Explorer

You can use IBM MQ Explorer to configure and manage the MQ Telemetry runtime component. For a queue manager to accept connections from a telemetry device, one or more telemetry channels are needed. To enable MQTT, there is a `define sample configuration` wizard that can be run from IBM MQ Explorer. The wizard runs through a series of steps including defining and starting the telemetry (MQXR) service, setting up the default transmission queue, and configuring a telemetry channel. For more information about using the `define sample configuration` wizard, and any implications, see [“Verifying the installation of MQ Telemetry by using IBM MQ Explorer”](#) on page 334.

The IBM MQ Explorer support provides the following capabilities:

- Telemetry node and content panel - providing welcome information, define sample configuration wizard, run MQTT client utility, Help on MQ Telemetry, and status information about the MQ Telemetry Service.
- Define sample configuration wizard - quickly configures a queue manager to support MQTT.
- New Telemetry Channel wizard - gathers information required to create a telemetry channel object.
- Telemetry Channels node and content panel - displays telemetry channels in the IBM MQ Explorer Content view.
- Telemetry Channel Status node and content panel - displays telemetry channel status in the IBM MQ Explorer Content view.
- MQTT Client Utility - provides a simple GUI for publishing and subscribing to topics.
- Help on MQ Telemetry.

You can install the MQ Telemetry runtime component on one system and configure and manage it using the IBM MQ Explorer installed on another system. However, the components can be installed only on systems with the appropriate prerequisites. For information about these prerequisites, see [IBM MQ system requirements](#).

## MQ Telemetry client libraries and SDK

To help you write messaging applications for MQTT networks, you can install and use a set of free example MQTT clients:

- In IBM WebSphere MQ 7.5, the client libraries were supplied with the product, in the Client Software Development Kit (SDK).

- From IBM MQ 8.0, this SDK was no longer supplied as part of the product. Instead, a version of the SDK was available as IBM Messaging Telemetry Clients SupportPac. This SupportPac was withdrawn in September 2020.
- Example clients continue to be freely available from the [Eclipse Paho downloads page](#).

If you still have a copy of IBM Messaging Telemetry Clients SupportPac, then you have the following resources available to you:

- Sample MQTT client applications written in Java, in JavaScript, and in C.
- MQTT client libraries that support these client applications, and enable them to run on most platforms and devices, including Android devices and products from Apple.

Install the clients in a directory of your own choosing. The sample applications and client libraries are in client-specific directories under `<CLIENTPACKDIR>/SDK/clients`, where `<CLIENTPACKDIR>` is the directory in which you uncompressed the client pack.

### **Related concepts**

[MQ Telemetry](#)

[Telemetry use cases](#)

### **Related tasks**

[Administering MQ Telemetry](#)

[Developing applications for MQ Telemetry](#)

[MQ Telemetry troubleshooting](#)

### **Related reference**

[MQ Telemetry reference](#)

## **Verifying the installation of MQ Telemetry**

There are three ways to verify the installation of MQ Telemetry. Any can be used, regardless of whether MQ Telemetry was installed as a custom installation of IBM MQ, or added to an existing installation of IBM MQ.

### **About this task**

Within IBM MQ you can verify the installation of MQ Telemetry either by using IBM MQ Explorer, or by using the command line.

You can also verify the installation by using the MQTT messaging client for JavaScript in a browser that supports the RFC 6455 (WebSocket) standard. A version of this client is installed with MQ Telemetry, and the latest version is freely available from the [Eclipse Paho downloads page](#). To verify the MQ Telemetry installation you do not need the latest version of the client.

### **Procedure**

- Verify your installation in one of the following ways:
  - By using IBM MQ Explorer as described in [“Verifying the installation of MQ Telemetry by using IBM MQ Explorer”](#) on page 334.
  - By using the command line as described in [“Verifying the installation of MQ Telemetry using the command line”](#) on page 335.

## Explorer

Use the Define sample configuration wizard and the MQTT client utility in IBM MQ Explorer to verify that the MQ Telemetry components have installed. Also check that publish/subscribe works correctly.

## Before you begin

The MQ Telemetry runtime and support for IBM MQ Explorer must be installed. The telemetry folder is part of a queue manager. To view the telemetry folder, you must start a queue manager.

Before running the define sample configuration wizard on an existing queue manager, review the information provided by the wizard about the configuration changes that are made. The changes might have implications for the configuration of the existing queue manager. Alternatively, run the sample configuration wizard on a newly created queue manager to avoid changing any security settings.

## About this task

To configure MQ Telemetry there is a define sample configuration wizard that can be run from IBM MQ Explorer. The wizard runs through a series of steps, including defining and starting the telemetry (MQXR) service, setting up the default transmission queue, and configuring a telemetry channel.

If you would prefer to do this manually, see [Configuring a queue manager for telemetry on Linux and AIX](#) . For Windows, see [Configuring a queue manager for telemetry on Windows](#) .

You can open the define sample configuration wizard from the MQ Telemetry Welcome page in IBM MQ Explorer. The wizard determines which steps are required based on the current configuration.

For example, the following actions might be specified by the wizard:

- Define the telemetry (MQXR) service.
- Start the telemetry (MQXR) service.
- Define the telemetry transmit queue.
- Set the default transmit queue of the queue manager to `SYSTEM.MQTT.TRANSMIT.QUEUE`.

If telemetry is already configured for this queue manager, the link to open the wizard is replaced with static text. The text confirms that the sample configuration has been set up.

After the configuration has finished, you can use IBM MQ Explorer to open the MQTT client utility. Use the MQTT client utility to verify that MQ Telemetry is set up correctly.

The following items summarize the main goals that can be achieved using the MQTT client utility:

- Validation of a basic or custom MQ Telemetry configuration by connecting, subscribing to topics and publishing messages.
- Showcases the main features of MQTT protocol.
- Provides a simple tool to aid in debugging MQ Telemetry applications.

You can find additional information within the IBM MQ Explorer by using the **Help** menu or pressing the **F1** key.

## Procedure

1. Start IBM MQ Explorer.

On Windows and Linux systems, you can start IBM MQ Explorer by using the system menu, the `MQExplorer` executable file, the `mqexplorer` command, or the `strmqcfig` command.

