

Directory structure

- Path to queue manager directory
 - Prefix
 - UNIX: /var/mqm/
 - Windows: \Program Files\IBM\WebSphere MQ\
 - Literal
 - qmgrs
 - Queue manager name
 - Transformed name if not a valid file system name
- Name of a queue or a process object
 - No simple transformation to a file system name
 - Use the control command **dspmqfls** to determine the mapping

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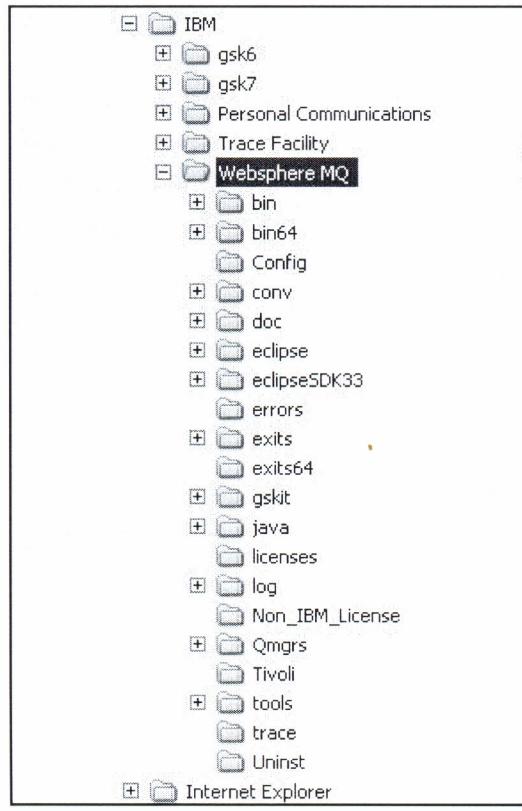
Figure 7-19. Directory structure

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Notes:

- There is no simple relationship between the name of a queue or a process object and a name in the file system. You can use the control command **dspmqfls** to determine the mapping between the name of a WebSphere MQ object and a name in the file system.
- WebSphere MQ for HP NonStop Server does not use this directory structure. A full description of the contents of the queue manager subvolumes for WebSphere MQ for HP NonStop Server can be found in *WebSphere MQ for HP NonStop Server System Administration*.

Directory structure for Windows



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Figure 7-20. Directory structure for Windows

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Notes:

Shows the directories found under the root `c:\Program Files\IBM\WebSphere MQ\`. If you are using 64-bit Windows, the root directory is `c:\Program Files\IBM\WebSphere MQ (x86)\`. If you have installed WebSphere MQ for Windows under a different directory, the root is modified appropriately.

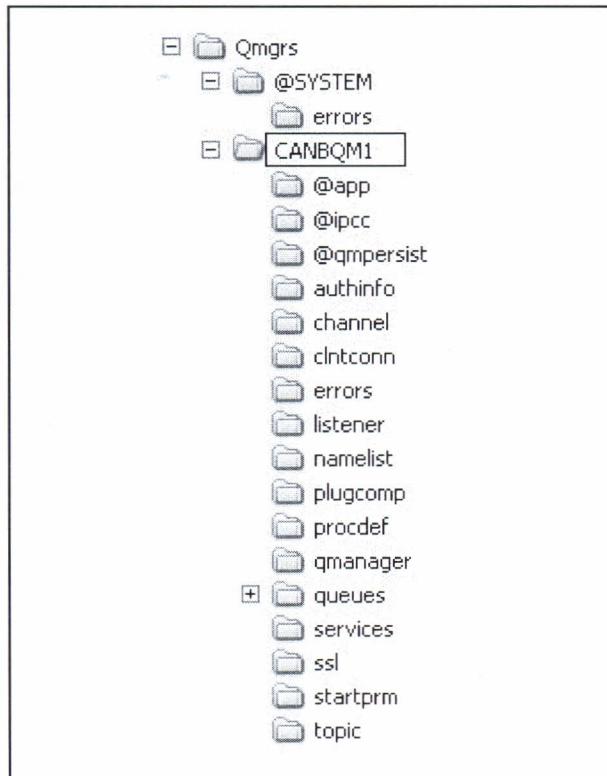
- `\bin` contains binary files (commands and DDLs).
- `\bin64` contains binary files (commands and DDLs 64-bit only).
- `\config` contains configuration information.
- `\conv` contains files for data conversion in folder `\table`.
- `\doc` contains files for TBD.
- `\errors` contains the system error log files:
 - `AMQERR01.LOG`
 - `AMQERR02.LOG`

- AMQERR03.LOG

These files contain information-related errors that are not associated with a particular queue manager. AMQERR01.LOG contains the most recent error information. This folder also holds any FFST files that are produced.

