

MQSeries® for Windows NT®



Quick Beginnings

Version 5.1

MQSeries® for Windows NT®



Quick Beginnings

Version 5.1

Note

Before using this document, read the general information under Appendix F, "Notices" on page 71.

First edition (March 1999)

This edition applies to Version 5.1 of *MQSeries for Windows NT* and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters.

Order publications through your IBM® representative or the IBM branch office serving your locality. Publications are not stocked at the address below.

IBM welcomes your comments. A form for readers' comments may be provided at the back of this publication. If the form has been removed, you may send your comments to the following address:

IBM United Kingdom Laboratories,
Information Development,
Mail Point 095,
Hursley Park,
Winchester,
Hampshire,
England,
SO21 2JN

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1996,1999. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Tables	iv
Welcome to MQSeries	v
Conventions	v
Chapter 1. About MQSeries	1
Introduction	1
Messages, queues, and queue managers	2
MQSeries configurations	4
MQSeries capabilities	7
Programming MQSeries	9
Managing MQSeries	10
Chapter 2. What's new in MQSeries for Windows NT Version 5.1	11
Chapter 3. Planning to install MQSeries	13
Server hardware	13
Server software	13
MQSeries components	16
The Windows NT client	17
Migration	17
Release Notes	19
Chapter 4. Installing MQSeries	21
Preparing for installation	21
Installation	22
Setting up communications	24
Verifying the installation	24
Removing MQSeries	28
Installing maintenance updates	28
Chapter 5. Using MQSeries	29
MQSeries snap-ins	29
Web administration	31
Commands	34
Sample programs	34
Chapter 6. Using MQSeries command sets	35
Control commands	35
MQSeries (MQSC) commands	38
PCF commands	39

Tables

Chapter 7. Using the MQSeries World Wide Web Interface	41
Overview of MQSeries Internet Gateway	41
MQSeries Internet Gateway documentation	42
Chapter 8. Obtaining additional information	43
The MQSeries library	43
Viewing online information	45
Printing and ordering books	47
Available from the internet	48
Appendix A. Preparing to install from a LAN	49
Appendix B. Unattended installation	51
Installation response file format	52
Installing on the remote machine	57
Appendix C. Removing MQSeries	59
Attended removal	59
Unattended removal	60
Appendix D. Using Microsoft System Management Server	65
Creating SMS packages and jobs for MQSeries	65
Appendix E. Applying maintenance	67
Applying the maintenance information	67
Restoring the previous backup version	68
Querying the service level	69
Appendix F. Notices	71
Trademarks	73
Index	75

Tables

1. MQSeries control commands	36
2. The MQSeries library	43
3. MQSeries publications – PDF file names	47

Welcome to MQSeries

This book describes MQSeries and explains how to plan for, install, and use the MQSeries for Windows NT Version 5.1 product.

Conventions

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

- The term “MQSeries” is used to mean the MQSeries for Windows NT product.
- **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

Chapter 1. About MQSeries

This chapter introduces IBM MQSeries. It describes its basic functions and its relationships with operating systems, applications, and other middleware products.

The information in this chapter provides a high-level overview and does not cover many aspects of the function that MQSeries provides; a more detailed description is given in the *MQSeries Planning Guide*.

You might also like to read the *MQSeries: An Introduction to Messaging and Queuing* book (GC33-0805) to learn about the concepts of MQSeries.

Introduction

MQSeries is a communications system that provides assured, asynchronous, once-only delivery of data across a broad 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 even 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—for example, 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

Fundamentals

data is sent. Likewise, the entire network path between the sender and receiver may 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* and 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 may 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.

Fundamentals

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 may exist on a remote machine across the network or it may exist on the same machine as the local queue manager. MQSeries supports multiple queue managers on the same machine.

MQSeries configurations

MQSeries configurations

In the simplest configurations, MQSeries is installed on a machine and a single queue manager is created. This queue manager then 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 hop (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 hop).

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 product includes clients for all the varieties of the Windows platform (Windows 98, Windows 95, Windows 3.1, and Windows NT); other client platforms are widely available.

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 *client 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 client 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 “Channels” on page 5 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.

The default configuration that is provided by the installation process for MQSeries 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.

Note: It is not advisable to use clustering in an environment where IP addresses change on an unpredictable basis, such as on machines where Dynamic Host Configuration (DHCP) is being used.

Clients and servers

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.

See “Clusters” on page 6 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.

A *client channel* (also known as 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.

Clusters

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.

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 is 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 kept 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 because these 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 them.

Public queues with the same name in the same cluster are regarded as equivalent. If a message is sent to that queue name, MQSeries (by default) 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 and queue name in the address, thus forcing the message to be delivered to a specific queue manager. Alternatively, you can replace the load-balancing routine with a different implementation. This is typical of MQSeries, in that there are many examples of where standard behavior can be changed by implementing user code in exits designed for this purpose.

You can read a full explanation in the *MQSeries Queue Manager Clusters* book.

Note: It is not advisable to use clusters in an environment where IP addresses change on an unpredictable basis, such as on machines where Dynamic Host Configuration (DHCP) is being used.

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 Chapter 6, “Introducing the Message Queue Interface” in the *MQSeries Application Programming Guide* for more information about writing MQSeries applications.

Transactional support

An application program may 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 may 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

Instrumentation events

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 cannot prepare 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, the following condition gives rise to a *Queue Full* event. Queue Full events are enabled for a specified queue, and an application issues an MQPUT call to put a message on that queue, but the call fails because the queue is full.

Other conditions that can give rise to 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 instance 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 (for those nodes that support instrumentation events). 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 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).

MQSeries programming

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 instance is stopped.

Message-driven processing

When they arrive on a queue, messages can automatically start an application, using a mechanism known as *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. Procedural and object-oriented programming can be done under Visual Basic, C, C++, Java, and COBOL. Microsoft® Windows NT ActiveX/COM technology is also supported.

MQSeries function is logically divided into what is normally required by applications (such as putting messages on a queue) and what is necessary for administration (such as changing queue or queue manager definitions). Application function is known as the *MQI* (message queue interface). Administration function is known as the *MQAI* (message queuing administration interface). Applications can mix MQI and MQAI functionality, as required.

The administration functions can be implemented in two ways:

1. Most often, using MQAI language bindings or ActiveX™ classes
2. Sending messages to administration queues to achieve the same results as above, using programmable command formats (PCFs)

Managing MQSeries

MQSeries is tightly integrated into the Windows NT operating system. The management facilities are, therefore, normally to be found alongside their Windows NT equivalents and are accessible through a graphical user interface. For example, MQSeries events are written to the Windows NT event log and are accessed through the event manager. Likewise, performance monitoring or checking the status of queues is available through the Windows NT performance monitor.

The operational side of MQSeries can be controlled through the Microsoft Management Console (MMC). The MQSeries Explorer, provided as an MMC snap-in, allows you to browse queues and change their properties. Both local and remote administration are available; thus, a single MQSeries installation on a Windows NT platform can be used to manage an entire MQSeries network.

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, an alternative management method is available that uses programs and a command language known as MQSC. These can be accessed from a command prompt. Details of MQSC are given in the *MQSeries 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, optionally, be installed on many machines within a network). The MQSeries Web Administration facility provides a scripting capability that allows automatic generation of MQSC.

Chapter 2. What's new in MQSeries for Windows NT Version 5.1

MQSeries for Windows NT Version 5.1 is an update to the MQSeries for Windows NT Version 5.0 product. The main areas of change are:

- Support for clusters (that is, named collections of queue managers). Provided the necessary infrastructure is in place, any queue manager can send a message to any other queue in the same cluster without the need for a transmission queue, channel definition, or remote queue definition. Clusters also simplify the implementation of hot-standby and load-balancing configurations.
- A default configuration that allows you to try out MQSeries as soon as you have finished installing the product.
- Close integration with Microsoft Windows NT Version 4.0, including exploitation of extra function provided by the Microsoft Management Console Version 1.1 and Active Directory Services Interface (ADSI) Version 2.0 system updates. The main highlights are:
 - Graphical tools and applications for managing, controlling, and exploring MQSeries:
 - IBM MQSeries (also known as MQSeries Explorer)—a Microsoft management console (MMC) snap-in that allows you to query, change, and create the local, remote, and cluster objects across an MQSeries network.
 - IBM MQSeries Services—an MMC snap-in that controls the operation of MQSeries components, either locally or remotely within the Windows NT domain. It monitors the operation of MQSeries servers and provides extensive error detection and recovery functions.
 - MQSeries API Exerciser—a graphical application for exploring the messaging and queuing programming functions that MQSeries provides. It can also be used in conjunction with the MQSeries Explorer to gain a deeper understanding of the effects of MQSeries operations on objects and messages.
 - MQSeries Postcard—a sample application that can be used to verify an MQSeries installation, for either local or remote messaging.
 - Support for the following features of Windows NT has been added:
 - Windows NT performance monitor—used to access and display MQSeries information, such as the current depth of a queue and the rate at which message data is put onto and taken off queues.
 - Active Directory—programmable access to MQSeries objects is available through the Active Directory Services Interface (ADSI).

What's new

- Windows NT user IDs—previous MQSeries restrictions on the validity of Windows NT user IDs have been removed. All valid Windows NT user IDs are now valid identifiers for MQSeries operations. MQSeries uses the associated Windows NT Security Identifier (SID) and the Security Account Manager (SAM). The SID allows the MQSeries Object Authority Manager (OAM) to identify the specific user for an authorization request.
- Windows NT registry—now used to hold all configuration and related data. The contents of any configuration (.INI) files from previous MQSeries installations of MQSeries for Windows NT products are migrated into the registry; the .INI files are then deleted.
- A set of Component Object Model (COM) classes, which allow ActiveX applications to access the MQSeries Message Queue Interface (MQI) and the MQSeries Administration Interface (MQAI).
- Support for Web-based administration of an MQSeries network, which provides a simplified way of using the MQSC commands and scripts and allows you to create powerful macros for standard administration tasks.
- Support for the MQSeries Administration Interface (MQAI)—a new programming interface that simplifies application development for controlling your MQSeries network.
- An online Quick Tour of the product concepts and functions.
- An online Information Center that gives you quick access to task help information, reference information, and Web-based online books and home pages.
- Simplified installation, with default options and automatic configuration.
- Support for the MQSeries client for Windows 98.
- Increased message queue limits; messages can be up to 2 gigabytes.
- Support for MQSeries LotusScript Extension (MQLSX), which allows Lotus Notes applications that are written in LotusScript to communicate with applications that run in non-Notes environments. MQLSX replaces the MQSeries Link program that was in the previous release.
- Support for Microsoft Visual Basic for Windows Version 5.0.
- Performance improvements over the MQSeries for Windows NT Version 5.0 product.
- Information and examples on how MQSeries applications can interface with and exploit the Lightweight Directory Access Protocol (LDAP) directories.

