

WebSphere MQ for AIX



Quick Beginnings

Version 7.0

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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 AIX, 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 AIX Version 7.0

Instructions for migrating to WebSphere® MQ Version 7.0.

If you want to migrate to WebSphere MQ Version 7.0, complete this task.

If you migrate from a previous level of this product without first backing up your system, 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, performed by WebSphere MQ Version 7.0.

1. Stop all 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 **dspmq** command to stop all running queue managers.
 - 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 of them, enter the following:
`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 Function supplied by the SupportPacs in the table below has been superseded by function in WebSphere MQ Version 7.0.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 SupportPacs superseded by WebSphere MQ Version 7.0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

Note: If you installed SupportPac MACS, remove the directory /usr/mqm/inc64 and its contents.

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

5. You do not have to uninstall your current version before installing WebSphere MQ Version 7.0. However, before installing you must ensure that you manually remove the filesets which have been retired from WebSphere MQ Version 7.0.
 - Remove the following filesets before migrating from WebSphere MQ Version 5.3 to WebSphere MQ Version 7.0:
mqm.Client.Bnd
mqm.Server.Bnd
mqm.dce.samples
mqm.dce.server

mqm.msg.De_DE
mqm.msg.Es_ES
mqm.msg.Fr_FR
mqm.msg.It_IT

- Remove the following filesets before migrating from WebSphere MQ Version 6.0 to WebSphere MQ Version 7.0:

mqm.msg.De_DE
mqm.msg.Es_ES
mqm.msg.Fr_FR
mqm.msg.It_IT

6. Install WebSphere MQ Version 7.0 by following the tasks set out in *WebSphere MQ Quick Beginnings for AIX*.
7. Restart WebSphere MQ.

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

After you have migrated to WebSphere MQ Version 7.0

Perform these tasks immediately after you migrate to WebSphere MQ Version 7.0.

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

Information describing how to install a WebSphere MQ server.

This chapter 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 Chapter 1, “Migrating to WebSphere MQ for AIX Version 7.0,” on page 1 before installing WebSphere MQ Version 7.0.

WebSphere MQ for AIX[®] 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 27.

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 43.

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 12.

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 hardware and software requirements

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

Checking the operating environment

Check through this topic to identify which hardware and software is supported for use with WebSphere MQ for AIX as a server.

Before you install WebSphere MQ Version 7.0, you must check that your system meets the hardware and operating system software requirements set for this product and the particular components you intend to install on it.

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 AIX, Version 7.0 runs on any machine that supports the AIX operating systems listed in the following section, whether from IBM® or other vendors.

Operating System

The operating systems supported by WebSphere MQ for AIX, Version 7.0 are:

- AIX V5.3 plus TL04 and appropriate firmware
- AIX V6.1

Use the `oslevel -r` command to determine the level of the operating system you are running, including the maintenance level.

Connectivity Requirements

Check that the system has 64-bit compatible communications hardware that supports at least one of the following:

- TCP/IP (IPv4 and IPv6, provided by the operating system)
- IBM Communications Server for AIX V6.3 (SNA)

Storage Requirements

The storage requirements for the WebSphere MQ for AIX, Version 7.0 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. The approximate amount of storage space required for a server installation is detailed in the table below.

Table 2. Storage requirements for a WebSphere MQ server

Storage Requirements	Storage Requirement in MB in /usr
WebSphere MQ Server installation	325

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

File descriptors

When running a multi-threaded process such as the agent process, you might reach the soft limit for file descriptors. This gives you the WebSphere MQ reason code MQRC_UNEXPECTED_ERROR (2195) and, if there are enough file descriptors, a WebSphere MQ FFST™ file.

To avoid this problem, you can increase the process limit for the number of file descriptors. To do this, alter the `nfiles` attribute in `/etc/security/limits` to 10,000 for the `mqm` user id or in the default stanza. For information about the `mqm` user id see, *WebSphere MQ for AIX Quick Beginnings* “Setting up the user ID and group ID” on page 7.

System Resource Limits

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

```
unlimit -d unlimited
unlimit -s unlimited
```

Checking optional software

Check through this topic to identify which additional software is supported for use with WebSphere MQ for AIX as a server.

Compilers

The following compilers are supported for WebSphere MQ for AIX applications:

- IBM C for AIX, V6.0
- IBM XL C Enterprise Edition for AIX V7.0
- IBM XL C Enterprise Edition for AIX V8.0
- IBM VisualAge® C++ Professional for AIX V6.0
- IBM XL C/C++ Enterprise Edition for AIX V7.0
- IBM XL C/C++ Enterprise Edition for AIX V8.0

Figure 1. C/C++

- IBM COBOL Set for AIX V2.0 (32-bit applications only)
- Micro Focus Server Express V4.0
- Micro Focus Server Express V5.0

Figure 2. Cobol

- 32-bit
 - IBM 32-bit SDK V1.4.2, 32-bit version
 - IBM 32-bit SDK V5 (for AIX 5.3.0.30 or later)
 - IBM 32-bit SDK V6 (for AIX 5.3.0.30 or later)
- 64-bit
 - IBM 64-bit SDK for AIX Java™ 2 Technology Edition V1.4.2,
 - IBM 64-bit SDK for AIX Java V5 (for AIX 5.3.0.30 or later)
 - IBM 64-bit SDK for AIX Java V6 (for AIX 5.3.0.30 or later)

The V5 SDKs (32- and 64-bit) are supplied with WebSphere MQ, and can be installed during the installation process described in this document.