- \exits contains channel exit programs.
- \exits64 contains channel exit programs (64 bit only).
- \gskit contains GSKit files.
- \java contains Java files.
- \licenses contains a folder for each national language. Each folder contains license information.
- \log contains a folder for each queue manager. The following subdirectories and files will exist for each queue manager after you have been using that queue manager for some time.
 - AMQHLCTL.LFH - Log control file.
 - Active - This directory contains the log files numbered S0000000.LOG, S0000001.LOG, S00000002.LOG, and so on.
- \Non_IBM_License contains non-IBM license files.
- \Qmgrs contains a folder for each queue manager; the contents of these folders are described in the next slide. Also contains the folder \@SYSTEM\errors,
- \tivoli contains the signature file used by Tivoli.
- \tools contains all the WebSphere MQ sample programs. The sample programs are described in *WebSphere MQ for Windows Quick Beginnings*.
- \trace contains all trace files.
- \Uninst contains files necessary to uninstall WebSphere MQ.

Directory structure of QMGR on Windows



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Figure 7-21. Directory structure of QMGR on Windows

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Notes:

This screen shows the directory structure for each queue manager in the `c:\Program Files\IBM\WebSphere MQ\qmgrs\` folder. In this example, there is 1 queue manager called CANBQM1.

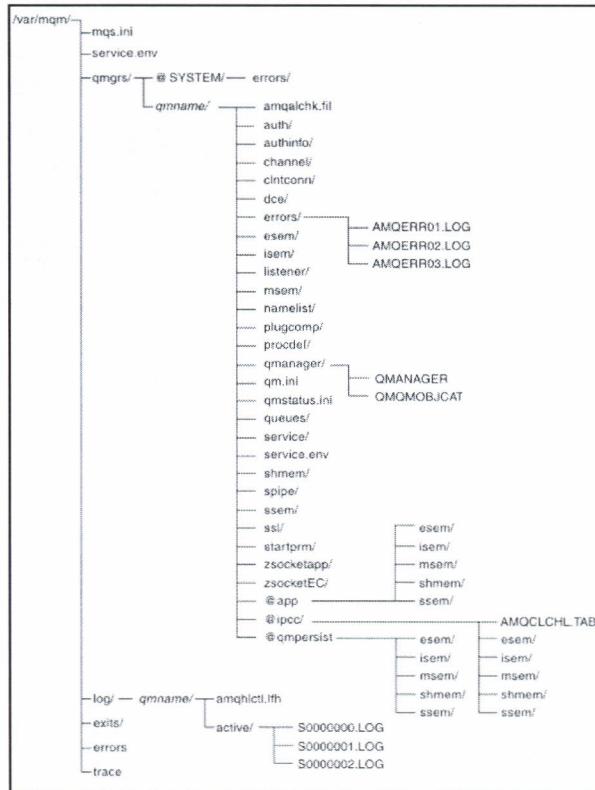
- **amqalchk.fil** contains a checkpoint file containing information about the last checkpoint.
- **AMQRSYNA.DAT** contains a file.
- **\authinfo** contains a file for each authentication information object.
- **\channel** contains a file for each channel object.
- **\clntconn** contains a file for each client connection channel object.
- **\errors** contains error log files associated with the queue manager:
 - AMQERR01.LOG
 - AMQERR02.LOG