Chapter 3. Planning to install MQSeries

This chapter is a summary of the requirements to run MQSeries, the network protocols and the compilers supported, the delivery media, and the various components of the product.

Note: It is not advisable to use clustering in an environment where IP addresses change on an unpredictable basis, such as on machines where Dynamic Host Configuration (DHCP) is being used.

The following information applies to the server environment. For information about the Windows NT client environment, see "The Windows NT client" on page 17).

Server hardware

The following are the hardware requirements for MQSeries:

- Any IBM PC machine (or compatible) capable of running Windows NT
- Any communications hardware supporting SNA LU 6.2, TCP/IP, NetBIOS, or SPX

MQSeries requires a minimum of approximately 40 megabytes (MB) of disk space for product code and data, using NTFS. In addition, allow a minimum of 20 MB for working space.

Server software

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

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

See the README file in the MQSeries Release Notes folder for further details of Microsoft software you will need.

Server software

- Connectivity
 - IBM Communications Server for Windows NT, Version 5.0
 - IBM Personal Communications for Windows NT, Version 5.0
 - Attachmate Extra! Personal Client, Version 6.1 or Version 6.2
 - Microsoft SNA Server, Version 2.11 or Version 3.0

Note: TCP/IP, NetBIOS, and SPX are part of the base operating system.

Software supported

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

- Transaction processing monitors
 - IBM TXSeries for Windows NT, Version 4.2
 - BEA Tuxedo, Version 5.1 and Version 6.1
- Lotus Notes, Version 4.5x or later
- Databases
 - IBM DB2® Universal Database, Version 5.0
 - Sybase XA Server, Version 11.1.1 (with latest support level)
 - Sybase Open Client/C, Version 11.1.1 (with latest support level)
 - Sybase Adaptive Server, Version 11.5
 - Sybase Embedded SQL/C, Version 11.1
 - Oracle, Version 8.0.4
- Software servers
 - IBM Communications Server for Windows NT, Version 5.0
 - IBM Database Server for Windows NT, Version 4.0
 - IBM Directory and Security Server for Windows NT, Version 5.0 (MQSeries DCE security modules are provided as part of the MQSeries for Windows NT product)
 - IBM Internet Connection Server for Windows NT, Version 4.1
 - IBM Internet Connection Secure Server for Windows NT, Version 4.1
 - IBM Transaction Server for Windows NT, Version 4.2
 - For Lightweight Directory Access Protocol (LDAP) support:
 - IBM eNetwork™ LDAP Directory, Version 1.1.1
 - Netscape Directory Server, Version 3.1
- Internet
 - Netscape Navigator Version 4.04, with the Java Abstract Windowing Toolkit (AWT)

Server software

The following software compilers are supported:

- IBM VisualAge™ e-business for Windows, Version 1.0.1
- IBM C and C++:
 - C and C++ compilers, Version 3.6.4
 - IBM VisualAge for C++ for Windows, Version 3.5
 - Microsoft Visual C++ for Windows 95 and Windows NT, Version 4.0 or Version 5.0
 - IBM VisualAge CC++ Professional, Version 4.0
- COBOL:
 - IBM VisualAge COBOL for Windows NT, Version 2.1
 - IBM VisualAge COBOL Enterprise, Version 2.2
 - Micro Focus Object COBOL for Windows NT, Version 3.3 or Version 4.0
 - Micro Focus COBOL Version 3.1J for Windows NT
- Java:
 - IBM VisualAge for Java Enterprise, Version 2.0
 - IBM VisualAge for Java Professional, Version 2.0
- PL/I:
 - IBM PL/I for Windows, Version 1.2
 - IBM VisualAge for PL/I for Windows
 - IBM VisualAge PL/I Enterprise, Version 2.1
- Visual Basic:
 - Microsoft Visual Basic for Windows, Version 4.0 (16 bit) or Version 5.0 (32 bit)

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

<http://www.software.ibm.com/ts/mqseries/>

MQSeries, when used in accordance with its associated documentation, is capable of correctly processing, providing, and/or receiving date information within and between the twentieth and twenty-first centuries, provided that all products (for example, hardware, software, and firmware) used with this IBM program properly exchange accurate date information with it.

Customers should contact third party owners or vendors regarding the readiness status of their products.

IBM reserves the right to update the information shown here. For the latest information regarding levels of supported software, refer to:

<http://www.software.ibm.com/ts/mqseries/platforms/supported.html>

For the latest IBM statement regarding Year 2000 readiness, refer to:

<http://www.ibm.com/ibm/year2000/>

Components

MQSeries components

You can select the components you require when you install MQSeries. The various components are:

Server

The MQSeries for Windows NT server code.

Clients

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

The Java client allows Java applets running on your machine to communicate with MQSeries. See the *MQSeries Using Java* book for full details.

The Windows NT and Java clients can 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. The MQSeries Information Center shows the sample programs that are provided.

Internet Gateway

Provides access to MQSeries applications via HTML and CGI.

Web Administration Server

Provides access to the Web-based administration server.

Documentation in English

Online versions of the books for MQSeries. Included are:

- MQSeries manuals in compiled HTML format
- MQSeries books in PDF format
- MQSeries Internet Gateway Documentation in HTML format

The MQSeries books are also on the CD-ROM.

Documentation in Other Languages

Documentation that you have selected (above) in other national languages.

The Windows NT client

The hardware and software requirements for the MQSeries for Windows NT client are the same as for the server product, except that:

- The client requires less disk space
- The Microsoft Management Console (MMC) and the Active Directory Services Interface (ADSI) cannot be run from the client; they must be installed on the server
- Transaction processing monitors and databases are not supported

Use the MQSeries Server CD-ROM to install an MQSeries for Windows NT client on the server machine, choosing the client install option. Do **not** use the MQSeries Client CD-ROM.

You can continue to use MQSeries for Windows NT clients from a previous level of the product. However, you must replace your existing clients if you want to use the new function that is provided in the MQSeries for Windows NT Version 5.1 product. So, if (for example) client security is important in your MQSeries network, make sure you install the new client code.

See “Support for MQSeries clients” in the *MQSeries Clients* book for information about other clients that can run under Windows NT.

Migration

Your migration path to MQSeries for Windows NT Version 5.1 depends on:

- The level of MQSeries for Windows NT you have been using
- Your MQSeries working environment

If you plan to migrate from MQSeries Version 2 or MQSeries Version 5.0, you will **not** be able to revert to your previous level. You should back up your system **before** installing MQSeries for Windows NT Version 5.1. 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 5.1.

With MQSeries for Windows NT Version 5.1, the installation process detects whether this is a new installation or an update from a previous level of MQSeries for Windows NT. If you are moving from an earlier level, all the objects you previously created (for example, your queue managers) can be maintained. Your previous component options will be preselected when you install the new level. These components are uninstalled if you then deselect them.

Migration

MQSeries system default objects are automatically created when you create a queue manager with this release of MQSeries, so the sample MQSC definition file, AMQSCOMA.TST, is no longer provided.

If you used AMQSCOMA.TST to customize your settings for MQSeries Version 2, and you want to use the same settings with Version 5.1 of the product:

1. Save your copy of AMQSCOMA.TST
2. Install MQSeries V5.1
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.

MQSeries for Windows NT Version 5.1 automatically migrates configuration information from your .INI files into the Windows NT registry. Configuration information is then updated in the registry when you define or change details through the user interface.

This release of MQSeries does not contain the MQSeries Link program. The equivalent functionality is provided by MQSeries LotusScript Extension (MQLSX).

The following new functions in MQSeries Version 5.1 require TCP/IP:

- Queue managers within clusters, which communicate using TCP/IP channels. You can use the MQSeries Postcard application to experiment with queue managers within clusters.
- Remote administration of queue managers. Remote administration using the MQSeries Explorer uses TCP/IP channels.
- MQSeries Web Administration server, which (being a Web server) uses TCP/IP to communicate with client Web browsers.

If you want your queue managers to be part of a cluster, use MQSeries commands (MQSC) as described in Chapter 6, "MQSeries commands" in the *MQSeries Queue Manager Clusters* book.

You need to define a channel to be able to remotely administer queue managers by using the MQSeries Explorer. To do this, you need to define a server connection (SVRCONN) channel called SYSTEM.ADMIN.SVRCONN on the queue manager to be administered. This is described in "Required definitions for administration" in the *MQSeries System Administration* book.

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 5.1 product and may update information in this book.

During installation, the Release Notes file is copied to the Program Files directory and an icon is added to the MQSeries program folder.

Release notes

Chapter 4. Installing MQSeries

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

For information on different methods of installation, see:

- Appendix A, "Preparing to install from a LAN" on page 49
- Appendix B, "Unattended installation" on page 51
- Appendix D, "Using Microsoft System Management Server" on page 65

The installation procedure described is for a TCP/IP environment. The procedure works for other environments (for example, SNA, SPX, and NetBIOS) but you must note that not all of the functions and facilities of MQSeries Version 5.1 are available in these environments. The items that are **not** available are:

- MQSeries Postcard
- MQSeries Explorer
- Default Configuration

For information on how to remove (uninstall) MQSeries in attended mode, see "Removing MQSeries" on page 28.

Preparing for installation

You **must** have administrator authority in order for you to install MQSeries. Define this authority through the Windows NT facilities.

MQSeries works with the Security accounts database. It is important that you give the appropriate definitions in the accounts to the user IDs that are going to use MQSeries.

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.

Note: 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 belong either directly, or indirectly, by the inclusion of global groups in the local mqm group.

Installation

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 describes how to do this.

