MQSeries® for Windows NT® and Windows® 2000

Quick Beginnings

Version 5.2.1

GC34-5389-02

Note!
Before using this information and the product it supports, be sure to read the general information under "Appendix F. Notices" on page 187.

Third edition (March 2001)

This edition applies to IBM® MQSeries for Windows NT and Windows® 2000, Version 5 Release 2.1 and to all subsequent releases and modifications until otherwise indicated in new editions.

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Welcome to MQSeries

This book introduces you to IBM MQSeries for Windows NT and Windows 2000, V5.2.1. It contains information about both the server and client features of MQSeries for Windows NT and Windows 2000 and describes how to plan for, install, and begin to use the product.

How this book is organized

Part 1 of this book contains the information that you need to know before you install MQSeries:

- "Chapter 1. Planning to install MQSeries" on page 3

  Provides information on hardware and software requirements for the MQSeries for Windows NT and Windows 2000 server, describes the features that can be installed, and summarizes the available installation methods.
- "Chapter 2. Planning to install the MQSeries for Windows NT and Windows 2000 client" on page 13

  Provides information on hardware and software requirements for the MQSeries for Windows NT and Windows 2000 client, describes the features that can be installed, and summarizes the available installation methods.

Part 2 of this book contains information about the various methods of installing MQSeries for Windows NT and Windows 2000, and also about the things that you need to do to ensure that MQSeries is working correctly. It also provides information on applying maintenance and removing MQSeries:

- "Chapter 3. Installing MQSeries" on page 19

  Describes how to install MQSeries interactively (both server and client). It provides both a brief outline of how to install the product, and also a more detailed step-by-step walkthrough of the whole installation process.
- "Chapter 4. Other methods of installing" on page 49

  Describes other ways in which you can install MQSeries, including unattended installation, installing across a LAN, and also how to install using the Microsoft® System Management Server.
- "Chapter 5. Verifying the installation" on page 71

  Describes how to verify that the installation is successful. Information is provided on verifying both a local and a server-to-server installation.
- "Chapter 6. Setting up communications" on page 83

  Explains how to set up communication between multiple MQSeries installations.

- "Chapter 7. Verifying a client installation" on page 87

  Explains how to verify that the MQSeries for Windows NT and Windows 2000 client is installed successfully.
- "Chapter 8. Applying maintenance" on page 93

  Explains how to apply maintenance information and restore previous backup versions of the product.
- "Chapter 9. Removing MQSeries" on page 97

  Explains how to remove MQSeries when it was installed using the MQSeries Server CD-ROM.
- "Chapter 10. Using the MQSeries Client CD-ROM" on page 101

  Describes how to use the MQSeries Client CD-ROM to install an MQSeries for Windows NT and Windows 2000 client, including interactive installation, unattended installation, installing from a LAN, and using the Microsoft System Management Server. It also describes how to remove the MQSeries client when it was installed using the MQSeries Client CD-ROM.

Part 3 of this book contains guidance information on getting started with MQSeries:

- "Chapter 11. About MQSeries" on page 117

  Introduces you to the capabilities of MQSeries.
- "Chapter 12. Using MQSeries" on page 127

  Describes how to manage and monitor MQSeries resources using the Microsoft Management Console (MMC) snap-ins (MQSeries Explorer and MQSeries Services), and the MQSeries Web Administration server.
- "Chapter 13. Using MQSeries command sets" on page 135

  Introduces the command sets that can be used to perform system administration tasks on MQSeries objects.
- "Chapter 14. Using the MQSeries Internet Gateway" on page 143

  Introduces the MQSeries Internet Gateway, and explains how to get more information about using it.
- "Chapter 15. Obtaining additional information" on page 145

  Identifies some sources of information that can be useful when you are using MQSeries products.

The **Appendixes** describe:

- The sample programs that are provided with MQSeries for Windows NT and Windows 2000.
- How to configure MQSeries accounts.
- The security exit that is provided with MQSeries for Windows NT and Windows 2000.
- The Active Directory services.

- New MQSeries messages.

Conventions used in this book

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

- The term ″MQSeries″ is used to mean the IBM MQSeries for Windows NT and Windows 2000 product.
- The terms ″click″, ″double-click″, and ″right-click″ are used to describe item selection with the mouse. For keyboard alternatives, refer to the Windows NT or Windows 2000 help.
- The term ″enter″ means type the relevant text or command, then press the Enter key.
- **Boldface** type indicates the name of an item 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.

Conventions

What's new in MQSeries for Windows NT and Windows 2000, Version 5 Release 2.1

MQSeries for Windows NT and Windows 2000, Version 5 Release 2.1, provides the following new and changed functions:

- New installation procedure

  There is a new installation procedure for the MQSeries server and the MQSeries client. This uses the MQSeries Installation Launchpad, the MQSeries Installation wizard, and (for the server) the Prepare MQSeries wizard. For details, see "Chapter 3. Installing MQSeries" on page 19.

  There are several new methods to perform an unattended (silent) installation. See "Unattended (silent) installation" on page 50 and "Advanced installation methods" on page 57.

- SSPI security exit

  A security exit is supplied for both the MQSeries client and the MQSeries server. This provides authentication for MQSeries channels by using the Security Services Programming Interface (SSPI), that is, the integrated security facilities provided with Windows NT and Windows 2000.

  For further details, see "Appendix C. SSPI security exit" on page 167.

- Support for Active Directory Services

  On Windows 2000, MQSeries V5.2.1 now publishes client connection channels in the Active Directory to provide dynamic client-server binding.

  For further details, see "Appendix D. Active directory services" on page 175.

- Additional MQSeries Web Administration script language command

  The MQSeries Web Administration script language now includes a WHILE-ENDWHILE statement.

- Advanced Configuration and Power Interface support

  The Advanced Configuration and Power Interface (ACPI) standard is now supported. If you run MQSeries on Windows 2000 and ACPI-enabled hardware, MQSeries responds to messages from the operating system about changes in power status. For example, MQSeries can stop then restart channels if the system enters, then resumes from, suspend mode.

  Note: ACPI is not supported on Windows NT 4.

- UNC support

  The universal naming convention (UNC) is now supported.

- Long file names

  Windows long file names (that is, file names of up to 255 characters) are now supported.
- MQSeries control command changes

  There is a new keyword for the `amqmdain` command. See "AMQMDAIN" on page 172.

  There is a new command, `setmqscp`. See "setmqscp command" on page 179.

Part 1. Planning

Chapter 1. Planning to install MQSeries

This chapter summarizes the prerequisite hardware and software to run MQSeries, the network protocols and the compilers that are supported, the delivery media, and the various features (previously called components) of the product.

The chapters in Part 2 of this book that deal with installation, verification, and communication setup assume that you are using TCP/IP as your communication protocol. You can use other protocols (for example, SNA, SPX and NetBIOS). Where specific procedures for these protocols are not covered in this book, there are references to other books in the MQSeries library that do contain the relevant information. However, note that the following functions of MQSeries are available only under TCP/IP:

- MQSeries Postcard
- MQSeries Explorer

Note: Although queue managers that run on machines that use Dynamic Host Configuration (DHCP) can be members of a cluster, we recommend that the queue manager that hosts the repository for a cluster is on a machine that has a static IP address.

Release notes

Before starting to install MQSeries, review the release notes file, which you will find on the product CD-ROM in the `\Readmes` folder for each national language. This file contains any additional information about the MQSeries Version 5.2.1 product and might update information in this book.

During installation, the release notes file is copied to the MQSeries program files folder (default `c:\Program Files\IBM\MQSeries`).

Server hardware

This information applies to the server environment only. However, the hardware requirements for the MQSeries for Windows NT and Windows 2000 client environment are similar. For details, see "Client hardware" on page 13.

The following are the hardware requirements for the MQSeries server:

- Any IBM PC machine (or compatible), based on a 32–bit Intel processor, that is year 2000 compliant and that is certified as Windows 2000 or Windows NT compatible (including a suitable monitor for the operating system)
- Any communications hardware supporting SNA LU 6.2, TCP/IP, NetBIOS, or SPX

For a typical installation, MQSeries requires a minimum of approximately 80 megabytes (MB) of disk space for product code and data (if you use NTFS). Allow a minimum of 20 MB for working space. Also, the installation process requires space on your system drive and the location you set for temporary space, which is usually your system drive (total space required is approximately 30MB).

Server software

This information applies to the server environment only. The software requirements for the MQSeries for Windows NT and Windows 2000 client environment are in "Client software" on page 13.

For details of the prerequisites for individual features of the product, see "Prerequisites for MQSeries features" on page 8.

The following are the prerequisites for running MQSeries; minimum supported levels are shown. Later compatible levels, if any, are supported, unless otherwise stated.

Operating system

MQSeries requires either of the following:

- Microsoft Windows NT Version 4.0 (including TCP/IP, NetBIOS, and SPX) and Microsoft Windows NT Service Pack 6a.

  Service Pack 6a is available from the Microsoft Web Site at:

  `http://www.microsoft.com`
- Microsoft Windows 2000. This can be any of the following products:
  - Microsoft Windows 2000 Professional.
  - Microsoft Windows 2000 Server.
  - Microsoft Windows 2000 Advanced Server.

Prerequisites for Windows NT

- Microsoft Active Directory Client Extensions (ADCE) for Windows NT

  Provided on the MQSeries Server CD-ROM.
- Microsoft HTML Help 1.22.

  Provided on the MQSeries Server CD-ROM.
- Microsoft Internet Explorer 4.0.1 with Service Pack 1.

  Available from the Microsoft Web site.

  For the Web Administration Server only, an alternative is Netscape Navigator 4.0.4 with the Java™ AWT patch (containing Java 1.1 enhancements) or later.
- Microsoft Management Console (MMC) 1.1.

  Provided on the MQSeries Server CD-ROM.

Note: For Windows 2000, the Microsoft software in the above list is provided with the operating system.

Connectivity

MQSeries requires one of the following:

- Attachmate Extra! Personal Client, Version 6.5.
- IBM Communications Server for Windows NT, Version 5.0 and Version 6.0.
- IBM Personal Communications Version 4.3.1.1 or Version 5.0.
- Microsoft SNA Server, Version 4.0.
- TCP/IP, NetBIOS, and SPX. These are part of the base operating system.

Installing prerequisite software

To install the prerequisite software provided on the MQSeries Server CD-ROM (which does not include service packs or Web browsers), you can do either of the following:

- Use the MQSeries installation procedure.

  When you install using the MQSeries Server CD-ROM, there is a **Software Prerequisites** option in the MQSeries Installation Launchpad window. You can use this option to check which prerequisite software is already installed and which is missing, and to install any missing software. See "Typical installation" on page 26.
- Use the Windows NT or Windows 2000 Explorer:
  1. Use the Windows Explorer to select the folder `\Prereqs` on the MQSeries Server CD-ROM.
  2. Select the folder for the software item to be installed.

3. Select the folder for the required installation language, if appropriate. These are:
   de_de German
   en_us English
   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
4. Start the installation program.

Software supported

The following are options, not prerequisites. Minimum supported levels are shown. Later levels, if any, are supported unless otherwise stated.

- Transaction processing monitors
  - BEA Tuxedo, Version 6.5 (Windows NT only) and Version 7.1
  - WebSphere™, Version 3.0x (Windows NT only) and Version 3.5
- Databases
  - IBM DB2 Universal Database®, Version 6.1 and Version 7.1
  - Oracle, Version 8i and Version 8iR2
  - Sybase 11. Sybase Adaptive Server Enterprise V11.5, Sybase XA-Server V11.1.1, Sybase Open Client V11.1, and Sybase Embedded SQL/C V11.0
  - Sybase 12. Sybase Adaptive Server V12 with DTM option (supported on Windows NT 4.0 only)
- Software servers
  - Microsoft Transaction Server (MTS) COM+
- Lightweight Directory Access Protocol (LDAP)
  - Netscape Directory Server Version 3.1 with the relevant year 2000 fixes

DCE support

- IBM Distributed Computing Environment (DCE) V1.1

  To enable users to run the MQ-supplied DCE send, receive or message exits, this must be the US domestic version that supports the Data Encryption Standard (DES).

  DCE names and security modules for MQSeries are provided as part of the MQSeries for Windows NT and Windows 2000 product.

  DCE support for Microsoft Windows 2000 is not yet available.

Compilers for MQSeries applications

The following software compilers are supported:

- C and C++:
  - IBM VisualAge® for C++ for Windows, Version 3.5
  - Microsoft Visual C++ for Windows 95 and Windows NT, Version 6.0 or Version 6.1
- COBOL:
  - IBM VisualAge COBOL Enterprise, Version 2.2
  - Merant Net Express Version 3.0 and Version 3.1
- PL/I:
  - IBM VisualAge for PL/I for Windows
  - IBM VisualAge PL/I Enterprise, Version 2.1
- Visual Basic:
  - Microsoft Visual Basic for Windows, Version 5.0 and Version 6.0

For latest details, see the MQSeries product family Web site at:

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

MQSeries features

You can select the features you require when you install MQSeries. The features shown below are available when you install the MQSeries server; for information on the features that are appropriate to the MQSeries client, see "MQSeries client features" on page 15.

Server The MQSeries for Windows NT and Windows 2000 server code.

Client The MQSeries for Windows NT and Windows 2000 client enables Windows applications to run as clients of remote queue managers. The client can also be installed on the server machine, enabling you to have the MQSeries server and client on the same machine.

Development Toolkit
Sample MQSeries program source code, including header files, link libraries, and source files for sample applications. These are useful when starting MQSeries application program development. "Appendix A. MQSeries sample programs" on page 153 and the MQSeries Information Center show the sample programs that are provided.

Internet Gateway
Provides access to MQSeries applications via HTML and web interfaces such as CGI and ISAPI.

Web Administration Server
Provides access to the Web-based administration server.

Documentation
Online versions of the books for MQSeries in U.S. English and other national languages. This includes:

- MQSeries books in Microsoft HTML Help format
- MQSeries Adobe Acrobat books (in portable document format (PDF))
- MQSeries Internet Gateway documentation (in HTML format)

Prerequisites for MQSeries features

The following table shows the prerequisite software for running each of the MQSeries features, and also the installation options used to install the features:

Table 1. Prerequisites and installation options for MQSeries features

MQSeries feature	Installation option	Prerequisites
Server	• Typical • Compact • Custom	• ADCE • HTML Help 1.22 • Internet Explorer 4.0.1 with SP1 • MMC 1.1
Client	• Custom	• ADCE (required only for Active Directory support)
Development Toolkit	• Typical	• None
Internet Gateway	• Custom	• None
Web Administration Server	• Custom	• HTML Help 1.22 • Internet Explorer 4.0.1 with SP1 or Netscape Navigator 4.0.4 with the Java AWT patch (containing Java 1.1 enhancements) or later
Documentation	• Typical • Custom	• HTML Help 1.22 • Internet Explorer 4.0.1 with SP1

Feature dependencies

Some of the MQSeries installable features have a dependency on other features, as follows:

To install the following features:	You must also install:
Web Administration Server	Server
Internet Gateway	Client

You cannot install a feature without also installing the feature on which it depends. Similarly, if you uninstall a feature on which other features depend, you must also remove those (dependent) features.

Migration

If you migrate from a previous level of MQSeries, you **cannot** revert to your previous level. You should back up your system **before** you install MQSeries for Windows NT and Windows 2000 V5.2.1. This will enable you to back off the upgrade if necessary. If you do back off the upgrade, however, you will not be able to recover any work performed by MQSeries Version 5.2.1.

With MQSeries for Windows NT and Windows 2000, the installation process detects whether this is a new installation or an update from a previous level of MQSeries. If you migrate from an earlier level, all the objects you previously created (for example, your queue managers) can be maintained. The components that were previously installed are preselected in the feature options when you install the new level. If you leave these components selected, you can keep them, or reinstall them. However, if you deselect any of these components, the installation process will uninstall them.

AMQSCOMA.TST

With this release of MQSeries, when you create a queue manager, MQSeries system default objects are created automatically. Therefore, the sample MQSC definition file, AMQSCOMA.TST, is no longer provided. If you used AMQSCOMA.TST to customize your settings for MQSeries, and you want to use the same settings with Version 5.2.1 of the product:

1. Save your copy of AMQSCOMA.TST
2. Install MQSeries V5.2.1
3. Load your copy of AMQSCOMA.TST and use the file to recreate your default objects

Alternatively, you can generate a new MQSC definition file, if required.

.INI file configuration information

MQSeries for Windows NT and Windows 2000 automatically migrates configuration information from your MQSeries .INI files into the Windows registry. Configuration information is then updated in the registry when you define or change details through the user interface.

Default configuration

If you migrate the default configuration of a machine hosting the repository queue manager for a cluster, the other machines in the cluster will no longer have access to the repository and will therefore encounter errors until they also migrate.

Although the default configuration can be set up and used on machines with either DHCP or static IP addresses, it is recommended that the queue manager selected to host the repository for a cluster should be on a machine that has a static IP address.

Migration of scmmqm

This release of MQSeries does not contain the **scmmqm** program (available in Version 5.0). When migrating, the MQSeries installation procedure processes the commands in any startup files that have been registered by using the `scmmqm` command. MQSeries Services properties are set for each command, as follows:

runmqchi A channel initiator processing the specified initiation queue is automatically started when the queue manager starts.

runmqchl The specified channel is automatically started when the queue manager starts.

runmqlsr A listener with the specified parameters is automatically started when the queue manager starts.

strmqcsv This command is ignored. A command server is automatically started when each queue manager starts.

strmqm The specified queue manager is automatically started when the MQSeries Service starts.

tpstart This command is ignored. After MQSeries is installed, you should either set your system to run tpstart automatically on system startup, or configure an MQSeries listener for the queue manager with the required TPNAME property.

Java support for MQSeries

If you wish to use Java support for MQSeries, you must obtain the product (MQSeries classes for Java and MQSeries classes for Java Message Service) separately, and install it after you install MQSeries.

For information about MQSeries classes for Java and MQSeries classes for Java Message Service, refer to the IBM MQSeries Web site, at:

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

If the MQSeries for Windows NT, V5.1 Java support is already installed, the installation program for Version 5.2.1 displays a warning message, then deletes the old Version 5.1 Java support files.

Installation methods

To install the MQSeries server, you must use the MQSeries Server CD-ROM. The following installation methods are available:

- Interactive installation (that is, using a sequence of windows and wizards). See "Chapter 3. Installing MQSeries" on page 19.
- Installation across a LAN. See "Installing from a LAN" on page 49.
- Direct installation without interaction. See "Unattended (silent) installation" on page 50.
- Advanced methods of direct installation. See:
  - "Using Msiexec with command line parameters" on page 57
  - "Using Msiexec with a response file" on page 61
  - "Using the MQParms command" on page 62
- Installation using the Microsoft System Management Server (SMS). See "Using Microsoft System Management Server" on page 69.

Before all methods of installation, refer to "Preparing for installation" on page 19.

Migration

Chapter 2. Planning to install the MQSeries for Windows NT and Windows 2000 client

This chapter outlines the hardware and software required for use with the MQSeries for Windows NT and Windows 2000 client, and lists the compilers that are supported for applications running on MQSeries clients.

For similar information about the MQSeries for Windows NT and Windows 2000 server environment, see "Chapter 1. Planning to install MQSeries" on page 3.

Client hardware

This section outlines the hardware requirements for an MQSeries client for Windows NT and Windows 2000.

An MQSeries client can run on Windows NT or Windows 2000 on any IBM PC machine or equivalent that is based on a 32–bit Intel and that is certified as Windows NT or Windows 2000 compatible (including a suitable monitor for the operating system). There must be enough random access memory (RAM) and disk storage for the programming prerequisites (below), the MQSeries client, the access methods, and the application programs.

Client software

The following are prerequisites for MQSeries client applications running on Windows NT and Windows 2000.

Minimum supported software levels are shown. Later levels, if any, are supported unless otherwise stated.

MQSeries requires either of the following:

- Microsoft Windows NT, Version 4.0 (to include TCP/IP, NetBIOS, and SPX) and Microsoft Windows NT Service Pack 6a

  Service Pack 6a is available from the Microsoft Web Site at:

  `http://www.microsoft.com`
- Microsoft Windows 2000

Connectivity

MQSeries requires one of the following:

- Attachmate Extra! Personal Client, Version 6.5.

- IBM Communications Server for Windows NT, Version 5.0 and Version 6.0.
- IBM Personal Communications Version 4.3.1.1 or Version 5.0.
- Microsoft SNA Server, Version 4.
- TCP/IP, NetBIOS, and SPX. These are part of the base operating system.

Prerequisites for Windows NT

- Microsoft Active Directory Client Extensions (ADCE) for Windows NT

  Required only for Active Directory support.

  Provided on the MQSeries Server CD-ROM, or available from the Microsoft Web Site at:

  `http://www.microsoft.com`

Note: For Windows 2000, this software is provided with the operating system.

Software supported

The following are options, not prerequisites.

- IBM Distributed Computing Environment (DCE) V1.1

  To enable users to run the MQ-supplied DCE send, receive or message exits, this must be the US domestic version that supports the Data Encryption Standard (DES).

  DCE names and security modules for MQSeries are provided as part of the MQSeries for Windows NT and Windows 2000 product.

  DCE support for Microsoft Windows 2000 is not yet available.
- Microsoft Windows Terminal Server feature

Compilers for MQSeries applications (clients)

The following compilers are supported:

- C and C++:
  - IBM VisualAge C++ for Windows, Version 3.5
  - Microsoft Visual C++ for Windows 95 and Windows NT, Version 6.0 and Version 6.1
- COBOL:
  - IBM VisualAge COBOL Enterprise, Version 2.2
  - Merant Net Express, Version 3.0 and Version 3.1
- PL/I:
  - IBM VisualAge for PL/I for Windows
  - IBM VisualAge PL/I Enterprise, Version 2.1
- Visual Basic:
  - Microsoft Visual Basic for Windows, Version 5.0 and Version 6.0

MQSeries client features

The following features for the MQSeries for Windows NT and Windows 2000 client environment can be installed from the MQSeries Server CD-ROM or the MQSeries Client CD-ROM:

Client The client enables Windows applications to run as clients of remote queue managers.

MQSeries Development Toolkit
Sample MQSeries program source code, including header files, link libraries, and source files for sample applications. These are useful when starting MQSeries application program development.

MQSeries Internet Gateway
Provides access to MQSeries applications via HTML and CGI.

MQSeries Internet Gateway documentation
MQSeries Internet Gateway documentation supplied in HTML format.

For information on MQSeries server features, see "MQSeries features" on page 7, and for information on feature dependencies, see "Feature dependencies" on page 8.

Installation methods

There are two different versions of the MQSeries for Windows NT and Windows 2000 client installation code, one on the MQSeries Server CD-ROM, and one on the MQSeries Client CD-ROM.

You can use the MQSeries Server CD-ROM to:

- Install the MQSeries client on any client machine.
- Install the MQSeries client on an MQSeries server machine.

You can use the MQSeries Client CD-ROM to install the MQSeries client on any client machine that does not have the MQSeries server installed.

You might use the MQSeries Client CD-ROM to install the MQSeries client, then subsequently decide to use that machine for the MQSeries server. In this situation, you must use the MQSeries Server CD-ROM to install the MQSeries server and to reinstall the MQSeries client.

Client features

To install the MQSeries client, the following installation methods are available:

- All methods that use the MQSeries Server CD-ROM. See "Chapter 3. Installing MQSeries" on page 19 and "Chapter 4. Other methods of installing" on page 49.

  For the interactive installation, select a Custom installation type, and select the Client feature.
- Methods that use the MQSeries Client CD-ROM:
  - Interactively using an MQSeries Client CD-ROM (see "Installing the MQSeries client" on page 102)
  - From a LAN (see "Installing the client from a LAN" on page 103)
  - Using SMS (see "Using the System Management Server with the MQSeries client" on page 104)
  - Unattended (see "Performing an unattended (silent) client installation" on page 106)

Because the MQSeries for Windows NT and Windows 2000 client code is different on the two CD-ROMs, you must also use the appropriate uninstallation method:

- If you installed using the MQSeries Server CD-ROM, see "Chapter 9. Removing MQSeries" on page 97.
- If you installed using the MQSeries Client CD-ROM, see "Removing an MQSeries client" on page 108.

Part 2. Installing MQSeries for Windows NT and Windows 2000

Chapter 3. Installing MQSeries

This chapter describes how to install MQSeries directly from the MQSeries Server CD-ROM in attended mode (interactively).

You can use the MQSeries Server CD-ROM to install the MQSeries server or the MQSeries client. If you wish to install the MQSeries server and the MQSeries client on the same machine, you must use the MQSeries Server CD-ROM.

For information on alternative methods of installation, see:
- "Installing from a LAN" on page 49
- "Unattended (silent) installation" on page 50
- "Advanced installation methods" on page 57

Note: You can also install the MQSeries client by using the MQSeries Client CD-ROM. The installation methods you use with this CD-ROM differ slightly. See "Chapter 10. Using the MQSeries Client CD-ROM" on page 101.

The installation configuration described in this chapter is for an environment that uses TCP/IP. The installation procedure is the same for environments that use other communications protocols (for example, SNA, SPX, or NetBIOS). However, not all of the functions and facilities of MQSeries Version 5.2.1 are available in these environments. The items that are **not** available are:
- MQSeries Postcard
- MQSeries Explorer

Preparing for installation

Before you start to install MQSeries, review the release notes file, which is on the product CD-ROM in the `\Readmes` folder for each national language. This file contains any additional information about the MQSeries Version 5.2.1 product and might update information in this book.

During installation, the release notes file is copied to the MQSeries program files folder (default `c:\Program Files\IBM\MQSeries`).

The following sections list the points you must consider before you start to install MQSeries.

Preparation

General considerations

- Ensure that you close all Windows programs (including all MQSeries windows).
- Ensure that you set up default logging for the installation process. See "Creating a log file when you install MQSeries" on page 21.

Migration considerations

If MQSeries is already installed on the machine:

- Ensure that no queue managers are running and that the IBM MQSeries Service is stopped. (To stop the MQSeries Service, right-click on the MQSeries icon in the task bar, then click **Stop IBM MQSeries**.)
- If an earlier version of MQSeries is already installed on the machine, back up your system **before** you install MQSeries for Windows NT and Windows 2000 V5.2.1. See "Migration" on page 9.
- MQSeries checks for any existing MQSeries configuration files (MQS.INI or QM.INI). If it finds any, it automatically migrates configuration information to the Windows registry. Otherwise, MQSeries automatically puts its configuration information directly into the Windows registry.

If you install MQSeries on a Windows NT machine, then wish to migrate the operating system to Windows 2000, there are further migration considerations for MQSeries. Any further information is in the release notes file that is supplied with MQSeries, or the frequently asked questions pages for MQSeries for Windows NT and Windows 2000 V5.2.1 on the Web. For access to these pages, use the following address for the MQSeries support page, then follow the links for frequently asked questions:

`http://www-4.ibm.com/software/ts/mqseries/support/`

Naming considerations

- Ensure that the machine name does not contain any spaces. MQSeries does not support machine names that include spaces. If you install MQSeries on such a machine, you cannot create any queue managers.
- For MQSeries authorizations, names of user IDs and groups must be no longer than 20 characters (spaces are not allowed).

Security considerations

- Are you installing MQSeries on a network where the domain controller is on a Windows 2000 Server? If so, you probably need to obtain a special domain account from your domain administrator. For further information, and the details that the domain administrator needs to set up this special account, refer to "Appendix B. Configuring MQSeries accounts" on page 163.
- You **must** have administrator authority. Define this authority through the Windows NT or Windows 2000 facilities.

- Your user ID **must** belong to the 'local' `mqm` or `Administrators` group in order to administer any queue manager on that system, or to run any of the MQSeries control commands. If the local `mqm` group does not already exist on the local computer, it is created automatically when MQSeries is installed. The user ID can either belong to the local `mqm` group directly, or belong indirectly through the inclusion of global groups in the local `mqm` group.
- If you intend to administer queue managers on a remote system, your user ID **must** be authorized on the target system. The information on protecting MQSeries resources in the *MQSeries System Administration* book includes more information on this topic.
- The system-defined user ID `System` can also administer any queue manager.
- A user account that is used to run the IBM MQSeries Services COM server is set up by default during the installation process, typically with the user ID MUSR_MQADMIN. This account is reserved for use by MQSeries. Refer to "Appendix B. Configuring MQSeries accounts" on page 163.

For further information about MQSeries user IDs on Windows NT and Windows 2000, and the MQSeries Object Authority Manager (OAM), see *MQSeries System Administration*.

Creating a log file when you install MQSeries

MQSeries for Windows NT and Windows 2000, V5.2.1 is installed using the Microsoft Installer (MSI). To generate a log file during installation, you need to set up default logging. This means that a log file is created each time you install software that uses MSI.

Default logging on Windows NT

Note: To set up default logging on Windows NT, you need to change a registry setting. We recommend that you back up your registry first.

To set up default logging for installation on Windows NT, use the following steps:

1. At a command line, type:
   ```
   regedit
   ```
2. Navigate to, or create, HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Installer.
3. Set the value of Logging to:
   ```
   voicewarmup
   ```

Default logging on Windows 2000

To set up logging for Windows 2000, use the following steps:

1. Launch the msiconfig snap-in to display the msiconfig window.

   If this is already set up on your machine, select **Start→Programs→Administrative Tools→msiconfig.mmc**.

   Otherwise, use the following steps to set it up:

   a. From the Windows task bar, select **Start→Run**.
   b. Type mmc, then select **OK** to display the Console window.
   c. Select **Console→Add/Remove Snap-in** to display the Add/Remove Snap-in dialog.
   d. Select **Add** to display the Add Standalone Snap-in dialog.
   e. Select Group policy from the list, then select **Add** to display the Select Group Policy Object dialog.
   f. Select **Finish**.
   g. In the Add Standalone Snap-in dialog, select **Close**.
   h. In the Add/Remove Snap-in dialog, select **OK**.

2. From the tree in the left-hand panel of the window, expand the following:
   a. Local Computer Policy
   b. Computer Configuration
   c. Administrative Templates
   d. Windows Components
3. Select Windows Installer.
4. In the Policy panel, right click on Logging, then select **Properties** from the resulting menu.

   The Logging Properties dialog is displayed.
5. Select the **Enabled** option.
6. In the Logging field, enter:

   voicewarmup
7. Click **OK**.
8. Close the msiconfig window and save the new setting.

Installation types

Before you install, you can decide what type of installation you require. Table 2 shows the installation types available, and the features that are installed with each option. For the prerequisites required for each feature, see "Prerequisites for MQSeries features" on page 8.

Table 2. Features installed with each type of installation

Installation type	Features installed	Comments
Typical	• Server • Development Toolkit • MQSeries books (in Microsoft HTML Help format)	The default option. Features are installed to default locations.
Compact	• Server only	The feature is installed to the default location.
Custom	By default, the following features are preselected: • Server • Development Toolkit • MQSeries books (in Microsoft HTML Help format)	All the available features are listed and you can select which ones to install, and where to install them.

To install the MQSeries server, you can select a Typical, Compact, or Custom installation.

To install the MQSeries client, select a Custom installation, then ensure that you select the Client feature. You can also install the MQSeries client using the MQSeries Client CD-ROM. See "Chapter 10. Using the MQSeries Client CD-ROM" on page 101.