2. Open the **Welcome to MQ Telemetry** page.

- To use an existing queue manager, click on IBM MQ\Queue Managers\*qMgrName*\Telemetry folder to open the **Welcome to MQ Telemetry** page.
- If, for the reasons mentioned, you decide to use a new queue manager,

- a. Click **Queue Managers > New > Queue Manager**.
  - b. Type MQTTVerification as the **Queue manager name > Next > Next > Next**.
  - c. Change the default port in **Listen on port number**, if the port is in use > **Finish**.
  - d. When the queue manager starts, click on IBM MQ\Queue Managers\MQTTVerification\Telemetry folder to open the **Welcome to MQ Telemetry** page.
3. From the **Welcome to MQ Telemetry** page in IBM MQ Explorer, click **Define sample configuration**.
- If this link is not present, and instead you see the text, "The sample configuration has been set up for this queue manager", then telemetry has already been configured. Proceed to step "6" on page 335.
- If you clicked **Define sample configuration**, the page opens, and lists actions that are to be performed as part of the sample configuration.
4. Leave **Launch MQTT client utility** checked, if you want to automatically start the MQTT client utility. The check box is selected by default.
5. Click **Finish**.
6. Click **Connect**.
- In the MQTT client utility panel, ensure that the host and port names are correct.
- If you did not automatically start the MQTT client utility panel in step 4, you can start it either by using a direct link from the **Welcome to MQ Telemetry** panel, or by right-clicking a NON-TLS channel, which allows you to control the channel it runs on.
- The client history records a Connected event.
7. Click **Subscribe**.
- The client history records a Subscribed event.
8. Click **Publish**.
- The client history records a Published and Received event.

## Results

If the publish/subscribe finishes successfully, the MQ Telemetry installation is verified.

If you encounter problems during the installation process, view the error log:

- On Windows, the default location for this log is, *IBM MQ data directory\qmgrs\qMgrName\mqxr*
- On AIX and Linux, the default location for this log is, */var/mqm/qmgrs/qMgrName/mqxr/*

## Verifying the installation of MQ Telemetry using the command line

Follow these instructions to run scripts and a sample application to verify that the MQ Telemetry components have installed, and are able to publish and subscribe.

## Before you begin

### Note:

This task uses the mqttv3app sample Java application, and the associated Java client library. These resources were previously available in the IBM Messaging Telemetry Clients SupportPac, and the detailed instructions in this task assume that you have a copy of this SupportPac.

The IBM Messaging Telemetry Clients SupportPac is no longer available. Free downloads of the latest telemetry clients and samples, for a range of programming languages, continue to be available from the [Eclipse Paho](#) project, and from [MQTT.org](#).

The telemetry (MQXR) service must be started to run the sample programs. The user ID must be a member of the mqm group.

The SampleMQM script creates and uses a queue manager called MQXR\_SAMPLE\_QM. Therefore, do not run unaltered on a system that already has a MQXR\_SAMPLE\_QM queue manager. Any changes made might have implications for the configuration of the existing queue manager.

There are two commands to run the mqttv3app sample Java application. The first command creates a subscription, then waits for a message. The second command publishes to that subscription. Therefore the commands must be entered into different command lines or shell windows.

## About this task

To perform verification on a server or device without a GUI, scripts are provided in the samples directory. The SampleMQM script performs the required steps to configure MQ Telemetry. The mqttv3app sample Java application can then be run to validate the basic or custom MQ Telemetry configuration by connecting, subscribing to topics, and publishing messages. The CleanupMQM sample script can be run to delete the queue manager created by the SampleMQM script.

The following items summarize the main goals that can be achieved using this verification procedure:

- Validate a basic or custom MQ Telemetry configuration by connecting, subscribing to topics and publishing messages.
- Showcase the main features of the MQTT protocol.
- Provide a simple tool to aid in debugging MQ Telemetry applications.

## Procedure

1. Decompress the IBM Messaging Telemetry Clients SupportPac into a directory of your own choosing.

This task uses the mqttv3app sample Java application, and the associated mqttv3 Java client library. If you have an older version of the MA9C SupportPac, the sample applications and client libraries are in the *CLIENTPACKDIR*/SDK/clients/java directory, where *CLIENTPACKDIR* is the directory in which you decompressed the client pack.

**Note:** The later (MA9C) version of the IBM Messaging Telemetry Clients SupportPac does not have the /SDK/ directory, and does not include a compiled copy of the mqttv3app sample application. If you have this version of the SupportPac, you need to compile the application manually, then create the /SDK/ directory and contents. For the latest information about available clients and samples, see [IBM MQ Telemetry Transport sample programs](#).

2. Configure MQ Telemetry.

The SampleMQM script runs through a series of steps, including creating the MQXR\_SAMPLE\_QM queue manager, defining and starting the telemetry (MQXR) service, setting up the default transmission queue, and configuring a telemetry channel.

For information about performing this manually, see [Configuring a queue manager for telemetry on Linux and AIX](#), or [Configuring a queue manager for telemetry on Windows](#).

- On Windows systems, enter the following command in a command line:

```
MQINSTDIR\mqxr\samples\SampleMQM.bat
```

- On AIX or Linux systems, enter the following command in a shell window:

```
MQINSTDIR/mqxr/samples/SampleMQM.sh
```

where *MQINSTDIR* is the installation directory for this installation of IBM MQ.

A queue manager called MQXR\_SAMPLE\_QM is created, and MQ Telemetry is configured.

3. Run the mqttv3app sample Java application to create a subscription.

- On Windows systems, enter the following commands in a command line:

```
java -cp  
"CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.sample.mqttv3app.jar;
```



```
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.client.mqttv3.jar"
org.eclipse.paho.sample.mqttv3app.Sample -a subscribe
```

- On AIX or Linux systems, enter the following commands in a shell window:

```
java -cp
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.sample.mqttv3app.jar:
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.client.mqttv3.jar
org.eclipse.paho.sample.mqttv3app.Sample -a subscribe
```

The subscription is created, and waits to receive a message.