Notes:

1. For MQSeries authorizations, names of user IDs and groups can be longer than 12 characters (spaces are not allowed).
For further information about MQSeries user IDs on Windows NT, and the MQSeries Object Authority Manager (OAM), see "Understanding the Object Authority Manager" in the *MQSeries System Administration* book.
2. The system-defined user ID System can also administer any queue manager.
3. You **cannot** install MQSeries in a root directory.

Installation

To install MQSeries, you must be logged on to Windows NT as an administrator.

If you have previously installed MQSeries, ensure that no queue managers are running and that the IBM MQSeries Service is stopped. (Use the Services option from the Windows NT Control Panel to check this.)

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 NT registry. Otherwise, MQSeries automatically puts its configuration information directly into the Windows NT registry.

Installation procedure

The installation procedure leads you through a number of windows in which you choose what you want to install. Extensive online help information is available. The installation procedure should take about 15 minutes to complete.

Insert the MQSeries for Windows NT CD-ROM into the CD-ROM drive.

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

You can then select the national language you want to use.

Follow the actions described in the windows that are presented to you.

Installation

In particular, note the following:

- When you specify installation folders, the data files top-level folder is used only if you install the server or the Windows NT client. The log files folder is used only if you install the server.
- We recommend that you use the Install Default Configuration dialog to install a configuration that will get you up and running with the minimum effort on your part. Note that the default configuration is not available if you migrate existing queue managers.

The Setup Complete window is displayed when you have been through all the relevant windows. You can then select one or more of the following:

- The Information Center
- The First Steps application
- The MQSeries Explorer
- The Release Notes

Click on the **Finish** button. You then go to the item(s) you have selected.

Note: English messages are written to an application log called `amq1logn.txt` in the data directory during installation. It is advisable to check in the log after performing an upgrade to see if any further actions are required. You can specify a different log by using the `-g` parameter; see “Installing on the remote machine” on page 57.

Installation is now complete.

Note: If the installation process is interrupted, you should run the process again; using the uninstallation process may not fix the problem.

You can now go on to set up your communications as shown in “Setting up communications” on page 24, and then verify the installation as shown in “Verifying the installation” on page 24.

Open a new Command Prompt window if you want to issue MQSeries commands.

When you have finished installing MQSeries, register your use of the product by selecting **MQSeries Registration** from the IBM MQSeries folder and following the instructions.

Verifying the installation

Setting up communications

Communications must be configured between the two machines if MQSeries is to exchange messages with MQSeries on another machine. You will not be able to run a server-to-server verification process until cross-server communication has been enabled.

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.

See Chapter 10, "Setting up communication for OS/2 and Windows NT" and Chapter 12, "Example configuration - IBM MQSeries for Windows NT" in the *MQSeries Intercommunication* book for descriptions and example configurations on how to set up communications from Windows NT to other MQSeries platforms using SNA, NetBIOS, and SPX protocols.

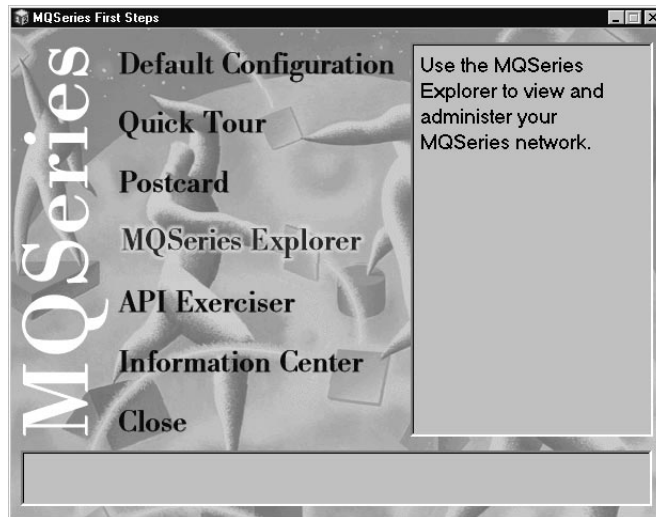
Verifying the installation

If you want to verify a TCP/IP communications link between multiple MQSeries installations (for example, between two servers), you must ensure that you have the default configuration installed on both machines, which are part of the same cluster (in which case, you do not have to do any more configuration work).

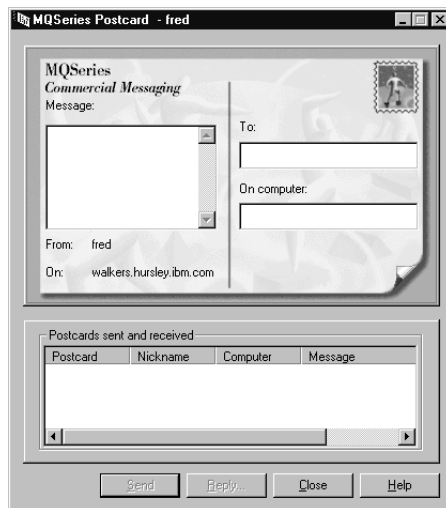
You can also verify a *local* installation (which has no communications links with other MQSeries installations), provided you have TCP/IP and the default configuration installed.

Go to the MQSeries First Steps window.

Verifying the installation



Select Postcard.



You need to have the default configuration installed to run this application. It allows you to send a message either to your own machine or to another named user's machine that is running MQSeries on the same TCP/IP domain. When you or the other user sees the message arrive, you can safely assume that MQSeries has been successfully installed and that your communications links are working properly.

Verifying the installation

What next?

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

- Install the MQSeries product on other machines. If so, follow the same installation procedure you've just been through. Make sure you use the Join Default Cluster window to add the other machines to your first machine's cluster.
- Install the MQSeries for Windows NT client on other machines. Go to "The Windows NT client" on page 17 if you need to do that task.
- Install other MQSeries clients in your network. Refer to Chapter 2, "Preparing for installation" in the *MQSeries Clients* book for full details if you need to do that task.
- If you want to continue with further administration tasks, go to Chapter 5, "Using MQSeries" on page 29.

You can also use the items in the MQSeries First Steps window to explore the facilities in MQSeries. Try using the following windows:

Select API Exerciser.



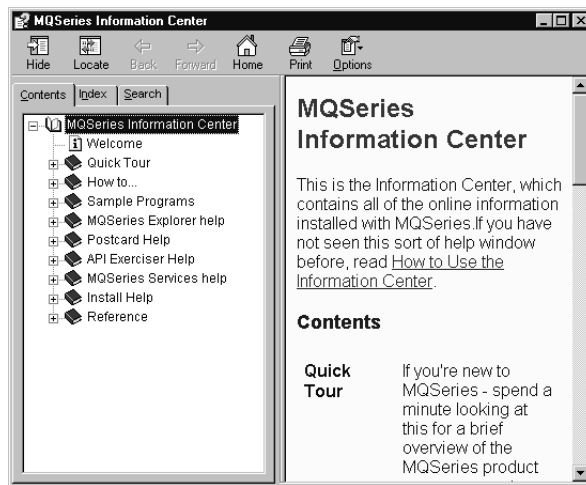
Use the API Exerciser window to experiment with the API calls that are provided in the MQSeries programming interface. Try using the MQPUT call to put a message on to a queue. You will be able to see that your message has arrived when you go to the IBM MQSeries Explorer window (see "MQSeries snap-ins" on page 29).

Check the Advanced Mode box if you want to see the full details of each call function.

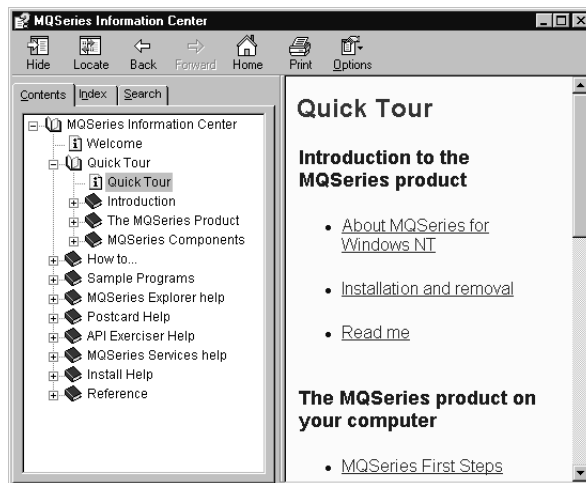
Verifying the installation

The Information Center provides help on using the API Exerciser. You can also look at the *MQSeries Application Programming Guide* and the *MQSeries Application Programming Reference* manual from the “Reference” section of the Information Center.

Go back to First Steps and select Information Center. Take a look through some of the online help and reference topics that it provides.



Select Quick Tour if you want to learn more about the concepts and functions of MQSeries, and to give you a brief overview of the product.



Removing MQSeries

Use MQSeries Uninstallation from the Start menu or Add/Remove Programs from the Control Panel to remove the MQSeries product from your computer.

For information on other methods of removing MQSeries, see Appendix C, “Removing MQSeries” on page 59.

Installing maintenance updates

If you need to install maintenance updates, see Appendix E, “Applying maintenance” on page 67.

Chapter 5. Using 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 (also known as the MQSeries Explorer) and IBM MQSeries Services)
- The MQSeries Web Administration server
- MQSeries commands (MQSC), or, if there are sets of commands that are issued regularly, by writing an application program that places them on the command queue
- MQSeries control commands

MQSeries snap-ins



MQSeries provides snap-ins that run under the Microsoft Management Console (MMC).

They provide a graphical user interface for administering the elements of your MQSeries network, allowing you to define and control:

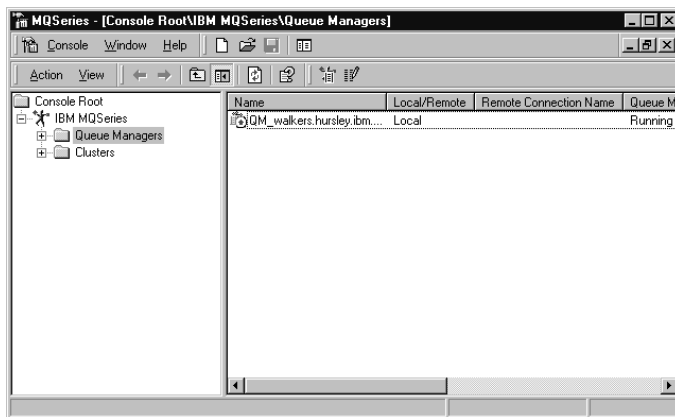
- Queue managers
- Queues
- Clusters (networks of queue managers that can be on several MQSeries systems)
- Other MQSeries objects (such as channels, processes, client connections, and namelists)
- Services, which allow you to start and stop functions and to associate actions with the functions

You can get to the IBM MQSeries snap-in from:

- The Windows NT Start menu, selecting MQSeries Explorer from the IBM MQSeries menu
- The MQSeries First Steps window, selecting MQSeries Explorer

Using MQSeries

You will then see a window similar to the following:



The IBM MQSeries (Explorer) snap-in allows you to:

- Create, delete, or change any of the MQSeries objects (for example: queue managers, clusters, namelists, queues, channels, client connections, and processes)
- Start or stop a 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

Your user ID **must** belong to the local mqm or Administrators group in order to administer any queue manager on that system.

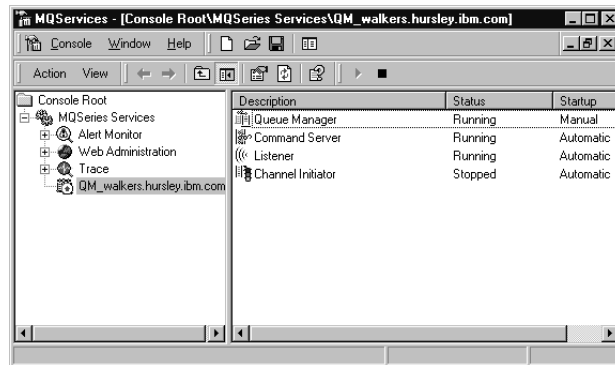
If the user ID under which you are running the MQSeries Explorer for your local system is a member of the mqm or Administrators group on a remote MQSeries system, you will be able to use the MQSeries Explorer to administer queue managers on the remote system.

You can get to the MQSeries Services snap-in from:

- The Windows NT Start menu, selecting MQSeries Services from the IBM MQSeries menu
- The MQSeries Explorer window, by right clicking on a queue manager name
- The IBM MQSeries icon in the taskbar menu and selecting MQSeries Services from the menu

Using MQSeries

You will then see a window similar to the following:



The MQSeries Services snap-in allows you 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 (for example: command server, channel initiator, and listener)
- Set up the configuration of the services (for example: automatic startup, failure recovery actions, and communication protocols)
- View the alert monitor
- Start and stop service trace

The user interface provides extensive help information to guide you through the tasks involved. The MQSeries Information Center also provides much useful information.

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 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 snap-in. The server is configured to start automatically when installed (it is not installed by default).

Using MQSeries

To log on as an MQSeries administrator (client side), connect your Web browser to the MQSeries Web Administration Web server by using a URL of the form:

`http://<hostname> : <port_number>`

where:

`<hostname>`

Is the IP host name 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. However, this value may be changed using the MQSeries Services snap-in.

This URL must be made known to all MQSeries administrators who will be using MQSeries Web Administration.

The left-hand pane of the browser window contains a navigation area. To log on as an MQSeries Web Administrator and administer MQSeries objects:

- Select the “Logon” option
- Use the Logon panel to enter your Windows NT user ID and password for MQSeries Web Administration
- Click Enter to start the logon process

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 administrator group on the machine running MQSeries Web Administration
- Logged on using the SYSTEM ID

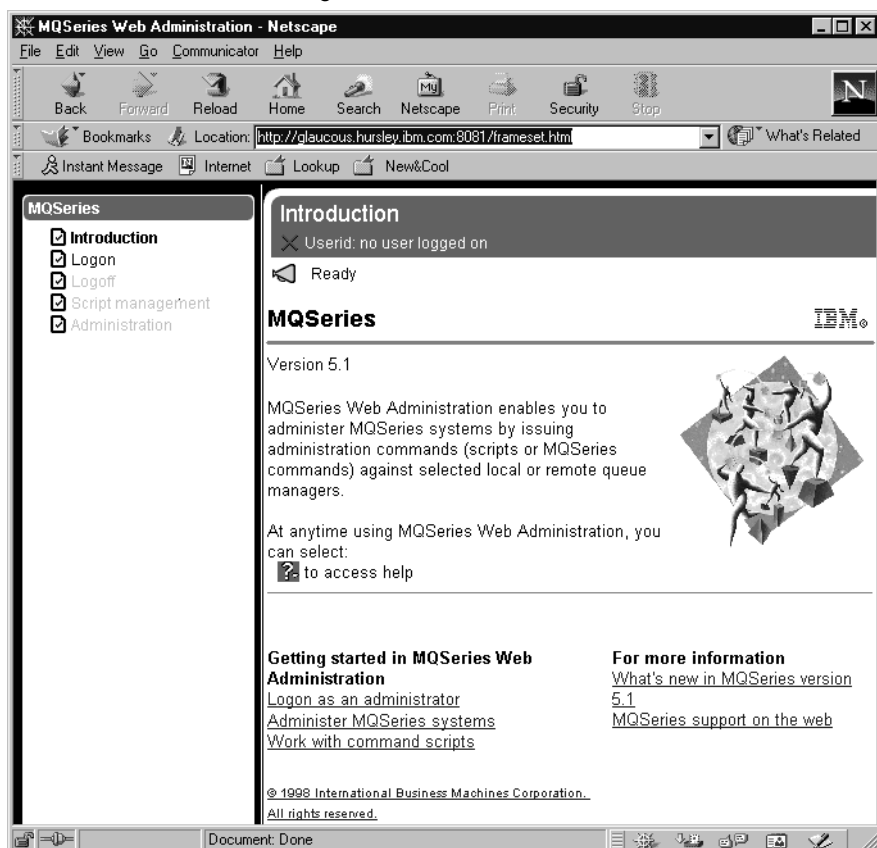
Some operations may require you to have authorization to use individual objects or object types. MQSeries Web Administration uses existing MQSeries rules for security to ensure that this happens.

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.

Full details on MQSeries Web Administration are given in Chapter 5, “Using MQSeries Web Administration” in the *MQSeries System Administration* book.

Using MQSeries

To access the MQSeries Web Administration server, go to the Windows NT Start menu and select Web Administration from the IBM MQSeries folder. You will then see a window similar to the following:



Its user interface provides extensive help information to guide you through the tasks involved.

Commands

MQSeries supports the following administration commands and facilities:

- MQSeries provides control commands that you can enter through the Windows NT command line. Your user ID **must** belong to the local mqm or Administrators group in order run any of the MQSeries for Windows NT control commands.
- You can use the **runmqsc** control command to cause MQSC commands from standard input to be executed.
- Any local or remote MQSeries application program can generate PCF commands in messages, and put them to the command queue, SYSTEM.ADMIN.COMMAND.QUEUE, to be processed by the MQSeries command server.

See Chapter 6, “Using MQSeries command sets” on page 35 for further details.

See Appendix G, “Comparing command sets” in the *MQSeries System Administration* manual for more information on how to use all these facilities.

Changes made to the resource definitions of a queue manager using the commands (directly or indirectly) are preserved across restarts of the MQSeries system.

Sample programs

See the MQSeries Information Center for details of the sample programs that are shipped with MQSeries.

Chapter 6. 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.

Note: Don't forget that the MQSeries user interface allows you to do many of the tasks that can be done by using commands. See Table 1 on page 36 for details.

MQSeries provides three command sets for performing administration tasks:

- Control commands
- MQSC commands
- PCF commands

This section describes the command sets that are available. Some tasks can be performed using either a control command or an MQSC command, whilst 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 Appendix G, "Comparing command sets" in the *MQSeries System Administration* manual.

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.

MQSeries command sets

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 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 question mark. MQSeries responds by listing the syntax required for the selected command.

<i>Table 1 (Page 1 of 3). MQSeries control commands</i>			
Command	Function	Description	User interface?
<code>crtmqcvx</code>	Data conversion	Creates a fragment of code that performs data conversion on data type structures.	No
<code>crtmqm</code>	Create queue manager	Creates a local queue manager and defines the default and system objects.	Yes
<code>dltmqm</code>	Delete queue manager	Deletes a specified queue manager.	Yes
<code>dmpmqlog</code>	Dump log	Dumps a formatted version of the MQSeries system log.	No
<code>dspmqaut</code>	Display authority	Displays the current authorizations to a specified object.	No

MQSeries command sets

Table 1 (Page 2 of 3). MQSeries control commands

Command	Function	Description	User interface?
dspmqcsv	Display command server	Displays the status of the command server for the specified queue manager.	Yes
dspmqlfs	Display MQSeries files	Displays the real file system name for all MQSeries objects that match a specified criterion.	No
dspmqrtn	Display MQSeries transactions	Displays details of in-doubt transactions.	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
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
rsvmqtrn	Resolve MQSeries transactions	Commits or backs out internally or externally coordinated in-doubt transactions.	No
runmqchi	Run channel initiator	Runs a channel initiator process.	Yes
runmqchl	Run channel	Runs either a Sender (SDR) or a Requester (RQSTR) channel.	Yes
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
runmqslr	Run listener	Runs a listener process.	Yes
runmqsc	Run MQSeries commands	Issues MQSC commands to a queue manager.	Yes

MQSeries command sets

<i>Table 1 (Page 3 of 3). MQSeries control commands</i>			
Command	Function	Description	User interface?
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
strmqcsv	Start command server	Starts the command server for the specified queue manager.	Yes
strmqm	Start queue manager	Starts a local queue manager.	Yes
strmqtrc	Start MQSeries trace	Enables tracing.	Yes

For more information about the syntax and purpose of control commands, see Chapter 17, “MQSeries control commands” in the *MQSeries System Administration* manual.

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, display, and delete a specified queue.

When you display a queue, using the DISPLAY QUEUE command, you display the queue *attributes*. For example, the MAXMSGL attribute specifies the maximum length of a message that can be put on the queue. The command does not show you the messages on the queue.

For detailed information about each MQSC command, see Chapter 2, “The MQSeries commands” in the *MQSeries Command Reference* manual.

Running MQSC commands

You run MQSC commands by invoking the control command **runmqsc**. You can run MQSC commands:

- Interactively by typing them at the keyboard
- As a sequence of commands from a text file (a script)

MQSeries command sets

For more information about using MQSC commands, see “Performing local administration tasks using MQSC commands” in the *MQSeries System Administration* manual.

PCF commands

MQSeries programmable command format (PCF) commands allow administration tasks to be programmed into an administration program. In this way you can create queues and process definitions, and change queue managers, 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. In this way, you can both centralize and automate administration tasks.

Notes:

1. 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 Chapter 6, “Introduction to Programmable Command Formats” in the *MQSeries Programmable System Management* manual.
2. The MQSeries administration interface (MQAI) provides a more convenient programmable way of using the function provided by PCF commands. For further information, see Chapter 1, “Introduction to the MQSeries Administration Interface (MQAI)” in the *MQSeries Administration Interface Programming Guide and Reference* manual.

MQSeries command sets

Chapter 7. Using the MQSeries World Wide Web Interface

This chapter introduces MQSeries Internet Gateway. It also explains how to get more information about obtaining and using the product.

The MQSeries Internet Gateway is one of the installable components on the MQSeries Server CD-ROM.

The following Gateways are also available:

- MQSeries Internet Gateway for OS/2
- MQSeries Internet Gateway for OS/390 OpenEdition™
- MQSeries Internet Gateway for AIX
- MQSeries Internet Gateway for HP-UX
- MQSeries Internet Gateway for Sun Solaris

Overview of MQSeries Internet Gateway

MQSeries Internet Gateway provides a bridge between the synchronous World Wide Web and asynchronous MQSeries applications. With the 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 gateway is through HTML fill-out form POST requests; MQSeries applications respond by returning HTML pages to the gateway, via an MQSeries queue.

MQSeries Internet Gateway can be installed on systems running OS/390™, AIX®, OS/2™, Sun Solaris™, HP-UX™, or Windows NT.

The MQSeries Internet Gateway supports the following Web server interfaces on all of these platforms:

- Common Gateway Interface (CGI)
- Internet Connection Application Programming Interface (ICAPI)
- Internet Services Application Programming Interface (ISAPI)
- Netscape Connection Application Programming Interface (NSAPI)

Using the Web Interface

The following exceptions apply:

- HP-UX does **not** support NSAPI
- Sun Solaris supports CGI **only**

MQSeries Internet Gateway documentation

The MQSeries product family Web site is at:

<http://www.software.ibm.com/ts/mqseries/>

The following documentation is accessible from this Web site:

- *Getting Started with MQSeries Internet Gateway*. This is the starting point for downloading and installing the MQSeries Internet Gateway.
- *MQSeries Internet Gateway User's Guide*. This is the main documentation for users of the MQSeries Internet Gateway.

Chapter 8. Obtaining additional information

This chapter describes the sources of information that can be useful when you are using MQSeries or related products.

The MQSeries library

The MQSeries Server CD-ROM contains the following documentation.

Table 2 (Page 1 of 3). The MQSeries library		
Order Number	Title	Description
GC34-5389	<i>MQSeries for Windows NT Quick Beginnings</i>	Gives a brief overview of MQSeries, provides information on planning for and installing the product, and how to use the product's interface to carry out system administration tasks.
GC33-1349	<i>MQSeries Planning Guide</i>	Describes some key MQSeries concepts, identifies items that need to be considered before MQSeries is installed, including storage requirements, backup and recovery, security, and migration from earlier releases, and specifies hardware and software requirements for every MQSeries platform.
SC33-1872	<i>MQSeries Intercommunication</i>	Defines the concepts of distributed queuing, and explains how to set up a distributed queuing network in a variety of MQSeries environments. In particular, it demonstrates how to (1) configure communications to and from a representative sample of MQSeries products, (2) create required MQSeries objects, (3) create and configure MQSeries channels, and (4) establish MQSeries client-server connections. It also describes how to use channel exits.
GC33-1632	<i>MQSeries Clients</i>	Describes how to install, configure, use, and manage MQSeries client systems.

MQSeries library

<i>Table 2 (Page 2 of 3). The MQSeries library</i>		
Order Number	Title	Description
SC33-1873	<i>MQSeries System Administration</i>	Supports day-to-day management of local and remote MQSeries objects. It includes topics such as security, recovery and restart, transactional support, problem determination, and the dead-letter queue handler. It also includes the syntax of the MQSeries control commands.
SC33-1369	<i>MQSeries Command Reference</i>	Contains the syntax of the MQSC commands, which are used by MQSeries system operators and administrators to manage MQSeries objects.
SC33-1482	<i>MQSeries Programmable System Management</i>	Provides both reference and guidance information for users of MQSeries events, programmable command formats (PCFs), and installable services.
GC33-1876	<i>MQSeries Messages</i>	Describes "AMQ" messages issued by MQSeries. This book is available in softcopy only.
SC33-0807	<i>MQSeries Application Programming Guide</i>	Provides guidance information for users of the message queue interface (MQI). It describes how to design, write, and build an MQSeries application. It also includes full descriptions of the sample programs supplied with MQSeries.
SC33-1673	<i>MQSeries Application Programming Reference</i>	Provides comprehensive reference information for users of the MQI. It includes: data-type descriptions; MQI call syntax; attributes of MQSeries objects; return codes; constants; and code-page conversion tables.
SX33-6095	<i>MQSeries Application Programming Reference Summary</i>	Summarizes the information in the <i>MQSeries Application Programming Reference</i> manual. This book is available in PDF format only.
SC33-1877	<i>MQSeries Using C++</i>	Provides both guidance and reference information for users of the MQSeries C++ programming-language binding to the MQI.
SC34-5404	<i>MQSeries LotusScript Extension</i>	Provides both guidance and reference information for programmers who use the LotusScript Extension to MQSeries.

Online information

Table 2 (Page 3 of 3). The MQSeries library		
Order Number	Title	Description
SC34-5387	<i>MQSeries for Windows NT Using the Component Object Model Interface</i>	Provides both guidance and reference information for programmers who use Microsoft Windows NT ActiveX controls and the active directory services interface (ADSI).
SC34-5390	<i>MQSeries Administration Interface Programming Guide and Reference</i>	Describes how to write programs for the MQSeries administration interface (MQAI).
SC34-5349	<i>MQSeries Queue Manager Clusters</i>	Explains the concepts and terminology of MQSeries clustering, and shows how you can benefit by taking advantage of cluster support. It summarizes the syntax of new and changed commands and shows a number of examples of tasks you can perform to set up and maintain clusters of queue managers.
SC34-5456	<i>MQSeries Using Java</i>	Provides guidance and reference information for users of the Java programming-language binding to the MQI.

Viewing online information

This section describes viewing:

- Online help
- Online books
- Books on the World Wide Web

Viewing 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 and select the MQSeries Information Center.

Online information

Viewing online books

Most of the MQSeries books are available in both hardcopy and softcopy formats.

The MQSeries online documentation is delivered in compiled HTML (.CHM) and PDF formats on the CD-ROM.

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. Compiled HTML files are also on the MQSeries CD-ROM in the \Docs\htmlhelp\ directory. Double click on a .CHM file to view it.

The PDF (viewable and printable) versions of the books are in the \Docs\acrobat\ directory on the MQSeries CD-ROM.

You can install the MQSeries manuals in your national language. Not all of the manuals are translated into every language so you should also install the English versions to get a full set.

BookManager™ books

The MQSeries manuals are supplied in IBM BookManager format on a variety of online library collection kits, including the *Transaction Processing and Data* collection kit CD-ROM, 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

HTML and PDF books on the World Wide Web

The books listed in "The MQSeries library" on page 43 are supplied in HTML and PDF formats on the World Wide Web. You can access the Web versions directly from the MQSeries Information Center (see the "Reference" section).

For the latest information about MQSeries, see "Available from the internet" on page 48.

Printing and ordering books

For information about ordering publications listed in this guide, contact your IBM authorized dealer or marketing representative. 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)**.

Printing PDF books

The MQSeries books are supplied in PDF format on the MQSeries for Windows NT Server CD-ROM.

Table 3 shows the file names used for the PDF files.

Note: The fifth character in the name represents the National Language of the book.
For example:

A	U.S. English
F	French
G	German
S	Spanish
I	Italian
J	Japanese
K	Korean
B	Brazilian Portuguese
Z	Simplified Chinese
T	Traditional Chinese

Table 3 (Page 1 of 2). MQSeries publications – PDF file names	
Book	File Name
<i>MQSeries for Windows NT Quick Beginnings</i>	AMQTAC00
<i>MQSeries Planning Guide</i>	CSQZAB02
<i>MQSeries Intercommunication</i>	CSQZAE02
<i>MQSeries Clients</i>	CSQZAF02
<i>MQSeries System Administration</i>	AMQZAG01
<i>MQSeries Command Reference</i>	CSQZAJ02
<i>MQSeries Programmable System Management</i>	CSQZAI02
<i>MQSeries Messages</i>	AMQZA001
<i>MQSeries Application Programming Guide</i>	CSQZAL02
<i>MQSeries Application Programming Reference</i>	CSQZAK02
<i>MQSeries Application Programming Reference Summary</i>	CSQZAM02

Internet availability

<i>Table 3 (Page 2 of 2). MQSeries publications – PDF file names</i>	
Book	File Name
<i>MQSeries Using C++</i>	AMQZAN02
<i>MQSeries LotusScript Extension</i>	AMQZAU00
<i>MQSeries for Windows NT Using the Component Object Model Interface</i>	AMQTAN00
<i>MQSeries Administration Interface Programming Guide and Reference</i>	AMQZAT00
<i>MQSeries Queue Manager Clusters</i>	CSQZAH00
<i>MQSeries Using Java</i>	CSQZAW00

Available from the internet

The MQSeries product family Web site is at:

<http://www.software.ibm.com/ts/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

Appendix A. Preparing to install from a LAN

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

1. You can make the MQSeries CD-ROM drive shareable, or:
2. You can copy the installation files from the CD-ROM to a server, by following these steps:

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

```
md m:\instmq5
```

- b. Load the MQSeries server CD-ROM. If you have autorun enabled, the language selection dialog will appear; cancel this dialog.

- c. Copy the entire CD-ROM to the m:\instmq5 folder. For example:

```
xcopy e:\*.* m:\instmq5 /e
```

Note: You can save space on the hard drive by copying only the Setups, Docs, and Prereqs subfolders for the languages you require.

The language subfolders are:

- en_us - English
- fr_fr - French
- de_de - German
- es_es - Spanish
- it_it - Italian
- ja_jp - Japanese
- ko_kr - Korean
- pt_br - Brazilian Portuguese
- zh_cn - Simplified Chinese
- zh_tw - Traditional Chinese

Also, you only need copy the Docs folder if you intend installing any of the online documentation.

- d. Give all licensed users access to the folder that now contains the CD-ROM image (in this example, the m drive).
- e. From a command prompt on the target machine, connect to the appropriate drive and folder using the net use command as follows:

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

For example:

```
net use x: \\mqmnt\instmq5
```

where x: is the required mapped drive on the target machine.

Installing from a LAN

Alternatively, you can use the Windows NT Explorer or some other method to map the shared resource to a drive letter.

- f. Change to the installation directory (in this example x:), type **Setup**, and press Enter.
- g. Follow the prompts.

Appendix B. Unattended installation

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

Because there is no user interaction, unattended installation uses a response file. A response file is an ASCII text file that contains values for the installation options you want to select.

To generate a response file you can:

- Carry out an 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:
 1. Load the MQSeries Server CD-ROM. If you have autorun enabled, the language selection dialog will appear; cancel this dialog.
 2. Run `setup.exe` from the root folder of the CD-ROM, with the `-r` parameter. This can be done by dragging `setup.exe` from Windows NT Explorer to the Run dialog in the Start menu and adding `-r` to the end of the file name, or by typing the fully-qualified path to `setup.exe` into the Run dialog, followed by `-r`.
 3. The language selection dialog will reappear. Perform an installation in the way you want it performed on the remote machine.
 4. If you are asked to restart the system, you do not need to do so if you are only generating a response file.

The `-noinst` parameter, which (if present) must come before the `-r` parameter, suppresses the MQSeries installation; `setup.exe` generates only a response file.

The installation creates a file called `setup.iss` in the Windows directory, normally `c:\winnt`. Save this file; you can edit it, if necessary.

Alternatively, you can either:

- Edit the response file (`setup.iss`) supplied on the MQSeries Server CD-ROM, using an ASCII file editor, or
- Generate your own response file, using an ASCII file editor.

Use the response file you have created to install the product on a remote machine (see "Installing on the remote machine" on page 57).

Unattended installation

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. Five stanzas are required; they are called:

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

Of these five, the [MQSeries-0] and [Queue Managers-0] stanzas specify the installation parameters; you should leave the three others unchanged or code them as shown.

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 and no changes to the existing queue manager configuration are made. If there is no existing MQSeries installation on the target machine, Setup installs the Server, the Development Toolkit, and the MQSeries manuals in compiled HTML format components. Any other components that are present are reinstalled. With the exception of LockedFiles, other keywords in this stanza and in the [Queue Managers-0] 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**, **DatDir**, **LogDir**, and **Folder** keywords.

Default=CURRENT

Interchangeable with Default=YES.

Default=DEFAULT

The installation updates the target machine to the latest MQSeries level. No changes to the existing queue manager configuration are made. Setup

Unattended installation

installs the Server, the Development Toolkit, and the MQSeries manuals in compiled HTML format components. Any other installed components, if any, are removed. The program files and the data files top-level folders, the log files folder and the program folder are forced to their default values for the machine. With the exception of LockedFiles, other keywords in this stanza and in the [Queue Managers-0] 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\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 Setup to take the default value for the folder on the target machine, which is usually c:\Winnt\Profiles\All Users\Application Data\MQSeries, or, if there is an existing MQSeries installation on the machine, it tells Setup to continue to use the existing folder. For example:

DatDir=c:\mqm data or DatDir=default

LogDir=<folder>

Specifies the folder for log 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:\Winnt\Profiles\All Users\Application Data\MQSeries\log, or, if there is an existing MQSeries installation on the machine, it tells Setup to continue to use the existing folder. For example:

LogDir=c:\mqm log or LogDir=default

Folder=<programfolder>

Specifies the program folder name for MQSeries. The value <programfolder> must be a valid program folder name, or it can be DEFAULT. The value DEFAULT tells Setup to take the default value for the program folder on the target machine, which is IBM MQSeries, or, if there is a previous MQSeries configuration on the machine, it tells Setup to continue to use the existing program folder. For example:

ProgramFolder=My MQ Programs or ProgramFolder=default

Skip=<option>

Specifies whether to reinstall any MQSeries components that are already installed and are at the Version 5.1 level. The value of <option> can be YES or NO. For example:

Skip=YES

Unattended installation

LockedFiles=<option>

Before transferring files to the target computer, Setup checks to see if any of the files it needs to replace are locked. This option specifies what Setup is to do if it finds any such files.

CONTINUE

Ignore the locked files and continue. After file transfer, Setup will restart the computer and replace the files during the restart.

CANCEL

Terminate the installation before transferring any files.

NORESTART

Ignore the locked files and continue. If any files are still found to be locked during file transfer, Setup will not restart the computer. In this case, you must restart the computer manually so that MQSeries will work correctly.

The rest of the 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 unchanged any user data associated with the component. Only the Server and the Web Administration Server components have any data associated with them. The Server has the queue manager configuration and queue data; the Web Administration Server has user-generated scripts.

REMOVEDATA

Remove the component, if it is already installed, along with any of its associated user data.

For example:

- Server=INSTALL installs the Server 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 63.

The Queue Managers-0 stanza

If the keyword `Default` in the `[MQSeries-0]` stanza has the value `NO`, keywords in this stanza are effective; otherwise, they are ignored.

The `DefaultConfiguration` keyword is necessary if `Default=NO` was used and there is no queue manager defined on the target machine; otherwise, it can be omitted. It determines whether a default configuration is created on the target machine. A value of `NO` means do not create a default configuration; a value of `YES` means create a default configuration if there is no queue manager already on the machine. For example:

```
DefaultConfiguration=YES
```

The `JoinDefaultCluster` keyword is necessary if `DefaultConfiguration=YES` was used; otherwise, it can be omitted. It determines whether the queue manager, created as part of the default configuration, will be joined to the default cluster for the local TCP/IP domain. A value of `YES` means join the default cluster, a value of `NO` means do not. For example:

```
JoinDefaultCluster=YES
```

The `RemoteAdministration` keyword is necessary if `DefaultConfiguration=YES` was used; otherwise, it can be omitted. It determines whether the queue manager, created as part of the default configuration, can be administered remotely by the MQSeries Explorer. A value of `YES` means allow remote administration (Setup creates the objects needed), a value of `NO` means do not. For example:

```
RemoteAdministration=YES
```

The `Repository` keyword is necessary if `JoinDefaultCluster=YES` is specified; otherwise, it can be omitted. It specifies the location of the cluster repository for the default cluster used by the default configuration. A value of `LOCALMACHINE` means that the machine on which the installation is to be run contains the repository; any other value is taken to be the TCP/IP name of the repository machine. For example:

```
Repository=computername.hursley.ibm.com or Repository=LOCALMACHINE
```

The `DoExistingQueueManagers` keyword determines whether the `<queuemanagername>` keywords in this stanza are processed (described below). A value of `NO` means do not process the `<queuemanagername>` keywords (they can be omitted); a value of `YES` means process them. For example:

```
DoExistingQueueManagers=NO
```

Each remaining keyword in this stanza is the name of an existing queue manager on the target machine. The value tells Setup whether to allow the queue manager to be administered from a remote machine using the MQSeries Explorer. To be administered in this way, a queue manager must have a server connection channel defined, and must have a listener so that incoming requests cause the channel to be started. These keywords are not examined if `DoExistingQueueManagers=NO` is specified; they can be omitted in that case.

Unattended installation

There must be one keyword for each queue manager on the target machine. The installation will fail if any particular queue manager keyword is missing. The format is:

`<queuemanagername>=<value>`

The value can be -1, 0, or a valid TCP/IP port number.

`<queuemanagername>=-1`

Means do nothing for this queue manager. No change is made.

`<queuemanagername>=0`

Means create the server connection channel so that the queue manager can be remotely administered.

`<queuemanagername>=<portnumber>`

Means create the server connection channel and create a channel listener using port number `<portnumber>`.

For example:

`MyQueueManager=1414`

creates, for MyQueueManager, a server connection channel and a TCP/IP listener for port 1414.

Here is an example of 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
LogDir=e:\mqmdat\log
ProgramFolder=IBM MQSeries
Skip=NO
LockedFiles=CONTINUE
Server=INSTALL
Development Toolkit=INSTALL
Local Clients\Windows NT Client=REMOVE
Local Clients\Java Client=REMOVE
Internet Gateway=REMOVE
Documentation\Internet Gateway=REMOVE
Documentation\Library HTML=INSTALL
Documentation\Library PDF=REMOVE
Web Administration Server=REMOVE
```


Unattended installation

```
Additional Languages\en_us=REMOVE
Additional Languages\fr_fr=INSTALL
Additional Languages\de_de=REMOVE
Additional Languages\es_es=REMOVE
Additional Languages\it_it=REMOVE
Additional Languages\ja_jp=REMOVE
Additional Languages\ko_kr=REMOVE
Additional Languages\pt_br=REMOVE
Additional Languages\zh_tw=REMOVE
Additional Languages\zh_cn=REMOVE
[Queue Managers-0]
DoExistingQueueManagers=YES
QueueManager1=-1
QueueManager2=0
QueueManager3=1414
```

Installing on the remote machine

The remote machine must have access to a shared resource or drive on a server that contains the MQSeries Server CD-ROM or a copy of it. Perform the procedure described in Appendix A, “Preparing to install from a LAN” on page 49 up to the point where you run Setup. Copy your response file to a location on the server that is accessible from the remote machine.

You can now start the installation on the remote machine in one of two ways:

1. On the remote machine, go to the Setups\xx_xx folder on the shared resource. Substitute xx_xx with the name of the language subfolder for the language that you require (see Appendix A, “Preparing to install from a LAN” on page 49).

Run setup.exe as follows:

```
setup -g<logfile> -f1<responsefile> -f2<secondarylogfile> -s
```

This method installs MQSeries in the language specified by xx_xx.

2. On the remote machine, go to the root folder on the shared resource and run setup.exe as follows:

```
setup -l<language> -g<logfile> -f1<responsefile> -f2<secondarylogfile> -s
```

This method installs MQSeries in the language specified by the -l parameter.

In the above:

- <responsefile> is the full path to the response file you prepared.

If you omit the -f1<responsefile> parameter, the response file must be in the Setups\xx_xx language subdirectory.

Unattended installation

- <logfile> is the full path to an installation log file. Setup creates an 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 case, any messages generated before the data-files folder is created are lost.

The -g<logfile> parameter must be placed before the -f1, -f2, and -s parameters; otherwise, it is ignored.

- <secondarylogfile> is the full path to a secondary 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 unattended installation.

If you omit the -f2<secondarylogfile> parameter, Setup attempts to create a file called setup.log in the language subdirectory (xx.xx), which is not possible if the installation is being performed from CD-ROM.

- <language> is the installation language.

If you omit the -l<language> parameter, or specify -lDefault, Setup runs in the default language of the user who is running Setup. If that language is not one of those supported by MQSeries, the machine's default language is used. If that language is not supported, English is used.

The value of <language> must be one of the following and must be in English (case is ignored):

- Default
- English or en_us
- French or fr_fr
- German or de_de
- Spanish or es_es
- Italian or it_it
- Japanese or ja_jp
- Korean or ko_kr
- Brazilian Portuguese or pt_br
- Simplified Chinese or zh_cn
- Traditional Chinese or zh_tw

The -s parameter tells Setup to run in silent mode.

Enclose long path name and file name expressions in double quotes. For example:

```
-g"c:\log file.txt"
```

Appendix C. Removing MQSeries

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

Attended removal

You can start attended removal in one of the following three ways:

1. Start Uninstallation from the MQSeries program folder:
 - a. Open the MQSeries program folder created during installation (by default, this folder is called IBM MQSeries).
 - b. Select the MQSeries Uninstallation icon to run the uninstall program.
2. Start Uninstallation by selecting IBM MQSeries V5.1 from the Add/Remove programs icon in the Control Panel.
3. Run the uninstall program directly from a command prompt or by using Run on the Start menu. The uninstall program is located in the c:\program files\mqseries\uninst folder and is called amqiunin.exe (where c:\program files\mqseries is the top-level program files folder selected during installation). Using this method, you can pass an execution parameter to the program to cause it to create and keep an uninstallation log file. The parameter is -g<logfilepath>, where <logfilepath> is the full path name of the log file you want to create. For example, the command might be:

```
c:\program files\mqseries\uninst\amqiunin -gc:\uninst.txt
```

Without this parameter, uninstallation appends to or creates a log file called amqilogn.txt in the data files top-level folder. If you delete the data files folder during uninstallation, the log file is lost.

When the uninstallation program is running, you must select one of:

- Uninstall one or more components:
- Uninstall all of MQSeries, excluding data
- Uninstall all of MQSeries, including data

Uninstalling MQSeries excluding data leaves your queue manager definitions and any Web Administration Server scripts intact.

If you later decide to reinstall MQSeries, you can get the previous data by explicitly specifying the previous data directory.

Removing MQSeries

If you decide to uninstall one or more components, you must choose from a list of which components to uninstall. If you choose to uninstall the Server or the Web Administration Server components, you are asked whether you want to keep the data associated with each of those components.

Unattended removal

You can remove (uninstall) MQSeries on a remote machine without interaction. This process is called unattended (or silent) removal, and uses a response file.

A response file is an ASCII text file containing values for the options you select when you uninstall an MQSeries system.

For unattended uninstallation, you can:

- Edit the response file (amqiunin.rsp) supplied on the MQSeries Server CD-ROM, using an ASCII file editor
- or:
- Generate your own response file, using an ASCII file editor

When you have generated your response file, run the uninstall program amqiunin.exe directly as described in step 3 under "Attended removal" on page 59, with two additional parameters, as follows:

```
c:\program files\mqseries\uninst\amqiunin -g<logfile> -f1<responsefile> -s
```

where <responsefile> is the fully-qualified path to your response file. If this parameter is omitted, the response file must be called amqiunin.rsp and must be located in the same folder as amqiunin.exe. The -s parameter tells the uninstall program to run in silent mode.

Uninstallation response file format

Like the installation response file, the uninstallation response file consists of stanzas and keyword=value pairs. Lines beginning with a semicolon (;) are comments. All text is in English. Case is ignored. An example of a complete response file is listed below. Two stanzas are required, called: [MQSeries], and [Components].

Removing MQSeries

The MQSeries stanza

This stanza has two required keywords: MQSeries and LockedFiles.

MQSeries=REMOVEDATA

This causes uninstallation to remove all of MQSeries on the target machine, including any queue manager definitions and queues. All queue manager data is lost. The [Components] stanza is not referenced and can be omitted.

MQSeries=REMOVE

This causes uninstallation to remove all of MQSeries on the target machine, except queue manager definitions and queues. Also left untouched are any Web Administration Server scripts. The [Components] stanza is not referenced and can be omitted.

MQSeries=REMOVECOMPONENTS

This causes uninstallation to remove specified components. The components are listed in the [Components] stanza, which 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 63). Any installed components for which there is no keyword=value pair are not uninstalled. For example:

Server=REMOVEDATA or Server=KEEP

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. Only the Server and the Web Administration Server components have any data associated with them.

The value REMOVEDATA means remove the component, including any user data associated with the component. Only the Server and the Web Administration Server components have any data associated with them.

Removing MQSeries

Here is an example of a complete uninstallation response file:

```
[MQSeries]
MQSeries=REMOVECOMPONENTS
LockedFiles=CONTINUE
[Components]
Server=REMOVE
Development Toolkit=KEEP
Local Clients\Windows NT Client=REMOVE
Local Clients\Java Client=KEEP
Internet Gateway=KEEP
Documentation\Library HTML=KEEP
Documentation\Library PDF=KEEP
Documentation\Internet Gateway=KEEP
Web Administration Server=REMOVEDATA
Additional Languages\en_us=KEEP
Additional Languages\fr_fr=KEEP
Additional Languages\de_de=KEEP
Additional Languages\es_es=KEEP
Additional Languages\it_it=KEEP
Additional Languages\ja_jp=KEEP
Additional Languages\ko_kr=KEEP
Additional Languages\pt_br=KEEP
Additional Languages\zh_tw=KEEP
Additional Languages\zh_cn=KEEP
```

In this example:

- The Server component is removed, leaving the queue manager definitions and their data untouched
- The Windows NT Client component is removed
- The Web Administration Server component is removed, along with its associated data

All other components are left unchanged.

Component names used in response files

The component names used in response files have fixed English values that are the same as the values stored in the registry after installation, under the following key:

HKEY_LOCAL_MACHINE\SOFTWARE\IBM\MQSeries\CurrentVersion\Components

Their names are:

Server
Development Toolkit
Local Clients\Windows NT Client
Local Clients\Java Client
Internet Gateway
Documentation\Library HTML
Documentation\Library PDF
Documentation\Internet Gateway
Web Administration Server
Additional Languages\en_us
Additional Languages\fr_fr
Additional Languages\de_de
Additional Languages\es_es
Additional Languages\it_it
Additional Languages\ja_jp
Additional Languages\ko_kr
Additional Languages\pt_br
Additional Languages\zh_tw
Additional Languages\zh_cn

Note: The names presented to the user during an attended installation are slightly different from these and are translated into the installation language.

Removing MQSeries

Appendix D. Using Microsoft System Management Server

You need an MQSeries response file (see “Installation response file format” on page 52 and “Uninstallation response file format” on page 60) if you want to use the Microsoft System Management Server (SMS) to install or remove an MQSeries for Windows NT server or client.

Creating SMS packages and jobs for MQSeries

The following steps are involved:

- Creating an SMS software package containing the MQSeries software – see “Creating the MQSeries SMS software package.”
- Creating an SMS job to distribute and install the software package – “Creating the MQSeries SMS job” on page 66.

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 then 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 directory 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.

Creating SMS packages

6. Click on the **Workstation** button. In the **Source Directory** entry field, specify the fully qualified path name to the MQSeries root directory which contains the MQSeries installation software. See Appendix A, "Preparing to install from a LAN" on page 49.
7. Select the appropriate Workstation Command Line:
 - **Automated Deinstallation of IBM MQSeries - NT**
 - **Automated Installation of IBM MQSeries - NT (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.

Note: The `-i<miffilepath>` parameter specifies the full path and file name of a Management Information Format (.mif) file that installation and uninstallation can generate. Remove this parameter if you do not want to generate a .mif file.
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 may 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 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 listbox.

Appendix E. 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.software.ibm.com/ts/mqseries/>

Attention

- Do not have queue managers operating 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 is not running.
- Do not have 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 has been stopped.
 2. End all listener processes by issuing the command:

```
endmq1sr -m QMgrName
```
- Stop the MQSeries service by using the **Stop** button in the Services application in the Windows NT Control Panel.

Applying the maintenance information

If you need to apply maintenance updates to your MQSeries product:

1. Ensure that you are logged on as an Administrator.
2. If you are installing from the MQSeries Web site you:
 - a. Must select a destination directory for the supplied executable file.
 - b. Change to the destination directory when the file has been downloaded and run the executable file. Running this file presents you with a dialog screen on which you can choose to use the default temporary directory, or specify your own temporary directory into which to unload the executable file.
 - c. Select the default directory, or change it if required, and select the **Next** button.

Applying maintenance

- d. When the file has been unloaded into the temporary directory, select the **Finish** button to end the dialog.
The SETUP.EXE file now runs.
3. If you are installing from CD-ROM, insert the MQSeries maintenance CD-ROM into the appropriate drive.
4. You will be presented with the **Welcome** dialog. Select the **Next** button.
You are strongly recommended to reply **Yes** to the prompt **Do you wish to backup the current version of the product?**.
5. Select the backup directory, and then select the **Next** button.
Note: You are strongly recommended to use the default directory for the backup operation.
6. From the **Copy Files** dialog, verify that the information displayed matches your choices.
If the information is incorrect, select the **Back** button to return to the previous dialogs. Otherwise, select the **Next** button to proceed.
7. Select the **Finish** button to complete the installation of the CSD.
8. To view the MEMO.PTF file, select:
 - **Start**
 - **Programs**
 - **IBM MQSeries**
 - **MQSeries Service Level**

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. Use the **Start** menu to navigate to the **Settings** menu, and run **Control Panel**.
3. Double click on the **Add/Remove Programs** icon.
4. Find and highlight **IBM MQSeries V5.1**, then select the **Add/Remove** button.
5. If any CSD has been applied with rollback, you are shown the history log and given the option to either rollback the most recent CSD, or remove the entire product.
Selecting the rollback option returns the installation to the state it was in before the CSD was applied.
Selecting **Remove Base Product** runs the uninstall program and removes MQSeries from your machine.

Querying the service level

After initial installation, the service level has the value 0000510.

After one or more updates, 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 query the service level:

- Select:
 1. **Start**
 2. **Programs**
 3. **IBM MQSeries**
 4. **MQSeries Service Level**

This shows the MEMO.PTF file containing the service level and details of the maintenance applied (PTF number). This file is installed in the program file directory.

Applying maintenance

Appendix F. Notices

This information was developed for products and services offered in the United States. IBM may not offer the products, services, or features discussed in this information in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this information. The furnishing of this information does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
2-31 Roppongi 3-chome, Minato-ku
Tokyo 106, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the information. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this information at any time without notice.

Any references in this information to non-IBM documentation or non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of

Notices

those documents or Web sites. The materials for those documents or Web sites are not part of the materials for this IBM product and use of those documents or Web sites is at your own risk.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM United Kingdom Laboratories,
Mail Point 151,
Hursley Park,
Winchester,
Hampshire,
England
SO21 2JN.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Programming License Agreement, or any equivalent agreement between us.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

AIX	BookManager	CICS
DB2	eNetwork	IBM
MQ	MQSeries	OpenEdition
TXSeries	OS/2	VisualAge

Lotus, Lotus Notes, LotusScript, and Domino are trademarks of Lotus Development Corporation in the United States, or other countries, or both.

Tivoli is a trademark or registered trademark of Tivoli Systems Inc. in the United States, or other countries, or both.

Encina is a registered trademark of Transarc Corporation in the United States, or other countries, or both.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and/or other countries.

Microsoft, Windows, Windows NT, and the Windows logo are registered trademarks of Microsoft Corporation. ActiveX is a trademark of Microsoft Corporation.

UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Limited.

Other company, product, and service names, may be trademarks or service marks of others.

Notices

Index

A

- administration 29
 - Web server 31
- administration command sets
 - control commands 35
 - MQSeries commands (MQSC) 38
 - programmable command format commands (PCF) 39
- administration interface (MQAI) 39
- administrator authority 21, 30
- API Exerciser window 26
- applying maintenance 67
- attended removal/uninstallation 59

B

- backup version, restoring 68
- bibliography 43
- BookManager 46

C

- capabilities of MQSeries 7
- case-sensitive control commands 36
- CD-ROM, installing from 22
- changes for Windows NT 11
- channel
 - events 9
 - message 5
 - MQI 5
- checking installation 24
- client channel 5
- client-server configurations 5
- clients 5, 17
- clusters 6
- command set administration 35
- commands
 - control 35
 - MQSC 38
 - programmable command format (PCF) 39
- communications, setting up 24
- compiled HTML books 46
- compilers supported 15

- component names in response files 63
- components of MQSeries 16
- Components stanza 61
- configurations 4
- control commands 36
- Corrective Service Diskette (CSD) 67
- creating the SMS software package 65

D

- database products supported 14
- DCE support 14
- default configuration 4, 23
- DHCP restriction 4
- disk space required 13

E

- events 8
 - channel 9
- example installation response file 56
- example uninstallation response file 62
- Explorer window 30

F

- First Steps window 24

G

- groups, creating 21

H

- HTML books 46
- Hypertext Markup Language (HTML) 46

I

- Information Center window 27
- installable components 16
- installation 21
 - disk space required 13
 - from a LAN 49

Index

- installation (*continued*)
 - from CD-ROM 22
 - planning 13
 - preparation 21
 - remote machine 57
 - server 22
 - unattended 51
 - verification 24
- installation response file 52
 - example 56
- installing maintenance updates 67
- instrumentation events 8
- Internet Gateway for MQSeries 41
- introduction to MQSeries 1

L

- LAN, installing from 49
- LDAP (Lightweight Directory Access Protocol) 14
- library of MQSeries books 43
- Lightweight Directory Access Protocol (LDAP) 14
- local queue 3
- local queue manager 3
- LotusScript Extension (MQLSX) 18

M

- maintenance 67
 - restoring a previous version 68
- Management Information Format (.mif) file 66
- managing MQSeries 10
- message
 - channels 5
 - description 2
 - descriptor 2
- message-driven processing 9
- Microsoft Management Console (MMC) 10
- Microsoft System Management Server (SMS) 65
- migration 17
- MMC (Microsoft Management Console) 10
- MMC snap-ins 10, 29
- monitoring queue managers 8
- MQAI (MQSeries administration interface) 9, 39
- MQI channel 5
- MQLSX (MQSeries LotusScript Extension) 18
- MQSC commands 34, 38
- MQSeries books 43
- MQSeries commands 34
- MQSeries Explorer 10

- MQSeries Explorer window 30
- MQSeries Internet Gateway 41
- MQSeries Services 10
- MQSeries Services window 30
- MQSeries stanza 61
- MQSeries-0 stanza 52

N

- new function for Windows NT 11

O

- online books 45
- online help 45
- ordering publications 47

P

- PDF-format books 47
- performance events 8
- planning to install 13
- Postcard window 25
- product status 69
- Program Temporary Fix (PTF) 67
- programmable command format (PCF) 39
- programming languages 15
- programming with MQSeries 9
- publications 43

Q

- querying the service level 69
- queue manager
 - description 3
 - events 8
 - monitoring 8
- Queue Managers-0 stanza 55
- queues
 - attributes 3
 - description 2
- Quick Tour window 27

R

- README file 19
- Release Notes 19
- remote machine, installation 57
- remote queue 3

Index

- remote queue manager 3
- removal response file format 60
- removing MQSeries 59
 - attended mode 28
 - interactively 28
- response file format, for removing MQSeries 60
- response files, component names 63
- restoring previous backup version 68
- running MQSC commands 38

S

- sample programs 34
- server hardware 13
- server software 13
- server-client configurations 5
- service level, querying 69
- service-level status 69
- Services window 30
- setting up communications 24
- setup command 57
- shell commands for MQSeries 35
- silent installation 51
- silent removal 60
- SMS
 - creating the MQSeries job 66
 - creating the software package 65
 - using with MQSeries 65
- snap-ins 29
- softcopy information 45
- software servers supported 14
- Software supported 14
- storage requirements 13
- supported software 13
- System Management Server (SMS) 65

T

- transaction processing monitors supported 14
- transactional support 7
- triggering 9

U

- unattended installation 51
- unattended removal/uninstallation 60
- uninstallation response file format 60
- uninstalling MQSeries 59
 - attended mode 28
 - interactively 28

- updating MQSeries 67
- users, creating 21

V

- verifying installation 24

W

- Web administration, from Windows NT 10, 31
- what's new for Windows NT 11
- Windows NT client 17

Sending your comments to IBM

MQSeries® for Windows NT®

Quick Beginnings

GC34-5389-00

If you especially like or dislike anything about this book, please use one of the methods listed below to send your comments to IBM.

Feel free to comment on what you regard as specific errors or omissions, and on the accuracy, organization, subject matter, or completeness of this book. Please limit your comments to the information in this book and the way in which the information is presented.

To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate, without incurring any obligation to you.

You can send your comments to IBM in any of the following ways:

- By mail, use the Readers' Comment Form (RCF)
- By fax:
 - From outside the U.K., after your international access code use 44 1962 870229
 - From within the U.K., use 01962 870229
- Electronically, use the appropriate network ID:
 - IBM Mail Exchange: GBIBM2Q9 at IBMMAIL
 - IBMLink: HURSLEY(IDRCF)
 - Internet: idrcf@hursley.ibm.com

Whichever you use, ensure that you include:

- The publication number and title
- The page number or topic to which your comment applies
- Your name/address/telephone number/fax number/network ID.

Readers' Comments

MQSeries® for Windows NT®

Quick Beginnings

GC34-5389-00

Use this form to tell us what you think about this manual. If you have found errors in it, or if you want to express your opinion about it (such as organization, subject matter, appearance) or make suggestions for improvement, this is the form to use.

To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer. This form is provided for comments about the information in this manual and the way it is presented.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

Be sure to print your name and address below if you would like a reply.

Name

Address

Company or Organization

Telephone

Email

MQSeries® for Windows NT®

MQSeries for Windows NT V5.1 Quick Beginnings GC34-5389-00



You can send your comments POST FREE on this form from any one of these countries:

Australia	Finland	Iceland	Netherlands	Singapore	United States
Belgium	France	Israel	New Zealand	Spain	of America
Bermuda	Germany	Italy	Norway	Sweden	
Cyprus	Greece	Luxembourg	Portugal	Switzerland	
Denmark	Hong Kong	Monaco	Republic of Ireland	United Arab Emirates	

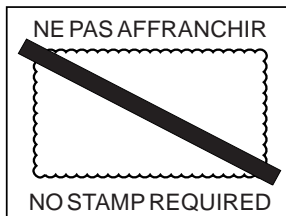
If your country is not listed here, your local IBM representative will be pleased to forward your comments to us. Or you can pay the postage and send the form direct to IBM (this includes mailing in the U.K.).

2

Fold along this line

By air mail
Par avion

IBRS/CCRI NUMBER: PHQ - D/1348/SO



REPONSE PAYEE
GRANDE-BRETAGNE

IBM United Kingdom Laboratories
Information Development Department (MP095)
Hursley Park,
WINCHESTER, Hants
SO21 2ZZ United Kingdom

3

Fold along this line

From: Name _____
Company or Organization _____
Address _____

EMAIL _____
Telephone _____

4

Fasten here with adhesive tape

1

Cut along this line

1

Cut along this line



Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

GC34-5389-00

