

Websphere MQ for Linux



Quick Beginnings

Version 7.0

Websphere MQ for Linux



Quick Beginnings

Version 7.0

Note

Before using this information and the product it supports, be sure to read the general information under notices at the back of this book.

First edition (April 2008)

This edition of the book applies to:

- IBM WebSphere MQ for Linux, Version 7.0

and to any subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Migrating to WebSphere MQ for Linux Version 7.0

This section gives information on considerations for migrating WebSphere® MQ for Linux®.

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

If you are migrating from a previous level of this product, you **cannot** revert to your previous level, so back up your system **before** you install WebSphere MQ Version 7.0. This will enable 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, for example, performed by WebSphere MQ Version 7.0.

See the following topics for information about how to migrate to WebSphere MQ 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

WebSphere MQ for Linux Version 7.0 - zSeries platform 32-bit and 64-bit

There is no migration path from WebSphere MQ for Linux V6.0 (zSeries® platform) (32-bit) to WebSphere MQ for Linux zSeries s390x V7.0 (64-bit). Migration is **not** supported between these two versions.

Migrating to WebSphere MQ Version 7.0 and upgrading your operating system

Follow these steps to upgrade your operating system and migrate to WebSphere MQ Version 7.0 whilst keeping your WebSphere MQ data.

If you want to migrate to WebSphere MQ Version 7.0, and also need to upgrade your operating system to one supported by WebSphere MQ Version 7.0, complete this task. For a list of supported operating systems, see *WebSphere MQ Quick Beginnings for Linux*.

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 in group mqm.
 - b. Use the **dspm** 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:

```
endmq1sr -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. Function supplied by the SupportPacs in the table below has been superseded by function in WebSphere MQ Version 7.0. Remove these SupportPacs before installing WebSphere MQ Version 7.0.

Table 1. SupportPacs superseded by WebSphere MQ Version 7.0

SupportPac™ Number	Description
MA0Y	WebSphere MQ Bridge for HTTP

Please review any other installed SupportPacs for their applicability to WebSphere MQ Version 7.0.

5. Uninstall any WebSphere MQ service updates, then uninstall WebSphere MQ.
6. Copy /var/mqm directory and save it to a location which will not be erased by the operating system upgrade.
7. Upgrade your operating system by following the manufacturer's instructions.
8. Copy the /var/mqm directory that you saved in step 4 to back into your file system.
9. Check your system has the required WebSphere MQ Version 7.0 prerequisites and install WebSphere MQ Version 7.0 as described in *WebSphere MQ Quick Beginnings for Linux*.
10. Restart WebSphere MQ.

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, whilst keeping your WebSphere MQ data.

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 "Checking the operating environment, WebSphere MQ for Linux" on page 6 for a list of supported operating systems. Follow these steps to migrate to WebSphere MQ Version 7.0 whilst keeping your WebSphere MQ data:

1. Before installing maintenance you must 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 in group mqm.
 - b. Use the **dspm** 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:

```
endmq1sr -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 chapters.
6. Restart WebSphere MQ.

Migrating to WebSphere MQ Version 7.0 using RPM upgrade tools

The use of RPM upgrade tools, using the `-U` or `-F` flags, to migrate directly from an earlier version of WebSphere MQ to WebSphere MQ Version 7.0 is not supported.

If you have already tried to upgrade WebSphere MQ 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 using `rpm -qa | grep MQSeries`
2. Remove all remaining WebSphere MQ packages of any level from your system using `rpm -e <package-name>`
3. Remove the `/opt/mqm` directory by typing `rm -rf /opt/mqm`
4. Install WebSphere MQ Version 7.0 using the instructions given in “Installing a WebSphere MQ server” in *WebSphere MQ Quick Beginnings for Linux* if you are installing a server, or “Installing a WebSphere MQ client” in *WebSphere MQ Quick Beginnings for Linux* if you are installing a client.

After you have migrated WebSphere MQ Version 7

You must perform certain tasks immediately after migrating to V7.

Immediately after you migrate 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 migration.

If you cannot connect to a migrated queue manager 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 the WebSphere MQ Explorer.

Chapter 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 “Migrating to WebSphere MQ Version 7.0 and upgrading your operating system” on page 1 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, Chapter 3, “Installing a WebSphere MQ client,” on page 37.

It is possible to have both a server and a client installation on the same machine, for instructions on how to do this see, Chapter 4, “Installing a client on the same machine as a server,” on page 59.

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” on page 21.

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

Preparing for installation

Before you install WebSphere MQ, complete the following tasks:

Checking prerequisite hardware and software

This section details the operating system requirements, the prerequisite software and optional software required for using WebSphere MQ Version 7.0.

These requirements differ in some cases depending on the system hardware on which you will be running WebSphere MQ. Please see the appropriate section for your installation.

Checking the operating environment, WebSphere MQ for Linux

Before installing WebSphere MQ as a server, you must check that your system meets the hardware and software requirements set out in this topic.

Note: 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 will be unable to create any queue managers.

Hardware

WebSphere MQ for Linux, Version 7.0 (x86 platform) runs on any computer that supports the x86 machine architecture, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (x86-64 platform) runs on any computer that supports the x86-64 (AMD64, Intel® EM64T or compatible) machine architecture, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (POWER platform) runs on any 64-bit System i or System p IBM POWER processor-based systems only, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform) runs on any IBM System z9 or IBM eServer (or equivalent) 64-bit processor that is explicitly compatible and fully capable of running a specified operating system.