4. Run the mqttv3app sample Java application to publish to the subscription.

- On Windows systems, enter the following command in a second command line:

```
java -cp
"CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.sample.mqttv3app.jar;
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.client.mqttv3.jar"
org.eclipse.paho.sample.mqttv3app.Sample -m "Hello from an MQTT v3 application"
```

- On AIX or Linux systems, enter the following command in a second shell window:

```
java -cp
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.sample.mqttv3app.jar:
CLIENTPACKDIR\SDK\clients\java\org.eclipse.paho.client.mqttv3.jar
org.eclipse.paho.sample.mqttv3app.Sample -m "Hello from an MQTT v3 application"
```

The message Hello from an MQTT v3 application, that you typed into the second command line or shell window, is published by that application and received by the application in the first window. The application in the first window shows it on the screen.

5. Press **Enter** in the first command line or shell window to end the subscribing application.
6. Remove the queue manager created by the SampleMQM script.

- On Windows systems, enter the following command in a command line:

```
MQINSTDIR\mqxr\samples\CleanupMQM.bat
```

- On AIX or Linux systems, enter the following command in a shell window:

```
MQINSTDIR/mqxr/samples/CleanupMQM.sh
```

## Results

If the scripts finished, and messages can be sent and received, the MQ Telemetry installation is verified.

## What to do next

If you encounter any problems during the verification process, see [MQ Telemetry troubleshooting](#). You can also view the error log:

- On Windows systems, the default location for the queue manager log is  
MQINSTDIR\qmgrs\MQXR\_SAMPLE\_QM\mqxr
- On AIX and Linux systems, the default location for the queue manager log is /var/mqm/qmgrs/  
MQXR\_SAMPLE\_QM/mqxr/

## Installing RDQM (replicated data queue managers)

Installation tasks associated with RDQM are grouped in this section. RDQM is only available on RHEL 7.x on x86-64.

### Before you begin

Pacemaker is one of the prerequisites for RDQM that you install as part of this task. Pacemaker requires that the following Linux packages are installed on the system:

- OpenIPMI-modalias.x86\_64
- OpenIPMI-libs.x86\_64
- libyaml.x86\_64
- PyYAML.x86\_64
- libesmtplib.x86\_64
- net-snmp-libs.x86\_64
- net-snmp-agent-libs.x86\_64
- openhpi-libs.x86\_64
- libtool-ltdl.x86\_64
- perl-TimeDate.x86\_64

### About this task

To install support for RDQM (replicated data queue managers), you run two scripts that perform the following tasks:

1. Install IBM MQ on each node.
2. Install DRBD and Pacemaker on each node.
3. Install RDQM on each node.
4. Configure the firewall on each node.

The DRBD and Pacemaker RPM packages are supplied on the IBM MQ media. You should install the versions supplied with IBM MQ. Do not download your own versions.

The DRBD and Pacemaker packages are signed with the LINBIT GPG key. Use the following command to import the public LINBIT GPG key:

```
rpm --import https://packages.linbit.com/package-signing-pubkey.asc
```

Without this step, an RPM install of these packages issues the following warnings:

```
warning: rpm-name: Header V4 DSA/SHA1 Signature, key ID 282b6e23: NOKEY"
```

The same installation location should be used on all three servers that are the nodes in the HA group, or both servers in a DR pair. You can have multiple IBM MQ installations on each server, but only one of these installations should be an RDQM installation.

The following installation script is supplied in the Advanced/RDQM directory of the installation media. You must run the script as root:

### installRDQMsupport

By default, installs the IBM MQ runtime, server, samples, client, and RDQM RPM packages. Also installs the DRBD and Pacemaker RPM packages. (You can edit this file, if required, to add additional RPM packages to install; see [“IBM MQ rpm components for Linux systems”](#) on page 136 for a list of available RPM packages.)

A script for configuring the firewall for HA RDQM is supplied in the IBM MQ samples directory, you must run the script as root:

### **`MQ_INSTALLATION_PATH/samp/rdqm/firewalld/configure.sh`**

Adds the following permanent firewalld service rules for DRBD, Pacemaker, and IBM MQ:

- `MQ_INSTALLATION_PATH/samp/rdqm/firewalld/services/rdqm-drbd.xml` allows TCP ports 7000-7100.
- `MQ_INSTALLATION_PATH/samp/rdqm/firewalld/services/rdqm-pacemaker.xml` allows UDP ports 5404-5407
- `MQ_INSTALLATION_PATH/samp/rdqm/firewalld/services/rdqm-mq.xml` allows TCP port 1414 (you must edit the script if you require a different port)

**V 9.0.5** For DR RDQM you specify the replication port when you create a DR RDQM, so must configure your firewall to add firewalld service rules accordingly.



**Attention:** You should retain the installation media, in case there is a need to revert to this level, after upgrading to a later level.

## **Procedure**

To install RDQM support, on each node:

1. Run the script `installRDQMsupport` to install IBM MQ, RDQM support, DRBD, and Pacemaker.
2. Run the script `MQ_INSTALLATION_PATH/samp/rdqm/firewalld/configure.sh` to configure the firewall for HA RDQM operation.

## **What to do next**

You can now configure the Pacemaker cluster and replicated data queue managers, see [RDQM high availability](#). Or you can configure disaster recovery replicated data queue managers, see [RDQM disaster recovery](#).

### **Related tasks**

[Migrating replicated data queue managers](#)

## **MQ Adv. Linux V 9.0.4 Uninstalling RDQM (replicated data queue managers)**

You can uninstall RDQM by using the supplied uninstallation scripts.

## **About this task**

Before you uninstall HA RDQM, you must first suspend the HA group, or remove it from the node altogether.



**Attention:** If you are uninstalling the RDQM support in order to revert to an earlier level, ensure that the installation media for the earlier level is available before proceeding.