- AMQERR03.LOG
 - AMQERR01.LOG contains the most recent error information.
 - **listener** Contains a file for each listener object.
 - \bennamelist Contains a file for each WebSphere MQ namelist.
 - \bennPlugcomp Directory reserved for use by WebSphere MQ installable services.
 - \bennProcdef Contains a file for each WebSphere MQ process definition. Where possible, the file name matches the associated process definition name, but some characters have to be altered. There might be a directory called @MANGLED here containing process definitions with transformed or mangled names.
 - \bennQmanager Contains the following files:
 - Qmanager - The queue manager object.
 - QMQMOBJCAT - The object catalogue containing the list of all WebSphere MQ objects, used internally.
- Note:** If you are using a FAT system, this name is transformed and a subdirectory created containing the file with its name transformed.
- QAADMIN - File used internally for controlling authorizations.
 - \bennQueues has a directory here containing a single file called Q. Where possible, the directory name matches the associated queue name but some characters have to be altered. There might be a directory called @MANGLED here containing queues with transformed or mangled names.
 - \bennservices contains a file for each service object.
 - \bennssl contains SSL certificate stores.
 - \bennStartprm contains temporary files used internally.
 - \benntopics contains a file for each named topic.

Directory structure for UNIX (1 of 3)

Note:

This directory structure is expanded on the next page for clarity.



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Figure 7-22. Directory structure for UNIX (1 of 3)

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Notes:

By default, the following directories and files are located in the directory `/var/mqm/qmgrs/qmname/` (where `qmname` is the name of the queue manager):

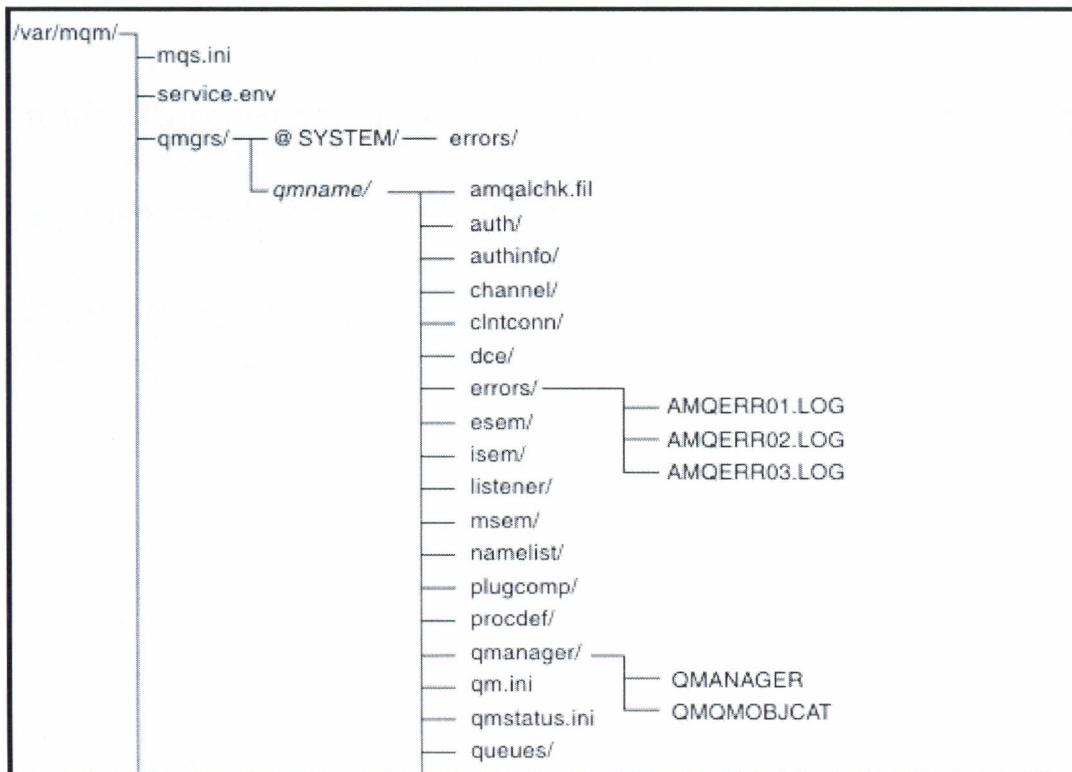
- **amqalchk.fil** - Checkpoint file containing information about the last checkpoint.
- **auth/** - Contained subdirectories and files associated with authority in WebSphere MQ before Version 6.0.
- **authinfo/** - Each WebSphere MQ authentication information definition is associated with a file in this directory.
- **channel/** - Each WebSphere MQ channel definition is associated with a file in this directory.
- **cintconn/** - Each WebSphere MQ client connection channel definition is associated with a file in this directory.
- **dce/** - Used for DCE support before WebSphere MQ Version 6.0.

