

Quick Beginnings for Linux

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Welcome to WebSphere MQ for Linux

This section describes WebSphere® MQ for Linux, Version 7.0, and explains how to plan for the product, install it, and verify that the installation has worked.

See the:

- [WebSphere MQ Glossary](#) for an explanation of terms used in this book
- [WebSphere MQ System Administration Guide](#) for further information on using the control commands **crtmqm**, **strmqm** and **endmqm**.

[Upgrading to WebSphere MQ for Linux Version 7.0](#)

This section provides information about considerations for upgrading WebSphere MQ for Linux.

[Installing a WebSphere MQ server](#)

This section describes how to install a WebSphere MQ Version 7.0 server. The information covers topics such as preparing for installation and verifying your installation, as well as installation itself.

[Installing a WebSphere MQ client](#)

This collection of topics describes how to install a WebSphere MQ client. The information covers subjects such as preparing for installation and verifying your installation, as well as installation itself.

[»Installing a client on the same machine as a server«](#)

[Applying maintenance](#)

This section describes how to maintain WebSphere MQ for Linux.

[»Installing and uninstalling GSKit Version 8 on Linux«](#)

You might want to use GSKit Version 8 instead of or in addition to GSKit Version 7. This collection of topics gives you instructions for installing and uninstalling GSKit Version 8.

[Uninstalling Websphere MQ](#)

This topic explains how to remove WebSphere MQ for Linux from your system.

[WebSphere MQ Documentation](#)

Where to find information describing WebSphere MQ.

[Notices](#)

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1. Upgrading to WebSphere MQ for Linux Version 7.0

This section provides information about considerations for upgrading WebSphere® MQ for Linux.

If you are upgrading from a previous version of WebSphere MQ for Linux, you must uninstall your current version before installing WebSphere MQ Version 7.0.

Because you cannot therefore revert to your previous level, back up your system before you install WebSphere MQ Version 7.0. This enables you to back out the upgrade if necessary. If you back out the upgrade, however, you cannot recover any work, such as changes to messages and objects, that WebSphere MQ Version 7.0 has done.

»

WebSphere MQ for Linux, (x86 and x86-64 platforms) and 32-bit and 64-bit

queue managers

You can install WebSphere MQ for Linux (x86 platform) on 32-bit and 64-bit versions of the Linux operating system. If you currently have 32-bit WebSphere MQ for Linux (x86 platform) Version 5.3 or Version 6.0 installed on a 64-bit version of the Linux operating system, you can install WebSphere MQ for Linux (x86 platform) or WebSphere MQ for Linux (x86-64) when you upgrade to WebSphere MQ for Linux, Version 7.0.

If you install the 64-bit version of WebSphere MQ for Linux (x86-64 platform), existing queue managers are migrated to 64-bit when they are started. When a queue manager is 64-bit, you **cannot** start it by using a 32-bit version of WebSphere MQ.

Upgrading from WebSphere MQ for Linux (x86 platform), Version 7.0 to WebSphere MQ for Linux (x86-64 platform) Version 7.0 is not supported.

Upgrading from WebSphere MQ for Linux (x86-64 platform) to WebSphere MQ for Linux (x86 platform) is not supported for any version.

The supported upgrade paths for previous versions of WebSphere MQ for Linux (x86 and x86-64 platforms) to WebSphere MQ for Linux Version 7.0 are as follows:

From:	To:
WebSphere MQ for Linux, Version 5.3 (x86 platform)	WebSphere MQ for Linux, Version 7.0 (x86 platform) WebSphere MQ for Linux, Version 7.0 (x86-64 platform)
WebSphere MQ for Linux, Version 6.0 (x86 platform)	WebSphere MQ for Linux, Version 7.0 (x86 platform) WebSphere MQ for Linux, Version 7.0 (x86-64 platform)
WebSphere MQ for Linux, Version 6.0 (x86-64 platform)	WebSphere MQ for Linux, Version 7.0 (x86-64 platform)



See the following topics for information about how to migrate to WebSphere MQ for Linux Version 7.0.

[Important information for Beta driver users](#)

If you have previously installed a WebSphere MQ Version 7.0 Beta driver, you **must** uninstall this driver and clean up any remaining files **before** you install the GA version of WebSphere MQ Version 7.0

[Upgrading to WebSphere MQ Version 7.0](#)

Complete this task to migrate to WebSphere MQ Version 7.0, while retaining your WebSphere MQ data, and optionally upgrade your operating system to one supported by WebSphere MQ Version 7.0.

[Migrating to WebSphere MQ Version 7.0 without upgrading your operating system](#)

Follow these steps to migrate WebSphere MQ Version 7.0 without upgrading your operating system, while keeping your WebSphere MQ data.

[Upgrading to WebSphere MQ Version 7.0 using RPM upgrade tools](#)

The use of RPM upgrade tools, using the -U or -F flags, to upgrade is not supported.

[After you have upgraded to WebSphere MQ Version 7](#)

You must perform certain tasks immediately after upgrading to V7.

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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1.1. Important information for Beta driver users

If you have previously installed a WebSphere® MQ Version 7.0 Beta driver, you **must** uninstall this driver and clean up any remaining files **before** you install the GA version of WebSphere MQ Version 7.0

Parent topic: [Upgrading to WebSphere MQ for Linux Version 7.0](#)

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1.2. Upgrading to WebSphere MQ Version 7.0

Complete this task to migrate to WebSphere® MQ Version 7.0, while retaining your WebSphere MQ data, and optionally upgrade your operating system to one supported by WebSphere MQ Version 7.0.



Before you begin

Review the upgrading limitations that are described in [Upgrading to WebSphere MQ for Linux Version 7.0](#).

Review the WebSphere MQ Version 7.0 prerequisites that are described in [WebSphere MQ Quick Beginnings for Linux](#). If your system version does not have the prerequisites, you must install a version that does. Operating system installation is an optional step in the procedure later in this topic.



Procedure

1. Stop all WebSphere MQ applications on the computer.
2. End all WebSphere MQ activity:
 - a. Log in as a user in group `mqm`.
 - b. Display the state of all the queue managers on the system, by using the command `dspmqr`.

- c. Stop all running queue managers, by using the command `endmqm`.
- d. Stop any listeners associated with the queue managers, by using the command:


```
endmqlsr -m QMgrName
```
- e. To check that you have stopped all necessary WebSphere MQ activity, type:


```
ps -ef | grep mq
```

If any processes are listed that are running command lines beginning `amq` or `runmq`, stop them. Ignore any that start with `amqi`.

3. Log in as `root`.
4. Remove the SupportPacs listed in the table below. They have been superseded by function in WebSphere MQ Version 7.0.

SupportPac Number	Description
MA0Y	WebSphere MQ Bridge for HTTP

5. Uninstall all WebSphere MQ service updates, then uninstall WebSphere MQ.
6. Optional: If you need to upgrade your operating system, complete the following steps:
 - a. Copy the `/var/mqm` directory and save it to a location that will not be erased by the operating system upgrade.
 - b. Upgrade your operating system by following the manufacturer's instructions.
 - c. Copy the `/var/mqm` directory that you saved in step 6.a back into your file system.
7. ➤ Install WebSphere MQ Version 7.0 as described in [WebSphere MQ Quick Beginnings for Linux](#).◀
8. Restart WebSphere MQ. Queue managers are migrated to WebSphere MQ Version 7.0 when you start them.

Parent topic: [Upgrading to WebSphere MQ for Linux Version 7.0](#)

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1.3. Migrating to WebSphere MQ Version 7.0 without upgrading your operating system

➤ Follow these steps to migrate WebSphere® MQ Version 7.0 without upgrading your operating system, while keeping your WebSphere MQ data.◀

➤

About this task

If you want to migrate to WebSphere MQ Version 7.0 and are already using an operating system supported by WebSphere MQ Version 7.0, you do not need to upgrade your operating system. See [WebSphere MQ requirements](#) for a list of supported operating systems. Follow these steps to migrate to WebSphere MQ Version 7.0 while keeping your WebSphere MQ data:

◀

Procedure

1. Before installing maintenance, you must stop all WebSphere MQ applications on the machine and the applications accessing remote machines. ▶ Any applications on the machine that are linked with the WebSphere MQ shared libraries must also be stopped before applying WebSphere MQ maintenance. ◀ ▶ The topic, [Applying maintenance to a running queue manager](#), describes how to apply maintenance to a multi-instance queue manager while keeping the queue manager running on a different server. ◀
2. End all WebSphere MQ activity:
 - a. Log in as a user in group `mqm`.
 - b. Use the **`dspmq`** command to display the state of all the queue managers on the system.
 - c. Use the **`endmqm`** command to stop all running queue managers.
 - d. Stop any listeners associated with the queue managers, using the command:

```
endmqlsr -m QMgrName
```
 - e. To check that you have stopped all necessary WebSphere MQ activity, type:

```
ps -ef | grep mq
```

Check that there are no processes listed that are running command lines beginning `amq` or `runmq`. Ignore any that start with `amqi`.
3. Log in as root.
4. Uninstall any WebSphere MQ service updates, then uninstall WebSphere MQ.
5. Check your system has the required WebSphere MQ prerequisites and install WebSphere MQ Version 7.0 as described in the following sections.
6. Restart WebSphere MQ.

Parent topic: [Upgrading to WebSphere MQ for Linux Version 7.0](#)

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1.4. Upgrading to WebSphere MQ Version 7.0 using RPM upgrade tools

The use of RPM upgrade tools, using the `-U` or `-F` flags, to upgrade is not supported.

About this task

If you have already tried to upgrade WebSphere® MQ by using `rpm -U` or `rpm -F`, you might have deleted your old WebSphere MQ package entries from the RPM database without removing the product from your system. You might also have partially installed WebSphere MQ Version 7.0.

To continue upgrading to WebSphere MQ Version 7.0, follow these steps:

1. Find out which WebSphere MQ packages still have entries in your RPM database by using

```
rpm -qa | grep MQSeries
```
2. Remove all remaining WebSphere MQ packages from your system by using `rpm -e`
`<package-name>`

3. Remove the `/opt/mqm` directory by using `rm -rf /opt/mqm`
4. Install WebSphere MQ Version 7.0 using the instructions given in [Installing a WebSphere MQ server](#), or [Installing a WebSphere MQ client](#).

Parent topic: [Upgrading to WebSphere MQ for Linux Version 7.0](#)

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1.5. After you have upgraded to WebSphere MQ Version 7

You must perform certain tasks immediately after upgrading to V7.

About this task

Immediately after you upgrade to Websphere MQ Version 7.0, you must start your queue managers at least once to migrate your file system structure before you start any Websphere MQ listeners. Otherwise, you will not be able to start Websphere MQ listeners after upgrading.

If you cannot connect to a migrated queue manager by using MQ Explorer, and receive the error message `SYSTEM.MQEXPLORER.REPLY.MODEL not defined`, run the following command on that queue manager:

```
strmqm -c
```

➤ This command refreshes existing system objects with default values (for example, setting the MCAUSER attribute of a channel definition to blanks), and creates the queue required by WebSphere® MQ Explorer. The queue manager is stopped when the command finishes. ◀

Parent topic: [Upgrading to WebSphere MQ for Linux Version 7.0](#)

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2. Installing a WebSphere MQ server

This section describes how to install a WebSphere® MQ Version 7.0 server. The information covers topics such as preparing for installation and verifying your installation, as well as installation itself.

If you already have an installation of WebSphere MQ, and are migrating to WebSphere MQ Version 7.0 see [Upgrading to WebSphere MQ Version 7.0](#) before installing WebSphere MQ Version 7.0.

WebSphere MQ for Linux can be installed as a server or a client.

A WebSphere MQ server is an installation of one or more queue managers that provide queueing services to one or more clients. All the WebSphere MQ objects, for example queues, exist only on the queue manager machine (the WebSphere MQ server machine), and not the

client. A WebSphere MQ server can also support local WebSphere MQ applications.