Figure 3. Java

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 with Client SDK V2.90
- Informix Dynamic Server (IDS) V10.50 with Client SDK V2.91
- Oracle 10g Release 2
- Oracle 11g Release 1
- Sybase Adaptive Server Enterprise (ASE) V15 and Sybase SDK V15

Transaction monitors

The following transaction processing monitors (coordination through X/Open XA interface) are supported:

- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphereApplication Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- IBM TXSeries® V6.0
- IBM TXSeries V6.1
- IBM TXSeries V6.2
- BEA Tuxedo V9.1
- BEA WebLogic Server 9.2

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support with WebSphere MQ, you need a Java Runtime Environment Version 5 or later. An appropriate runtime environment is provided in the JDKs provided on the WebSphere MQ Server CD- ROM. These JDK packages can be selected for install during the installation procedure described in this book, see *WebSphere MQ for AIX Quick Beginnings* “WebSphere MQ Components” on page 12 for package information.

The JDKs available on the server CD-ROM are:

- IBM 32-bit SDK V5
- IBM 64-bit SDK for AIX Java V5
- Apache Axis V1.1 is not a JDK but does provide SOAP support.

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

Note that to use the JDK shipped with WebSphere MQ for AIX, Version 7.0, the fileset Java14.ext.java3d 1.4.2.0 requires the following fileset updates:

- OpenGL.OpenGL_X.rte.base 5.1.0.50
- OpenGL.OpenGL_X.rte.soft 5.1.0.50

An error message will be displayed when you install the JDK if you do not have these updates.

For a list of alternative JDKs, see <http://www.ibm.com/software/integration/wmq/requirements/>

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

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

If you use a JDK 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 for AIX, Version 7.0 will not comply with FIPS 140-2 standards.
- SOAP is not supported.

On AIX, the 32-bit and 64-bit JDKs are typically installed to different locations, for example, the 32-bit JDK is located in /usr/java5 and the 64-bit JDK is located in /usr/java5_64. Ensure that the PATH variable is correctly set for your applications that use Java. You can check the version installed using the following command:

```
java -version
```

Secure Sockets Layer (SSL)

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.

You must also have installed version 7.0.4.11 (or later) of the C++ runtime to use the SSL support.

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 8

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.

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

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

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

Set the group name field to `mqm`.

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

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

Set the user name field to `mqm`.

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

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

Set the password as required.

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

Adding existing user IDs to the group

How to add existing user IDs to the `mqm` 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.

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

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

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

UNIX[®] platforms generally restrict the length of a user ID to 12 characters. AIX Version 5.3 has raised this limit but WebSphere MQ continues to observe a 12 character restriction on all UNIX platforms. If you use a user ID of greater than 12 characters, WebSphere MQ truncates it and then fails to recognize the truncated user ID. For example, if your user ID is `userwithlongid` (14 characters) and you try to sign on to WebSphere MQ, it will issue an error message to the effect of `userwithlong not authorized`.

Creating WebSphere MQ file systems

The installation directory for the WebSphere MQ product code is `/usr/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 `/usr/mqm` file system into which the WebSphere MQ code will be installed and what to do should you not have enough storage space available in the file system.

The WebSphere MQ product code is installed in `/usr/mqm`. If you cannot install the product code in the `/usr/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 `/usr/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 `/usr/mqm` to this new directory. For example:

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

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

3. Allow the install program to expand the file system.

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 AIX, 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
- The amount of SSL trace that is written to the `/var/mqm/trace` directory

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 volume 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

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: `/usr/mqm/lib` (32-bit libraries) and `/usr/mqm/lib64` (64-bit libraries).

Server installation procedure

This section tells you how to install the WebSphere MQ for AIX server. If you want to install the WebSphere MQ client see Chapter 3, “Installing a WebSphere MQ client,” on page 27.

Before you start the installation procedure, make sure you have prepared your system as described in “Preparing for installation” on page 3.

The installation method allows you to select which components you would like to install, for a list of the components and their corresponding filesets see “WebSphere MQ Components” on page 12.

To install on a local machine, see “Installation Method”

To install on a remote machine, see “Remote Installation” on page 12

Installation Method

WebSphere MQ is supplied as a set of filesets that are installed using AIX’s standard installation tools. The procedure below uses the system management interface tool (SMIT), but you may choose to use `installp`, `geninstall` or the Web-based System Manager. You may select which components you want to install. The components and filesets are listed in “WebSphere MQ Components” on page 12; you must install at least the Runtime, Java, the JRE, and Server components.

1. Log in as root.
2. Insert the WebSphere MQ Server CD-ROM into the CD-ROM drive.
3. Enter the following command to mount the CD-ROM:

```
mount /cdrom
```

4. Select the required **smit** window using the following sequence:

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

Alternatively you can use a fastpath command (`smitty install_latest`), however this does not give you the opportunity to install the language filesets.

5. Click **List** to display the input device or directory for the software, select the location that contains the installation images.
6. Use the **SOFTWARE to install** field to obtain a list of available filesets, and select the filesets you want to install. Ensure that you include the appropriate message catalog if you require a messages in a language different than that specified by the locale selected on your machine. Enter **ALL** to install all applicable fileset updates to your installation.
7. Change **Preview new LICENSE agreements?** to **yes** and press Enter to view the license agreements.

8. Change **ACCEPT new license agreements?** to **yes** and press Enter to accept the license agreements.
9. Change **Preview new LICENSE agreements?** to **no** and press Enter to install WebSphere MQ.

Remote Installation

To install WebSphere MQ for AIX, Version 7.0 on a remote machine, you can use standard WebSphere MQ techniques.

To do this, log on to both systems as root. Put the WebSphere MQ for AIX, Version 7.0 Server CD-ROM in the CD-ROM drive of the machine from which you are going to take the copy. Follow this procedure for each target machine on which you want to install the product:

1. Create a CD-ROM file system on the local machine, and mount the CD-ROM file system on the local machine (mount `/cdrom`).
2. Using **smit**, export this file system using NFS to the target machine.
3. Log on to the remote machine and use NFS to mount the CD-ROM file system that you created (mount `local_machine:/cdrom`).
4. Use **smit** to install WebSphere MQ for AIX, Version 7.0 from the target directory that you specified as specified in “Installation Method” on page 11.

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 AIX, you can choose which components to install.

Table 3. WebSphere MQ components and filesets

Component	Description	Fileset	Server	Client
Runtime	Mandatory component. Needed for application development and provides support for external applications.	mqm.base.runtime	X	X
SDK	Required for compiling applications.	mqm.base.sdk	X	X
Server	The server feature allows you to run queue managers on your computer and connect to other computers over a network. Provides messaging and queuing services to applications, and support for WebSphere MQ client connections.	mqm.server.rte	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.	mqm.client.rte	X	X
Sample programs	Sample application programs. Needed if you want to check your WebSphere MQ installation using the verification procedures.	mqm.base.samples	X	X

Table 3. WebSphere MQ components and filesets (continued)

Java messaging	The files needed for messaging using Java (includes Java Messaging Service). Prerequisite for the server component.	mqm.java.rte	X	X
SSL support	Support for SSL key management	mqm.keyman.rte	X	X
U.S. English Message catalogs	A message catalog in U.S. English is installed automatically.	mqm.msg.en_US	X	X
Brazilian Portuguese Message catalogs	Brazilian Portuguese message catalogs	mqm.msg.pt_BR	X	X
Czech Message catalogs	Czech Message catalogs	mqm.msg.cs_CZ	X	X
French Message catalogs	French message catalogs	• mqm.msg.fr_FR	X	X
German Message catalogs	German message catalogs	• mqm.msg.de_DE	X	X
Hungarian Message catalogs	Hungarian Message catalogs	mqm.msg.hu_HU	X	X
Italian Message catalogs	Italian message catalogs	• mqm.msg.it_IT	X	X
Japanese Message catalogs	Japanese message catalogs	• mqm.msg.ja_JP • mqm.msg.Ja_JP	X	X
Korean Message catalogs	Korean message catalogs	mqm.msg.ko_KR	X	X
Polish Message catalogs	Polish Message catalogs	mqm.msg.pl_PL	X	X
Russian Message catalogs	Russian Message catalogs	mqm.msg.ru_RU	X	X
Spanish Message catalogs	Spanish message catalogs	• mqm.msg.es_ES	X	X
Simplified Chinese Message catalogs	Simplified Chinese message catalogs	• mqm.msg.zh_CN • mqm.msg.Zh.CN	X	X
Traditional Chinese Message catalogs	Traditional Chinese message catalogs	• mqm.msg.zh_TW • mqm.msg.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 	mqm.man.en_US.data	X	X

Table 3. WebSphere MQ components and filesets (continued)

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. 	mqm.txclient.rte	X	
IBM Java JRE (32-bit)	IBM 32-bit Runtime Environment for AIX, Java 2 Technology Edition, Version 5. Prerequisite for the server component.	mqm.jre.rte	X	

Table 4. Other products supplied with WebSphere MQ

Component	Description	Fileset	Server	Client
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 32 bit	gskta.rte	X	X
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 64 bit.	gksa.rte	X	X
IBM Java SDK (32-bit)	IBM SDK for AIX, Java 2 Technology Edition for AIX, Version 5, 32-bit	<ul style="list-style-type: none"> Java5.ext Java5.license Java5.msg.ja_JP Java5.msg.Ja_JP Java5.msg.ko_KR Java5.msg.zh_CN Java5.msg.Zh_CN Java5.msg.zh_TW Java5.msg.Zh_TW Java5.samples Java5.sdk 	X	X
IBM Java SDK (64-bit)	IBM SDK for AIX, Java 2 Technology Edition for AIX, Version 5, 64-bit	<ul style="list-style-type: none"> Java5_64.ext Java5_64.license Java5_64.msg.ja_JP Java5_64.msg.Ja_JP Java5_64.msg.ko_KR Java5_64.msg.zh_CN Java5_64.msg.Zh_CN Java5_64.msg.zh_TW Java5_64.msg.Zh_TW Java5_64.samples Java5_64.sdk 	X	X

Displaying messages in your national language

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

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

WebSphere MQ Version 7.0 requires a base AIX operating system at level 5.3 or higher and, from this level of operating system, the locales supporting IBM-850 code pages are no longer supported.

Message catalogs for languages other than US English are installed as `/usr/lib/nls/msg/localename/amq.cat`.

The filesets containing message catalogs for IBM-850:

```
mqm.msg.De_DE (German)
mqm.msg.Es_ES (Spanish)
mqm.msg.Fr_FR (French)
mqm.msg.It_IT (Italian)
```

are no longer included.

If you have any of these filesets installed you must remove them manually before you install WebSphere MQ Version 7.0.

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

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

1. Install the appropriate message catalog (see “WebSphere MQ Components” on page 12).
2. To select messages in a different language, ensure the **LANG** environment variable is set to the identifier for the language you want to install:

Identifier	Language
cs_CZ	Czech
de_DE	German
es_ES	Spanish
fr_FR	French
hu_HU	Hungarian
it_IT	Italian
ja_JP	Japanese
ko_KR	Korean
pl_PL	Polish
pt_BR	Brazilian Portuguese
ru_RU	Russian
zh_CN	Simplified Chinese
zh_TW	Traditional Chinese

Verifying the server installation

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

The following set of tasks describes how to verify that the WebSphere MQ for AIX 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 21.
- 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 17.
 - To verify the installation using the Postcard application, see: “Verifying the installation using the Postcard application” on page 21.

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 38.

Verifying a local installation

To verify a local installation using a simple configuration of one queue manager and one queue, complete the following steps. Once you have completed the steps below, you must test the installation as described in: “Testing the installation” on page 17

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. 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 16.

To test the queue manager and queue, use the **amqsput** 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 `/usr/mqm/samp/bin` directory, which contains the sample programs.
3. Put a message on the queue using the following command:

```
./amqsput 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 18
- “Setting up the receiver server” on page 19
- “Testing communication between the servers” on page 20

To verify a server-to-server installation you need to 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.

WebSphere MQ for AIX supports both TCP and SNA. 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 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 shell 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 18, 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 18, you must include the port parameter in the command, as shown below.

```
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 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) trptype (tcp)
```

A message tells you when the channel has been created.

9. End MQSC by typing:

```
end
```

Some messages are displayed, followed by the shell 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 18, and “Setting up the receiver server” on page 19, 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. Stop MQSC by typing:

```
end
```

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

6. On the **sender** server, change into the `/usr/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 `/usr/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.

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.

You can use the Postcard application to verify a local installation or a server-to-server installation, as follows:

- 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 another server that is running WebSphere MQ and using TCP/IP, see “Using the Postcard application to verify a server-to-server installation” on page 23.

Using the Postcard application to verify a local installation

Sending messages successfully between two Postcard applications verifies 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:

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

To run two instances of the Postcard application, do the following:

1. Log on as a user in group mqm.
2. Change the directory to `/usr/mqm/java/bin`
3. Run the postcard shell script.
`./postcard`

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.

4. At the Postcard - Sign On window, type in a nickname to use to send messages within the Postcard application (for example, User1).
5. 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.

6. Run the Postcard shell script again in a different shell window. This opens a second instance of the Postcard application.
7. The Postcard - Sign On panel is displayed again. Type in a second nickname to use to send messages within this second Postcard application (for example, User2).
8. Repeat the selection of the queue manager that you want to use as the mailbox (as described in step 5). 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.
9. In the first Postcard, User1, enter the nickname User2 for the second Postcard application in the **To:** field and the queue manager it is using in the **On:** field.
10. Type a message in the **Message:** field and click **Send**.
11. 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*.
12. In the receiving Postcard, User2, 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.

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 27.
- Continue with further administration tasks. See the WebSphere MQ System Administration Guide.

Using the Postcard application to verify a server-to-server installation

Sending messages successfully between two Postcard applications verifies 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, if 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 18, and "Setting up the receiver server" on page 19. Once you have set up communication, you can use the Postcard application starting at step 5 on page 24.

Note:

1. The Postcard application has a graphical interface. To view this interface, your systems require the ability to view a graphical display.
2. 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. Log on as a user in group mqm.

2. Change directory to `/usr/mqm/java/bin`
3. Run the postcard shell script.
`./postcard`

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.

You can use the Postcard application with existing queue managers, if 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.

4. 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**. When you have completed the wizard, you are taken back to the Postcard - Sign On window.
5. At the Postcard - Sign On window, type a nickname to use to send messages within the Postcard application (for example, User1).
6. 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 second postcard window.

On the receiver server:

1. Log on as a user in group mqm.
2. Change directory to `/usr/mqm/java/bin`
3. Run the postcard shell script.
`./postcard`

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.

You can use the Postcard application with existing queue managers, if 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.

4. Work through the Default Configuration wizard:
 - a. When you get the option to join the queue manager to the default cluster, tick the checkbox.
 - b. In the next window click **No another computer has already joined the cluster as a repository**. Click Next.
 - c. When requested, enter the location of the repository, by typing the name of the sender server. Click Next.
 - d. Complete the Default Configuration wizard. Once you have completed the wizard you are taken back to the Postcard - Sign On window.
5. At the Postcard - Sign On window, type a nickname to use to send messages within the Postcard application (for example, User2).
6. 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.

7. In one of the Postcards, enter the nickname for the other Postcard application in the **To:** field, and the queue manager that it is using in the **On:** field.
8. Type a message in the **Message:** field and click **Send**.
9. The **Postcards sent and received** area of the postcard shows details of the message. In the sending Postcard, the message is displayed as *sent*. In the receiving Postcard, the message is displayed as *received*.
10. In the sent and received area of the Postcard, details of the new message are displayed. The message is displayed as *received*. 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.

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 27.
- Continue with further administration tasks. See the WebSphere MQ System Administration Guide.

Chapter 3. Installing a WebSphere MQ client

Follow these steps to install a WebSphere MQ client.

This chapter describes how to install a WebSphere MQ Version 7.0 client. 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 Chapter 1, “Migrating to WebSphere MQ for AIX Version 7.0,” on page 1 before installing WebSphere MQ Version 7.0.

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

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.

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 3.

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 43.

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 35.

The following set of tasks take you through the process of installing a WebSphere MQ client, complete all of these tasks in sequence.

- “Checking hardware and software requirements” on page 28
- “Installing WebSphere MQ” on page 34
- “Verifying the client installation” on page 38

Preparing to install

Before you install WebSphere MQ, complete the following tasks.

- “Checking hardware and software requirements” on page 28
- “Setting up the user ID and group ID” on page 31
- “Creating WebSphere MQ file systems” on page 32

Additionally, if you require messages in a language other than U.S. English see, “Displaying messages in your national language” on page 37.

Checking hardware and software requirements

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

Checking the operating environment

Check through this topic to identify which hardware and software is supported for use with WebSphere MQ for AIX as a client.

Before you install WebSphere MQ Version 7.0, you must check that your system meets the hardware and operating system software requirements set for this product and the particular components you intend to install on it.

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 AIX, Version 7.0 runs on any machine that supports the AIX operating systems listed in the following section, whether from IBM or other vendors.

Operating System

The operating systems supported by WebSphere MQ for AIX, Version 7.0 are:

- AIX V5.3 plus TL04 and appropriate firmware
- AIX V6.1

Use the `oslevel -r` command to determine the level of the operating system you are running, including the maintenance level.

Connectivity Requirements

Check that the system has 64-bit compatible communications hardware that supports at least one of the following:

- TCP/IP (IPv4 and IPv6, provided by the operating system)
- IBM Communications Server for AIX V6.3 (SNA)

Storage Requirements

The storage requirements for the WebSphere MQ for AIX, Version 7.0 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. The approximate amount of storage space required for a server installation is detailed in the table below.

Table 5. Storage requirements for a WebSphere MQ client

Storage Requirements	Storage Requirement in MB in /opt
WebSphere MQ Client installation	276

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

File descriptors

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

To avoid this problem, you can increase the process limit for the number of file descriptors. To do this, alter the `nfiles` attribute in `/etc/security/limits` to 10,000 for the `mqm` user id or in the default stanza. For information about the `mqm` user id see, *WebSphere MQ for AIX Quick Beginnings* “Setting up the user ID and group ID” on page 7.

System Resource Limits

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

```
unlimit -d unlimited
unlimit -s unlimited
```

Checking optional software

Check through this topic to identify which additional software is supported for use with WebSphere MQ for AIX as a client.

Compilers

The following compilers are supported for WebSphere MQ for AIX applications:

- IBM C for AIX, V6.0
- IBM XL C Enterprise Edition for AIX V7.0
- IBM XL C Enterprise Edition for AIX V8.0
- IBM VisualAge C++ Professional for AIX V6.0
- IBM XL C/C++ Enterprise Edition for AIX V7.0
- IBM XL C/C++ Enterprise Edition for AIX V8.0

Figure 4. C/C++

- IBM COBOL Set for AIX V2.0 (32-bit applications only)
- Micro Focus Server Express V4.0
- Micro Focus Server Express V5.0

Figure 5. Cobol

- 32-bit
 - IBM 32-bit SDK V1.4.2, 32-bit version
 - IBM 32-bit SDK V5 (for AIX 5.3.0.30 or later)
 - IBM 32-bit SDK V6 (for AIX 5.3.0.30 or later)
- 64-bit
 - IBM 64-bit SDK for AIX Java 2 Technology Edition V1.4.2,
 - IBM 64-bit SDK for AIX Java V5 (for AIX 5.3.0.30 or later)
 - IBM 64-bit SDK for AIX Java V6 (for AIX 5.3.0.30 or later)

The V5 SDKs (32- and 64-bit) are supplied with WebSphere MQ, and can be installed during the installation process described in this document.

Figure 6. Java

Transaction monitors

The following transaction processing monitors (coordination through X/Open XA interface) are supported:

- IBM WebSphere Application Server (WAS) V5.1
- IBM WebSphereApplication Server (WAS) V6.0.2
- IBM WebSphere Application Server (WAS) V6.1
- IBM TXSeries V6.0
- IBM TXSeries V6.1
- IBM TXSeries V6.2
- BEA Tuxedo V9.1
- BEA WebLogic Server 9.2

Java Messaging and SOAP transport

If you want to use Java Messaging and SOAP (Simple Object Access Protocol) Support with WebSphere MQ, you need a Java Runtime Environment Version 5 or later. An appropriate runtime environment is provided in the JDKs provided on the WebSphere MQ Server CD- ROM. These JDK packages can be selected for install during the installation procedure described in this book, see *WebSphere MQ for AIX Quick Beginnings* “WebSphere MQ Components” on page 12 for package information.

The JDKs available on the server CD-ROM are:

- IBM 32-bit SDK V5
- IBM 64-bit SDK for AIX Java V5
- Apache Axis V1.1 is not a JDK but does provide SOAP support.

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

Note that to use the JDK shipped with WebSphere MQ for AIX, Version 7.0, the fileset Java14.ext.java3d 1.4.2.0 requires the following fileset updates:

- OpenGL.OpenGL_X.rte.base 5.1.0.50
- OpenGL.OpenGL_X.rte.soft 5.1.0.50

An error message will be displayed when you install the JDK if you do not have these updates.

For a list of alternative JDKs, see <http://www.ibm.com/software/integration/wmq/requirements/>

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

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

If you use a JDK 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 for AIX, Version 7.0 will not comply with FIPS 140-2 standards.
- SOAP is not supported.

On AIX, the 32-bit and 64-bit JDKs are typically installed to different locations, for example, the 32-bit JDK is located in `/usr/java5` and the 64-bit JDK is located in `/usr/java5_64`. Ensure that the `PATH` variable is correctly set for your applications that use Java. You can check the version installed using the following command:

```
java -version
```

Secure Sockets Layer (SSL)

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.

You must also have installed version 7.0.4.11 (or later) of the C++ runtime to use the SSL support.

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 32

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.

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

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

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

Set the group name field to `mqm`.

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

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

Set the user name field to mqm.

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

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

Set the password as required.

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.

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

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

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

Creating WebSphere MQ file systems

The installation directory for the WebSphere MQ product code is /usr/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 /usr/mqm file system into which the WebSphere MQ code will be installed and what to do should you not have enough storage space available in the file system.

The WebSphere MQ product code is installed in /usr/mqm. If you cannot install the product code in the /usr/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 /usr/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 /usr/mqm to this new directory. For example:


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

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

3. Allow the install program to expand the file system.

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 AIX, 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
- The amount of trace that is written to the `/var/mqm/trace` 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 9.

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 `mqclient.ini` 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.

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 volume 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.

Installing WebSphere MQ

This chapter tells you how to install the WebSphere MQ for AIX client. If you want to install the WebSphere MQ server see Chapter 2, “Installing a WebSphere MQ server,” on page 3.

Before you start the installation procedure, make sure you have prepared your system as described in “Preparing to install” on page 27.

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 “Installation Method” on page 11.

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 43.

Client Installation Procedure

This installation procedure uses the System Management Interface Tool (**smit**), enabling you to select which components you want to install. The components and filesets are listed in “WebSphere MQ Components” on page 35. You must install at least the Runtime, and Client components.

1. Log in as root.
2. Insert the WebSphere MQ Client CD-ROM into the CD-ROM drive.

3. Enter the following command to mount the CD-ROM:

```
mount /cdrom
```
4. Select the required **smit** window using the following sequence:

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

Alternatively you can use a fastpath command (`smitty install_latest`).
5. Click **List** to display the input device or directory for the software, select the location that contains the installation images.
6. Use the **SOFTWARE to install** field to obtain a list of available filesets, and select the filesets you want to install. Ensure that you include the appropriate message catalog if you require messages in a language different than that specified by the locale specified on your machine. Enter **ALL** to install all applicable fileset updates to your installation.
7. If you have a previous version of the product on your machine, change the **Automatically install requisite software** to **No** and overwrite same or newer versions to **Yes**.
8. Change **ACCEPT new license agreements?** to **yes** and press Enter to accept the license agreements.
9. Change **Preview new LICENSE agreements?** to **no** and press Enter to install 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 AIX, you can choose which components to install.

Table 6. WebSphere MQ components and filesets

Component	Description	Fileset	Server	Client
Runtime	Mandatory component. Needed for application development and provides support for external applications.	mqm.base.runtime	X	X
SDK	Required for compiling applications.	mqm.base.sdk	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.	mqm.client.rte	X	X
Sample programs	Sample application programs. Needed if you want to check your WebSphere MQ installation using the verification procedures.	mqm.base.samples	X	X
Java messaging	The files needed for messaging using Java (includes Java Messaging Service).	mqm.java.rte	X	X
SSL support	Support for SSL key management	mqm.keyman.rte	X	X

Table 6. WebSphere MQ components and filesets (continued)

U.S. English Message catalogs	A message catalog in U.S. English is installed automatically.	mqm.msg.en_US	X	X
Brazilian Portuguese Message catalogs	Brazilian Portuguese message catalogs	mqm.msg.pt_BR	X	X
Czech Message catalogs	Czech Message catalogs	mqm.msg.cs_CZ	X	X
French Message catalogs	French message catalogs	• mqm.msg.fr_FR	X	X
German Message catalogs	German message catalogs	• mqm.msg.de_DE	X	X
Hungarian Message catalogs	Hungarian Message catalogs	mqm.msg.hu_HU	X	X
Italian Message catalogs	Italian message catalogs	• mqm.msg.it_IT	X	X
Japanese Message catalogs	Japanese message catalogs	• mqm.msg.ja_JP • mqm.msg.Ja_JP	X	X
Korean Message catalogs	Korean message catalogs	mqm.msg.ko_KR	X	X
Polish Message catalogs	Polish Message catalogs	mqm.msg.pl_PL	X	X
Russian Message catalogs	Russian Message catalogs	mqm.msg.ru_RU	X	X
Spanish Message catalogs	Spanish message catalogs	• mqm.msg.es_ES	X	X
Simplified Chinese Message catalogs	Simplified Chinese message catalogs	• mqm.msg.zh_CN • mqm.msg.Zh.CN	X	X
Traditional Chinese Message catalogs	Traditional Chinese message catalogs	• mqm.msg.zh_TW • mqm.msg.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 	mqm.man.en_US.data	X	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. 	mqm.txclient.rte	X	

Table 7. Other products supplied with WebSphere MQ

Component	Description	Fileset	Server	Client
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 32 bit	gskta.rte	X	X
IBM Global Security Kit V7	Certificate and SSL Base Runtime - 64 bit.	gksa.rte	X	X
IBM Java SDK (32-bit)	IBM SDK for AIX, Java 2 Technology Edition for AIX, Version 5, 32-bit	<ul style="list-style-type: none"> • Java5.ext • Java5.license • Java5.msg.ja_JP • Java5.msg.Ja_JP • Java5.msg.ko_KR • Java5.msg.zh_CN • Java5.msg.Zh_CN • Java5.msg.zh_TW • Java5.msg.Zh_TW • Java5.samples • Java5.sdk 	X	X
IBM Java SDK (64-bit)	IBM SDK for AIX, Java 2 Technology Edition for AIX, Version 5, 64-bit	<ul style="list-style-type: none"> • Java5_64.ext • Java5_64.license • Java5_64.msg.ja_JP • Java5_64.msg.Ja_JP • Java5_64.msg.ko_KR • Java5_64.msg.zh_CN • Java5_64.msg.Zh_CN • Java5_64.msg.zh_TW • Java5_64.msg.Zh_TW • Java5_64.samples • Java5_64.sdk 	X	X

Displaying messages in your national language

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

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

WebSphere MQ Version 7.0 requires a base AIX operating system at level 5.3 or higher and, from this level of operating system, the locales supporting IBM-850 code pages are no longer supported.

Message catalogs for languages other than US English are installed as `/usr/lib/nls/msg/localename/amq.cat`.

The filesets containing message catalogs for IBM-850:

```
mqm.msg.De_DE (German)
mqm.msg.Es_ES (Spanish)
mqm.msg.Fr_FR (French)
mqm.msg.It_IT (Italian)
```

are no longer included.

If you have any of these filesets installed you must remove them manually before you install WebSphere MQ Version 7.0.

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

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

1. Install the appropriate message catalog (see “WebSphere MQ Components” on page 12).
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 the client installation

The following set of tasks describes how to verify that the WebSphere MQ for AIX 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” on page 39
- “Setting up the client workstation” on page 40
- “Testing communication between workstations” on page 41

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) trdtype (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 41.

A message tells you when the channel has been created.

6. Define a listener by entering the following command:

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

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

Where

port_number

is the name of the port the listener should run on. This must be the same

as the number used when defining your client-connection channel in “Setting up the client workstation.”

7. Start the listener by entering the following command:
`start listener (listener1)`
8. Stop MQSC by typing:
`end`

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

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 `LISTENR1`
- 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 39.

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-address

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 39. 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 40.

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 `/usr/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.

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

To install a WebSphere MQ for AIX 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 “Server installation procedure” on page 11.

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 38.

Chapter 5. Applying maintenance

How to maintain WebSphere MQ for AIX

This section describes how to maintain WebSphere MQ for AIX.

- “Applying service” describes the process of how to install service updates.
- “Restoring the previous service level” on page 46 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

Use the System Management Interface Tool (**smit**) to install maintenance.

The same process applies to WebSphere MQ client installations. Refer to the *WebSphere MQ Clients* book for more information about client installation.

To install service updates:

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 **endmqm** command to stop all running queue managers.
 - c. Stop any listeners associated with the queue managers, using the command:
`endmqlsr -m QMgrName`
 - d. To check that you have stopped all of them, enter the following:
`ps -ef | grep mq`

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

3. Login as root
4. Display the appropriate **smit** panel using this sequence:

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

Alternatively, use a fastpath command (**smit[ty] install_update**).

5. Click **List** to display the input device or directory for the software, select the location that contains the installation images.
6. Complete the **SOFTWARE to install** field. Enter **ALL** to install all applicable fileset updates to your installation.

7. If you think that at a later time you might want to reject the service updates and return to the backup level, you must ensure that:
 - a. The **COMMIT software updates** value is set to **no**.
 - b. The **SAVE replaced files** value is set to **yes**.

By setting these values, you ensure that the updates are applied, and the old filesets are saved, not overwritten.

8. Press Enter to display a confirmation message before starting the update. While the command runs, it displays progress messages ending with an **installp Summary** table, confirming which components of WebSphere MQ for AIX have been updated. If the command does not complete successfully, a full error log is saved in the file **smit.log** in root's home directory.

Restoring the previous service level

You can backout service updates and restore your system to the previous service/install level, for any component of WebSphere MQ for AIX that is in the **APPLIED** state.

To back out a service update:

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 **endmqm** command to stop all running queue managers.
 - c. Stop any listeners associated with the queue managers, using the command:
`endmqlsr -m QMgrName`
 - d. To check that you have stopped all of them, enter the following:
`ps -ef | grep mq`

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

3. Log in as root.
4. Display the appropriate **smit** panel using this sequence:


```
Software Installation and Maintenance
Software Maintenance and Utilities
Reject Applied Software Updates (Use Previous Version)
```

Alternatively, use a fastpath command (`smitty install_reject`).

5. Complete the SOFTWARE name field. Enter **MQM** to restore all applicable fileset updates to your installation.

Note: Although there is an option to restore only selected fileset updates for WebSphere MQ for AIX, this still results in all applicable fileset updates for the service update being restored.

6. Use the displayed default values for all other fields to reject the current service level and reinstate the previous service or install level.
7. Press Enter to display a confirmation message, before starting the reject process. While the command runs, it displays progress messages terminating with an **Installp Summary** table, confirming which components of WebSphere MQ for AIX have been rejected.

Chapter 6. Uninstalling WebSphere MQ

This topic describes how to uninstall WebSphere MQ for AIX using the System Management Interface Tool (smit).

1. Stop all WebSphere MQ applications on the machine and the applications accessing remote machines.
2. Log in as a user in group mqm.
3. Use the `endmqm` command to stop any running queue managers.
4. Stop any listeners associated with the queue managers, using the command:
`endmqlsr -m QMgrName`
5. Log in a root.
6. To display the appropriate panel, use the following sequence:
Software Installation and Maintenance
Software Maintenance and Utilities
Remove Installed Software

Alternatively, use a fastpath command (`smitty install_remove`).

7. Press F4 to list the software in the **SOFTWARE name** field.
8. Select the filesets to uninstall from the list (those beginning with mqm), and press **Enter**. There is an option at this stage to do a preview.
9. Press **Enter** on the **Remove Installed Software** panel, it will ask whether you are sure, press **Enter**.

Note: If the product was successfully uninstalled, you can delete the files and directories contained in `/usr/mqm`. If for any reason the product was not properly uninstalled, files might still exist in the package.

Unless you are planning to reinstall, after uninstalling WebSphere MQ, delete the `/var/mqm` directory tree.

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 8. 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 8. 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>

Information Center

The WebSphere MQ documentation, including the Information Center, is supplied separately on a CD-ROM alongside the product. You can either view the Information Center directly from CD, or you can install it on your computer (either before or after installing the WebSphere MQ product).

The WebSphere MQ Information Center is available on Linux and Windows® only.

For information on how to view and install the Information Center, see Information Center in *WebSphere MQ for Windows Quick Beginnings*.

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 8 on page 49 shows the file names used for the PDF files.

Hardcopy books

This book, and all the books listed in Table 8 on page 49, 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 “Information Center” on page 50.

Online information

This section describes 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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