- **errors/** - Directory containing FFSTs, client application errors, and operator message files from newest to oldest. The files are held in either: AMQERR01.LOG, AMQERR02.LOG, or AMQERR03.LOG
- **esem/** - Directory containing files used internally.
- **isem/** - Directory containing files used internally.
- **listener/** - Each WebSphere MQ listener definition is associated with a file in this directory.
- **namelist/** - Each WebSphere MQ namelist definition is associated with a file in this directory.
- **plugcomp/** - Empty directory reserved for use by installable services.
- **procdef/** - Each WebSphere MQ process definition is associated with a file in this directory.
- **qmanager/**
 - QMANAGER - The queue manager object.
 - QMQMOBJCAT - The object catalog containing the list of all WebSphere MQ objects; used internally.
- **qm.ini** - Queue manager configuration file.
- **queues/-** Each queue has a directory in here containing a single file called `+q`.
- **services/** - Each WebSphere MQ service definition is associated with a file in this directory.
- **shmem/** - Directory containing files used internally.
- **spipe/** - Used internally by channel processes.
- **ssem/** - Directory containing files used internally.
- **ssl/-** Directory for SSL key database files.
- **startprm/** - Directory containing temporary files used internally.
- **zsocketapp/** - Used internally for isolated bindings.
- **zsocketEC/** - Used internally for isolated bindings.
- **@ipcc/**
 - AMQCLCHL.TAB - Client channel table file.

The following subdirectories and files exist after you have installed WebSphere MQ, created and started a queue manager, and have been using that queue manager for some time.

- **amqlctl.lfh** - Log control file.
- **active/** - This directory contains the log files numbered S0000000.LOG, S0000001.LOG, S0000002.LOG, and so on.

Directory structure for UNIX (2 of 3)



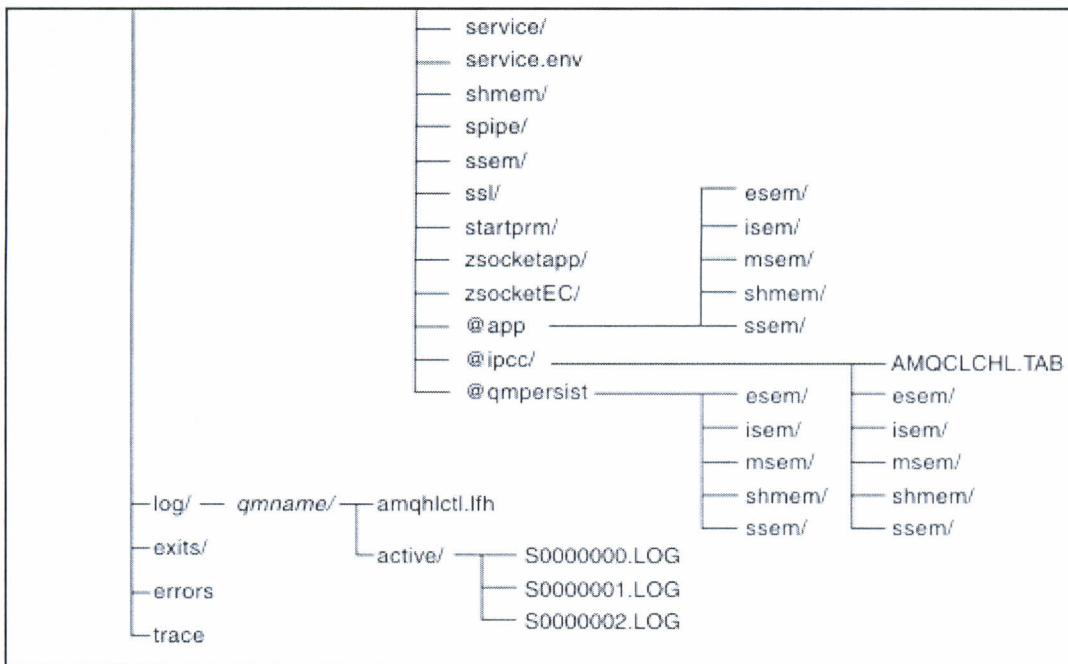
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Figure 7-23. Directory structure for UNIX (2 of 3)