A WebSphere MQ 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. To install a WebSphere MQ client see, [Installing a WebSphere MQ client](#).

It is possible to have both a server and a client installation on the same machine, for instructions on how to do this see, [Installing a client on the same machine as a server](#).

See the [WebSphere MQ System Administration Guide](#) for an introduction to WebSphere MQ concepts and objects.

For information on the components that can be included in the server and client installations see, [WebSphere MQ Components](#).

The installation process is divided into the following group of topics, complete all of these tasks in sequence:

[Preparing for installation](#)

[Implications of a 64-bit queue manager](#)

[Kernel configuration](#)

[Installing a WebSphere MQ server](#)

Installing a WebSphere MQ server on a 32-bit or 64-bit Linux system.

[Verifying your installation](#)

This is an overview of various methods for verifying a WebSphere MQ installation.

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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2.1. Preparing for installation

Before you install WebSphere® MQ, complete the following tasks:

[Checking hardware and software requirements](#)

Before installing WebSphere MQ as a server check its system requirements and your operating environment.

[Setting up the user ID and group ID](#)

[Creating WebSphere MQ file systems](#)

Parent topic: [Installing a WebSphere MQ server](#)

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2.1.1. Checking hardware and software requirements

Before installing WebSphere® MQ as a server check its system requirements and your operating environment.

You must check that your system meets the hardware and software requirements set out in [WebSphere MQ requirements](#) on ibm.com.

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

Storage requirements

The storage requirements for WebSphere MQ for Linux depend on which components you install, and how much working space you need. This, in turn, depends 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. Approximate space requirements are listed in the following table:

Table 1. Space requirements for WebSphere MQ for Linux server installation

Platform	x86	x86-64	POWER®	zSeries® s390x
Space (MB)	201	201	312	183

You can use the `df` command to determine the amount of free space on your system.

Disk storage is also required for

- Prerequisite software
- Optional software
- Your application programs

WebSphere MQ Explorer requirements

If you want to use the WebSphere MQ Explorer (available for use with WebSphere MQ for Linux, Version 7.0 (x86 & x86-64 platform) only), your system will require the following, as a minimum:

- 512 MB RAM
- 1 GHz processor
- 800 MB for Eclipse Platform code and data
- A suitable monitor for the operating system with a screen size of at least 1024x768

The WebSphere Eclipse Platform is a prerequisite for the WebSphere MQ Explorer and WebSphere MQ File Transfer Application components. Before installing the WebSphere Eclipse Platform (x86 & x86-64 platform only), you must install GTK2 Version 2.2.4-0 or later. ➤ Users running the x86-64 platform must install the 32-bit version of GTK2 Version 2.2.4-0 or later to use the WebSphere MQ Explorer and WebSphere MQ File Transfer Application components. ◀

► The WebSphere Eclipse Platform is supplied on the WebSphere MQ installation CD as the MQSeriesEclipseSDK33 rpm. ◀

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need an IBM® Java 2 SDK and Runtime Environment Version 1.4.2 or later.

Apache Axis V1.4 provides support for SOAP and is shipped on the server CD-ROM, but not installed.

For further information about using Java with WebSphere MQ, see [WebSphere MQ Using Java](#).

For further information about SOAP with WebSphere MQ, see [WebSphere MQ Using Web Services](#).

If you use a JDK that is not in the list of supported JDKs you should be aware that:

- The JDK might not be FIPS level 140-2 compliant and by using it with WebSphere MQ, WebSphere MQ Version 7.0 will not comply with the FIPS 140-2 standards.
- The WebSphere MQ Web service deployment utility, **amqwdeployWMQService**, requires IBM Java 2 SDK.

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 [Using the Postcard application](#), you need to use a 32-bit JDK. You can check the version installed using the following command:

```
java -version
```

[Prerequisite software for using SSL](#)

This section describes the prerequisites for using SSL. These prerequisites apply to both client and server installations of WebSphere MQ.

Parent topic: [Preparing for installation](#)

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2.1.1.1. Prerequisite software for using SSL

This section describes the prerequisites for using SSL. These prerequisites apply to both client and server installations of WebSphere® MQ.

Installing the g++ version runtime support

If you intend to run SSL channels then you must have the g++ runtime libraries installed. The GNU g++ libraries are called `libgcc_s.so` and `libstdc++.so.5` and, on a Red Hat system with `libgcc` and `libstdc++5` RPMs installed, are found in the directory `/usr/lib`. Check the release level of the libraries meets WebSphere MQ requirements, found at [WebSphere MQ requirements](#).

If you have a distribution that does not install `libgcc_s.so` and `libstdc++.so.5` into

`/usr/lib`, then you will have to do one of the following tasks:

- Locate and install the packages from your distribution vendor that contain these libraries.
- Install the GNU gcc and g++ compilers from another location, for example the home page for the GNU compiler collection at <http://gcc.gnu.org/>.
Ensure that the libraries listed above are included in `/usr/lib` after installation.

►The required packages for SSL support for WebSphere MQ are set out in [WebSphere MQ requirements](#) on ibm.com. ◀

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 SSL functions.

IBM Global Security Kit V7

If you want to use the SSL support, you need IBM® Global Security Kit V7. It is supplied with WebSphere MQ as one of the components available for installation. If you are migrating from WebSphere MQ Version 5.3 and have no other requirement for the IBM Global Security Kit V6, you can uninstall it using the process described in [Uninstalling Websphere MQ](#), the package name is `gskbas-6.0-n.nn.<arch>.rpm`.

Parent topic: [Checking hardware and software requirements](#)

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2.1.2. Setting up the user ID and group ID

WebSphere® 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. Create the user ID and group IDs as described in the following topics.

- [Creating the user ID and group](#)
- [Adding existing user IDs to the group](#)

[Creating the user ID and group](#)

RPM creates the `mqm` user ID and group ID as part of the install procedure if they do not exist. You might need to create the IDs before running the installation procedure.

[Adding existing user IDs to the group](#)

Parent topic: [Preparing for installation](#)

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2.1.2.1. Creating the user ID and group

RPM creates the `mqm` user ID and group ID as part of the install procedure if they do not exist. You might need to create the IDs before running the installation procedure.

- If you are installing WebSphere® MQ on multiple machines you might want to ensure each UID and GID of `mqm` has the same value on all machines. If you are planning to configure multi-instance queue managers, it is essential the UID and GID are the same from machine to machine.
- If your machines are administered in a network information services (NIS) domain, you need to create the IDs on the NIS master server machine.

Create the IDs using the **groupadd** and **useradd** commands, or edit `/etc/passwd` directly to set the UID and GID the same on each machine.

Set the home directory of the `mqm` user to `/var/mqm`.

Parent topic: [Setting up the user ID and group ID](#)

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2.1.2.2. 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.

Ask an administrator to add your user ID to the `mqm` group.

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

Parent topic: [Setting up the user ID and group ID](#)

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2.1.3. Creating WebSphere MQ file systems

The installation directory for the WebSphere® MQ product code is `/opt/mqm`. Working data is stored in `/var/mqm`. You cannot change these locations. The IBM® Global Security Kit (GSKit) must also be installed into its default location.

The topics contained in this section describe how to prepare your file system for installing WebSphere MQ. Perform these tasks before installation.

[Creating a file system for the product code](#)

This topic describes how to prepare the `/opt/mqm` file system into which the WebSphere MQ code will be installed should you not have enough storage space available in the file system.

[Creating a file system for the working data](#)

Parent topic: [Preparing for installation](#)

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2.1.3.1. Creating a file system for the product code

This topic describes how to prepare the `/opt/mqm` file system into which the WebSphere® MQ code will be installed should you not have enough storage space available in the file system.

About this task

The approximate amount of storage space required for a server installation is detailed below.

Table 1. Space requirements for WebSphere MQ for Linux server installation

Platform	x86	x86-64	POWER®	zSeries® s390x
Space (MB)	201	201	312	183

The WebSphere MQ product code is installed in `/opt`. If you cannot install the product code in the `/opt` file system because the file system is too small to contain the product, you can do one of the following:

1. Create a new file system and mount it as `/opt/mqm`. If you choose this option, the new file system must be created and mounted before installing the product code.
2. Create a new directory anywhere on your machine, and create a symbolic link from `/opt/mqm` to this new directory. For example:

```
mkdir /bigdisk/mqm
ln -s /bigdisk/mqm /opt/mqm
```

If you choose this option, the new directory must be created, and the link created, before installing the product code.

The file system into which the code is installed can be a remote network device, for example, NFS. However, you must define the mount options defined on that device to allow **setuid** programs, including those which are **setuid** root, to run.

Parent topic: [Creating WebSphere MQ file systems](#)

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2.1.3.2. Creating a file system for the working data

About this task

Before you install WebSphere® MQ for Linux, create and mount a file system called `/var/mqm` which is owned by user and is of group `mqm`. If possible, use a partition strategy with a separate volume for the WebSphere MQ data. This means that other system activity is not affected if a large amount of WebSphere MQ work builds up.

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

Allow 130 MB as a minimum for a WebSphere MQ server and 15 MB as a minimum for a WebSphere MQ client.

Parent topic: [Creating WebSphere MQ file systems](#)

Creating separate file systems for working data



About this task

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.◀

➤ 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 4 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 should 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.◀

If you want to use individual queues that hold more than 2 GB of data, you must enable `/var/mqm` to use large files.

The size of the log file depends on the log settings that you use. The minimum sizes above are for circular logging using the default settings. For further information about log sizes, see [Calculating the size of the log 3](#).



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2.2. Implications of a 64-bit queue manager

Note: A 64-bit queue manager is available on the POWER®, x86-64 and zSeries® (s390x) platforms.

When using the 64-bit queue manager, the use of the LIBPATH and LD_LIBRARY_PATH environment variable is not advised. Setting these environment variables might result in you not being able to run any WebSphere® MQ commands. By default, the installation will operate as in previous versions of WebSphere MQ, with symbolic links being created from `/usr/lib`, `/usr/bin` and `/usr/include` to the appropriate files within the WebSphere MQ tree structure. In the case of `/usr/lib` the symbolic links will be to the 32-bit WebSphere MQ libraries provided for customer 32-bit applications.

Note: No symbolic links are required for the 64-bit WebSphere MQ libraries required by WebSphere MQ commands.

All WebSphere MQ commands are 64-bit and have a built in path to the WebSphere MQ 64-bit libraries, however, this can be overridden by the use of LIBPATH and thus can cause WebSphere MQ commands to fail to run. The recommended way of using WebSphere MQ commands and your applications is as follows:

- Unset LIBPATH and LD_LIBRARY_PATH and build your applications with a built in path to the appropriate WebSphere MQ libraries, this is detailed in the appropriate WebSphere MQ book for your type of WebSphere MQ application.
- If you need to set LIBPATH or LD_LIBRARY_PATH, consider not including `/usr/lib` in the path you specify in the variable. If you need to include `/usr/lib` in your LIBPATH or LD_LIBRARY_PATH then in order to avoid errors running 64-bit WebSphere MQ applications or WebSphere MQ commands, consider removing the symbolic links from `/usr/lib` to the 32-bit WebSphere MQ libraries using the **dltmqlnk** command. The symbolic links can be restored with the **crtmqlnk** command. You also need to build your applications with a built in path to the appropriate WebSphere MQ libraries. Note that both the **dltmqlnk** command and the **crtmqlnk** command are scripts, and take no parameters.
- If you cannot use either of the first two options, run your applications in a different environment to the one which issues any WebSphere MQ commands.

Note: WebSphere MQ libraries are in the following locations: `/opt/mqm/lib` (32-bit libraries) and `/opt/mqm/lib64` (64-bit libraries).

Parent topic: [Installing a WebSphere MQ server](#)

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2.3. Kernel configuration

WebSphere® MQ makes use of System V IPC resources, in particular shared memory and semaphores.

The minimum configuration for WebSphere MQ for these resources is as follows:

```
kernel.msgmni = 1024
```

```
kernel.shmmni = 4096
```

```
kernel.shmall = 2097152
```

```
kernel.sem = 500 256000 250 1024
```

```
fs.file-max = 32768
net.ipv4.tcp_keepalive_time = 300
```

To view the kernel parameters for your system, enter the command `ipcs -l`

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 the values shown:

```
kernel.msgmni = 1024
kernel.shmmni = 4096
kernel.shmall = 2097152
kernel.sem = 500 256000 250 1024
fs.file-max = 32768
net.ipv4.tcp_keepalive_time = 300
```

Then save and close the file.

To load these `sysctl` values immediately, enter the 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](#)

[Maximum processes](#)

Parent topic: [Installing a WebSphere MQ server](#)

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2.3.1. Maximum open files

If the system is heavily loaded, you might need to increase the maximum possible number of open files. If your distribution supports the `proc` filesystem you can query the current limit by issuing the following command: `cat /proc/sys/fs/file-max`

➤ If you are using a pluggable security module such as PAM (Pluggable Authentication Module), ensure that this does not unduly restrict the number of open files for the 'mqm' user. For a standard WebSphere® MQ queue manager, set the 'nofile' value to 10240 or more for the 'mqm' user. Consider adding this command to a startup script in `/etc/rc.d/...`

Parent topic: [Kernel configuration](#)

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2.3.2. Maximum processes

A running WebSphere® MQ queue manager consists of a number of thread programs, and

each connected application will increase the number of threads running in the queue manager processes. You should ensure that the maximum number of processes which the `mqm` user is allowed to run is not unduly restricted by one of the pluggable security modules such as PAM. Set `nproc` for the `mqm` user to 4090 or more.

Parent topic: [Kernel configuration](#)

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2.4. Installing a WebSphere MQ server

Installing a WebSphere® MQ server on a 32-bit or 64-bit Linux system.

Before you begin

Before you start the installation procedure,

- Ensure that you have the correct 32 bit or 64 bit Server CD-ROM. If you want to install the 64 bit Server, you **must** mount the 64 bit Server CD-ROM.
- Make sure that you have prepared your system as described in [Preparing for installation](#).



About this task

This section describes the installation of the server, using the RPM Package Manager installer, enabling you to choose which components you want to install. You must install at least the Runtime and Server components. The components and file sets are listed in [WebSphere MQ Components](#).

Procedure

1. Log in as root, or switch to the superuser using the **su** command.
2. If you are installing from the Server CD-ROM, insert the WebSphere MQ for Linux Server CD-ROM, and make the mount point your current directory.
3. 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:

```
./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. Use the **rpm -ivh** command to install each component that you require. The minimum components you must install are: 
 - MQSeriesRuntime
 - MQSeriesServer

 This example shows a minimum installation:

```
rpm -ivh MQSeriesRuntime-7.0.1-0.i386.rpm
MQSeriesServer-7.0.1-0.i386.rpm
```



What to do next

Note: Ensure that `/bin/sh` is a valid shell interpreter compatible with the Bourne shell, otherwise the post-installation configuration of WebSphere MQ does not complete successfully.

If your Linux machine was not installed with RPM, you might see a prerequisites failure of `/bin/sh` when you try to install WebSphere 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 using RPM, or specify the RPM option `--nodeps` to disable dependency checking during installation of WebSphere MQ.

[WebSphere MQ Components](#)

This lists all of the installable MQ components and other IBM products that comprise Websphere MQ.

[Displaying messages in your national language](#)

This describes how to display messages from a different national language message catalog.

Parent topic: [Installing a WebSphere MQ server](#)

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2.4.1. WebSphere MQ Components

This lists all of the installable MQ components and other IBM® products that comprise Websphere MQ.

When you install WebSphere® MQ for Linux, you can choose which components to install.

Table 1. WebSphere MQ components and packages

Component	Description	Package	Server	Client (with SSL)
Runtime	Mandatory component. Needed for application development and provides support for external applications.	MQSeriesRuntime	X	X

Server	The server feature allows you to run queue managers on your computer and connect to other computers over a network. Provides messaging and queuing services to applications, and support for WebSphere MQ client connections.	MQSeriesServer	X	
SDK	Required for compiling applications.	MQSeriesSDK	X	X
Client	The WebSphere MQ client is a small subset of WebSphere MQ, without a queue manager. Provides remote access to WebSphere MQ. Must be connected to a server. To install a client on the same machine as a server, use the Server CD-ROM; otherwise use the Clients CD-ROM.	MQSeriesClient	X	X
Sample programs	Sample application programs. Needed if you want to check your WebSphere MQ installation using the verification procedures.	MQSeriesSamples	X	X
Java messaging	►The files needed for messaging using Java (includes Java Messaging	MQSeriesJava	X	X

	Service).			
SSL support	Support for SSL key management	MQSeriesKeyman	X	X
IBM Java JRE (32-bit)	JRE Version 5 for Linux on Intel, AMD64, i5/OS®, pSeries®, and zSeries®.	MQSeriesJRE	X	
Brazilian Portuguese Message catalogs	Brazilian Portuguese message catalogs	MQSeriesMsg_pt	X	X
Czech Message catalogs	Czech message catalogs	MQSeriesMsg_cs	X	X
French Message catalogs	French message catalogs	MQSeriesMsg_fr	X	X
German Message catalogs	German message catalogs	MQSeriesMsg_de	X	X
Hungarian Message catalogs	Hungarian message catalogs	MQSeriesMsg_hu	X	X
Italian Message catalogs	Italian message catalogs	MQSeriesMsg_it	X	X
Japanese Message catalogs	Japanese message catalogs	MQSeriesMsg_ja	X	X
Korean Message catalogs	Korean message catalogs	MQSeriesMsg_ko	X	X
Polish Message catalogs	Polish message catalogs	MQSeriesMsg_pl	X	X
Russian Message catalogs	Russian message catalogs	MQSeriesMsg_ru	X	X
Spanish Message catalogs	Spanish message catalogs	MQSeriesMsg_es	X	X
Simplified Chinese Message catalogs	Simplified Chinese message catalogs	MQSeriesMsg_Zh_CN	X	X
Traditional Chinese Message catalogs	Traditional Chinese message catalogs	MQSeriesMsg_Zh_TW	X	X

Man pages	UNIX man pages, in U.S. English, for the following: <ul style="list-style-type: none"> • Control commands • Message Queue Interface (MQI) commands • MQSC commands 	MQSeriesMan	X	
Extended Transactional Client	WebSphere MQ component that allows a client application, within the same unit of work: <ul style="list-style-type: none"> • To put messages to, and get messages from, queues that are owned by the queue manager to which it is connected. • To update the resources of a resource manager other than a WebSphere MQ queue manager. 	MQSeriesTXClient	X	
WebSphere MQ Explorer (x86 platform & x86-64 platform only)	The WebSphere MQ Explorer allows you to administer and monitor WebSphere MQ resources.	MQSeriesConfig	X	
WebSphere Eclipse Platform (x86 platform & x86-64)	The WebSphere Eclipse Platform is a prerequisite for the WebSphere MQ Explorer and	MQSeriesEclipseSDK33	X	

platform only)	WebSphere MQ File Transfer Application components.			
WebSphere MQ File Transfer Application (x86 platform only)	The File Transfer Application allows you to send and receive ordinary files in the form of WebSphere MQ messages. You can use the File Transfer Application to send and receive any type of file in any format, for example: ASCII Linux format (with line feed characters), ASCII file Windows format (with carriage return/line feed characters), binary (for example, image files, wordprocessor files, spreadsheet files, or compressed files), also reports, letters, memos and charts. The File Transfer Application has both a graphical user interface and a command line interface.	MQSeriesFTA	X	

Table 2. Other products supplied with WebSphere MQ

Component	Description	File set	Server	Client
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 32 bit	gsk7bas	X	X
IBM Global Security Kit V7 (POWER®, pSeries x86-64, zSeries s390x platforms only)	Certificate and SSL Base Runtime - 64 bit.	gsk7bas64	X	X

Parent topic: [Installing a WebSphere MQ server](#)

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2.4.2. Displaying messages in your national language

This describes how to display messages from a different national language message catalog.

About this task

Messages in U.S. English are automatically installed with WebSphere® MQ.

If you require messages in a different language, perform the following steps:

Procedure

1. Install the appropriate message catalog (see [WebSphere MQ Components](#)).
2. To select messages in a different language, use the following command with the identifier for the language you want to install:

```
export LANG=message identifier
```

The message identifiers for the message catalogs are as follows:

- 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)
- ru_RU (Russian)
- zh_CN (Simplified Chinese)
- zh_TW (Traditional Chinese)

Parent topic: [Installing a WebSphere MQ server](#)

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2.5. Verifying your installation

This is an overview of various methods for verifying a WebSphere® MQ installation.

You must install the Samples programs component if you want to use these verification procedures. The group of topics within this section describes how to verify that the WebSphere MQ for Linux server has been correctly installed and configured. You can verify a WebSphere MQ server installation at different levels:

- To verify a local (stand-alone) installation that has no communication links with other WebSphere MQ installations, do the following:
 - To verify the installation using a single queue manager with a single queue, see: [Verifying a local installation](#).
 - To verify the installation using the Postcard application, see: [Using the Postcard application to verify a local installation](#).
- To verify a server-to-server installation that includes communication links to other WebSphere MQ installations, do the following:
 - To verify the installation using two queue managers, two queues and both a sender channel and a receiver channel, see: [Verifying a server-to-server installation](#).
 - To verify the installation using the Postcard application, see: [Verifying the installation using the Postcard application](#).

To verify a client/server installation that includes communication links between a server and a WebSphere MQ client, see [Verifying the client installation](#).

[Verifying a local installation](#)

[Verifying a server-to-server installation](#)

To verify a server-to-server installation using two servers, one as a sender and one as a receiver, complete the following tasks.

[Starting the WebSphere MQ Explorer](#)

[Verifying the installation using the Postcard application](#)

You can set up and use the Postcard application to verify a local installation or a server-to-server installation.

Parent topic: [Installing a WebSphere MQ server](#)

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2.5.1. Verifying a local installation

Before you begin

About this task

To verify your installation you must first perform this task. Once you have completed the steps below, you must test the installation as described in: [Testing the installation](#).

Note: WebSphere® 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.

From a shell window, use these steps to create a queue manager and a queue:

Procedure

1. Log in as a user in the `mqm` group
2. Create a default queue manager called `venus.queue.manager` by entering the following command:

```
crtmqm -q venus.queue.manager
```

You will see messages telling you that the queue manager has been created, and that the default WebSphere MQ objects have been created.

3. To start the queue manager, type:

```
strmqm
```

A message tells you when the queue manager has started.

4. Enable MQSC commands by typing:

```
runmqsc
```

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

5. Define a local queue called `ORANGE.QUEUE` by entering the following command:

```
define qlocal (orange.queue)
```

A message tells you when the queue has been created.

6. Stop MQSC by typing:

```
end
```

You will see some messages, followed by the command prompt.

What to do next

You have now defined:

- A default queue manager called `venus.queue.manager`
- A queue called `ORANGE.QUEUE`

Now proceed to [Testing the installation](#) to verify your installation.

[Testing the installation](#)

Parent topic: [Verifying your installation](#)

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2.5.1.1. Testing the installation

Before you begin

Before completing this task you must have created a queue manager called

`venus.queue.manager` and a local queue called `ORANGE.QUEUE`. For instructions on how to do this see [Verifying a local installation](#).

About this task

To test the queue manager and queue, use the **amqspout** sample program to put a message on the queue, and the **amqsget** sample program to get the message back from the queue. See [Running the amqspout and amqsputc samples](#) for more information about running the put sample programs.

Procedure

1. Log on as a user in group `mqm`, if you are not already.
2. Change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
3. Put a message on the queue using the following command:

```
./amqspout ORANGE.QUEUE
```

The following messages are displayed:

```
Sample AMQSPUT0 start  
target queue is ORANGE.QUEUE
```

4. Type some message text, on one or more lines, followed by a blank line. The following message is displayed:

```
Sample AMQSPUT0 end
```

Your message is now on the queue and the command prompt is displayed again.

5. To get the message from the queue, use the following command:

```
./amqsget ORANGE.QUEUE
```

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

What to do next

You have now successfully verified your local installation.

Parent topic: [Verifying a local installation](#)

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2.5.2. Verifying a server-to-server installation

To verify a server-to-server installation using two servers, one as a sender and one as a receiver, complete the following tasks.

- [Setting up the sender server](#)
- [Setting up the receiver server](#)
- [Testing communication between the servers](#)

To verify a server-to-server installation you must check the communications link between the two machines. Before you can do this, you must ensure that the communications protocol has been installed and configured on both systems.

The network protocols supported by WebSphere® MQ for Linux, Version 7.0 (x86 platform) are:

Protocol	Comments
TCP/IP	TCP/IP is part of the Linux (x86 platform) operating system. You can use any communications hardware supporting TCP/IP
LU6.2	If you want to use the SNA LU6.2 support on WebSphere MQ for Linux, Version 7.0 (x86 platform) you need the IBM® Communications Server for Linux Version 6.2. The Communications Server is available as a PRPQ product from IBM. For more details, see: http://www.ibm.com/software/network/commserver/about

The network protocols supported by WebSphere MQ for Linux, Version 7.0 (x86-64 platform) are:

Protocol	Comments
TCP/IP	TCP/IP is part of the Linux (x86-64 platform) operating system. You can use any communications hardware supporting TCP/IP

The network protocols supported by WebSphere MQ for Linux, Version 7.0 (zSeries® s390x platform) are:

Protocol	Comments
TCP/IP	TCP/IP is part of the Linux (zSeries s390x platform) operating system. You can use any communications hardware supporting TCP/IP

The network protocols supported by WebSphere MQ for Linux, Version 7.0 (POWER® platform) are:

Protocol	Comments
TCP/IP	TCP/IP is part of the Linux (POWER platform) operating system. You can use any communications hardware supporting TCP/IP
LU6.2	If you want to use the SNA LU6.2 support on WebSphere MQ for Linux, Version 7.0 (POWER platform) you need the IBM Communications Server for Linux Version 6.2. The Communications Server is available as a PRPQ product from IBM. For more details, see: http://www.ibm.com/software/network/commserver/about

The tasks in this section explain how to verify your installation and use TCP in the examples; if you are using an alternative protocol, refer to the [WebSphere MQ Intercommunication](#) manual.

The verification procedure assumes that both systems are Linux or UNIX machines; if this is not the case, some of the commands are different (for details, refer to the documentation for that system).

Note: WebSphere 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.

[Setting up the sender server](#)

[Setting up the receiver server](#)

[Testing communication between the servers](#)

Parent topic: [Verifying your installation](#)

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2.5.2.1. Setting up the sender server

About this task

In order to verify a server-to-server installation you must first set up a sender server. From a shell window, follow these steps to set up the sender server.

Procedure

1. Log in as a user in the `mqm` group.
2. Create a default queue manager called `saturn.queue.manager` with the following command:

```
crtmqm -q saturn.queue.manager
```

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

3. To start the queue manager, type:

```
strmqm
```

A message tells you when the queue manager has started.

4. Start MQSC commands by typing:

```
runmqsc
```

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

5. Define a local queue called `TRANSMIT1.QUEUE` (to be used as a transmission queue) by entering the following command:

```
define qlocal (transmit1.queue) usage (xmitq)
```

A message tells you when the queue has been created.

6. Define a local definition of the remote queue with the following command:

```
define qremote (local.def.of.remote.queue) rname (orange.queue)
rqmname ('venus.queue.manager') xmitq (transmit1.queue)
```

The name specified by the **rname** parameter must be the same as the name of the queue to which you are sending the message (`ORANGE.QUEUE` on the receiver workstation).

7. Define a sender channel with the following command:

```
define channel (first.channel) chltype (sdr)
```

```
conname ('con-name(port)') xmitq (transmit1.queue) trdtype (tcp)
```

The value `con-name` is the TCP address of the receiver workstation, and `port` is the port number, port 1414 is the default port number.

8. End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

Results

You have now defined the following objects:

- A default queue manager called `saturn.queue.manager`
- A transmission queue called `TRANSMIT1.QUEUE`
- A local definition of a remote queue called `LOCAL.DEF.OF.REMOTE.QUEUE`
- A sender channel called `FIRST.CHANNEL`

What to do next

Now to set up the receiver server so that you can verify your server-to-server installation, see [Setting up the receiver server](#).

Parent topic: [Verifying a server-to-server installation](#)

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2.5.2.2. Setting up the receiver server

About this task

After you have completed the task, [Setting up the sender server](#), follow these steps to set up the receiver server:

Procedure

1. Log in as a user in the `mqm` group.
2. Create a default queue manager called `venus.queue.manager` by entering the following command:

```
crtmqm -q venus.queue.manager
```

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

3. To start the queue manager, type:

```
strmqm
```

A message tells you when the queue manager has started.

4. Enable MQSC commands by typing:

```
runmqsc
```

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

5. Define a local queue called `ORANGE.QUEUE` by entering the following command:

```
define qlocal (orange.queue)
```

A message tells you when the queue has been created.

- Define a listener by entering the following command:

Note: If you do not specify the port that the listener should listen on, the default of 1414 is used. If you specified a port other than 1414 in step 7 of [Setting up the sender server](#), you must include the port parameter in the command, as shown below.

```
define listener (listener1) trdtype (tcp) control (qmgr) port (port_number)
```

Where

port_number

is the name of the port the listener should run on. This must be the same as the number used when defining your sender channel.

- Start the listener by entering the following command:

```
start listener (listener1)
```

Note: It is not recommended to start the listener in the background from any shell that automatically lowers the priority of background processes.

- Define a receiver channel with the following command:

```
define channel (first.channel) chdtype (rcvr) trdtype (tcp)
```

A message tells you when the channel has been created.

- End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

Results

You have now defined the following objects:

- A default queue manager called `venus.queue.manager`
- A queue called `ORANGE.QUEUE`
- A listener called `LISTENER1`
- A receiver channel called `FIRST.CHANNEL`

What to do next

Now to test communications between your sender and receiver workstations, see [Testing communication between the servers](#).

Parent topic: [Verifying a server-to-server installation](#)

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2.5.2.3. Testing communication between the servers

About this task

After completing, [Setting up the sender server](#), and [Setting up the receiver server](#), use this topic to test communications between sender and receiver workstations using sample programs. Use the **amqsput** sample program to put a message from the sender server to a

queue at the receiver server, and the **amqsget** sample program on the receiver server to get the message from the queue:

Procedure

1. Log in to both servers as a user in the `mqm` group.
2. If the queue managers on the two servers have stopped, restart them now by typing the following on both servers:

```
strmqm
```

3. Enable MQSC commands by typing:

```
runmqsc
```

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

4. On the **sender** server, start the sender channel using the MQSC **START CHANNEL** command and specify the channel name:

```
START CHANNEL (FIRST.CHANNEL)
```

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

5. End MQSC by typing:

```
end
```

Some messages are displayed, followed by the command prompt.

6. On the **sender** server, change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
7. To put a message on the local definition of the remote queue (which in turn specifies the name of the remote queue), use the following command:

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

You will see the following messages:

```
Sample amqsput0 start
target queue is LOCAL.DEF.OF.REMOTE.QUEUE
```

8. Type some message text on one or more lines, followed by a blank line. You will see the following message:

```
Sample amqsput0 end
```

Your message is now on the queue and the command prompt is displayed again.

9. On the **receiver** server, change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
10. To get the message from the queue at the receiver, enter the following command:

```
./amqsget ORANGE.QUEUE
```

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

Results

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

Parent topic: [Verifying a server-to-server installation](#)

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2.5.3. Starting the WebSphere MQ Explorer

About this task

To start the WebSphere® MQ Explorer on the x86 and x86-64 platforms , use the following command:

```
strmqcfcg
```

This command is described in the Control Commands section of the WebSphere MQ System Administration Guide. Use this command to ensure the WebSphere MQ Explorer launches correctly.

Parent topic: [Verifying your installation](#)

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2.5.4. Verifying the installation using the Postcard application

You can set up and use the Postcard application to verify a local installation or a server-to-server installation.

Use the Postcard application to verify that WebSphere® MQ is successfully installed, and that the associated communication links are working properly.

To use the Postcard application to verify a *local* installation (which does not have any communication links with other WebSphere MQ installations), see [Using the Postcard application to verify a local installation](#).

To use the Postcard application to verify communication between your server and the server of another named user, where that server is running WebSphere MQ and using TCP/IP, see [Using the Postcard application to verify a server-to-server installation](#).

[Using the Postcard application to verify a local installation](#)

Sending messages successfully between two Postcard applications to verify a local installation.

[Using the Postcard application to verify a server-to-server installation](#)

Sending messages successfully between two Postcard applications to verify a server-to-server installation.

[Using the Postcard application to verify a local installation using further steps](#)

Sending messages successfully between two Postcard applications verifies a local installation with these further optional steps.

Parent topic: [Verifying your installation](#)

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2.5.4.1. Using the Postcard application to verify a local installation

Sending messages successfully between two Postcard applications to verify a local installation.

About this task

To verify that the local installation is working, you can run two instances of the Postcard application on the same server and send messages between the applications. Successful sending and receiving of messages verifies that WebSphere® MQ is installed and working correctly on the server.

Note:

- The Postcard application has a graphical interface. To view this interface, your system requires the ability to view a graphical display.
- Before you can run the Postcard application, you must ensure that you are a member of the WebSphere MQ administrators group (mqm).

If there are no queue managers on your server, you are invited to run the Default Configuration wizard to create a queue manager to use with the Postcard application after signing on to the Postcard application.

Procedure

1. Start the Postcard application:

- In WebSphere MQ for Linux, Version 7.0 (any platform), you start the Postcard application as follows:
 - a. Log on as a user in group mqm.
 - b. Change directory to `/opt/mqm/java/bin`
 - c. Run the Postcard shell script.

```
./postcard
```
- In WebSphere MQ for Linux, Version 7.0 (x86 platform), in addition to the above method, you can start the Postcard application as follows:▶
 - a. Ensure the WebSphere MQ Explorer is installed, and start it with the following command:

```
strmqcfcg
```

If this is the first time you have started the Explorer, click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard application.
 - b. ▶If this is not the first time you have started the Explorer, you might have to navigate to the Welcome pages. Click **Help** > **Welcome** to display the Welcome page.◀
 - c. ▶Click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard.◀

◀

2. At the Postcard - Sign On window, type in a nickname to use to send messages within the Postcard application (for example, `User1`).
3. Select the queue manager to use as the mailbox:
 - If the only queue manager on your server is the default queue manager that you created by running the Default Configuration wizard, this queue manager is used automatically as your mailbox for postcards.
 - If you have created one or more of your own queue managers, but you have not run the Default Configuration wizard, select the appropriate queue manager from the list displayed.
 - If you do not have any queue managers, you will be prompted to either launch the Default Configuration or close the Postcard application. Launching the Default Configuration will create a default queue manager.
 - If you have run the Default Configuration wizard and you want to use the default queue manager, but there is more than one queue manager on your server, select the **Advanced** checkbox, then select **Use Default Configuration as mailbox**.
 - If you have run the Default Configuration wizard and also created one or more of your own queue managers, and you do not want to use the default queue manager, select the **Advanced** checkbox, select **Choose queue manager as mailbox**, then select the appropriate queue manager from the list displayed.

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

4. Run the Postcard shell script again in a different shell window. This opens a second Postcard window.
5. The Postcard - Sign On panel is displayed again. Type a second nickname to use to send messages within the Postcard application (for example, `User2`).
6. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 3). The queue manager you select for this second Postcard must either be the same queue manager, be in the same cluster as the queue manager for the first postcard, or communication links must have been set up between them. You now have two Postcards, one with the nickname `User1` and one with the nickname `User2`.
7. In one of the Postcards (for example, `User1`), enter the nickname for the other Postcard application in the **To:** field and the queue manager it is using in the **On:** field.
8. Type a message in the **Message:** field and click **Send**.
9. 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*.
10. From the receiving postcard, double-click the message in the **Postcards sent and received** area to view it. When this message arrives, this verifies that WebSphere MQ is correctly installed.

Example

Parent topic: [Verifying the installation using the Postcard application](#)

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2.5.4.2. Using the Postcard application to verify a server-

to-server installation

Sending messages successfully between two Postcard applications to verify a server-to-server installation.

Before you begin

To verify that a server-to-server installation is working on two servers, the sender of the message and the receiver, you can use an instance of the Postcard application on the sender server, and an instance of the Postcard application on the receiver server, and send messages between the two Postcard applications. Successful sending and receiving of messages verifies that WebSphere® MQ is successfully installed, and that communication between the two servers is working correctly. Both servers must use TCP/IP.

To use the Postcard application for this type of verification, one of the following must be true:

- Both queue managers must be in the same cluster; this is the simplest method. To ensure that both queue managers are in the same cluster, you can run the Postcard application before creating any local queue managers on each server. The Postcard application detects that there are no local queue managers defined for that server, and displays the Default Configuration wizard so that you can create the default queue managers and link them to the default cluster.

You can use the Postcard application with existing queue managers, as long as both queue managers belong to the same cluster. If you have already completed the Default Configuration wizard but did not put the two queue managers into the same cluster, you can create your own new queue managers on both servers, create a cluster, and ensure that the queue managers that you create on each server belong to the same cluster.

- Alternatively if the queue managers are not in the same cluster, you can configure channels to communicate between the two servers. For instructions on how to set up the channels, see [Setting up the sender server](#) and [Setting up the receiver server](#). When you have set up communication, you can use the Postcard application. To test the server-to-server installation, you must repeat the process on the second server, so that both servers have sent and received messages.

Note:

- The Postcard application has a graphical interface. To view this interface, your systems require the ability to view a graphical display.
- Before you can run the Postcard application on each server, you must ensure that you are a member of the WebSphere MQ administrators group (mqm) on each server.

Parent topic: [Verifying the installation using the Postcard application](#)

On the sender server

Procedure

1. Start the Postcard application:
 - In WebSphere MQ for Linux, Version 7.0 (any platform), you start the Postcard application as follows:
 - a. Log on as a user in group mqm.
 - b. Change directory to `/opt/mqm/java/bin`
 - c. Run the Postcard shell script.

./postcard

- In WebSphere MQ for Linux, Version 7.0 (x86 platform), in addition to the above method, you can start the Postcard application as follows:▶
 - a. Ensure the WebSphere MQ Explorer is installed, and start it with the following command:

```
strmqcfcfg
```

If this is the first time you have started the Explorer, click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard application.

- b. ▶If this is not the first time you have started the Explorer, you might have to navigate to the Welcome pages. Click **Help** > **Welcome** to display the Welcome page.◀
- c. ▶Click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard.◀

◀

2. At the Postcard - Sign On window, type in a nickname to use to send messages within the Postcard application (for example, `User1`).
3. Select the queue manager to use as the mailbox (You can use the Postcard application with existing queue managers, as long as both queue managers belong to the same cluster. If your existing queue manager does not belong to the appropriate cluster refer to the introduction of this topic for information on how to proceed):
 - If the only queue manager on your server is the default queue manager that you created by running the Default Configuration wizard, this queue manager is used automatically as your mailbox for postcards.
 - If you have created one or more of your own queue managers, but you have not run the Default Configuration wizard, select the appropriate queue manager from the list displayed.
 - If you do not have any queue managers, you will be prompted to either start the Default Configuration or close the Postcard application. Starting the Default Configuration will create a default queue manager.
Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the checkbox. On the next screen select **yes, make it the repository for the cluster**. Once you have completed the wizard you are taken back to the Postcard - Sign On window.
 - If you have run the Default Configuration wizard and you want to use the default queue manager, but there is more than one queue manager on your server, select the **Advanced** checkbox, then select **Use Default Configuration as mailbox**.
 - If you have run the Default Configuration wizard and also created one or more of your own queue managers, and you do not want to use the default queue manager, select the **Advanced** checkbox, select **Choose queue manager as mailbox**, then select the appropriate queue manager from the list displayed.

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

On the receiver server

Procedure

1. Start the Postcard application:
 - In WebSphere MQ for Linux, Version 7.0 (any platform), you start the Postcard

application as follows:

- a. Log on as a user in group mqm.
- b. Change directory to `/opt/mqm/java/bin`
- c. Run the Postcard shell script.

```
./postcard
```

- In WebSphere MQ for Linux, Version 7.0 (x86 platform), in addition to the above method, you can start the Postcard application as follows:➤

- a. Ensure the WebSphere MQ Explorer is installed, and start it with the following command:

```
strmqcfcfg
```

If this is the first time you have started the Explorer, click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard application.

- b. ➤If this is not the first time you have started the Explorer, you might have to navigate to the Welcome pages. Click **Help > Welcome** to display the Welcome page.◀
- c. ➤Click **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to start the Postcard.◀



2. At the Postcard - Sign On window, type in a nickname to use to send messages within the Postcard application (for example, `User 2`).
3. Select the queue manager to use as the mailbox (You can use the Postcard application with existing queue managers, as long as both queue managers belong to the same cluster. If your existing queue manager does not belong to the appropriate cluster refer to the introduction of this topic for information on how to proceed):
 - If the only queue manager on your server is the default queue manager that you created by running the Default Configuration wizard, this queue manager is used automatically as your mailbox for postcards.
 - If you have created one or more of your own queue managers, but you have not run the Default Configuration wizard, select the appropriate queue manager from the list displayed.
 - If you do not have any queue managers, you will be prompted to either start the Default Configuration or close the Postcard application. Starting the Default Configuration will create a default queue manager.
Work through the Default Configuration wizard. When you get to the option to join the queue manager to the default cluster, tick the checkbox. On the next screen select **yes, make it the repository for the cluster**. Once you have completed the wizard you are taken back to the Postcard - Sign On window.
 - If you have run the Default Configuration wizard and you want to use the default queue manager, but there is more than one queue manager on your server, select the **Advanced** checkbox, then select **Use Default Configuration as mailbox**.
 - If you have run the Default Configuration wizard and also created one or more of your own queue managers, and you do not want to use the default queue manager, select the **Advanced** checkbox, select **Choose queue manager as mailbox**, then select the appropriate queue manager from the list displayed.

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

4. In one of the Postcards (for example, `User1`), type the nickname for the other Postcard application in the **To:** field and the queue manager it is using in the **On:** field.
5. Type a message in the **Message:** field and click **Send**.

6. 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*.
7. In the sent and received area of the Postcard, details of the new message are displayed. double-click the message in the **Postcards sent and received** area to view it. When this message arrives, this verifies that WebSphere MQ is correctly installed and that your communication link between the two servers is working correctly.

Results

When all installation and verification is complete, you are ready to start using WebSphere MQ (see the [WebSphere MQ System Administration Guide](#)).

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2.5.4.3. Using the Postcard application to verify a local installation using further steps

Sending messages successfully between two Postcard applications verifies a local installation with these further optional steps.

About this task

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

- Install WebSphere® MQ on other servers. Follow the same installation procedure that you used for the first server. Ensure that you use the Join Default Cluster window in the Default Configuration wizard to add the other servers to your first server's cluster.
- Install the WebSphere MQ client on other servers. See the [Installing a WebSphere MQ client](#).
- Continue with further administration tasks. See the [WebSphere MQ System Administration Guide](#).

Parent topic: [Verifying the installation using the Postcard application](#)

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3. Installing a WebSphere MQ client

This collection of topics describes how to install a WebSphere® MQ client. The information covers subjects such as preparing for installation and verifying your installation, as well as installation itself.

If you already have an installation of WebSphere MQ, and are migrating to WebSphere MQ Version 7.0, see [Upgrading to WebSphere MQ Version 7.0](#) before installing.

WebSphere MQ for Linux can be installed as a server or a client.

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

A WebSphere MQ server is an installation of one or more queue managers that provide queuing services to one or more clients. All the WebSphere MQ objects, for example queues, exist only on the queue manager machine (the WebSphere MQ server machine), and not the client. A WebSphere MQ server can also support local WebSphere MQ applications. To install a WebSphere MQ server, see [Installing a WebSphere MQ server](#).

It is possible to have both a server and a client installation on the same machine, for instructions on how to do this, see [Installing a client on the same machine as a server](#).

See the [WebSphere MQ System Administration Guide](#) for an introduction to WebSphere MQ concepts and objects.

For information about the components that can be included in the server and client installations, see [WebSphere MQ Components](#).

The group of topics within this section take you through the process of installing a WebSphere MQ client, complete all of these tasks in sequence.

- [Preparing to install](#)
- [Installing WebSphere MQ](#)
- [Verifying the client installation](#)

[Preparing to install](#)

[Installing WebSphere MQ](#)

[Verifying the client installation](#)

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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3.1. Preparing to install

Before you install WebSphere® MQ, complete the following tasks.

- [Checking hardware and software requirements](#)
- [Setting up the user ID and group ID](#)
- [Creating WebSphere MQ file systems](#)

Additionally, if you require messages in a language other than U.S. English see, [Displaying messages in your national language](#).

[Checking hardware and software requirements](#)

Before installing WebSphere MQ as a client check its system requirements and your operating environment.

[Setting up the user ID and group ID](#)

[Creating WebSphere MQ file systems](#)

[Displaying messages in your national language](#)

This describes how to display messages from a different national language message catalog.

Parent topic: [Installing a WebSphere MQ client](#)

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3.1.1. Checking hardware and software requirements

Before installing WebSphere® MQ as a client check its system requirements and your operating environment.

You must check that your system meets the hardware and software requirements set out in [WebSphere MQ requirements](#) on ibm.com.

Storage Requirements

The storage requirements for the WebSphere MQ for Linux depend on which components you install, and how much working space you need. Approximate space requirements are listed in the following table:

Table 1. Space requirements for WebSphere MQ for Linux client installation

Platform	x86	x86-64	POWER®	zSeries® s390x
Space (MB)	126	126	216	183

You can use the `df` command to determine the amount of free space on your system.

Disk storage is also required for

- Prerequisite software
- Optional software
- Your application programs

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need an IBM® Java 2 SDK and Runtime Environment Version 1.4.2 or later.

Apache Axis V1.4 provides support for SOAP and is shipped on the server CD-ROM, but not installed.

For further information about using Java with WebSphere MQ, see [WebSphere MQ Using Java](#).

For further information about SOAP with WebSphere MQ, see [WebSphere MQ Using Web Services](#).

If you use a JDK that is not in the list of supported JDKs you should be aware that:

- The JDK might not be FIPS level 140-2 compliant and by using it with WebSphere MQ, WebSphere MQ Version 7.0 will not comply with the FIPS 140-2 standards.
- The WebSphere MQ Web service deployment utility, **amqwdployWMQService**, requires IBM Java 2 SDK.

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 [Using the Postcard application](#), you need to use a 32-bit JDK. You can check the version installed using the following command:

```
java -version
```

[Prerequisite software for using SSL](#)

Parent topic: [Preparing to install](#)

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3.1.1.1. Prerequisite software for using SSL

This section describes the prerequisites for using SSL, minimum supported software levels are given. Later levels, if any, are supported unless otherwise stated. These prerequisites apply to both client and server installations of WebSphere® MQ.

Installing the g++ version runtime support

If you intend to run SSL channels then you must have the g++ runtime libraries installed. The GNU g++ libraries are called `libgcc_s.so` and `libstdc++.so.5` and, on a Red Hat system with `libgcc` and `libstdc++5` RPMs installed, are found in the directory `/usr/lib`. Check the release level of the libraries meets WebSphere MQ requirements, found at [WebSphere MQ requirements](#).

If you have a distribution that does not install `libgcc_s.so` and `libstdc++.so.5` into `/usr/lib`, then you will have to do one of the following tasks:

- Locate and install the packages from your distribution vendor that contain these libraries.
- Install the GNU gcc and g++ compilers from another location, for example the home page for the GNU compiler collection at <http://gcc.gnu.org/>. Ensure that the libraries listed above are included in `/usr/lib` after installation.

➤ The required packages for SSL support for WebSphere MQ are set out in [WebSphere MQ requirements](#) on ibm.com. ◀

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 SSL functions.

IBM Global Security Kit V7

If you want to use the SSL support, you need IBM® Global Security Kit V7. This is supplied with WebSphere MQ as one of the components available for installation. If you are migrating from WebSphere MQ Version 5.3 and have no other requirement for the IBM Global Security Kit V6, you can uninstall it using the process described in [Uninstalling Websphere MQ](#), the package name is `gskbas-6.0-n.nn.<arch>.rpm`.

Parent topic: [Checking hardware and software requirements](#)

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3.1.2. Setting up the user ID and group ID

WebSphere® 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. Create the user ID and group IDs as described in the following topics.

- [Creating the user ID and group](#)
- [Adding existing user IDs to the group](#)

[Creating the user ID and group](#)

[Adding existing user IDs to the group](#)

Parent topic: [Preparing to install](#)

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3.1.2.1. Creating the user ID and group

Create the required user ID and group ID **before** you install WebSphere® MQ. Both user ID and group ID must be set to `mqm`. For stand-alone machines, you can create the new user ID and group IDs locally; for machines administered in a network information services (NIS) domain, an administrator must create the IDs on the NIS master server machine.

It is also suggested that you set the `mqm` user's home directory to `/var/mqm`.

Parent topic: [Setting up the user ID and group ID](#)

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3.1.2.2. 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.

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

Parent topic: [Setting up the user ID and group ID](#)

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3.1.3. Creating WebSphere MQ file systems

The installation directory for the WebSphere® MQ product code is `/opt/mqm`. Working data is stored in `/var/mqm`. You cannot change these locations. The GSKit must also be installed into its default location.

The topics contained in this section describe how to prepare your file system for installing WebSphere MQ. Perform these tasks before installation.

[Creating a file system for the product code](#)

This topic describes how to prepare the `/opt/mqm` file system into which the WebSphere MQ code will be installed should you not have enough storage space available in the file system.

[Creating a file system for the working data](#)

Parent topic: [Preparing to install](#)

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3.1.3.1. Creating a file system for the product code

This topic describes how to prepare the `/opt/mqm` file system into which the WebSphere® MQ code will be installed should you not have enough storage space available in the file system.

About this task

The WebSphere MQ product code is installed in `/opt/mqm`. If you cannot install the product code in the `/opt/mqm` file system because the file system is too small to contain the product, you can do one of the following:

1. Create a new file system and mount it as `/opt/mqm`. If you choose this option, the new file system must be created and mounted before installing the product code.
2. Create a new directory anywhere on your machine, and create a symbolic link from

`/opt/mqm` to this new directory. For example:

```
mkdir /bigdisk/mqm
ln -s /bigdisk/mqm /opt/mqm
```

If you choose this option, the new directory must be created, and the link created, before installing the product code.

The file system into which the code is installed can be a remote network device, for example, NFS. However, you must define the mount options defined on that device to allow **setuid** programs, including those which are **setuid** root, to run.

Parent topic: [Creating WebSphere MQ file systems](#)

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3.1.3.2. Creating a file system for the working data

About this task

Before you install WebSphere® MQ for Linux, create and mount a file system called `/var/mqm`. For a client installation, the file system can be mounted on a remote network device, for example NFS.

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

- The size of the error log files written to the `/var/mqm/errors` directory

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. For details about the requirements of the server installation, see [Creating a file system for the working data](#).

➤ Allow 130 MB as a minimum for a WebSphere MQ server and 15 MB as a minimum for a WebSphere MQ client. These values are the absolute minimum values for a single queue manager and are not recommended values. The size of a file system should be scaled depending on 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. ◀

➤ A new sample WebSphere MQ client configuration file is created in the `var/mqm` directory, by the C client package, during installation, but only if this file does not already exist. This file contains the `ClientExitPath` stanza. An example `mqlclient.ini` file is shown in [WebSphere MQ client configuration file](#). ◀

Note that if you are using a common configuration file for multiple clients, either in the WebSphere MQ installation directory or in another location using the `MQCLNTCF` environment variable, you should grant read access to all user identifiers under which the WebSphere 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.

Parent topic: [Creating WebSphere MQ file systems](#)

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3.1.4. Displaying messages in your national language

This describes how to display messages from a different national language message catalog.

About this task

Messages in U.S. English are automatically installed with WebSphere® MQ.

If you require messages in a different language, perform the following steps:

Procedure

1. Install the appropriate message catalog (see [WebSphere MQ Components](#)).
2. To select messages in a different language, use the following command with the identifier for the language you want to install:

```
export LANG=message identifier
```

The message identifiers for the message catalogs are as follows:

- 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)
- ru_RU (Russian)
- zh_CN (Simplified Chinese)
- zh_TW (Traditional Chinese)

Parent topic: [Preparing to install](#)

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3.2. Installing WebSphere MQ

This collection of topics tells you how to install the WebSphere® MQ for Linux client. If you want to install the WebSphere MQ server see [Installing a WebSphere MQ server](#).

Before you start the installation procedure, make sure you have prepared your system as described in [Preparing to install](#).

There are two types of WebSphere MQ clients:

Client with SSL

This is the standard WebSphere MQ client with additional code to allow you to use SSL support. You can install the client with SSL from either the client or the server CD.

Extended Transactional Client

This is additional code to allow a client application within the same unit of work to:

- To put messages to, and get messages from, queues that are owned by the queue manager to which it is connected.
- To update the resources of a resource manager other than a WebSphere MQ queue manager.

You can only install this from the server CD.

For more information about SSL, see the [WebSphere MQ Security](#) book.

To install a WebSphere MQ server, see [Installing a WebSphere MQ server](#).

If you want to install the client on the same machine as a WebSphere MQ server, see [Installing a client on the same machine as a server](#).

[Client Installation procedure](#)

Installing a WebSphere MQ client on a 32-bit or 64-bit Linux system.

[WebSphere MQ Components](#)

When you install WebSphere MQ for Linux, you can choose which components to install.

Parent topic: [Installing a WebSphere MQ client](#)

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3.2.1. Client Installation procedure

Installing a WebSphere® MQ client on a 32-bit or 64-bit Linux system.

Before you begin

Before you start the installation procedure:

- ensure you have the correct 32-bit or 64-bit Client CD-ROM. If you want to install the 64-bit Client, you **must** mount the 64-bit Client CD-ROM.
- make sure that you have prepared your system as described in [Preparing to install](#).

About this task

This installation procedure uses the Red Hat Package Manager (RPM) installer, enabling you to choose which components you want to install. The components (or filesets) are listed in [WebSphere MQ Components](#); you must install at least the Runtime and Client components.

Procedure

1. Log in as root.
2. If you are installing from the CD-ROM, insert the WebSphere MQ for Linux Client

CD-ROM, and make the mount point your current 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. Use the **`rpm -ivh`** command to install each component that you require. For example: On x86 architecture, enter the following commandh for a minimum installation:

```
rpm -ivh MQSeriesRuntime-7.0.1-0.i386.rpm MQSeriesClient-7.0.1-0.i386.rpm
```

Note: Ensure that `/bin/sh` is a valid shell interpreter compatible with the Bourne shell, otherwise the post-installation configuration of WebSphere MQ will not complete successfully.

If your Linux machine was not installed with RPM, you might see a prerequisites failure of `/bin/sh` when you try to install WebSphere MQ. This is because the RPM tables do not recognize that a valid shell interpreter is installed.

If this occurs, you can reinstall the `/bin/sh` shell using RPM, or specify the RPM option `--nodeps` to disable dependency checking during installation of WebSphere MQ.

Parent topic: [Installing WebSphere MQ](#)

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3.2.2. WebSphere MQ Components

When you install WebSphere® MQ for Linux, you can choose which components to install.

When you install WebSphere MQ for Linux, you can choose which components to install.

Table 1. WebSphere MQ components and packages

Component	Description	Package	Server	Client (with SSL)
Runtime	Mandatory component. Needed for application development and provides support for external applications.	MQSeriesRuntime	X	X
Server	The server feature allows you to run queue managers on your computer and connect to other computers over a network. Provides messaging and queuing services to applications, and support for WebSphere MQ client connections.	MQSeriesServer	X	
SDK	Required for compiling applications.	MQSeriesSDK	X	X
Client	The WebSphere MQ client is a small subset of WebSphere MQ, without a queue manager. Provides remote access to WebSphere MQ. Must be connected to a server. To install a client on the same machine as a server, use the Server CD-ROM; otherwise use the Clients CD-ROM.	MQSeriesClient	X	X
Sample programs	Sample application programs. Needed if you	MQSeriesSamples	X	X

	want to check your WebSphere MQ installation using the verification procedures.			
Java messaging	➤The files needed for messaging using Java (includes Java Messaging Service).◀	MQSeriesJava	X	X
SSL support	Support for SSL key management	MQSeriesKeyman	X	X
IBM® Java JRE (32-bit)	➤JRE Version 5 for Linux on Intel, AMD64, i5/OS®, pSeries®, and zSeries®. ◀	MQSeriesJRE	X	
Brazilian Portuguese Message catalogs	Brazilian Portuguese message catalogs	MQSeriesMsg_pt	X	X
Czech Message catalogs	Czech message catalogs	MQSeriesMsg_cs	X	X
French Message catalogs	French message catalogs	MQSeriesMsg_fr	X	X
German Message catalogs	German message catalogs	MQSeriesMsg_de	X	X
Hungarian Message catalogs	Hungarian message catalogs	MQSeriesMsg_hu	X	X
Italian Message catalogs	Italian message catalogs	MQSeriesMsg_it	X	X
Japanese Message catalogs	Japanese message catalogs	MQSeriesMsg_ja	X	X
Korean Message catalogs	Korean message catalogs	MQSeriesMsg_ko	X	X
Polish Message catalogs	Polish message catalogs	MQSeriesMsg_pl	X	X
Russian Message catalogs	Russian message catalogs	MQSeriesMsg_ru	X	X

Spanish Message catalogs	Spanish message catalogs	MQSeriesMsg_es	X	X
Simplified Chinese Message catalogs	Simplified Chinese message catalogs	MQSeriesMsg_Zh_CN	X	X
Traditional Chinese Message catalogs	Traditional Chinese message catalogs	MQSeriesMsg_Zh_TW	X	X
Man pages	<p>UNIX man pages, in U.S. English, for the following:</p> <ul style="list-style-type: none"> • Control commands • Message Queue Interface (MQI) commands • MQSC commands 	MQSeriesMan	X	
Extended Transactional Client	<p>WebSphere MQ component that allows a client application, within the same unit of work:</p> <ul style="list-style-type: none"> • To put messages to, and get messages from, queues that are owned by the queue manager to which it is connected. • To update the resources of a resource manager other than a WebSphere MQ queue manager. 	MQSeriesTXClient	X	

WebSphere MQ Explorer (x86 platform & x86-64 platform only)	The WebSphere MQ Explorer allows you to administer and monitor WebSphere MQ resources.	MQSeriesConfig	X	
WebSphere Eclipse Platform (x86 platform & x86-64 platform only)	The WebSphere Eclipse Platform is a prerequisite for the WebSphere MQ Explorer and WebSphere MQ File Transfer Application components.	MQSeriesEclipseSDK33	X	
WebSphere MQ File Transfer Application (x86 platform only)	The File Transfer Application allows you to send and receive ordinary files in the form of WebSphere MQ messages. You can use the File Transfer Application to send and receive any type of file in any format, for example: ASCII Linux format (with line feed characters), ASCII file Windows format (with carriage return/line feed characters), binary (for example, image files, wordprocessor files, spreadsheet files, or compressed files), also reports, letters, memos and charts. The File Transfer Application has both a graphical user interface	MQSeriesFTA	X	

	and a command line interface.			
--	-------------------------------	--	--	--

Table 2. Other products supplied with WebSphere MQ

Component	Description	File set	Server	Client
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 32 bit	gsk7bas	X	X
IBM Global Security Kit V7 (POWER®, pSeries x86-64, zSeries s390x platforms only)	Certificate and SSL Base Runtime - 64 bit.	gsk7bas64	X	X

Parent topic: [Installing WebSphere MQ](#)

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3.3. Verifying the client installation

The group of topics within this section describes how to verify that the WebSphere® MQ for Linux client has been correctly installed and configured.

To verify your WebSphere MQ client installation, you need a WebSphere MQ server with communication links with your client workstation. You can then complete the following tasks in order:

- [Setting up the server workstation](#)
- [Setting up the client workstation](#)
- [Testing communication between workstations](#)

The verification procedure assumes that:

- TCP/IP is configured and initialized on both the server and the client machines. If you are using SNA, refer to the [WebSphere MQ Intercommunication](#) manual.
- The WebSphere MQ server is installed on a Linux or UNIX machine; if this is not the case, some of the commands will be different (for details, refer to the [WebSphere MQ Clients](#) book).

Note: WebSphere 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.

[Setting up the server workstation](#)

[Setting up the client workstation](#)

[Testing communication between workstations](#)

[Starting the WebSphere MQ Explorer](#)

Parent topic: [Installing a WebSphere MQ client](#)

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3.3.1. Setting up the server workstation

Before you begin

About this task

In order to verify your installation you must first perform this task. From a shell window, use these steps to install a queue manager and a queue on the server:

Note: WebSphere® 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 default queue manager called `saturn.queue.manager` by entering the following command:

```
crtmqm -q saturn.queue.manager
```

You will see messages telling you that the queue manager has been created, and that the default WebSphere MQ objects have been created.

2. To start the queue manager, type:

```
strmqm
```

A message tells you when the queue manager has started.

3. Enable MQSC commands by typing:

```
runmqsc
```

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

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

```
define qlocal (queue1)
```

A message tells you when the queue has been created.

5. Define a server-connection channel by entering the following command on one line:

```
define channel (channel1) chltype (svrconn) trptype (tcp) mcauser ('mqm')
```

Note: Once you have set the **mcauser** attribute to `mqm`, you **MUST** set the attribute back to its default value after you have verified the installation to prevent any security

vulnerabilities, as described in: [Testing communication between workstations](#).
A message tells you when the channel has been created.

6. Define a listener by entering the following command:

Note: If you do not specify the port that the listener should listen on, by omitting the port parameter from the command below, the default of 1414 is used. If you want to specify a port other than 1414, you must include the port parameter in the command, as shown.

```
define listener (listener1) trdtype (tcp) control (qmgr) port (port_number)
```

Where

port_number

is the name of the port the listener should run on. This must be the same as the number used when defining your client-connection channel in [Setting up the client workstation](#).

7. Start the listener by entering the following command:

```
start listener (listener1)
```

8. Stop MQSC by typing:

```
end
```

You will see some messages, followed by the command prompt.

Results

You have now defined the following objects on the server:

- A default queue manager called `saturn.queue.manager`
- A local queue called `QUEUE1`
- A listener called `LISTENER1`
- A server-connection channel called `CHANNEL1`

What to do next

To continue with the verification process, see [Setting up the client workstation](#).

Parent topic: [Verifying the client installation](#)

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3.3.2. Setting up the client workstation

Before you begin

Before you complete this task you must have completed, [Setting up the server workstation](#).

About this task

When a WebSphere® MQ application is run on the WebSphere MQ client, the following information is required:

- The name of the MQI channel that connects the client to the server
- The communications protocol

- The address of the server

You provide this information by defining a client-connection channel with the name used for the server-connection channel defined on the server. This example uses the `MQSERVER` environment variable to define the client-connection channel.

Procedure

1. Before starting, use the **ping** command to check that your TCP/IP software is correctly configured, and that your WebSphere MQ client and server TCP/IP sessions have been initialized. From the client, enter:

```
ping server-hostname
or
ping n.n.n.n
```

where

server-hostname

Is the host name of the server

n.n.n.n

Is the network address of the server

2. Press `Ctrl-C` to stop the **ping** command.
3. To create a client-connection channel, set the `MQSERVER` environment variable as follows:

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

where

CHANNEL1

Is the name of the server-connection channel already defined on the server

TCP

Is the communications protocol.

server-hostname

Is the TCP/IP host name of the server.

port

Is optional and is the port number that the server is listening on, you specified this in step 6 of [Setting up the server workstation](#). If you do not give a port number, WebSphere MQ uses:

- The one specified in the `qm.ini` file.
- If no value is specified in the `qm.ini` file, WebSphere MQ uses the port number identified in the TCP/IP services file for the service name WebSphere MQ. If this entry in the services file does not exist, a default value of 1414 is used.

The client-connection channel and server listener program must use the same port number.

What to do next

To continue with the verification process, see [Testing communication between workstations](#).

Parent topic: [Verifying the client installation](#)

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3.3.3. Testing communication between workstations

Before you begin

Before you complete this task you must have completed, [Setting up the client workstation](#). You must install the Samples programs component if you want to use these verification procedures.

About this task

On the WebSphere® MQ client workstation, use the **amqsputc** sample program to put a message on the queue at the server workstation, and the **amqsgetc** sample program to get the message from the queue back to the client:

Procedure

1. Change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
2. Put a message on the queue at the server using the following command:

```
./amqsputc QUEUE1 saturn.queue.manager
```

This displays the following messages:

```
Sample amqsput0 start  
target queue is QUEUE1
```

3. Type some message text on one or more lines, followed by a blank line. You will see the following message:

```
Sample amqsput0 end
```

Your message is now on the queue and the command prompt is displayed again.

4. To get the message from the queue located on the server, enter the following command:

```
./amqsgetc QUEUE1 saturn.queue.manager
```

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

Results

You have now successfully verified the client installation.

What to do next

You must now set the **mcauser** attribute back to its default value.

[Resetting mcauser](#)

Reset the **mcauser** attribute to its default value using the **alter channel** command.

Parent topic: [Verifying the client installation](#)

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3.3.3.1. Resetting mcauser

Reset the mcauser attribute to its default value using the **alter channel** command.

Procedure

Run the following steps on the server.

1. Start MQSC commands by entering the following command:

```
runmqsc
```

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

2. In the MQSC window, set the **mcauser** attribute to its default value by entering the following command:

```
alter channel(channel1) chltype (svrconn) mcauser(' ')
```

3. Stop MQSC by typing:

```
end
```

You will see some messages, followed by the command prompt.

Results

You have now set the **mcauser** attribute back to its default value.

Parent topic: [Testing communication between workstations](#)

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3.3.4. Starting the WebSphere MQ Explorer

About this task

To start the WebSphere® MQ Explorer, use the following command:

```
strmqcfg
```

This command is described in the Control Commands section of the WebSphere MQ System Administration Guide. Use this command to ensure the WebSphere MQ Explorer launches correctly.

Parent topic: [Verifying the client installation](#)

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4. Installing a client on the same machine as a server

To install a WebSphere® MQ for Linux client on a server machine, use the WebSphere MQ Server CD-ROM. Choose the Client component on the Server CD-ROM to install the client code on the server machine, and use the installation procedure described in [Installing a WebSphere MQ server](#).

If you install a WebSphere MQ client on the same machine as a WebSphere MQ server, the client is not connected to the server automatically. Configure the communication channel (an MQI channel) between the client and the server, as described in [Verifying the client installation](#).

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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5. Applying maintenance

This section describes how to maintain WebSphere® MQ for Linux.

[Applying maintenance to WebSphere MQ for Linux](#)

How to apply maintenance to WebSphere MQ for Linux using **RPM**.

[Restoring the previous maintenance level](#)

How to remove updates and restore the previous maintenance level using **RPM**.

[Applying maintenance to a running queue manager](#)

Use multi-instance queue managers to reduce the outage caused by applying maintenance updates. Follow these steps to apply maintenance to a multi-instance queue manager.

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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5.1. Applying maintenance to WebSphere MQ for Linux

[How to apply maintenance to WebSphere® MQ for Linux using RPM](#)

About this task

Maintenance is delivered in the form of RPM update images, which are applied using the RPM installation tool. Additional disk space is required for the update images, as the updated files are kept in `/opt/mqm/maintenance` directory, to allow maintenance to be removed and the previous level restored. Do not delete or move this directory or the files it contains.

Updates are cumulative. You can install your chosen update directly, without installing any previous updates first. The maintenance might contain updates for one or more package. You must install those parts of an update that correspond to the packages that are installed on your machine.

Procedure

1. Before installing maintenance, you must stop all WebSphere MQ applications on the machine and the applications accessing remote machines. ▶ Any applications on the machine that are linked with the WebSphere MQ shared libraries must also be stopped before applying WebSphere MQ maintenance. ◀ ▶ The topic, [Applying maintenance to a running queue manager](#), describes how to apply maintenance to a multi-instance queue manager while keeping the queue manager running on a different server. ◀
2. End all WebSphere MQ activity:
 - a. Log in as a user in `group mqm`.
 - b. Use the **dspmq** command to display the state of all the queue managers on the system.
 - c. Use the **endmqm** command to stop all running queue managers.
 - d. Stop any listeners associated with the queue managers, using the command:


```
endmqclsr -m QMgrName
```
 - e. To check that you have stopped all necessary WebSphere MQ activity, type:


```
ps -ef | grep mq
```

Check that there are no processes listed that are running command lines beginning `amq` or `runmq`. Ignore any that start with `amqi`.

3. Log in as root.
4. Change into the directory containing the maintenance packages.
5. Use the `ls` command to list the available updates. For example, if there are level 1 maintenance updates for the Runtime, SDK and Server packages, you see the following:

```
MQSeriesRuntime-Uxxxx-7.0.0-1.i386.rpm
MQSeriesSDK-Uxxxx-7.0.0-1.i386.rpm
MQSeriesServer-Uxxxx-7.0.0-1.i386.rpm
```

6. To find out which packages are installed on your machine, enter the following:

```
rpm -qa | grep MQSeries
```

For example, if you have a minimum WebSphere MQ installation and SDK component, at level 0, this command returns:

```
MQSeriesRuntime-7.0.0-0
MQSeriesSDK-7.0.0-0
MQSeriesServer-7.0.0-0
```

7. Now install all available updates for the packages you have on your system:

```
rpm -ivh MQSeriesRuntime-Uxxxx-7.0.0-1.i386.rpm
MQSeriesSDK-Uxxxx-7.0.0-1.i386.rpm
MQSeriesServer-Uxxxx-7.0.0-1.i386.rpm
```

You must install all packages in a maintenance update that apply to those packages that are currently installed on your system.

8. Repeat step 4, and you see that the Runtime, SDK and Server packages are now at level 1:

```
MQSeriesRuntime-7.0.0-0
MQSeriesSDK-7.0.0-0
MQSeriesServer-7.0.0-0
```

```
MQSeriesRuntime-Uxxxx-7.0.0-1
MQSeriesSDK-Uxxxx-7.0.0-1
MQSeriesServer-Uxxxx-7.0.0-1
```

Note: ▶ Following the installation of WebSphere MQ fix packs, if you run the `rpm-verify` or `rpm -V` command, it does not return the correct results. It produces spurious results relating to missing files in `/opt/mqm/maintenance`. This error message can be ignored because it is a known limitation in the WebSphere MQ fix pack installation code. For further information about this error, see <http://www.ibm.com/support/docview.wss?uid=swg21317903>◀

What to do next

For further information about using RPM to install software packages, see your Linux documentation.

Parent topic: [Applying maintenance](#)

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5.2. Restoring the previous maintenance level

How to remove updates and restore the previous maintenance level using **RPM**.

About this task

When maintenance is installed, the original versions of replaced files are saved to allow the updates to be removed if necessary. To restore the previous maintenance level, issue an RPM uninstall for all the packages that were updated by the maintenance package as follows:

Procedure

1. Before installing maintenance, you must stop all WebSphere® MQ applications on the machine and the applications accessing remote machines. ▶ Any applications on the machine that are linked with the WebSphere MQ shared libraries must also be stopped before applying WebSphere MQ maintenance.◀ ▶ The topic, [Applying maintenance to a running queue manager](#), describes how to apply maintenance to a multi-instance queue manager while keeping the queue manager running on a different server.◀
2. End all WebSphere MQ activity:
 - a. Log in as a user in `group mqm`.
 - b. Use the **`dspmq`** command to display the state of all the queue managers on the system.
 - c. Use the **`endmqm`** command to stop all running queue managers.
 - d. Stop any listeners associated with the queue managers, using the command:


```
endmqmlsr -m QMgrName
```
 - e. To check that you have stopped all necessary WebSphere MQ activity, type:

```
ps -ef | grep mq
```

Check that there are no processes listed that are running command lines beginning `amq` or `runmq`. Ignore any that start with `amqi`.

3. Log in as root.
4. To find out which packages are installed on your machine, enter the following:

```
rpm -qa | grep MQSeries
```

Using the example given in [Applying maintenance to WebSphere MQ for Linux](#), returns:

```
MQSeriesRuntime-7.0.0-0
MQSeriesSDK-7.0.0-0
MQSeriesServer-7.0.0-0
MQSeriesRuntime-Uxxxx-7.0.0-1
MQSeriesSDK-Uxxxx-7.0.0-1
MQSeriesServer-Uxxxx-7.0.0-1
```

5. Remove all the updates applied at level 1, with the following commands:

```
rpm -ev MQSeriesRuntime-Uxxxx-7.0.0-1 MQSeriesSDK-Uxxxx-7.0.0-1
MQSeriesServer-Uxxxx-7.0.0-1
```

6. Repeat step 2 to check that the packages have been returned to their original levels:

```
MQSeriesRuntime-7.0.0-0
MQSeriesSDK-7.0.0-0
MQSeriesServer-7.0.0-0
```

What to do next

For further information on using RPM to install software packages, see your Linux documentation.

Parent topic: [Applying maintenance](#)

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5.3. Applying maintenance to a running queue manager

Use multi-instance queue managers to reduce the outage caused by applying maintenance updates. Follow these steps to apply maintenance to a multi-instance queue manager.



Before you begin

Maintenance is applied to the WebSphere® MQ installation on a server and not to individual queue managers. You need to stop all the queue managers, and any WebSphere MQ service, on a server before you apply maintenance.

If you want a queue manager to keep running while maintenance is applied, you need to configure it as a *multi-instance* queue manager, and have a standby instance running on another server. If a queue manager is an existing single instance queue manager, you need to convert it to a multi-instance queue manager. See the topic, [Multi-instance queue managers](#) for pre-requisites and guidance how to create a multi-instance queue manager.

You can create a multi-instance queue manager from v7.0.1 onwards. If you are running multi-instance queue managers, you then can apply a maintenance update to a *running* queue manager by switching the active instance to a different server.

Typically active and standby installations are maintained at the same maintenance level. Consult the maintenance instructions for each upgrade. Check if it is possible to run the active and standby instances at different maintenance levels. Check if fail over from higher

to lower, or only lower to higher maintenance level is possible.

The instructions for applying a maintenance update might require you to stop a multi-instance queue manager completely.

If you have a primary server for running active queue manager instances, and a secondary server that runs standby instances, you have a choice of updating the primary or secondary server first. If you update the secondary server first, you need to switch back to the primary server once both servers have been updated.

If you have active and standby instances on several servers, you need to plan in what order you update the servers to minimize the disruption caused by ending the active instances on each server you update.



About this task

Combine the steps in this task with the maintenance update procedure for applying maintenance to a WebSphere MQ server installation.

Procedure

1. Where the maintenance update procedure instructs you to use the **endmqm** command to stop all running queue managers, do the following instead:
 - a. If the queue manager is running as standby, end the standby with the **endmqm -x QMgrName** command.
 - b. If the queue manager is running as the active instance, end the instance and transfer control to the standby instance with the **endmqm -shutdown_option -s QMgrName** command. If there is no standby instance running, the command fails, and you need to start a standby instance on a different server.
 - c. If a queue manager is running as a single instance queue manager, you have no alternative but to stop the queue manager before applying the maintenance update.

When you complete this step, no queue manager instances are left running on the server you intend to update.

2. Continue with the maintenance update procedure, following the step to issue the **endmqm** command, and apply maintenance to the WebSphere MQ server.
3. When you have completed the maintenance update, restart all the queue managers on the WebSphere MQ server, permitting standby instances, using the **strmqm -x QmgrName** command.
4. Repeat the procedure on the standby server, to update its maintenance level.
5. If necessary, switch the active instances back to the primary servers, using the **endmqm -shutdown_option -s QMgrName** command, and the restart the instances using the **strmqm -x QmgrName** command.

Parent topic: [Applying maintenance](#)

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6. Installing and uninstalling GSKit Version 8 on Linux

You might want to use GSKit Version 8 instead of or in addition to GSKit Version 7. This

collection of topics gives you instructions for installing and uninstalling GSKit Version 8.

The subcomponent that provides support for SSL and TLS on Windows, UNIX, and Linux systems is called GSKit. If you select SSL and TLS support when you install WebSphere® MQ V7.0.1, GSKit Version 7 is installed and run by default. Versions of WebSphere MQ V7.0.1 from Fix Pack 7.0.1.4 and later also contain an alternative, separate copy of GSKit, at Version 8. You can install and run this version instead of, or in addition to, GSKit Version 7.

► [Installing GSKit Version 8 on Linux](#) ◀

Uncompressed versions of the GSKit V8 packages are supplied. Install the relevant packages for your system architecture.

► [Uninstalling GSKit Version 8 on Linux](#) ◀

If you no longer need the functions provided by GSKit Version 8, and are not using it to provide the SSL or TLS infrastructure for products other than WebSphere MQ, you can uninstall it.

Parent topic: [Welcome to WebSphere MQ for Linux](#)

Related information

[Alternative SSL and TLS support for Windows, UNIX, and Linux systems](#)

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6.1. Installing GSKit Version 8 on Linux

Uncompressed versions of the GSKit V8 packages are supplied. Install the relevant packages for your system architecture.

About this task

The GSKit Version 8 runtime packages are placed in the directory into which you expand your WebSphere® MQ fix pack. These packages are not in a compressed (.tar) format. Files providing both 32-bit and 64-bit support are provided. The 32-bit package names begin with gskcrypt32 or gskssl32. The 64-bit package names begin with gskcrypt64 or gskssl64. The 32-bit package must always be installed. Not all platforms support both 32-bit and 64-bit SSL, so the 64-bit package is required only on 64-bit capable platforms.

Procedure

1. Log in as root.
2. Change to the directory into which you expanded the Fix Pack.
3. Install the 32-bit packages by using the following command:

```
rpm -ivh gskcrypt32-8.0.X.Y.linux.arch.rpm gskssl32-8.0.X.Y.linux.arch.rpm
```

X.Y represents the version number of GSKit being installed. This value varies by architecture and as new modifications of GSKit are released.

arch represents your system architecture, for example x86.

4. Optional: Install the 64-bit packages by using the following command:

```
rpm -ivh gskcrypt64-8.0.X.Y.linux.arch.rpm gskssl64-8.0.X.Y.linux.arch.rpm
```

X.Y represents the version number of GSKit being installed. This value varies by architecture and as new modifications of GSKit are released.

arch represents your system architecture, for example x86.

Parent topic: [►Installing and uninstalling GSKit Version 8 on Linux◀](#)

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6.2. Uninstalling GSKit Version 8 on Linux

If you no longer need the functions provided by GSKit Version 8, and are not using it to provide the SSL or TLS infrastructure for products other than WebSphere® MQ, you can uninstall it.

Procedure

Uninstall GSKit v8 by using the following command:

```
rpm -ev gskssl32-8.0.X.Y gskcrypt32-8.0.X.Y
```

X.Y represents the version number of GSKit installed.

Parent topic: [►Installing and uninstalling GSKit Version 8 on Linux◀](#)

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7. Uninstalling Websphere MQ

This topic explains how to remove WebSphere MQ for Linux from your system.

Procedure

1. Stop all WebSphere® MQ applications on the machine and the applications accessing remote machines.
2. End all WebSphere MQ activity:
 - a. [►Log in as a user from group mqm.◀](#)
 - b. Use the **dspmq** command to display the state of all the queue managers on the system (only applicable on a server installation).
 - c. Use the **endmqm** command to stop all running queue managers.
 - d. Stop any listeners associated with the queue managers, using the command:

```
endmqlsr -m QMgrName
```

- e. To check that you have stopped all necessary WebSphere MQ activity, type:

```
ps -ef | grep mq
```

Check that there are no processes listed that are running command lines beginning `amq` or `runmq`. Ignore any that start with `amqi`.

3. Log in as root.
4. Before you uninstall WebSphere MQ for Linux you must find out the names of the packages (components) currently installed on your system. To list all the packages with their version information, enter the following:

```
rpm -qa | grep MQSeries
rpm -qa | grep gsk
```

Note: If you have applied maintenance to the install, remove these maintenance packages before removing the base install.

5. Some of the installed packages are dependent on others. The **rpm** command will not remove a package if others are dependent on it. For this reason you must uninstall the packages in such an order that each one you uninstall has no dependencies from other packages. To list all of the packages on which a named package (for example `MQSeriesServer`) depends, enter the following:

```
rpm -q --requires MQSeriesServer
```

Alternatively, remove all the components at the same time by appending all the package names to the rpm command arguments. For example, to remove the runtime, Server and SDK components, enter the following:

```
rpm -ev MQSeriesRuntime MQSeriesServer MQSeriesSDK
```

6. After uninstalling , you might want to delete the contents of `/var/mqm`, which is not removed by the uninstallation. **Only do this if you do not need your queue manager data.** For example, do not delete the content if you plan to migrate to a later version of WebSphere MQ.

Results

You have now uninstalled WebSphere MQ.

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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8. WebSphere MQ Documentation

Where to find information describing WebSphere MQ.

See the [main information center page](#).

Parent topic: [Welcome to WebSphere MQ for Linux](#)

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