Installing MQSeries - quick guide

The installation procedure leads you through a number of windows in which you choose what to install, and configure the installation. The installation procedure should take about 30 minutes to complete.

Note: Check in advance whether you are installing MQSeries on a network where the domain controller is on a Windows 2000 Server, so that you can obtain a domain account if necessary. See "Security considerations" on page 20.

1. Insert the MQSeries for Windows NT and Windows 2000 Server CD-ROM into the CD-ROM drive.

   If autorun is enabled, the installation process starts. If it is not, double-click on the Setup icon in the root folder on the CD-ROM to start the process.
2. Wait until the MQSeries Installation Launchpad window is displayed.
3. Optionally, to change the national language of the installation, click the **Select Language** option, then select the language you require from the list.
4. Click on **Software Prerequisites** and install any required software.
5. Click on **Network Prerequisites** and follow the instructions that are presented to you.
6. After you complete the software and network prerequisites, click on **MQSeries Installation** to start the Windows Installation wizard.
7. Follow the instructions and actions in the MQSeries Setup windows that are presented to you.
8. When the MQSeries Setup window displays a message that the Installation wizard completed successfully, click **Finish**.

   If you installed the Server feature, the Prepare MQSeries wizard is launched.

   If you did not install the Server feature, go to step 12 on page 25.
9. Follow the instructions and actions in the windows that are presented to you.
10. When the Prepare MQSeries wizard completes, the window displays a list of one or more recommended tasks to complete the preparation of MQSeries. This list depends on what already exists from any previous installation.

    To launch a wizard to complete a task, select the relevant option and follow the instructions on the resulting windows.

    When the required tasks are completed, or to continue without completing any of these tasks, select **Next**. Note that it is possible to complete these tasks later; see "Using the Default Configuration wizard" on page 39 and "Using the Remote Administration wizard" on page 42.

Note: If the previous installation is such that none of the tasks apply, this window is not displayed. Go to the next step.

11. The Prepare MQSeries Wizard window displays the following message:

    Completing the Prepare MQSeries Wizard

    Select the applications that you want to launch, then click **Finish**.

12. Verify the installation.

    If you installed the Server feature, you can use Postcard application:

    - To verify that MQSeries is working correctly on a single machine, you can run a local verification (see "Using Postcard to verify a local installation" on page 72).
    - To verify that MQSeries is communicating correctly between machines, see "Using Postcard to verify a server-to-server installation" on page 76.

    Alternatively, see "Chapter 7. Verifying a client installation" on page 87.

Installation and verification are now complete.

Notes:

1. If the installation process is interrupted, go back to the beginning and start the installation again.
2. Following installation, some of the MQSeries icons might not appear in the Start menu until after the machine is restarted. To use these icons without restarting your machine, access them from the appropriate folder. By default, this is either `Program Files\IBM\MQSeries\` or `Program Files\IBM\MQSeries\bin`.
3. If the MQSeries for Windows NT, V5.1 Java support is already installed, the installation program for Version 5.2.1 displays a warning message, then deletes the old Version 5.1 Java support files. See "Java support for MQSeries" on page 10.

Installing MQSeries - step-by-step

This section provides step-by-step guidance on how to install MQSeries for Windows NT and Windows 2000. The installation procedure should take approximately 30 minutes.

The following steps show how to perform a typical installation. The steps involved in a compact and custom installation are in "Compact installation" on page 34 and "Custom installation" on page 34.

Note: Check in advance whether you are installing MQSeries on a network where the domain controller is on a Windows 2000 Server, so that you can obtain a domain account if necessary. See "Security considerations" on page 20.

Typical installation

You can think of the complete installation procedure as three parts:

1. Installing MQSeries
2. Configuring MQSeries (required if you install the server)
3. Final installation and verification tasks

Installing MQSeries

1. Insert the MQSeries for Windows NT and Windows 2000 Server CD-ROM into the CD-ROM drive.
2. If autorun is installed, the installation process starts. If it is not, double-click on the Setup icon in the root folder on the CD-ROM to start the process.
3. Wait until the MQSeries Installation Launchpad window is displayed.
4. Optionally, to change the national language of the installation, click the **Select Language** option, then select the language you require from the list.
5. Select the **Software Prerequisites** option.

   The window lists the prerequisite software for a typical installation. To the right of each installation item, there is a check symbol (the software is installed) or a cross (the software is not installed).

   If there is a cross:

   a. Click on the + symbol to the left of the item to display installation links.

   b. Select the option for the installation source you wish to use. Select from:

      - MQSeries CD
      - Internet
      - Network

Note: Some software prerequisites are not available from all sources.

c. When installation is complete, click on the – symbol to the left of the item.

Note: For a custom installation, you might not need all the software prerequisites. Select the link **For details of MQSeries setup types click here** to see further information. Details are also available in "Prerequisites for MQSeries features" on page 8.

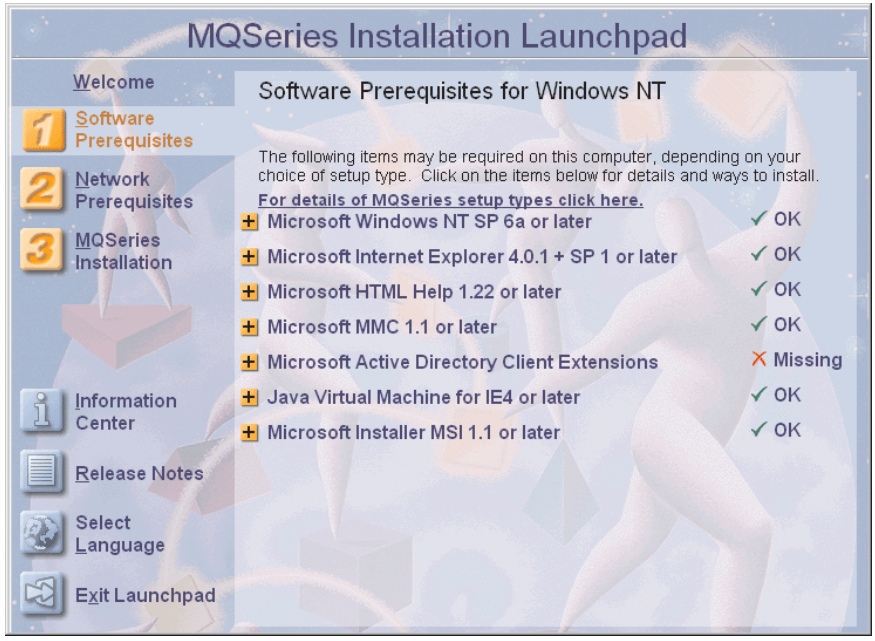

Figure 1. Example of MQSeries Installation Launchpad - Software Prerequisites page

6. When all the required software is installed, select the **Network Prerequisites** option. This window describes the conditions when MQSeries needs a special domain account.

   If the conditions described in the window apply, select **Yes**. If you do not have details of the required special domain account, follow the link for instructions that will be useful to your domain administrator. Further information is also available in "Appendix B. Configuring MQSeries accounts" on page 163. You cannot continue to install MQSeries until you have details of the special domain account.

   If the conditions described do not apply, select **No**.

   If you do not know, follow the **More Information** link for help to answer this question, or contact your domain administrator.

7. If you selected **Yes** (and have details of the special domain account), or if you selected **No**, select the **MQSeries Installation** option.

   The MQSeries Installation panel is displayed with a summary of the pre-installation status.
8. To continue, select **Launch MQSeries Installer**, and wait until the MQSeries Setup window is displayed with a welcome message.
9. Click **Next** to continue.

   If the current version of MQSeries is already installed, the Program Maintenance panel is displayed. See "Modifying the installation" on page 37 or "Removing MQSeries using the installation process" on page 97.

   If the current version of MQSeries is not installed, the License Agreement panel is displayed.
10. Read the information and license terms on the panel, select the option to accept the license terms, then click **Next**.
11. If there was no previous version of MQSeries installed on the machine, the Setup Type panel is displayed.

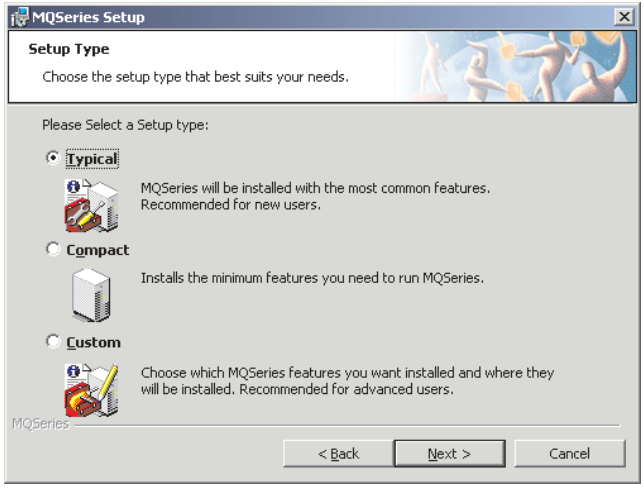

Figure 2. MQSeries Setup window - Setup Type panel

Select the type of installation you want, then click **Next**. Table 2 on page 23 shows the installation types and the features that are installed with each option.

If you select Custom, go to the procedure "Custom installation" on page 34. If you select Typical or Compact, go to step 13.

12. If there was a previous version of MQSeries installed on the machine, the Type of Installation Process panel is displayed. Select one of the following options, then click on **Next**:
    - Update. Installs the same features as the previous version. Go to the next step.
    - Custom. You can select which features to install.

      If you select this option, a Destination Folders panel for data files or for log files might be displayed, then the Features panel is displayed. Follow the procedure "Custom installation" on page 34 from step 4, 5, or 6, as appropriate.
13. The MQSeries Setup window displays the following message:

    Ready to Install MQSeries

    The window also displays a summary of the installation you selected.

    To continue, click **Install**. The Installing MQSeries panel is displayed.
14. Wait until the progress bar is complete.

    When MQSeries is successfully installed, the MQSeries Setup window displays the following message:

    Installation Wizard Completed Successfully
15. Click **Finish** to launch the Prepare MQSeries wizard.
16. Follow the procedure described in "Configuring MQSeries".

Configuring MQSeries

The Prepare MQSeries wizard helps you to configure MQSeries files and a user account for your network, and migrate any queue managers and data from a previous installation.

1. When MQSeries installation completes, the Prepare MQSeries Wizard window is displayed with a welcome message. To continue, click **Next**.
2. If you have not run the Prepare MQSeries wizard before, the Prepare MQSeries Wizard window displays a progress bar with the following message:

   Status: Setting up MQSeries Configuration

   Wait until the progress bar completes.

   Otherwise, go to the next step.
3. The Prepare MQSeries Wizard window displays a progress bar with the following message:

   Status: Setting up the MQSeries Service.

   Wait until the progress bar completes.

4. If MQSeries detects that you need to configure MQSeries for Windows 2000 domain users, the Prepare MQSeries Wizard window displays a message that starts:

   MQSeries does not have the authority to query information about your user account

   Optionally, to see online help about configuring the domain account, select **More Information**. When you are finished, close the MQSeries Information Center window to return to the current window.

   Click **Next** , then go to step 6.

5. If MQSeries cannot detect whether you need to configure MQSeries for Windows 2000 domain users, the Prepare MQSeries Wizard window displays the following message:

   Are any of the domain controllers in your network running Windows 2000 server?

   If you select Yes, click **Next**, then go to step 6.

   If you select No, click **Next**, then go to step 9.

   If you select Don't know, you cannot continue. Either select one of the other options, or click **Cancel** and contact your domain administrator.

   Note: At any time, you can select **More Information** to view online help about configuring the domain account. When you are finished, close the MQSeries Information Center window to return to the current window.

   If MQSeries cannot detect whether you need to configure MQSeries for Windows 2000 domain users, but you are installing on a Windows 2000 domain controller, this window is not displayed. Go to the next step.

6. The Prepare MQSeries Wizard window displays the following message:

   Do you need to configure MQSeries for users defined on Windows 2000 domain controllers?

   If you select Yes, click **Next**, then go to step 7.

   If you select No, click **Next**, then go to step 9.

   If you select Don't know, you cannot continue. Either select one of the other options, or click **Cancel** and contact your domain administrator.

   Note: At any time, you can select **More Information** to view online help about configuring the domain account. When you are finished, close the MQSeries Information Center window to return to the current window.

7. In the next window, enter the Domain and User name of the domain user account that you obtained from your domain administrator. Either enter the Password for this account, or select the option **This account does not have a password**. Click **Next**.

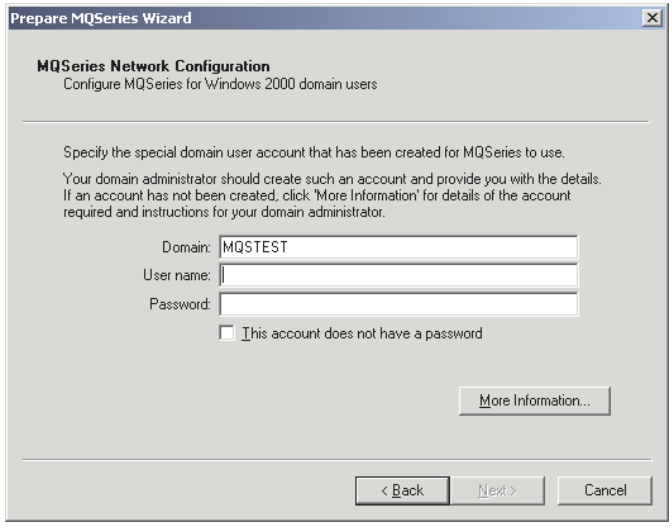

Figure 3. Prepare MQSeries Wizard window

8. The Prepare MQSeries Wizard window displays a progress bar with the following message:

   Status: Configuring MQSeries with the special domain user account

   Wait until the progress bar completes.

   If there are any problems with the domain user account, a further window is displayed. Follow the advice on this window before you continue with this procedure.
9. The IBM MQSeries window displays a progress bar with the following message:

   Status: Starting MQSeries services

   Wait until the progress bar completes.
10. If there are further tasks to complete, the Prepare MQSeries Wizard window displays the following message:

    Recommended tasks to complete the preparation of MQSeries

    It displays one or more of the following options, which depend on whether a default configuration or queue managers already exist from a previous installation:

    - **Setup the Default Configuration**. This option is displayed only if there are no queue managers and there is no Default Configuration

already on the system. This action launches the Default Configuration wizard (see "Using the Default Configuration wizard" on page 39).

In this situation, to verify the installation by using the Postcard application (described in "Using the Postcard application" on page 71), select this option and use the Default Configuration wizard to create the default queue manager for the Postcard application to use.

- **Migrate the existing Default Configuration**. This option is displayed if a Default Configuration already exists from MQSeries version 5.1. This action launches the Default Configuration wizard (see "Using the Default Configuration wizard" on page 39).

  Note: If a Default Configuration already exists from MQSeries version 5.2, you can use this without any migration.

- **Allow remote administration of existing queue managers**. This option is displayed only if queue managers exist from a previous installation. This action launches the Remote Administration wizard (see "Using the Remote Administration wizard" on page 42).

  Note: Existing queue managers are migrated automatically.

To launch a wizard to complete a task, select the required option. When all required tasks are complete and you return to this window, click **Next**.

To continue without completing any of these tasks, select **Next**. Note that it is possible to complete these tasks later:

- To set up the Default Configuration, or migrate an existing Default Configuration, select **Default Configuration** from the First Steps application (see "Using MQSeries First Steps" on page 45).
- To allow remote administration of existing queue managers, use the MQSeries Explorer (see "To allow or prevent remote administration" on page 129).

Note: If the previous installation is such that none of these tasks apply, this window is not displayed. Go to the next step.

11. The Prepare MQSeries Wizard window displays the following message:

    Completing the Prepare MQSeries Wizard

    Select the options that you require, then click **Finish**. Select one or more from:

    - **Remove the shortcut to this wizard from the desktop**

      This option is available only if you have previously attempted installation, but you cancelled the procedure from the Prepare MQSeries wizard and you created a desktop shortcut to this wizard.

Select this option to remove the shortcut. You do not need it now that you have completed the Prepare MQSeries wizard.

- **Launch MQSeries Information Center**

  The Information Center gives you quick access to all task-oriented help information, reference information, and the web-based online books and home pages.

- **Launch MQSeries First Steps**

  The First Steps application provides easy access to the key parts of MQSeries, including:

  – Default Configuration
  – Quick Tour
  – Postcard
  – MQSeries Explorer
  – API Exerciser
  – Information Center

  For further information, see "Using MQSeries First Steps" on page 45.

- **Launch MQSeries Explorer**

  The MQSeries Explorer allows you to view and administer your MQSeries network.

- **Launch Notepad to view the release notes**

  The release notes contain information on installing MQSeries and also late-breaking news that is available after the published documentation is produced.

12. Follow the procedure described in "Final installation and verification tasks".

Final installation and verification tasks

1. Check for messages in the following files:

   - `msi`*`nnnnn`*`.log`

     This file is in your user `Temp` folder. It is an application log that contains English messages written during installation. The log includes a message indicating whether or not the installation was successful and complete.

     This file is created if you have set up default logging. See "Creating a log file when you install MQSeries" on page 21.

   - `amqmjpse.txt`

     This file is in the MQSeries data files folder (default `c:\Program Files\IBM\MQSeries`). It is an application log that contains messages written during installation by the Prepare MQSeries wizard.

2. Following installation, some of the MQSeries icons might not appear in the Start menu until after the machine is restarted. To use these icons without restarting your machine, access them from the appropriate folder. This is either `Program Files\IBM\MQSeries\` or `Program Files\IBM\MQSeries\bin`.
3. You can now verify your installation using the Postcard application, as described in "Chapter 5. Verifying the installation" on page 71.

Notes:

1. If the complete installation process is interrupted at any stage, run the installation again from the beginning.
2. If the MQSeries for Windows NT, V5.1 Java support is already installed, the installation program for Version 5.2.1 displays a warning message, then deletes the old Version 5.1 Java support files. See "Java support for MQSeries" on page 10.

Compact installation

Follow the steps for a typical installation, as described in "Typical installation" on page 26. The only difference is that, at step 11 on page 28, you select **Compact** on the **Setup Type** window. This installs only the Server feature of MQSeries for Windows NT and Windows 2000.

Custom installation

During custom installation, you can choose the destination folders for program files, data files, and log files. However, after installation, you cannot change these (except by removing the product, then reinstalling). Therefore, plan and select your destination folders carefully.

1. Follow steps 1 to 11 of the "Typical installation" on page 26.
2. At step 11, select **Custom** on the **Setup Type** window.
3. The Destination Folder panel is displayed.

   To accept the default folder for the program files, select **Next**.

   To change the folder for the program files, select **Change**, select the required folder in the resulting dialog box, select **OK**, then select **Next**.

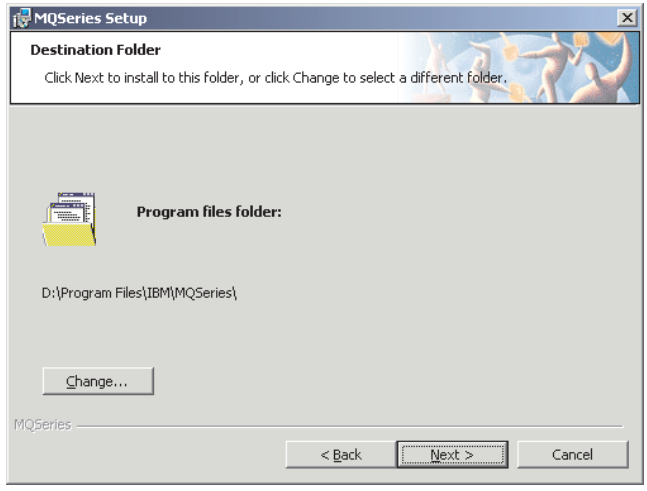

Figure 4. MQSeries Setup window – Destination Folder panel

4. The Destination Folders panel is displayed.

   To accept the default folder for the data files, select **Next**.

   To change the folder for the data files, select **Change**, select the required folder in the resulting dialog box, select **OK**, then select **Next**.

   If you wish to install either the Server or the Client feature, you require a data files folder. Otherwise, you can ignore this panel (that is, accept the default).

5. The Destination Folders panel is displayed.

   To accept the default folder for the log files, select **Next**.

   To change the folder for the log files, select **Change**, select the required folder in the resulting dialog box, select **OK**, then select **Next**.

   If you do not wish to install the Server feature, you can ignore this panel (that is, accept the default).

6. The Features panel is displayed.

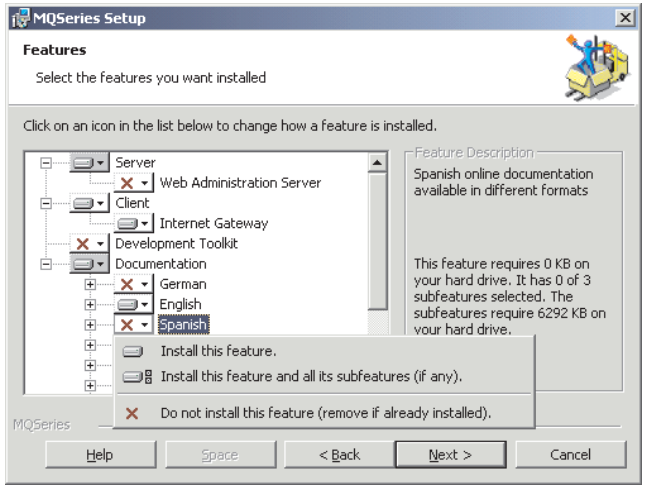

Figure 5. MQSeries Setup window – Features panel

7. Click on the + symbol to the left of a feature to show any dependent features (subfeatures).
8. To change the installation of a feature:
   a. Click on the symbol to the left of the feature name to display a drop-down menu.
   b. Select the required option from:
      - Install this feature
      - Install this feature and all its subfeatures
      - Do not install this feature (remove if already installed).

      The symbol to the left of the feature name changes to show the current installation option. For more information, click **Help** to display the Custom Setup Tips page, which explains the icons used in the feature list.
9. Optionally, to check that there is enough disk space, click **Space**.

   The Disk Space Requirements panel is displayed. This shows the disk space available and the amount of disk space that your current selections will take. It highlights any volumes that do not have enough disk space.

   To close the panel and return to the Features panel, click **OK**.
10. When your selections are complete, click **Next**.
11. If you selected to install the Server feature:
    a. Follow from step 13 on page 29 to the final step of the procedure Installing MQSeries.
    b. Follow the procedure “Configuring MQSeries” on page 29.

c. Follow the procedure "Final installation and verification tasks" on page 33 .

If you did not select to install the Server feature:

a. Follow from step 13 on page 29 to the final step of the procedure Installing MQSeries.

b. Follow the procedure "Final installation and verification tasks" on page 33.

Modifying the installation

You modify the installation when MQSeries for Windows NT and Windows 2000, V5.2.1 is installed and you wish to remove or install some MQSeries features.

1. Insert the MQSeries for Windows NT and Windows 2000 Server CD-ROM into the CD-ROM drive.
2. If autorun is installed, the installation process starts.

   Otherwise, double-click on the Setup icon in the root folder of the CD-ROM to start the installation process.

   The MQSeries Installation Launchpad window is displayed.
3. Select the **MQSeries Installation** option.
4. Select **Launch MQSeries Installer**. Wait until the MQSeries Setup window is displayed with a welcome message.
5. Click **Next** to continue.

   The Program Maintenance panel is displayed.

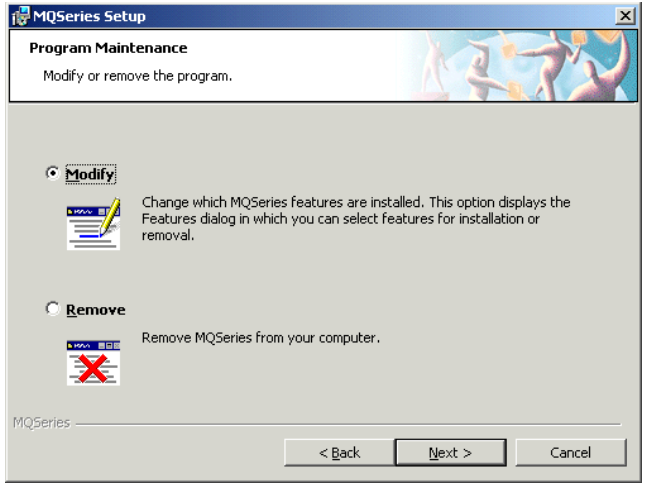

Figure 6. MQSeries Setup window - Program Maintenance panel

6. Select **Modify**, then click **Next**.

The Features panel is displayed.

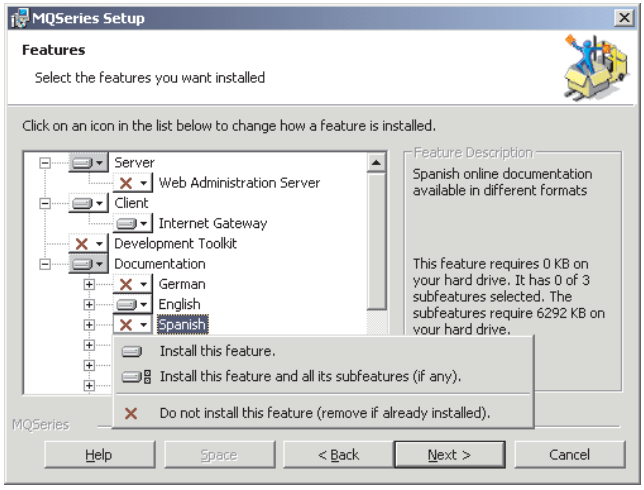

Figure 7. MQSeries Setup window –Features panel

7. Click on the + symbol to the left of a feature to show any dependent features (subfeatures).
8. To change the installation of a feature:
   a. Click on the symbol to the left of the feature name to display a drop-down menu.
   b. Select the required option from:
      - Install this feature
      - Install this feature and all its subfeatures
      - Do not install this feature (remove if already installed).

      The symbol to the left of the feature name changes to show the current installation option.
9. When your selections are complete, click **Next**. MQSeries installation begins.

Using the Default Configuration wizard

You can use the Default Configuration wizard to add a configured queue manager to this computer. This enables you to connect easily with other queue managers in the same MQSeries cluster. You can use the Default Configuration wizard to create, view or alter your default configuration. You can also use this wizard to alter or display details of an existing queue manager that was created by the default configuration.

For a new installation of MQSeries, creating a default configuration enables you to explore features of MQSeries using the Postcard application, the API Exerciser, and the MQSeries Explorer.

The Postcard application provides a fast and simple way to verify that your MQSeries installation completed successfully. It can use default queue manager that is created during the default configuration. If you wish to use the Postcard application for verification, and you do not have any existing queue managers, we recommend that you run the Default Configuration wizard first.

If you have migrated existing queue managers, or created any queue managers since installing MQSeries, you might not want to run the Default Configuration wizard. This is because you cannot create the default configuration if other queue managers already exist. If you have previously created any other queue managers on this computer and you still want to set up a default configuration, you must delete them before you run the Default Configuration wizard.

To use the Default Configuration wizard:

1. Start the Default Configuration wizard in either of the following ways:
   - During MQSeries installation, when the Prepare MQSeries wizard completes, select the option **Setup the Default Configuration**.
   - After MQSeries is installed, select **Default Configuration** from the **MQSeries First Steps** application.

   The MQSeries Default Configuration window is displayed.

   If the default configuration already exists, a message to say this is displayed, and you do not need to follow this procedure. Click **Close**.

   If the default configuration does not exist, select **Set up Default Configuration**.
2. The Default Configuration Wizard window is displayed with a welcome message.

   Click **Next** to display the Setup Default Configuration panel.
3. Click **Next** to display the Select Options panel.

This panel shows the name of the default queue manager that will be created automatically. This name is based on the name of your computer.

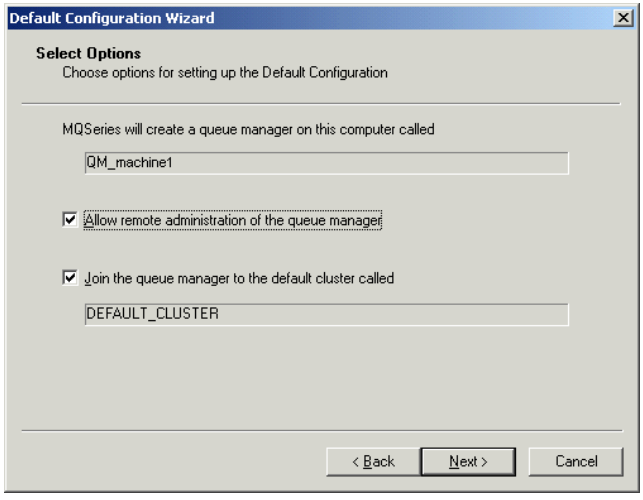

Figure 8. Default Configuration Wizard - Select Options panel

4. Select the options you require so that there is a check mark by each required option. You can select:
   - **Allow remote administration of the queue manager**

     This allows a user on a remote MQSeries machine to administer this queue manager. We recommend that you do this.
   - **Join the queue manager to the default cluster called**

     This joins the default queue manager to the cluster DEFAULT_CLUSTER. We recommend that you do this, because it is then easy to verify the installation by using the Postcard application.
5. When your selections are complete, click **Next** to display the Join Default Cluster panel.
6. Select whether or not to make the default queue manager the repository for the cluster, then click **Next**. Select from:
   - **Yes, make it the repository for the cluster**

     Select this option if this is the first installation of MQSeries V5.2.1 on a computer in this cluster.
   - **No, another computer has already joined the cluster as a repository**

     Select this option if another queue manager (on this, or another, computer in the cluster) is already defined as the repository holder.

7. If you chose to make the default queue manager the repository for the cluster and the computer does not have a fixed IP address, the Repository Location panel is displayed with the message:

   Is there another computer available, with a fixed IP address, that can be used to hold the repository?

   If required, you can select **More Information** to display a dialog box with a longer explanation. To return to the original window, select **OK**.

   Select **Yes** or **No**, as appropriate, then click **Next**.

   Note: We recommend that the queue manager that hosts the repository for a cluster is on a machine that has a fixed IP address.

   Otherwise, go to the next step.
8. The Repository Location panel is displayed. The information it shows depends on the option you chose in step 6:
   - If you chose to make the default queue manager the repository for the cluster, this panel shows the location of the repository, that is, the name of this machine.
   - If another queue manager (on this or another computer in the cluster) is already defined as the repository holder, enter the name of the relevant machine (for example, `machine2.server.company.com`).

   Click **Next** to continue.
9. The Default Configuration summary panel is displayed, showing a summary of the configuration options you selected.

   Click **Finish** to continue.
10. Configuration starts and the MQSeries - Set up Default Configuration window is displayed.

    Wait for the progress bar to complete.
11. When configuration is complete, the MQSeries Default Configuration window is displayed.