Operating System, WebSphere MQ for Linux, Version 7.0 (x86 platform)

WebSphere MQ for Linux, Version 7.0 (x86 platform) has been tested with the following distributions:

- Red Hat Enterprise Linux (RHEL) V4.0 or later update
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) V9
- SuSE Linux Enterprise Server (SLES) V10
- NLPOS9 FP1
- IRES V2
- Red Flag Data Centre V5.0

Operating System, WebSphere MQ for Linux, Version 7.0 (x86-64 platform)

WebSphere MQ for Linux, Version 7.0 (x86-64 platform) has been tested with the following distributions:

- Red Hat Enterprise Linux V4.0 or later update
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) 9
- SuSE Linux Enterprise Server (SLES) 10

Operating System, WebSphere MQ for Linux, Version 7.0 (POWER platform)

WebSphere MQ for Linux, Version 7.0 (POWER platform) has been tested with the following distributions:

- Red Hat Enterprise Linux (RHEL) V4.0
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) V9
- SuSE Linux Enterprise Server (SLES) V10

Operating System, WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform)

WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform) has been tested with the following distributions:

- Red Hat Enterprise Linux V4.0
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) 9
- SuSE Linux Enterprise Server (SLES) V10

Connectivity Requirements

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

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/commsserver/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/commsserver/about

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 2. 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.

After checking the requirements in this topic, proceed to “Prerequisite software for using SSL.”

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++ version 3.2 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`.

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:

- 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:

Platform	Operating System	Package
POWER platform	Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 or later
All other platforms	Red Hat Enterprise Linux 4	compat-libstdc++-33-3.2.3-47.3 or later
All other platforms	Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 or later

Note: On 64-bit platforms, the 32-bit and the 64-bit versions of the package should both be installed. This is 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 Chapter 6, “Uninstalling WebSphere MQ,” on page 65, the package name is `gskbas-6.0-n.nn.<arch>.rpm`.

Checking optional software - x86 platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a server on the x86 platform

Compilers for WebSphere MQ for Linux (x86 platform) applications

The following compilers are supported for WebSphere MQ for Linux, Version 7.0.

C applications/C++ applications

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, /opt/mqm/lib/<version>, and links are placed from /opt/mqm/lib to the default version, 3.3.

COBOL applications

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java™ applications

- IBM 32-bit SDK for Linux on Intel, Java 2 Technology Edition V1.4.2
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V5.0
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V6.0
- Java 2 Platform, Standard Edition (J2SE) V1.4.2 from Sun Microsystems, Inc.

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1
- BEA WebLogic Server V9.1

Databases

The following databases are supported:

- IBM DB2® V9.1 for Linux, Unix and Windows®
- IBM DB2® V9.5 for Linux, Unix and Windows
- Informix® Dynamic Server (IDS) V10 plus Client SDK V2.90
- Informix Dynamic Server (IDS) V10.50 plus Client SDK V2.91
- Oracle 10g Release 2
- Oracle 11g Release 1
- Sybase Adaptive Server Enterprise (ASE) V15 with Sybase SDK V15

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDK provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDK available on the server CD-ROM is:

- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0

This JDK provides support for SOAP and is FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see WebSphere MQ Using Java.

For further information about using SOAP with WebSphere MQ see WebSphere MQ Using Web Services .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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.
- SOAP is not supported.

Checking optional software - x86-64 platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a server, on the x86-64 platform

Compilers for WebSphere MQ for Linux (x86-64 platform) applications

The following compilers are supported for WebSphere MQ for Linux, Version 7.0.

C applications/C++ applications

- GNU C Compiler (gcc) and g++, Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++, Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++, Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, `/opt/mqm/lib/<version>`, and links are placed from `/opt/mqm/lib` to the default version, 3.3.

COBOL applications

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java applications

- 32-bit
 - IBM® 32-bit SDK for Linux on Intel® architecture, Java™ 2 Technology Edition, Version 1.4.2
 - IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V5.0 (SR1 or above)
 - IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V6.0
 - Java 2 Platform, Standard Edition (J2SE) V1.4.2 from Sun Microsystems, Inc.
 - Java 2 Platform, Standard Edition (J2SE) V1.5 from Sun Microsystems, Inc.
- 64-bit

- IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 1.4.2
- IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 5
- IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 6
- Java 2 Platform, Standard Edition (J2SE) V1.5 from Sun Microsystems, Inc.

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1
- BEA WebLogic Server V9.1

Databases

The following databases are supported:

- IBM DB2[®] V9.1 for Linux, Unix and Windows
- IBM DB2 V9.5 for Linux, Unix and Windows
- Informix Dynamic Server (IDS) V10 plus Client SDK V2.90
- Informix Dynamic Server (IDS) V10.50 plus Client SDK V2.91
- Oracle 10g Release 2
- Oracle 11g Release 1
- Sybase Adaptive Server Enterprise (ASE) V15 Sybase SDK V15

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDK supplied on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDKs available on the server CD-ROM are:

- IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 5.0
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0

These JDKs provide support for SOAP and are FIPS 140-2 compliant.

For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see WebSphere MQ Using Java.

For further information about using SOAP with WebSphere MQ see WebSphere MQ Using Web Services .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 you should be aware that:

- The JDK may not be FIPS level 140-2 compliant and by using it with WebSphere MQ, WebSphere MQ Version 7.0 will not comply the FIPS 140-2 standards.
- SOAP is not supported.

Checking optional software - POWER platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a server on the POWER platform

Compilers for WebSphere MQ for Linux (POWER platform) applications

The following compilers are supported for WebSphere MQ for Linux applications on the POWER platform:

C/C++

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1,1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, /opt/mqm/lib/<version>, and links are placed from /opt/mqm/lib to the default version, 3.3.