An uninstallation script is supplied in the root directory of the installation image, you must run the script as root:

### **`uninstallRDQMsupport`**

By default, uninstalls the MQSeries Runtime, Server, Samples, Client and RDQM RPM packages along with the DRBD and Pacemaker RPM packages. You can edit the script, if required. If you do not want to uninstall IBM MQ when the script is run comment out the line:

```
yum -y remove $MQ_DEPENDENCIES $RDQM_PACKAGES $ADDITIONAL_MQ_PACKAGES
```

A script for undoing the firewall configuration is supplied in the IBM MQ samples directory, you must run the script as root:

## **`MQ_INSTALLATION_PATH/samp/rdqm/firewalld/unconfigure.sh`**

Removes firewalld service rules for DRBD, Pacemaker and IBM MQ.

### **Procedure**

- To uninstall HA RDQM support, on each node:
  - a) Suspend or delete the HA group. To suspend the HA group on the node, enter the following command:

```
rdqmadm -s
```

To delete the HA group from the node, enter the following command:

```
rdqmadm -u
```

- b) Run the script `MQ_INSTALLATION_PATH/samp/rdqm/firewalld/unconfigure.sh` to undo the firewall configuration.
  - c) Run the script `uninstallRDQMsupport` to uninstall IBM MQ, RDQM support, DRBD, and Pacemaker.
- **V 9.0.5**  
To uninstall DR RDMQ support:
    - a) Back up the queue manager running on the primary node, see [Backing up and restoring IBM queue manager data](#).
    - b) Delete the queue manager on both the primary and secondary nodes, see [Deleting a DR RDQM](#).
    - c) Run the script `uninstallRDQMsupport` to uninstall IBM MQ, RDQM support, DRBD, and Pacemaker.

### **Related reference**

`rdqmadm` ([administer replicated data queue manager cluster](#))

## **z/OS Installing IBM MQ for z/OS**

Installation tasks that are associated with installing IBM MQ on z/OS systems are grouped in this section.


### **About this task**

IBM MQ for z/OS uses the standard z/OS installation procedure. It is supplied with a Program Directory that contains specific instructions for installing the program on a z/OS system. You must follow the instructions in the appropriate Program Directory. The Program Directory includes not only details of the installation process, but also information about the prerequisite products and their service or maintenance levels. For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

SMP/E, used for installation on the z/OS platform, validates the service levels and prerequisite and corequisite products, and maintains the SMP/E history records to record the installation of IBM MQ for z/OS. It loads the IBM MQ for z/OS libraries and checks that the loads have been successful. You then have to customize the product to your own requirements.

Before you install and customize IBM MQ for z/OS, you must decide the following:

- Whether you are going to install one of the optional national language features. See [National language support](#).
- Which communications protocol and distributed queuing facility you are going to use. See [Communications protocol and distributed queuing](#).
- What your naming convention for IBM MQ objects will be. See [Naming conventions](#).

- What command prefix string (CPF) you are going to use for each queue manager. See [Using command prefix strings](#).
-  When upgrading from a previous Continuous Delivery release through the installation of PTFs, decide whether any USERMODs that have been applied to IBM MQ for z/OS will still be required. Remove the USERMODs before installation of the Continuous Delivery PTFs, or use the SMP/E BYPASS(ID) option on APPLY. If neither of these actions is performed, an SMP/E MODID ERROR GIM38201E will be received.

The PTFs for the latest Continuous Delivery release can be determined by using [SMP/E FIXCAT HOLDDATA category IBM.MQ.V9R0Mn](#), where *n* is the modification level. For example, category [IBM.MQ.V9R0M2](#) identifies fixes that upgrade IBM MQ for z/OS 9.0 Continuous Delivery to modification level 2.

You also need to plan how much storage you require in your z/OS system to accommodate IBM MQ; [Planning your storage and performance requirements on z/OS](#) helps you plan the amount of storage required.

## Procedure

1. Check that your system hardware, and software levels meet the minimum requirements.  
See [“Checking requirements on z/OS”](#) on page 343.
2. Plan your installation  
See [“Planning to install IBM MQ for z/OS”](#) on page 343.
3. Install and configure IBM MQ for z/OS, by following the instructions detailed in the Program Directory.  
See also the information in the subtopics for further guidance.

## z/OS installation overview

IBM MQ functions are provided as a number of different products, which are installed together to provide the capability required.

The different products are:

### IBM MQ for z/OS

Provides IBM MQ capability, connectivity on and off the z/OS platform, and excellent integration with z/OS software, such as CICS®, IMS, WebSphere Application Server, and Db2. Licensed under a Monthly License Charge (MLC) model.

### IBM MQ for z/OS Value Unit Edition (VUE)

Same functionality as IBM MQ for z/OS, but licensed under a One Time Charge (OTC) model. Can coexist and interact with IBM MQ MLC offerings in other LPARs.

From an installation perspective, the same FMIDs as for IBM MQ for z/OS are installed, then, an additional enablement feature is added, which changes product usage recording for billing purposes.

### IBM MQ Managed File Transfer for z/OS (MFT)

See the [Note](#) about the withdrawal of 5655-MF9.

Equivalent function as Managed File Transfer on [Multiplatforms](#), though more closely integrated with base IBM MQ offering as of IBM MQ 8.0. Must be locally bound to a z/OS queue manager.

### IBM MQ Advanced Message Security for z/OS (AMS)

See the [Note](#) about the withdrawal of 5655-AM9.

Provides end to end encryption of messages throughout the IBM MQ network. Data is encrypted at rest, as well as when data is being transmitted.

From an installation perspective, AMS only provides an enablement feature, which permits encryption code integrated into the queue manager to be used.