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Notes:

Directory structure for UNIX (3 of 3)



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Figure 7-24. Directory structure for UNIX (3 of 3)

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Notes:

Directory structures topic summary

Having completed this topic, you should be able to:

- Recognize the directory structure of files in the Windows and UNIX file systems

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Figure 7-25. Directory structures topic summary

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Notes:

Configuration (.ini) files

- Purpose
 - To define values for individual queue managers and for WebSphere MQ as a whole
 - To tailor a specific queue manager
- Mechanism
 - Configuration files containing human readable information
- Creation
 - During installation and queue manager creation
- Modification
 - By commands
 - For specific purposes, by editing
- Recommendation
 - Back up after significant changes

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Figure 7-27. Configuration (.ini) files

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Notes:

- The WebSphere MQ configuration file is used to find a queue manager, to specify system-wide default values, and to identify the default queue manager on a system. It is created during the installation of WebSphere MQ.
- A queue manager configuration file specifies values used by an individual queue manager. It is created when the queue manager is created.
- WebSphere MQ for Windows is different from the other V7 queue managers. The configuration information is in the Windows Registry but changes are made to that information through the WebSphere MQ Explorer or by using the **amqmdain** command.
- More information about the contents of the configuration files can be found in the following publications.
 - *WebSphere MQ System Administration Guide* for a Version 7 queue manager.
 - The appropriate System Management Guide for each of the remaining queue managers.
 - *WebSphere MQ Intercommunication*.

WebSphere MQ configuration file - mqs.ini

- Created when WebSphere MQ is installed
- Default location
 - HP NonStop Server: \$SYSTEM.ZMQSSYS.MQSINI
 - UNIX: /var/mqm
- Content
 - Path to files associated with each queue manager
 - Default log parameters (not on HP NonStop Server)
 - Stanza for each queue manager
 - Name of the default queue manager
- WebSphere MQ for Windows stores similar information in Windows registry
 - Use MQ Explorer or `amqmdain` to edit

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Figure 7-28. WebSphere MQ configuration file - mqs.ini

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Notes:

The WebSphere MQ configuration file is created when WebSphere MQ is installed. It has the name `mqs.ini` on all non-Windows platforms except on HP NonStop Server where its name is `MQSINI`.

WebSphere MQ configuration file example

```
#####
#* Module Name: mqs.ini *#
#* Type : WebSphere MQ Configuration File *#
#* Function : Define WebSphere MQ resources for the node *#
#####
AllQueueManagers:
#####
#* The path to the qmgrs directory, below which queue manager data *#
#* is stored *#
#####
DefaultPrefix=/var/mqm
LogDefaults:
LogPrimaryFiles=3
LogSecondaryFiles=2
LogFilePages=1024
LogType=CIRCULAR
LogBufferPages=0
LogDefaultPath=/var/mqm/log
QueueManager:
Name=saturn.queue.manager
Prefix=/var/mqm
Directory=saturn!queue!manager
QueueManager:
Name=pluto.queue.manager
Prefix=/var/mqm
Directory=pluto!queue!manager
DefaultQueueManager:
Name=saturn.queue.manager
|
```

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Figure 7-29. WebSphere MQ configuration file example

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Notes:

AllQueueManagers specifies the path to the `qmgrs` directory, effectively indicating where the files associated with any newly created queue manager are located.

LogDefaults are the default log parameters for the system. They can be overridden by parameters on the `crtmqm` command. Each queue manager configuration file contains a similar stanza specifying the values actually in effect for that queue manager.

DefaultQueueManager specifies the name of the default queue manager.