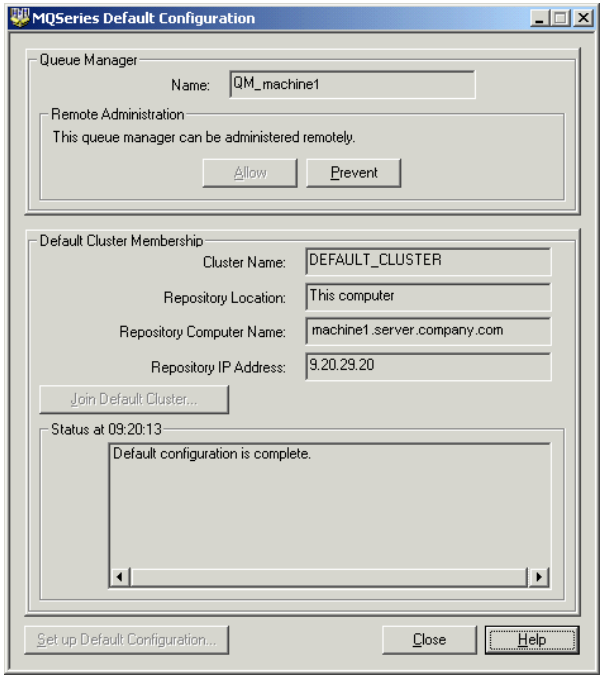

Figure 9. MQSeries Default Configuration window - example configuration

12. Click **Close**.

Using the Remote Administration wizard

You can use the Remote Administration wizard to make existing queue managers on the local machine enabled for remote administration.

1. During MQSeries installation, after MQSeries is configured, the Prepare MQSeries wizard displays a list of recommended tasks to complete the preparation of MQSeries. To start the Remote Administration wizard, select the option **Allow remote administration of existing queue managers** from this window.

   Note: To allow or prevent remote administration after installation is complete, you can use the MQSeries Explorer (see "To allow or prevent remote administration" on page 129).

2. The Remote Administration Wizard window is displayed with a welcome message.

   Click **Next** to continue.

3. The Select queue managers panel is displayed.

   If all the queue managers on the local machine are already enabled for remote administration, or if there are no queue managers defined on the local machine, one of the following messages is displayed:

   - All queue managers on this computer already allow remote administration
   - There are no queue managers defined on this computer

   You do not need to proceed and you can click **Cancel** to close the wizard.

   Otherwise, this window displays a list of queue managers on the local machine that are not enabled for remote administration.

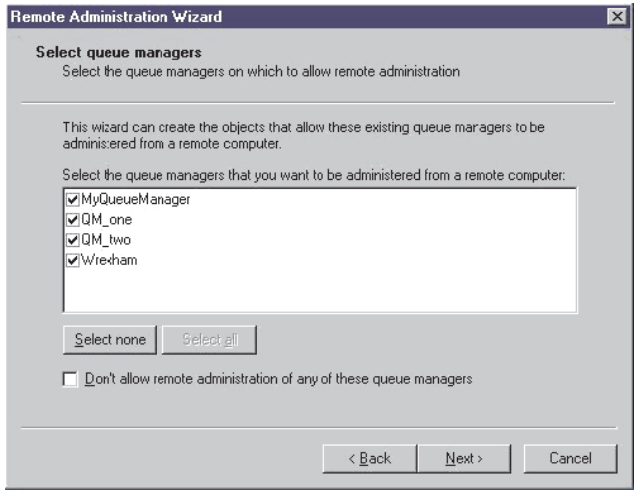

Figure 10. Remote Administration Wizard - Select queue managers panel

4. For each queue manager that you wish to enable for remote administration, select it so that there is a check in the box to the left of the queue manager name.

   You can also use the following:

   - Click the **Select none** button to deselect all queue managers
   - Click the **Select all** button to select all queue managers
   - Select the **Don't allow remote administration of any of these queue managers** option if you do not wish to enable any queue managers on this machine (that is, if you wish to abandon the operation).

   You must either select at least one queue manager, or select the **Don't allow remote administration of any of these queue managers** option to continue.

When your selections are complete, click **Next**.

5. If any of the selected queue managers do not have listeners, the Enter listener port numbers panel is displayed. The upper list on this window shows the queue managers on this machine that already have listeners. The lower list shows the queue managers you selected in the previous step that do not have listeners. For each one, it shows whether a listener already exists on that queue manager, and if so, the TCP/IP port number that it uses.

   For each queue manager that does not have a listener:

   a. Click on the queue manager name to select it.
   b. Enter the required port number in the field next to the **Set** button. This port number must be unique.
   c. Click the **Set** button.

   When all your settings are complete, click **Next**.

   If all the selected queue managers already have listeners, this window is not displayed. Go to the next step.
6. The Allow remote administration panel is displayed. This window shows a summary of your selections.

   To continue, click **Next**.
7. The wizard enables remote administration of the selected queue managers. Wait for the progress bar to complete.
8. The Remote Administration Wizard window displays the following message:

   Completing the Remote Administration Wizard

   Click **Finish**.

After you complete this procedure, continue with the installation (step 11 on page 32).

Using MQSeries First Steps

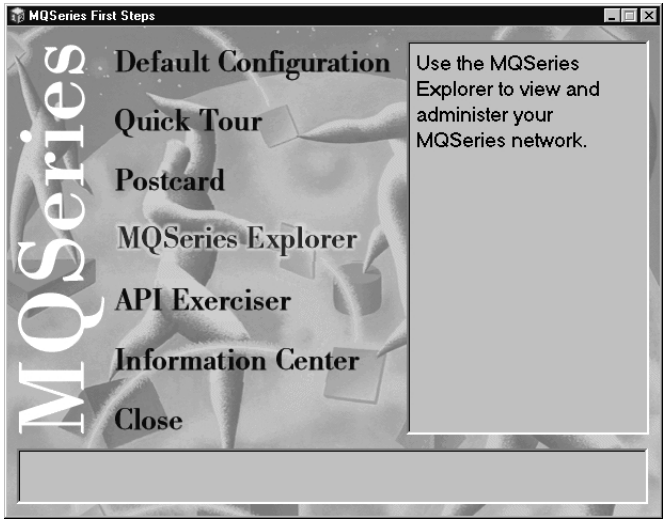

Figure 11. MQSeries First Steps window

You can use the items in the MQSeries First Steps window to explore the facilities in MQSeries.

- **Default Configuration**

  Allows you to add a configured queue manager to this computer for connecting easily with other queue managers in the same MQSeries cluster. You can also use it to alter or display details of an existing queue manager created by the default configuration. This feature is available only using TCP/IP.

  Note: If you migrated existing queue managers, or if you have created any queue managers after you installed MQSeries, you might not want to use this facility. This is because you can only set up a default configuration if there are not any queue managers already, and you might not want do delete your existing queue managers.

- **Quick Tour**

  Gives a brief overview of MQSeries and helps you to learn more about the concepts and functions of the product.

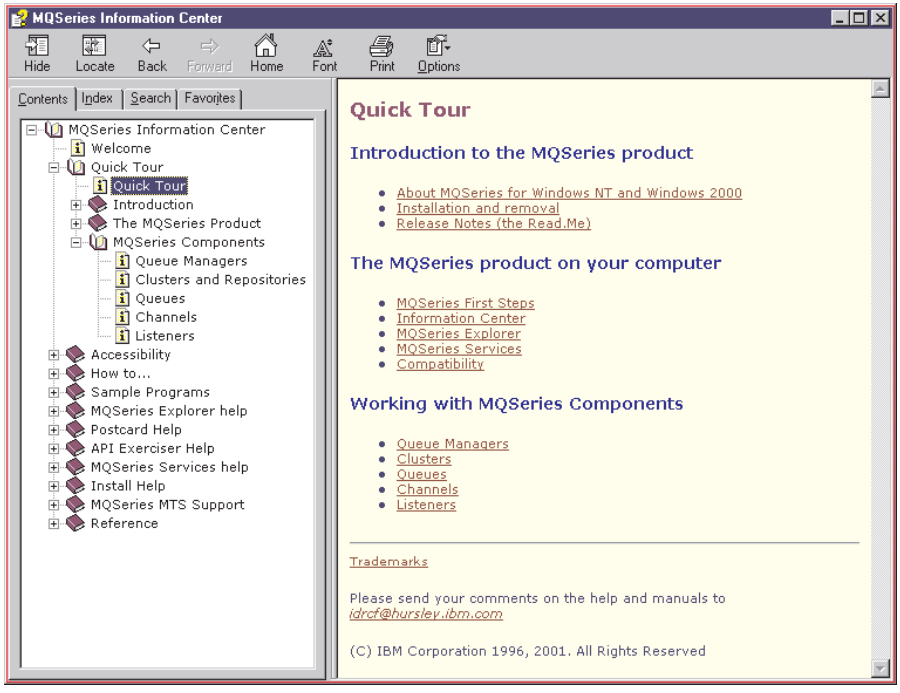

Figure 12. Quick Tour

- **Postcard**

  Allows you to try out MQSeries messaging quickly and easily. You can send a message either to your own machine or to another named user's machine very simply. It is described in detail in "Chapter 5. Verifying the installation" on page 71.

- **MQSeries Explorer**

  Allows you to view and administer your MQSeries network. For more information on using the MQSeries Explorer, see "MQSeries Explorer" on page 128.

- **API Exerciser**

  Allows you to experiment with the API calls that are provided in the MQSeries programming interface.

  To use the API Exerciser:

  1. Select the tab for the page with the button for the API call that you wish to try.
  2. Set the options that are relevant to that page.
  3. Optionally, set the parameters or attributes that you wish to use with the API call.
  4. Select the required API button.

     The results of the call are displayed in the Status area of the window.

  For further information about the API Exerciser, refer to the Information Center online help. To display this help, select the **Help** button on the MQSeries API Exerciser window.

  For further information about the API calls, refer to the *MQSeries Application Programming Guide* and the *MQSeries Application Programming Reference* manual. You can access these manuals from the Reference section of the Information Center.

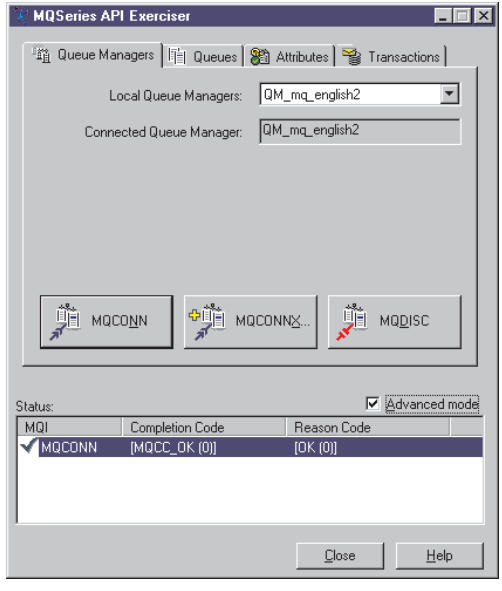

Figure 13. MQSeries API Exerciser window

- **Information Center**

  Gives you fast access to task-oriented help information, reference information, and Web-based online books and home pages.

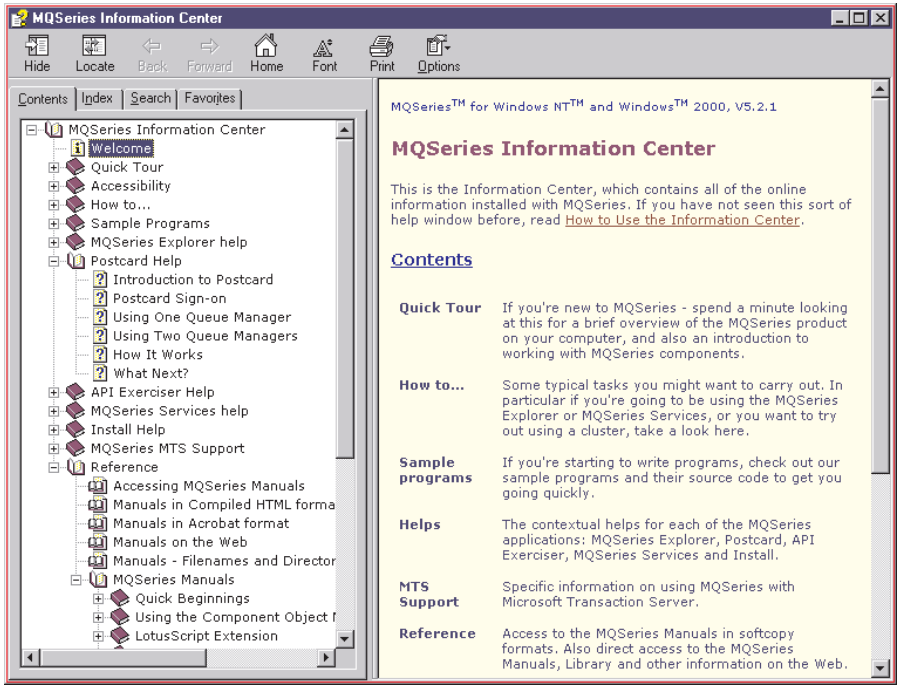

Figure 14. MQSeries Information Center window

Chapter 4. Other methods of installing

"Chapter 3. Installing MQSeries" on page 19 describes how to install MQSeries interactively using the Server CD-ROM. However, there are also other methods of installing MQSeries for Windows NT and Windows 2000:

- "Installing from a LAN"
- "Unattended (silent) installation" on page 50
- "Advanced installation methods" on page 57
  - "Using Msiexec with command line parameters" on page 57
  - "Using Msiexec with a response file" on page 61
  - "Using the MQParms command" on page 62
  - "Using Microsoft System Management Server" on page 69

Before starting to install MQSeries, review the release notes file, which is on the product CD-ROM in the `\Readmes` folder for each national language. This file contains any additional information about the MQSeries Version 5.2.1 product, and might update information in this book.

During installation, the release notes file is copied to the MQSeries program files folder (default `Program Files\IBM\MQSeries`).

For all installation methods, ensure that you use the logging facility. You can set up default logging (see"Creating a log file when you install MQSeries" on page 21), or set the appropriate installation parameter. When installation completes, check the log file to ensure that the installation is successful.

Installing from a LAN

There are two ways to put MQSeries installation files on a LAN server for easier access:

- You can make the MQSeries Server CD-ROM drive shareable.
- You can copy the installation files from the CD-ROM to a server. To do this, use the following steps:
  1. Create a folder on the LAN server to store the installation files. For example:

     ```
     md m:\instmqs
     ```
  2. Load the MQSeries Server CD-ROM. If autorun is enabled, the MQSeries Installation Launchpad window is displayed. Select **Cancel** to close this window.

3. Copy the entire CD-ROM to the installation folder. For example:
   ```
   xcopy e:\*.* m:\instmqs /e
   ```
4. Give all licensed users access to the folder that now contains the CD-ROM image (in this example, the `m:` drive).
5. From a command prompt on the target machine, type the following:
   ```
   \\servername\installation_folder\setup.exe
   ```

   where:

   servername is the name of the server and *installation_folder* is the full path of the installation folder.

   Alternatively:

   a. Map the shared resource to a drive letter. You can use the net use command, or the Windows NT or Windows 2000 Explorer.
   b. Change to the installation folder.
   c. Type **Setup**, then press Enter.
6. Follow the prompts.

Unattended (silent) installation

MQSeries for Windows NT and Windows 2000, V5.2.1 is installed using the Microsoft Installer (MSI). It is possible to invoke MSI directly, without using the MQSeries Installation Launchpad.

This means that you can install MQSeries on a machine without interaction. This process is called unattended (or silent) installation, and is particularly useful for installing MQSeries over a network on a remote machine, because you can install from a shared drive on a LAN server.

To do this, you can invoke MSI with a parameter that calls a response file. A response file is an ASCII text file that contains the parameter values you wish to set for the installation.

The machine on which you wish to install must be able to share the MQSeries Server CD-ROM, or a copy of the files on it, and you must be able to execute a command on that machine.

Notes:

1. The response file you use to install MQSeries for Windows NT and Windows 2000, V5.2.1 using the MQSeries Server CD-ROM is **not** the same as the one used with earlier versions of MQSeries, or with the MQSeries

Client CD-ROM. For details about the response file you use with the MQSeries Client CD-ROM, see "Using response files to install and remove MQSeries clients" on page 110.

2. There are several other methods to invoke MSI without using the MQSeries Installation Launchpad. For details, see "Advanced installation methods" on page 57.

To invoke a silent installation using a response file, you use the `Msiexec` command.

The response file is an ASCII text file, with a format similar to a Windows .ini file, that contains the stanza **[MQSeries]**. This stanza contains parameters that the `Msiexec` command can use, in the form of PROPERTY=value pairs. The `Msiexec` command ignores any other stanzas in the file. An example response file, MQSeries.ini, is supplied with MQSeries. This file contains default installation parameters.

There are three ways to create a response file for installation:

- Copy and edit the file MQSeries.ini that is supplied on the MQSeries Server CD-ROM, using an ASCII file editor.
- Create your own response file using an ASCII file editor.
- Use an advanced method to invoke an installation and specify the SAVEINI property (and optionally, the ONLYINI property) to generate a response file that contains the same installation options. See "Using Msiexec with command line parameters" on page 57.

In the response file, all text is in English, and comments begin with a ; character.

Invoking a silent installation

To invoke a silent installation using a response file, enter the following command at a command line (this command is case sensitive):

```
Msiexec /i "path\MSI\MQSeries.msi" /q USEINI="response_file"
TRANSFORMS=:1033
```

where:

/q Specifies a silent installation.

response_file Is the full path and file name of the file that contains the [MQSeries] stanza and the required PROPERTY=value pairs, for example MQSeries.ini.

`TRANSFORMS=:1033` specifies that the installation is in US English. For further information about installing in different national languages, see "Using transforms" on page 60.

You can also specify PROPERTY=value pairs on the command line (the property must be in upper case), for example:

```
Msiexec /i "path\MSI\MQSeries.msi" /q USEINI="response_file"
TRANSFORMS=:1033 AGREETOLICENSE="yes"
```

If a parameter is specified both on the command line and in the response file, the setting on the command line takes precedence.

Table 3 shows the parameters you can enter in the response file (defaults are shown in bold). Some properties or values are related to uninstallation, rather than installation. Note that:

- PROPERTY strings must be in upper case.
- Value strings are not case sensitive, except for feature names. They can be enclosed in double quotation marks. If a value string includes a blank, it must be enclosed in double quotation marks.
- For a property that can take more than one value, use the format:

  ```
  ADDLOCAL="Server,Client,WebAdmin"
  ```

Table 3. Response file parameters

Property	Values	Meaning
PGMFOLDER	*path*	Folder for the MQSeries program files. For example, `c:\mqm`.
DATFOLDER	*path*	Folder for the MQSeries data files. For example, `c:\mqm\data`.
LOGFOLDER	*path*	Folder for the MQSeries queue manager log files. For example, `c:\mqm\log`.
USERCHOICE	0	Not used for a silent installation. Otherwise, for any other value (including null), if the command line or response file specifies parameters to install features, a dialog is displayed. This dialog prompts the user to accept the preselected options, or review and possibly change them. For other types of installation, when set to 0, suppresses display of the dialog.
AGREETOLICENSE	yes	Accept the terms of the license. For a silent installation, this must be set to yes. If the installation is not silent, this parameter is ignored.

Table 3. Response file parameters (continued)

Property	Values	Meaning
KEEPQMDATA	**keep** | delete	If the Server feature is to be uninstalled, whether or not to delete any existing queue managers. delete removes any existing queue managers. keep, or any other value, keeps them.
REMOVEJAVA	1 | **""**	1. If MQSeries for Windows NT, V5.1 Java support was previously installed, acknowledge that the Version 5.1 Java support files should be deleted. For a silent installation in this situation, this value must be set to 1, or installation fails. "". If MQSeries for Windows NT, V5.1 Java support was previously installed, a dialog is displayed that the user must acknowledge (the default). If MQSeries for Windows NT, V5.1 Java support was not previously installed, this parameter is ignored.
KEEPWEBDATA	**keep** | delete	If the WebAdmin feature is to be uninstalled, whether or not to delete any existing Web Administration scripts. delete removes any existing Web Administration scripts. keep, or any other value, keeps them.
LAUNCHWIZ	0 | 1 | **""**	0. Do not launch the Prepare MQSeries wizard after MQSeries is installed. 1. Launch the Prepare MQSeries wizard if the Server feature is installed. "". Launch the Prepare MQSeries wizard if this installation will install the Server (the default). If this option will launch the Prepare MQSeries wizard, you can specify the WIZPARMFILE, either in this file, or on the command line.

Table 3. Response file parameters (continued)

Property	Values	Meaning
WIZPARMFILE	*path**file_name*	When specified, the file that contains the parameters to pass to the Prepare MQSeries wizard when it is launched. These are in the [Services], [DefaultConfiguration] and [RemoteAdministration] stanzas. See "Parameter file" on page 63.
ADDLOCAL	*feature*, *feature*, ... | All | ""	A comma-separated list of features to install locally.[1] All installs all features. "" installs no features (the default).
REMOVE	*feature*, *feature*, ... | All | ""	A comma-separated list of features to remove.[1] All uninstalls all features. "" uninstalls no features (the default).
1. For a list of valid feature names, see Table 4.		

Table 4 shows the features that can be values for the ADDLOCAL and REMOVE properties.

Table 4. Valid feature names

Feature Name	Description
Software features	
Client	The MQSeries for Windows NT and Windows 2000 client.
GuiAdmin	GUI administration functions, that is, MQSeries Services and MQSeries Explorer. This feature is installed automatically if the Server feature is installed. On Windows NT only, you can select to remove it. This might be of use if the Windows NT system does not include the system upgrades that are required to run MQSeries Services and MQSeries Explorer.
Internet_gateway	Provides access to MQSeries applications via HTML and CGI.
Server	The MQSeries for Windows NT and Windows 2000 server.
Toolkit	Sample MQSeries program source and sample executable code.
WebAdmin	Provides access to the Web-based administration server.
German documentation features	
docs_de_de_chm	MQSeries books (in Microsoft HTML Help format) in German.
docs_de_de_pdf	MQSeries Adobe Acrobat books (in PDF format) in German.

Table 4. Valid feature names (continued)

Feature Name	Description
US English documentation features	
docs_en_us_chm	MQSeries books (in Microsoft HTML Help format) in US English.
docs_en_us_pdf	MQSeries Adobe Acrobat books (in PDF format) in US English.
docs_en_us_inet	MQSeries Internet Gateway documentation (in HTML format) in US English.
Spanish documentation features	
docs_es_es_chm	MQSeries books (in Microsoft HTML Help format) in Spanish.
docs_es_es_pdf	MQSeries Adobe Acrobat books (in PDF format) in Spanish.
docs_es_es_inet	MQSeries Internet Gateway documentation (in HTML format) in Spanish.
French documentation features	
docs_fr_fr_chm	MQSeries books (in Microsoft HTML Help format) in French.
docs_fr_fr_pdf	MQSeries Adobe Acrobat books (in PDF format) in French.
docs_fr_fr_inet	MQSeries Internet Gateway documentation (in HTML format) in French.
Italian documentation features	
docs_it_it_chm	MQSeries books (in Microsoft HTML Help format) in Italian.
docs_it_it_pdf	MQSeries Adobe Acrobat books (in PDF format) in Italian.
docs_it_it_inet	MQSeries Internet Gateway documentation (in HTML format) in Italian.
Japanese documentation features	
docs_ja_jp_chm	MQSeries books (in Microsoft HTML Help format) in Japanese.
docs_ja_jp_pdf	MQSeries Adobe Acrobat books (in PDF format) in Japanese.
docs_ja_jp_inet	MQSeries Internet Gateway documentation (in HTML format) in Japanese.
Korean documentation features	
docs_ko_kr_chm	MQSeries books (in Microsoft HTML Help format) in Korean.
docs_ko_kr_pdf	MQSeries Adobe Acrobat books (in PDF format) in Korean.
Brazilian Portuguese documentation features	
docs_pt_br_chm	MQSeries books (in Microsoft HTML Help format) in Brazilian Portuguese.
docs_pt_br_pdf	MQSeries Adobe Acrobat books (in PDF format) in Brazilian Portuguese.

Table 4. Valid feature names (continued)

Feature Name	Description
docs_pt_br_inet	MQSeries Internet Gateway documentation (in HTML format) in Brazilian Portuguese.
Simplified Chinese documentation features	
docs_zh_cn_chm	MQSeries books (in Microsoft HTML Help format) in Simplified Chinese.
docs_zh_cn_pdf	MQSeries Adobe Acrobat books (in PDF format) in Simplified Chinese.
Traditional Chinese documentation features	
docs_zh_tw_chm	MQSeries books (in Microsoft HTML Help format) in Traditional Chinese.
docs_zh_tw_pdf	MQSeries Adobe Acrobat books (in PDF format) in Traditional Chinese.
docs_zh_tw_inet	MQSeries Internet Gateway documentation (in HTML format) in Traditional Chinese.

An example of a typical response file is:

```
[MQSeries]
PGMFOLDER="c:\mqm"
DATFOLDER="c:\mqm\data"
LOGFOLDER="c:\mqm\log"
AGREETOLICENSE="yes"
LAUNCHWIZ=""
WIZPARMFILE="d:\MQParms.ini"
ADDLOCAL="Server,Client,Internet_gateway"
```

Advanced installation methods

MQSeries for Windows NT and Windows 2000, V5.2.1 is installed using the Microsoft Installer (MSI). It is possible to install MQSeries by invoking MSI directly, without using the MQSeries Installation Launchpad. You can use this process for more complex unattended (or silent) installation, or for interactive installation, from a command line.

The machine on which you wish to install must be able to share the Server CD-ROM, or a copy of the files on it, and you must be able to execute a command on that machine.

Also, you can use the Microsoft System Management Server to install MQSeries. See "Creating the MQSeries SMS software package" on page 69.

There are several ways to invoke MSI without using the MQSeries Installation Launchpad:

- Use the `Msiexec` command with command line parameters. See "Using Msiexec with command line parameters".
- Use the `Msiexec` command with a parameter that calls a response file. The response file contains the parameters that a user normally specifies during an interactive installation. See "Using Msiexec with a response file" on page 61.
- Use the `MQParms` command with command line parameters, a parameter file, or both. The parameter file can contain many more parameters than a response file. See "Using the MQParms command" on page 62.

The following sections describe how to invoke MSI from the command line in more detail. These sections also describe the parameters you can use for such an installation.

Using Msiexec with command line parameters

You can use the `Msiexec` command with command line parameters to invoke installation or uninstallation. At a command line, enter the following command, followed by the parameters you require:

```
Msiexec
```

Table 5 on page 58 shows the parameters you can use. For a silent installation, this must include the **/q** or **/qn** parameter.

Note: The `Msiexec` command can take further parameters that are not supported or listed here. If you need details of these, refer to the help file for the Windows Installer that is supplied with the MSI software development kit. See the Microsoft Web Site at:

```
http://www.microsoft.com
```

A typical example of an `Msiexec` command is:

```
Msiexec /i "path\MSI\MQSeries.msi" /l*v c:\install.log /m mif_file
TRANSFORMS=":1033" ADDLOCAL=Server REMOVE="" WIZPARMFILE="path\MQParms.ini"
```

Table 5. Msiexec command line parameters

Parameter	Options	Description
/a	*Package*	Installs a product on the network using administrative installation, that is, installs a source image of the application onto the network that is similar to a source image on a CD-ROM.
/i	*Package* | *ProductCode*	Installs or configures a product using the specified .msi file. The MQSeries Windows Installer package is MQSeries.msi.
/j	[u | m]Package | [u | m]Package /t *Transform List* | [u | m]Package /g *LanguageID*	Advertises the product. This option ignores any property values entered on the command line. **u** Advertise to the current user. **m** Advertise to all users of machine. **g** Language ID. **t** Applies transform to advertised package.
/l	[i | w | e | a | r | u | c | m | o | p | v | + | !]*Logfile*	Specifies path to log file, with flags to set which information to log. **i** Status messages. **w** Non-fatal warnings. **e** All error messages. **a** Start up of actions. **r** Action-specific records. **u** User requests. **c** Initial user interface parameters. **m** Out-of-memory or fatal exit information. **o** Out-of-disk-space messages. **p** Terminal properties. **v** Verbose output. **+** Append to existing file. **!** Flush each line to the log. * Log all information except for the v option. To log all information including the v option, specify "/l*v".

Table 5. Msiexec command line parameters (continued)

Parameter	Options	Description
/m	*filename*	Generates a Microsoft System Management Server (SMS) status .mif file. Must be used with either the install (/i), remove (/x), administrative installation (/a), or reinstall (/f) options. The ISMIF32.DLL is installed as part of SMS and must be on the path. The fields of the status .mif file are filled with the following information: • Manufacturer - Author • Product - Revision Number • Version - Subject • Locale - Template • Serial Number - not set • Installation - set by ISMIF32.DLL to ″DateTime″ • InstallStatus - ″Success″ or ″Failed″ • Description - Error messages in the following order: 1. Error messages generated by installer. 2. Resource from msi.dll if install could not commence or user exit 3. System error message file. 4. Formatted message: ″Installer error %i″, where %i is the error returned from msi.dll.
/q	n | b | r | f	Sets the level of user interface displayed during the install. **q, qn** No user interface. A silent installation that displays no user interface. **qb** Basic user interface. Displays the built-in modeless dialog boxes that show progress messages **qr** Reduced user interface with a modal dialog box displayed at the end of the installation. **qf** Full user interface with a modal dialog box displayed at the end. **qn+** No user interface except for a modal dialog box displayed at the end of installation. **qb+** Basic user interface with a modal dialog box displayed at the end. The modal box is not displayed if the user cancels the installation. **qb-** Basic user interface with no modal dialog boxes. Note that /qb+- is not a supported UI level.

Table 5. Msiexec command line parameters (continued)

Parameter	Options	Description
/x	*Package|ProductCode*	Uninstalls the product.
PROPERTY=VALUE		See Table 3 on page 52 and Table 6.

Notes:

1. The options /i, /x, /j[u|m], and /a should not be used together.
2. The options /t and /g should only be used with /j.
3. The options /l and /q can be used with /i, /x, /j[u|m], and /a.

Table 3 on page 52 and Table 6 show the parameters that you can enter as PROPERTY=value pairs on the `Msiexec` command line (defaults are shown in bold). Note that:

- PROPERTY strings must be in upper case.
- Value strings are case sensitive. They can be enclosed in double quotation marks. If a value string includes a blank, it must be enclosed in double quotation marks.
- For a property that can take more than one value, use the format:

  ```
  ADDLOCAL="Server,Client,WebAdmin"
  ```

Table 6. Msiexec PROPERTY= value parameters

Property	Values	Meaning
USEINI	*path\file_name*	Use the specified response file. See "Using Msiexec with a response file" on page 61.
SAVEINI	*path\file_name*	Generate a response file during installation. The file will contain those parameters selected for this installation that a user could make during an interactive installation.
ONLYINI	1|""	1 or any value other than null. End the installation before updating the target system, but after generating a response file, if this is specified. "". Continue the installation and update the target machine (the default).

Using transforms

MSI can use transforms to modify an installation. During MQSeries installation, transforms can be used to support different national languages. MQSeries is supplied with transform files in the `\MSI` folder of the MQSeries Server CD-ROM. These files are also embedded in the MQSeries Windows Installer package, MQSeries.msi.

On the Msiexec command line, you can specify the required language by using the TRANSFORMS property in a PROPERTY=value pair, for example:

```
TRANSFORMS=:1033
```

The : character means use the embedded transform. Otherwise, you must specify the full path and file name of the transform file, for example:

```
TRANSFORMS=D:\Msi\1033.mst
```

Table 7 shows the supplied transform files, the resulting language, and the numerical value to use in the Msiexec command line.

Table 7. Supplied transform files

Language	Transform File name	Value
US English	1033.mst	1033
German	1031.mst	1031
French	1036.mst	1036
Spanish	1034.mst	1034
Italian	1040.mst	1040
Brazilian Portuguese	1046.mst	1046
Japanese	1041.mst	1041
Korean	1042.mst	1042
Simplified Chinese	2052.mst	2052
Traditional Chinese	1028.mst	1028

You can also specify the required language by using the MQPLANGUAGE property with the MQParms command. See Table 8 on page 65.

Using Msiexec with a response file

You can use the Msiexec command with a parameter that calls a response file, as described in "Unattended (silent) installation" on page 50. The response file contains the parameters that a user normally specifies during an interactive installation.

You can combine the Msiexec command line parameters described in "Using Msiexec with command line parameters" on page 57 with the response file to invoke a complex installation or uninstallation. This could be silent or interactive. For a silent installation, this must include the **/q** or **/qn** parameter.

To invoke the Msiexec command using a response file, enter the following command at a command line:

```
Msiexec [parameters] USEINI="response_file"
```

where:

parameters are command line parameters listed in Table 5 on page 58, or PROPERTY=value pairs on the command line (always put the command line parameters first).

response_file is the full path and file name of the file that contains the [MQSeries] stanza and the required PROPERTY=value pairs, for example, MQSeries.ini.

If a parameter is specified both on the command line and in the response file, the setting on the command line takes precedence.

For example:

```
Msiexec /i "path\MSI\MQSeries.msi" /l*v c:\install.log /q USERCHOICE= "1"
USEINI="c:\MyResponseFile.ini"
```

Using the MQParms command

You can use the `MQParms` command to invoke installation or uninstallation. This command can use parameters on a command line, or those specified in a parameter file. The parameter file is an ASCII text file that contains the parameter values you wish to set for the installation. The `MQParms` command takes the specified parameters and generates the corresponding `Msiexec` command line.

This means that you can save all the parameters you wish to use with the `Msiexec` command in a single file.

For a silent installation, this must include the **/q** or **/qn** parameter, either on the command line, or in the [MSI] stanza of the parameter file.

You can specify many more parameters in the parameter file that you use with the `MQParms` command than you can in the response file that you use directly with the `Msiexec` command. Also, as well as parameters that the MQSeries installation uses, you can specify parameters that can be used by the Prepare MQSeries wizard.

An example of the file MQParms.ini is supplied with MQSeries. This file contains default installation parameters.

There are two ways to create a parameter file for installation:

- Copy and edit the file MQParms.ini that is supplied in the root folder of the MQSeries Server CD-ROM, using an ASCII file editor.
- Create your own parameter file using an ASCII file editor.

To invoke installation using the MQParms command:

1. From a command line, change to the root folder of the MQSeries Server CD-ROM (that is, the location of the file MQParms.exe).
2. Enter the following command:

   ```
   MQParms [parameter_file] [parameters]
   ```

   where:

   parameter_file is the file that contains the required parameter values. If this file is not in the same folder as MQParms.exe, specify the full path and file name. If you do not specify a parameter file, the default is MQParms.ini. For further details, see "Parameter file".

   parameters are one or more command line parameters, as listed in Table 5 on page 58.

A typical example of a command line is:

```
MQParms MyParams.ini /l*v c:install.log
```

If you specify a parameter both on the command line and in the parameter file, the setting on the command line takes precedence.

If you specify a parameter file, you might want to run the encryption utility before you use the MQParms command (see "Encrypting a parameter file" on page 68).

If you do not specify /i, /x, /a or /j, MQParms defaults to standard installation using the MQSeries Windows Installer package, MQSeries.msi. That is, it generates the following part of the command line:

```
/i current_folder\MSI\MQSeries.msi
```

If you do not specify a WIZPARMFILE parameter, MQParms defaults to the current parameter file. That is, it generates the following part of the command line:

```
WIZPARMFILE="current_folder\current_parameter_file"
```

Parameter file

A parameter file is an ASCII text file that contains sections (stanzas) with parameters that can be used by the MQParms command. Typically, this is an initialization file such as MQParms.ini.

The MQParms command takes parameters from the following stanzas in the file:

[MSI] Contains general properties related to how the MQParms command runs and to the installation of MQSeries.

The properties you can set in this stanza are listed in Table 3 on page 52 , Table 5 on page 58, Table 6 on page 60, and Table 8 on page 65.

[Services]
Contains properties related to MQSeries account configuration, in particular, the user account required for MQSeries Services. If you are installing MQSeries on a network where the domain controller is on a Windows 2000 server, you probably need details of a special domain account. For further information, see "Appendix B. Configuring MQSeries accounts" on page 163 and "Configuring MQSeries" on page 29.

The properties you can set in this stanza are listed in Table 10 on page 66.

[Default Configuration]
Contains properties related to the default configuration, that is, adding or configuring a default queue manager. For further information, see "Using the Default Configuration wizard" on page 39.

The properties you can set in this stanza are listed in Table 11 on page 66.

[RemoteAdministration]
Contains properties related to enabling existing queue managers for remote administration. For further information, see "Using the Remote Administration wizard" on page 42.

The properties you can set in this stanza are listed in Table 12 on page 67.

`MQParms` ignores any other stanzas in the file.

In the [MSI] stanza, the properties can be in command line format (for example, `/q`) or PROPERTY=value format.

In all other stanzas, the parameters are in the form PROPERTY=VALUE, where PROPERTY is always interpreted as upper case, but VALUE is case sensitive. If a value string includes a blank, it must be enclosed in double quotation marks. Most other values can be enclosed in double quotation marks. Some properties can take more than one value, for example:

```
ADDLOCAL="Server,Client"
```

To clear a property, set its value to an empty string, for example:

```
REINSTALL=""
```

The following tables show the properties that you can set. The default is shown in bold.

For the [MSI] stanza, you can enter parameters in command line format (for example, `/q`) and parameters in PROPERTY=value format (for example, `ADDLOCAL="Server"`). Refer to Table 3 on page 52, Table 5 on page 58 and Table 6 on page 60 for the properties used to install MQSeries. Table 8 shows additional properties in the stanza that affect how the `MQParms` command runs, but do not affect the installation.

Table 8. Properties used by MQParms in the MSI stanza

Property	Values	Description
MQPLOG	*path\file_name*	When specified, MQParms generates a text log file with the specified name and location.
MQPLANGUAGE	**system** | user | *transform_value*	The installation language. system. Install using the language of the default system locale (the default). user. Install using the language of the default locale of the user. *transform_value*. Install using the language specified by this value. See Table 9.
MQPSMS	**0**	0. MQParms does not wait for the `Msiexec` command to end (the default). Any other value. MQParms waits for the `Msiexec` command to end.

Table 9. Valid values for the MQPLANGUAGE property

Language	Valid values		
US English	English	en_us	1033
German	German	de_de	1031
French	French	fr_fr	1036
Spanish	Spanish	es_es	1034
Italian	Italian	it_it	1040
Brazilian Portuguese	Brazilian Portuguese	pt_br	1046
Japanese	Japanese	ja_jp	1041
Korean	Korean	ko_kr	1042
Simplified Chinese	Simplified Chinese	zh_cn	2052
Traditional Chinese	Traditional Chinese	zh_tw	1028

For the [Services] stanza, you can enter parameters in PROPERTY=value format. You might want to encrypt the values in this stanza. See "Encrypting a parameter file" on page 68.

Table 10. Properties in the Services stanza

Property	Values	Description
USERTYPE	**local** | domain	The type of user account to use. local. Creates a local user account. domain. Uses the domain user account specified by DOMAINNAME, USERNAME, and PASSWORD.
DOMAINNAME	*domain_name*[1]	The domain for the domain user account. Required if USERTYPE is set to domain.
USERNAME	*user_name*[1]	The user name for the domain user account. Required if USERTYPE is set to domain.
PASSWORD	*password*[1]	The password for the domain user account. Required if USERTYPE is set to domain.
1. Do not enclose this value in double quotation marks.		

For the [DefaultConfiguration] stanza, you can enter parameters in PROPERTY=value format.

Table 11. Properties in the DefaultConfiguration stanza

Property	Values	Description
CREATE	yes | **no**	Whether or not to create the default configuration. If this is set to yes and a default configuration already exists, there is no action. If this is set to yes and the default configuration cannot be created because other queue managers already exist, an error is raised.

Table 11. Properties in the DefaultConfiguration stanza (continued)

Property	Values	Description
MIGRATE	yes | **no**	Whether or not to migrate an existing default configuration from a previous version of MQSeries. If this is set to yes and a default configuration does not already exist, there is no action.
ALLOWREMOTEADMIN	**yes** | no	Whether or not to enable remote administration of the queue manager that is created as part of the default configuration.
JOINDEFAULTCLUSTER	**yes** | no	Whether or not the default queue manager joins the default cluster.
REPOSITORY	**local** | *computer_name* | *computer_ip_address*	The location of the default configuration cluster repository. Use *computer_name* or *computer_ip_address* if the repository is not on the local machine. If it is not possible to 'ping' the remote machine, the default configuration is not joined to the cluster, and an error is raised.

For the [RemoteAdministration] stanza, you can enter parameters in PROPERTY=value format.

Table 12. Properties in the RemoteAdministration stanza

Property	Values	Description
ALLOWFORQMGR	**none** | *qmgr_name*, *qmgr_name*, ...	none. Leaves any existing queue managers unchanged. *qmgr_name*. A list of existing queue managers to be enabled for remote administration.
LISTENERPORTNUMBER	*port_number*, *port_number*, ...	The list of TCP/IP port numbers to be used for the corresponding list of queue managers, for each queue manager that does not already have a listener defined. If you do not specify enough port numbers, no queue managers are enabled for remote administration and an error is raised.

A typical example of a parameter file is:

```
[MSI]
MQPLANGUAGE=1033
MQPLOG=%temp%\MQParms.log
MQPSMS=no
ADDLOCAL=Server
/m miffile
REMOVE=""
/l*v c:\install.log

[Services]
USERTYPE=domain
DOMAINNAME=mqm*df349edfcab12
USERNAME=mqm*a087ed4b9e9c
PASSWORD=mqm*d7eba3463bd0a3

[DefaultConfiguration]
CREATE=yes
MIGRATE=""
ALLOWREMOTEADMIN=yes
JONDEFAULTCLUSTER=yes
REPOSITORY=machine1.server.company.com

[RemoteAdministration]
ALLOWFORQMGR="testqueue1,testqueue2"
LISTENERPORTNUMBER=1414,1822"
```

Encrypting a parameter file

You can use the `setmqipw` utility to encrypt the DOMAINNAME, USERNAME, and PASSWORD values in the [Services] stanza of a parameter file, if they are not already encrypted. (These values could be encrypted if you have run the utility before.)

This encryption means that if you need a special domain account to configure MQSeries (see "Appendix B. Configuring MQSeries accounts" on page 163), details of that account are kept secure. Otherwise, these values, including the domain account password, flow across the network as clear text. You do not have to use this utility, but it is useful if security in your network is an issue.

To run the script:

1. From a command line, change to the folder that contains your parameter file.
2. Enter the following command:

   CD_drive:\setmqipw

   Note: It is possible to run the command from a different folder. In this situation, enter the following command, where *parameter_file* is the full path and file name of the parameter file:

   CD_drive:\setmqipw *parameter_file*

If you view the resulting parameter file, the encrypted values start with the string `mqm*`. Do not use this prefix for any other values; passwords or names that begin with this prefix are not supported.

The utility creates a log file, `setmqipw.log` in the current directory. This file contains messages related to the encryption process. When encryption is successful, messages are similar to:

```
Encryption complete
Configuration file closed
Processing complete
```

After you encrypt the parameter file, you can use it in the normal way with the `MQParms` command (see "Using the MQParms command" on page 62).

Using Microsoft System Management Server

There are two major steps to install MQSeries using the Microsoft System Management Server:

1. Create an SMS software package (see "Creating the MQSeries SMS software package").
2. Create an SMS job to distribute and install the package (see "Creating the MQSeries SMS job" on page 70).

For more detailed information on how to create a software package and a job, refer to the Microsoft System Management Server documentation.

Creating the MQSeries SMS software package

To create the SMS software installation package:

1. From the Microsoft SMS Administrator application, open the **Packages** folder and create a new package.
2. In the SMS **Package Properties** dialog, click on the **Import** button to create the software package by importing a Package Definition File (PDF).
3. In the **File Browser** dialog, select the drive where the IBM MQSeries CD-ROM is located.
4. Select the current root folder, which contains the package definition file `MQSERIES.PDF`.

   You can also find the `MQSERIES.PDF` file in the local drive, or shared network drive to where you copied the MQSeries Installation software.
5. Select the **MQSERIES.PDF** file and click on the **OK** button.
6. Click on the **Workstation** button. In the **Source Directory** entry field, specify the fully qualified path name to the MQSeries root folder that contains the MQSeries installation software. See "Installing from a LAN" on page 49.

7. Select the appropriate Workstation Command Line:
   - **Automated Deinstallation of IBM MQSeries**
   - **Automated Installation of IBM MQSeries (US English)**
8. Click on the **Properties** button for each process and review the **Command Line** entry field to ensure that the parameters are what you require.
9. Click on the **Close** button to close the **Workstation Properties** dialog.

   Note: If you specified a local path in the **Source Directory** entry field, you will get a pop-up dialog warning you that the local path you specified might not be accessible to SMS components running on another machine. Click on the **OK** button to continue.
10. Click on the **OK** button to close the **Package Properties** window.

    A pop-up dialog appears indicating that SMS will update the software package at all sites. Click the **OK** button to continue.

The software package has been created and can be installed by creating an SMS job.

Creating the MQSeries SMS job

You must now create an SMS job to distribute and install the software packages you created, which contain the MQSeries installation software.

Refer to the Microsoft System Management Server documentation for detailed information on how to create and run a job.

Notes:

1. You ***must*** be logged onto the target machine with Administrator authority in order to install MQSeries.
2. When creating an SMS Job to distribute and install the software package, ensure that you select the appropriate workstation command. The workstation commands are displayed on the **Job Details** dialog in the **Run Phase** section and appear in a drop-down listbox.

Chapter 5. Verifying the installation

Before you can use MQSeries for Windows NT and Windows 2000, you need to verify that the product has installed correctly. You can verify an MQSeries server installation at different levels:

- A local (standalone) installation that has no communication links with other MQSeries installations.

  If both queue managers are in the same cluster, see "Using Postcard to verify a local installation" on page 72.

  If both queue managers are not in the same cluster, see "Verifying a local installation" on page 78.
- A server-to-server installation that includes communication links to other MQSeries installations.

  If both machines are in the same cluster, or channels are configured to communicate between the two machines, see "Using Postcard to verify a server-to-server installation" on page 76.

  If the machines are not in the same cluster and channels are not configured to communicate between the two machines, see "Chapter 6. Setting up communications" on page 83, then "Verifying a server-to-server installation" on page 79.

For a client-to-server installation that includes communication links between a server machine and an MQSeries client, see "Chapter 7. Verifying a client installation" on page 87.

Using the Postcard application

You can verify a *local* installation (which does not have any communication links with other MQSeries installations) by using the Postcard application that is supplied with MQSeries. This application allows you to send a message between two users on your machine. When the message arrives at the recipient user, this verifies that MQSeries is successfully installed and that your communication links are working properly.

For further information, see "Using Postcard to verify a local installation" on page 72.

You can also use the Postcard application to verify communication between your machine and the machine of another named user, where that machine is running MQSeries and using TCP/IP. Therefore, you can use Postcard to verify that you can communicate with another server. To use the 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 "Chapter 6. Setting up communications" on page 83).

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

- Run the Default Configuration wizard on both machines to create or alter the default queue managers and link them to the default cluster (see "Using the Default Configuration wizard" on page 39).
- Create your own queue managers on both machines, create a cluster, and ensure that the queue managers that you create belong to the same cluster.

You can use the Postcard application with existing queue managers, as long as both queue managers belong to the same cluster.

For further information, see "Using Postcard to verify a server-to-server installation" on page 76.

Using Postcard to verify a local installation

Note: TCP/IP must be already installed on the machine, and 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 during default configuration, or another queue manager that you have set up yourself.

To verify that the local installation is working, you can send a message to yourself using the Postcard application. This application allows you to create two postcards on the same machine and send messages between them, verifying that MQSeries messaging is working correctly on the machine.

1. Go to the MQSeries First Steps folder.

   At the end of installation, if you selected **Launch MQSeries First Steps** from the Completing the Prepare MQSeries Wizard window, this window is already open.

   Alternatively, select **Start→Programs→IBM MQSeries V5.2.1→First Steps**.

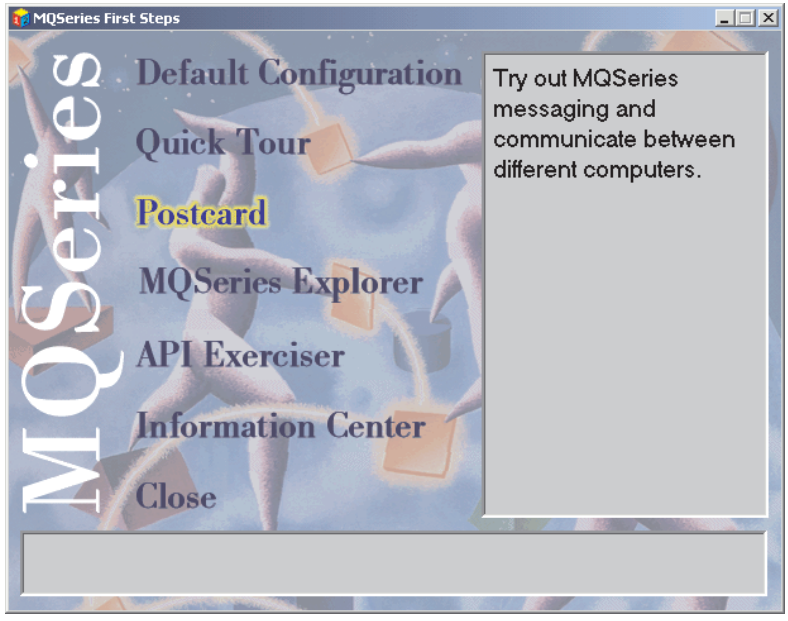

Figure 15. MQSeries First Steps window

2. Click **Postcard**.
3. The **MQSeries Postcard - Sign On** window is displayed.

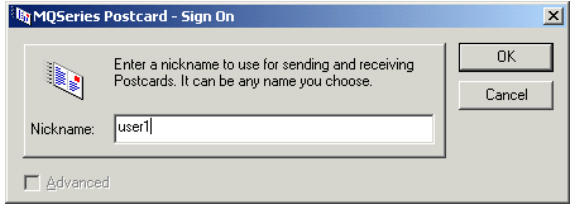

Figure 16. MQSeries Postcard - Sign On window

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 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 wish 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 wish 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.

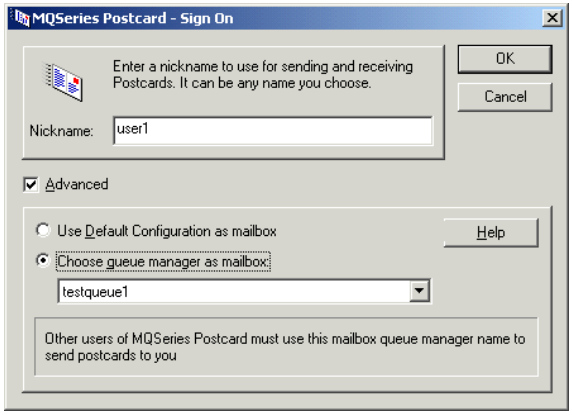

Figure 17. MQSeries Postcard - Sign On window with the Advanced options

5. From the First Steps folder, click **Postcard** again to open a second postcard window.
6. The **MQSeries 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** be in the same cluster as the queue manager for the first postcard.
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 would need to type the recipient's machine in the **On:** field. An example machine name is `machine2.server.company.com`.

   If the receiver is on a different machine and is not using the default queue manager as the mailbox, you would need to type the recipient's queue manager in the **On:** field.

10. Click **Send**.

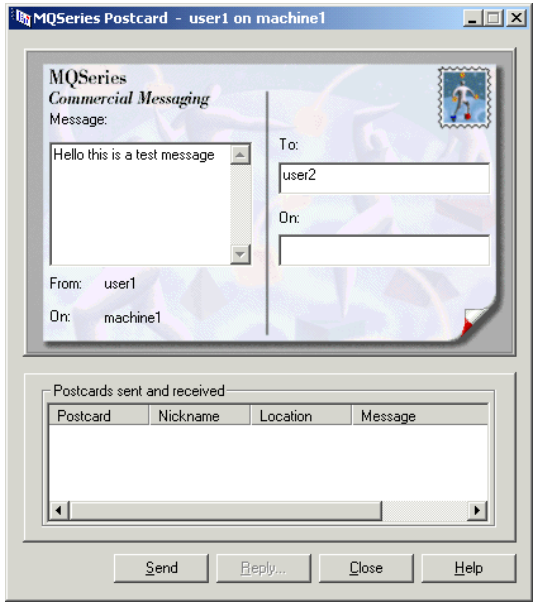

Figure 18. MQSeries Postcard window – completed postcard

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 on the message in the **Postcards sent and received** area to view it.

If you complete this procedure successfully, it verifies that MQSeries is correctly installed.

What next?

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

- Install MQSeries on other machines. Follow the same installation procedure that you used for the first machine. Ensure that you use the Join Default Cluster window to add the other machines to your first machine's cluster.
- Install the MQSeries client on other machines. See "Chapter 3. Installing MQSeries" on page 19 or "Chapter 10. Using the MQSeries Client CD-ROM" on page 101.
- Continue with further administration tasks. See "Part 3. Getting started with MQSeries" on page 115.

Using Postcard to verify a server-to-server installation

You can use the 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 Postcard to verify that you can communicate with another server. Before you start:

- Make sure that TCP/IP and MQSeries 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 "Chapter 6. Setting up communications" on page 83).

The following steps describe how to verify communication between two machines – the *sender* of the message and the *receiver*.

On the sender machine:

1. Go to the MQSeries First Steps folder.

   At the end of installation, if you selected **Launch MQSeries First Steps** from the Completing the Prepare MQSeries Wizard window, this window is already open.

   Alternatively, select **Start→Programs→IBM MQSeries V5.2.1→First Steps**.
2. Click **Postcard**.
3. The **MQSeries 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 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 wish 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 wish 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 (for example, `machine2.server.company.com`). If the receiver is not using the default queue manager, type the queue manager name in the **On:** field.
6. Select **Send**.

On the receiver machine:

1. To receive the message, open a Postcard (from the First Steps folder).
2. Type in the nickname of the recipient, then click **OK** to display the MQSeries 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 MQSeries is 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 MQSeries (see "Part 3. Getting started with MQSeries" on page 115).

Verifying a local installation

If you do not wish to use the Postcard application, you can verify a local installation with a simple configuration of one queue manager and one queue. You use sample applications to put a message onto the queue and to read the message from the queue.

Setting up the installation

Use the following steps to install a queue manager and a queue:

1. Create a default queue manager called `venus.queue.manager`. At the command prompt in the window, enter the following command:

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

   Messages tell you that the queue manager is created, and that the default MQSeries objects are created.
2. Start the default queue manager. Enter the following command:

   ```
   strmqm
   ```

   A message tells you when the queue manager starts.
3. Enable MQSC commands. Enter the following command:

   ```
   runmqsc
   ```

   The message `Starting MQSeries Commands` is displayed when the MQSC session starts. MQSC has no command prompt.
4. Define a local queue called `ORANGE.QUEUE`. Enter the following command:

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

   Any text entered in MQSC in lowercase is converted automatically to uppercase unless you enclose it in single quotation marks. This means that if you create a queue with the name `orange.queue`, you must remember to refer to it in any commands outside MQSC as `ORANGE.QUEUE`.

   The message `MQSeries queue created` is displayed when the queue is created.
5. Stop MQSC. Enter the following command:

   ```
   end
   ```

   The following messages are displayed, then the command prompt is displayed again:

   ```
   One MQSC commands read.
   No commands have a syntax error.
   All valid MQSC commands were processed.
   ```

You have now defined the following objects:

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

Testing the installation

To test the queue and queue manager, use the sample programs **amqsput** (to put a message on the queue) and **amqsget** (to get the message from the queue):

1. Change to the folder `c:\Program Files\IBM\MQSeries\bin`.
2. To put a message on the queue, enter the following command:

   ```
   amqsput ORANGE.QUEUE
   ```

   The following message is displayed:

   ```
   Sample amqsput0 start
   target queue is ORANGE.QUEUE
   ```
3. Type some message text, then press Enter **twice**. 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, enter the following command:

   ```
   amqsget ORANGE.QUEUE
   ```

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

Verification of the local installation is now complete.

Verifying a server-to-server installation

If you do not wish to use the Postcard application, you can use the following procedures to verify a server-to-server installation.

These procedures are more complex than for a local installation, because the communications link between the two machines must be checked. Before you can do this, you must ensure that the communications protocol is installed and configured on both systems. MQSeries for Windows NT and Windows 2000 supports both TCP and SNA. This example explains how to verify your installation if you use TCP. If you use SNA, refer to *MQSeries Intercommunication*.

To test the installation, you must set up two workstations, one as a sender and one as a receiver.

Setting up a sender workstation

Use the following steps to set up the sender machine:

1. Create a default queue manager called `saturn.queue.manager`. At a command prompt in a window, enter the following command:

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

   Messages tell you that the queue manager is created, and that the default MQSeries objects are created.
2. Start the default queue manager. Enter the following command:

   ```
   strmqm
   ```

   A message tells you when the queue manager starts.
3. Enable MQSeries Commands (MQSC). Enter the following command:

   ```
   runmqsc
   ```

   The message `Starting MQSeries Commands` is displayed when MQSC has started. MQSC has no command prompt.
4. Define a local queue to use as a transmission queue called `TRANSMIT1.QUEUE`. Enter the following command:

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

   The message `MQSeries queue created` is displayed when the queue is created.
5. Create a local definition of the remote queue. Enter the following command:

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

   The `rname` parameter specifies the name of the queue on the remote machine to which the message will be sent. Therefore, the name that the `rname` parameter specifies must be the name of the queue to which you wish to send the message (that is, `ORANGE.QUEUE` on the receiver workstation).
6. Define a sender channel. Enter the following command:

   ```
   define channel (first.channel) chltype (sdr) conname (con-name)
   xmitq (transmit1.queue) trptype (tcp)
   ```

   The value *con-name* is the TCP/IP address of the receiver workstation.
7. Stop MQSC. Enter the following command:

   ```
   end
   ```

You have now defined the following objects:

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

Setting up a receiver workstation

Use the following steps to set up the receiver:

1. Create a default queue manager called venus.queue.manager. At the command prompt, enter the following command:

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

   Messages tell you that the queue manager is created, and that the default MQSeries objects are created.
2. Start the queue manager. Enter the following command:

   ```
   strmqm
   ```

   A message tells you when the queue manager starts.
3. Start an MQSeries listener. Enter the following command:

   ```
   runmqlsr -t tcp
   ```

   A message should be displayed when the listener starts.
4. Open a new command prompt window and enable MQSeries Commands (MQSC). Enter the following command:

   ```
   runmqsc
   ```

   The message Starting MQSeries Commands is displayed when MQSC starts. MQSC has no command prompt.
5. Define a local queue called ORANGE.QUEUE. Enter the following command:

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

   The message MQSeries queue created is displayed when the queue is created.
6. Create a receiver channel. Enter the following command:

   ```
   define channel (first.channel) chltype (rcvr) trptype (tcp)
   ```
7. Stop MQSC. Enter the following command:

   ```
   end
   ```

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 following steps to test the communication between the sender and receiver:

1. If the queue managers on the two workstations have stopped for any reason, restart them now using the **strmqm** command.
2. On the **Sender** workstation, start the sender channel by entering the following command:

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

   The receiver channel on the receiver workstation is started automatically when the sender channel starts.
3. On the **Sender** workstation, open a new command prompt window and change to the `c:\Program Files\IBM\MQSeries\bin` folder.
4. To put a message on the queue, enter the following command:

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

   This puts the message to the local definition of the remote queue, which in turn specifies the name of the remote queue.
5. Type the text of the message, then press Enter **twice**.
6. On the **Receiver** workstation, change to the `c:\Program Files\IBM\MQSeries\bin` folder.
7. To get the message from the queue, enter the following command:

   ```
   amqsget ORANGE.QUEUE
   ```

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

The verification of the server-to-server installation is now complete. You are ready to start using MQSeries (see "Part 3. Getting started with MQSeries" on page 115).

Chapter 6. Setting up communications

This chapter explains how to set up communications for the MQSeries for Windows NT and Windows 2000 server.

Communications must be configured between the two machines if MQSeries is to exchange messages with MQSeries on another machine. You cannot run a server-to-server verification process until cross-server communication is enabled, unless you use the Postcard application (and both queue managers are members of the same cluster).

MQSeries supports the TCP/IP, SNA LU 6.2, NetBIOS, and SPX protocols. The installation process automatically sets up a default TCP/IP configuration, if requested.

This chapter describes how to set up MQSeries to enable it to communicate using TCP/IP. For more information and extensive examples of using other transmission protocols, see *MQSeries Intercommunication*.

For information on setting up communications between MQSeries servers and clients, see *MQSeries Intercommunication*.

Defining a connection

To enable two machines to exchange messages, communication *channels* must be defined between the machines. The channels must be defined on each machine, with a *sender channel* defined on the sending machine, and a *receiver channel* defined on the receiving machine. The channel definition at the sending end specifies the address of the target (the receiving machine).

Before the receiving machine can receive any messages from the sending machine, a *listener* must be running on this receiving machine.

The following sections describe how to create the channels on the sending and receiving machines.

Defining a connection

Sending end

To define a sender channel:

1. Do one of the following to start the MQSeries Explorer.
   - From the Windows task bar, select **Start→Programs→IBM MQSeries V5.2.1→MQSeries Explorer**.
   - From the MQSeries First Steps window, select **MQSeries Explorer**.
   - From the MQSeries folder (default `c:\Program Files\IBM\MQSeries`), double click on the MQSeries.msc icon.
2. Click the plus sign (+) to the left of **Queue Managers** item in the list.
3. Click the plus sign (+) to the left of your default queue manager in the list.
4. Click the plus sign (+) to the left of **Advanced.**
5. Click **Channels** (so that it is highlighted).
6. Click the **Action** menu, then click **New** and then **Sender channel.**
7. Use the online help to guide you in filling in the details of the **Create Sender Channel** panel.
8. When this is complete, create the receiver channel on the receiver machine as shown in the next section.

Receiving end

To define a receiver channel:

1. Start the MQSeries Explorer, as described in "Sending end".
2. Click the plus sign (+) to the left of **Queue Managers** item in the list.
3. Click the plus sign (+) to the left of your default queue manager in the list.
4. Click the plus sign (+) to the left of **Advanced.**
5. Click **Channels** (so that it is highlighted).
6. Click the **Action** menu, then click **New** and then **Receiver channel.**
7. Use the online help to guide you in filling in the details of the **Create Receiver Channel** panel.

Starting the listener program

Receiving channel programs are started in response to a startup request from the sending channel. To enable this to happen, a listener program must be started to detect incoming network requests and start the associated channel.

A TCP/IP listener is started automatically for port 1414 when you start the default queue manager.

To listen on a different port, or to use a different queue manager, use the RUNMQLSR command to start the MQSeries listener:

```
RUNMQLSR -t tcp [-m QMNAME] [-p port_number]
```

where:

QMNAME is the name of the queue manager.

port_number is the number of the port to listen on.

What next?

- To verify the communication links, follow the steps in "Verifying a server-to-server installation" on page 79.
- To find out more about how to use MQSeries, see "Part 3. Getting started with MQSeries" on page 115.

Chapter 7. Verifying a client installation

You can verify your MQSeries client and server installation using the supplied sample PUT and GET programs. These verify that your installation has been completed successfully and that the client and server can communicate.

This chapter explains how to use the supplied sample PUT and GET programs to verify that an MQSeries client has been installed correctly, by guiding you through the following tasks:

1. "Setting up the MQSeries server" on page 88
2. "Setting up the MQSeries client" on page 89
3. "Putting a message on the queue" on page 90
4. "Getting a message from the queue" on page 90
5. "Post verification tasks" on page 91

These instructions assume that the MQSeries Server feature is installed on a server machine, and that the MQSeries Client feature is installed on a client machine.

The transmission protocol used in the example is TCP/IP. It is assumed that you have TCP/IP configured on the server and the MQSeries client machines, and that it is initialized on both the machines.

If you are not using TCP/IP, refer to the information about configuring communication links in *MQSeries Clients*.

Compiled samples AMQSPUTC and AMQSGETC are included in the MQSeries client directories that you installed.

The following sections provide step-by-step instructions for creating a queue manager called *queue.manager.1*, a local queue called *QUEUE1*, and a server-connection channel called *CHANNEL1* on the server. They show how to create the client-connection channel on the MQSeries client workstation, and how to use the sample programs to put a message onto a queue, and then get the message from the queue.

Note: MQSeries object definitions are case-sensitive. You must type the examples ***exactly*** as shown.

Setting up the MQSeries server

Create a folder to hold working files, for example `mqverify`, and make this the current folder. Then follow the steps below to set up the server workstation. Before you can verify the client installation, you need to:

1. Create a default queue manager (called *queue.manager.1*) by entering the following command at the command prompt:

   ```
   crtmqm -q queue.manager.1
   ```

2. Start the queue manager by entering the following command:

   ```
   strmqm
   ```

3. Start MQSeries commands (MQSC) by entering the following command:

   ```
   runmqsc
   ```

   MQSC does not provide a prompt, but should respond with the message `Starting MQSeries Commands.`

4. Create a server-connection channel by entering the following command:

   ```
   DEFINE CHANNEL(CHANNEL1) CHLTYPE(SVRCONN) TRPTYPE(TCP) MCAUSER(' ')
   ```

5. Create a client-connection channel that matches the server-connection channel by entering the following command:

   ```
   DEFINE CHANNEL(CHANNEL1) CHLTYPE(CLNTCONN) TRPTYPE(TCP)
   QMNAME('queue.manager.1') CONNAME('server_address(port)')
   ```

   where:

   server_address is the is the TCP/IP hostname, or the network address (in the format *n.n.n.n*), of the server.

   port is the TCP/IP port number on which the server is listening, for example, 1414.

6. Stop MQSC by typing `end` and then pressing Enter.

7. Start a listener by entering the following command at the command prompt:

   ```
   RUNMQLSR -t tcp -m queue.manager.1
   ```

   Note that this command does not specify a port number for the listener. Therefore, the default, 1414, is used.

8. The server is now ready to communicate with the client.

Setting up the MQSeries client

When an MQSeries application is run on the MQSeries client, the binding information that it requires to connect to a specific queue manager is defined in a client-connection channel. A client-connection channel can be defined in one of the following three ways:

- Define the MQSERVER variable on the client. See "Defining a client-connection channel using MQSERVER".
- Give the client access to the generated client channel definition table (that is, the amqclchl.tab file). See the chapter about running applications on MQSeries clients in *MQSeries Clients*.
- If Active Directory support is enabled, the client discovers the client-connection information dynamically from the Active Directory. See "Appendix D. Active directory services" on page 175.

When an MQSeries application is run on the MQSeries client, the information it requires is the name of the MQI channel, the communication type, and the address of the server to be used. You provide this by defining a client-connection channel. The name used must be same as the name used for the server-connection channel defined on the server. In this example, the MQSERVER environment variable is used to define the client-connection channel. This is the simplest method (but not the only one).

Before starting, confirm that your MQSeries client and server TCP/IP sessions are initialized. To do this, type the following command:

```
ping server_address
```

server_address is the TCP/IP hostname, or the network address (in the format *n.n.n.n*), of the server.

If the `ping` command fails, check that your TCP/IP software is correctly configured and has been started.

Defining a client-connection channel using MQSERVER

This section applies only if you are not using Active Directory Services support. If you are using Active Directory Services support, you can omit the step in this section.

Create a client-connection channel by setting the MQSERVER environment variable. Use the following command:

```
SET MQSERVER=CHANNEL1/TCP/server_address(port)
```

where:

server_address is the TCP/IP hostname of the server.

(*port***)** is optional, and is the TCP/IP port number on which the server is listening.

If you do not give a port number, MQSeries uses the one specified in the Windows NT or Windows 2000 registry. If no value is specified in the registry, MQSeries uses the port number identified in the TCP/IP services file for the service name `MQSeries`. If this entry in the services file does not exist, a default value of 1414 is used.

It is important that the client and the server listener program both use the same port number.

Putting a message on the queue

On the MQSeries client workstation, put a message on the queue using the AMQSPUTC sample program:

1. From a command prompt, change to the folder that contains the sample program amqsputc.exe. This is in the `\bin` folder. Then enter the following command:

   ```
   amqsputc SYSTEM.DEFAULT.LOCAL.QUEUE queue.manager.1
   ```

2. The following message is displayed:

   ```
   Sample AMQSPUT0 start
   target queue is SYSTEM.DEFAULT.LOCAL.QUEUE
   ```

3. Type some message text, then press Enter twice.
4. The following message is displayed:

   ```
   Sample AMQSPUT0 end
   ```

5. The message is now on the queue on the server queue manager.

Getting a message from the queue

On the MQSeries client workstation, get a message from the queue using the amqsgetc sample program:

1. Ensure that you are in the folder that contains the sample programs (the `\bin` folder).
2. Enter the following command:

   ```
   amqsgetc SYSTEM.DEFAULT.LOCAL.QUEUE queue.manager.1
   ```

The message on the queue is removed from the queue and displayed.

Post verification tasks

The verification process is now complete.

If you wish to stop the queue manager on the server, type the following command on the server machine:

```
endmqm queue.manager.1
```

If you wish to delete the queue manager on the server, type:

```
dltmqm queue.manager.1
```

Now that verification is complete, see “Part 3. Getting started with MQSeries” on page 115.

Chapter 8. Applying maintenance

Maintenance updates in the form of a Program Temporary Fix (PTF) are supplied on CD-ROM, referred to as a Corrective Service Diskette (CSD). They can also be downloaded from:

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

Attention

- There should be no queue managers running when you install maintenance on MQSeries. End each queue manager that is running by issuing the command:

  ```
  endmqm -i QMgrName
  ```

  and check that the queue manager has stopped running before you try to install the CSD.
- There should be no channel listeners running when you install maintenance on MQSeries. To end all running listener processes for a queue manager:
  1. Check that the queue manager is stopped.
  2. End all listener processes by issuing the command:

     ```
     endmqlsr -m QMgrName
     ```
- You must stop the MQSeries service. To do this, right-click on the MQSeries icon in the task bar, then select **Stop IBM MQSeries**.

Applying the maintenance information

To apply maintenance updates to your MQSeries product, you must ensure that you are logged on with Administrator authority. You can install the updates either from the MQSeries Web site (see "Installing updates from the MQSeries Web site"), or from CD-ROM (see "Installing updates from CD-ROM" on page 94).

Installing updates from the MQSeries Web site

To install maintenance updates from the MQSeries Web site:

1. Select a destination folder for the supplied executable file.

   This should be the same as the root folder for the existing product.
2. When the file has been downloaded, change to the destination folder and run the executable file.

Running this file presents you with a dialog screen on which you can choose to use the default temporary folder, or specify your own temporary folder into which to unload the executable file.

3. Select the default folder, or change it if required, and click **Next**.
4. Click **Finish** when the file has been unloaded into the temporary folder to end the dialog.

   The SETUP.EXE file now runs.

The MEMO.PTF file contains details of the maintenance applied. To view this file, locate it in the MQSeries program files folder (default `c:\Program Files\IBM\MQSeries`), then open it using a suitable text editor.

Installing updates from CD-ROM

To install maintenance updates from a CD-ROM:

1. Insert the MQSeries maintenance CD-ROM into the CD drive.
2. The **Welcome** dialog is displayed. Click **Next**.
3. Select the backup folder, and then click **Next**.

   Note: We strongly advise you to use the default folder for the backup operation. If you do use a different folder, use the same drive as you use for the destination folder for the update.
4. From the **Copy Files** dialog, verify that the information displayed matches your choices.

   If the information is incorrect, click **Back** to return to the previous dialogs. Otherwise, click **Next** to proceed.
5. Click **Finish** to complete the installation of the CSD.

The MEMO.PTF file contains details of the maintenance applied. To view this file, locate it in the MQSeries program files folder (default `c:\Program Files\IBM\MQSeries`), then open it using a suitable text editor.

Restoring the previous backup version

If you need to restore MQSeries to a previous level of maintenance:

1. Ensure that you are logged on as an Administrator.
2. Ensure that all queue managers are stopped.
3. Ensure that all channel listeners are stopped.
4. Ensure that the IBM MQSeries Service has been stopped.
5. Select **Start → Programs → IBM MQSeries V5.2.1→ Remove Latest CSD**.
6. The CSD history log is displayed, and you are given the option to rollback the most recent CSD.

Selecting the rollback option returns the installation to the state it was in before the CSD was applied.

Querying the service level

After one or more updates to the initial installation, the service level indicates from which CSD the product was most recently updated. The service level is expressed in terms of the PTF number for a particular CSD. To view the service level, do one of the following:

- Use the `mqver` command. At a command prompt, enter the following command:

  ```
  mqver
  ```

  The resulting messages include the MQSeries Version number, which shows the service level.
- Locate the file MEMO.PTF in the MQSeries program files folder (default `c:\Program Files\IBM\MQSeries`), then open it using a suitable text editor.

  The MEMO.PTF file contains the service level and details of the maintenance applied (PTF number).

Applying maintenance

Chapter 9. Removing MQSeries

This chapter describes how to uninstall (remove) MQSeries if you installed it by using the MQSeries Server CD-ROM.

If you installed the MQSeries client using the MQSeries Client CD-ROM, use one of the methods described in "Removing an MQSeries client" on page 108.

You can uninstall (remove) MQSeries in attended mode or unattended (silent) mode.

Before you uninstall MQSeries, ensure that there are no MQSeries programs running. To do this:

1. Stop MQSeries (right click on the MQSeries icon in the task bar, then select **Stop IBM MQSeries**).
2. Close all MQSeries windows.
3. Stop any monitoring service.

Removing MQSeries from Windows NT or Windows 2000

There are three ways to remove MQSeries from your machine:

- Start the installation process, then select the appropriate option.
- Use the Add/Remove Programs facility in the Windows Control Panel.
- Perform an unattended removal from the command line.

You can use these methods to uninstall the MQSeries server or the MQSeries client, as long as the original installation used the MQSeries Server CD (that is, not the MQSeries Client CD).

You can also uninstall MQSeries by using the appropriate parameters with advanced installation methods, or by using Microsoft System Management Server (SMS). See "Advanced installation methods" on page 57.

Removing MQSeries using the installation process

This procedure removes MQSeries from your machine in attended mode. It removes all the currently installed features, although you have the option to keep existing queue managers and their objects.

1. Insert the MQSeries for Windows NT and Windows 2000 Server CD-ROM into the CD-ROM drive.

2. If autorun is installed, the installation process starts.

   Otherwise, double-click on the Setup icon in the root folder of the CD-ROM to start the installation process.

   The MQSeries Installation Launchpad window is displayed.
3. Select the **MQSeries Installation** option.
4. Select **Launch MQSeries Installer**. Wait until the MQSeries Setup window is displayed with a welcome message.
5. Click **Next** to continue.

   The Program Maintenance panel is displayed.

   If this panel is not displayed, MQSeries for Windows NT and Windows 2000, V5.2.1 is not installed on this machine.
6. Select **Remove**, then click **Next**.
7. If there are any existing queue managers, the Removing Server feature panel is displayed.

   Select one of the following options, then click **Next**:

   - Keep – keep existing queue managers and their objects.
   - Remove – remove existing queue managers and their objects.
8. If there are any existing Web Administration scripts, the Removing Web Administration Server feature panel is displayed.

   Select one of the following options, then click **Next**:

   - Keep – keep existing Web Administration scripts.
   - Remove – remove existing Web Administration scripts.
9. The Remove MQSeries panel is displayed, with a summary of the installation to be removed.

   Click **Remove** to continue.
10. The Removing MQSeries panel is displayed.

    Wait for the progress bar to complete.

    If there are any messages that state that locked files are found, ensure that there are no MQSeries programs running, as described at the start of this chapter.

    Uninstallation should then continue.
11. The MQSeries Setup window displays the following message:

    Uninstallation Completed Successfully

    Click **Finish**.

Removing MQSeries using Add/Remove Programs

1. From the Windows task bar, select **Start→ Settings→ Control Panel**.
2. Select **Add/Remove Programs**.
3. Select **MQSeries**.
4. For Windows 2000, do one of the following:
   - Select **Remove**. When a confirmation prompt is displayed, select **Yes**.

     The uninstall program begins. All the MQSeries files are removed, but not your queue managers.
   - Select **Change**. The MQSeries Setup window with the Program Maintenance panel is displayed. Follow the procedure Removing MQSeries using the installation process from step 6 on page 98 to the end.
5. In Windows NT, select **Add/Remove**.

   The MQSeries Setup window with the Program Maintenance panel is displayed. Follow the procedure Removing MQSeries using the installation process from step 6 on page 98 to the end.

Removing MQSeries using the command line

This procedure is also called removing the MQSeries files in unattended (silent) mode.

To invoke an unattended uninstallation, you use the `Msiexec` command.

To uninstall all MQSeries features, enter either of the following commands:

```
Msiexec /i path\MSI\MQSeries.msi /q REMOVE="All"

Msiexec /x path\MSI\MQSeries.msi /q
```

This command does not remove any queue manager data.

Alternatively, you can the `Msiexec` command with a parameter that calls a response file. A response file is an ASCII text file that contains the parameter values you wish to set for the uninstallation. The response file has a format similar to a Windows .ini file, and contains the stanza **[MQSeries]**. This stanza contains parameters that the `Msiexec` command can use, in the form of PROPERTY=value pairs. The `Msiexec` command ignores any other stanzas in the file.

This method gives you more control over the uninstallation. For example, you can set which features to uninstall, and set whether or not to keep queue manager and web administration data.

Note: The response file you use to uninstall MQSeries for Windows NT and Windows 2000, V5.2.1 when it was installed using the MQSeries Server

CD-ROM is **not** the same as the one used with earlier versions of MQSeries, or with the MQSeries Client CD-ROM. For details about the response file you use with the MQSeries Client CD-ROM, see "Using response files to install and remove MQSeries clients" on page 110.

To uninstall MQSeries using a response file, enter the following command:

```
Msiexec /i "path\MSI\MQSeries.msi" /q USEINI="response_file"
```

where *response_file* is the file that contains the [MQSeries] stanza and the required PROPERTY=value pairs. For details about how to create a response file, see "Unattended (silent) installation" on page 50. For details of the parameters you can specify in a response file, see Table 3 on page 52.

An example of a typical uninstallation response file is:

```
[MQSeries]
KEEPQMDATA="delete"
KEEPWEBDATA="delete"
REMOVE="Server,Client,WebAdmin"
```

Chapter 10. Using the MQSeries Client CD-ROM

You can use the MQSeries Client CD-ROM to install the MQSeries for Windows NT and Windows 2000 client on a client machine.

Do not use this CD-ROM for installation if you plan to install the MQSeries server software on the same machine. For details, see "Installation methods" on page 15.

You can use the MQSeries Client CD-ROM to install:

- Interactively (see "Installing the MQSeries client" on page 102)
- From a LAN (see "Installing the client from a LAN" on page 103)
- Using SMS (see "Using the System Management Server with the MQSeries client" on page 104)
- Without interaction (see "Performing an unattended (silent) client installation" on page 106)

After you install the MQSeries client, you need to:

- Set up communication between the client and server. See *MQSeries Intercommunication*.
- Verify that the client and server are installed and communicating successfully (see "Chapter 7. Verifying a client installation" on page 87).

See the *MQSeries Clients* manual for information about other clients that can run under Windows NT and Windows 2000.

If you install the MQSeries client using the MQSeries Client CD-ROM, you **must** use one of the methods described in "Removing an MQSeries client" on page 108 to uninstall it. You **cannot** use the methods described in "Chapter 9. Removing MQSeries" on page 97 (these apply only if you installed using the MQSeries Server CD-ROM).

Installing the MQSeries client

To install an MQSeries client for Windows NT and Windows 2000, you must be logged on to Windows NT or Windows 2000 as an administrator.

MQSeries checks for any existing MQSeries configuration files (MQS.INI). If it finds any, it automatically migrates configuration information to the Windows NT or Windows 2000 registry. Otherwise, MQSeries automatically puts its configuration information directly into the Windows NT or Windows 2000 registry.

The following instructions assume that you are installing an MQSeries client using the MQSeries Client CD-ROM supplied as part of the MQSeries product. If you plan to install an MQSeries client and server on the same machine, see the notes in the previous section of this chapter.

1. Insert the MQSeries Client CD-ROM into the CD-ROM drive.

   If autorun is enabled, the installation process starts. If it is not, double-click on the Setup icon in the root folder on the CD-ROM to start the process.

   The Select Setup Language window is displayed.
2. On the Select Setup Language window, select the national language of your choice from the list, then click **OK**.

   The MQSeries Welcome window is displayed.
3. ***Make sure you are installing the correct client*** for your system, as displayed in the Welcome window.
4. Choose Installation Folders lets you choose folders into which the MQSeries program files and data files will be installed.

   You can change the default shown by clicking the browse button and choosing a different drive and folder, then click **OK**. Click **Next** to continue.
5. Select Components displays a list of components (also called features). You can select the ones you want to be installed from this list.

   To select a component, click in the box next to it so that a check mark appears (just highlighting the line does not select it). The panel displays information about the amount of space available on the selected drive, and the amount of space required for each component.

   If there are any MQSeries components installed already, ensure that, as well as the Client component, you select all components that are already installed and that you wish to keep. If you deselect a component that is already installed, that component will be removed when the client is installed.
6. When your selections are complete, click **Next** to continue.

If there were any MQSeries components installed already, the Refresh or Skip Components window is displayed. You can choose whether to skip installation of, or re-install, the components that are already installed. Click **Next** to continue.

7. Ready to Copy Files displays all the selections you have made. Click **Back** if you want to return to a previous window to change any of your choices.

   When you have checked your choices, click **Next** to start the file copying process.

   The progress indicator shows which components are being copied and the percentage of copying completed.
8. The Setup Complete window appears when the selected components have been installed. Click **Finish** to close the window (after optionally selecting **Launch Notepad to View the Release Notes**).
9. The installation of the MQSeries client is now complete. Note that MQSeries clients are sets of services and do not have to be explicitly run.
10. You now need to verify that the client was installed successfully (see "Chapter 7. Verifying a client installation" on page 87).

Installing the client from a LAN

There are two ways to put MQSeries client installation files on a LAN file server for easier access:

- You can make the MQSeries for Windows NT and Windows 2000 Client CD-ROM drive shareable.
- You can copy the installation files from the CD-ROM to a file server. Use the following steps:

  1. Create a folder on the LAN file server to store the installation files. For example:

     ```
     md m:\instmqs
     ```
  2. Load the MQSeries Client CD-ROM.

     If autorun is enabled, the Select Setup Language window is displayed. Select **Cancel** to remove this window.
  3. Copy the Windows folder structure from the CD-ROM to the `m:\instmqs` folder. For example:

     ```
     xcopy e:\Winnt\*.* m:\instmqs /e
     ```

     You can save space on the hard drive by copying only the subfolders for the languages that you require. The language subfolders are:

     SetupCn Simplified Chinese
     SetupDe German
     SetupEn U.S. English
     SetupEs Spanish

SetupFr	French
SetupIt	Italian
SetupJp	Japanese
SetupKo	Korean
SetupPt	Brazilian Portuguese
SetupTw	Traditional Chinese

4. Give all licensed users access to the folder that now contains the CD-ROM image (in this example, the m: drive).
5. From the target machine, connect to the appropriate drive and folder. Do this in one of the following ways:
   - Use the Windows NT or Windows 2000 Explorer to map the shared resource to a drive letter (for example, x:).
   - From a command prompt, use the `net use` command:

     ```
     net use devicename \\servername\netname
     ```

     For example:

     ```
     net use x: \\mqmnt\instmqs
     ```

     where x: is the required mapped drive on the target machine.
6. At the command prompt on the target machine, change to the installation folder (in this example, x:).
7. Type `Setup`, then press Enter.
8. Follow the prompts that are displayed.

Using the System Management Server with the MQSeries client

This section describes how to install, or remove, an MQSeries for Windows NT and Windows 2000 client using the System Management Server (SMS).

Creating SMS Packages and Jobs for MQSeries

You must create:

- An SMS software package containing the MQSeries software
- An SMS job to distribute and install the software package (see "Creating the MQSeries SMS Job" on page 105).

For more detailed information on how to create a software package and a job, refer to the Microsoft System Management Server documentation.

Note that to use the Microsoft System Management Server to install or remove an MQSeries for Windows NT or Windows 2000 client, you also need an MQSeries response file. This response file must be created for use with the MQSeries Client CD-ROM (see"Using response files to install and remove MQSeries clients" on page 110 or "Removing an MQSeries client using the command line" on page 109).

Creating the MQSeries SMS Software Package

To create the SMS software installation package:

1. From the Microsoft SMS Administrator application, open the **Packages** folder and create a new package.
2. In the SMS **Package Properties** dialog click on the **Import** button to create the software package by importing a Package Definition File (PDF).
3. In the **File Browser** dialog, select the drive where the IBM MQSeries Client CD-ROM is located.
4. Select the Winnt folder, which contains the package definition file `MQSERIES.PDF`.

   You can also find the `MQSERIES.PDF` file in the local drive, or shared network drive where you copied the MQSeries Installation software.
5. Select the **MQSERIES.PDF** file and select **OK**.
6. Select **Workstation**. In the **Source Directory** entry field, specify the fully-qualified path name to the MQSeries root folder that contains the MQSeries installation software.
7. Select the appropriate Workstation Command Line:
   - **Automated Uninstallation of IBM MQSeries - Windows NT client**
   - **Automated Installation of IBM MQSeries - Windows NT client (US English)**
8. Select **Properties** for each process and review the **Command Line** entry field to ensure that the parameters are correct.
9. Select **Close** to close the **Workstation Properties** dialog.

   Note: If you specified a local path in the **Source Directory** entry field, you get a pop-up dialog warning you that the local path you specified might not be accessible to SMS components running on another machine. Select **OK** to continue.
10. Select **OK** to close the **Package Properties** window.

    A pop-up dialog appears indicating that SMS will update the software package at all sites. Select **OK** to continue.

The software package has been created and can be installed by creating an SMS job.

Creating the MQSeries SMS Job

You must now create an SMS job to distribute and install the software packages you created that contain the MQSeries installation software.

Refer to the Microsoft System Management Server documentation for detailed information on how to create and run a job.

Client installation (System Management Server)

Notes:

1. You ***must*** be logged onto the target machine with Administrator authority in order to install the MQSeries Server.
2. When creating an SMS Job to distribute and install the software package, ensure that you select the appropriate workstation command. The workstation commands are displayed on the **Job Details** dialog in the **Run Phase** section and appear in a drop-down list box.

Performing an unattended (silent) client installation

You can install the MQSeries for Windows NT and Windows 2000 client on a machine without interaction, provided that the machine can share the Client CD-ROM, or a copy of the files on it, and that you can execute a command on the machine. This process is called unattended (or silent) installation, and is particularly useful for installing MQSeries clients over a network on a remote machine because you can do it from a shared drive on a LAN file server.

Because there is no user interaction, unattended installation uses a response file. A response file is an ASCII text file containing values for the installation options you want to select. For information on the format of the response files you use with the MQSeries Client CD-ROM, see "Installation response file format" on page 110 and "Uninstallation response file format" on page 113.

Note: The response file you use to install the MQSeries client using the MQSeries Client CD-ROM is **not** the same as the one you use with the MQSeries Server CD-ROM. For details about the response file you use with the MQSeries Server CD-ROM, see "Unattended (silent) installation" on page 50.

There are three ways to generate an installation response file:

1. Copy and edit the response file (setup.iss) that is supplied in the Winnt folder on the MQSeries for Windows NT and Windows 2000 Client CD-ROM, using an ASCII file editor.
2. Generate your own response file using an ASCII file editor.
3. Perform an MQSeries client installation on a machine and record the options selected to install the product in a response file. To do this, you must run `setup.exe` with the -r parameter and (optionally) the -noinst parameter. Do this as follows:
   a. Load the MQSeries for Windows NT and Windows 2000 Client CD-ROM.

      If autorun is enabled, the Select Setup Language window is displayed. Select **Cancel** to remove this window.

b. Run `setup.exe` from the root folder of the CD-ROM with the `-noinst` parameter (optional) and the `-r` parameter. Use the parameters in this order. The `-noinst` parameter suppresses the MQSeries installation so that you only generate a response file.

   To run `setup.exe`, drag `setup.exe` from the Windows NT or Windows 2000 Explorer to the Run dialog in the Start menu, then adding the parameters (for example `-r`) to the end of the file name.

   Alternatively, type the fully-qualified path to `setup.exe` into the Run dialog, followed by the parameters.

c. The Select Setup Language window is displayed again. Carry out an installation as you want it performed on the remote machine.

   If you are only generating a response file, you do not need to restart the system, even if asked to do so.

The installation creates a response file called setup.iss in the Windows folder (for example, c:\Winnt). Save this file; you can edit it if necessary.

Use the response file you have created to install the product on a remote machine. (See "Installing the client".)

You create an uninstallation response file in a similar way. See "Removing an MQSeries client using the command line" on page 109.

Installing the client

The machine on which you install the client must have access to a shared resource or drive on a file server that contains the Client CD-ROM, or a copy of it. To install the MQSeries client on the machine, use the following steps:

1. Follow steps 1 to 6 of the procedure described in "Installing the client from a LAN" on page 103.
2. Copy your response file to a location on the file server that is accessible from the remote machine.
3. Start the installation on the remote machine:
   a. On the remote machine, change to the Setup*xx* folder on the shared resource (where Setup*xx* is the national language subfolder for the national language you require).
   b. Run setup.exe to install in the language specified by Setup*xx*:

      ```
      setup -g logfile -f1responsefile -f2secondarylogfile -s
      ```

      where:

      logfile The full path to an installation log file. Setup creates a U.S. English ASCII text log file containing details of what happens during installation. You should check this file to see if any errors occurred.

If you omit the -g *logfile* parameter, Setup creates a file called amqilogn.txt in the data files folder on the machine running the installation. In this situation, any messages that were generated before the data files folder is created are lost.

The -g *logfile* parameter must be before the -f1 and the -s parameters, otherwise it is ignored.

responsefile
The full path to the response file you prepared.

If you omit the -f1*responsefile* parameter, the response file must be in the Setup*xx* language subfolder.

secondarylogfile
The full path to a secondary installation log file. This file contains less detail than the other log file and should not be used as the primary source for information about the success of the installation.

If you omit the -f2*secondarylogfile* parameter, Setup attempts to create a file called setup.log in the language subfolder (Setup*xx*), which is not possible if you are installing from a CD-ROM.

The -f2*secondarylogfile* parameter must be after the -f1 parameter.

-s This parameter specifies that Setup runs in silent mode.

Note: Enclose the long path name and file name expressions in double quotes.

When installation is complete, verify your installation, as described in "Chapter 7. Verifying a client installation" on page 87.

Removing an MQSeries client

This section describes how to uninstall (remove) the MQSeries client if you installed it by using the MQSeries Client CD-ROM. If you installed the MQSeries client using the MQSeries Server CD-ROM, use one of the methods described in "Chapter 9. Removing MQSeries" on page 97.

If you installed the MQSeries client by using the MQSeries Client CD, there are two ways to remove the MQSeries client files from your machine:

- Use the Add/Remove Programs facility in the Windows Control Panel.
- Perform an unattended removal from the command line.

Removing an MQSeries client using Add/Remove Programs

To remove the MQSeries client files from your machine:

1. From the Windows NT or Windows 2000 task bar, select **Start→ Settings→ Control Panel**.
2. Select **Add/Remove Programs**.
3. Select IBM MQSeries Client, which launches the uninstall program.

   You can choose to uninstall one or more features, or the whole of the MQSeries client.

Removing an MQSeries client using the command line

This procedure is also called removing the MQSeries client in unattended (silent) mode.

To invoke an unattended uninstallation, you use the `amqiunin` command with a parameter that calls a response file. A response file is an ASCII text file that contains the parameter values you wish to set for the uninstallation. The response file has a format similar to a Windows .ini file, and contains the stanzas **[MQSeries]** and **[Components]**. These stanzas contain parameters that the `amqiunin` command can use, in the form of PROPERTY=value pairs. The `amqiunin` command ignores any other stanzas in the file.

There are two ways to create an uninstallation response file:

- Edit the response file amqiunin.rsp that is supplied on the MQSeries Clients CD-ROM
- Create your own response file by using and ASCII file editor.

For details about the format of an uninstallation response file, see "Uninstallation response file format" on page 113.

Note: The response file you use to uninstall the MQSeries client when it was installed using the MQSeries Client CD-ROM is **not** the same as the one you use if it was installed using the MQSeries Server CD-ROM. For details about the response file to use if you installed using the MQSeries Server CD-ROM, see "Unattended (silent) installation" on page 50.

Once your response file is created, use the following steps:

1. Change to the `uninst` subfolder in the folder that holds the MQSeries client (by default, `C:\Program Files\MQSeries Client`).
2. Enter the following command:

   ```
   amqiunin -g log_file -f1 response_file -s
   ```

where:

log_file is the full path to an installation log file. The `-g log_file` parameter must be before the `-f1` and `-s` parameters, otherwise it is ignored.

response_file is the path and file name of the response file. If you omit this parameter, the command uses the file amqiunin.rsp. This file must be in the same folder as amqiunin.exe (that is, `uninst`).

-s sets the uninstallation to silent mode.

Using response files to install and remove MQSeries clients

A response file is an ASCII text file containing values for the installation (or uninstallation) options that you wish to apply. You can use response files for:

- Unattended installation or removal of the MQSeries for Windows NT or Windows 2000 client. See "Performing an unattended (silent) client installation" on page 106.
- Installation or removal of the MQSeries for Windows NT or Windows 2000 client using the Microsoft System Management Server. See "Using the System Management Server with the MQSeries client" on page 104.

For details about how to create a response file, see "Performing an unattended (silent) client installation" on page 106.

Installation response file format

The installation response file has a standard Windows .ini file format. All text is in English. Lines beginning with a semicolon (;) are comments. Case is ignored. A sample file is listed below. It consists of stanzas, with titles in square brackets, and, within each stanza, parameters in keyword=value format. The following four stanzas are required:

- [InstallShield Silent]
- [DlgOrder]
- [Application]
- [MQSeries-0]

The [MQSeries-0] stanza specifies the installation parameters and is described below. Leave the other three stanzas unchanged.

The MQSeries-0 stanza

The Default parameter is required and can be used to specify a default installation.

Its value can be NO, YES, CURRENT, or DEFAULT.

Default=NO
This value means that the installation is specified by the other keywords. You must code this value if you do not require one of the other values (YES, CURRENT, or DEFAULT).

Default=YES
The installation updates the target machine to the latest MQSeries level. No new components are installed. If there is no existing MQSeries installation on the target machine, Setup installs the Client and the Development Toolkit. With the exception of LockedFiles, other keywords in this stanza are ignored (and can be omitted).

If there is an existing MQSeries installation on the machine, Setup installs files in the existing folders; otherwise, it installs into the default folder for the machine. See the **PgmDir** and **DatDir** keywords.

Default=CURRENT
Interchangeable with Default=YES.

Default=DEFAULT
The installation updates the target machine to the latest MQSeries level. Setup installs the Client and the Development Toolkit. Any other installed components, if any, are removed. The program files and the data files top-level folders are forced to their default values for the machine. With the exception of LockedFiles, other keywords in this stanza are ignored (and can be omitted).

PgmDir=<folder>
Specifies the top-level folder for program files. The value <folder> must be a valid path on the target machine, or it can be DEFAULT. The value DEFAULT tells Setup to take the default value for the folder on the target machine, which is usually `C:\Program Files\IBM\MQSeries`, or, if there is an existing MQSeries installation on the machine, it tells Setup to continue to use the existing folder. For example:

```
PgmDir=c:\mqm pgm or PgmDir=default
```

DatDir=<folder>
Specifies the top-level folder for data files. The value <folder> must be a valid path on the target machine, or it can be DEFAULT. The value DEFAULT tells the setup procedure to take the default value for the folder on the target machine, which is usually `C:\Program Files\IBM\MQSeries`, or, if there is an existing MQSeries installation on the machine, it tells the setup procedure to continue to use the existing folder. For example:

```
DatDir=c:\mqm data or DatDir=default
```

The other keywords in this stanza specify component selections. There must be one keyword=value pair for each component; the keyword is the component name and the value must be one of:

INSTALL
Install or reinstall the component.

REMOVE
Remove the component, if it is already installed. This leaves any user data associated with the component unchanged. However, there is no user data associated with any client components.

REMOVEDATA
Remove the component, if it is already installed, along with any of its associated user data. Because there is no user data associated with any client components, this has the same effect as REMOVE.

For example:

- Local Clients\Windows NT Client=INSTALL installs the Client component, or if it is already installed, reinstalls it.
- Development Toolkit=REMOVE does not install the Development Toolkit component, or if it is already installed, removes it.

The component names are listed in "Component names used in response files" on page 114.

There is a special keyword: Java. If you install MQSeries for Windows NT and Windows 2000, V5.2.1 and you previously installed MQSeries for Windows NT, V5.1 Java support, you must include the line Java=REMOVE. This acknowledges that the Version 5.1 Java support files should be deleted during the installation of Version 5.2.1.

Example installation response file

The following example shows a complete installation response file:

```
[InstallShield Silent]
Version=v5.00.000
File=Response File
[Application]
Name=MQSeries
Version=CurrentVersion
Company=IBM
[DlgOrder]
Dlg0=MQSeries-0
Count=2
Dlg1=Queue Managers-0
[MQSeries-0]
DEFAULT=NO
PgmDir=e:\mqmpgm
DatDir=e:\mqmdat
```

```
Skip=NO
LockedFiles=CONTINUE
Development Toolkit=INSTALL
Local Clients\Windows NT Client=INSTALL
Internet Gateway=REMOVE
Documentation\Internet Gateway=REMOVE
```

Uninstallation response file format

Like the installation response file, the uninstallation response file consists of stanzas and keyword=value pairs. Lines that begin with a semicolon (;) are comments. All text is in English. Case is ignored. There is an example of a complete response file at the end of this section. The following two stanzas are required:

- [MQSeries]
- [Components]

The MQSeries stanza

This stanza has two required keywords: `MQSeries` and `LockedFiles`.

MQSeries=REMOVE
Uninstallation removes all of MQSeries on the target machine. The [Components] stanza is not referenced and can be omitted.

MQSeries=REMOVECOMPONENTS
Uninstallation removes the components specified in the [Components] stanza. This stanza must be present.

LockedFiles=<option>
Before deleting files from the target computer, uninstallation checks to see if any of the files are locked. This parameter specifies what uninstallation is to do if it finds any locked files.

CONTINUE
Ignore the locked files and continue. You must remove any locked files manually after uninstallation.

CANCEL
Terminate the uninstallation before deleting any files.

The Components stanza

There can be one keyword=value pair in this stanza for each MQSeries component. The keyword is the component name and the value must be: KEEP, SKIP, REMOVE, or REMOVEDATA. The component names are the same strings that are used in an installation response file (see "Component names used in response files" on page 114). For example:

```
Internet Gateway=REMOVEDATA or Internet Gateway=KEEP
```

Any installed components for which there is no keyword=value pair are not uninstalled.

- The values KEEP and SKIP mean do not remove this component.
- The value REMOVE means remove this component, but keep any user data associated with the component. However, there is no user data associated with any client components.
- The value REMOVEDATA means remove the component, including any user data associated with the component. Because there is no user data associated with any client components, this has the same effect as REMOVE.

Here is an example of a complete uninstallation response file:

```
[MQSeries]
MQSeries=REMOVECOMPONENTS
LockedFiles=CONTINUE
[Components]
Development Toolkit=KEEP
Local Clients\Windows NT Client=REMOVE
Internet Gateway=KEEP
```

In this example, the Windows NT Client component is removed. All other components are left unchanged.

Component names used in response files

The component names used in response files have fixed English values. Their names are:

```
Development Toolkit
Local Clients\Windows NT Client
Internet Gateway
Documentation\Internet Gateway
```

The names that are displayed during an attended installation are slightly different from these, and are translated into the installation language.

Part 3. Getting started with MQSeries

Chapter 11. About MQSeries

This chapter introduces IBM MQSeries. It describes its basic functions and its relationships with operating systems, applications, and other middleware products.

Introduction

MQSeries is a communications system that provides assured, asynchronous, once-only delivery of data across a wide range of hardware and software platforms.

These characteristics make MQSeries the ideal infrastructure for application-to-application communication, and make it an appropriate solution whether the applications run on the same machine or on different machines that are separated by one or more networks.

MQSeries supports all the important communication protocols and provides routes between networks that use different protocols. MQSeries bridges and gateway products allow easy access (with little or no programming) to many existing systems and application environments. This includes Lotus® Notes™, Web browsers, Java applets, and many others.

The assured delivery capability reflects the many functions built in to MQSeries to ensure that data is not lost because of failures in the underlying system or network infrastructure. Assured delivery enables MQSeries to form the backbone of critical communication systems and to be entrusted with delivering high-value data. There are also options that allow you to select a less robust quality of service, where this is appropriate. For example, there might be circumstances where you might prefer faster delivery with less emphasis on assured delivery.

The asynchronous processing support in MQSeries means that the exchange of data between the sending and receiving applications is time independent. This allows the sending and receiving applications to be decoupled so that the sender can continue processing, without having to wait for the receiver to acknowledge that it has received the data. In fact, the target application does not even have to be running when the data is sent. Likewise, the entire network path between the sender and receiver might not need to be available when the data is in transit.

Once-only delivery of data is a vital consideration, particularly in financial and business applications where duplicate requests to move large sums of money from one account to another are precisely what you do not want to happen!

Messages, queues, and queue managers

The three fundamental concepts in MQSeries that you need to understand are:

- Messages
- Queues
- Queue managers

Messages

A *message* is a string of bytes that has meaning to the applications that use it. Messages are used for transferring data from one application to another (or to different parts of the same application). The applications can be running on the same platform, or on different platforms.

MQSeries messages have two parts:

- The *application data*
- A *message descriptor*

The content and structure of the application data is defined by the application programs that use the data. The message descriptor identifies the message and contains other control information, such as the type of message and the priority assigned to the message by the sending application.

Queues

A *queue* is a data structure in which messages are stored. The messages can be put on, or got from, the queue by applications or by a queue manager as part of its normal operation.

Queues exist independently of the applications that use them. A queue can exist in main storage (if it is temporary), on disk or similar auxiliary storage (if it must be kept in case of recovery), or in both places (if it is currently being used, and must also be kept for recovery). Each queue belongs to a *queue manager*, which is responsible for maintaining it. The queue manager puts the messages it receives onto the appropriate queue.

Queues can exist either in your local system, in which case they are called *local queues*, or at another queue manager, in which case they are called *remote queues*.

Applications send to, and receive messages from, queues. For example, one application can put a message on a queue, and another application can get the message from the same queue.

Each queue has *queue attributes* that determine what happens when applications reference the queue. The attributes indicate:

- Whether applications can retrieve messages from the queue (get enabled)
- Whether applications can put messages onto the queue (put enabled)
- Whether access to the queue is exclusive to one application or shared between applications
- The maximum number of messages that can be stored on the queue at the same time (maximum queue depth)
- The maximum size of messages that can be put on the queue (maximum message size)

Queue managers

A queue manager provides queuing services to applications, and manages the queues that belong to it. It ensures that:

- Object attributes are changed according to the details received.
- Special events (such as instrumentation events or triggering) are generated when the appropriate conditions are met.
- Messages are put on the correct queue, as requested by the application. The application is informed if this cannot be done, and an appropriate reason code is given.

Each queue belongs to a single queue manager and is said to be a *local queue* to that queue manager. The queue manager to which an application is connected is said to be the local queue manager for that application. For the application, the queues that belong to its local queue manager are local queues. A *remote queue* is a queue that belongs to another queue manager. A *remote queue manager* is any queue manager other than the local queue manager. A remote queue manager might exist on a remote machine across the network or it might exist on the same machine as the local queue manager. MQSeries supports multiple queue managers on the same machine.

MQSeries configurations

In the simplest configurations, MQSeries is installed on a machine and a single queue manager is created. This queue manager allows you to define queues. Local applications can then use these queues to exchange messages.

Communication by applications with queues managed by another queue manager requires *message channels* to be defined. It is not necessary to define a channel directly to the target queue manager and it is often appropriate to define one only to the next location (that is, an intermediate queue manager). Message channels available from that queue manager will be used to deliver the message to the target queue manager (or even to a subsequent location).

See "Channels" on page 121 for more information.

More complex configurations can be created using a client-server structure. The MQSeries product can act as an MQSeries server to MQSeries clients. The clients and server do not need to be on the same platform. MQSeries supports a broad range of client platforms. The MQSeries products typically include clients for a variety of platforms. Additional MQSeries clients are available from the MQSeries Web site.

In a client-server configuration, the MQSeries server provides messaging and queuing services to the clients, as well as to any local applications. The clients are connected to the server through dedicated channels (known as *MQI channels*) for clients. This is a cost-effective deployment method because a server can support hundreds of clients with only a single copy of the MQSeries server product. However, the MQI channel must be continuously available whenever the MQSeries applications on the client are running. This contrasts with the message channels, which need not be continuously available to support MQSeries applications running on the server.

See "Clients and servers" on page 121 for more information.

MQSeries also supports the concept of *clusters* to simplify setup and operation. A cluster is a named collection of queue managers and any one queue manager can belong to none, one, or several such clusters. The queue managers in a cluster can exist on the same or different machines.

There are two major benefits from the use of clusters:

1. Communication between members of a cluster is greatly simplified, particularly because the channels required for exchanging messages are automatically defined and created as needed.
2. Some or all of the queues of participating queue managers can be defined as being cluster queues, which has the effect of making them automatically known and available to all other queue managers in the cluster.

The default configuration that is provided by the installation process for MQSeries for Windows NT and Windows 2000 can, if there is no other queue manager already defined, configure a queue manager that is joined to the local default cluster. The queue manager has a name that is based on the TCP/IP domain of the machine.

See "Clusters" on page 122 for more information.

Channels

A channel provides a communication path to a queue manager. There are two types of channel: message channels and MQI channels.

A *message channel* provides a communication path between two queue managers on the same, or different, platforms. The message channel is used for transmitting messages from one queue manager to another, and shields the application programs from the complexities of the underlying networking protocols. A message channel can transmit messages in one direction only. Two message channels are required if two-way communication is required between two queue managers.

An *MQI channel* connects an MQSeries client to a queue manager on a server machine and is bidirectional.

If you want to read more information about channels and how MQSeries uses them to communicate across the systems in your network, see the *MQSeries Intercommunication* book.

Clients and servers

MQSeries supports client-server configurations for MQSeries applications.

An *MQSeries client* is a part of the MQSeries product that is installed on a machine to accept MQSeries calls from applications and pass them to an *MQSeries server* machine. There they are processed by a queue manager. Typically, the client and server reside on different machines, but they can also exist on the same machine.

An *MQSeries server* is a queue manager that provides queuing services to one or more clients. All the MQSeries objects (for example, queues) exist only on the queue manager machine (that is, on the MQSeries server machine). A server can support local MQSeries applications as well.

The difference between an MQSeries server and an ordinary queue manager is that the MQSeries server can support MQSeries clients, and each MQSeries client application has a dedicated communication link with the MQSeries server.

MQSeries configurations

MQSeries for Windows NT and Windows 2000 supports dynamic client-server binding through the Windows 2000 Active Directory. See "Appendix D. Active directory services" on page 175.

For more information about client support, see the *MQSeries Clients* book.

Clusters

A cluster is a named collection of queue managers.

Clusters require that at least one of the queue managers in the cluster be defined as a *repository* (that is, a place where the shared cluster information can be held). More typically, two or more such repositories are usually designated to provide continued availability in the case of system failure. MQSeries makes sure that the information in the repositories is synchronized.

When a queue is defined as a cluster queue, it can be regarded as a public queue in that it is freely available to other queue managers in the cluster. This contrasts with non-cluster queues, which are accessible only when a local definition of them is available. Thus, a non-cluster queue has the characteristics of a private queue, accessible only to those queue managers that have been configured to know about it.

Public queues with the same name in the same cluster are regarded as equivalent. If a message is sent to that queue name, MQSeries sends it to any one of the instances, using a load-balancing algorithm.

If you do not want this to happen, you can use the queue manager name and queue name in the address. This forces the message to be delivered to a specific queue manager. Alternatively, you can replace the load-balancing routine with a different implementation.

For a full explanation, see *MQSeries Queue Manager Clusters*.

MQSeries capabilities

MQSeries can be used to create many different types of solutions. Some exploit the platform support, or the bridge and gateway capabilities, to connect existing systems in an integrated way or to allow new applications to extract information from, or interchange information with, existing systems. Other solutions support business application servers, where a central pool of MQSeries applications can manage work sent across networks. Complex routing of information for workflow scenarios can be supported. Publish/subscribe or "send and forget" are other application scenarios that use different message flows. Load balancing and hot-standby systems can be built using the power and flexibility of MQSeries, which includes specific functions to support many of these diverse scenarios.

See the *MQSeries Application Programming Guide* for more information about writing MQSeries applications.

Transactional support

An application program might need to group a set of updates into a *unit of work*. Such updates are usually logically related and must all be successful for data integrity to be preserved. Data integrity would be lost if one update in the group succeeded while another failed.

MQSeries supports transactional messaging. A unit of work *commits* when it completes successfully. At this point all updates made within that unit of work are made permanent and irreversible. Alternatively, all updates are *backed out* if the unit of work fails. *Syncpoint coordination* is the process by which a unit of work is either committed or backed out with integrity.

A *local* unit of work is one in which the only resources updated are those of the MQSeries queue manager. Here, syncpoint coordination is provided by the queue manager itself, using a single-phase commit process.

A *global* unit of work is one in which resources belonging to other resource managers, such as XA-compliant databases, are also updated. Here, a two-phase commit procedure must be used and the unit of work might be coordinated by the queue manager itself, or externally by another XA-compliant transaction manager such as IBM CICS®, IBM Transaction Server, IBM TXSeries™, Transarc Encina, or BEA Tuxedo.

When the queue manager coordinates global units of work itself, it becomes possible to integrate database updates within MQSeries units of work. That is, a mixed MQSeries and SQL application can be written, and commands can be used to commit or roll back the changes to the queues and databases together.

The queue manager achieves this using a two-phase commit protocol. When a unit of work is to be committed, the queue manager first asks each participating database manager whether it is prepared to commit its updates. Only if all of the participants, including the queue manager itself, are prepared to commit, are all of the queue and database updates committed. If any participant is not prepared to commit its updates, the unit of work is backed out instead.

Full recovery support is provided if the queue manager loses contact with any of the database managers during the commit protocol. If a database manager becomes unavailable while it is in doubt (that is, it has been called to prepare but has yet to receive a commit or backout decision), the queue manager remembers the outcome of the unit of work until it has been successfully

delivered. Similarly, if the queue manager terminates with incomplete commit operations outstanding, these are remembered when the queue manager restarts.

Instrumentation events

You can use MQSeries instrumentation events to monitor the operation of queue managers.

Instrumentation events cause special messages, called *event messages*, to be generated whenever the queue manager detects a predefined set of conditions. For example, a *Queue Full* event message is generated if all of the following apply:

- Queue Full events are enabled for a specified queue
- An application issues an **MQPUT** call to put a message on that queue
- The call fails because the queue is full

Other conditions that can cause instrumentation events include:

- A predefined limit for the number of messages on a queue being reached
- A queue not being serviced within a specified time
- A channel being started or stopped

If you define your event queues as remote queues, you can put all the event queues on a single queue manager. You can then use the events generated to monitor a network of queue managers from a single node.

MQSeries instrumentation events are categorized as follows:

Queue manager events
: These are related to the definitions of resources within queue managers. For example, if an application attempts to open a queue but the associated user ID is not authorized to perform that operation, a queue manager event is generated.

Performance events
: These are notifications that a threshold condition has been reached by a resource. For example, a queue depth limit has been reached or, following an **MQGET** request, a queue has not been serviced within a predefined period of time. You can use the Windows NT or Windows 2000 performance monitor to check and control certain aspects of your queues (for example, the queue depth, percentage queue depth, and how many messages have been enqueued and dequeued).

Channel events
: These are reported by channels as a result of conditions detected during their operation. For example, a channel event is generated when a channel is stopped.

Triggering

An application can be started automatically when a message arrives on a queue, using a mechanism called *triggering*. If necessary, the application can be stopped when the message or messages have been processed.

Programming MQSeries

MQSeries applications can be developed using a variety of programming languages and styles. Both procedural and object-oriented programming are supported, depending on the MQSeries platform, using, for example, Visual Basic, C, C++, Java, COBOL, and PL/I. Microsoft Windows NT and Windows 2000 ActiveX/COM technology is also supported.

The Message Queue Interface (MQI) provides a set of calls that enables application programs to send and receive messages using MQSeries. These calls include options that specify the details of how the messages are to be sent and retrieved. The MQI is provided with MQSeries, and is described in the *MQSeries Application Programming Guide* and the *MQSeries Application Programming Reference*.

Alternatively, the Application Messaging Interface (AMI) can be used. This provides a simpler interface that application programmers can use without needing to understand all the options in the MQI calls (the options required in a particular installation are specified by a system administrator). The AMI is described in *MQSeries Application Messaging Interface*, and can be downloaded from the IBM MQSeries Web page:

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

Managing MQSeries

MQSeries is tightly integrated into the Windows NT and Windows 2000 operating system. Therefore, normally you can find the management facilities alongside their Windows NT and Windows 2000 equivalents, and they are accessible through a graphical user interface. For example, MQSeries events are written to the Windows NT or Windows 2000 event log and are accessed through the event manager. Likewise, performance monitoring or checking the status of queues is available through the Windows NT or Windows 2000 performance monitor.

You can control the operational side of MQSeries through the Microsoft Management Console (MMC). The MQSeries Explorer, provided as an MMC snap-in, allows you to browse queues and change their properties. Local and remote administration are both available. Therefore, you can use a single MQSeries installation on a Windows NT or Windows 2000 platform to manage an entire MQSeries network.

Managing MQSeries

A second MMC snap-in, MQSeries Services, allows you to control the operation of MQSeries and its various subcomponents (such as stopping and starting facilities, default configurations, and other administration actions).

For compatibility with previous levels of MQSeries, there is an alternative management method available that uses programs and a command language known as MQSC. You can access these programs from a command prompt. Details of MQSC are in the *MQSeries MQSC Command Reference*.

You can also use a Web browser to manage MQSeries. MQSeries includes an optional Web server that supports secure management of an MQSeries network from a browser. It is only necessary to install the Web server on one MQSeries machine (although it can be installed on many machines in a network). The MQSeries Web Administration facility provides a scripting capability that allows automatic generation of MQSC commands.

Chapter 12. Using MQSeries

If MQSeries has been installed with the standard (default) settings, the MQSeries service starts automatically when the machine on which it is installed starts up. An MQSeries icon appears in the task bar, and color of the figure in the icon indicates whether MQSeries is running or not: when the figure is green MQSeries is running, and when the figure is red MQSeries has stopped. You can start and stop MQSeries by right-clicking on the icon in the task bar and then clicking on either **Start IBM MQSeries** or **Stop IBM MQSeries**.

It is the system administrator's job to monitor MQSeries and make any changes that might be necessary. To do this, you need to know where each MQSeries object resides, what its characteristics are, and who has access to it.

You can manage and monitor MQSeries resources by using:

- The MQSeries MMC snap-ins
  - IBM MQSeries Explorer
  - IBM MQSeries Services
- The MQSeries Web Administration server

MQSeries snap-ins

MQSeries provides snap-ins that run under the Microsoft Management Console (MMC):

- IBM MQSeries Explorer, described in "MQSeries Explorer" on page 128
- IBM MQSeries Services, described in "MQSeries Services" on page 130

These snap-ins provide a graphical user interface for administering the elements of your MQSeries network, allowing you to define and control:

- Queue managers
- Queues
- Clusters (networks of queue managers that can be on several MQSeries systems)
- Other MQSeries objects (such as channels, processes, client connections, and namelists)
- Services, which allow you to start and stop functions and to associate actions with the functions

The user interface provides extensive help information to guide you through the tasks involved. The MQSeries Information Center also provides a great deal of useful information.

MQSeries Explorer

You can open the MQSeries Explorer in one of the following ways:

- From the Windows NT or Windows 2000 task bar, select **Start→Programs→IBM MQSeries V5.2.1→MQSeries Explorer**.
- From the MQSeries First Steps window, select **MQSeries Explorer**.

The MQSeries Explorer window is displayed.

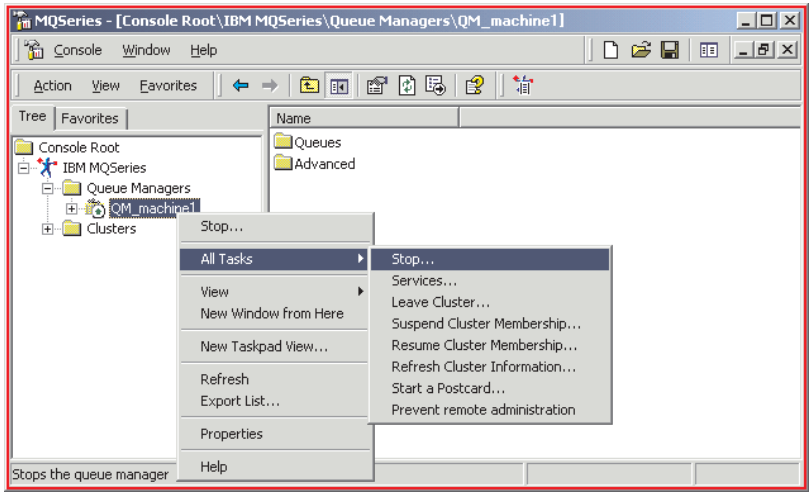

Figure 19. MQSeries Explorer window

You can use the MQSeries Explorer to:

- Create, delete, or change any of the MQSeries objects (queue managers, clusters, namelists, queues, channels, client connections, and processes)
- Start or stop a queue manager
- Allow or prevent remote administration for a local queue manager
- View queue managers and their objects on this or other computers
- Check the status of queue managers, clusters, and channels on this or other computers
- Browse messages on queues
- Start the Postcard application, using the local queue manager as the postcard mailbox.

Your user ID ***must*** belong to the local `mqm` or `Administrators` group in order to administer any queue manager on that system. Your user ID ***must*** be a member of the `mqm` or `Administrators` group on a remote MQSeries system in order to administer queue managers on the remote system.

To allow or prevent remote administration

You can allow or prevent remote administration for a local queue manager. To do this:

- From the MQSeries Explorer, select the Queue Managers node in the tree, and click on the + symbol to expand that node.
- Select the required queue manager.
- From the menu, select **Action→All Tasks→**, then select either **Allow remote administration**, or **Prevent remote administration**, as required. The option available changes, depending whether remote administration is already enabled for the selected queue manager.
- Click **OK** in the resulting dialog.

MQSeries Services

You can open the MQSeries Services in one of the following ways:

- From the Windows NT or Windows 2000 task bar, select **Start→Programs→IBM MQSeries V5.2.1→MQSeries Services**.
- From the MQSeries Explorer window, right click on a queue manager name.
- From the IBM MQSeries icon in the task bar, select **MQSeries Services** from the menu.

The MQSeries Services window is displayed.

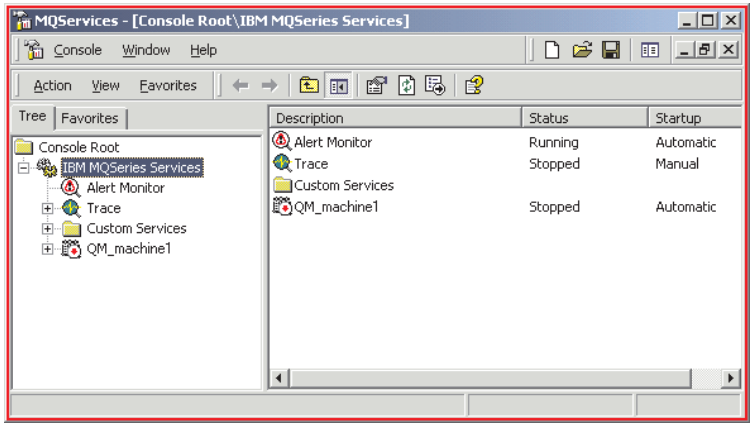

Figure 20. MQSeries Services

You can use the MQSeries Services to:

- Start, stop, create, or delete a queue manager
- Start or stop the Web Administration server
- Start or stop individual services of a queue manager (such as command server, channel initiator, and listener)
- Set up the configuration of the services (such as automatic startup, failure recovery actions, and communication protocols)
- View the alert monitor
- Start and stop service trace
- Specify applications to be started automatically when MQSeries is started (see the *MQSeries System Administration* manual for more information on the Custom Service)

Web Administration

MQSeries also provides a Web-based application that allows you to administer all the systems in your MQSeries network from a Windows NT or Windows 2000 workstation. The application allows you to use MQSeries command (MQSC) facilities, either as individual commands or multiple commands in a script. The MQSeries Web Administration server can be started and stopped from the MQSeries Services. The server is configured to start automatically when installed (but it is not installed by default).

Full details on MQSeries Web Administration are in *MQSeries System Administration*.

Logging on to MQSeries Web Administration

To log on as an MQSeries administrator (as a client to the Web Administration server), connect your Web browser to the MQSeries Web Administration Web server by using a URL of the form:

`http://`*`hostname`*`:`*`port_number`*`/`

where:

where:

hostname Is the IP host name (or numeric TCP/IP address) of the computer running the Web server.

port_number Is the IP port number assigned to the Web server. The default value for `port_number` is 8081. For example:

```
http://name.server.company.com:8081/
```

or

```
http://1.23.45.6:8081/
```

However, you can change the port value using the MQSeries Services.

This URL must be made known to all MQSeries administrators who will be using MQSeries Web Administration.

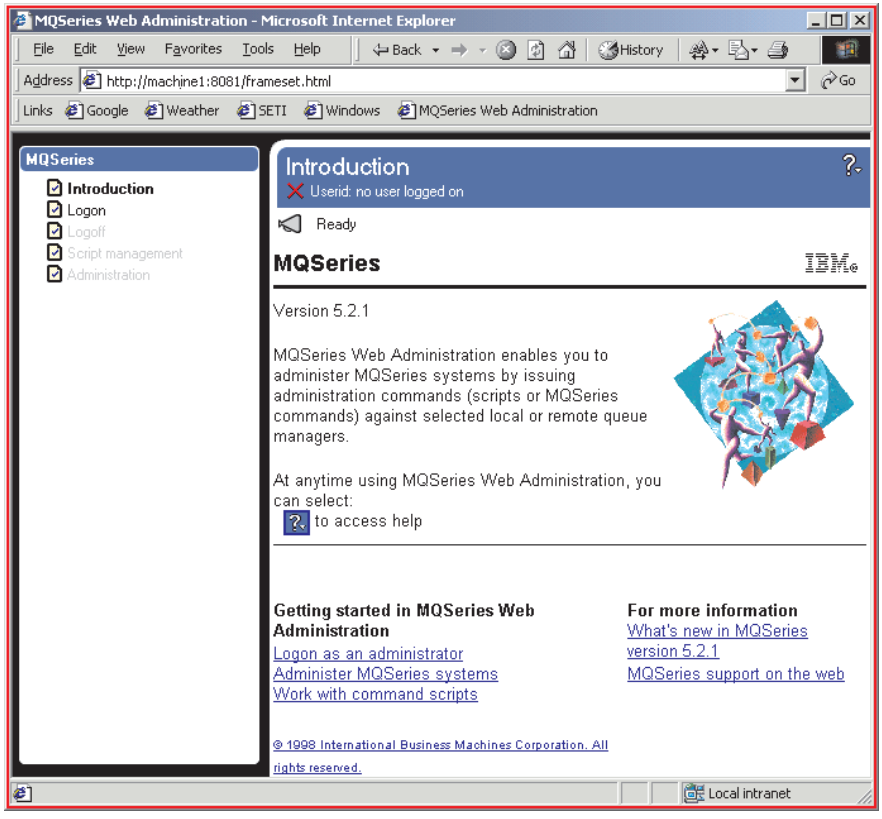

Figure 21. MQSeries Web Administration window

Note: If you use Netscape as your browser, you might find that the response time is relatively slow — this is a known problem with Netscape when it is run on the same system as the MQSeries server. To avoid this problem either use Internet Explorer, or run the browser and MQSeries server on different machines.

The left-hand pane of the browser window contains a navigation area. To log on as an MQSeries Web Administrator and administer MQSeries objects:

1. Click **Logon** in the navigation area in the left-hand pane of the browser window. The Logon panel is displayed.
2. Use the Logon panel to enter your Windows NT or Windows 2000 user ID and password for MQSeries Web Administration.
3. Click **Logon** to start the logon process. The Administration panel is displayed.

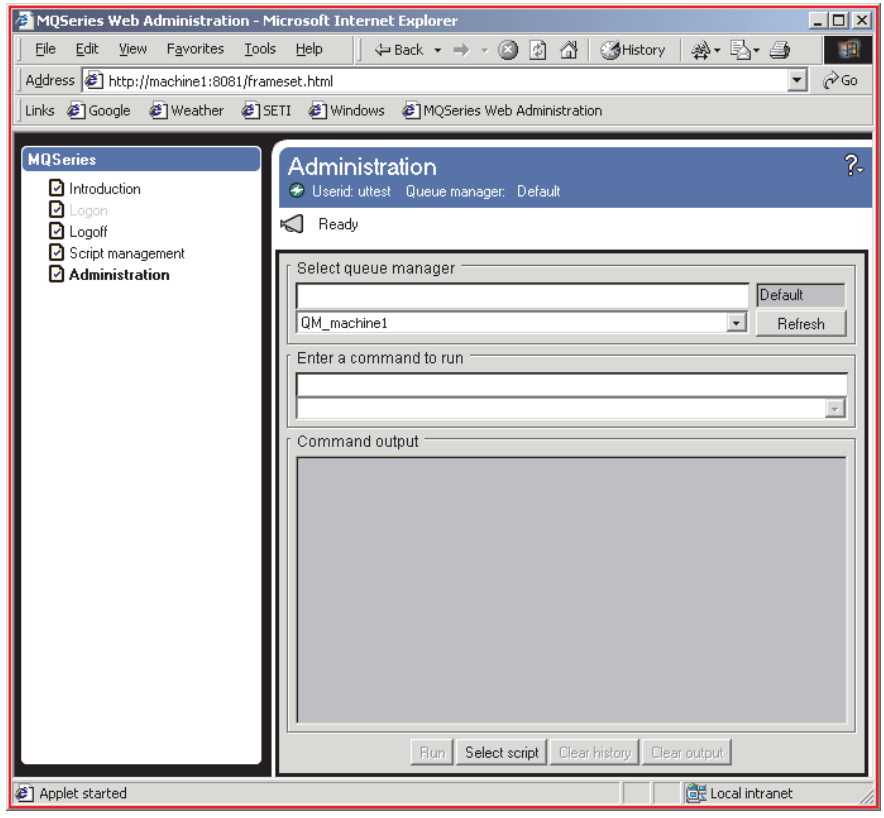

Figure 22. MQSeries Web Administration window – Administration panel

4. Select the queue manager that you want to work with from the **Select Queue Manager** list. The default queue manager is selected by default.
5. Enter the command that you wish to run, then click **Run**.

MQSeries Web Administration user IDs

Your user ID needs the necessary administration privileges on the MQSeries server to perform administration tasks. Therefore, before attempting to log on to MQSeries Web Administration, ensure that you have the correct level of authorization. This means being one or more of the following:

- A member of the `mqm` group
- A member of the `Administrators` group on the machine running MQSeries Web Administration
- Logged on using the SYSTEM ID

For some operations, you might need authorization to use individual objects or object types. MQSeries Web Administration uses existing MQSeries rules for security to ensure that this happens.

Web administration

MQSeries Web Administration controls remote queue managers by using MQSeries commands (MQSC). The Web Administration server adopts the user ID of each logged-on administrator prior to invoking MQSC commands on the administrator's behalf. Therefore, administrators have exactly the same privileges from MQSeries Web Administration as they would have using the **runmqsc** command locally on the Web Administration server.

Chapter 13. Using MQSeries command sets

This chapter introduces the command sets that can be used to perform system administration tasks on MQSeries objects.

Administration tasks include creating, starting, altering, viewing, stopping, and deleting MQSeries objects such as queue managers, queues, processes, and channels. To perform these tasks, you must select the appropriate command from one of the supplied command sets.

MQSeries provides three command sets for performing administration tasks:
- Control commands
- MQSC commands
- PCF commands

Note: The MQSeries Explorer (see "MQSeries Explorer" on page 128) provides a graphical user interface that allows you to do many of the tasks that can be done using commands. See Table 13 on page 136 for details.

The following sections describe the command sets that are available. Some tasks can be performed using either a control command or an MQSC command, but other tasks can be performed using only one type of command. For a comparison of the facilities provided by the different types of command set, see *MQSeries System Administration*.

Control commands

MQSeries provides control commands that you can enter through the Windows NT or Windows 2000 command line. Your user ID *must* belong to the local `mqm` or `Administrators` group in order to run any of the MQSeries control commands.

Control commands fall into three categories:

- *Queue manager commands*, including commands for creating, starting, stopping, and deleting queue managers and command servers.
- *Channel commands*, including commands for starting and ending channels and channel initiators.
- *Utility commands*, including commands associated with authority management and conversion exits.

Using control commands

Under MQSeries, you enter control commands at a command prompt. Control commands and their flags are not case sensitive, but arguments to those commands (such as queue names and queue manager names) are case sensitive. For example, in the command:

```
crtmqm -u SYSTEM.DEAD.LETTER.QUEUE jupiter.queue.manager
```

- The command name can be entered in uppercase or lowercase, or a mixture of the two. These are all valid: `crtmqm`, `CRTMQM`, and `CRTmqm`.
- The flag can be entered as `-u`, `-U`, `/u`, or `/U`.
- The arguments `SYSTEM.DEAD.LETTER.QUEUE` and `jupiter.queue.manager` must be entered exactly as shown.

The following table lists the control commands, gives a brief description of each control command, and indicates whether the command function can be achieved through the MQSeries Explorer user interface.

Notes:

1. When working from the user interface, you can get help for the command you are using by pressing the Help button.
2. When working from the command prompt, you can get help for the syntax of any of the commands by entering the command followed by a space and then a question mark. MQSeries responds by listing the syntax required for the selected command.

Table 13. MQSeries control commands

Command	Function	Description	User interface?
Queue manager commands			
crtmqm	Create queue manager	Creates a local queue manager and defines the default and system objects.	Yes
dltmqm	Delete queue manager	Deletes a specified queue manager.	Yes
dspmqcsv	Display command server	Displays the status of the command server for the specified queue manager.	Yes
dspmq	Display MQSeries queue managers	Displays the names of all the queue managers on a machine.	No
endmqcsv	End command server	Stops the command server on the specified queue manager.	Yes
endmqm	End queue manager	Stops a specified local queue manager.	Yes

Table 13. MQSeries control commands (continued)

Command	Function	Description	User interface?
runmqdlq	Run dead-letter queue handler	Starts the dead-letter queue (DLQ) handler, a utility that you can run to monitor and handle messages on a dead-letter queue.	No
strmqcsv	Start command server	Starts the command server for the specified queue manager.	Yes
strmqm	Start queue manager	Starts a local queue manager.	Yes
Channel commands			
runmqchi	Run channel initiator	Runs a channel initiator process.	Yes
runmqchl	Run channel	Runs either a sender (SDR) or a requester (RQSTR) channel.	Yes
Utility commands			
amqmdain	MQSeries services control	Query or configure MQSeries queue manager services.	No
crtmqcvx	Data conversion	Creates a fragment of code that performs data conversion on data type structures.	No
dmpmqlog	Dump log	Dumps a formatted version of the MQSeries system log.	No
dspmqaut	Display authority	Displays the current authorizations to a specified object.	No
dspmqfls	Display MQSeries files	Displays the real file system name for all MQSeries objects that match a specified criterion.	No
dspmqtrn	Display MQSeries transactions	Displays details of in-doubt transactions.	No
endmqlsr	End listener	Ends all running listener processes for a particular queue manager.	No
endmqtrc	End MQSeries trace	Ends tracing for the specified entity or all entities.	Yes
rcdmqimg	Record media image	Writes an image of an MQSeries object, or group of objects, to the log for use in media recovery.	No
rcrmqobj	Recreate object	Recreates an object, or group of objects, from their images contained in the log.	No

Control commands

Table 13. MQSeries control commands (continued)

Command	Function	Description	User interface?
rsvmqtrn	Resolve MQSeries transactions	Commits or backs out internally or externally coordinated in-doubt transactions.	No
runmqlsr	Run listener	Runs a listener process.	No
runmqsc	Run MQSeries commands	Issues MQSC commands to a queue manager.	Yes
runmqtrm	Start trigger monitor	Invokes a trigger monitor.	No
setmqaut	Set/reset authority	Changes the authorizations to an object or to a class of objects.	No
setmqipw	Encrypt parameter file.	Encrypts user account values in a parameter file used for silent installation.	No
setmqscp	Set MQSeries service connection points	Adds the MQSeries client connections Active Directory container, or removes or displays MQSeries service connection points.	No
strmqtrc	Start MQSeries trace	Enables tracing.	Yes

For more information about the syntax and purpose of control commands, see *MQSeries System Administration*.

MQSeries (MQSC) commands

You use the MQSeries (MQSC) commands to manage queue manager objects, including the queue manager itself, channels, queues, and process definitions. For example, there are commands to define, alter, or display the attributes (not the messages) of a specified queue.

The MQSC commands and their functions are shown in Table 14.

Table 14. MQSC commands

Command	Function
ALTER CHANNEL	Alter the attributes of a channel.
ALTER NAMELIST	Alter a list of names (usually a list of cluster or queue names).
ALTER PROCESS	Alter the attributes of an existing MQSeries process definition.
ALTER QALIAS	Alter the attributes of an alias queue.
ALTER QLOCAL	Alter the attributes of a local queue.
ALTER QMGR	Alter the queue manager attributes for the local queue manager.

Table 14. MQSC commands (continued)

Command	Function
ALTER QMODEL	Alter the attributes of a model queue.
ALTER QREMOTE	Alter the attributes of a local definition of a remote queue, a queue-manager alias, or a reply-to queue alias.
CLEAR QLOCAL	Clear the messages from the local queue.
DEFINE CHANNEL	Define a new channel and set its attributes.
DEFINE NAMELIST	Define a list of names (usually cluster names or queue names).
DEFINE PROCESS	Define a new MQSeries process definition, and set its attributes.
DEFINE QALIAS	Define a new alias queue and set its attributes.
DEFINE QLOCAL	Define a new local queue and set its attributes.
DEFINE QMODEL	Define a new model queue and set its attributes.
DEFINE QREMOTE	Define a new local definition of a remote queue, a queue manager alias, or a reply-to queue alias, and to set its attributes.
DELETE CHANNEL	Delete a channel definition.
DELETE NAMELIST	Delete a namelist definition.
DELETE PROCESS	Delete a process definition.
DELETE QALIAS	Delete an alias queue definition.
DELETE QLOCAL	Delete a local queue definition. You can specify that the queue must not be deleted if it contains any messages, or that it can be deleted even if it does contain messages.
DELETE QMODEL	Delete a model queue definition.
DELETE QREMOTE	Delete a local definition of a remote queue. It does not affect the definition of that queue on the remote system.
DISPLAY CHANNEL	Display a channel definition.
DISPLAY CHSTATUS	Display the status of one or more channels.
DISPLAY CLUSQMGR	Display cluster information about queue managers in a cluster.
DISPLAY NAMELIST	Display the names in a namelist.
DISPLAY PROCESS	Display the attributes of one or more MQSeries processes.
DISPLAY QALIAS	Display the attributes of one or more queues.
DISPLAY QCLUSTER	Display the attributes of one or more queues.
DISPLAY QLOCAL	Display the attributes of one or more queues.
DISPLAY QMGR	Display the queue manager attributes for this queue manager.
DISPLAY QMODEL	Display the attributes of one or more queues.
DISPLAY QREMOTE	Display the attributes of one or more queues.
DISPLAY QUEUE	Display the attributes of one or more queues of any type.

Table 14. MQSC commands (continued)

Command	Function
PING CHANNEL	Test a channel by sending data as a special message to the remote queue manager, and checking that the data is returned. The data is generated by the local queue manager.
PING QMGR	Test whether the queue manager is responsive to commands.
REFRESH CLUSTER	Discard all local held cluster information (including any autodefined channels that are in doubt) and force it to be rebuilt. This allow the cluster to be "cold-started".
REFRESH SECURITY	Perform a security refresh.
RESET CHANNEL	Reset the message sequence number for an MQSeries channel, with, optionally, a specified sequence to be used the next time the channel is started.
RESET CLUSTER	Perform special operations on clusters.
RESOLVE CHANNEL	Request a channel to commit or back out in-doubt messages.
RESUME QMGR	Inform other queue managers in a cluster that the local queue manager is available again for processing, and can be sent messages. This reverses the action of the SUSPEND QMGR command.
START CHANNEL	Start a channel.
START CHINIT	Start a channel initiator.
START LISTENER	Start a channel listener.
STOP CHANNEL	Stop a channel.
SUSPEND QMGR	Inform other queue managers in a cluster that the local queue manager is not available for processing, and cannot be sent messages. You can reverse this action by using the RESUME QMGR command.

For detailed information about each MQSC command, see *MQSeries MQSC Command Reference*.

Running MQSC commands

You run MQSC commands by invoking the control command **runmqsc**. You can run MQSC commands:

- Interactively by typing them at a command prompt
- As a sequence of commands from a text file (a script)

When you have finished using the MQSC commands, type `END` and press Enter to return to the Windows command prompt.

For more information about using MQSC commands, see *MQSeries System Administration*.

PCF commands

MQSeries programmable command format (PCF) commands allow administration tasks to be programmed into an administration program. In this way, you can create and manipulate MQSeries objects from a program. PCF commands cover the same range of functions that are provided by the MQSC facility. You can therefore write a program to issue PCF commands to any queue manager in the network from a single node, using the MQI (see "Programming MQSeries" on page 125). In this way, you can both centralize and automate administration tasks.

Unlike MQSC commands, PCF commands and their replies are not in a text format that you can read. For a complete description of the PCF data structures and how to implement them, see *MQSeries Programmable System Management*.

The MQSeries Administration Interface (MQAI) provides a simpler interface for writing administration programs than using PCF commands. It is described in the *MQSeries Administration Interface Programming Guide and Reference*.

Chapter 14. Using the MQSeries Internet Gateway

This chapter introduces the MQSeries Internet Gateway. It also explains how to get more information about using the MQSeries Internet Gateway.

The MQSeries Internet Gateway is one of the installable components on the MQSeries Server CD-ROM, and is also available from the MQSeries Web site.

The following Gateways are available:
- MQSeries Internet Gateway for AIX®
- MQSeries Internet Gateway for HP-UX
- MQSeries Internet Gateway for Linux
- MQSeries Internet Gateway for OS/2®
- MQSeries Internet Gateway for OS/390® OpenEdition®
- MQSeries Internet Gateway for Sun Solaris
- MQSeries Internet Gateway for Windows NT

Overview of MQSeries Internet Gateway

MQSeries Internet Gateway provides a bridge between the synchronous World Wide Web and asynchronous MQSeries applications. With the MQSeries Internet Gateway, Web server software and MQSeries together provide an Internet-connected Web browser with access to MQSeries applications. This means that enterprises can take advantage of the low-cost access to global markets provided by the Internet, while benefitting from the robust infrastructure and assured message delivery of MQSeries.

User interaction with the MQSeries Internet Gateway is through HTML fill-out form POST requests; MQSeries applications respond by returning HTML pages to the MQSeries Internet Gateway, via an MQSeries queue.

The MQSeries Internet Gateway supports the following Web server interfaces:
- Common Gateway Interface (CGI)
- Internet Connection Application Programming Interface (ICAPI)
- Internet Services Application Programming Interface (ISAPI)
- Netscape Connection Application Programming Interface (NSAPI)

MQSeries Internet Gateway documentation

The MQSeries product family Web site is at:

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

Documentation

The following documentation is accessible from this Web site:

- *Getting Started with MQSeries Internet Gateway*. This is the starting point for the download and installation of MQSeries Internet Gateway.
- *MQSeries Internet Gateway User's Guide*. This is the main documentation for users of the MQSeries Internet Gateway.

Chapter 15. Obtaining additional information

This chapter describes the documentation for MQSeries for Windows NT and Windows 2000. It starts with a list of the publications, and then discusses:
- "Hardcopy books" on page 146
- "Online information" on page 146

If there is similar information in this book (MQSeries for Windows NT and Windows 2000 V5.2.1 Quick Beginnings) and any of the books in the following list, the information in this book should take precedence.

MQSeries for Windows NT and Windows 2000 is described in the following books:

Table 15. MQSeries for Windows NT and Windows 2000 books

Order Number	Title
	Windows NT and Windows 2000 Specific Books
GC34-5389	*MQSeries for Windows NT and Windows 2000 Quick Beginnings*
SC34-5404	*MQSeries LotusScript Extension*
SC34-5387	*MQSeries for Windows NT Using the Component Object Model Interface*
	MQSeries Family Books
GC34-5761	*MQSeries V5.2 Release Guide*
SC33-1872	*MQSeries Intercommunication*
SC34-5349	*MQSeries Queue Manager Clusters*
GC33-1632	*MQSeries Clients*
SC33-1873	*MQSeries System Administration*
SC33-1369	*MQSeries MQSC Command Reference*
SC34-5760	*MQSeries Event Monitoring*
SC33-1482	*MQSeries Programmable System Management*
SC34-5390	*MQSeries Administration Interface Programming Guide and Reference*
GC33-1876	*MQSeries Messages*
SC33-0807	*MQSeries Application Programming Guide*
SC33-1673	*MQSeries Application Programming Reference*
SX33-6095	*MQSeries Programming Interfaces Reference Summary*
SC33-1877	*MQSeries Using C++*

Table 15. MQSeries for Windows NT and Windows 2000 books (continued)

Order Number	Title
SC34-5456	*MQSeries Using Java*
SC34-5604	*MQSeries Application Messaging Interface*

Hardcopy books

The book that you are reading now is *MQSeries for Windows NT and Windows 2000 V5.2.1 Quick Beginnings*. This book and the *MQSeries V5.2 Release Guide* are the only books that are supplied in hardcopy with the product. However, all books listed in Table 15 on page 145 are available for you to order or print.

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

```
http://www.ibm.com/ibmlink
```

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

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

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

For information about printing books, see "PDF" on page 147.

Online information

This section describes:

- "Publications supplied with the product"
- "HTML and PDF books on the World Wide Web" on page 148
- "BookManager CD-ROMs" on page 149
- "Online help" on page 149

Publications supplied with the product

The MQSeries online documentation is delivered in Microsoft HTML Help (.CHM) and PDF formats on the CD-ROM.

HTML

You can view the compiled HTML version of the books from the Information Center. Look for "IBM MQSeries Manuals" under the "Reference" section in

the Table of Contents. Microsoft HTML Help (.CHM) files are also on the MQSeries CD-ROM in the \Docs\htmlhelp\ folder. Double-click on a .CHM file to view it.

You can install the MQSeries manuals in your national language. Some manuals are not translated into every language, so you should also install the English versions to get a full set.

PDF

A PDF (Portable Document Format), corresponding to each hardcopy book, is available on the 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. If you have a Web browser, you can access the PDFs on the product CD-ROM by pointing your browser to \Docs\acrobat.

The PDFs 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

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:

- pt_BR (Brazilian Portuguese)
- en_US (English)
- fr_FR (French)
- de_DE (German)
- it_IT (Italian)
- ja_JP (Japanese)
- ko_KR (Korean)
- es_ES (Spanish)
- zh_CN (Simplified Chinese)
- zh_TW (Traditional Chinese)

Within these directories, you can find the complete set of PDFs that are available. Table 16 on page 148 shows the file names used for the PDF files.

Table 16. MQSeries publications – file names

Book	File Name
MQSeries for Windows NT and Windows 2000 Quick Beginnings	AMQTAC02
MQSeries LotusScript Extension	AMQZAU00
MQSeries for Windows NT Using the Component Object Model Interface	AMQTAN01
MQSeries V5.2 Release Guide	AMQZAY00
MQSeries Intercommunication	CSQZAE05
MQSeries Queue Manager Clusters	CSQZAH03
MQSeries Clients	CSQZAF05
MQSeries System Administration	AMQZAG01
MQSeries MQSC Command Reference	CSQZAJ05
MQSeries Event Monitoring	CSQZAX01
MQSeries Programmable System Management	CSQZAI03
MQSeries Administration Interface Programming Guide and Reference	CSQZAT01
MQSeries Messages	AMQZAO02
MQSeries Application Programming Guide	CSQZAL05
MQSeries Application Programming Reference	CSQZAK05
MQSeries Programming Interfaces Reference Summary	CSQZAM05
MQSeries Using C++	AMQZAN05
MQSeries Using Java	CSQZAW06
MQSeries Application Messaging Interface	AMTYAK04

HTML and PDF books on the World Wide Web

The MQSeries 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 MQSeries 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 MQSeries product family.
- Access the MQSeries books in HTML and PDF formats.
- Download MQSeries SupportPacs.

You can access the Web versions of the books directly from the MQSeries Information Center (see the “Reference” section).

BookManager CD-ROMs

The MQSeries library is supplied in IBM BookManager® format on a variety of online library collection kits, including the *Transaction Processing and Data* collection kit, SK2T-0730. You can view the softcopy books in IBM BookManager format using the following IBM licensed programs:

- BookManager READ/2
- BookManager READ/6000
- BookManager READ/DOS
- BookManager READ/MVS
- BookManager READ/VM
- BookManager READ for Windows

Online help

To view the online help for a specific topic when using the MQSeries user interface, press F1, click on the Help button, or use the Help menu.

Alternatively, you can click on the Start menu, select MQSeries from the Programs menu, then select the MQSeries Information Center.

Part 4. Appendixes

Appendix A. MQSeries sample programs

Code samples for the following interfaces are provided with MQSeries:
- C
- C++
- VisualBasic
- COBOL
- Internet gateway
- MQSC
- DCE
- ActiveX

They are stored in the `Tools` folder and its subfolders. If you installed MQSeries into the default folders, the `Tools` folder is in `C:\Program Files\IBM\MQSeries`. You can use these samples directly or modify them as required.

For more information on the samples provided with MQSeries, see *MQSeries Application Programming Guide*.

MQSC command file samples

Table 17 lists the MQSC command file samples. These are simply ASCII text files containing MQSC commands. You can invoke the **runmqsc** command against each file in turn to create the objects specified in the file.

By default, these files are located in the folder `C:\Program Files\IBM\MQSeries\Tools\mqsc\Samples`.

Table 17. MQSC command files

File name	Purpose
amqscic0.tst	Defines objects for use in the sample CICS programs
amqscos0.tst	Defines a set of MQI objects for use with the sample programs

C program samples

Table 18 lists the sample MQSeries C source files. By default, the samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\c\Samples`.

Samples are also provided for XATM (see Table 23 on page 157), and the dead-letter queue handler (see Table 19 on page 155).

To find out more about what the programs do and how to use them, see the *MQSeries Application Programming Guide*.

Table 18. Sample programs - C source files

File name	Purpose
amqsaicq.c	Creates a local queue using the MQSeries Administration Interface (MQAI).
amqsaiem.c	Demonstrates a basic event monitor using the MQAI.
amqsailq.c	Inquires the current depth of the local queues using the MQAI.
amqsbcg0.c	Reads, then outputs both the message descriptor and message context fields of all messages on a specified queue.
amqsblst.c	Writes messages to and reads messages from a given queue and queue manager.
amqscnxc.c	Demonstrates how to specify client connection information on **MQCONNX**.
amqsdsc0.c	Demonstrates the DCE GSS channel exit routines.
amqsecha.c	Echoes a message from a message queue to the reply-to queue. Can be run as a triggered application program.
amqsgbr0.c	Writes messages from a queue to `stdout`, leaving the messages on the queue. Uses **MQGET** with the browse option.
amqsget0.c	Removes the messages from the named queue (using **MQGET**) and writes them to `stdout`.
amqsgrma.c	Get reference message sample. Gets messages from the queue specified in the input trigger message and checks that the file exists.
amqsinqa.c	Inquires about some of the attributes of a queue using the **MQINQ** call.
amqsldpc.c	Queries an LDAP directory, then puts messages to a message queue using **MQPUT**.
amqsprma.c	Put reference message sample. Creates a reference message, referring to a file, and puts it to a queue.
amqsptl0.c	Puts messages to a list of message queues, distribution lists (using **MQPUT**), and lists.

Table 18. Sample programs - C source files (continued)

File name	Purpose
amqsput0.c	Copies `stdin` to a message and then puts this message on a specified queue.
amqsreq0.c	Puts request messages on a specified queue and then displays the reply messages.
amqsseta.c	Inhibits puts on a named queue and responds with a statement of the result. Runs as a triggered application.
amqsspin.c	Demonstrates the SSPI security routines.
amqstrg0.c	A trigger monitor that reads a named initiation queue and then starts the program associated with each trigger message. Provides a subset of the full triggering function of the supplied RUNMQTRM command.
amqsvfc0.c	A sample C skeleton of a Data Conversion exit routine.
amqswlm0.c	Sample CLWL exit that chooses a destination queue manager.
amqsxrma.c	Exit reference message sample. Channel message exit program that processes reference messages.
amquregn.c	Dumps the MQ values in the registry to the console, or (using standard redirection) to a file.
Note: You can create the objects required by these samples using the MQSC command file AMQSCOS0.TST.	

Dead-letter queue handler sample programs

By default, the samples for the dead-letter queue handler are in the folder `C:\Program Files\IBM\MQSeries\Tools\c\Samples\dlq`.

Table 19. Sample programs - dead-letter queue handler

File name	Purpose
amqodqka.c	Main source for the MQSeries dead-letter queue handler
amqodqla.c	Functions for the MQSeries dead-letter queue handler
amqodqma.c	RUNMQDLQ Parser: YACC source in amqodqma.y
amqodqna.c	Functions for the MQSeries dead-letter queue handler
amqodqoa.c	Functions for the MQSeries dead-letter queue handler
amqodqpa.c	Lexical scanner
amqodqua.c	Functions for the MQSeries dead-letter queue handler

COBOL program samples

Table 20 lists the sample COBOL source files. By default, the COBOL samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\cobol\Samples`. To find out more about what the programs do and how to use them, see the *MQSeries Application Programming Guide*.

Table 20. Sample programs - COBOL source files

File name	Purpose
amq0gbr0.cbl	Writes messages from a queue to `stdout`, leaving the messages on the queue. Uses **MQGET** with the browse option.
amq0get0.cbl	Removes the messages from the named queue (using **MQGET**) and writes them to `stdout`.
amq0ptl0.cbl	Puts messages to a list of message queues, distribution lists (using **MQPUT**), and lists.
amq0put0.cbl	Copies `stdin` to a message and then puts this message on a specified queue.
amq0req0.cbl	Puts request messages on a specified queue and then displays the reply messages.
amqiech2.cbl	IBM COBOL program that echoes messages to the reply-to queue.
amqiinq2.cbl	IBM COBOL program that inquires about some of the attributes of a queue using the **MQINQ** call.
amqiset2.cbl	IBM COBOL program using **MQSET**.
amqmech2.cbl	Merant COBOL program that echoes messages to the reply-to queue.
amqminq2.cbl	Merant COBOL program using **MQINQ**.
amqmset2.cbl	Merant COBOL program using **MQSET**.
Note: You can create the objects required by these samples using the MQSC command file AMQSCOS0.TST.	

Supporting CICS and Encina for transaction processing

The samples include a CICS transaction and some associated headers and initialization programs. By default, the samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\c\Samples`.

For further information about some of these samples and how to use them, see the *MQSeries Application Programming Guide*.

Table 21. Sample programs - transaction processing with CICS and Encina

File name	Purpose
amqscic0.ccs	Sample CICS transaction program. Uses queues that can be created using the MQSC script amqscic0.tst.
amqscih0.h	Header file for CICS transaction sample amqscic0.
amqsxae0.c	Encina transaction.
amqzscgn.c	GLUE program for the CICS task termination user exit.
amqzscin.c	XA switch program for CICS XA initialization.
Note: You can create objects to support transaction processing using the MQSC command file AMQSCIC0.TST.	

Supporting Tuxedo for transaction processing

The samples include client transactions and some associated definitions and configuration files. By default, the samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\c\Samples`.

For further information about these samples and how to use them, see the *MQSeries Application Programming Guide*.

Table 22. Sample programs - transaction processing with Tuxedo

File name	Purpose
amqstxsx.c	Sample server
amqstxgx.c	Sample GET client application
amqstxpx.c	Sample PUT client application
amqstxvx.fld	Field definition
ubbstxcn.cfg	Configuration file

Supporting databases

By default, the database samples are located in the following folders:

- `C:\Program Files\IBM\MQSeries\Tools\cobol\Samples\xatm`
- `C:\Program Files\IBM\MQSeries\Tools\c\Samples\xatm`

Table 23. Sample programs - databases

C	COBOL	Purpose
amqsxag0.c	amq0xag0.cbl	Coordinates XA-compliant database managers

Database samples

Table 23. Sample programs - databases (continued)

C	COBOL	Purpose
amqsxab0.sqc	amq0xab0.sqb	Functions to access MQBankTB table in MQBankDB database
amqsxaf0.sqc	amq0xaf0.sqc	Functions to access MQFeeTB table in MQFeeDB database
amqsxas0.sqc	amq0xas0.sqb	SQC and SQB programs for MQSeries coordinating XA-compliant database managers
db2swit.c	–	MQSeries XA switch program for DB2®
oraswit.c	–	MQSeries XA switch program for Oracle
sybswit.c	–	MQSeries XA switch program for Sybase

Miscellaneous tools

These tool files are provided to support the trace formatter and code conversion.

Table 24. Sample programs- miscellaneous files

File name	Location	Purpose
AMQTRC.FMT	C:\Program Files\IBM\MQSeries\Tools\Lib	Defines MQSeries trace formats.
CCSID.TBL	C:\Program Files\IBM\MQSeries\conv\table	Edit this file to add any newly supported CSSID values to your MQSeries system. For more information about CCSID, see the Character Data Representation Architecture (CDRA) documentation.

C++ program samples

Table 25 lists the sample C++ source files. By default, the C++ samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\cplus\Samples`.

Table 25. Sample programs - C++ source files

File name	Purpose
imqdput.cpp	Puts messages to a distribution list containing two queues
imqsget.cpp	Gets messages from a named queue
imqsput.cpp	Puts messages to a named queue
imqwrld.cpp	Puts and gets a message to and from a queue

VisualBasic program samples

Table 26 lists the sample VisualBasic source files. By default, the VisualBasic samples are in the following folders:

- `C:\Program Files\IBM\MQSeries\Tools\VB\sampVB5`
- `C:\Program Files\IBM\MQSeries\Tools\VB\sampVB6`

To find out more about what the programs do and how to use them, see the *MQSeries Application Programming Guide*.

Table 26. Sample programs - VisualBasic source files

File name	Purpose
amqsaicq.vbp	Creates queues.
amqsaiem.vbp	Basic event monitor.
amqsailq.vbp	Displays queue information for a given queue manager.
amqsbcgb.vbp	Reads and outputs both the message descriptor fields and the message content of all the messages on a queue.
amqsgetb.vbp	Gets messages from a queue.
amqsputb.vbp	Puts messages onto a queue.
mqtrivc.vbp	Connects to a queue manager, puts and gets messages (client version).
mqtrivs.vbp	Connects to a queue manager, puts and gets messages (server version).
pcfsamp.vbp	Channel administrator. Connects to a remote queue manager, starts and stops channels, tests PCF commands.
strings.vbp	Allows putting and getting of data structures onto queues.

Internet Gateway program samples

Table 27 lists the sample Internet Gateway source files. By default, the Internet Gateway samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\DMQGATE\Samples`.

Table 27. Sample programs - Internet Gateway source files

File name	Purpose
dmqsamp1.c	Sample C program. Reads data from a request queue and writes a response to a reply queue using MQI calls. It is a web-aware application. Data read from the input queue is decoded from a web interface (URL) format. Data written to the reply queue is written in an HTML format so that it can be displayed by a web browser.

Internet Gateway samples

Table 27. Sample programs - Internet Gateway source files (continued)

File name	Purpose
dmqsamp2.c	Reads data from a request queue and writes a response to a reply queue using MQAPI calls. It differs from dmqsamp1 in that it uses the MQSeries Internet Gateway's ability to form a SESSION between the browser and a back-end application (in this case, dmqsamp2).

DCE program samples

Table 28 lists the sample DCE source files. By default, the DCE samples are in the folder `C:\Program Files\IBM\MQSeries\Tools\dce\Samples`. For more information about how to use these programs, see the *MQSeries Application Programming Guide*.

Table 28. Sample programs - DCE source files

File name	Purpose
dcesetkt.bat	Batch file, sets up the DCE keytable file so that the MQSeries DCE naming service can run
dcesetsv.bat	Batch file, sets up the DCE security and directory servers so that the MQSeries DCE naming service can run

ActiveX program samples

Table 29 lists the sample ActiveX source files. By default, the ActiveX samples are in the following folders:

- `C:\Program Files\IBM\MQSeries\Tools\mqax\Samples\excel`
- `C:\Program Files\IBM\MQSeries\Tools\mqax\Samples\HTML`
- `C:\Program Files\IBM\MQSeries\Tools\mqax\Samples\VB`

To find out more about what the programs do and how to use them, see the *MQSeries for Windows NT Using the Component Object Model Interface*.

Table 29. Sample programs - ActiveX source files

File name	Purpose
Excel	
mqax.xls	This Excel example macro code illustrates using the various MQAX objects to send a request to the bank server and process the reply.
mqaxtriv.xls	This is a very simple example of the use of MQAX from an Excel spreadsheet. This file shows a simple MQSeries example, putting a message and getting it back.

Table 29. Sample programs - ActiveX source files (continued)

File name	Purpose
HTML	
mqaxtriv.htm	A simple MQSeries example, putting a message and getting it back.
VisualBasic	
mqaxbsrv.vbp	Simple bank server.
mqaxclss.vbp	Displays a form on which you can query attributes of an MQSeries queue manager or queue.
mqaxdlst.vbp	Distribution lists sample.
mqaxtriv.vbp	Simple tester, using **MQPUT** and **MQGET**.

ActiveX samples

Appendix B. Configuring MQSeries accounts

MQSeries must check that only authorized users can access queue managers or queues. Whenever any user attempts such access, MQSeries uses its own local account to query information about the user. However, if a domain controller runs on Windows 2000, it can be set up so that local accounts cannot be used to make these queries. In this situation, you must provide MQSeries with a special account to use. This is necessary when both of the following conditions apply:

- Any domain controller on your network is running on Windows 2000
- Local user accounts are not authorized to query the group membership of the Windows 2000 domain user accounts

If these conditions apply (or if you are not sure), give the information described in the following section to your domain administrator, and ask for one of the special accounts it describes. When you install the product, towards the end of the installation procedure, in the Prepare MQSeries wizard, you are asked to enter details of this account (domain, user name, and password).

If these conditions apply and you install MQSeries without a special account (or without entering its details), many or all parts of MQSeries will not work, depending upon the particular user accounts involved. In particular, if you are currently logged on with a Windows 2000 domain user account, you cannot complete the Default Configuration, and the Postcard and API Exerciser applications will not work. Also, MQSeries connections to queue managers that run under Windows 2000 domain accounts on other computers might fail.

For information about the user rights required to take advantage of the Kerberos authentication support, (which is introduced in MQSeries for Windows NT and Windows 2000, V5.2.1), see "Appendix C. SSPI security exit" on page 167.

For information about the user rights required to take advantage of the Active Directory support, (which is introduced in MQSeries for Windows NT and Windows 2000, V5.2.1), see "Appendix D. Active directory services" on page 175.

Information for domain administrators

MQSeries has a component, running as a Windows service, that checks that any user account attempting to access MQSeries is authorized. As part of the check, the service must confirm that the account belongs to the group `DOMAIN\domain mqm`. The service itself by default runs under a local user account (MUSR_MQADMIN) that MQSeries creates at installation.

If any domain controller on your network is running on Windows 2000, that domain can be set up so that local user accounts do not have authority to query the group membership of its domain user accounts. Such a setup will prevent MQSeries from completing its check, and access will fail. To resolve this, each installation of MQSeries on the network must be configured to run its service under a domain user account that has the required authority. See the following section for instructions to create a suitable domain account.

Creating and setting up Windows 2000 domain accounts for MQSeries

The step-by-step instructions below show how to:

- Create a domain group (a global or universal group)
- Give members of this group the authority to query the group membership of any account
- Create one or more user accounts, and add them to the group
- Use the accounts to configure each installation of MQSeries
- Set the password expiry periods

Step-by-step instructions

1. Log on to the domain controller as an account with domain administrator authority.
2. Create a domain group with a special name that is known to MQSeries:
   a. From the Start menu, open **Active Directory Users and Computers**.
   b. Find your domain name in the navigation pane on the left (typically something like `mqdev.server.company.com`), right-click it and select **New Group**.
   c. Enter the name `domain mqm` (use this exact string, because it is understood and used by MQSeries).
   d. Make any specific changes you want to the other defaults, then click **OK**.
3. Give members of this group the authority to query the group membership of any account:
   a. If it is not already open, from the Start menu, open **Active Directory Users and Computers**

b. Find your domain name in the navigation pane on the left (typically something like `mqdev.server.company.com`), right-click it, select **Delegate Control...**, then click **Next**.

   If there is more than one domain available, choose the domain that contains the accounts of the users that wish to install the product. If you require MQSeries to authenticate users from more than one domain, perform this step for each relevant domain.

c. At Selected Groups and Users, select **Add**, select **domain mqm** and select **Add**, then select **OK**.

d. Select **domain mqm** and select **Next**.

e. Select **Create a custom task to delegate** and select **Next**.

f. Select **Only the following objects in the folder**, check **User Objects** in the alphabetical list, then select **Next**.

g. Check **Property-specific**, then search down the list (it is in alphabetical order on the second word) to find:

   1) Read Group Membership

   2) Read groupMembershipSAM

h. Check both of these options, then select **Next**.

i. Select **Finish**.

4. Create one or more accounts, and add them to the group:

   a. In a similar manner to step 3, create a user account with a name of your choosing and add it to group `domain mqm`.

   b. Repeat this for all the accounts you want to create.

5. Use the accounts to configure each installation of MQSeries:

   a. Either use the same domain user account for each computer on which MQSeries is installed, or create a separate account for each one and add each account to the `domain mqm` group.

   b. When you have created the required accounts, provide each installer of MQSeries with details of the account you want them to use for configuration (domain name, user name and password). During installation, the Prepare MQSeries wizard will prompt them for this information.

   c. When you install MQSeries on any computer on the domain, the MQSeries install program detects the existence of the `domain mqm` group on the LAN, and automatically adds it to the local `mqm` group. (The local `mqm` group is created during installation; all user accounts in it have authority to use MQSeries). Therefore, all members of the `domain mqm` group will have authority to use MQSeries on this computer. However, for every installation, you must still provide a domain user account to the Prepare MQSeries wizard, so that MQSeries is reconfigured to use that account when it makes queries.

6. Set the password expiry periods:
   a. If you use only one account for all MQSeries users, consider setting the password of the account so that it never expires. Otherwise, when the password expires, all instances of MQSeries will stop working at the same time.
   b. If you give each MQSeries user their own user account, there will be more user accounts to create and manage, but when a password expires, only one instance of MQSeries will stop working.
   c. If you set the password so that it does expire, tell users that sometimes MQSeries might stop working, and entries in the event log will warn that the password has expired, and will explain how to reset the password.

Appendix C. SSPI security exit

MQSeries for Windows NT and Windows 2000 supplies a security exit for both the MQSeries client and the MQSeries server. This is a channel-exit program that provides authentication for MQSeries channels by using the Security Services Programming Interface (SSPI). The SSPI provides the integrated security facilities of Windows NT and Windows 2000.

The security packages are loaded from either security.dll or secur32.dll. These DLLs are supplied with your operating system.

One-way authentication is provided on both Windows NT and Windows 2000, using NTLM authentication services. Two way authentication is provided on Windows 2000, using Kerberos authentication services.

The security exit program is supplied in source and object format. You can use the object code as it is, or you can use the source code as a starting point to create your own user-exit programs.

Introduction to security exits

A security exit forms a secure connection between two security exit programs, where one program is for the sending message channel agent (MCA), and one is for the receiving MCA. The program that initiates the secure connection, that is, the first program to get control after the MCA session is established, is known as the *context initiator*. The partner program is known as the *context acceptor*.

The following table shows some of the channel types that are context initiators and their associated context acceptors.

Table 30. Context initiators and their associated context acceptors

Context Initiator	Context Acceptor
MQCHT_CLNTCONN	MQCHT_SVRCONN
MQCHT_RECEIVER	MQCHT_SENDER
MQCHT_CLUSRCVR	MQCHT_CLUSSDR

The security exit program has two entry points:

- **SCY_NTLM**

  This uses NTLM authentication services, which provide one-way authentication. NTLM allows servers to verify the identities of their clients. It does not allow clients to verify a server's identity, or one server to verify the identity of another. NTLM authentication was designed for a network environment in which servers are assumed to be genuine. NTLM is supported in Windows NT and Windows 2000.

- **SCY_KERBEROS**

  This uses Kerberos mutual authentication services. The Kerberos protocol does not assume that servers in a network environment are genuine. Parties at both ends of a network connection can verify the identity of the other party. That is, servers can verify the identity of clients and other servers, and clients can verify the identity of a server. Kerberos is supported only in Windows 2000.

What the security exit does

This section describes what the SSPI channel-exit programs do.

The supplied channel-exit programs provide either one-way or two-way (mutual) authentication of a partner system when a session is being established. For a particular channel, each exit program has an associated *principal* (similar to a user ID, see "MQSeries access control and Windows principals" on page 169). A connection between two exit programs is an association between the two principals.

After the underlying session is established, a secure connection between two security exit programs (one for the sending MCA and one for the receiving MCA), is established. The sequence of operations is as follows:

1. Each program is associated with a particular principal, for example as a result of an explicit login operation.
2. The context initiator requests a secure connection with the partner from the security package (for Kerberos, the named partner) and receives a token (called token1). The token is sent, using the underlying session that is already established, to the partner program.
3. The partner program (the context acceptor) passes token1 to the security package, which verifies that the context initiator is authentic. For NTLM, the connection is now established.
4. For the Kerberos supplied security exit (that is, for mutual authentication), the security package also generates a second token (called token2), which the context acceptor returns to the context initiator by using the underlying session.
5. The context initiator uses token2 to verify that the context acceptor is authentic.

6. At this stage, if both applications are satisfied with the authenticity of the partner's token, the secure (authenticated) connection is established.

MQSeries access control and Windows principals

The access control that MQSeries provides is based on the user and group. The authentication that Windows provides is based on principals, such as user and servicePrincipalName (SPN). In the case of servicePrincipalName, there may be many of these associated with a single user.

The SSPI security exit uses the relevant Windows principals for authentication. If Windows authentication is successful, the exit passes the userid that is associated with the Windows principal to MQSeries for access control.

The Windows principals that are relevant for authentication vary, depending on the type of authentication used.

- For NTLM authentication, the Windows principal for Context Initiator is the userid associated with the process that is running. Because this authentication is one-way, the principal associated with the Context Acceptor is irrelevant.
- For Kerberos authentication, on CLNTCONN channels, the Windows principal is the userid associated with the process that is running. Otherwise, the Windows principal is the servicePrincipalName that is formed by adding the following prefix to the QueueManagerName.

  ```
  ibmMQSeries/
  ```

For details about setting the SPN, see "Setting up Kerberos servicePrincipalNames on Windows 2000" on page 170.

Using the security exit

This section describes how to use the SSPI channel-exit programs. The supplied exit code is in two formats: object and source.

Object code

The object code file is called amqrspin.dll. For both client and server, it is installed as a standard part of MQSeries for Windows NT and Windows 2000 in the exits folder, and is loaded as a standard user exit. You can run the supplied security channel exit and use authentication services in your definition of the channel.

To do this, specify either of the following:

```
SCYEXIT('amqrspin(SCY_KERBEROS)')

SCYEXIT('amqrspin(SCY_NTLM)')
```

To provide support for a restricted channel, specify the following on the SRVCONN channel:

```
SCYDATA('remote_principal_name')
```

where *remote_principal_name* is in the form DOMAIN\user. The secure channel is established only if the name of the remote principal matches *remote_principal_name*.

To use the supplied channel-exit programs between systems that operate within a Kerberos security domain, you must create a servicePrincipalName for the queue manager. See "Setting up Kerberos servicePrincipalNames on Windows 2000" for instructions on how to do this.

Source code

The exit source code file is called amqsspin.c. It is in `C:\Program Files\IBM\MQSeries\Tools\c\Samples`.

If you modify the source code, you must recompile the modified source.

You compile and link it in the same way as any other channel exit for the relevant platform, except that SSPI headers need to be accessed at compile time, and the SSPI security libraries, together with any recommended associated libraries, need to be accessed at link time.

Before you execute the following command please make sure that cl.exe, and the Visual C++ library and the `include` folder are available in your path. For example:

```
cl /VERBOSE /LD /MT /I<path_to_Microsoft_platform_SDK\include>
/I<path_to_MQSeries\tools\c\include> amqsspin.c /DSECURITY_WIN32
-link  /DLL /EXPORT:SCY_KERBEROS /EXPORT:SCY_NTLM STACK:8192
```

Note: The source code does not include any provision for tracing or error handling. If you choose to modify and use the source code, you should add your own tracing and error-handling routines.

Setting up Kerberos servicePrincipalNames on Windows 2000

To use the supplied channel-exit programs between systems that operate within a Kerberos domain, there must be an association between a queue manager and its servicePrincipalName. This association is not formed when a queue manager is created, so you must set it explicitly. To do this, write an entry into the Windows 2000 Active Directory.

The servicePrincipalName that MQSeries writes is formed by adding the following prefix to the QueueManagerName:

```
ibmMQSeries/
```

You can set the servicePrincipalName that is associated with a particular queue manager in the following ways:

- Using integrated MQSeries support, that is, either of the following:
  - AMQMDAIN facility
  - MQSeries Services MMC snap-in
- Using the Windows 2000 resource kit

In all cases, you must be aware of the context for which user, the server processes will be run. For automatically-controlled queue managers, this user is typically MUSR_MQADMIN.

Using integrated MQSeries support

For automatically-controlled queue managers, you can use either the AMQMDAIN facility, or the MQSeries Services MMC snap-in to set the servicePrincipalName. The domain administrator needs to grant permission to the user MUSR_MQADMIN (or its equivalent, the domain user; see "Appendix B. Configuring MQSeries accounts" on page 163) to read and write its own servicePrincipalName attribute. Usually, only a domain administrator has permission to read or write this attribute.

To set permission for the user to read and write its own servicePrincipalName attribute:

1. Access the support tools on the Windows 2000 operating system CD.
2. Run the **ADSI Edit** tool (select **Domain→DC→Users**).
3. Select the node that represents the user MUSR_MQADMIN (or its equivalent).
4. Select **Properties**, then select **Security**.
5. Select **Advanced**, then select **Add**.
6. Select user **SELF**, then click **OK**.
7. On the dialog for the new entry SELF, select the **Properties** tab.
8. Select the following options, then click **OK**:
   - Allow Read servicePrincipalName
   - Allow Write servicePrincipalName

Once this permission is set, you can use the integrated MQSeries support services.

AMQMDAIN

You can use the spn keyword of the MQSeries utility AMQMDAIN to set or unset the servicePrincipalName that is associated with a queue manager.

The AMQMDAIN utility provides a command line interface. The syntax for the spn keyword is:

```
AMQMDAIN spn queue_manager_name  [set|unset]
```

where *queue_manager_name* is the name of a local queue manager.

For more information about the AMQMDAIN command, see the *MQSeries V5.2 Release Guide*.

MQServices snap-in

The MQServices MMC snap-in enables you to create or remove the association between a particular queue manager and its principal.

To create or remove the association, select the **Context** menu of the Queue Manager node, then select the following option:

- **Kerberos authentication support**

If there is a tick next to this option, this indicates that an association already exists. If there is no tick, an association does not exist. Select the option to toggle the association on or off (that is, create or remove the association, respectively).

SETSPN tool from the Windows 2000 Resource Kit

You can use the `setspn` tool that is provided with the Windows 2000 Resource Kit to set the servicePrincipalName. To use this tool, ensure that it is available on the required machine, that is, that the Windows 2000 Resource Kit is available.

The servicePrincipalName for a queue manager is formed by adding the prefix `ibmMQSeries/` to the QueueManagerName. This name must be associated with the user ID in which context the server process is being run. This is typically MUSR_MQADMIN.

Typically, to use the `setspn` command, you must be a domain administrator.

To set the servicePrincipalName (assuming the typical user ID), issue the command:

```
setspn -A ibmMQSeries/queue_manager_name MUSR_MQADMIN
```

To delete the servicePrincipalName (assuming the typical user ID), issue the command:

```
setspn -D ibmMQSeries/queue_manager_name MUSR_MQADMIN
```

To configure the MQSeries services to run under a different user ID, you use the AMQMSRVN command. For details about this command, and about configuring MQSeries Services to run under a domain user, see the *MQSeries V5.2 Release Guide*.

Appendix D. Active directory services

This section describes dynamic client-server binding through the Windows 2000 Active Directory.

When CLNTCONN channels are defined, they are written into a binary file called amqclchl.tab.

Previously, for an MQSeries client to use these definitions, it needed direct access to this file. This was achieved by making amqclchl.tab available on a shared drive, or placing the file on the client machine. If any of the definitions changed, the new amqclchl.tab file had to be deployed to all affected clients. Other alternatives were:

- Using the MQSERVER environment variable. This also requires manual configuration on the client.
- Using the MQCONNX API call to define the channel in the application. Though useful, this means that the application must be aware of the context in which it is running.

Now, when the definitions are written into the amqclchl.tab file, if the client channels use the TCP/IP protocol, the MQSeries server also publishes them in the Active Directory. When the MQSeries V5.2.1 client determines how to connect to the server, it looks for a relevant CLNTCONN definition using the following search order:

1. MQSERVER environment variable
2. amqclchl.tab file
3. Active Directory

This order means that any current applications are not affected by the change. You can think of these entries in the Active Directory as records in the amqclchl.tab file, and the MQSeries client processes them in the same way.

Support for the Windows 2000 Active Directory

MQSeries exploits the Windows 2000 Active Directory as follows:

- MQSeries Client Connections (CLNTCONN) are published in the Active Directory as instances of the class Service-Connection-Point). Each instance contains protocol configuration information. This information allows a client application to connect to the queue manager. When a new

CLNTCONN is created, it is published in the Active Directory as a serviceConnectionPoint object under the IBM-MQClientConnections container object.

- When the MQSeries client connects to a particular remote queue manager, the client queries the Active Directory for a matching serviceConnectionPoint object, by using the keywords attribute. The protocol communication to connect to the queue manager is obtained from the serviceBindingInformation attribute of the serviceConnectionPoint object.

MQSeries does not extend the Windows 2000 Active Directory schema.

MQSeries objects in the Windows 2000 Active Directory

MQSeries creates objects in the Active Directory in two locations:

- The IBM-MQClientConnections container is created under the ″System″ container.
- serviceConnectionPoint objects are created under the IBM-MQClientConnections container.

Object classes and attributes that MQSeries uses

Table 31 and Table 32 on page 177 describe the object classes that MQSeries uses.

Table 31. Container

Class	Container
Active Directory Common Name (cn)	IBM-MQClientConnections
Description	A container for the MQSeries “Client Channel Definition” serviceConnectionPoint objects
SubClassOf	top
Required Attributes	Common Name
Optional Attributes	
OID (Object Identifier)	1.2.840.113556.1.3.23
GUID (Global Unique Identifier)	BF967A8B-0DE6-11D0-A285-00AA003049E2

Table 32. Service-Connection-Point

Class	Service-Connection-Point
Active Directory Common Name (cn)	A name in the form: *channel_name* (*queue_manager_name*) *channel_name* is the name of the CLNTCONN. *queue_manager_name* is the name of the queue manager on which this CLNTCONN was created.
Description	Provides the binding information for an MQSeries client to bind to an appropriate Queue Manager
SubClassOf	Connection-Point
Required Attributes	keywords, serviceBindingInformation
Optional Attributes	
OID (Object Identifier)	1.2.840.113556.1.5.126
GUID (Global Unique Identifier)	28630EC1-41D5-11D1-A9C1-0000F80367C1

Table 33 and Table 34 on page 178 describe the attributes that MQSeries uses.

Table 33. keywords attribute

Attribute	keywords
Description	Strings used query the Active Directory for MQSeries “Client Channel Definition” objects
Syntax	String(UNICODE)
Maximum Length	74
isSingleValued	FALSE
attributeID (attribute identifier)	1.2.840.113556.1.4.48
attribute GUID (Global Unique Identifier)	BF967993-0DE6-11D0-A285-00AA003049E2

The keywords attribute in the serviceConnectionPoint object contains the product-specific GUID. The MQSeries client uses this GUID to locate this type of serviceConnectionPoint. The instance of the keywords attribute takes the following multiple values:

- Client Channel Definition
- MQSeries
- IBM
- {6B602242-0C78-4512-9357-876E65CB7397}

  This keyword is the product-specific GUID.

Table 34. Service-Binding-Information attribute

Attribute	Service-Binding-Information
Description	Information required for an MQSeries client to connect to a queue manager
Syntax	String(UNICODE)
Maximum Length	1463
isSingleValued	FALSE
attributeID (attribute identifier)	1.2.840.113556.1.4.510
GUID (Global Unique Identifier)	B7B1311C-B82E-11D0-AFEE-0000F80367C1

The serviceBindingInformation attribute in the serviceConnectionPoint object contains the communication protocol information to bind an MQSeries client to an appropriate queue manager.

The following list of tokens, each saved as a separate values, are in the following format:

name(*value*)

The names and values correspond to those that are defined for an MQSeries CLNTCONN (except for CRTQM). For a list of possible values, refer to the Client-connection channel section for the DEFINE CHANNEL command in *MQSeries MQSC Command Reference*. For CRTQM, the value associated with the name is the name of the queue manager on which this definition was created.

The tokens are:

- CHANNEL( )
- TRPTYPE( )
- DESCR( )
- QMNAME( )
- SCYEXIT( )
- SCYDATA( )
- SENDEXIT( )
- RCVEXIT( )
- SENDDATA( )
- RCVDATA( )
- MAXMSGL( )
- CONNAME( )
- HBINT( )
- CRTQM( )

Access to the Windows 2000 Active Directory

The active directory calls that are made use Windows Authentication to validate the access rights of the users who wish to read or write to the active directory. There are three types of access required:

- Client access

  A user who makes an MQCONN call using the client libraries must have read permission on the IBM-MQClientConnections container, and its subfolders. By default, if the user is authenticated on the domain, this permission already exists.

- MQSeries server access

  The user account under which the queue manager and command server run must have permission to create, update and delete child objects of the IBM-MQClientConnections container.

  When the `setmqscp -a` command is run to create the IBM-MQClientConnections container, these permissions are granted to the local `mqm` group for that container and its subcontainers. Because the user account required to start a queue manager must be a member of the `mqm` group, these permissions are available.

- setmqscp access

  To use the `setmqscp` command to create and delete the IBM-MQClientConnections container, a user must have permission in the active directory to read and write the ″System″ container (to update the otherWellKnownObjects property), and to ″Create Child Objects″. When the IBM-MQClientConnections container is created, full control permissions are granted to the local `mqm` group for it.

  To delete the new container, the user needs to have permission to delete the object itself.

setmqscp command

The `setmqscp` (Set MQSeries Service Connection Points) command is used to configure and administer MQSeries support for publishing client connection channel definitions in an Active Directory.

Initially, this command is used by a domain administrator to:

- Prepare the Active Directory for MQSeries usage
- Grant MQSeries users and administrators the relevant authorities to access and update the MQSeries Active Directory objects

You can also use the `setmqscp` command to display all of the currently configured client connection channel definitions available on the Active Directory.

Active directory services

Syntax

```
setmqscp -a[-m[*|qmgr]]|
         -r[-m[*|qmgr]]|
         -d
```

At least one parameter from -a (add), -r (remove) or -d (display) must be specified.

Parameters

-a Adds the MQSeries client connections Active Directory container, if it does not already exist. You must be a user with the appropriate privileges to create subcontainers in the ″System″ container of your domain. The MQSeries folder is called ″CN=IBM-MQClientConnections″. Do not attempt to delete this folder in any other way than by using the `setmqscp -r` command.

-r Removes the MQSeries service connection points. If -m is not specified, and no client connection definitions exist in the IBM-MQClientConnections folder, the folder itself is removed from the Active Directory.

-d Displays the MQSeries service connection points.

-m [* | qmgr]
Modifies the specified parameter (-a or -r) so that only the specified queue manager is affected. * specifies that all queue managers are affected. This enables you to migrate a specific client connection table file from one queue manager alone, if required.

Examples

The following command creates the IBM-MQClientConnections folder and allocates the required permissions to MQSeries administrators for the folder, and to child objects that are created subsequently:

```
setmqscp -a
```

The following command migrates existing client connection definitions from a local queue manager, Paint.queue.manager, to the Active Directory:

```
setmqscp -a -m Paint.queue.manager
```

The following command migrates all client connection definitions on the local server to the Active Directory:

```
setmqscp -a -m *
```

Appendix E. MQSeries Messages

The following section lists the messages that are new for MQSeries for Windows NT and Windows 2000, V5.2.1. For details of other MQSeries messages, refer to *MQSeries Messages*.

AMQ4225

Message:
Remote administration of queue manager *'queue_manager_name'* has been allowed.

AMQ4226

Message:
Remote administration of queue manager *'queue_manager_name'* has been prevented.

AMQ4227

Message:
Unable to allow remote administration of queue manager *'queue_manager_name'*.

Explanation:
An error occurred when MQSeries tried to create the channel or create the listener used for remote administration of the specified queue manager.

User Response:
Retry the operation. If the problem persists, contact your system administrator.

AMQ4228

Message:
Unable to prevent remote administration of queue manager *'queue_manager_name'*.

Explanation:
An error occurred when MQSeries tried to delete the channel used for remote administration of the specified queue manager.

User Response:
Retry the operation. If the problem persists, contact your system administrator.

AMQ4235

Message:
MQSeries running on this computer was unable to retrieve group membership information for user *'user_id'*.

Explanation:
When MQSeries is running, it must check that only authorized users can access queue managers or queues. Whenever any user attempts such access, MQSeries uses its services component to query group membership information about the user. The user account that the MQSeries service component is using does not have the authority to query this information.

User Response:
Use the links provided to obtain details of a user account with the required authority from your domain administrator, and to start the Prepare MQSeries wizard in order to reconfigure the MQSeries services component with this user account.

AMQ4236

Message:
MQSeries running on this computer can now retrieve group membership information for user *'user_id'*.

Explanation:
You have successfully reconfigured the MQSeries services component so that it now has the authority it needs.

User Response:
None.

AMQ4237

Message:
MQSeries running on this computer is still unable to retrieve group membership information for user *'user_id'*.

Explanation:
You have not reconfigured the MQSeries services component so that it has the authority it needs.

User Response:
Use the link to start the Prepare MQSeries wizard again, and configure it with a user account that does have the required authority.

AMQ4732

Message:
No installation language specified. Use the TRANSFORMS property.

Explanation:
When installing from a command line, the national language has not been specified.

User Response:
Run the installation again, using the TRANSFORMS property, or its equivalent.

AMQ4733

Message:
Unable to launch program '*program_name*'.

Explanation:
When installing from a command line, the program could not be launched.

AMQ4734

Message:
Can't open response file '*file_name*'.

Explanation:
When installing from a command line, the specified response file could not be opened.

User Response:
Check that the response file exists, and that path and filename of the required response file are correct.

AMQ4735

Message:
Error '*error_number*' reading response file '*file_name*'.

Explanation:
When installing from a command line using a response file, there was an error reading the response file.

AMQ4736

Message:
Error '*error_number*' writing response file '*file_name*'.

Explanation:
When installing from a command line using a response file, there was an error writing the response file.

AMQ4737

Message:
Error *'error_number'* creating response file *'file_name'*.

Explanation:
When installing from a command line and generating a response file, there was an error creating the response file.

AMQ4738

Message:
Unknown value *'value'* for keyword *'keyword'* in *'file_name'*.

Explanation:
When installing from a command line, there is an invalid value specified in the response file or parameter file.

AMQ4739

Message:
One or more problems occurred. Review the MSI log file for details.

Explanation:
When installing from a command line, one or more errors occurred with the Msiexec command.

User Response:
Refer to the Microsoft Installer (MSI) log file.

AMQ7910

Message:
Usage: amqmscpn [-m QmgrName | *] [-a] [-d] [-r]

Explanation:
This shows the correct usage of the amqmscpn command.

AMQ7911

Message:
The default Active Directory could not be located on your domain.

Explanation:
No domain controllers with Active Directories could be found on the domain that your computer is a member of.

User Response:
Active Directory support for MQSeries client connections cannot be used without a default Active Directory available on your domain.

AMQ7912

Message:
The Active Directory support library failed to initialize.

Explanation:
MQSeries support libraries for Active Directory client connections could not be initialized.

User Response:
Check that the Active Directory client prerequisite software is installed on your machine.

AMQ7913

Message:
The MQSeries Active Directory container could not be created.

Explanation:
MQSeries failed to create an IBM-MQClientConnections container as a child of your domain's system container in the Active Directory.

User Response:
Ensure that you have permission to create subcontainers of the system container, and to modify the otherWellKnownObjects property of the system container.

AMQ7914

Message:
Migration of the client connection table for Queue Manager *queue_manager_name* failed.

Explanation:
The client connection table for this Queue Manager cannot be migrated at this time.

User Response:
Ensure that the client connection table exists and is not corrupted, and that you have authority to create new objects in the Active Directory on your domain.

AMQ7915

Message:
Created service connection point for connection *connection_name*.

Explanation:
The service connection point is successfully created for this client connection.

AMQ7916

Message:
The Active Directory channel definition table could not be opened.

Explanation:
The IBM-MQClientConnections Active Directory container cannot be located in the Global Catalog.

User Response:
Ensure that `setmqscp` was used to create the container object, and that you have permission to read the container and its child objects.

AMQ7917

Message:
Display active directory channel details.

Explanation:
The command to display active directory channel details completed successfully, and details follow this message.

AMQ7918

Message:
The MQSeries Active Directory container could not be deleted.

Explanation:
There is a problem when attempting to delete the MQSeries Active Directory container. The container must be empty before it can be deleted from the directory.

User Response:
Ensure that the MQSeries Active Directory container is empty.

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