### IBM MQ Advanced for z/OS

Bundling of IBM MQ Managed File Transfer for z/OS and IBM MQ Advanced Message Security for z/OS only; that is, no IBM MQ for z/OS. Can be deployed with IBM MQ MLC or VUE offerings

### IBM MQ Advanced for z/OS, Value Unit Edition

Bundling of IBM MQ for z/OS Value Unit Edition, together with IBM MQ Managed File Transfer for z/OS, and IBM MQ Advanced Message Security for z/OS

The two different licensing models, together with their associated bundles, are shown in the following table:

Licensing Model			Product Name	Product ID
MLC			IBM MQ for z/OS	5655-MQ9
OTC	VUE is also available in MQ Advanced for z/OS VUE		IBM MQ for z/OS Value Unit Edition	5655-VU9
OTC	MFT is also available in MQ Advanced for z/OS VUE	MFT is also available in MQ Advanced for z/OS	IBM MQ Managed File Transfer (MFT) for z/OS	5655-MF9
OTC	AMS is also available in MQ Advanced for z/OS VUE	AMS is also available in MQ Advanced for z/OS	IBM MQ Advanced Message Security (AMS) for z/OS	5655-AM9
OTC			IBM MQ Advanced for z/OS	5655-AV9
OTC			IBM MQ Advanced for z/OS Value Unit Edition	5655-AV1

Figure 1. IBM MQ for z/OS product bundles

Both the IBM MQ Advanced Message Security product, and IBM MQ for z/OS Value Unit Edition product, provide their own module that only enables their respective function. The functional code is integrated into the base IBM MQ for z/OS code for efficiency, and supplied and serviced through the base IBM MQ for z/OS code.

**V 9.0.3** From IBM MQ 9.0.3, rather than separately install these enablement modules, a runtime configuration option is available. This provides simpler and more granular control of which functions are available, and better recording of the capabilities used in SMF billing data at an individual queue manager level. See [“Product usage recording with IBM MQ for z/OS products”](#) on page 348 for more information.

Program directories provide instructions for SMP/E installation of the program materials on to a target system. For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

The [Customizing IBM MQ for z/OS topics](#) guide you through customization of the code, and creating customized execution units, for example the queue manager and file transfer agents.

**Note:** As per the 9th July, 2019 announcement letter, 5655-AM9 IBM MQ Advanced Message Security for z/OS and 5655-MF9 IBM MQ Managed File Transfer for z/OS 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 for z/OS and IBM MQ Advanced for z/OS VUE.

### Related concepts

[Managed File Transfer product options](#)

Managed File Transfer can be installed as four different options, depending on your operating system and overall setup. These options are Managed File Transfer Agent, Managed File Transfer Service, Managed File Transfer Logger, or Managed File Transfer Tools.

### Related tasks

Maintaining and migrating

[Installing Advanced Message Security](#)

Use the information for your platform to guide you through installing the Advanced Message Security (AMS) component.

## Checking requirements on z/OS

Before you install IBM MQ on z/OS, you must check for the latest information and system requirements.

### About this task

A summary of the tasks that you must complete to check system requirements is listed here with links to further information.

### Procedure

1. Check that you have the latest information, including information on hardware and software requirements.  
See [“Where to find product requirements and support information”](#) on page 9.
2. Check that your systems meet the initial hardware and software requirements for IBM MQ on z/OS.  
Before attempting to install and run IBM MQ for z/OS, ensure that your system hardware, and software levels meet the minimum requirements. You can check the minimum required levels on the [System Requirements for IBM MQ](#) website. Follow the links to the appropriate Detailed System Requirements report for z/OS. There are separate reports for Long Term Support and Continuous Delivery.
3. Check that you have the correct licenses.  
See [“License requirements”](#) on page 8 and [IBM MQ license information](#).

## Planning to install IBM MQ for z/OS

To install the IBM MQ product your hardware, and software environment must meet minimum requirement levels. You must also consider the national language features, communications protocols, and naming conventions to be used.

### National language support

You can choose one of the following national languages for the IBM MQ operator messages and the IBM MQ operations and control panels (including the character sets used). Each language is identified by one of the following language letters:

**C**

Simplified Chinese

**E**

U.S. English (mixed case)

**F**

French

**K**

Japanese

**U**

U.S. English (uppercase)

The samples, IBM MQ commands, and utility control statements are available only in mixed case U.S. English.

## Communications protocol and distributed queuing

The distributed queuing facility provided with the base product feature of IBM MQ can either use APPC (LU 6.2), TCP/IP from IBM, or any TCP product which supports the z/OS Unix Sockets API. The distributed queuing facility is also known as the channel initiator and the mover.

You must perform the following tasks to enable distributed queuing:

- Choose which communications interface to use. This can be either, or both, of the following:
  - APPC (LU 6.2)
  - TCP/IP
- Customize the distributed queuing facility and define the IBM MQ objects required.
- Define access security.
- Set up your communications. This includes setting up your TCPIP.DATA data set if you are using TCP/IP, LU names, and side information if you are using APPC. This is described in [Setting up communication for z/OS](#).

## Naming conventions

It is advisable to establish a set of naming conventions when planning your IBM MQ systems. The names you choose will probably be used on different platforms, so you should follow the convention for IBM MQ, not for the particular platform.

IBM MQ allows both uppercase and lowercase letters in names, and the names are case sensitive. However, some z/OS consoles fold names to uppercase, so do not use lowercase letters for names unless you are sure that this will not happen.

You can also use numeric characters and the period (.), forward slash (/), underscore (\_) and percent (%) characters. The percent sign is a special character to Security Server (previously known as RACF®), so do not use it in names if you are using Security Server as your External Security Manager. Do not use leading or trailing underscore characters if you are planning to use the Operations and Control panels.

For more information, see [Rules for naming IBM MQ objects](#).

## Choosing names for queue managers and queue sharing groups

Each queue manager and queue sharing group within a network must have a unique name. Do not use the same name for a queue manager and a queue sharing group. On z/OS the names of queue managers and queue sharing groups can be up to four characters long. Each Db2 system and data-sharing group within the network must also have a unique name.

The names of queue manager and queue sharing groups can use only uppercase alphabetic characters, numeric characters, and dollar sign (\$), number sign (#) or at sign (@); they must not start with a numeric character. Queue sharing group names that are less than four characters long are padded internally with at signs, so do not use names ending in the at sign.

The queue manager name is the same as the z/OS subsystem name. You might identify each subsystem as a queue manager by giving it the name QM *xx* (where *xx* is a unique identifier), or you might choose a naming convention like ADDX, where A signifies the geographic area, DD signifies the company division, and X is a unique identifier.

You might want to use your naming convention to distinguish between queue managers and queue sharing groups. For example, you might identify each queue sharing group by giving it the name QG *xx* (where *xx* is the unique identifier).



## Choosing names for objects

Queues, processes, name lists, and clusters can have names up to 48 characters long. Channels can have names up to 20 characters long and storage classes can have names up to 8 characters long.