QueueManager appears for each queue manager. It specifies the name of the queue manager and the location of the files associated with the queue manager.

The path to the files is formed from the value of **Prefix**, the literal `qmgrs`, and the value of **Directory**.

Queue manager configuration file – qm.ini

- Created in queue manager directory when the queue manager is created
- Content
 - Queue manager log configuration (not on HP NonStop server)
 - Details of installable service components
 - Values relating to the operation of channels
 - Communications protocol configuration parameters
 - XA resource manager information
- WebSphere MQ for Windows contains similar information in Windows registry
 - Use MQ Explorer or amqmdain to edit

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Figure 7-30. Queue manager configuration file – qm.ini

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Notes:

The **Service** and **ServiceComponent** stanzas indicate that the queue manager has an authorization service component installed and provide certain details about it.

Log specifies the log configuration for the queue manager.

A queue manager configuration file might also contain the following stanzas:

- **Channels** specify values relating to the operation of channels such as the maximum number of channels that can be active at any one time.
- **LU62, NETBIOS, TCP, SPX** contain configuration parameters relating to their respective communications protocols.
- **XAResourceManager** identifies an XA-compliant resource manager, such as a data base manager, for which the queue manager can act as a sync point coordinator. On WebSphere MQ for HP NonStop Server, the queue manager configuration file is called QMINI and is located in the queue manager data files subvolume. Refer to *WebSphere MQ for HP NonStop Server System Administration* for full details on the configuration file.

Queue manager configuration file example

```
#####
#* Module Name: qm.ini *
#* Type : WebSphere MQ queue manager configuration file *
# Function : Define the configuration of a single queue manager *
#####
ExitPath:
ExitsDefaultPath=/var/mqm/exits
Service:
Name=AuthorizationService
EntryPoints=9
ServiceComponent:
Service=AuthorizationService
Name=MQ.UNIX.auth.service
Module=/opt/mqm/bin/amqzfuno.o 1
ComponentDataSize=0
Log:
LogPrimaryFiles=3
LogSecondaryFiles=2
LogFilePages=1024
LogType=CIRCULAR
LogBufferPages=0
LogPath=/var/mqm/log/saturn!queue!manager/
XA ResourceManager:
Name=DB2 Resource Manager Bank
SwitchFile=/usr/bin/db2swit
XAOpenString=MQBankDB
XACloseString=
ThreadOfControl=THREAD
CHANNELS:
MaxChannels = 200 ; Maximum number of Channels allowed.
MaxActiveChannels = 100 ; Maximum number of Channels allowed to be active at any time.
TCP: ; TCP/IP entries.
KeepAlive = Yes ; Switch KeepAlive on
```

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Figure 7-31. Queue manager configuration file example

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Notes:

WebSphere MQ configuration file, qm.ini, contains information relevant to all the specific queue managers. There is one queue manager configuration file for each queue manager. The qm.ini file is automatically created when the queue manager with which it is associated is created.

A qm.ini file is held in the root of the directory tree occupied by the queue manager. For example, the path and the name for a configuration file for a queue manager called QMNAME is:

/var/mqm/qmgrs/QMNAME/qm.ini

The queue manager name can be up to 48 characters in length. However, a queue manager name of 48 characters does not guarantee that the name is valid or unique. Therefore, a directory name is generated based on the queue manager name. This process is known as name transformation.

Configuration files topic summary

Having completed this topic, you should be able to:

- Understand the role of the configuration file
- Describe the difference between the configuration files on a Windows system and UNIX systems

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Figure 7-32. Configuration files topic summary

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Notes:

Stopping and removing a QMGR manually topic objectives

After completing this topic, you should be able to:

- Identify the steps required to stop a QMGR
- Describe the process to remove a QMGR manually

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Figure 7-33. Stopping and removing a QMGR manually topic objectives

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Notes:

Stopping a queue manager manually

- Normally use **endmqm**
 - May take time
 - Give it a chance

- Only if no other option, find and stop the processes that are still running
 - On UNIX, enter the following command to locate all processes


```
ps -ef | grep amq
```
 - On Windows, use Windows Task Manager

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Figure 7-34. Stopping a queue manager manually

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Notes:

If you ever need to stop a queue manager manually as a last resort, stop any residual processes in the following order. The names of the programs depicted are typical of a UNIX implementation.