COBOL

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java

- 32-bit
 - IBM 32-bit SDK for Linux for System i and System p, Java 2 Technology Edition V1.4.2 (supported on System p only)
 - IBM 32-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V5.0 (SR1 or above)
 - IBM 32-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V6.0
- 64-bit
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V1.4.2 (supported on System p only)
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V5.0 (SR1 or above)
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V6.0

Databases

The following databases are supported:

- IBM DB2 V9.1 for Linux, Unix and Windows
- IBM DB2 V9.5 for Linux, Unix and Windows
- Informix Dynamic Server (IDS) V10.50 with Client SDK V2.91
- Sybase Adaptive Server Enterprise (ASE) V15 with Sybase SDK V15

Transaction Monitors

- IBM TXSeries® V6.1
- IBM TXSeries® V6.2
- WebSphere Application Server, Version 5.1
- WebSphere Application Server, Version 6.0.2
- WebSphere Application Server, Version 6.1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDKs provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDKs available on the server CD-ROM are:

- IBM 32-bit SDK for Linux for IBM System I and System p, Java 2 Technology Edition V5.0
- IBM 64-bit SDK for Linux for IBM System I and System p, Java 2 Technology Edition V5.0

These JDKs provide support for SOAP and are FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with Websphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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 FIPS 140-2 standards.
- SOAP is not supported.

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 *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 you need to use a 32-bit JDK. You can check the version installed using the following command:

```
java -version
```

Checking optional software - zSeries s390x platform

Check through this topic to identify which additional software is supported for use with WebSphere® MQ for Linux as a server on the zSeries s390x platform.

Compilers for WebSphere MQ for Linux (zSeries s390x platform) applications

The following compilers are supported for WebSphere MQ for Linux applications on the zSeries s390x platform.

C/C++

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, `/opt/mqm/lib/<version>`, and links are placed from `/opt/mqm/lib` to the default version, 3.3.

COBOL

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java

- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition, Version 1.4.2
- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0 (SR1 or above)
- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V6.0
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition, Version 1.4.2
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0 (SR1 or above)
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V6.0

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1

Databases

The following databases are supported:

- IBM DB2 V9.1 for Linux, Unix and Windows

- IBM DB2 V9.5 for Linux, Unix and Windows
- IBM Informix Dynamic Server (IDS) V10 plus Client SDK V2.90
- IBM Informix Dynamic Server (IDS) V10.50 plus Client SDK V2.91
- Oracle 10g Release 2
- Oracle 11g Release 1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5 (SR1 or later). An appropriate runtime environment is provided in the JDK provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDK available on the server CD-ROM is:

- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0

This JDK provides support for SOAP and is FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For WebSphere MQ Version 7.0 Java scripts to function properly a number of environment variables must be set. For information on setting these environment variables and general information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with WebSphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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.
- SOAP is not supported.

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 sections.

- “Creating the user ID and group”
- “Adding existing user IDs to the group” on page 17

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`.

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.

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.

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

Table 3. 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.

Creating a file system for the working data

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

Creating separate file systems for working data:

You can also create separate file systems for your log data (`/var/mqm/log`) and error files (`/var/mqm/errors`). If possible, store log files on a different physical disk from the WebSphere MQ queues (`/var/mqm`).

If you create separate file systems:

- The `/var/mqm` and `/var/mqm/log` directories *must* be on a local file system.
- 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` for a server installation and 15 MB of storage for `/var/mqm` for a client installation. Also allow 20 MB of storage for `/var/mqm/log`, and 4 MB of storage for `/var/mqm/errors` for both client and sever installations.

If you want to use individual queues that will 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 on log sizes see the WebSphere MQ System Administration Guide.

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).

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

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. We suggest you add this command to a startup script in `/etc/rc.d/...`

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.

Installing a WebSphere MQ server

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

Before you start the installation procedure:

- Ensure 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 you have prepared your system as described in "Preparing for installation" on page 5.

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, the Server, the JRE, and the Java components. The components and filesets are listed in "WebSphere MQ Components" on page 21.

1. Log in as root.
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
 - MQSeriesJRE
 - MQSeriesServer
 - MQSeriesJava

This example shows a minimum installation:

```
rpm -ivh MQSeriesRuntime-7.0.0-0.i386.rpm MQSeriesSDK-7.0.0-0.i386.rpm
MQSeriesServer-7.0.0-0.i386.rpm MQSeriesJava-7.0.0-0.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.

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 4. 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
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 Service). Prerequisite for the server component.	MQSeriesJava	X	X
SSL support	Support for SSL key management	MQSeriesKeyman	X	X

Table 4. WebSphere MQ components and packages (continued)

IBM Java JRE (32-bit)	IBM 32-bit Runtime Environment for Linux on i5/OS® and pSeries®, Java 2 Technology Edition Version 5.0. Prerequisite for the server component.	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	

Table 4. WebSphere MQ components and packages (continued)

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 zip files), also reports, letters, memos and charts. The File Transfer Application has both a graphical user interface and a command line interface.	MQSeriesFTA	X	X

Table 5. Other products supplied with WebSphere MQ

Component	Description	Fileset	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

Table 5. Other products supplied with WebSphere MQ (continued)

IBM Java SDK (32-bit)	IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (x86 platform)). IBM 32-bit Software Developer's Kit (SDK) for Linux for i5/OS and pSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (POWER platform)). IBM 31-bit SDK for Linux on zSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (zSeries platform)).	IBM-Java2-x86-SDK IBMJava2-ppc-SDK IBMJava2-s390-SDK	X	X
IBM Java SDK (64-bit) (POWER pSeries x86-64, zSeries s390x platforms only)	IBM 64-bit Software Developer's Kit (SDK) for Linux for pSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (POWER platform)). IBM 31-bit SDK for Linux on zSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (zSeries platform)).	IBM-Java2-SDK-ppc64-SDK IBM-Java2-SDK-x86_64-SDK IBM-Java2-SDK-s390x-SDK	X	X

Displaying messages in your national language

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

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

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

1. Install the appropriate message catalog (see "WebSphere MQ Components" on page 21).
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)

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. For information on installing components, see: “WebSphere MQ Components” on page 21. The following set of tasks 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” on page 31.
- 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” on page 26.
 - To verify the installation using the Postcard application, see: “Verifying the installation using the Postcard application” on page 31.

To verify a client/server installation that includes communication links between a server and a WebSphere MQ client, see “Verifying the client installation” on page 54.

Verifying a local installation

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” on page 26.

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:

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.

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

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” on page 25.

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:

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.

You have now successfully verified your 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.

- “Setting up the sender server” on page 28

- “Setting up the receiver server” on page 29
- “Testing communication between the servers” on page 30

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

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.

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) trptype (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.

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

Now to set up the receiver server so that you can verify your server-to-server installation, see “Setting up the receiver server.”

Setting up the receiver server

After you have completed the task, “Setting up the sender server” on page 28, follow these steps to set up the receiver server:

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.

6. 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” on page 28, 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.

7. 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.

8. Define a receiver channel with the following command:

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

A message tells you when the channel has been created.

9. End MQSC by typing:
end

Some messages are displayed, followed by the command prompt.

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`

Now to test communications between your sender and receiver workstations, see “Testing communication between the servers.”

Testing communication between the servers

After completing, “Setting up the sender server” on page 28, and “Setting up the receiver server” on page 29, 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:

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.

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

Starting the WebSphere MQ Explorer

To start the WebSphere MQ Explorer on the x86 and x86-64 platforms, 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.

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” on page 33.

Using the Postcard application to verify a local installation

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

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.

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 launch it with the following command:
strmqcfg

If this is the first time you have launched the Explorer, click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch the Postcard.

- b. If this is not the first time you have launched the Explorer, you might have to navigate to the Welcome pages. Click **Help** → **Welcome** to display the Welcome page.
 - c. Click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch 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. At the Postcard - Sign On window, type a nickname to use to send messages within the Postcard application (for example, User1).
5. Run the Postcard shell script again in a different shell window. This opens a second Postcard window.
6. The Postcard - Sign On panel is displayed again. Type a second nickname to use to send messages within the Postcard application (for example, User2).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 3 on page 32). 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.
8. 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.
9. Type a message in the **Message:** field and click **Send**.
10. The **Postcards sent and received** area of the Postcard shows details of the message. In the sending Postcard, the message is displayed as *sent*. In the receiving postcard, the message is displayed as *received*.
11. 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.

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.

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” on page 28 and

“Setting up the receiver server” on page 29. 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.

On the sender server:

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 launch it with the following command:

```
strmqcfcg
```

If this is the first time you have launched the Explorer, click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch the Postcard.

- b. If this is not the first time you have launched the Explorer, you might have to navigate to the Welcome pages. Click **Help** → **Welcome** to display the Welcome page.
 - c. Click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch 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 launch the Default Configuration or close the Postcard application. Launching 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:

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 launch it with the following command:
`strmqcfcg`

If this is the first time you have launched the Explorer, click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch the Postcard.

- b. If this is not the first time you have launched the Explorer, you might have to navigate to the Welcome pages. Click **Help** → **Welcome** to display the Welcome page.
 - c. Click on **Get Started** to open the Get Started page, then click **Launch the Postcard Application** to launch 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 launch the Default Configuration or close the Postcard application. Launching 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.

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

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.

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 Chapter 3, "Installing a WebSphere MQ client," on page 37.
- Continue with further administration tasks. See the *WebSphere MQ System Administration Guide*.

Chapter 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 “Migrating to WebSphere MQ Version 7.0 and upgrading your operating system” on page 1 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 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. To install a WebSphere MQ server, see Chapter 2, “Installing a WebSphere MQ server,” on page 5.

It is possible to have both a server and a client installation on the same machine, for instructions on how to do this, see Chapter 4, “Installing a client on the same machine as a server,” on page 59.

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” on page 51.

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” on page 50
- “Verifying the client installation” on page 54

Preparing to install

Before you install WebSphere MQ, complete the following tasks.

- “Checking hardware and software requirements” on page 38
- “Setting up the user ID and group ID” on page 47
- “Creating WebSphere MQ file systems” on page 48

Additionally, if you require messages in a language other than U.S. English see, “Displaying messages in your national language” on page 49.

Checking hardware and software requirements

Operating system requirements, prerequisite software and optional software required for using WebSphere MQ Version 7.0.

This section details the operating system requirements, the prerequisite software and optional software required for using WebSphere MQ Version 7.0. These requirements differ in some cases depending on the system hardware on which you will be running WebSphere MQ. Please see the appropriate section for your installation.

Checking the operating environment, WebSphere MQ for Linux

Before installing WebSphere MQ as a client, you must check that your system meets the hardware and software requirements set out in this topic.

Note: 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 will be unable to create any queue managers.

Hardware

WebSphere MQ for Linux, Version 7.0 (x86 platform) runs on any computer that supports the x86 machine architecture, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (x86-64 platform) runs on any computer that supports the x86-64 (AMD64, Intel EM64T or compatible) machine architecture, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (POWER platform) runs on any 64-bit System i or System p IBM POWER processor-based systems only, capable of running the required level of a compatible operating system.

WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform) runs on any IBM System z9 or IBM eServer (or equivalent) 64-bit processor that is explicitly compatible and fully capable of running a specified operating system.

Operating System, WebSphere MQ for Linux, Version 7.0 (x86 platform)

WebSphere MQ for Linux, Version 7.0 (x86 platform) has been tested with the following distributions:

- Red Hat Enterprise Linux (RHEL) V4.0 or later update
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) V9
- SuSE Linux Enterprise Server (SLES) V10
- NLPOS9 FP1
- IRES V2
- Red Flag Data Centre V5.0

Operating System, WebSphere MQ for Linux, Version 7.0 (x86-64 platform)

WebSphere MQ for Linux, Version 7.0 (x86-64 platform) has been tested with the following distributions:

- Red Hat Enterprise Linux V4.0 or later update

- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) 9
- SuSE Linux Enterprise Server (SLES) 10

Operating System, WebSphere MQ for Linux, Version 7.0 (POWER platform)

WebSphere MQ for Linux, Version 7.0 (POWER platform) has been tested with the following distributions:

- Red Hat Enterprise Linux (RHEL) V4.0
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) V9
- SuSE Linux Enterprise Server (SLES) V10

Operating System, WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform)

WebSphere MQ for Linux, Version 7.0 (zSeries s390x platform) has been tested with the following distributions:

- Red Hat Enterprise Linux V4.0
- Red Hat Enterprise Linux (RHEL) V5.0
- SuSE Linux Enterprise Server (SLES) 9
- SuSE Linux Enterprise Server (SLES) V10

Connectivity Requirements

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/commsserver/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/commsserver/about

Storage Requirements

The storage requirements for the 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 6. 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

After checking the requirements in this topic, proceed to “Prerequisite software for using SSL.”

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++ version 3.2 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.

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:

- 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:

Platform	Operating System	Package
POWER platform	Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 or later
All other platforms	Red Hat Enterprise Linux 4	compat-libstdc++-33-3.2.3-47.3 or later
All other platforms	Red Hat Enterprise Linux 5	compat-libstdc++-33-3.2.3-61 or later

Note: On 64-bit platforms, the 32-bit and the 64-bit versions of the package should both be installed. This is 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 Chapter 6, “Uninstalling WebSphere MQ,” on page 65, the package name is gskbas-6.0-n.nn.<arch>.rpm.

Checking optional software - x86 platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a client on the x86 platform.

Compilers for WebSphere MQ for Linux (x86 platform) applications

The following compilers are supported for WebSphere MQ for Linux, Version 7.0.

C applications/C++ applications

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, /opt/mqm/lib/<version>, and links are placed from /opt/mqm/lib to the default version, 3.3.

COBOL applications

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java applications

- IBM 32-bit SDK for Linux on Intel, Java 2 Technology Edition V1.4.2
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V5.0
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V6.0
- Java 2 Platform, Standard Edition (J2SE) V1.4.2 from Sun Microsystems, Inc.

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1
- BEA WebLogic Server V9.1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDK provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDK available on the server CD-ROM is:

- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0

This JDK provides support for SOAP and is FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with WebSphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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.
- SOAP is not supported.

Checking optional software - x86-64 platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a client, on the x86-64 platform.

Compilers for WebSphere MQ for Linux (x86-64 platform) applications

The following compilers are supported for WebSphere MQ for Linux, Version 7.0.

C applications/C++ applications

- GNU C Compiler (gcc) and g++, Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++, Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++, Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, /opt/mqm/lib/<version>, and links are placed from /opt/mqm/lib to the default version, 3.3.

COBOL applications

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java applications

- 32-bit
 - IBM® 32-bit SDK for Linux on Intel® architecture, Java™ 2 Technology Edition, Version 1.4.2
 - IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V5.0 (SR1 or above)
 - IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition V6.0
 - Java 2 Platform, Standard Edition (J2SE) V1.4.2 from Sun Microsystems, Inc.
 - Java 2 Platform, Standard Edition (J2SE) V1.5 from Sun Microsystems, Inc.
- 64-bit
 - IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 1.4.2
 - IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 5
 - IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 6
 - Java 2 Platform, Standard Edition (J2SE) V1.5 from Sun Microsystems, Inc.

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1
- BEA WebLogic Server V9.1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDK supplied on the

WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDKs available on the server CD-ROM are:

- IBM SDK for Linux on AMD64/EM64T architecture, Java 2 Technology Edition, Version 5.0
- IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0

These JDKs provide support for SOAP and are FIPS 140-2 compliant.

For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with WebSphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 you should be aware that:

- The JDK may not be FIPS level 140-2 compliant and by using it with WebSphere MQ, WebSphere MQ Version 7.0 will not comply the FIPS 140-2 standards.
- SOAP is not supported.

Checking optional software - POWER platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a server on the POWER platform

Compilers for WebSphere MQ for Linux (POWER platform) applications

The following compilers are supported for WebSphere MQ for Linux applications on the POWER platform:

C/C++

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1,1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, `/opt/mqm/lib/<version>`, and links are placed from `/opt/mqm/lib` to the default version, 3.3.

COBOL

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java

- 32-bit

- IBM 32-bit SDK for Linux for System i and System p, Java 2 Technology Edition V1.4.2 (supported on System p only)
- IBM 32-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V5.0 (SR1 or above)
- IBM 32-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V6.0
- 64-bit
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V1.4.2 (supported on System p only)
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V5.0 (SR1 or above)
 - IBM 64-bit SDK for Linux for IBM System i and System p, Java 2 Technology Edition V6.0

Transaction Monitors

- IBM TXSeries® V6.1
- IBM TXSeries® V6.2
- WebSphere Application Server, Version 5.1
- WebSphere Application Server, Version 6.0.2
- WebSphere Application Server, Version 6.1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5.0 (SR1 or later). An appropriate runtime environment is provided in the JDKs provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDKs available on the server CD-ROM are:

- IBM 32-bit SDK for Linux for IBM System I and System p, Java 2 Technology Edition V5.0
- IBM 64-bit SDK for Linux for IBM System I and System p, Java 2 Technology Edition V5.0

These JDKs provide support for SOAP and are FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For further information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with Websphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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 FIPS 140-2 standards.
- SOAP is not supported.

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 *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 you need to use a 32-bit JDK. You can check the version installed using the following command:

```
java -version
```

Checking optional software - zSeries s390x platform

Check through this topic to identify which additional software is supported for use with WebSphere MQ for Linux as a client on the zSeries s390x platform.

Compilers for WebSphere MQ for Linux (zSeries s390x platform) applications

The following compilers are supported for WebSphere MQ for Linux applications on the zSeries s390x platform.

C/C++

- GNU C Compiler (gcc) and g++ Version 3.3 (SLES/9)
- GNU C Compiler (gcc) and g++ Version 4.1.1 (SLES/10 & RedHat/5)
- GNU C Compiler (gcc) and g++ Version 3.4 (RedHat/4)

Note: The C++ support libraries are installed in directories whose names match the compiler version, `/opt/mqm/lib/<version>`, and links are placed from `/opt/mqm/lib` to the default version, 3.3.

COBOL

- Micro Focus Server Express, V4.0
- Micro Focus Server Express, V5.0

Java

- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition, Version 1.4.2
- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0 (SR1 or above)
- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V6.0
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition, Version 1.4.2
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0 (SR1 or above)
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V6.0

Transaction Monitors

- IBM TXSeries V6.1
- IBM TXSeries V6.2
- IBM WebSphere Application Server (WAS) V5.1

- IBM WebSphere Application Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- BEA Tuxedo V9.1

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support, you need a Java Runtime Environment Version 5 (SR1 or later). An appropriate runtime environment is provided in the JDK provided on the WebSphere MQ Server CD-ROM. See *WebSphere MQ for Linux Quick Beginnings* “WebSphere MQ Components” on page 21 for package information.

The JDK available on the server CD-ROM is:

- IBM 31-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0
- IBM 64-bit SDK for Linux on System z9, Java 2 Technology Edition V5.0

This JDK provides support for SOAP and is FIPS 140-2 compliant. For a list of alternative JDKs, see

www.ibm.com/software/integration/websphere/mqplatforms/supported.html

Apache Axis V1.4 provides support for SOAP and is available on the server CD-ROM.

For WebSphere MQ Version 7.0 Java scripts to function properly a number of environment variables must be set. For information on setting these environment variables and general information about using Java with WebSphere MQ see *WebSphere MQ Using Java*.

For further information about using SOAP with WebSphere MQ see *WebSphere MQ Using Web Services* .

If you use a JDK other than the one supplied by WebSphere MQ Version 7.0 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.
- SOAP is not supported.

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 sections.

- “Creating the user ID and group”
- “Adding existing user IDs to the group” on page 48

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`.

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.

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.

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.

Creating a file system for the working data

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” on page 18.

Allow 50 MB as a minimum for a WebSphere MQ server and 15 MB as a minimum for a WebSphere MQ client.

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 example stanzas, with the `name=value` pairs commented out. This file should include the following lines, after the header:

```
TCP:
# KeepAlive=Yes
```

An example WebSphere MQ client configuration file is shown in *System Administration Guide*.

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.

Displaying messages in your national language

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

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

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

1. Install the appropriate message catalog (see “WebSphere MQ Components” on page 21).
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)

Installing WebSphere MQ

This chapter tells you how to install the WebSphere MQ for Linux client. If you want to install the WebSphere MQ server see Chapter 2, “Installing a WebSphere MQ server,” on page 5.

Before you start the installation procedure, make sure you have prepared your system as described in “Preparing to install” on page 37.

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” on page 20.

If you want to install the client on the same machine as a WebSphere MQ server, see Chapter 4, “Installing a client on the same machine as a server,” on page 59.

Client Installation procedure

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

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” on page 37.

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” on page 51; you must install at least the Runtime and Client components.

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 you 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 command for a minimum installation:

```
rpm -ivh MQSeriesRuntime-7.0.0-0.i386.rpm MQSeriesClient-7.0.0-0.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.

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 7. 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
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

Table 7. WebSphere MQ components and packages (continued)

Java messaging	The files needed for messaging using Java (includes Java Messaging Service). Prerequisite for the server component.	MQSeriesJava	X	X
SSL support	Support for SSL key management	MQSeriesKeyman	X	X
IBM Java JRE (32-bit)	IBM 32-bit Runtime Environment for Linux on i5/OS and pSeries, Java 2 Technology Edition Version 5.0. Prerequisite for the server component.	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

Table 7. WebSphere MQ components and packages (continued)

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 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 zip files), also reports, letters, memos and charts. The File Transfer Application has both a graphical user interface and a command line interface.	MQSeriesFTA	X	X

Table 8. Other products supplied with WebSphere MQ

Component	Description	Fileset	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

Table 8. Other products supplied with WebSphere MQ (continued)

IBM Java SDK (32-bit)	IBM 32-bit SDK for Linux on Intel architecture, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (x86 platform)). IBM 32-bit Software Developer's Kit (SDK) for Linux for i5/OS and pSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (POWER platform)). IBM 31-bit SDK for Linux on zSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (zSeries platform)).	IBM-Java2-x86-SDK IBMJava2-ppc-SDK IBMJava2-s390-SDK	X	X
IBM Java SDK (64-bit) (POWER pSeries x86-64, zSeries s390x platforms only)	IBM 64-bit Software Developer's Kit (SDK) for Linux for pSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (POWER platform)). IBM 31-bit SDK for Linux on zSeries, Java 2 Technology Edition, Version 5.0 (for WebSphere MQ for Linux, Version 7.0 (zSeries platform)).	IBM-Java2-SDK-ppc64-SDK IBM-Java2-SDK-x86_64-SDK IBM-Java2-SDK-s390x-SDK	X	X

Verifying the client installation

The following set of tasks 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” on page 56
- “Testing communication between workstations” on page 57

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

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.

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” on page 57.

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) trptype (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” on page 56.

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.

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`

To continue with the verification process, see “Setting up the client workstation.”

Setting up the client workstation

Before you complete this task you must have completed, “Setting up the server workstation” on page 54.

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.

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” on page 54. 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.

To continue with the verification process, see “Testing communication between workstations.”

Testing communication between workstations

Before you complete this task you must have completed, “Setting up the client workstation” on page 56. You must install the Samples programs component if you want to use these verification procedures.

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:

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.

You have now successfully verified the client installation.

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

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.

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

Starting the WebSphere MQ Explorer

To start the WebSphere MQ Explorer, 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.

Chapter 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” on page 20.

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” on page 54.

Chapter 5. Applying maintenance

This section describes how to maintain WebSphere MQ for Linux.

- “Applying service to WebSphere MQ for Linux” describes the process of how to install service updates.
- “Restoring the previous service level” on page 62 details how to restore the previous service level.

This information applies to both server and client installations of WebSphere MQ Version 7.0.

The latest information about service updates and downloads can be found on the Internet, at:

<http://www.ibm.com/software/integration/mqfamily/support/>

Applying service to WebSphere MQ for Linux

How to apply service to WebSphere MQ for Linux

Service 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 service 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.

1. Before installing maintenance you must 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 in group `mqm`.
 - b. Use the `dspsmq` 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. 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 service updates for the Runtime, SDK and Server packages, you will 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 will return:

```
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
```

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

8. Repeat step 4, and you will 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
```

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

Restoring the previous service level

How to remove updates and restore the previous service level.

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

1. Before installing maintenance you must 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 in group `mqm`.
 - b. Use the `dspsmq` 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:

```
endmq1sr -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 service to WebSphere MQ for Linux” on page 61, 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
```

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

Chapter 6. Uninstalling WebSphere MQ

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

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 administrator.
 - 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:

```
endmq1sr -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 ibm-java  
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.

You have now uninstalled WebSphere MQ.

Chapter 7. WebSphere MQ Documentation

This chapter describes the documentation and sources of information about WebSphere MQ. It starts with a list of the publications, including their PDF filenames, and then discusses:

- Publications supplied with the product
- Hardcopy books
- Online information

If there is similar information in this book and any of the books in the following list, the information in this book should take precedence.

WebSphere MQ is described in the following books:

Table 9. WebSphere MQ family books

PDF file name	Order Number	Title
AMQTAC07	GC34-6920	<i>WebSphere MQ for Windows Quick Beginnings</i>
AMQDAC10	GC34-6921	<i>WebSphere MQ for Solaris Quick Beginnings</i>
AMQAAC10	GC34-6922	<i>WebSphere MQ for AIX Quick Beginnings</i>
AMQCAC09	GC34-6923	<i>WebSphere MQ for HP-UX Quick Beginnings</i>
AMQ1AC07	GC34-6924	<i>WebSphere MQ for Linux Quick Beginnings</i>
AMQWAC04	GC34-6925	<i>WebSphere MQ for i5/OS Quick Beginnings</i>
CSQZAE10	SC34-6931	<i>WebSphere MQ Intercommunications</i>
CSQZAH08	SC34-6933	<i>WebSphere MQ Queue Manager Clusters</i>
CSQZAF10	GC34-6934	<i>WebSphere MQ Clients</i>
AMQZAG10	SC34-6928	<i>WebSphere MQ System Administration Guide</i>
CSQZAJ11	SC34-6941	<i>WebSphere MQ Script (MQSC) Command Reference</i>
CSQZAX06	SC34-6937	<i>Monitoring WebSphere MQ</i>
CSQZAC06	SC34-6942	<i>WebSphere MQ Programmable Command Formats and Administration Interface</i>
AMQZA006	GC34-6945	<i>WebSphere MQ Messages</i>
CSQZAL12	SC34-6939	<i>WebSphere MQ Application Programming Guide</i>
CSQZAK11	SC34-6940	<i>WebSphere MQ Application Programming Reference</i>
AMQZAN10	SC34-6936	<i>WebSphere MQ Using C++</i>
CSQZAW16	SC34-6935	<i>WebSphere MQ Using Java</i>
CSQZAC06	SC34-6942	<i>WebSphere MQ Programmable Command Formats and Administration Interface</i>
CSQZAS04	SC34-6932	<i>WebSphere MQ Security</i>
CSQSAT04	GC34-6926	<i>WebSphere MQ for z/OS Concepts and Planning Guide</i>
CSQSAV05	SC34-6927	<i>WebSphere MQ for z/OS System Setup Guide</i>
CSQSAW04	SC34-6929	<i>WebSphere MQ for z/OS System Administration Guide</i>
AMQWAG04	SC34-6930	<i>WebSphere MQ for i5/OS System Administration Guide</i>
AMQTAN04	SC34-6938	<i>WebSphere MQ Using the Component Object Model Interface</i>
AMQWAK02	SC34-6943	<i>WebSphere MQ for i5/OS Application Programming Reference</i>

Table 9. WebSphere MQ family books (continued)

PDF file name	Order Number	Title
CSQSAQ04	GC34-6944	<i>WebSphere MQ for z/OS Problem Determination Guide</i>
CSQSA006	GC34-6946	<i>WebSphere MQ for z/OS Messages and Codes</i>
CSQZA001	GC34-6948	<i>WebSphere MQ Migration Information</i>
CSQZAV06	GC34-6949	<i>WebSphere MQ Using .NET</i>
CSQSAD05	GI10-2584	<i>Program Directory for WebSphere MQ for z/OS</i>
AMQNAR11	SC34-6950	<i>WebSphere MQ Publish/Subscribe User's Guide</i>
CSQZAQ01	SC34-6951	<i>WebSphere MQ Constants</i>
CSQZAY04	SC34-6947	<i>WebSphere MQ Glossary</i>

Publications supplied with the product

The WebSphere MQ online documentation is delivered on the documentation CD-ROM as PDFs on all platforms and as an Information Center on Linux and Windows only.

You can either view the documents directly from CD, or you can install them on your computer (either before or after installing the WebSphere MQ product).

Installing and running the WebSphere MQ Information Center on Linux

Documentation for WebSphere MQ Version 7.0 is supplied as an Information Center based on the Eclipse framework. You can install the Information Center on any Linux system supported by the WebSphere MQ Version 7.0 product.

Prerequisite software

To use the Information Center you must have one of the following browsers installed on your system:

- Mozilla 1.7 or later
- Firefox 1.5
- Firefox 2.0
- Konqueror (UI base mode only. This means that only the basic functions of the information center will work; for example: All function that supports base user activities with the content such as displaying a topic, locating a topic via the table of contents, searching for a topic and displaying it)

Viewing the Information Center

When you insert the Documentation CD, the welcome panel opens. If it does not appear when you insert the Documentation CD, you can run the CD from Windows Explorer.

Click the View Information Center icon to open and view the Information Center. The Information Center launches in a browser window after a few moments.

Click the Close Information Center icon to close the Information Center.

Installing the WebSphere MQ Information Center

To install the Information Center:

1. Insert the Documentation CD. The welcome panel opens.
2. Click the Install icon to install the Information Center.
3. Click **Next** to start the InstallShield Wizard for the WebSphere MQ Version 7 Information Center.
4. Accept the license agreement terms and work through the panels in the InstallShield Wizard for the WebSphere MQ Version 7 Information Center wizard.
5. Choose a directory to install the Information Center to.
6. Select which languages to install. English is always installed.

The Information Center is installed to the directory you specified in the Wizard. When the installation is complete you can choose any or all of the following options:

- View the readme file
- See how to request updated documents
- Start the Information Center

Alternatively, click **Close** to close the Wizard.

Running the WebSphere MQ Information Center

1. Navigate to the directory you installed the Information Center in.
2. You can run the Information Center in two modes:

Standalone mode

In standalone mode, the Information Center is available only to the user who is logged in to the machine that is running the Information Center.

To run the Information Center in standalone mode, double-click `help_start.sh`

Information Center mode

In Information Center mode, the Information Center is available to users on other machines in the same network as the machine that is running the Information Center. Using this mode, you can have an Information Center that is installed on one machine, and make it available to many users.

To run the Information Center in standalone mode, double-click `IC_start.sh`

The Information Center uses a web server that is included with the system. The web server uses a random port to avoid port conflicts among applications, and by default the listener is disabled. The default port used is 8888.

Stopping the Information Center

To stop the Information Center when it is running in standalone mode, double-click `<Information_Center_Install_Dir>/help_end.sh`.

To stop the Information Center when it is running in Information Center mode, double-click `<Information_Center_Install_Dir>/IC_end.sh`.

Updating the Information Center

When newer versions of the documentation in the Information Center are available, you can download the updated content from within the help system.

To check whether there are any updates available and download them to your local system:

- Click **Update** on the tool bar. A list of installed document sets is displayed.
- Click **Find Updates** on the bottom of the list to start finding available updates. The help system searches for updates at a server location. A progress bar is displayed while updates are being located.
- When updates have been located, in the search results for the latest updates, two lists are displayed:
 - Updates for existing documentation
 - New documentation

Select the check boxes corresponding to the documentation sets you want to install.

- Click **Install Updates** to install the documentation sets you have selected.
- Click **Finish** when the installation is done.

You do not need to restart the help system. It will refresh automatically to show the updated content.

PDF

A PDF (Portable Document Format), corresponding to each book, is available on the documentation CD. You can read PDFs using Adobe Acrobat Reader. You can download them to your own file system, or you can print them on a PostScript printer.

The PDFs are available in U.S. English in the `\docs\pdf\en_US` directory on the Documentation CD, and also in some or all of the following national languages. After you have installed the PDFs, you can find the files in the directory in which you installed the Information Center. To find out which ones are available in your language, look for the appropriate directory on the CD in the form `\docs\pdf\ll_LL`, where *ll_LL* is one of the following:

- 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)

Within these directories, you can find the complete set of PDFs that are available. Table 9 on page 67 shows the file names used for the PDF files.

Infopops in the WebSphere MQ Explorer

Infopops are provided in the WebSphere MQ Explorer for Windows and Linux. They provide context-sensitive help from any part of the GUI.

You can:

- Click a folder
- Click a properties page
- Click a view
- Click a dialog

then press F1 on Windows installations or Ctrl+F1 on Linux installations. By default, help information that typically contains one or more links to more detailed information, is displayed in a new panel in WebSphere MQ Explorer. Alternatively, the infopops can be set to display as a small yellow box that hovers over the cursor.

Hardcopy books

This book, and all the books listed in Table 9 on page 67, are available for you to order or print.

You can order publications from the IBMLink™ Web site at:

<http://www.ibm.com/ibmlink>

In the United States, you can also order publications by dialing **1-800-879-2755**.

In Canada, you can order publications by dialing **1-800-IBM-4YOU (1-800-426-4968)**.

For further information about ordering publications, contact your IBM authorized dealer or marketing representative.

For information about printing books, see “Publications supplied with the product” on page 68.

Online information

The sources of information available online about WebSphere MQ Version 7.0

HTML and PDF books on the World Wide Web

The WebSphere MQ books are available on the World Wide Web as well as on the product CD-ROM. They are available in PDF and HTML format. The WebSphere MQ product family Web site is at:

<http://www.ibm.com/software/integration/mqfamily>

By following links from this Web site you can:

- Obtain latest information about the WebSphere MQ product family.

- Access the WebSphere MQ books in HTML and PDF formats.

Online help

Man pages are provided for all API calls, MQSC commands, and relevant control commands including **crtmqm**, **strmqm**, and **endmqm**.

SupportPacs

SupportPacs contain material that complements the WebSphere MQ family products, for example, there are a number of SupportPacs to help you with performance and capacity planning. Many SupportPacs are freely available for download, others can be purchased as a fee-based service. SupportPacs can be obtained from the following Web site:

<http://www.ibm.com/software/integration/websphere/support>

WebSphere MQ newsgroups

WebSphere MQ support provides a number of newsgroups where members share their knowledge and experience with others. A list of the newsgroups can be found at:

<http://www.ibm.com/software/integration/mqfamily/support/newsgroups>

Whitepapers and migration documents

IBM produces a number whitepapers that contain other useful information about WebSphere MQ. These can be found at:

<http://www.ibm.com/software/integration/websphere/library>

Service support summary (PTF readmes)

The service support summary gives a summary of the support information and end of service dates for in-service WebSphere MQ products. This can be found at:

<http://www.ibm.com/software/integration/mqfamily/support/summary>

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