If possible, choose meaningful names within any constraints of your local conventions. Any structure or hierarchy within names is ignored by IBM MQ, however, hierarchical names can be useful for system management. You can also specify a description of the object when you define it to give more information about its purpose.

Each object must have a unique name within its object type. However, each object type has a separate namespace, so you can define objects of different types with the same name. For example, if a queue has an associated process definition, it is a good idea to give the queue and the process the same name. It is also a good idea to give a transmission queue the same name as its destination queue manager.

You could also use the naming convention to identify whether the object definition is private or a global. For example, you could call a namelist `project_group.global` to indicate that the definition is stored on the shared repository.

## Application queues

Choosing names that describe the function of each queue helps you to manage these queues more easily. For example, you might call a queue for inquiries about the company payroll `payroll_inquiry`. The reply-to queue for responses to the inquiries might be called `payroll_inquiry_reply`.

You can use a prefix to group related queues. This means that you can specify groups of queues for administration tasks like managing security and using the dead-letter queue handler. For example, all the queues that belong to the payroll application might be prefixed by `payroll_`. You can then define a single security profile to protect all queues with names beginning with this prefix.

You can also use your naming convention to indicate that a queue is a shared queue. For example, if the payroll inquiry queue was a shared queue, you might call it `payroll_inquiry.shared`.

## Storage classes and coupling facility structures

The character set you can use when naming storage classes and coupling facility structures is limited to uppercase alphabetic and numeric characters. You should be systematic when choosing names for these objects.

Storage class names can be up to 8 characters long, and must begin with an alphabetic character. You will probably not define many storage classes, so a simple name is sufficient. For example, a storage class for IMS bridge queues could be called `IMS`.

Coupling facility structure names can be up to 12 characters long, and must begin with an alphabetic character. You could use the name to indicate something about the shared queues associated with the coupling facility structure (that they all belong to one suite of applications for example). Remember that in the coupling facility, the structure names are the IBM MQ name prefixed by the name of the queue sharing group (padded to four characters with @ symbols).

## Choosing names for channels

To help you manage channels, it is a good idea if the channel name includes the names of the source and target queue managers. For example, a channel transmitting messages from a queue manager called `QM27` to a queue manager called `QM11` might be called `QM27/QM11`.

If your network supports both TCP and SNA, you might also want to include the transport type in the channel name, for example `QM27/QM11_TCP`. You could also indicate whether the channel is a shared channel, for example `QM27/QM11_TCP.shared`.

Remember that channel names cannot be longer than 20 characters. If you are communicating with a queue manager on a different platform, where the name of the queue manager might contain more than 4 characters, you might not be able to include the whole name in the name of the channel.

## Using command prefix strings

Each instance of IBM MQ that you install must have its own *command prefix* string (CPF). You use the CPF to identify the z/OS subsystem that commands are intended for. It also identifies the z/OS subsystem from which messages sent to the console originate.

You can issue all MQSC commands from an authorized console by inserting the CPF before the command. If you enter commands through the system command input queue (for example, using CSQUTIL), or use the IBM MQ operations and control panels, you do not use the CPF.

To start a subsystem called CSQ1 with CPF that is ' +CSQ1 ', issue the command +CSQ1 START QMGR from the operator console (the space between the CPF and the command is optional).

The CPF also identifies the subsystem that is returning operator messages. The following example shows +CSQ1 as the CPF between the message number and the message text.

```
CSQ9022I +CSQ1 CSQNCDSP ' DISPLAY CMDSERV' NORMAL COMPLETION
```

See [Defining command prefix strings \(CPFs\)](#) for information about defining command prefix strings.

### z/OS

## Delivery media

IBM MQ for z/OS is supplied by DVD or electronic media. See the relevant product announcement letter for complete information on product packaging.

The following language features are available:

- U.S. English (mixed case)
- U.S. English (uppercase)
- French
- Chinese
- Japanese

Refer to the [IBM Offering Information](#) site, where you can find more information on the Release For Announcement (RFA) .

### z/OS

## Customizing IBM MQ and its adapters

IBM MQ requires some customization after installation to meet the individual and special requirements of your system, and to use your system resources in the most effective way.

For a list of tasks that you must perform when you customize your system, see [Customizing IBM MQ for z/OS](#).

## Using queue sharing groups

If you want to use queue sharing groups, you do not have to set them up when you install IBM MQ, you can do this at any time.

For details of how to manage your queue sharing groups when you have set them up, see [Managing queue sharing groups](#).

## Verifying your installation of IBM MQ for z/OS

After the installation and customization has been completed, you can use the installation verification programs (IVPs) supplied with IBM MQ for z/OS to verify that the installation has been completed successfully.

The IVPs supplied are assembler language programs and you should run them after you have customized IBM MQ for z/OS to suit your needs. They are described in [Running the basic installation verification program](#).

## Macros intended for customer use

The macros identified in this topic are provided as programming interfaces for customers in support of features that are specific to IBM MQ for z/OS.

The 'C' include files, COBOL copy files, PL/I include files and assembler macros that are provided as programming interfaces for customers in support of features that apply across many IBM MQ platforms are described in the [Constants](#).

**Note:** Do not use as programming interfaces any IBM MQ macros other than those interfaces identified in this topic or in the [Constants](#)

### General-use programming interface macros

The following assembler macros are provided to enable you to write programs that use the services of IBM MQ. The macros are supplied in library thlqual.SCSQMACS.

- CMQXCALA
- CMQXCFBA
- CMQXCFCFA
- CMQXCFLA
- CMQXCDFFA
- CMQXCINA
- CMQXCVCA

### Product-sensitive programming interface macros

The following assembler macros are provided to enable you to write programs that use the services of IBM MQ. The macros are supplied in library thlqual.SCSQMACS. Product-sensitive interfaces are open to change between different releases of the product.