- **amqzmuc0** - Critical process manager
- **amqzxma0** - Execution controller
- **amqfuma** - OAM process
- **amqzlaa0** LQM agents
- **amqzlsa0** - LQM agents
- **amqzmur0** - Restartable process manager
- **amqzmgr0** - Process controller
- **amqrmpaa** - Process pooling process
- **amqrrmfa** - The repository process (for clusters)

- **amqzdmaa** - Deferred message processor
- **amqpcsea** - The command server

On WebSphere MQ for Windows any residual shared memory processes, programs AMQXSSV2.EXE and AMQXSSVN.EXE, should be stopped after the execution controller has been stopped.

On WebSphere MQ for HP NonStop Server, the procedure is slightly different because of the different internal process structure of the queue manager. Details can be found in *MQSeries for Compaq NonStop Kernel System Administration*.

On WebSphere MQ for Windows, if there is a residual trace process, executable file AMQZTRCN.EXE, it should be stopped after the local queue manager agents have been stopped and before attempting to stop the execution controller.

Stopping a queue manager in WebSphere MQ for Windows

- AMQZMUC0** - Critical process manager
- AMQZXMA0** - Execution controller
- AMQFUMA** - OAM process
- AMQZLAA0** - LQM agents
- AMQZLSA0** - LQM agents
- AMQZMUR0** - Restartable process manager
- AMQRMPA** - Process pooling process
- AMQRRMFA** - The repository process (for clusters)
- AMQZDMAA** - Deferred message processor
- AMQPCSEA** - The command server
- AMQXSSVN** - Shared memory servers
- AMQZTRCN** - Trace

After these processes have been stopped, the WebSphere MQ service from the **Services** on the Windows Control Panel should be stopped.

If you have tried all methods and the queue manager has not stopped, reboot your system

Removing a queue manager manually

- Normally: `dltmqm QMgrName`
- If there are problems:
 - Delete queue manager directory and its contents
 - Delete associated log directory and its contents
 - Remove queue manager's stanza from WebSphere MQ configuration file
 - Remove or change `DefaultQueueManager` stanza if required
- WebSphere MQ for Windows requires manual changes in Windows registry

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Figure 7-35. Removing a queue manager manually

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Notes:

If there are problems related to errors on a test system, follow the steps given.

- Find the queue manager directory from the WebSphere MQ configuration file.
- Find the queue manager log directory from the queue manager configuration file.
- Delete the queue manager directory, all subdirectories, and files.
- Delete the queue manager log directory, all subdirectories, and files
- Remove its stanza from the WebSphere MQ configuration file
- Remove or change the **DefaultQueueManager** stanza if the queue manager being deleted is the default queue manager.

The procedure is similar for all the queue managers, but there are minor differences. The full procedure for each queue manager is documented in *WebSphere MQ System Administration Guide*.

In a Windows system, Registry keys need to be located and deleted. See the *System Administration Guide* for more details.

Stopping and removing a QMGR manually topic summary

Having completed this topic, you should be able to:

- Identify the steps required to stop a QMGR
- Describe the process to remove a QMGR manually

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Figure 7-36. Stopping and removing a QMGR manually topic summary

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Notes:

Checkpoint questions

1. What is the first process to start when a queue manager is started?
2. True or false: The log manager and the checkpoint process share queue manager information using shared storage.
3. What is the file AMQRSYN.DAT used for?
4. What is the default queue manager directory in a UNIX system?
5. What is the command in Windows to edit the WebSphere MQ configuration information held in the Windows Registry?

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Figure 7-37. Checkpoint questions

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Notes:

Unit summary

Having completed this unit, you should be able to:

- Explain the WebSphere MQ architecture and framework at a high level
- Describe the components and processes that make up WebSphere MQ
- List the directory structure on Windows and UNIX platforms
- Identify configuration files and where to locate them on Windows and UNIX systems
- Describe how to remove a queue manager manually

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Figure 7-38. Unit summary

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Notes: