WebSphere MQ for HP-UX

Quick Beginnings

Version 5.3

GC34-6077-01

Note!
Before using this information and the product it supports, be sure to read the general information under "Notices" on page 49.

Second edition (October 2002)

This edition applies to WebSphere® MQ for HP-UX, V5.3, and to all subsequent releases and modifications until otherwise indicated in new editions.

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Welcome to WebSphere MQ for HP-UX

This book describes WebSphere MQ for HP-UX Version 5.3 and explains how to plan for the product, install it, and verify that the installation has worked.

See the:

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

Road map

Use Table 1 to find the information that you need to get started with WebSphere MQ for HP-UX.

Table 1. Getting started road map

If you want to...	Refer to...
Learn about system requirements for WebSphere MQ for HP-UX	Chapter 1, "Planning to install WebSphere MQ for HP-UX" on page 1 and Chapter 2, "Preparing to install WebSphere MQ for HP-UX" on page 7
Install WebSphere MQ for HP-UX	Chapter 3, "Installing the WebSphere MQ for HP-UX server" on page 11 and Chapter 4, "Verifying the server installation" on page 19
Install the WebSphere MQ for HP-UX client	Chapter 5, "Installing the WebSphere MQ for HP-UX client" on page 29 and Chapter 6, "Verifying the client installation" on page 33
Read more about WebSphere MQ	Chapter 7, "WebSphere MQ documentation" on page 37
Apply maintenance to WebSphere MQ for HP-UX	Chapter 8, "Applying maintenance to WebSphere MQ for HP-UX" on page 41
Uninstall a WebSphere MQ for HP-UX server or client	Chapter 9, "Uninstalling WebSphere MQ for HP-UX" on page 43

Conventions

Knowing the conventions used in this book will help you to use it more efficiently.

- **Boldface type** indicates the name of an item that you need to select or the name of a command.
- *Italics type* indicates new terms, book titles, or variable information that must be replaced by an actual value.
- `Monospace type` indicates an example (such as a fictitious path or file name) or text that is displayed on the screen.

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Conventions

What's new in WebSphere MQ for HP-UX, Version 5 Release 3

WebSphere MQ for HP-UX, Version 5 Release 3 provides the following new and changed functions:

- WebSphere MQ for HP-UX now supports WebSphere MQ channels protected using the industry standard Secure Sockets Layer (SSL). See *WebSphere MQ Security* for details. This support is based on IBM® Global Security Kit; a copy of this product is included with WebSphere MQ.
- Support for Java™ is integrated within the product. This replaces the support previously provided by MQSeries® SupportPac™ MA88.
- Product documentation is now supplied on separate CD-ROMs.
- Support for the Internet Gateway has been removed. If you have this feature installed from a previous release of the product, you will lose it when you upgrade.
- A new form of license management is implemented for this release of the product.
- WebSphere MQ for HP-UX Version 5 Release 3 is supported only on HP-UX V11.
- WebSphere MQ now supports generic authority administration.

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What's new

Chapter 1. Planning to install WebSphere MQ for HP-UX

This chapter describes the prerequisites for running WebSphere MQ for HP-UX, V5.3, including:

- "Hardware requirements"
- "Prerequisite software"
- "Optional software" on page 2

The software that is supplied with the WebSphere MQ for HP-UX product package is described in:

- "Delivery" on page 3
- "WebSphere MQ components" on page 4

The latest information about the product can be found in the README file (see "readme file" on page 6).

Hardware requirements

WebSphere MQ for HP-UX, V5.3 runs on any Year 2000 compliant Hewlett Packard PA-RISC (1.1 or later) machine that supports the specified operating system.

Disk storage

The storage requirements for WebSphere MQ for HP-UX, V5.3 depend on which components you install (see "WebSphere MQ components" on page 4), 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.

Typical storage requirements are as follows:

- Server installation: 50 MB
- Client installation: 15 MB
- Data storage (server): 50 MB
- Data storage (client): 5 MB

Use the **df -k** command to determine the amount of free space on your system.

Disk storage is also required for:

- Prerequisite software
- Optional software
- Your application programs

See "Preparing for installation" on page 7 for information about creating the file systems you need to install and run WebSphere MQ for HP-UX.

Prerequisite software

Minimum supported software levels are shown. Later levels, if any, are supported unless otherwise stated. These prerequisites apply to both client and server installations of WebSphere MQ.

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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.

Operating system

The operating systems supported by WebSphere MQ for HP-UX, V5.3 are:

- HP-UX Version 11i (11.11) (32 bit)
- HP-UX Version 11.0 (32 bit) with patches PHSS_24627 (or any superseding patch), and PHSS_22543.

If you need to convert to or from codepages associated with Chinese, Japanese, or Korean locales on HP-UX V11.00, you need to install the Asian System Enviroment (ASE).

Connectivity

The network protocols supported by WebSphere MQ for HP-UX, V5.3 are:

- TCP/IP
- SNA LU 6.2

TCP/IP is part of the base operating system. For SNA connectivity you need HP SNAplus2.

You can use any communications hardware supporting SNA LU 6.2 or TCP/IP.

SSL

If you want to use the SSL support, you need IBM Global Security Kit V6. This is supplied with WebSphere MQ.

To use SSL, WebSphere MQ clients on HP-UX V11.0 must be built:

- Using the C++ compiler (not the C compiler)
- Using POSIX threads
- With the compiler options: `-Wl, +b/opt/ibm/gsk6/lib:/opt/mqm/lib`

SSL is not supported on HP-UX Version 11i.

Optional software

The following products can be used with WebSphere MQ for HP-UX, V5.3, but are not required. Unless otherwise stated, these products apply only to server installations of WebSphere MQ.

Compilers

The following compilers are supported for WebSphere MQ for HP-UX, V5.3 applications:

- C Softbench V7.0
- aC++ (aCC) A.03.27
- Micro Focus Server Express V2.0.10
- HP-UX ANSI C compiler
- HP-UX SDK for the Java platform, Version 1.3.1

The bundled C compiler is not supported for WebSphere MQ applications.

Transaction monitors

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

- BEA TUXEDO V6.4 and V6.5
- WebSphere Application Server V4.0
- TXSeries™ for HP-UX V4.2

WebSphere MQ for HP-UX, V5.3 supports WebSphere Application Server as an XA coordinator. For more information about the WebSphere MQ application adaptor, and how to write Component Broker applications, see the *WASEE 3.5, MQSeries Application Adaptor Development Guide* , SC09–4444–01.

Databases

The following databases are supported:

- DB2® Universal Database V7.1 or V7.2
  - If you use DB2 V7.1 on HP-UX 11.00, make sure that FixPak 1 (FP1) for DB2 V7.1 is installed.
- Oracle 8iR3 (8.1.7) and Oracle 9i

For information on how to set up XA coordination, see the *WebSphere MQ System Administration Guide*.

DCE

The DCE product supported for client and server installations of WebSphere MQ is HP9000 DCE version appropriate for the level of the HP-UX operating system in use.

You cannot use the WebSphere MQ DCE package and DB2 or Oracle to perform XA coordination. This is because DB2 and Oracle do not provide POSIX draft 4 threaded libraries (which are needed by DCE) on HP11.00.

DCE names and security modules are provided with WebSphere MQ for HP-UX, V5.3.

Note: If you install the WebSphere MQ DCE extensions, you will not be able to use SSL channels.

Java

If you want to use the Java Messaging Support, you need the Java Runtime Environment Version 1.3 or later.

Delivery

WebSphere MQ for HP-UX, V5.3 is supplied on a number of CD-ROMs, as follows:

- WebSphere MQ for HP-UX Server, for HP-UX V11.x
- WebSphere MQ Clients (2)
- WebSphere MQ Documentation (2)

WebSphere MQ for HP-UX can be installed as a server or a client. See the *WebSphere MQ System Administration Guide* for an explanation of client and server installations of WebSphere MQ.

Delivery

The Clients CD-ROMs contain the WebSphere MQ clients for AIX, HP-UX, Linux, Solaris, and Windows. Refer to the relevant *Quick Beginnings* book for information on how to install the client on other platforms.

The documentation CD-ROMs contain the product documentation in HTML and PDF formats.

WebSphere MQ components

When you install WebSphere MQ for HP-UX, V5.3, you can choose which components to install.

Server

The components available on the Server CD-ROM are as follows:

Runtime
Mandatory component. Provides support for external applications.

Base Needed for application development.

Server Provides messaging and queuing services to applications, and support for WebSphere MQ client connections.

Client 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.

Sample programs
Sample application programs. Needed if you want to check your WebSphere MQ installation using the verification procedures described in this book.

DCE support
Provides support for DCE names and security on the server. Install this component only if you are using DCE.

DCE samples
Sample programs for DCE support.

Java messaging
The files needed for messaging using Java (includes Java Messaging Service).

Message catalogs
A message catalog in U.S. English is installed automatically. Message catalogs are also available for the following national languages:
- Brazilian Portuguese
- French
- German
- Italian
- Japanese
- Korean
- Spanish
- Simplified Chinese
- Traditional Chinese

Man pages
UNIX® man pages, in U.S. English, for the following:
- Control commands
- Message Queue Interface (MQI) commands

- MQSC commands

IBM Global Security Kit V6
Needed for SSL.

IBM Key Management tool (iKeyman)
Needed for SSL.

Client

The following components of WebSphere MQ for HP-UX are available on the Clients CD-ROM. For a description of each component, see "Server" on page 4.

Runtime

Base

Client

Sample programs

Message catalogs

Man pages

Documentation

HTML and PDF versions of the WebSphere MQ for HP-UX books, are available on the Documentation CD-ROM package in some or all of the following national languages:

- Brazilian Portuguese
- French
- German
- Italian
- Japanese
- Korean
- Spanish
- Simplified Chinese
- Traditional Chinese
- U.S. English

See "Online information" on page 38 for details of the documentation CD-ROM package.

Note: HTML and PDF versions of the WebSphere MQ books can be viewed directly from the CD-ROM.

Filesets

The filesets that correspond to each of the components are listed in Table 2.

Table 2. Filesets and components

Fileset	Component
MQSERIES.MQM-BASE	Base
MQSERIES.MQM-CL-HPUX	Client
MQSERIES.MQM-JAVA	Java Client and JMS
MQSERIES.MQM-MAN	Man pages (U.S. English)
MQSERIES.MQM-MC-CHINES	Message catalog (Simplified Chinese)
MQSERIES.MQM-MC-CHINET	Message catalog (Traditional Chinese)
MQSERIES.MQM-MC-FRENCH	Message catalog (French)

WebSphere MQ components

Table 2. Filesets and components (continued)

Fileset	Component
MQSERIES.MQM-MC-GERMAN	Message catalog (German)
MQSERIES.MQM-MC-ITALIAN	Message catalog (Italian)
MQSERIES.MQM-MC-JAPAN	Message catalog (Japanese)
MQSERIES.MQM-MC-KOREAN	Message catalog (Korean)
MQSERIES.MQM-MC-PORT	Message catalog (Brazilian Portuguese)
MQSERIES.MQM-MC-SPANISH	Message catalog (Spanish)
MQSERIES.MQM-RUNTIME	Runtime
MQSERIES.MQM-SAMPLES	Sample programs
MQSERIES.MQM-SERVER	Server
MQSERIES-DCE.MQM-DCE	DCE support (in separate package on HP-UX V11)
gsk6bas	IBM Global Security Kit V6
MQSERIES.MQM-KEYMAN	WebSphere MQ support for SSL key management

readme file

Before starting to install WebSphere MQ for HP-UX, review the `readme` file for the latest information on the product. The `readme` files for all supported national languages are found in the `READMES` directory on each CD-ROM.

Chapter 2. Preparing to install WebSphere MQ for HP-UX

This chapter describes what to do to prepare your system for installing WebSphere MQ for HP-UX (see "Preparing for installation").

If you are migrating from an earlier version of MQSeries, read "Migrating from an earlier version" on page 9.

"National language considerations" on page 9 describes how to select the national language for your WebSphere MQ installation.

Preparing for installation

Before you install WebSphere MQ for HP-UX, you need to:

1. Create the file systems used to hold WebSphere MQ and its data.
2. Set up the user ID and group for WebSphere MQ.

Creating WebSphere MQ file systems

The installation directory for the WebSphere MQ product code is `/opt/mqm`. Working data is stored in `/var/mqm`. You cannot change these.

Creating a file system for the product code

Install WebSphere MQ for HP-UX in `/opt/mqm`. The space required depends on how many components you install. Typically you need 50 MB for a server installation, or 15 MB for a client installation without SSL.

If you cannot install the product code in this file system (for example, if it is too small to contain the product), you can do one of the following:

1. Create a new file system and mount it as `/opt/mqm`.
2. Create a new directory anywhere on your machine, and create a symbolic link from `/opt/mqm` to this new directory. For example:

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

Whichever of these options you choose, you must do it ***before*** installing the product code. The file system into which the code is installed can be a remote network device, for example, NFS. However, you must define the mount options defined on that device to allow **setuid** programs, including root access, to run.

Creating a file system for the working data

Before you install WebSphere MQ for HP-UX, create and mount a journalized file system called`/var/mqm`. 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

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- 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. You need less space in /var/mqm for a WebSphere MQ client, typically 15 MB.

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). This ensures data integrity in the case of a hardware failure.

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.

Attention

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, 20 MB of storage for /var/mqm/log, and 4 MB of storage for /var/mqm/errors.

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 size we recommend is for circular logging using the default settings. For further information on log sizes see the *WebSphere MQ System Administration Guide*.

Setting up the user ID and group

A user ID of the name mqm, with a primary group of mqm, is required. The mqm user ID owns the directories and files that contain the resources associated with the product. You ***must*** create the user ID and group IDs yourself, as described in the next section.

Creating the user ID and group

You must 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 Administration Manager (SAM) to work with user IDs.

Adding existing user IDs to the group

If you want to run administration commands, for example **crtmqm** (create queue manager) or **strmqm** (start queue manager), your user ID must be a member of the mqm group.

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

Migrating from an earlier version

This section describes differences between WebSphere MQ for HP-UX, V5.3 and earlier versions of the product, known previously as MQSeries.

Creating the system default objects

When you use the **crtmqm** command to create a queue manager with WebSphere MQ for HP-UX, V5.3, the system default objects are automatically created. We no longer provide the sample MQSC definition file, **amqscoma.tst**.

If you used **amqscoma.tst** to customize your settings for MQSeries for HP-UX, V5.0, and you want to use the same settings with V5.3 of the product:

1. Save your copy of **amqscoma.tst**.
2. Install WebSphere MQ for HP-UX, V5.3.
3. Load your copy of **amqscoma.tst** and use the file to re-create your default objects.

Client applications

An MQSeries Version 5 client can connect to all queue managers that support client attach. Note, however, that you cannot use features and structures specific to WebSphere MQ for HP-UX, V5.3 in your client application if you connect to a non-Version 5.3 queue manager.

National language considerations

This section includes information on displaying messages in your national language and national language support for manuals.

Displaying messages in your national language

Messages in U.S. English are always available. If you require messages in a different language, ensure that:

1. You install the appropriate message catalog (see "WebSphere MQ components" on page 4).
2. Your NLSPATH environment variable includes the appropriate directory. For example, to select messages in German use the following:

```
export LANG=de_De.iso88591
export NLSPATH=/usr/lib/nls/msg/%L/%N
```

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

National language support for manuals

The documentation for WebSphere MQ is supplied in HTML and PDF formats on a separate CD-ROM. The documentation is available in any of the languages that are supported by WebSphere MQ for HP-UX.

See "Online information" on page 38 for more information about hypertext linking between books in different national languages.

Chapter 3. Installing the WebSphere MQ for HP-UX server

This chapter tells you how to install the WebSphere MQ for HP-UX server.

It also tells you how to migrate from a version of MQSeries (see "Migrating from an earlier version" on page 14), and describes some other procedures that might be needed after you have installed WebSphere MQ.

Chapter 4, "Verifying the server installation" on page 19 describes how to verify that your installation of the WebSphere MQ server is working.

If you want to install the WebSphere MQ client, see Chapter 5, "Installing the WebSphere MQ for HP-UX client" on page 29.

Kernel configuration

WebSphere MQ uses semaphores and shared memory. It is possible, therefore, that the default kernel configuration is not adequate.

Before installation, review the machine's configuration and increase the values if necessary. The minimum recommended values of the kernel parameters are given in Figure 1 on page 12. These values might need to be increased if you obtain any First Failure Support Technology™ (FFST™) records.

Notes:

1. WebSphere MQ Version 5.3 uses more thread timers than previous releases. If you intend to run a high number of concurrent connections to WebSphere MQ, we recommend that you increase the number of kernel timers, or CALLOUTS as they are known. You configure the number of CALLOUTs available using the NCALLOUT kernel parameter. By default, NCALLOUT is equal to (16 + NPROC), where NPROC is the total number of processes allowed on the system. As WebSphere MQ is threaded, you could choose a value similar to (16 + NKTHREAD). However, there is an overhead in kernel memory for every CALLOUT defined, so tune this value to the requirements of the individual system.
2. Semaphore and swap usage does not vary significantly with message rate or message persistence.
3. WebSphere MQ queue managers are generally independent of each other. Therefore system kernel parameters, for example `shmmni`, `semmni`, `semmns`, and `semmnu` need to allow for the number of queue managers in the system.

See the HP-UX documentation for information about changing these values.

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Kernel configuration

```
shmmax           536870912
shmseg           1024
shmmni           1024
shmem            1
sema             1
semaem           16384
semvmx           32767
semmns           16384
semmni           1024 (semmni < semmns)
semmap           1026 (semmni +2)
semmnu           2048
semume           256
msgmni           50
msgtql           256
msgmap           258 (msgtql +2)
msgmax           4096
msgmnb           4096
msgssz           8
msgseg           1024
maxusers         32
max_thread_proc  66
maxfiles         1024
nfile            10000
```

Figure 1. Minimum recommended kernel parameter values

Note: `msgmap` and `msgmax` are not needed if you are using circular logging.

You must restart the system once you have made any changes to the kernel parameters.

Installation procedure

This section describes the installation of the WebSphere MQ for HP-UX server.

This installation procedure uses the **swinstall** program, enabling you to choose which components you want to install. The components and filesets are listed in "WebSphere MQ components" on page 4; you must install at least the Runtime, Base, and Server components.

Note: If you are using a screenreader, you are recommended to use the non-interactive installation option "Non-interactive installation" on page 13, so that you can accept the license without viewing it.

Before you start the installation procedure, make sure that you have prepared your system as described in "Preparing for installation" on page 7.

1. Log in as root.
2. Insert the WebSphere MQ for HP-UX Server CD-ROM
3. Mount the CD-ROM drive:
   a. change directory to `/usr/sbin`
   b. Type `pfs_mountd &`
   c. Type `pfsd 4 &`
   d. Type `pfs_mount –o xlat=unix /<path to CD-ROM device>/<localdir>`
4. Accept the license:
   a. Change directory to the location of the mounted CD-ROM (for example `/cdrom`).
   b. Run the `mqlicense` script (for example `./mqlicense.sh`).

If you want to view a text-only version of the license, which can be read by a screen-reader, type:

```
mqlicense.sh -text_only
```

The license is displayed.

Note: Pay particular attention to the section that outlines the number of license units that you need, because you will be asked later to confirm that you have purchased sufficient license units for the number of processors you have in your computer.

If you accept the license, you can continue the installation. If you do not accept the license, you will get the warning message: **The license agreement has not been accepted...**.

If you are performing a silent or remote install, you can run `mqlicense.sh` with the `-accept` option, so that the license is accepted without being displayed.

5. Type the following command to start the installation procedure:

   ```
   swinstall -s /cdrom<localdir>/hpux11/<drivername>.v11
   ```

6. Select and highlight **MQSeries**.
7. Carry out the following procedure to select the components of WebSphere MQ that you want to install:
   - Select **Open item** from the Actions menu.
   - Highlight the components that you require (use the `Ctrl` key for multiple selections) and select **Mark for install** from the Actions menu.

     The `gsk6bas` fileset for the IBM Global Security Kit is automatically selected.
   - Select **go up** and press *Enter* to return to the product list. WebSphere MQ is marked as **Partial** if you did not select all the components.
8. Select **Install (analysis)** from the Actions menu. The error log tells you if there are any problems that need fixing.
9. When you have fixed any problems, click **OK** to install WebSphere MQ. You are informed when the installation is complete. Details of the installation process are found in the Logfile.

Once you have installed WebSphere MQ for HP-UX, you need to run the **setmqcap** command, inputting the number of processors you have paid for. The relationship between processors and license units for UNIX servers is shown in the license agreement.

The first time that you start a queue manager on this machine, if you have not already run the **setmqcap** command, you get a warning saying `Purchased license units not set (use setmqcap)`. If you have already run **setmqcap** but entered an incorrect value, you get the warning `Insufficient license units`. You need to run **setmqcap** to correct this before you can start a queue manager.

Non-interactive installation

If you do not want to select which components to install, you can install WebSphere MQ in a non-interactive way.

Before you run the installation, you must run the `mqlicense.sh` script. Use the following command to accept the license without displaying it:

```
mqlicense.sh -accept
```

Installing the server

Then use the following command to start the installation :

```
swinstall -s /cdrom/hpux11/mqs530.v11 MQSERIES
```

If you do this, *all* components of WebSphere MQ are installed (including message catalogs for all available languages).

Once you have installed WebSphere MQ for HP-UX, you need to run the **setmqcap** command, inputting the number of processors you have paid for. The relationship between processors and license units for UNIX servers is shown in the license agreement.

Installing the DCE extensions

Note: You can install the DCE extensions only if DCE is already installed.

With HP-UX version 11, there is a DCE extensions package that you can install. You must install this package *after* the base package.

The base package provides non-threaded and Posix draft 10 threaded versions of WebSphere MQ for HP-UX V11. When you install this package, the reentrant, or threaded, libraries are suffixed with **_r**.

The DCE extensions package provides the extra files and libraries that you need for the DCE version of WebSphere MQ. These libraries have a **_d** suffix, indicating that they are for Posix draft 4 threads as used by DCE.

Note: If you install the DCE extensions, you will not be able to run SSL channels.

You install the DCE extensions package in the same way as the base package. If you want to install it in a non-interactive way, issue the following command:

```
swinstall -s /cdrom<localdir>/hpux11/<drivername>.v11DCE
```

Migrating from an earlier version

Always backup the `/var/mqm` directory before starting to migrate from a version of MQSeries for HP-UX.

To migrate to WebSphere MQ for HP-UX, V5.3:

1. End all queue manager activity on the target machine.
2. Uninstall the old MQSeries product as described in "Uninstallation procedure" on page 43. Do not delete the `/var/mqm` directory tree if you want to retain existing MQSeries information, for example your queue manager data.
3. Uninstall the MQSeries SupportPac MA88, if installed
4. Install WebSphere MQ for HP-UX, V5.3 as described in "Installation procedure" on page 12.

Differences between WebSphere MQ for HP-UX, V5.3 and versions of MQSeries are described in "Migrating from an earlier version" on page 9.

Migrating from HP10.20 to HP11.x

If you move from HP10.20 to HP11.x, you need to recompile your applications.

Install WebSphere MQ, followed by the WebSphere MQ DCE package (if you are using DCE), and then do the following:

1. Link unthreaded server applications against `libmqm` by adding `-lmqm` to your link line. For example:

   ```
   cc -Aa -D_HPUX_SOURCE -o myprog myprog.c -lmqm
   ```

2. Link unthreaded client applications against `libmqic` by adding `-lmqic` to your link line. For example:

   ```
   cc -Aa -D_HPUX_SOURCE -o myprog myprog.c -lmqic
   ```

3. If you are **not** using DCE, then do the following:

   a. Link Posix draft 10 threaded server applications against `libmqm_r` by adding `-lmqm_r` to your link line. For example:

      ```
      cc -Aa -D_HPUX_SOURCE -o myprog myprog.c -lmqm_r -lpthread
      ```

   b. Link Posix draft 10 threaded client applications against `libmqic_r` by adding `-lmqic_r` to your link line. For example:

      ```
      cc -Aa -D_HPUX_SOURCE -o myprog myprog.c -lmqic_r -lpthread
      ```

   Note: The reentrant WebSphere MQ libraries and executables (**_r**) in `/usr/lib` and `/usr/bin` are symbolic links to the Posix draft 10 (**_r**) versions in `/opt/mqm/lib` and `/opt/mqm/bin`.

   If you **are** using DCE, then do the following:

   a. Link Posix draft 4 and DCE server applications against `libmqm_d` by adding `-lmqm_d` to your link line. For example:

      ```
      cc -Aa -D_HPUX_SOURCE -D_PTHREADS_DRAFT4 -o myprog myprog.c -lmqm_d -ld4r -lcma
      ```

   b. Link Posix draft 4 and DCE client applications against `libmqic_d` by adding `-lmqic_d` to your link line. For example:

      ```
      cc -Aa -D_HPUX_SOURCE -D_PTHREADS_DRAFT4 -o myprog myprog.c -lmqic_d -ld4r -lcma
      ```

Migrating authorization data

If you are migrating from MQSeries V5.1 or V5.2, and you are using the compatibility OAM, all authorization data is migrated from the authorization files to the authorization queue the first time that you restart the queue manager after installing WebSphere MQ for HP-UX, V5.3. If the Object Authorization Manager (OAM) detects a missing file and:

- The authorization applies to a single object, the OAM gives the mqm group access to the object and continues with the migration. Message AMQ5528 is written to the queue manager's error log. Refer to the *WebSphere MQ Messages*book for more information about message AMQ5528.
- The authorization applies to a class of objects, the OAM stops the migration. The queue manager does not start until the file has been replaced.

You can continue to store authorization data in files. However, if you do so, you cannot exploit any of the V5.3 improvements (such as generic profiles), and the performance of the OAM will be affected. The default OAM service module is amqzfu. WebSphere MQ for HP-UX, V5.3 also provides the previous service module as amqzfu0. There are two ways in which you can use the previous module to continue to store authorization data in files:

- Modify the Module attribute in the ServiceComponent stanza of the qm.ini file to use amqzfu0. This option is possible only for queue managers created before you migrated to V5.3.
- Replace the amqzfu module found in `/opt/mqm/lib` by the previous version. For example, you can do this by:

  1. Removing the existing amqzfu module

2. Renaming amqzfu0 as amqzfu

Notes:

1. You can restore the new amqzfu module from the copy provided as amqzfu1.
2. Once you have created or restarted a queue manager with the new amqzfu module, you can no longer replace the amqzfu module with the previous version. The migration process, described above, is not reversible.

You can view authorization data with the **dspmqaut** and **dmpmqaut** commands. Refer to the *WebSphere MQ System Administration Guide* for a complete description of these commands.

Setting the queue manager CCSID

The coded character set identifier (CCSID) is fixed when you create a queue manager. The CCSID is determined by the locale that you use to run the **crtmqm** command. For more information on using command sets see the *WebSphere MQ System Administration Guide*

The following table gives some examples of using the `LANG` parameter to change the code set and CCSID.

Table 3. Examples of setting the CCSID

Example	Code set	CCSID
`export LANG=C` (this is the default locale)	Roman8	1051
`export LANG=en_US.roman8`	Roman8	1051
`export LANG=en_US.iso88591`	ISO8859-1	819

To modify an existing queue manager CCSID, follow this procedure:

1. Start MQSC commands by typing: `runmqsc`
2. Display the existing queue manager CCSID, using the MQSC command:
   `display qmgr ccsid`
3. Change the CCSID to the new CCSID with the MQSC command:
   `alter qmgr ccsid` *`(new.ccsid)`*

   where *`new.ccsid`* is the number of the new CCSID.
4. Stop MQSC commands by typing: `end`
5. Stop the queue manager, and then restart it and any channels that it uses.

See Chapter 10, “Code sets supported on WebSphere MQ for HP-UX” on page 45 for further information about supported code sets. See “Migration to euro support” on page 46 for information on migrating to a CCSID that supports the euro character.

User exits

Check that your user exits are linked with threaded libraries before using them on this version of the product.

- For further details on threaded libraries, and information about data-conversion exits, see the *WebSphere MQ Application Programming Guide*.
- For information about channel exits, see the *WebSphere MQ Intercommunication* book.

- For information about cluster-workload exits, see the *WebSphere MQ Queue Manager Clusters* book.

User exits

Chapter 4. Verifying the server installation

This chapter describes how to verify that the WebSphere MQ for HP-UX server has been correctly installed and configured. You can verify a WebSphere MQ server installation at different levels:

- A local (stand-alone) installation that has no communication links with other WebSphere MQ installations. This is described in "Verifying a local installation".
- A server-to-server installation that includes communication links to other WebSphere MQ installations. This is described in "Verifying a server-to-server installation" on page 20.

See Chapter 6, "Verifying the client installation" on page 33 if you have a client/server installation that includes communication links between a server machine and a WebSphere MQ client.

Verifying a local installation

To verify a local installation with a simple configuration of one queue manager and one queue, use sample programs to put a message onto the queue and to read the message from the queue.

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.

The procedures outlined in this section describe how to configure your default queue manager from the command line.

Setting up the installation

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

1. 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.
2. To start the queue manager, type: `strmqm`

   A message tells you when the queue manager has started.

   The first time that you start a queue manager on a machine, you might get one of the following warnings: `Purchased license units not set (use setmqcap)` or `Insufficient license units`. See "Installation procedure" on page 12 for how to correct this.
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 `ORANGE.QUEUE` by entering the following command:

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

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A message tells you when the queue has been created.

5. 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`

Testing the installation

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. Change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
2. 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
   ```

3. 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.
4. 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 the local installation.

Verifying a server-to-server installation

There are more steps involved in verifying a server-to-server installation, because 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 HP-UX supports both TCP and SNA. This example explains how to verify your installation if you are using TCP; if you are using SNA, refer to the *WebSphere MQ Intercommunication* manual.

To test the installation, set up two workstations, one as a sender and one as a receiver. You test communications between sender and receiver using sample programs, which you must install on both workstations. The verification procedure assumes that both workstations are UNIX machines; if this is not the case, some of the commands are different (for details, refer to the documentation for the workstation).

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 workstation

From a shell window, use these steps to set up the sender machine:

1. 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.

2. To start the queue manager, type: `strmqm`

   A message tells you when the queue manager has started.

   The first time that you start a queue manager on a machine, you might get one of the following warnings: `Purchased license units not set (use setmqcap)` or `Insufficient license units`. See "Installation procedure" on page 12 for how to correct this.

3. Start 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 `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.

5. 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).

6. 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 name, with 1414 as default.

7. Stop MQSC by typing: `end`

   Some messages are displayed, followed by the command prompt.

You have now defined the following objects:

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

Setting up the receiver workstation

Now follow these steps to set up the receiver:

1. 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.
2. To start the queue manager, type: `strmqm`

   A message tells you when the queue manager has started.

   The first time that you start a queue manager on a machine, you might get one of the following warnings: `Purchased license units not set (use setmqcap)` or `Insufficient license units`. See "Installation procedure" on page 12 for how to correct this.
3. Start a WebSphere MQ listener as a background task by entering the following command:

   ```
   runmqlsr -t tcp &
   ```

   You can use the `-p` parameter to specify the number of a port that the listener should listen on. If you do not specify it, the default of `1414` is used. The port number must be the same as the one that you specify when setting up the sender.
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 receiver channel with the following command:

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

   A message tells you when the channel has been created.
7. Stop MQSC by typing: `end`

   Some messages are displayed, followed by the command prompt.

You have now defined the following objects:

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

Testing communication between the workstations

Finally, use the **amqsput** sample program to put a message from the sender workstation to a queue at the receiver, and the **amqsget** sample program on the receiver workstation to get the message from the queue:

1. If the queue managers on the two workstations have stopped, restart them now by typing: `strmqm`

2. On the **sender** workstation, start the sender channel as a background task by entering the following command:

   ```
   runmqchl -c FIRST.CHANNEL -m saturn.queue.manager &
   ```

   The receiver channel on the receiver workstation starts automatically when the sender channel starts.
3. On the **sender** workstation, change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
4. 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
   ```
5. 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.
6. On the **receiver** workstation, change into the `/opt/mqm/samp/bin` directory, which contains the sample programs.
7. 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 JMS Postcard application

To use the **JMS Postcard**, you must install the optional Java Messaging feature of WebSphere MQ, and you must have a working JRE (Java Runtime Environment).

Note: If you want the **JMS Postcard** application to use font and color settings different from the Java Virtual Machine defaults, change the Postcard.ini file. For more information see *WebSphere MQ Using Java*.

Use the **JMS Postcard** application to verify that WebSphere MQ is successfully installed, the associated communication links are working properly, and that WebSphere MQ Java Messaging support is successfully installed.

You can use the **JMS Postcard** application to verify a *local* installation (which does not have any communication links with other WebSphere MQ installations). For further information, see "Using the JMS Postcard application to verify a local installation" on page 25.

You can also use the **JMS Postcard** application to verify communication between your machine and the machine of another named user, where that machine is running WebSphere MQ and using TCP/IP. Therefore, you can use the **JMS Postcard** application to verify that you can communicate with another server. To use the **JMS Postcard** application for this type of verification, either both machines must be in the same cluster (the simplest method), or you must configure channels to communicate between the two machines (see "Verifying a server-to-server installation" on page 20)

To ensure that both machines are part of the same cluster, you can do either of the following:

- Run the **JMS Postcard** application for the first time on each machine. The **JMS Postcard** application detects that there are no local queue managers defined for that machine, and displays the Default Configuration wizard so that you can create the default queue managers and link them to the default cluster.
- Create your own queue managers on both machines, create a cluster, and ensure that the queue managers that you create on each machine belong to the same cluster.

You can use the **JMS Postcard** application with existing queue managers, as long as both queue managers belong to the same cluster, or communication channels have been configured between the queue managers. Alternatively, you can exchange postcards between two queues that are using the same queue manager as their mailbox.

For further information, see "Using the Postcard application to verify a server-to-server installation" on page 27.

Setting up your system to run the JMS Postcard

Before you can run the **JMS Postcard** application, you must ensure that:

- You are a member of the WebSphere MQ administrators group (mqm). If you are not a member of mqm, ask someone who is a member to run the Default Configuration tool on your behalf, either directly, or by running the **JMS Postcard** application, which runs the Default Configuration tool indirectly.
- A supported Java Virtual Machine is installed on your system and suitably configured in the system path so that the java command can be executed.

- The required environment variables are defined.

Define the environment variables as follows:

1. Log on as user mqm.
2. Add the required environment variables to the .profile file using a text editor. These are shown in the following table:

CLASSPATH	`/opt/mqm/java/lib/com.ibm.mq.jar:`
	`/opt/mqm/java/lib/com.ibm.mqjms.jar:`
	`/opt/mqm/java/lib/connector.jar:`
	`/opt/mqm/java/lib/jms.jar:`
	`/opt/mqm/java/lib/jndi.jar:`
	`/opt/mqm/java/lib/jta.jar:`
	`/opt/mqm/java`

MQ_JAVA_INSTALL_PATH	`/opt/mqm/java`
MQ_JAVA_DATA_PATH	`/var/mqm`
SHLIB_PATH	`/opt/mqm/java/lib`
PATH (for JRE settings)	`$PATH:/opt/java1.3/bin`

Using the JMS Postcard application to verify a local installation

Note: A queue manager that can be used as a mailbox must be already set up. This queue manager can be either the default queue manager, which is set up automatically when you run the Default Configuration wizard, or another queue manager that you have set up yourself.

To verify that the local installation is working, you can use the **JMS Postcard** application. This application allows you to create two postcards on the same machine and send messages between them, verifying that WebSphere MQ messaging is working correctly on the machine, and that WebSphere MQ Java Messaging support is successfully installed.

Note: If you want the **JMS Postcard** application to use font and color settings different from the Java Virtual Machine defaults, change the Postcard.ini file. For more information see *WebSphere MQ Using Java*.

1. Change directory to `/opt/mqm/java/bin`
2. Run the Postcard shell script.

   If there are no queue managers on your machine, the **Incomplete Default Configuration** window is displayed. From here you can either run the Default Configuration wizard to create a queue manager to use with the **JMS Postcard** application, or you can close the application.
3. The **JMS Postcard - Sign On** window is displayed.

   Type in a nickname to use to send messages within the postcard application (for example, `user1`).

   If the only queue manager on your machine is the default queue manager that you created by running the Default Configuration wizard, this queue manager is used as your mailbox for postcards. Click **OK** to display your first postcard, then go to step 5.
4. Select the queue manager to use as the mailbox:

- 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 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 machine, 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.

5. Run the Postcard shell script again. This opens a second postcard window.
6. The **JMS Postcard - Sign On** panel is displayed again. Type in a second nickname to use to send messages within the Postcard application (for example, `user2`).
7. Repeat the selection of the queue manager that you want to use as the mailbox (as described earlier). The queue manager you select for this second postcard must either be in the same cluster as the queue manager for the first postcard, or communication links must have been set up between them.
8. You now have two postcards, one with the nickname `user1` and one with the nickname `user2`.
9. In one of the postcards (for example, `user1`), type some message text in the **Message:** field and the nickname of the other postcard (for example, `user2`) in the **To:** field.

   Note: Because the sender and receiver are on the same machine, you do not need to type anything in the **On:** field.

   If the receiver is on a different machine, and is using the default queue manager as the mailbox, you need to type the recipient's machine in the **On:** field.

   If the receiver is on a different machine, and is not using the default queue manager as the mailbox, you need to type the recipient's queue manager in the **On:** field.
10. 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. From the receiving postcard, double-click the message in the **Postcards sent and received** area to view it.

If you complete this procedure successfully, it verifies that WebSphere MQ is working correctly, and that the WebSphere MQ Java messaging support is successfully installed.

What next?

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

- Install WebSphere MQ on other machines. Follow the same installation procedure that you used for the first machine. Ensure that you use the Join Default Cluster window in the Default Configuration wizard to add the other machines to your first machine's cluster.
- Install the WebSphere MQ client on other machines. See the Chapter 5, "Installing the WebSphere MQ for HP-UX client" on page 29.
- Continue with further administration tasks. See the *WebSphere MQ System Administration Guide*.

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

You can use the **JMS Postcard** application to verify communication between your machine and the machine of another named user, where that machine uses TCP/IP. Therefore, you can use the Postcard applications to verify that you can communicate with another server. Before you start:

- Make sure that TCP/IP and WebSphere MQ are installed on both machines.
- Check that either of the following apply:
  - Both machines are in the same cluster (this is the simplest method)
  - You have configured channels to communicate between the two machines (see "Verifying a server-to-server installation" on page 20).

To verify that the communication between two machines, the *sender* of the message and the *receiver*, are working correctly, and that the WebSphere MQ Java messaging support is successfully installed, you can use the **JMS Postcard** application.

On the sender machine:

1. Change directory to `/opt/mqm/java/bin`
2. Run the Postcard shell script.

   If there are no queue managers on your machine, the **Incomplete Default Configuration** window is displayed. From here you can either run the Default Configuration wizard to create a queue manager to use with the **JMS Postcard** application, or you can close the application.
3. The **JMS Postcard - Sign On** window is displayed.

   Type in a nickname to use to send messages within the Postcard application (for example, `user1`).

   If the only queue manager on your machine is the default queue manager that you created by running the Default Configuration wizard, this queue manager is used as your mailbox for postcards. Click **OK** to display your postcard, then go to step 5.
4. Select the queue manager to use as the mailbox:
   - 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 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 machine, 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 postcard.

5. Type in the following:
   - Some message text in the **Message:** field.
   - The nickname of the recipient in the **To:** field.
   - If the receiver is using the default queue manager as the mailbox, the machine name of the recipient in the **On:** field. If the receiver is not using the default queue manager, type the queue manager name in the **On:** field.
6. Click **Send**.

On the receiver machine:

1. To receive the message, run the Postcard shell script.

   If there are no queue managers on your machine, the **Incomplete Default Configuration** window is displayed. From here you can either run the Default Configuration wizard to create a queue manager to use with the **JMS Postcard** application, or you can close the application.
2. Type in the nickname of the recipient, select the queue manager to use as the mailbox, then click **OK** to display the **JMS Postcard** window.
3. In the **Postcards sent and received** area of the postcard, details of the new message are displayed. The message is displayed as *received*.

   When this message arrives, this verifies that WebSphere MQ and the Java messaging support are correctly installed and that your communication link between the two machines is working correctly.

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

Chapter 5. Installing the WebSphere MQ for HP-UX client

There are two types of clients in WebSphere MQ for HP-UX, V5.3:

Standard client
This is the standard WebSphere MQ client. Use this client if you do **not** require Secure Sockets Layer (SSL) support. You install this client from Client CD-ROM 1.

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.

For more information about SSL, see the *WebSphere MQ Security* book.

This chapter tells you how to install each of the WebSphere MQ for HP-UX clients.

If you want to install the client on the same machine as a WebSphere MQ server, see "Installing the client on the same machine as a server" on page 31.

Chapter 6, "Verifying the client installation" on page 33 describes how to verify that your installation of the WebSphere MQ client is working.

If you want to install the WebSphere MQ server, see Chapter 3, "Installing the WebSphere MQ for HP-UX server" on page 11.

Installation procedure

This installation procedure uses the **swinstall** program, enabling you to choose which components you want to install. The components (or filesets) are listed in "WebSphere MQ components" on page 4; you must install at least the Runtime, Base, and Client components.

Before you start the installation procedure, make sure that you have prepared your system as described in "Preparing for installation" on page 7.

1. Log in as root.
2. Insert the WebSphere MQ Client CD-ROM 1 into the CD-ROM drive.
3. Mount the CD-ROM drive:
   a. Change directory to `/usr/sbin`
   b. Type `pfs_mountd &`
   c. Type `pfsd4 &`
   d. Type `pfs_mount –o xlat=unix /<path to CD-ROM device>/<localdir>`
4. Accept the license:
   a. Change directory to the location of the mounted CD-ROM (for example `/cdrom`).
   b. Run the `mqlicense` script by typing one of the following commands:
      - For the WebSphere MQ client without the WebSphere MQ SSL support:
        `./hpux11/MQClient/mqlicense.sh`
      - For the WebSphere MQ client with the WebSphere MQ SSL support:

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```
./hpux11/MQClientwithSSL/mqlicense.sh
```

The license is displayed. If you accept the license, you can continue the installation. If you decline, the message: **The license agreement has not been accepted...** is displayed, and the installation fails.

If you are performing a silent or remote install, you can run the installation with the `-accept` option, so that the license is accepted without being displayed.

5. Type one of the following commands to start the installation procedure:
   - For the WebSphere MQ client without the WebSphere MQ SSL support:
     ```
     swinstall -s /cdrom/<localdir>/hpux11/MQClient/mqs530.v11
     ```
   - For the WebSphere MQ client with the WebSphere MQ SSL support:
     ```
     swinstall -s /cdrom/<localdir>/hpux11/MQClientwithSSL/mqs530.v11
     ```

   If the files on your CD-ROM appear in uppercase with a `;1` suffix, use this name for the depot.
6. Select and highlight **MQSeries**.
7. To select the components of the WebSphere MQ Client that you want to install, do the following:
   - Select **Open item** from the Actions menu.
   - Highlight the components you require (use the `Ctrl` key for multiple selections) and select **Mark for install** from the Actions menu.

     The `gsk6bas` fileset for the IBM Global Security Kit is automatically selected.
   - Select **go up** and press Enter to return to the product list. WebSphere MQ is marked as **Partial** if you do not select all the components.
8. Select **Install (analysis)** from the Actions menu. The error log tells you if there are any problems that need fixing.
9. Click **OK** to install WebSphere MQ when you have fixed any problems. The system informs you when the installation is complete. Details of the installation process are found in the Logfile.

Non-interactive installation

If you do not want to select which components to install, use the following command to install the WebSphere MQ Client in a non-interactive way:

```
swinstall -s src_dir MQSERIES
```

where *src_dir* is the source directory for the installation files. If you do this, *all* components of the WebSphere MQ client are installed (including message catalogs for all available languages).

Migrating to and from the WebSphere MQ SSL support

To upgrade a WebSphere MQ client without the SSL support to one with the SSL support, install the two additional file sets, gsk6bas and MQSERIES.MQM-KEYMAN, from the directory on WebSphere MQ Client CD-ROM 1 that contains the set of client components with the WebSphere MQ SSL support. To downgrade a WebSphere MQ client with the SSL support to one without the SSL support, simply remove these two file sets.

Migrating from an earlier version

If you want to migrate an MQSeries for HP-UX client to WebSphere MQ for HP-UX, V5.3 on its own, you must first apply PTF U473486.

If you want to use the migrated client in a DCE operating environment, you must also apply PTF U473489, after you have successfully applied PTF U474386.

Installing the client on the same machine as a server

To install a WebSphere MQ for HP-UX 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 "Installation procedure" on page 12. Do not use the WebSphere MQ Clients CD-ROM.

You might install components from the WebSphere MQ Clients CD-ROM onto a machine, and subsequently want to install the WebSphere MQ Server component on the same machine. If so, first remove from the machine any components that you installed from the WebSphere MQ Clients CD-ROM. Then use the WebSphere MQ Server CD-ROM to install the server, client, and any other components that you need.

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 Chapter 6, "Verifying the client installation" on page 33.

Chapter 6. Verifying the client installation

This chapter describes how to verify that you have correctly installed and configured the WebSphere MQ for HP-UX client. To do this you use a client/server installation that includes communication links between a WebSphere MQ server machine and the WebSphere MQ client.

Verifying the installation

To verify your WebSphere MQ client installation, you need a workstation set up as a WebSphere MQ server, in addition to your client workstation. You can then use sample programs (which must be installed on the client) to test communications between the client and server.

The verification procedure assumes that:

- TCP/IP is configured and initialized on both the server and the client machines.
- The WebSphere MQ server product is installed on a 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

From a shell window, use these steps to set up the server workstation:

1. Create a default queue manager called `saturn.queue.manager` by entering 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.
2. To start the queue manager, type: `strmqm`

   A message tells you when the queue manager has started.
3. Enable MQSC commands by typing: `runmqsc`

   A message tells you that an MQSC session has started. MQSC has no command prompt.
4. Define a local queue called `QUEUE1` by entering the following command:

   ```
   define qlocal(queue1)
   ```

   A message tells you when the queue has been created.
5. Define a server-connection channel by entering the following command on one line:

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

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A message tells you when the channel has been created.

6. Stop MQSC by typing: `end`

   Some messages are displayed, and the command prompt is displayed again.

7. Start a WebSphere MQ listener as a background task by entering the following command:

   ```
   runmqlsr -t tcp &
   ```

   You can use the `-p` parameter to specify the number of a port that the listener should listen on. If you do not specify it, the default of `1414` is used. The port number must be the same as the one that you specify when setting up the client.

You have now defined the following objects on the server:

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

Setting up the client workstation

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.

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-address
```

or

```
ping n.n.n.n
```

where:

server-address
: Is the TCP/IP host name of the server

n.n.n.n
: Is the network address of the server

Press `Ctrl-C` to stop the **ping** command.

To create a client-connection channel, set the `MQSERVER` environment variable as follows:

```
export MQSERVER=CHANNEL1/TCP/'server-address(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 TCP/IP port number that the server is listening on. 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 and server listener program must use the same port number.

Testing communication between the workstations

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

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

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

   This displays the following messages:

   ```
   Sample amqsput0 start
   target queue is QUEUE1
   ```
3. Type some message text on one or more lines, followed by a blank line. This displays 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 at 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.

Chapter 7. WebSphere MQ documentation

This chapter describes the documentation for WebSphere MQ for HP-UX. It starts with a list of the publications, including their PDF filenames, and then discusses:

- "Hardcopy books"
- "Online information" on page 38
- "SupportPacs" on page 39
- "WebSphere MQ newsgroups" on page 39

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 4. WebSphere MQ family books

PDF file name	Order Number	Title
CSQZAE07	SC34-6059	*WebSphere MQ Intercommunication*
CSQZAH05	SC34-6061	*WebSphere MQ Queue Manager Clusters*
CSQZAF07	GC34-6058	*WebSphere MQ Clients*
AMQZAG03	SC34-6068	*WebSphere MQ System Administration Guide*
CSQZAJ07	SC34-6055	*WebSphere MQ Script (MQSC) Command Reference*
CSQZAX03	SC34-6069	*WebSphere MQ Event Monitoring*
CSQZAI01	SC34-6060	*WebSphere MQ Programmable Command Formats and Administration Interface*
AMQZAO04	GC34-6057	*WebSphere MQ Messages*
CSQZAL07	SC34-6064	*WebSphere MQ Application Programming Guide*
CSQZAK07	SC34-6062	*WebSphere MQ Application Programming Reference*
AMQZAN07	SC34-6067	*WebSphere MQ Using C++*
CSQZAW11	SC34-6066	*WebSphere MQ Using Java*
AMTYAK08	SC34-6065	*WebSphere MQ Application Messaging Interface*
CSQZAS01	SC34-6079	*WebSphere MQ Security*
CSQZAY01	SC34-6113	*WebSphere MQ Bibliography and Glossary*

Hardcopy books

This book, and all the books listed in Table 4 , 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).**

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Hardcopy books

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

For information about printing books, see "PDF".

Online information

This section describes:
- "Publications supplied with the product"
- "HTML and PDF books on the World Wide Web" on page 39
- "Online help" on page 39

Publications supplied with the product

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

The WebSphere MQ online documentation is delivered in HTML, Microsoft® Compiled HTML Help (.CHM), and PDF formats on CD-ROM.

HTML

You can view the WebSphere MQ online documentation in HTML format directly from the documentation CD-ROM. All books are available in U.S. English and also in some or all of the following national languages:
- Brazilian Portuguese
- French
- German
- Italian
- Japanese
- Korean
- Spanish
- Simplified Chinese
- Traditional Chinese

When you read the books in HTML, you can follow hypertext links from one book to another. If you are reading translated books and link to a book that is not available in your national language, the U.S. English version of the book is opened instead.

PDF

A PDF (Portable Document Format), corresponding to each hardcopy book, is available on the documentation CD-ROM. You can read PDFs using Adobe Acrobat Reader. Also, 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 *en_US* directory, and also in some or all of the following national languages. To find out which ones are available in your language, look for the appropriate directory on the CD-ROM. The PDFs are in a subdirectory called *ll_LL*, where *ll_LL* is one of the following:
- de_DE (German)
- es_ES (Spanish)
- fr_FR (French)
- it_IT (Italian)
- ja_JP (Japanese)
- ko_KR (Korean)

- pt_BR (Brazilian Portuguese)
- zh_CN (Simplified Chinese)
- zh_TW (Traditional Chinese)

Within these directories, you can find the complete set of PDFs that are available. Table 4 on page 37 shows the file names used for the PDF files.

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/mqseries
```

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/mqseries/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/mqseries/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/mqseries/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 MQSeries products. This can be found at:

```
http://www.ibm.com/software/mqseries/support/summary
```

Online information

Chapter 8. Applying maintenance to WebSphere MQ for HP-UX

This chapter tells you how to apply maintenance to WebSphere MQ for HP-UX. A maintenance update in the form of a Program Temporary Fix (PTF), also known as a CSD (Corrective Service Diskette), is supplied on CD-ROM.

PTFs can also be downloaded from:

```
http://www.ibm.com/software/mqseries
```

You must stop all WebSphere MQ activity, before installation of maintenance on WebSphere MQ for HP-UX, by carrying out the following procedure:

1. Log in as root.
2. Use the **endmqm** command to stop all running queue managers.
3. Stop any listeners associated with the queue managers, using this command:

   ```
   endmqlsr -m QMgrName
   ```
4. 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`.

Installing a PTF

A PTF requires hard disk space for installation. In addition, the installation process requires an identical amount of disk space to save the previous level. For example, a 16 MB PTF requires 32 MB of space. This allows a PTF to be removed, and the previous level to be restored automatically.

If disk space is limited, the backup can be suppressed by creating an empty flag file called MQPTF_NOSAVE in the directory `/var/adm/sw/patch`. If this option is used, the previous level is not restored if a PTF is removed. To restore a previous level in this instance, you must reinstall the product and reapply a previous PTF image.

To apply the PTF:

1. Log in as root.
2. Use the **swinstall** command to install the patch from the supplied medium. Details of the **swinstall** command can be found in the *HP-UX Administration Guide* or by using the **man swinstall** command.
3. If you have installed an WebSphere MQ client from your WebSphere MQ for HP-UX installation, and if one or more of these client components has been modified by installing an update, then you *must* specifically update your WebSphere MQ client installation.

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Restoring the previous service level

To restore the previous service level:

1. Log in as root.
2. Use the **swremove** command to remove the patch from the system.

   For example, to remove patch `U443859` issue the following command:

   ```
   swremove MQSERIES.U443859
   ```

   Details of the **swremove** command can be found in the *HP-UX Administration Guide* or by using the **man swremove** command.
3. If you have installed a WebSphere MQ client, and the client was updated after installing the PTF that is being removed, you *must* specifically update your WebSphere MQ client installation again, after the PTF has been removed.

Chapter 9. Uninstalling WebSphere MQ for HP-UX

This chapter tells you how to remove WebSphere MQ for HP-UX from your system.

Before starting to uninstall, end all WebSphere MQ activity.

1. Log in as root.
2. Use the **dspmq** command to display the state of all the queue managers on the system.
3. Use the **endmqm** command to stop all running queue managers.
4. Stop any listeners associated with the queue managers, using the command:

   ```
   endmqlsr -m QMgrName
   ```

5. 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`.

Uninstallation procedure

To uninstall WebSphere MQ (server or client), use the HP-UX **swremove** program.

1. Log in as root.
2. Enter `swremove MQSERIES` to uninstall the MQSERIES package.

If you have installed the MQSERIES-DCE package, you need to uninstall it first, because it depends on the MQSERIES package.

1. Log in as root.
2. Enter `swremove MQSERIES-DCE` to uninstall the MQSERIES-DCE package.
3. Enter `swremove MQSERIES` to uninstall the MQSERIES package.

After uninstalling WebSphere MQ, delete the `/var/mqm` directory tree (unless you are migrating to a later version of WebSphere MQ).

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Chapter 10. Code sets supported on WebSphere MQ for HP-UX

WebSphere MQ uses CCSIDs in its message headers. One CCSID identifies which code set is used in the header, and a second identifies the code set used for the user message data.

The CCSID is obtained by analyzing the locale code set on HP-UX Version 11. Where available, select the locales using ISO8859 code sets. WebSphere MQ does not support the locales using the following code sets:

greek8
turkish8
hebrew8
arabic8
thai8

> **Note**
> Locales using the default **roman8** code set (CCSID=1051) are supported, but there might be very limited support for this code set on other platforms, which means that sending data to them using these locales is not possible.
>
> You are recommended to use the ISO8859-1 code set (CCSID = 819) when communicating with iSeries servers and other platforms.

WebSphere MQ for HP-UX supports most of the code sets used by the locales that are provided as standard on HP-UX Version 11.

Note: If you need to translate to or from codepages associated with Chinese, Japanese, or Korean locales on HP-UX V11.00, you need to install the Asian System Enviroment (ASE).

Table 5 shows the HP-UX Version 11 locales and CCSIDs that are registered for the code set used by the locale.

Note: The locales shown in italics are **not** supported.

Table 5. Locales and CCSIDs for HP-UX

Locale	code set	CCSID	Locale	code set	CCSID
ar_DZ.arabic8	*arabic8*	*None*	it_IT.iso88591	iso88591	819
ar_SA.arabic8	*arabic8*	*None*	it_IT.roman8	roman8	1051
ar_SA.iso88596	iso88596	1089	*iw_IL.hebrew8*	*hebrew8*	*None*
bg_BG.iso88595	iso88595	915	iw_IL.iso88598	iso88598	916
C	roman8	1051	ja_JP.eucJP	eucJP	954
C.iso88591	iso88591	819	ja_JP.kana8	kana8	897
cs_CZ.iso88592	iso88592	912	ja_JP.SJIS	SJIS	932
da_DK.iso88591	iso88591	819	ko_KR.eucKR	eucKR	970
da_DK.roman8	roman8	1051	nl_NL.iso88591	iso88591	819

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Supported code sets

Table 5. Locales and CCSIDs for HP-UX (continued)

Locale	code set	CCSID	Locale	code set	CCSID
de_DE.iso88591	iso88591	819	nl_NL.roman8	roman8	1051
de_DE.roman8	roman8	1051	no_NO iso88591	iso88591	819
el_GR.greek8	*greek8*	*None*	no_NO.roman8	roman8	1051
el_GR.iso88597	iso88597	813	pl_PL.iso88592	iso88592	912
en_GB.iso88591	iso88591	819	POSIX	roman8	1051
en_GB.roman8	roman8	1051	is_IS.roman8	roman8	1051
en_US.iso88591	iso88591	819	pt_PT.iso88591	iso88591	819
en_US.roman8	roman8	1051	pt_PT.roman8	roman8	1051
es_ES.iso88591	iso88591	819	ro_RO.iso88592	iso88592	912
es_ES.roman8	roman8	1051	ru_RU.iso88595	iso88595	915
fi_FI.iso88591	iso88591	819	sk_SK.iso88592	iso88592	912
fi_FI.roman8	roman8	1051	sl_SI.iso88592	iso88592	912
fr_CA.iso88591	iso88591	819	sv_SE.iso88591	iso88591	819
fr_CA.roman8	roman8	1051	sv_SE.roman8	roman8	1051
fr_FR.iso88591	iso88591	819	th_TH.tis620	tis620	874
fr_FR.roman8	roman8	1051	tr_TR.iso88599	iso88599	920
hr_HR.iso88592	iso88592	912	*tr_TR.turkish8*	*turkish8*	*None*
hu_HU.iso88592	iso88592	912	zh_CN.hp15CN	hp15CN	1381
is_IS.iso88591	iso88591	819	zh_TW.big5	big5	950
zh_TW.ccdc	ccdc	938	zh_TW.eucTW	eucTW	964

For further information listing inter-platform support for these locales, see the *WebSphere MQ Application Programming Reference*.

Migration to euro support

To use the *euro* character with WebSphere MQ, first install any operating system updates necessary to display the euro character.

Now modify your WebSphere MQ system:

- Edit the existing CCSID.TBL file, in `/var/mqm/conv/table/`, to enable the new euro version of the coded character set identifier (CCSID). To do this, remove the first # symbol from the required line of the **CCSID Mapping** section of the CCSID.TBL file. When you have done this, all new queue managers you create will adopt the new euro CCSID.

  Note: If you want to create a new queue manager with a CCSID that supports the euro character, select a euro-supporting locale. For more information refer to the WebSphere MQ Web site at:

  `http://www.ibm.com/software/mqseries`

- To modify any existing queue managers that do not support the euro character, follow this procedure:
  1. Enable MQSC commands by typing: `runmqsc`
  2. To record the existing queue manager CCSID, enter the following:

```
display qmgr ccsid
```

3. To change the CCSID to the euro support CCSID, enter the following:

   ```
   alter qmgr ccsid (no. of ccsid)
   ```

4. Stop the MQSC commands by typing: `end`
5. Stop the queue manager.
6. Restart the queue manager and any channels that it uses by typing: `strmqm`

Now any new message issued using the queue manager CCSID uses the new euro CCSID. All messages now received using MQGET with conversion and requesting the queue manager CCSID to be used, are converted into the euro CCSID. CCSIDs and object text (for example descriptions, definitions, and exit names) from existing messages are not changed.

Now modify your applications to support the euro character. If these use hard coded CCSIDs, ensure that they now use the new euro CCSID.

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