- CSQBDEF
- CSQDQEST
- CSQDQIST
- CSQDQJST
- CSQDQLST
- CSQDQMAC
- CSQDQMST
- CSQDQPST
- CSQDQSST
- CSQDQWHC
- CSQDQWHS
- CSQDQ5ST
- CSQDWQ

- CSQDWTAS
- CSQQDEFX
- CSQQLITX

**z/OS**

## Product usage recording with IBM MQ for z/OS products

To determine the product usage, the z/OS system records the amount of processor time that is used by the product when it processes.

z/OS can measure how much processing time is spent in doing work on behalf of the IBM MQ queue manager that is handling MQI calls, executing MQSC commands, or performing some other action to support the messaging and queuing functions that are used by your application programs. The amount of processing time is recorded in a file at hourly intervals, and the hourly records are totaled at the end of a month. In this way, the total amount of time used by the IBM MQ for z/OS product on your behalf is computed, and used to determine how much you pay for your use of the IBM MQ for z/OS product that month.

Product usage recording is implemented as follows:

- When IBM MQ for z/OS is installed, it identifies itself to z/OS and requests that the *System Management Facilities (SMF)* mechanism within z/OS is to automatically measure how much processor time is used by the IBM MQ for z/OS product.
- **V 9.0.3** The default product used by registration must be overridden at run-time for particular software execution instances which are processing under the license provided by a particular software bundle.

For example, if you are licensed to use IBM MQ Advanced for z/OS, Value Unit Edition (VUE), then:

- Queue manager
- Advanced message security, and
- Managed file transfer

instances must be identified as using the ADVANCEDVUE product identifier, so that month end usage reports correctly identify the product used.

- When enabled, the z/OS usage measurement facility collects usage figures for each hour of the day, and generates usage records that are added to a report file on disk.
- At the end of one full month, these usage records are collected by a program, which generates a report of product usage for the month. This report is used to determine the charge for the IBM MQ for z/OS product.

For more information about product usage recording and the Sub-Capacity Reporting Tool (SCRT), see [Preparing to use the Sub-Capacity Reporting Tool](#). For information about the MULCCAPT parameter see, [Using CSQ6SYSP](#).

## Over-riding the default product associated with usage

**V 9.0.3**

IBM MQ 9.0.3 introduces an improved method for associating IBM MQ usage with the licensed Product ID (PID) so that workload reporting tools, for example, SCRT and MWRT, correctly reflect usage.

Each of the following products uses a different PID:

- Base IBM MQ
- Advanced Message Security
- Managed File Transfer
- IBM MQ for z/OS Value Unit Edition (VUE)
- IBM MQ Advanced for z/OS, Value Unit Edition

There are two alternative mechanisms to associate the correct PID with a running instance of IBM MQ:

1. Most useful for a long term deployment of IBM MQ - The [CSQ6USGP](#) macro selects the correct PID, and is built into the queue manager ZPARM parameter.
2. Most useful for a test system which needs to run for short times under different PIDs - Parameters on the [START QMGR](#) command select the PIDs. These run-time parameters, **QMGRPROD** and **AMSPROD**, can be entered on the command, or coded into the MSTR JCL.

Note that a value entered on a START command overrides any values encoded into ZPARM.

In all cases, the selected PIDs are shown in startup messages [CSQY036I](#) and [CSQ0619I](#).

For Managed File Transfer, the PID is selected using an [fteSetProductId](#) command.

If no value is set by the preceding mechanisms, a default PID is used.

### Sample scenarios

#### **You have MLC IBM MQ for z/OS and have purchased Advanced Message Security**

No changes are necessary, the default PIDs are correctly recorded, 5665-MQ9 for IBM MQ use and 5665-AM9 for Advanced Message Security usage.

#### **You are migrating a single queue manager from MLC to VUE**

Use either the ZPARM or START QMGR mechanism, to select **QMGRPROD=VUE**

#### **You have installed a new IBM MQ Advanced for z/OS, Value Unit Edition on a new LPAR**

Use either the ZPARM or START QMGR mechanisms to select both **QMGRPROD=ADVANCEDVUE** and **AMSPROD=ADVANCEDVUE**.

For MFT deployments use **fteSetProductID ADVANCEDVUE**

### Related reference

[IBM MQ license information](#)

[IBM MQ product identifiers and export information](#)

## **IBM MQ for z/OS Value Unit Edition (VUE)**

IBM MQ for z/OS Value Unit Edition (VUE) provides all the function and capability of the base IBM MQ for z/OS, in a format that offers a one-time-charge (OTC) price metric.

The OTC price metric provides an alternative pricing model for IBM MQ for z/OS workloads.

IBM MQ for z/OS VUE can connect to other supported versions of IBM MQ for z/OS for workload federation and systems management.

IBM MQ for z/OS VUE allows connections from IBM MQ clients, that run on other platforms.

### Installing VUE

An order for VUE is fulfilled by delivery of two products:

- IBM MQ for z/OS (5655-MQ9), either Long Term Support (LTS) release or Continuous Delivery (CD) release.
- The VUE enabling product, IBM MQ for z/OS Value Unit Edition 9.0 (5655-VU9).

**Note:** The VUE enabling product enables either IBM MQ 9.0 LTS release or IBM MQ 9.0 CD release to conform with the licensing requirements of Value Unit Edition operation.

The products are separately installed using SMP/E following the process documented in their respective Program Directories. For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

## Enabling VUE

To enable a queue manager to run as an IBM MQ for z/OS VUE queue manager, the SCUEAUTH library created by installation of the VUE enabling product must be added to the STEPLIB concatenation of the xxxxMSTR procedure for that queue manager:

- The SCUEAUTH library should be APF authorized
- The SCUEAUTH library must be concatenated ahead of the SCSQAUTH library,

For example, the CSQ4MSTR sample would be modified as follows:

```
//PROCSTEP EXEC PGM=CSQYASCP,REGION=0M,MEMLIMIT=2G
//*
//STEPLIB DD DSN=h1q.SCSQANLE,DISP=SHR
// DD DSN=h1q.SCUEAUTH,DISP=SHR
// DD DSN=h1q.SCSQAUTH,DISP=SHR
-
```

## Characteristics of a VUE-enabled queue manager

A VUE-enabled queue manager has all the function and capability of the base queue manager. Additionally, clients will be enabled during channel initiator startup.

A VUE-enabled queue manager records usage information in SMF89 records with the product name and identifier for IBM MQ for z/OS Value Unit Edition (VUE) instead of those for the IBM MQ product.

A VUE-enabled queue manager can:

- Connect to other queue managers and clients in a network, according to the connectivity capabilities of the base queue manager installation.
- Participate in a queue sharing group with other queue managers provided the base queue manager versions are able to interoperate, regardless of whether other members are standard or VUE function queue managers.

## Installing Managed File Transfer for z/OS

You install Managed File Transfer on your IBM MQ for z/OS system by using SMP/E.

### About this task

For information about licensing for Managed File Transfer for z/OS, see [IBM MQ license information](#) and [IBM MQ for z/OS product identifiers](#).

Managed File Transfer for z/OS uses the standard z/OS installation procedure. It is supplied with a Program Directory that contains specific instructions for installing the program. You must follow the instructions in the appropriate Program Directory. The instructions in the Program Directory include not only details of the installation process, but also information about the prerequisite products and their service or maintenance levels. For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

SMP/E, used for installation on the z/OS platform, validates the service levels and prerequisite and corequisite products, and maintains the SMP/E history records to record the installation of Managed File Transfer. The process loads the appropriate libraries and checks that the loads have been successful. You then have to customize the product to your own requirements.

**Note:** For IBM MQ 9.0, the supported versions of Java for Managed File Transfer for z/OS are Java 7 and Java 8.

### Procedure

1. Plan your installation.

See [Planning for Managed File Transfer](#) for items you need to consider before installing the component.

2. Install the product by following the instructions detailed in the Program Directory.
3. Check that the SMP/E installation process has created the product JCL library `USERID.MFTV800.SBFGCMDS`.

If this JCL library has not been created during the installation process, create the library and submit the job `USERID.ZOS.JCL(COPYJCL1)`.

## What to do next

When you have installed the product, you must carry out some customization tasks. For more information, see [Configuring Managed File Transfer for z/OS](#).

### Related concepts

[Managed File Transfer for z/OS](#)

### Related tasks

[Planning for Managed File Transfer](#)

## Installing Advanced Message Security on z/OS

You can install Advanced Message Security on z/OS by using SMP/E.

### About this task

Advanced Message Security for z/OS (AMS) extends IBM MQ to provide a high level of protection for sensitive data flowing through the IBM MQ network using a public key cryptography model.

For information about licensing for Advanced Message Security for z/OS, see [IBM MQ license information](#) and [IBM MQ for z/OS product identifiers](#).

Advanced Message Security for z/OS is installed separately using SMP/E by following the process documented in the Program Directory. For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

When you have completed the SMP/E installation, it provides the `SDRQAUTH` library which contains the Advanced Message Security for z/OS enablement module. You must make the enablement module available for processing during queue manager startup, either by adding to the system linklist or LPA, or for individual queue managers, by including in the `STEPLIB` concatenation.

The enablement module can be used with either a Long Term Support release or Continuous Delivery release of IBM MQ for z/OS to activate the Advanced Message Security for z/OS functions.

### Procedure

1. Install Advanced Message Security for z/OS using SMP/E.  
When installing Advanced Message Security for z/OS, you must follow the instructions in the appropriate Program Directory.

2. Enable Advanced Message Security for z/OS separately for each queue manager.  
Completing the additional customization tasks described in [Customizing IBM MQ for z/OS](#).

The following tasks are relevant when adding AMS support to a queue manager:

- [Task 2: APF authorize the IBM MQ load libraries](#)
- [Task 3: Update the z/OS link list and LPA](#)
- [Task 4: Update the z/OS program properties table](#)
- [Task 13: Customize the initialization input data sets](#)
- [Task 17: Tailor your system parameter module](#)

- [Using CSQ6SYSP](#)
- [Task 23: Create procedures for Advanced Message Security](#)
- [Task 24: Set up the started task user Advanced Message Security](#)
- [Task 25: Grant RACDCERT permissions to the security administrator for Advanced Message Security](#)
- [Task 26: Grant users resource permissions for Advanced Message Security](#)

You also need to configure certificates and policies, which are described in

- [Using certificates on z/OS](#)
- [Security policies](#)
- [Example configurations on z/OS](#)

## Results

Advanced Message Security component has been installed successfully.

## Related concepts

[Advanced Message Security](#)

## Installing IBM MQ Advanced for z/OS

Use this topic to understand how you install IBM MQ Advanced for z/OS on your system.

## About this task

IBM MQ Advanced for z/OS is a bundling of the Advanced Message Security for z/OS and Managed File Transfer for z/OS products.

## Procedure

- For installation instructions, follow the guidance in [“Installing Advanced Message Security on z/OS” on page 351](#) and [“Installing Managed File Transfer for z/OS” on page 350](#).  
For download links for the Program Directories, see [IBM MQ for z/OS Program Directory PDF files](#).

## Installing IBM MQ Advanced for z/OS, Value Unit Edition

Use this topic to understand how you install IBM MQ Advanced for z/OS, Value Unit Edition (VUE) on your system.

## About this task

IBM MQ Advanced for z/OS, VUE is a bundling of the Advanced Message Security for z/OS, Managed File Transfer for z/OS, and IBM MQ for z/OS Value Unit Edition (VUE) products.

## Procedure

- For installation instructions, follow the guidance in [“Installing Advanced Message Security on z/OS” on page 351](#), [“Installing Managed File Transfer for z/OS” on page 350](#), and [“IBM MQ for z/OS Value Unit Edition \(VUE\)” on page 349](#).  
For download links for the IBM MQ Advanced for z/OS, Value Unit Edition Program Directory, see [IBM MQ for z/OS Program Directory PDF files](#).

## Related tasks


[“Installing IBM MQ Advanced for Multiplatforms” on page 314](#)



Installation tasks associated with IBM MQ Advanced for Multiplatforms are grouped in this section.

**Related reference**

 [DISPLAY QMGR ADVCAP](#)

 [MQCMD\\_INQUIRE\\_Q\\_MGR MQIA\\_ADVANCED\\_CAPABILITY](#)



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## Programming interface information

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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.

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