



IBM MQSeries Workflow

Installation Guide

Version 3.2



IBM MQSeries Workflow

Installation Guide

Version 3.2

Note!

Before using this information and the product it supports, be sure to read the general information under "Appendix H. Notices" on page 173.

Fourth Edition (June 1999)

This edition applies to version 3, release 2 of IBM MQSeries Workflow (product number 5697-FM3) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SH12-6288-02.

© **Copyright International Business Machines Corporation 1993, 1998. All rights reserved.**

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

Contents

About this book.	vii
Who should read this book	vii
How this book is organized	vii
How to get additional information	viii
How to send your comments.	viii
How to read the syntax diagrams	ix

Part 1. Introduction 1

Chapter 1. How to use this book 3

Chapter 2. Components and setup scenarios 7

MQ Workflow components	7
Supported operating platforms	7
Installable components	7
MQ Workflow setup scenarios	10
Setup scenario for stand-alone	11
Setup scenario for standard client/server	12
Setup scenario for dedicated database	13
Setup scenario for multiple MQ Workflow servers	14

Part 2. Before installing MQ Workflow 17

Chapter 3. Requirements for UNIX 19

Prerequisite software	19
Installing MQSeries	19
Installing DB2.	21
Server requirements.	23
Hardware requirements	23
Software requirements	23
Client requirements	24
Hardware requirements	24
Software requirements	24

Chapter 4. Requirements for OS/2 Warp 27

Prerequisite software	27
Installing MQSeries	27
Installing DB2.	28
Server requirements.	31
Hardware requirements	31

Software requirements	31
Client requirements	32
Hardware requirements	32
Software requirements	32

Chapter 5. Requirements for Windows 35

Prerequisite software	35
Installing MQSeries	35
Installing DB2.	36
Server requirements.	40
Hardware requirements	40
Software requirements	40
Client requirements	41
Hardware requirements	41
Software requirements	41
Buildtime requirements	42
Hardware requirements	42
Software requirements	43

Part 3. Installing MQ Workflow 45

Chapter 6. Installing on UNIX 47

Preparing for installation	47
Preparing the directory /var/fmc	47
Installing software on AIX	48
Installing software on HP-UX	50
Installing software on Sun Solaris	51

Chapter 7. Installing on OS/2 Warp 53

Installing the software	53
-----------------------------------	----

Chapter 8. Installing on Windows 55

Installing the software	55
-----------------------------------	----

Chapter 9. Preparing and administering the Lotus Notes database templates 57

Installing the client components for Lotus Notes	57
Installing the MQ Workflow Client for Lotus Notes	57
Installing the Lotus Notes database templates	57
Adminstrating the database templates	58

Creating databases from the database template	60
---	----

Part 4. Configuring MQ Workflow 63

Chapter 10. Configuring your installation 65

Configuration tools	65
Configuration utility	65
Advanced configuration utility	66
Configuring components	66
Configuring a server	67
Configuring Runtime Database Utilities	71
Configuring clients	72
Configuring Buildtime	74
Configuring a Java CORBA Agent	76
MQ Workflow profiles	78
Multiple MQ Workflow setups	79

Part 5. After installing and configuring MQ Workflow 83

Chapter 11. Checking your installation 85

Checking the configuration of a component	85
Starting the configuration-checking utility	85
Using command-line options	86
The configuration-checking log file and online documentation	87

Chapter 12. Starting and stopping MQ Workflow on UNIX 89

Starting components in the right order	89
Starting the Administration server	89
Starting the administration utility	90
Starting other MQ Workflow servers	92
Stopping servers	92
Via the administration utility	92
From a command prompt	92
Stopping the administration utility	93

Chapter 13. Starting and stopping MQ Workflow on OS/2 Warp 95

Starting components in the right order	95
Starting the Administration server	96
Starting the administration utility	96
Starting other MQ Workflow servers	98
Stopping servers	98
Stopping the administration utility	98

Chapter 14. Starting and stopping MQ Workflow on Windows 101

Starting components in the right order	101
Starting the Administration server	102
Method 1: Manually as a Windows NT service	102
Method 2: Automatically as a Windows NT service	103
Method 3: From a command line	104
Starting the administration utility	104
Starting other MQ Workflow servers	106
Starting the standard Client	106
Starting Buildtime	106
Password and user ID	107
Stopping servers	107
Via the administration utility	107
Via the service panel	108
Stopping the administration utility	108
Stopping the standard Client	108
Stopping Buildtime	109

Chapter 15. Verifying your installation 111

Verifying MQ Workflow components	111
Server installation	111
Administration utility installation	111
Client installation	112
Buildtime installation	112
Verifying an MQSeries connection	112

Part 6. Appendixes 115

Appendix A. Basic DB2 and MQSeries commands 117

Basic DB2 commands	117
Start DB2	117
Stop DB2	117
Access a remote DB2 instance	118
Access a remote DB2 database	119
Basic MQSeries commands	119
Start MQSeries	120
Start the MQSeries queue manager	120
Start the TCP/IP listener program	121
Start the MQSeries trigger monitor	121

Appendix B. MQ Workflow profile and system environment settings 123

Locating the MQ Workflow profile and system environment	123
Changing values of MQ Workflow variables	124

Changing values in the MQ Workflow profile	124	How to migrate the MQ Workflow profile	167
Changing values in the system environment	125	Appendix G. Deleting MQ Workflow	169
Guidelines for changing values	126	Before deleting MQ Workflow	169
MQ Workflow variables	126	Deleting MQ Workflow from an AIX workstation	169
Appendix C. Language settings	145	Deleting MQ Workflow from an OS/2 Warp workstation	170
Language settings for UNIX	145	Deleting MQ Workflow from a Windows workstation	171
Language settings for OS/2 Warp and Windows	146	Appendix H. Notices	173
Appendix D. Updated files	147	Trademarks	175
Files updated on UNIX.	147	Glossary	177
Files updated on OS/2 Warp.	149	Bibliography	183
Files updated on Windows	151	MQSeries Workflow publications	183
Appendix E. Installation messages	155	Related publications.	183
Appendix F. Migrating data from a previous release	163	Index	185
How to migrate Runtime data	163	Readers' Comments — We'd Like to Hear from You	189
Before migrating Runtime data	164		
Command-line migration tool	165		
How to migrate the Buildtime database	166		

About this book

This book explains how to install the components that make up an IBM MQSeries Workflow system. Hereafter MQSeries Workflow is abbreviated to MQ Workflow.

It is assumed that you are familiar with:

- UNIX based operating systems, if you intend installing MQ Workflow components on AIX, HP-UX, or Sun Solaris.
- OS/2 Warp, if you intend installing MQ Workflow components on OS/2 Warp.
- Windows based operating systems, if you intend installing MQ Workflow components on Windows NT, Windows 98, or Windows 95.
- IBM's DB2 relational database management system.
- IBM's MQSeries communications product.

It is assumed that you have read the *IBM MQSeries Workflow: Concepts and Architecture* book. You should be familiar with the components of an MQ Workflow system and understand how the system is structured.

Who should read this book

This book is for system administrators who do the following:

- Install and configure MQ Workflow and its prerequisite and corequisite products.
- Install corrective service updates and new releases of MQ Workflow.

How this book is organized

"Part 1. Introduction" on page 1 contains information that you need to know before you proceed with installing MQ Workflow. It contains information regarding the structure of this book and describes the different setup scenarios that are possible for MQ Workflow, the supported operating platforms and the different MQ Workflow components.

"Part 2. Before installing MQ Workflow" on page 17 lists the hardware and software requirements and prerequisites for MQ Workflow.

"Part 3. Installing MQ Workflow" on page 45 describes how to install the different MQ Workflow components on the supported operating platforms.

“Part 4. Configuring MQ Workflow” on page 63 gives an overview of the configuration process for MQ Workflow components using the various configuration tools available.

“Part 5. After installing and configuring MQ Workflow” on page 83 describes how to check the configuration and setup of installed MQ Workflow components. Details about starting and stopping components and verifying that they are installed correctly are also given.

“Part 6. Appendixes” on page 113 contains useful DB2 and MQSeries commands, information about MQ Workflow variables, details regarding language settings, information about files that are updated during installation, details about creating and deleting databases, queue managers, and MQ Workflow components, instructions for migrating from a previous release, and installation messages.

The back of this book includes a glossary that defines terms as they are used in this book, a bibliography, and an index.

How to get additional information

Visit the MQSeries Workflow home page at
<http://www.software.ibm.com/ts/mqseries/workflow>

For a list of additional MQSeries Workflow publications, refer to “MQSeries Workflow publications” on page 183.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other MQSeries Workflow documentation, choose one of the following methods:

- Send your comments by e-mail to: swsdid@de.ibm.com
Be sure to include the name of the book, the part number of the book, the version of MQSeries Workflow, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).
- Fill out one of the forms at the back of this book and return it by mail, by fax, or by giving it to an IBM representative.

How to read the syntax diagrams

In this manual diagrams are used to illustrate programming syntax. To use a diagram, follow a path from left to right, top to bottom, adding elements as you go. In these diagrams, all spaces and other characters are significant.

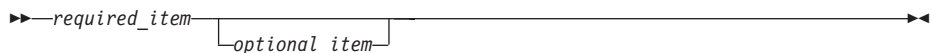
Each diagram begins with a double right arrowhead and ends with a right and left arrowhead pair.

The following rules apply to the syntax diagrams used in this book:

- The \blacktriangleright — symbol indicates the beginning of a statement.
The — \blacktriangleright symbol indicates that the statement syntax is continued on the next line.
The \blacktriangleright — symbol indicates that a statement is continued from the previous line.
The — \blacktriangleleft symbol indicates the end of a statement.
Diagrams of syntactical units other than complete statements start with the \blacktriangleright — symbol and end with the — \blacktriangleright symbol.
The \blacktriangleright >--- symbol indicates the beginning of a statement.
The ---> symbol indicates that the statement syntax is continued on the next line.
The >--- symbol indicates that a statement is continued from the previous line.
The --->< symbol indicates the end of a statement.
Diagrams of syntactical units other than complete statements start with the >--- symbol and end with the ---> symbol.
- Required items appear on the horizontal line (the main path).



- Optional items normally appear below the main path.



If an optional item appears above the main path, that item has no effect on the execution of the statement and is used only for readability.



- If you can choose from two or more items, they appear vertically, in a stack.

If you *must* choose one of the items, one item of the stack appears on the main path.



If choosing one of the items is optional, the entire stack appears below the main path.



If one of the items is the default, it appears above the main path and the remaining choices are shown below.



- Keywords appear in uppercase (for example, FROM). Variables appear in all lowercase letters (for example, *column name*). They represent user-supplied names or values.
- If punctuation marks, parentheses, arithmetic operators, or other such symbols are shown, you must enter them as part of the syntax.

Part 1. Introduction

Chapter 1. How to use this book 3

Chapter 2. Components and setup

scenarios 7

MQ Workflow components 7

 Supported operating platforms 7

 Installable components 7

MQ Workflow setup scenarios 10

 Setup scenario for stand-alone 11

 Setup scenario for standard client/server 12

 Setup scenario for dedicated database 13

 Setup scenario for multiple MQ 14

 Workflow servers 14

Chapter 1. How to use this book

This book has been divided into several parts in order to group stages in the installation process and to separate MQ Workflow components installed on one operating system from another. It is anticipated that you will find certain chapters irrelevant and thus choose to ignore some parts of the book.

Setting up MQ Workflow is a multi-stage process, which consists of two major steps. As such, the main focus of this book is on the following two parts:

Installing MQ Workflow

“Part 3. Installing MQ Workflow” on page 45 is split into a number of chapters. These chapters contain details about how to install MQ Workflow components on workstations running on a particular operating system.

The installation simply copies the software from the MQ Workflow CD-ROM to your workstation and performs basic setup and registration functions. The MQ Workflow installation steps described in each chapter only need to be performed once per machine for each MQ Workflow component you want to install.

Configuring MQ Workflow

“Part 4. Configuring MQ Workflow” on page 63 contains a single chapter that gives a general overview of the MQ Workflow configuration process and introduces you to the tools used for configuring MQ Workflow components.

Configuring your installation is imperative for operating and communication purposes and must be performed after installation.

When installing MQ Workflow on a workstation, it is intended that you move from the beginning to the end of the book, reading in sequential order only the chapters that are relevant for installing MQ Workflow on a specific operating system. Some chapters, such as chapters 1, 2, 10, 11, and 15, are relevant for all operating systems and should be read.

Figure 1 on page 4 illustrates the structure of this book and can be used as a navigation aid for finding the relevant chapters required for installing MQ Workflow on a particular operating system. To set up MQ Workflow on a workstation, you should follow a single path in Figure 1 on page 4 from **Start** to **Finish**.

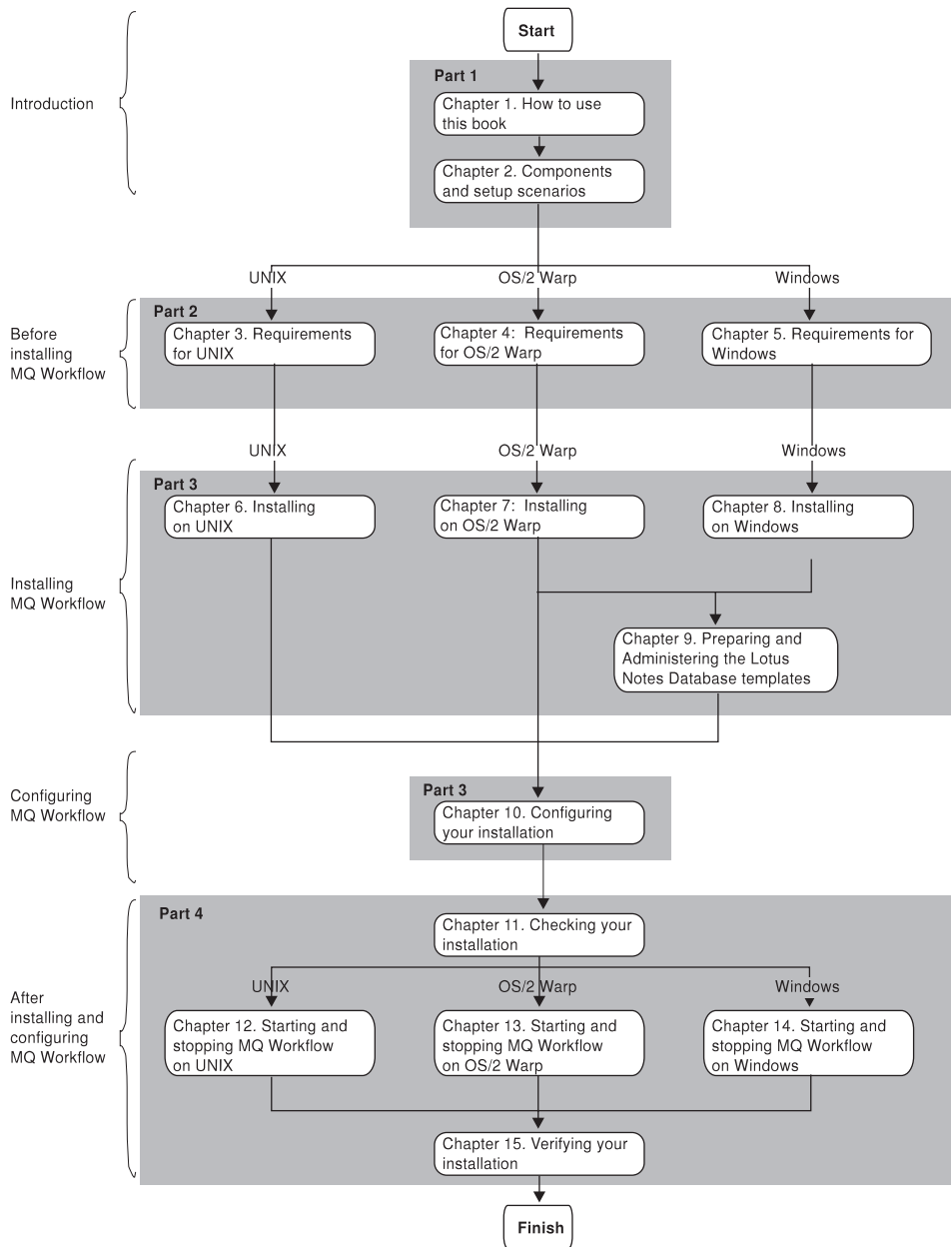


Figure 1. Structure of the MQ Workflow Installation Guide.

You should start by reading the chapters contained in part 1 and then go to the relevant chapters contained in part 2 and 3, which list the requirements and describe how to install MQ Workflow components on the operating system of your choice.

After completing the installation, go to chapter 10 which provides a general overview for configuring the preinstalled MQ Workflow component using the MQ Workflow configuration tools.

After configuring the MQ Workflow component, you should read the chapters contained in part 4. Chapters 11 and 15 should be read for all operating systems. Chapters 12, 13, and 14 describe how to start and stop MQ Workflow components for the different operating systems. Read only the chapter that is relevant for the operating system on your workstation.

"Part 6. Appendixes" on page 113 contains information that can be referenced during the installation process or additional information that you may find helpful.

Before proceeding to set up MQ Workflow on your workstation, you should examine Figure 1 on page 4 and make a list of the relevant chapters you need to read.

Chapter 2. Components and setup scenarios

This chapter contains information about MQ Workflow components and describes the setup scenarios that are possible when installing MQ Workflow.

MQ Workflow components

In the following, the supported operating platforms and all MQ Workflow components that can be installed on each supported operating platform are listed and briefly described.

Supported operating platforms

MQ Workflow components can be installed on the following supported operating platforms:

- AIX
- HP-UX
- Sun Solaris
- OS/2 Warp
- Windows NT
- Windows 98
- Windows 95

Use the MQ Workflow CD-ROM to install MQ Workflow components on any of these supported operating platforms.

Installable components

Table 1 on page 8 lists all MQ Workflow components and indicates on which operating platform each component can be installed.



In Table 1 on page 8 and the rest of this book we have grouped the AIX, HP-UX, and Sun Solaris platforms under the heading **UNIX**. The same MQ Workflow components listed under **UNIX** can be installed on all these platforms. Differences that occur when setting up MQ Workflow components on any of these platforms are indicated where necessary.

Table 1. MQ Workflow components and the supported operating systems

Components	UNIX	OS/2 Warp	Windows NT	Windows 95/98
Server	●	●	●	
Administration Utility	●	●	●	●
Standard Client			●	●
Client for Lotus Notes		●	●	●
Lotus Notes Database Templates		●	●	●
API Runtime Libraries	●	●	●	●
Program Execution Agent	●	●	●	●
Java CORBA Agent	●		●	●
Java Beans	●		●	●
Buildtime			●	●
API Development Kit	●	●	●	●
Samples			●	●
Runtime Database Utilities	●	●	●	●

Details regarding MQ Workflow components can be found in the *IBM MQSeries Workflow: Concepts and Architecture* manual. However, for a quick reference, a brief description of each component is also given here.

Server MQ Workflow servers control the execution of process models throughout your organization. A server consists of one or more components, such as Execution server, Administration server, Scheduling server, and Cleanup server.

Client components

Several components can be grouped within this category. These include:

- **Administration Utility**

The MQ Workflow Administration Utility is the administrator's user interface to control the operation of MQ Workflow servers.

- **Standard Client**

The MQ Workflow Client provides a standard client GUI to manage processes and work items.

- **Client for Lotus Notes**

The MQ Workflow Client for Lotus Notes provides a customizable workflow client integrated into Lotus Notes.

- **API Runtime Libraries**

The MQ Workflow Client API Runtime Libraries enable the execution of MQ Workflow client applications.

- **Program Execution Agent**

An MQ Workflow Program Execution Agent enables the execution of client programs as defined for process activities.

Buildtime

With MQ Workflow Buildtime you can create process and organization models and define system resources.

Java CORBA Agent

The MQ Workflow Java API CORBA Agent enables the execution of MQ Workflow Client applications built with the Java API Beans.

Java Beans

The MQ Workflow Java API Beans can be used to build MQ Workflow client applications written in the Java programming language.

Runtime Database Utilities

The MQ Workflow Runtime Database Utilities are used to create and populate Runtime databases and includes the following two utilities:

- **Import/Export utility**

With the MQ Workflow Import/Export utility you can import and export process models, organization models, and system resources, following the syntax of the FlowMark Definition Language (FDL).

- **Database Creation utility**

The MQ Workflow Database Creation utility is required to create an MQ Workflow runtime database and to set up the database structure.

Miscellaneous components

Various components can be grouped within a miscellaneous category. These include:

- **Lotus Notes Database Templates**

The MQ Workflow Lotus Notes Database Templates contain Lotus Notes databases for use with the MQ Workflow Client for Lotus Notes and additional sample information.

- **API Development Kit**

The MQ Workflow Development Kit contains everything that application developers need to interface to MQ Workflow, using one or more of the programming languages supported for the various

platforms such as C, C++, Java, VisualBasic, REXX and LotusScript. The MQ Workflow ActiveX Controls Development Kit contains interfaces to workflow client components implemented as ActiveX Controls, that can be used to build a custom workflow client.

- **Samples**

Several MQ Workflow Samples can be installed, for example Credit Request sample process models.

MQ Workflow setup scenarios

The first step you must take to implement MQ Workflow is to decide how you want to set up the MQ Workflow workstations.

The following list of setup scenarios represents ways MQ Workflow can be implemented:

- Stand-alone
- Standard client/server
- Client/server with a dedicated Database server
- Client/server with multiple MQ Workflow servers

Deciding on a specific setup is influenced by system resources and the type of operating platforms you want to use. When choosing a setup, you should decide on the right number and type of MQ Workflow components that best matches your requirements and system resources. The following sections briefly describe each setup scenario and give an example illustration for each.

Setup scenario for stand-alone

The stand-alone workstation scenario is useful for becoming familiar with MQ Workflow functions.

In the stand-alone scenario, all MQ Workflow components are installed on one Windows NT workstation. The MQ Workflow server, Client, and Buildtime components are all installed together from the CD-ROM provided. During the MQ Workflow configuration phase, the Buildtime and Runtime databases are created and MQSeries is customized and configured to work with MQ Workflow.

Use the illustration shown in Figure 2 as a basis for planning a stand-alone MQ Workflow setup.



- All Components for Windows NT
- MQ Workflow Server
 - MQ Workflow Administration Utility
 - MQ Workflow Client
 - MQ Workflow Buildtime
 - Windows NT
 - DB2 Server
 - MQSeries Server

Figure 2. Example of a stand-alone setup



Steps for installing and configuring a stand-alone configuration can be found at the following web site:
<http://www6.software.ibm.com/MQSWF/Workflow.htm>

Setup scenario for standard client/server

In the standard client/server scenario, the MQ Workflow server and Runtime database reside on the same workstation. Buildtime and Client components are installed on remote workstations within the client/server network. This results in a two-tier architecture. MQ Workflow Clients are connected to the MQ Workflow server via MQSeries. This type of setup both optimizes the use of the available resources and improves performance.

Use the illustration shown in Figure 3 as a basis for planning a standard MQ Workflow client/server setup.

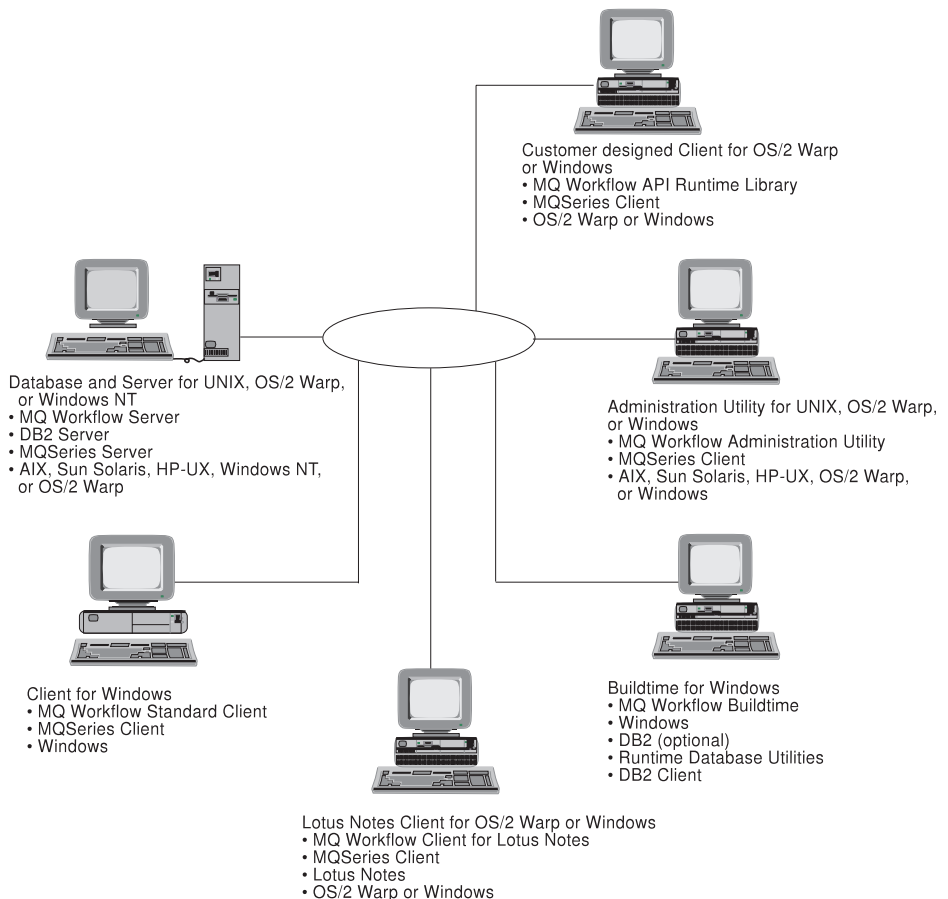


Figure 3. Example of a standard client/server setup

Setup scenario for dedicated database

With a client/server setup scenario that contains a dedicated Runtime database server, the concept of a three-tier client/server architecture is introduced. In this setup, the Runtime database runs on its own workstation in tier 3, while the MQ Workflow server lies in tier 2. Buildtime, and Client components are installed separately on other workstations in tier 1. MQ Workflow Clients are connected to the MQ Workflow server via MQSeries.

With this type of setup, data is centralized about one dedicated workstation, making it easier to manage, and allowing easy expansion as the database grows in size.



In a system group, only servers installed on workstations running homogeneous operating systems are supported. That is, database and MQ Workflow servers must be installed on workstations running the same operating platforms.

Use the illustration shown in Figure 4 on page 14 as a basis for planning a dedicated database setup.

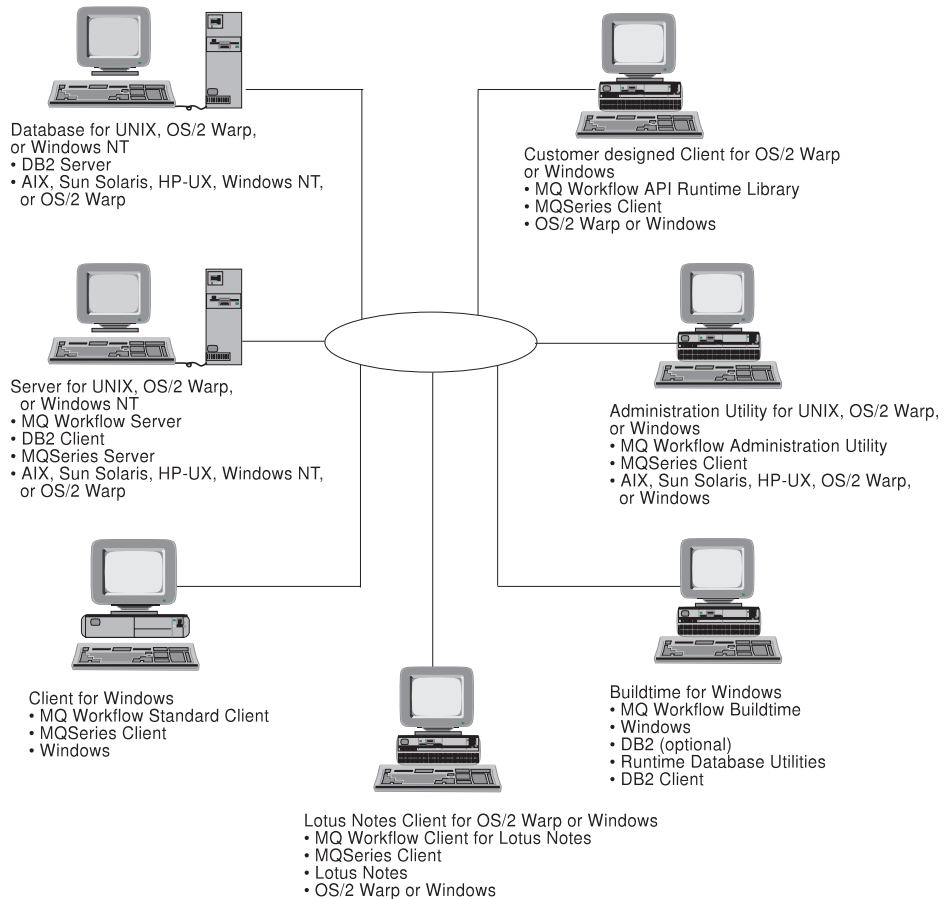


Figure 4. Example of a dedicated database setup

Setup scenario for multiple MQ Workflow servers

One or more additional MQ Workflow servers can be added to an existing standard or dedicated database client/server setup. By doing so, the workload is distributed equally between servers.

This type of setup increases performance by reducing the demand on a single MQ Workflow server and increases the capability to handle more clients.

With this setup, clients use different MQ Workflow servers, connecting to them via MQSeries. All MQ Workflow servers access and use the same Runtime database.



In a system group, only servers installed on workstations running homogeneous operating systems are supported. That is, database and MQ Workflow servers must be installed on workstations running the same operating platforms.

Use the illustration shown in Figure 5 as a basis for planning a multiple MQ Workflow server setup.

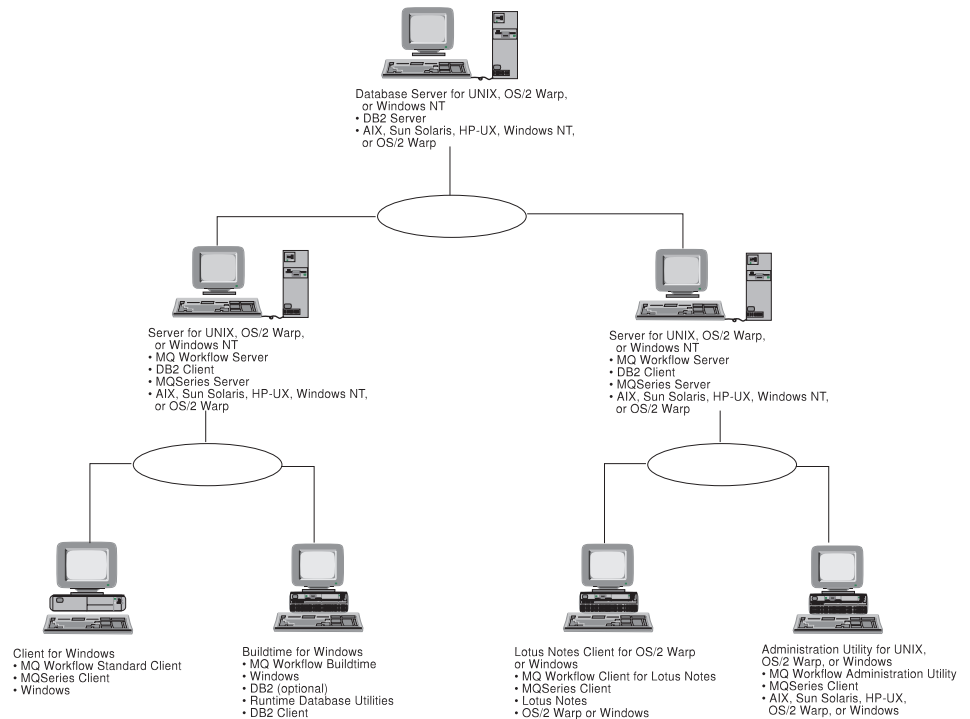


Figure 5. Example of a multiple server setup

Part 2. Before installing MQ Workflow

Chapter 3. Requirements for UNIX	19
Prerequisite software	19
Installing MQSeries	19
Installing DB2	21
Server requirements	23
Hardware requirements	23
Software requirements	23
Client requirements	24
Hardware requirements	24
Software requirements	24
Chapter 4. Requirements for OS/2 Warp	27
Prerequisite software	27
Installing MQSeries	27
Installing DB2	28
Server requirements	31
Hardware requirements	31
Software requirements	31
Client requirements	32
Hardware requirements	32
Software requirements	32
Chapter 5. Requirements for Windows	35
Prerequisite software	35
Installing MQSeries	35
Installing DB2	36
Runtime database	37
Buildtime database	37
Server requirements	40
Hardware requirements	40
Software requirements	40
Client requirements	41
Hardware requirements	41
Software requirements	41
Buildtime requirements	42
Hardware requirements	42
Software requirements	43

Chapter 3. Requirements for UNIX

This chapter talks about prerequisite software and describes the hardware and software requirements for MQ Workflow components installed on workstations running the following UNIX based operating platforms:

- AIX
- HP-UX
- Sun Solaris

Prerequisite software

MQSeries and DB2 are prerequisites for MQ Workflow.



You must install both prerequisites on workstations that require them before installing MQ Workflow.

Installing MQSeries

MQSeries is IBM's message/queue communications product used for communicating between components within MQ Workflow.

Before you proceed with the MQ Workflow installation, you must install MQSeries on workstations where you intend installing MQ Workflow components. MQSeries is included as part of the MQ Workflow package.



MQSeries is a prerequisite for the following MQ Workflow components installed on workstations running any of the UNIX based operating systems:

- MQ Workflow Server
- MQ Workflow Administration utility
- MQ Workflow Java CORBA Agent
- MQ Workflow API Runtime Libraries

The MQSeries components you must install depend on the MQ Workflow components you intend installing.

Prior to installing an MQ Workflow Server, **IBM MQSeries Version 5** must be installed on the same workstation. As a minimum, the following MQSeries components must be installed on the intended MQ Workflow Server machine:

mqm.Client.Bnd	MQSeries Client Bundle
mqm.Server.Bnd	MQSeries Server Bundle

mqm.base.runtime	MQSeries Runtime for Client and Server
mqm.base.samples	MQSeries Samples
mqm.base.sdk	MQSeries Base Kit for Client and Server
mqm.client.rte	MQSeries Client
mqm.msg.en_US	MQSeries Messages — U.S. English
mqm.server.rte	MQSeries Server

For MQ Workflow components other than the MQ Workflow Server, **IBM MQSeries Version 5 client** must be installed. As a minimum, the following MQSeries component must be installed on the intended MQ Workflow component machine:

mqm.client.rte	MQSeries Client
-----------------------	-----------------



In addition to the IBM MQSeries Version 5 components, the MQSeries maintenance package **CSD 05** must be applied to the MQSeries installation on all workstations where it has been installed. This is included on the MQ Workflow installation disk in the directory `csd/`. For details regarding MQSeries CSDs, visit the web site <http://www.software.ibm.com/ts/mqseries/support/fixes/>

The following table summarizes the MQSeries requirements for the relevant MQ Workflow components.

Summary for MQSeries requirements	
MQ Workflow components	MQSeries components required
Server	MQSeries V5, plus CSD 05
Administration utility	MQSeries V5 client, plus CSD 05
Java CORBA Agent	MQSeries V5 client, plus CSD 05
API Runtime Libraries	MQSeries V5 client, plus CSD 05

Note: On Sun Solaris MQSeries Version 5.1 is required without the maintenance package CSD 05.

Procedures for installing MQSeries server and client components are not contained in this book. To install MQSeries, see the *Quick Beginnings* online manual selected from the **start.htm** file on the MQSeries CD-ROM that comes as part of the MQ Workflow package.

Installing DB2

DB2 is IBM's universal database management system used by MQ Workflow to store process models and process-relevant data.

Before you proceed with the MQ Workflow installation, you must have a DB2 server installed and running on the intended Runtime database workstation. To do this you must install **IBM DB2 Universal Database Enterprise Edition**. (DB2 is included as part of the MQ Workflow package.) As a minimum for a DB2 server, you must install the following DB2 components on the intended Runtime database workstation:

- Universal Database Enterprise Edition
- Client Configuration Assistant
- Documentation

You may or may not have decided to have the MQ Workflow server and Runtime database on the same workstation. If you intend running the MQ Workflow server and Runtime database on different workstations, you must additionally have a DB2 client installed and running on every workstation where you intend installing MQ Workflow servers. To do this you must install **DB2 Client Application Enabler**. As a minimum for a DB2 client, you must install the following DB2 components on intended MQ Workflow server workstations:

- Client Application Enabler
- Client Configuration Assistant
- Documentation



It is recommended that you use IBM DB2 Universal Database Enterprise Edition Version 5.2. This is included as part of the MQ Workflow program package. However, if you intend using IBM DB2 Universal Database Enterprise Edition Version 5.0, CSD 06 must be applied to your DB2 installation. Details about this are held in the README.1ST file contained on the MQ Workflow CD-ROM.

The following table summarizes the DB2 requirements for the relevant MQ Workflow components.

Summary of DB2 requirements

MQ Workflow components	DB2 components required
Runtime database	DB2 Universal Database Enterprise Edition V5.2
Server	DB2 Client Application Enabler V5.2 Note: This is only required on the MQ Workflow Server machine if you intend installing the Runtime database on a different machine.

Procedures for installing DB2 server and client components are not contained in this book. To install DB2, see the *Quick Beginnings* online manual in the **DB2cy.htm** file on the DB2 CD-ROM that comes as part of the MQ Workflow package.

Server requirements

The following describes the hardware and software requirements for an MQ Workflow Server installed on workstations running AIX, HP-UX, or Sun Solaris.

Hardware requirements

The recommended hardware requirements are:

	AIX requirements	HP-UX requirements	Sun Solaris requirements
Operating environment	RS/6000 ¹	HP 9000 ²	Sun SPARC ³
Memory ⁴	256 MB	256 MB	256 MB
Hard-disk space ⁵	2 GB	2 GB	2 GB

Notes:

1. An RS/6000 uni-processor, SMP or SP2 machine as supported by AIX. For a list of available IBM machines visit the IBM web site at: <http://www.rs6000.ibm.com/hardware>
2. An HP 9000 workstation as supported by HP-UX.
3. A Sun workstation with SPARC processor architecture as supported by Sun Solaris.
4. This must be real memory.
5. This includes Runtime and database data.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements for using the MQ Workflow Server are:

	Version for AIX	Version for HP-UX	Version for Sun Solaris
Operating system	V4.2 for AIX or higher ¹	V10.20 for HP-UX	V7 for Sun Solaris
IBM MQSeries ²	V5.0 for AIX plus CSD 05	V5.0 for HP-UX plus CSD 05	V5.1 for Sun Solaris
IBM DB2 Universal Database ³	V5.2 for AIX	V5.2 for HP-UX	V5.2 for Sun Solaris

Notes:

1. In a high availability environment use:
 - AIX V4.3.1 with HACMP V4.2.2, or

- AIX V4.3.2 with either HACMP V4.2.2, or HACMP V4.3
2. IBM's message/queue communications product used for communicating between components within MQ Workflow. For details see "Prerequisite software" on page 19.
 3. IBM's universal database management system used by MQ Workflow to store process models and process-relevant data. For details see "Prerequisite software" on page 19.

Client requirements

The hardware and software requirements described next are valid for the following MQ Workflow components installed on workstations running AIX, HP-UX, or Sun Solaris:

- MQ Workflow Administration utility
- MQ Workflow Java CORBA Agent

Hardware requirements

The recommended hardware requirements are:

	AIX requirements	HP-UX requirements	Sun Solaris requirements
Operating environment	RS/6000 ¹	HP 9000 ²	Sun SPARC ³
Memory ⁴	64 MB	64 MB	64 MB
Hard-disk space	60 MB	60 MB	60 MB

Notes:

1. An RS/6000 uni-processor, SMP or SP2 machine as supported by AIX. For a list of available IBM machines visit the IBM web site at: <http://www.rs6000.ibm.com/hardware>
2. An HP 9000 workstation as supported by HP-UX.
3. A Sun workstation with SPARC processor architecture as supported by Sun Solaris.
4. This must be real memory.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements and options for using MQ Workflow client components are:

	Version for AIX	Version for HP-UX	Version for Sun Solaris
Operating system	V4.2 for AIX or higher ¹	V10.20 for HP-UX	V7 Sun Solaris
IBM MQSeries ²	V5.0 client for AIX plus CSD 05	V5.0 client for HP-UX plus CSD 05	V5.1 client for Sun Solaris
IBM CSet++ (optional) ³	V3.1.4 for AIX	-	-
IBM C (optional) ³	V3.0 for AIX	-	-
Java (optional) ³	V1.1.6 or V1.1.7	V1.1.6 or V1.1.7	V1.16 or V1.1.7
HP C/ANSI C Developer's Bundle (optional) ³	-	V10.20 for HP-UX	-
Workshop Professional C/SPARC (optional) ³	-	-	V3.0

Notes:

- In a high availability environment use:
 - AIX V4.3.1 with HACMP V4.2.2, or
 - AIX V4.3.2 with either HACMP V4.2.2, or HACMP V4.3
- IBM's message/queue communications product used for communicating between components within MQ Workflow. For details see "Prerequisite software" on page 19.
- Used for the development of programs using the MQ Workflow APIs.

Chapter 4. Requirements for OS/2 Warp

This chapter talks about prerequisite software and describes the hardware and software requirements for installing MQ Workflow components on workstations running OS/2 Warp.

Prerequisite software

MQSeries and DB2 are prerequisites for MQ Workflow.



You must install both prerequisites on workstations that require them before installing MQ Workflow.

Installing MQSeries

MQSeries is IBM's message/queue communications product used for communicating between components within MQ Workflow.

Before you proceed with the MQ Workflow installation, you must install MQSeries on workstations where you intend installing MQ Workflow components. MQSeries is included as part of the MQ Workflow package.



MQSeries is a prerequisite for the following MQ Workflow components installed on workstations running OS/2 Warp:

- MQ Workflow Server
- MQ Workflow Administration utility
- MQ Workflow Client for Lotus Notes
- MQ Workflow Java CORBA Agent
- MQ Workflow APIs Runtime Libraries

The MQSeries components you must install depend on the MQ Workflow components you intend installing.

Prior to installing an MQ Workflow Server, **IBM MQSeries for OS/2 Version 5** must be installed on the same workstation. As a minimum, the following MQSeries components must be installed on the intended MQ Workflow Server machine:

- Base product and servers
- OS/2 Warp client
- Toolkit

For MQ Workflow components other than the MQ Workflow Server, **IBM MQSeries for OS/2 Version 5 client** must be installed. As a minimum, the following MQSeries component must be installed on the intended MQ Workflow component machine:

- MQSeries Client for OS/2 Warp



In addition to the IBM MQSeries for OS/2 Version 5 components, the MQSeries maintenance package **CSD 05** must be applied to the MQSeries installation on all workstations where it has been installed. This is included on the MQ Workflow installation disk in the directory `csd/`. For details regarding MQSeries CSDs, visit the web site <http://www.software.ibm.com/ts/mqseries/support/fixes/>

The following table summarizes the MQSeries requirements for each MQ Workflow component.

Summary for MQSeries requirements	
MQ Workflow components	MQSeries components required
Server	MQSeries for OS/2 V5.0, plus CSD 05
Administration utility	MQSeries for OS/2 V5.0 client, plus CSD 05
Client for Lotus Notes	MQSeries for OS/2 V5.0 client, plus CSD 05
Java CORBA Agent	MQSeries for OS/2 V5.0 client, plus CSD 05
Client APIs Runtime Libraries	MQSeries for OS/2 V5.0 client, plus CSD 05

Procedures for installing MQSeries components are not contained in this book. To install MQSeries, see the *Quick Beginnings* online manual selected from the **start.htm** file on the MQSeries CD-ROM that comes as part of the MQ Workflow package.

Installing DB2

DB2 is IBM's universal database management system used by MQ Workflow to store process models and process-relevant data.

Before you proceed with the MQ Workflow installation, you must have a DB2 server installed and running on the intended Runtime database workstation. To do this you must install **IBM DB2 Universal Database Enterprise Edition**.

(DB2 is included as part of the MQ Workflow package.) As a minimum for a DB2 server, you must install the following DB2 components on the intended Runtime database workstation:

- Universal Database Enterprise Edition
- Graphics Tools
- Client Configuration Assistant
- Control Center
- Documentation



If any of your DB2 client workstations, databases managed by this workstation, or host databases are configured in Japanese, Korean, Simplified Chinese or Traditional Chinese, the appropriate component **Conversion Support** must be installed, too.

You may or may not have decided to have the MQ Workflow server and Runtime database on the same workstation. If you intend running the MQ Workflow server and Runtime database on different workstations, you must additionally have a DB2 client installed and running on every workstation where you intend installing MQ Workflow servers. To do this you must install **DB2 Client Application Enabler**.



During the DB2 installation, the check box **Install Components required to administer remote servers** must be checked.

As a minimum for a DB2 client, you must install the following DB2 components on intended MQ Workflow server workstations:

- Client Application Enabler
- Graphics Tools
- Client Configuration Assistant
- Control Center
- Documentation



It is recommended that you use IBM DB2 Universal Database Enterprise Edition Version 5.2. This is included as part of the MQ Workflow program package. However, if you intend using IBM DB2 Universal Database Enterprise Edition Version 5.0, CSD 06 must be applied to your DB2 installation. Details about this are held in the README.1ST file contained on the MQ Workflow CD-ROM.

The following table summarizes the DB2 requirements for the relevant MQ Workflow components.

Summary of DB2 requirements

MQ Workflow components	DB2 components required
Runtime database	DB2 Universal Database Enterprise Edition V5.2
Server	DB2 Client Application Enabler V5.2 Note: This is only required on the MQ Workflow Server machine if you intend installing the Runtime database on a different machine.

Procedures for installing DB2 server and client components are not contained in this book. To install DB2, see the *Quick Beginnings* online manual in the **DB2cy.htm** file on the DB2 CD-ROM that comes as part of the MQ Workflow package.

Server requirements

The OS/2 Warp MQ Workflow Server operates on workstations running OS/2 Warp Server 4.0 or OS/2 Warp 4.0. The following describes the hardware and software requirements for an MQ Workflow Server installed on OS/2 Warp.

Hardware requirements

The recommended hardware requirements are:

	Requirements
Processor	Pentium ¹
Speed	200 MHz
Memory ²	128 MB
Hard-disk space	2 GB

Notes:

1. This must be an Intel processor.
2. This must be real memory.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements for the MQ Workflow Server are:

Program name	Version
<i>Either</i>	
OS/2 Warp Server	V4.0
<i>or</i>	
OS/2 Warp	V4.0
IBM MQSeries ¹	V5.0 for OS/2 Warp plus CSD 05
IBM DB2 Universal Database Enterprise Edition ²	V5.2 for OS/2 Warp

Notes:

1. IBM's message/queue communications product used for communicating between components within MQ Workflow. For details see "Prerequisite software" on page 27.
2. IBM's universal database management system used by MQ Workflow to store process models and process-relevant data. For details see "Prerequisite software" on page 27.

Client requirements

The hardware and software requirements described next are valid for the following MQ Workflow components installed on workstations running OS/2 Warp 4.0:

- MQ Workflow Administration utility
- MQ Workflow Client for Lotus Notes
- MQ Workflow Java CORBA Agent
- MQ Workflow Client APIs Runtime Libraries

Hardware requirements

The recommended hardware requirements are:

	Requirements
Processor	Pentium ¹
Speed	200 MHz
Memory ²	32 MB
Hard-disk space	60 MB

Notes:

1. This must be an Intel processor.
2. This must be real memory.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements and options for using MQ Workflow Clients are:

Program name	Version
OS/2 Warp	V4.0
IBM MQSeries ¹	V5.0 client for OS/2 plus CSD 05
IBM VisualAge C++ (optional) ²	V3.0
IBM REXX (optional) ²	Not specified ³
Java (optional) ²	V1.1.6 or V1.1.7
Lotus Notes (optional) ⁴	V4.5

Notes:

1. IBM's message/queue communications product used for communicating between components within MQSeries Workflow. For details see "Prerequisite software" on page 27.

2. For the development of programs using the MQ Workflow APIs, any of these tools can be used.
3. IBM REXX is included in OS/2 Warp.
4. Lotus Notes Version 4.5 is required if you intend installing the MQ Workflow Client for Lotus Notes.

Chapter 5. Requirements for Windows

This chapter talks about prerequisite software and describes the hardware and software requirements for installing MQ Workflow components on workstations running:

- Windows NT
- Windows 98
- Windows 95

Prerequisite software

MQSeries and DB2 are prerequisites for MQ Workflow.



You must install both prerequisites on workstations that require them before installing MQ Workflow.

Installing MQSeries

MQSeries is IBM's message/queue communications product used for communicating between components within MQ Workflow.

Before you proceed with the MQ Workflow installation, you must install MQSeries on workstations where you intend installing MQ Workflow components. MQSeries is included as part of the MQ Workflow package.



MQSeries is a prerequisite for the following MQ Workflow components installed on workstations running any of the Windows based platforms:

- MQ Workflow Server
- MQ Workflow Administration utility
- MQ Workflow Client
- MQ Workflow Client for Lotus Notes
- MQ Workflow Java CORBA Agent
- MQ Workflow API Runtime Libraries
- MQWorkflow Development Kit

The MQSeries components you must install depend on the MQ Workflow components you intend installing.

Prior to installing an MQ Workflow Server on Windows NT, **IBM MQSeries for Windows NT Version 5** must be installed on the same workstation. As a

Windows

minimum, the following MQSeries components must be installed on the intended MQ Workflow Server machine:

- MQSeries server for Windows NT
- MQSeries client
- MQSeries toolkit

For MQ Workflow components other than the MQ Workflow Server installed on any of the Windows based operating systems, an **IBM MQSeries for Windows Version 5 client** must be installed. As a minimum, the following **MQSeries Client** component must be installed on the intended MQ Workflow component machine:

- MQSeries Client



In addition to the IBM MQSeries for Windows Version 5 components, the MQSeries maintenance package **CSD 05** must be applied to the MQSeries installation on all workstations where it has been installed. This is included on the MQ Workflow installation disk in the directory `csd/`. For details regarding MQSeries CSDs, visit the web site <http://www.software.ibm.com/ts/mqseries/support/fixes/>

The following table summarizes the MQSeries requirements for each MQ Workflow component.

Summary for MQSeries requirements	
MQ Workflow components	MQSeries components required
Server	MQSeries V5.0, plus CSD 05
Administration utility	MQSeries V5.0 client, plus CSD 05
Standard Client	MQSeries V5.0 client, plus CSD 05
Client for Lotus Notes	MQSeries V5.0 client, plus CSD 05
Java CORBA Agent	MQSeries V5.0 client, plus CSD 05
API Runtime Libraries	MQSeries V5.0 client, plus CSD 05
Development Kit	MQSeries V5.0 client, plus CSD 05

Procedures for installing MQSeries components are not contained in this book. To install MQSeries, see the *Quick Beginnings* online manual selected from the **start.htm** file on the MQSeries CD-ROM that comes as part of the MQ Workflow package.

Installing DB2

DB2 is IBM's universal database management system used by MQ Workflow to store process models and process-relevant data.

DB2 is used to create and manage the Runtime database used by MQ Workflow. It is also used to create and manage the Buildtime database used by MQ Workflow Buildtime unless you decide to use Microsoft Jet Engine as the Buildtime database type.

Runtime database

Before you proceed with the MQ Workflow installation, you must have a DB2 server installed and running on the intended Runtime database workstation. To do this you must install **IBM DB2 Universal Database Enterprise Edition**. (DB2 is included as part of the MQ Workflow package.) As a minimum for a DB2 server, you must install the following DB2 components on the intended Runtime database workstation:

- Graphics Tools
- Documentation



If any of your DB2 client workstations, databases managed by this workstation, or host databases are configured in Japanese, Korean, Simplified Chinese or Traditional Chinese, the component **East Asian Conversion Support** must be installed, too.

You may or may not have decided to have the MQ Workflow server and Runtime database on the same workstation. If you intend running the MQ Workflow server and Runtime database on different workstations, you must additionally have a DB2 client installed and running on every workstation where you intend installing MQ Workflow servers. To do this you must install **DB2 Client Application Enabler**.



During the DB2 installation, the check box **Install Components required to administer remote servers** must be checked.

As a minimum for a DB2 client, you must install the following DB2 components on intended MQ Workflow server workstations:

- Graphics Tools
- Documentation

Buildtime database

For the MQ Workflow Buildtime database, you have a choice of using either:

- IBM DB2 Universal Database Enterprise Edition (for Windows NT)
- IBM DB2 Universal Database Personal Edition for (Windows 98/95)
- Microsoft JetEngine

If you intend using IBM DB2 Universal Database Enterprise/Personal Edition, before you install MQ Workflow Buildtime, you must have a DB2 server

Windows

installed and running on the intended Buildtime database workstation. To do this you must install **IBM DB2 Universal Database Enterprise Edition** (for Windows NT), or **IBM DB2 Universal Database Enterprise Edition** (for Windows 98/95). (DB2 is included as part of the MQ Workflow package.) As a minimum for a DB2 server, you must install the following DB2 components on the intended Buildtime database workstation:

- Graphical Tools
- DB2 ODBC Driver
- Documentation



If any of your DB2 client workstations, databases managed by this workstation, or host databases are configured in Japanese, Korean, Simplified Chinese or Traditional Chinese, the component **East Asian Conversion Support** must be installed, too.

You may or may not have decided to have the Buildtime component and Buildtime database on the same workstation. If you intend running them on different workstations, you must additionally have a DB2 client installed and running on the workstation where you intend installing the MQ Workflow Buildtime component. To do this you must install **DB2 Client Application Enabler** (for Windows NT) or **DB2 Universal Database Personal Edition** (for Windows 98/95).



During the DB2 installation on Windows NT, the check box **Install Components required to administer remote servers** must be checked.

As a minimum for a DB2 client, you must install the following DB2 components on the intended MQ Workflow Buildtime component workstation:

- Graphical Tools
- DB2 ODBC Driver
- Documentation



It is recommended that you use IBM DB2 Universal Database Enterprise Edition Version 5.2. This is included as part of the MQ Workflow program package. However, if you intend using IBM DB2 Universal Database Enterprise Edition Version 5.0, CSD 06 must be applied to your DB2 installation. Details about this are held in the README.1ST file contained on the MQ Workflow CD-ROM.

The following table summarizes the DB2 requirements for the relevant MQ Workflow components.

Summary of DB2 requirements

MQ Workflow components	DB2 components required
Runtime database	DB2 Universal Database Enterprise Edition V5.2
Server	DB2 Client Application Enabler V5.2 Note: This is only required on the MQ Workflow Server machine if you intend installing the Runtime database on a different machine.
Buildtime database	DB2 Universal Database Enterprise/Personal Edition V5.2
Buildtime	DB2 Client Application Enabler V5.2 Note: A DB2 client is only required on the MQ Workflow Buildtime machine if you intend installing the Buildtime database on a different machine.

Procedures for installing DB2 server and client components are not contained in this book. To install DB2, see the *Quick Beginnings* online manual in the **DB2cy.htm** file on the DB2 CD-ROM that comes as part of the MQ Workflow package.

Server requirements

The Windows NT MQ Workflow Server operates on workstations running Windows NT Version 4.0. The following describes the hardware and software requirements for an MQ Workflow Server installed on Windows NT.

Hardware requirements

The recommended hardware requirements are:

	Windows NT Requirements
Processor	Pentium ¹
Speed	200 MHz
Memory ²	128 MB
Hard-disk space	2 GB

Notes:

1. This must be an Intel processor.
2. This must be real memory.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements for the MQ Workflow Server are:

Program name	Version for Windows NT
<i>Either</i>	
Microsoft Win NT Server ¹	V4.0 plus service pack 4
<i>or</i>	
Microsoft Win NT Workstation ¹	V4.0 plus service pack 4
IBM MQSeries ²	V5.0 for Windows NT plus CSD 05
IBM DB2 Universal Database Enterprise Edition ³	V5.2 for Windows NT

Notes:

1. Service Pack 4 is required. See the Microsoft Network or the following Microsoft web site for Windows NT service packs:
<http://www.microsoft.com/msdownload/default.htm>
Only Windows NT for Intel is supported.
2. IBM's message/queue communications product used for communicating between components within MQ Workflow. For details see "Prerequisite software" on page 35.

- IBM's universal database management system used by MQ Workflow to store process models and process-relevant data. For details see "Prerequisite software" on page 35.

Client requirements

The hardware and software requirements described next are valid for the following MQ Workflow components installed on workstations running Windows NT 4.0, Windows 98, or Windows 95:

- MQ Workflow Administration utility
- MQ Workflow Standard Client
- MQ Workflow Client for Lotus Notes
- MQ Workflow Java CORBA Agent
- MQ Workflow API Runtime Libraries
- MQ Workflow Development Kit

Hardware requirements

The recommended hardware requirements are:

	Windows NT requirements	Windows 98/95 requirements
Processor	Pentium ¹	Pentium ¹
Speed	200 MHz	200 MHz
Memory ²	64 MB	48 MB
Hard-disk space	60 MB	60 MB

Notes:

1. This must be an Intel processor.
2. This must be real memory.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements and options for using MQ Workflow Client components are:

	Version for Windows NT	Version for Windows 98/95
Operating system	Windows NT Workstation V4.0 plus service pack 4 ¹	Windows 98/95 ²

Windows

IBM MQSeries ³	V5.0 client for Windows NT plus CSD 05	V5.0 client for Windows 98/95 plus CSD 05
Microsoft Visual C++ (optional) ⁴	V5.0	V5.0
IBM VisualAge C++ (optional) ⁴	V3.5	V3.5
Microsoft VisualBasic (optional) ^{4, 5}	V5.0	V5.0
Java (optional) ⁴	V1.16 or V1.17	V1.16 or V1.17
Lotus Notes (optional) ⁶	V4.5	V4.5

Notes:

1. On Windows NT, Service Pack 4 is required. See the Microsoft Network or the following Microsoft web site for Windows NT service packs:
<http://www.microsoft.com/msdownload/default.htm>
2. On Windows 95, Service Pack 1 or the OEM Service Release 2 (OSR 2) is required. See the Microsoft Network or the following Microsoft web site for Windows 95 service packs:
<http://www.microsoft.com/msdownload/default.htm>
3. IBM's message/queue communications product used for communicating between components within MQSeries Workflow. For details see "Prerequisite software" on page 35.
4. For the development of programs using the MQ Workflow APIs, any of these tools can be used.
5. For the development of programs using the MQ Workflow ActiveX Controls, use Microsoft VisualBasic Version 5.0.
6. Lotus Notes Version 4.5 is required if you intend installing the MQ Workflow Client for Lotus Notes.

Buildtime requirements

MQ Workflow Buildtime operates on workstations running Windows NT 4.0, Windows 98, or Windows 95. The following describes the hardware and software requirements for MQ Workflow Buildtime installed on any of these platforms.

Hardware requirements

The recommended hardware requirements are:

	Windows NT requirements	Windows 98/95 requirements
Processor	Pentium ¹	Pentium ¹
Speed	200 MHz ²	200 MHz ²

Screen resolution	1024x768 ³	1024x768 ³
Memory ⁴	<i>Either</i> 96 MB ⁵ <i>or</i> 64 MB ⁶	<i>Either</i> 64 MB ⁵ <i>or</i> 48 MB ⁶
Hard-disk space	<i>Either</i> 1 GB ⁵ <i>or</i> 700 MB ⁶	<i>Either</i> 1 GB ⁵ <i>or</i> 700 MB ⁶

Notes:

1. This must be an Intel processor.
2. 200 MHz is the minimum recommended speed. Higher speed is recommended for graphical process modeling.
3. It is recommended to use a screen with a diagonal size of 432mm (17") or more.
4. This must be real memory.
5. Required if **DB2** is used to create and access the Buildtime database. In addition, make sure you have sufficient swap space.
6. Required if **Microsoft JetEngine** is used to access the Buildtime database that is installed during configuration. In addition, make sure you have sufficient swap space.

The system unit must have access to a CD-ROM drive.

Software requirements

The software requirements and options for using MQ Workflow Buildtime on Windows NT and Windows 95 are:

	Version for Windows NT	Version for Windows 98/95
Operating system	Windows NT Workstation V4.0 ¹	Windows 98/95 ²
IBM DB2 Universal Database (optional) ³	V5 Enterprise Edition for Windows NT	V5 Personal Edition for Windows 98/95
Microsoft JetEngine ⁴	Not specified	Not specified

Notes:

1. On Windows NT, Service Pack 4 is required. See the Microsoft Network or the following Microsoft web site for Windows NT service packs:
<http://www.microsoft.com/msdownload/default.htm>
2. On Windows 95, Service Pack 1 or the OEM Service Release 2 (OSR 2) is required. See the Microsoft Network or the following Microsoft web site

Windows

for Windows 95 service packs:

<http://www.microsoft.com/msdownload/default.htm>

3. IBM's universal database management system used by MQ Workflow Buildtime to store process models and process-relevant data. For details see "Prerequisite software" on page 35.
4. Microsoft's database management system. MQ Workflow Buildtime uses Microsoft JetEngine to access and store process models and process-relevant data.



You must install IBM's DB2 Universal Database Enterprise Edition on your Windows NT Buildtime workstation or IBM's DB2 Personal edition on your Windows 98 or Windows 95 Buildtime workstation unless you intend using Microsoft JetEngine to access the Buildtime database. Microsoft JetEngine is automatically installed during the Buildtime installation or upgraded if a previous installation already exists on your workstation.

Part 3. Installing MQ Workflow

Chapter 6. Installing on UNIX	47
Preparing for installation	47
Preparing the directory /var/fmc	47
Installing software on AIX	48
Installing software on HP-UX	50
Installing software on Sun Solaris	51
Chapter 7. Installing on OS/2 Warp	53
Installing the software	53
Chapter 8. Installing on Windows	55
Installing the software	55
Chapter 9. Preparing and administering the Lotus Notes database templates	57
Installing the client components for Lotus Notes	57
Installing the MQ Workflow Client for Lotus Notes	57
Installing the Lotus Notes database templates	57
Adminstrating the database templates	58
Creating databases from the database template	60

Chapter 6. Installing on UNIX

This chapter describes the procedures for installing MQ Workflow components on workstations running the following UNIX based operating platforms:

- AIX
- HP-UX
- Sun Solaris



If you have an old version of MQ Workflow installed and you want to use data from this version with the new release of MQ Workflow, you must migrate your existing installation as explained in “Appendix F. Migrating data from a previous release” on page 163. You must do this before installing MQ Workflow. Migration is not possible after installing MQ Workflow.

Preparing for installation



Before installing MQ Workflow on any of the UNIX based platforms, make sure that the prerequisite software is installed as explained in “Prerequisite software” on page 19.

For any of the UNIX based operating platforms you are required to perform simple preparation checks on your workstation before installing MQ Workflow as the following describes.

Preparing the directory `/var/fmc`

During installation, the directory `/var/fmc` is created. This directory contains the following subdirectory:

`/var/fmc/ipc`

System files used by MQSeries require temporary disk space for interprocess communication purposes. This subdirectory is used for that purpose. The amount of disk space required depends on how MQ Workflow is used, but is usually not more than 5 MB. Before proceeding with the installation, make sure that at least 5 MB of disk space is available for this directory.

Installing software on AIX

These instructions describe how to install MQ Workflow on an AIX workstation using the AIXwindows version of the System Management Interface Tool (smit). If you install an MQ Workflow Server on a workstation that does not have AIXwindows, use the character-based version of the System Management Interface Tool (smitty). The sequence of panels is the same as for smit.

1. Log on to the workstation as root and enter the root password.
2. Insert the MQ Workflow installation disk into the CD-ROM drive.
3. Start the System Management Interface Tool by entering **smit** or **smitty** at a shell prompt.
4. Step through the installation windows by selecting the appropriate options until the **MULTI-SELECT LIST** window appears.
5. In the **MULTI-SELECT LIST** window, the following list of components appears. Select the packages for the MQ Workflow components you want to install.

fmc		ALL	fmc_all_filesets
MQSeries Workflow API Development Kit			fmc.api.adt
MQSeries Workflow API Runtime			fmc.api.rte
MQSeries Workflow Administration Utility			fmc.UTIL
MQSeries Workflow Base Common Files			fmc.base
MQSeries Workflow Java API Beans			fmc.java.beans
MQSeries Workflow Java CORBA Agent			fmc.java.agent
MQSeries Workflow Java Documentation			fmc.java.doc
MQSeries Workflow Java Samples			fmc.java.samples
MQSeries Workflow Other Common Files			fmc.baseext
MQSeries Workflow Program Execution Agent			fmc.pea
MQSeries Workflow Rtdb and Srvr Common Files			fmc.basertdb
MQSeries Workflow Runtime Database Utilities			fmc.rtdbutil
MQSeries Workflow server			fmc.server
fmcdefault		ALL	fmcdefault_all_filesets
MQSeries Workflow Default Configuration			fmcdefault.config



Selecting the `fmc` package installs all MQ Workflow components.

Selecting the `fmcdefault` package is used to install MQ Workflow components with default configuration values preset.

Selecting both of these packages is useful for installing a stand-alone MQ Workflow setup with preset configuration values.

6. After selecting the MQ Workflow components you want to install, select the appropriate options to start the installation.

After starting the installation, program files are copied to the newly created MQ Workflow installation directory, `/usr/lpp/fmc`. This may take several minutes to complete.

7. When the installation is complete, leave smit from the **Exit** menu.



MQ Workflow is installed in the same language that your system is set to, unless your system is using a language not supported by MQ Workflow. In this case, U.S. English is used. For details about language settings, refer to “Appendix C. Language settings” on page 145.

Installing software on HP-UX

These instructions describe how to install MQ Workflow on an HP-UX system using the SD-UX software install program **swinstall**.

1. Log on to your system as root and enter the root password.
2. Insert the MQ Workflow installation disk into the CD-ROM drive.
3. Mount this CD-ROM with a mount point /cdrom. For details on how to mount a CD-ROM, refer to the HP-UX Model...Owner's Guide.
4. Invoke the SD-UX software install program by entering at a command prompt:

swinstall

If the environment variable **DISPLAY** is set correctly, the XWindows version of **swinstall** is displayed, otherwise the terminal version is displayed.

5. In the Panel **Source Depot Type**, select **Network Directory/CDROM**.
6. In the panel **Source Home Name...** enter your hostname.
7. In the Panel **Source Depot Path...** enter **/cdrom/hp-ux/fmc**.
8. Select **OK**. A panel appears displaying MQ Workflow.
9. Press **Enter**. A panel appears displaying the following list of MQ Workflow components:

FMC-API-ADT	MQSeries Workflow API Development Kit
FMC-API-RTE	MQSeries Workflow API Runtime
FMC-AUTIL	MQSeries Workflow Administration Utility
FMC-BASEEXT	MQSeries Workflow Other Common Files
FMC-PEA	MQSeries Workflow Program Execution Agent
FMC-SERVER	MQSeries Workflow Binaries
FMC-JAVA_AGENT	MQSeries Workflow Java CORBA Agent
FMC-JAVA_BEANS	MQSeries Workflow Java API Beans
FMC-RTDBUTIL	MQSeries Workflow Import/Export
10. Choose the MQ Workflow components you want to install by:
 - Selecting the MQ Workflow components.
 - Selecting **Action** and then **Mark For Install m** from the menu options.
11. After all MQ Workflow components have been selected, select **Action** and then **Install (analysis)** from the menu options.
12. When **Ready** is displayed in the **Status** field, select **OK**.
13. A panel appears. Select **Yes**.
14. A panel appears. To start the installation, select **OK**.
The installation starts and program files are copied to your system. This may take several minutes to complete.
15. When the installation is complete, select **Done**, and exit **swinstall**.

Installing software on Sun Solaris

These instructions describe how to install MQ Workflow on a workstation running Sun Solaris.

1. Log on to your system as root and enter the root password.
2. Insert the MQ Workflow installation disk into the CD-ROM drive. The CD-ROM is mounted automatically.
3. Set the variable **DISPLAY** to **'hostname':0**.
4. Start **admintool** as root.
5. From the menu bar, select **Browse/Software**→**Edit/Add**.
The **set source media** dialog box appears.
6. Select **location: CD with Volume Management**.
7. Enter the drive letter of your CD-ROM in the appropriate field.
8. Press the **OK** button. A panel appears displaying the following list of MQ Workflow components:

FMC-API-ADT	MQSeries Workflow API Development Kit
FMC-API-RTE	MQSeries Workflow API Runtime
FMC-AUTIL	MQSeries Workflow Administration Utility
FMC-BASEXT	MQSeries Workflow Other common files
FMC-PEA	MQSeries Workflow Program Execution Agent
FMC-SERVER	MQSeries Workflow Binaries
FMC-JAVA_AGENT	MQSeries Workflow Java Agent
FMC-JAVA_BEANS	MQSeries Workflow Java Beans
FMC-RTDBUTIL	MQSeries Workflow Import/Export
9. Select the MQ Workflow components you want to install.
10. Press the **install** button. The installation program starts.
11. Step through the installation program by selecting the appropriate options until the installation is complete.

Chapter 7. Installing on OS/2 Warp

This chapter describes the procedures for installing MQ Workflow components on workstations running OS/2 Warp.



If you have an old version of MQ Workflow installed and you want to use data from this version with the new release of MQ Workflow, you must migrate your existing installation as explained in “Appendix F. Migrating data from a previous release” on page 163. You must do this before installing MQ Workflow. Migration is not possible after installing MQ Workflow.

Installing the software



Before installing MQ Workflow on OS/2 Warp, make sure that the prerequisite software is installed as explained in “Prerequisite software” on page 19.

To install MQ Workflow components on an OS/2 Warp workstation:

1. With the MQ Workflow installation disk in the CD-ROM drive start the installation program by opening an OS/2 Warp command prompt window and entering:

```
x:\OS2\lng\INSTALL
```

where:

x is the drive letter for the CD-ROM drive.

lng is replaced by a three-letter abbreviation that represents the language version you want to install. For a list of abbreviations refer to “Appendix C. Language settings” on page 145.

For example, to install the English version of MQ Workflow from your E drive, enter:

```
E:\OS2\ENU\INSTALL
```

2. The **IBM MQSeries Workflow Version 3.2** window is displayed. Select **Continue**.
3. The **Install** window is displayed. Select **Update CONFIG.SYS** and select **OK**. This allows the installation program to add MQ Workflow variables to your **CONFIG.SYS** file automatically. The MQ Workflow variables that are added are described in “Appendix B. MQ Workflow profile and system environment settings” on page 123.

Note: The installation program saves your original **CONFIG.SYS** file as **CONFIG.00n** in the root directory of your startup drive, where n is any number starting from 1.

Deselect **Update CONFIG.SYS** and select **OK** if you want to add the settings to the **CONFIG.SYS** file yourself. The installation program writes an updated configuration file named **CONFIG.ADD** to the directory that contains your original **CONFIG.SYS** file. Using the settings in **CONFIG.ADD**, you can manually update the **CONFIG.SYS** file.

4. The **Install-directories** window is displayed containing the following list of components. Select the MQ Workflow components you want to install.
 - Server
 - Administration Utility
 - Client for Lotus Notes
 - Lotus Notes Database Templates
 - Client APIs Runtime Libraries
 - Program Execution Agent
 - Java Agent
 - Java Beans
 - Development Kit
 - Runtime Database Utilities

Select **OK**.

5. The **Installation directory** field contains the directory **D:\FMCOS2**. This is the default directory for installation. If you do not want to use this as your installation directory, enter a new name.
6. Select **Continue**. Program files are copied to the directory you specified in the **Installation directory** field. This may take several minutes to complete.
7. The **Setup complete** window is displayed. Click **Finish** and restart your workstation to activate the changes made by the installation program.

Chapter 8. Installing on Windows

This chapter describes the procedures for installing MQ Workflow components on workstations running:

- Windows NT
- Windows 98
- Windows 95



If you have an old version of MQ Workflow installed and you want to use data from this version with the new release of MQ Workflow, you must migrate your existing installation as explained in “Appendix F. Migrating data from a previous release” on page 163. You must do this before installing MQ Workflow. Migration is not possible after installing MQ Workflow.

Installing the software



Before installing MQ Workflow on any of the Windows based platforms, make sure that the prerequisite software is installed as explained in “Prerequisite software” on page 35.

Additionally for Windows NT, make sure that you have **administration rights** before installing MQ Workflow components.

To install MQ Workflow components on a workstation running any of the supported Windows operating platforms:

1. With the MQ Workflow installation disk in the CD-ROM drive, start the installation program by opening a command prompt window and entering:
`x:\WINDOWS\SETUP`
where *x* is the drive letter for the CD-ROM drive.
2. A window appears containing a list of languages. Select the language that you want to use.

Note: After installing MQ Workflow, this language cannot be changed.

3. The **Welcome** window is displayed. Select **Next**.
4. The **Choose destination location** window is displayed with one of the following default directories set as the destination location for installation:

D:\FMCWINNT for Windows NT

D:\FMCWIN98 for Windows 98

D:\FMCWIN95

for Windows 95

If you do not want to use this as your installation directory, enter a new destination location. Select **Next**.

5. For Windows NT only, the **Setup-type** window is displayed containing the following list of MQ Workflow categories:
 - All Components
 - Administrative Components
 - Buildtime
 - Clients
 - Development Kit
 - Java
 - Server

Highlight the category that contains the components you want to install and select **Next**.



On Windows 95 and Windows 98, instead of the **Setup-type** window, the **Select components** window is displayed containing a full list of components. Choose the components you want to install, select **Next**, and then go to step 7.

6. For Windows NT only, the **Select Components** window is displayed containing a list of components. The list depends on the category you previously selected. Choose the MQ Workflow components you want to install. Select **Next**.
7. The **Select Program Folder** window is displayed. Select or create a name for the Program folder you wish to use for MQ Workflow. When created, this folder appears on the Windows Start menu under Programs with the name you entered. Select **Next**.
8. The **Start Copying Files** window is displayed. Click **Next**. Setup copies program files to the MQ Workflow installation directory. This may take several minutes to complete.
9. The **Setup Complete** window is displayed. Click **Finish** and restart your workstation to activate the changes made by the installation program.

Chapter 9. Preparing and administering the Lotus Notes database templates

This chapter describes how to prepare and administer the Lotus Notes database templates for use with the MQ Workflow Client for Lotus Notes on either OS/2 Warp or any of the Windows based operating systems.

Installing the client components for Lotus Notes

The installation of the client components consists of these parts:

- Installing the MQ Workflow Client for Lotus Notes
- Installing the Lotus Notes database templates
- Administrating the databases

Installing the MQ Workflow Client for Lotus Notes

The client is installed by selecting **Client for Lotus Notes** during the installation. For details on how to install the client, see “Chapter 7. Installing on OS/2 Warp” on page 53 and “Chapter 8. Installing on Windows” on page 55.

Note: The MQ Workflow Client for Lotus Notes must be installed on the workstations of the Lotus Notes administrator and all users.

Installing the Lotus Notes database templates

You should be a Lotus Notes administrator to install the database templates on your workstation and then:

- Customize the installation according to your organization’s needs
- Provide the MQ Workflow Client for Lotus Notes users with their own database

During the MQ Workflow installation, select the component **Lotus Notes database templates** to install the following parts:

1. Database templates:
 - Client database template, stored as FMC4Rxxx.NTF. This database template comprises the client functions for Lotus Notes equivalent to the functions of the Standard Client of MQ Workflow.
 - Client sample database template, stored as FMC4Sxxx.NTF, containing additional examples. These examples demonstrate how you can

OS/2 Warp, Windows

implement MQ Workflow activities in Lotus Notes and how you can extend the standard functions offered by the Standard Client.

Where *xxx* represents the language code as listed in “Appendix C. Language settings” on page 145.

2. External LotusScript files:
 - General Notes functions, stored as EXMP4API.LSS
 - Error return codes, stored as EXMP4ARC.LSS

These parts are stored in the directory:

`\FMC\LNC`

where *FMC* is the installation directory that you specified during the MQ Workflow installation.

The database names for the database templates on the MQ Workflow CD-ROM are **IBM MQSeries Workflow V3R1** and **IBM MQSeries Workflow (Sample)**.

To prepare the MQ Workflow Client for Lotus Notes so that it can be accessed from the Lotus Notes environment, proceed as follows:

1. Copy the database templates into the Lotus Notes data directory, which is usually:
`x:\NOTES\DATA`
where *x* is the drive letter.
2. Copy the external LotusScript files into the Lotus Notes directory, which is usually:
`x:\NOTES`
where *x* is the drive letter.

To use the MQ Workflow Client for Lotus Notes in the Notes environment, you must follow the steps as described in “Administrating the database templates”.

Administrating the database templates

The following steps describe the tasks for the Lotus Notes administrator to make the MQ Workflow Client for Lotus Notes available to the users.

You can use the sample database template as a basis for the databases that you distribute to your users. The database template is the equivalent to the

MQ Workflow Client, whereas the sample database template contains a sample application for a credit request solution. For details on the sample application and options for customizing a database template, see the *IBM MQSeries Workflow: Programming Guide*.

To prepare the sample database template for distribution to the users, follow these steps:

1. Make sure that the database template FMC4Rxxx.NTF is in the Lotus Notes data directory.
2. Make sure that the sample database template FMC4Sxxx.NTF is in the Lotus Notes data directory.
3. Make sure that the external LotusScript files are in the Lotus Notes directory.
4. Add the database templates to your Lotus Notes workspace:
Select **File - Database - Open** and select the name of the database template that you want to add in the Filename field.
5. If you plan to customize one of the templates:
 - Select the database.
 - Make a copy on your workstation using Lotus Notes **File - Database - New Copy**.
 - Make sure **Database design and documents** is selected.
 - Make sure **Access Control List** is selected.
 - Customize it to your organization's needs and specifications, that is, for example, access control list (ACL), forms, and views.
6. Make sure that the ACL is correct for your installation. The access level of the -Default- group and of the database manager is copied to the database to be used by the user.

Consider the following security aspects:

- For the -Default- group the access level should be **No Access**. Only authorized users should have access to the databases.
 - When databases are created from the template by the database administrator, the administrator becomes manager of the resulting databases. This can be a security problem.
 - To ensure regular design refreshes, the Local Domain server name should be part of the ACL for the template.
 - When you select **Distribute MQSeries Workflow Template**, the user name will be added automatically to the ACL with **Editor** access.
7. Test your changes to be sure to have a sound environment.
 8. Install the resulting database templates on the Lotus Notes server.
 9. Install the external LotusScript files on the Lotus Notes server.

10. Create a database for each of your Notes Client users. You can use the **Distribute MQSeries Workflow Template** function (see “Creating databases from the database template”) to perform this task.
11. Users must add the database to their Notes workspace.
12. Make sure that the MQ Workflow Client for Lotus Notes is installed on the workstation of the user (see “Installing the MQ Workflow Client for Lotus Notes” on page 57).

Creating databases from the database template

The database administrator can automatically create databases from either of the database templates for a user or a group of users in the following way:

1. Select the database template you want to use.
2. In the Lotus Notes Menu select **Actions** and then **Distribute MQSeries Workflow Template**.
3. You are prompted to enter:
 - The name of the server where you want to create one or more databases. The server where the template resides is displayed as default, which is usually the Lotus Notes server. If you leave the field empty, the databases are created on your local workstation.
 - A directory name for the resulting databases, which is added as subdirectory to the Lotus Notes data directory. The default subdirectory is `fmc`. If you leave the field empty, the databases are stored in the Lotus Notes data directory.
 - A user or group name. The Lotus Notes address books can be used to select a group or user name. If you enter a user name manually, it need not be in an address book. However, when you specify a group, the address books of the current session are used to find the members of the group. Make sure that the user names are consistent with the names in the ACL of the server. This is especially important when you use hierarchical names.
4. Select the **Create Database(s)** button:
 - A database is created from the database template for the specified user or all users of the specified group.
 - You are prompted to confirm the database creation for each user so that you can exclude database creation for individual members of the group.
 - The database name is the one you specified as name for the template. If no name is specified, the default names are used:
IBM MQSeries Workflow V3R1 or
IBM MQSeries Workflow (Sample)

with a suffix of **for name**, where *name* represents the user's first initial and the last name to distinguish the databases.

- The database file name is *shortuser.NSF*, where *shortuser* consists of the first letter of the first name and the first seven letters of the last name of the user.
- The user is added to the ACL list with **Editor** access. The name that is added corresponds to the user name for which you were prompted in step 3 on page 60. If you created databases for a group, the user names correspond to those entered in the address book as members of the group.
- All documents you may have created are copied to the new database.

Part 4. Configuring MQ Workflow

Chapter 10. Configuring your installation	65
Configuration tools	65
Configuration utility	65
Starting the configuration utility	66
Advanced configuration utility	66
Starting the advanced configuration utility	66
Configuring components	66
Configuring a server	67
Runtime database information	68
Queue manager information	70
Configuring Runtime Database Utilities	71
Configuring clients	72
Configuring Buildtime	74
IBM DB2 Universal Database.	74
Microsoft Jet Engine.	75
Configuring a Java CORBA Agent	76
MQ Workflow profiles	78
Multiple MQ Workflow setups	79

Chapter 10. Configuring your installation

This chapter introduces you to the configuration stage in the MQ Workflow setup process. It provides a general overview of the configuration process. It is intended that the information contained in this chapter will give you the understanding required to use the configuration tools provided and configure MQ Workflow.

Configuration tools

Configuring your installation is imperative for operating and communication purposes and must be performed after installation using one of the configuration tools provided.



Configuration must be performed on all workstations where you have installed MQ Workflow components.

Configuring your installation involves selecting the components you want to configure, setting up and creating Buildtime and Runtime databases, configuring MQSeries so that MQ Workflow components can communicate with each other, and providing general information about your MQ Workflow setup. This is done by using one of the configuration tools provided. Two types of tools are available for this purpose:

Configuration utility

This is a command-line interface for use on all supported operating platforms.

Advanced configuration utility

This is a windows style general user interface for use on OS/2 Warp or any of the supported Windows based operating platforms.

Which tool you use is both a question of choice and the operating system your MQ Workflow components are installed on. A brief description about each configuration tool is given in the following.

Configuration utility

The configuration utility is a command-line user interface for configuring MQ Workflow components installed on any of the supported operating platforms.

You use the configuration utility to perform configuration tasks by selecting objects from menu lists and supplying information about your MQ Workflow

setup when prompted to do so. The options contained in the menu lists and the information you must supply depends on the MQ Workflow components you have installed.

With the configuration utility you can list existing configurations and select one to work on, or simply create a new configuration.

Starting the configuration utility

The configuration utility is started by simply entering the **fmczutil** command at a command prompt.

Advanced configuration utility

The advanced configuration utility is a windows style general user interface for configuring MQ Workflow components installed on OS/2 Warp or any of the supported Windows based operating platforms.

You use the advanced configuration utility to perform configuration tasks by entering configuration information into data fields and selecting items using check boxes and radio buttons. The information you supply is entered within pages selected by using the <<**Back** and **Next**>> buttons located at the bottom of each page. The pages that are available in the advanced configuration utility depend on the MQ Workflow components you have installed.

With the advanced configuration utility you can perform all the same configuration tasks as you can with the command-line configuration utility previously described.

Starting the advanced configuration utility

The advanced configuration utility can be started by simply clicking on the advanced configuration utility icon on your desktop or either from a command prompt by entering the **fmczacfg** start command.

Configuring components

Each MQ Workflow component installed on all workstations must be configured using one of the available configuration tools. By configuring MQ Workflow components, you give them access to database and communications resources and define them to be part of a specific MQ Workflow system. The configuration process is used to bind MQ Workflow and its prerequisite software together and carry out some basic setup tasks.

During the configuration process, you must supply information about your MQ Workflow setup in order to configure MQSeries, set up and create

databases, and perform general configuration tasks. The information you are required to supply depends on the MQ Workflow components you have installed and want to configure on your workstation.



During the configuration stage, default values are provided that can be used to create a default MQ Workflow setup. When configuring a stand-alone system for test or demonstration purposes, you are recommended to use these values.

The MQ Workflow configuration tools are used to perform configuration tasks for the following categories of MQ Workflow components:

- Server
- Runtime database utilities
- Client
- Buildtime
- Java CORBA Agent

You can use the MQ Workflow configuration tools to configure MQ Workflow components only if they are installed on your workstation. The configuration tools allow you to either work on an existing configuration or create a new one. Creating a new configuration is always the first thing you do after installing an MQ Workflow component.



If you are configuring MQ Workflow components on a Windows NT workstation, make sure that you have **administration rights**.

Since DB2 commands are executed during configuration, your user ID that gives you administration rights **must meet the DB2 rules for user IDs**. For details about the DB2 rules for user IDs, see the *IBM DB2 Universal Database for Windows NT: Quick Beginnings* online manual.

Configuring a server

Before using any of the configuration tools to configure a server, make sure that:

- **MQSeries has been installed and started.**¹
- **DB2 has been installed and started.**²
- **A DB2 instance exists.**³

1. "Start MQSeries" on page 120 provides information about starting MQSeries. Starting MQSeries is only necessary on Windows NT.

2. "Start DB2" on page 117 provides information about starting DB2.

3. If a DB2 instance does not exist, create a new one as explained in the *IBM DB2 Universal Database: Quick Beginnings* online manual. Either a remote or local instance can be used.



For OS/2 Warp or Windows NT, if you accepted the default values provided when installing MQSeries or DB2, they are configured to start during system startup and a DB2 instance is created automatically.



If the DB2 instance you want to use exists on a remote workstation, it has to be made accessible to the MQ Workflow server running on your workstation. “Access a remote DB2 instance” on page 118 describes the steps you need to take to do this.



Additionally, for AIX, HP-UX, and Sun Solaris, you must also add the following line to the DB2 script file after the line that initializes the **DB2DIR** variable:

```
export DB2DIR
```

For details about the DB2 script file, refer to the *IBM DB2 Universal Database for UNIX: Quick Beginnings* online manual.

To configure an MQ Workflow Server, you must supply information about the Runtime database and the queue manager you intend using, as well as some general information such as the name of the system and system group that the MQ Workflow Server is part of as the following explains.

Runtime database information

Every MQ Workflow system uses a Runtime database. It is possible that several MQ Workflow systems use the same Runtime database. To use a Runtime database, your MQ Workflow server must be given access to it. To do this, you must provide certain information about your setup to the configuration utility.

The first thing you need to do in order to give your MQ Workflow server access to a Runtime database is to select a DB2 instance. Selecting a DB2 instance allows you to either create a new Runtime database or select a Runtime database associated with the preselected DB2 instance if one exists.

If you have previously configured an MQ Workflow system, it is possible that a Runtime database already exists. In this case, you have the possibility of using the same database. If you decide not to, you can also create a new one.

If a Runtime database does not yet exist, you have no choice but to create a new one. To create a new database you must provide certain information to the configuration utility that includes:

Database name

The name of the new Runtime database you want to use.

Database location

The drive on the database server where the database is to be created, for example, D:

Containers location

The directory path where the database containers are to be created.



You should be aware that over a period of time, as the database is used, the database grows in size. Before supplying a location for the database containers, make sure that enough space is available in this directory and that more space is made available as the database grows in size.

Log files location

A path that points to a directory on another physical disk where a log file is created that can then be used to restore all lost data in case of a failure.

The Runtime database must contain some basic settings that are required to make it a valid MQ Workflow database. The settings indicate which MQ Workflow system uses the Runtime database and is used by the MQ Workflow server to access the Runtime database. The settings required are:

System group

A name for the system group that contains the system that the MQ Workflow server is a member of.

System

A name for the system that contains the MQ Workflow server you are configuring.

Queue prefix

A high-level qualifier for queue names in an MQ Workflow system. It is typically determined by your organizations naming conventions and is particularly required in an MVS environment, where the high-level qualifier (the queue prefix) can be used to provide RACF protection. In workstation environments, it is recommended that you use the default of **FMC**.

Queue manager

A name for the queue manager associated with your system. Queue managers are responsible for managing communications within an MQ Workflow system. Only one queue manager is required per system. The name you use must be unique, that is, no other queue manager can be given the same name.

If a Runtime database already exists and is accessible, it is displayed. By selecting a database, you configure it to be the Runtime database used by your MQ Workflow system.



If the runtime database you want to use is installed on a remote workstation, it has to be made accessible to the MQ Workflow server running on your workstation. “Access a remote DB2 database” on page 119 describes the steps you need to take before access to a remote database is possible.

If you select a database that is already used by one or more MQ Workflow systems, the systems that use it are displayed. Selecting a system from the list displayed uses the configuration settings for this system to configure your MQ Workflow server. You should keep in mind that only one MQ Workflow system can exist within any MQ Workflow system group, and that this system must be unique. Therefore, when selecting an MQ Workflow system, make sure that no other MQ Workflow server uses the same configuration settings as those specified by the selected MQ Workflow system.

If you want, you can create a new system by entering a new system name. Your MQ Workflow server is then configured to be a member of this new system.

Queue manager information

As well as information about the Runtime database, you must provide information that is required for configuring communications. The information you must provide is used to configure MQSeries for your MQ Workflow server and includes:

Queue manager

A name for the queue manager associated with your system as explained on page 69.

Queue prefix

A high level qualifier for queue names in an MQ Workflow system as explained on page 69.

Principal name

(For UNIX only) A user ID that the Object Authority Manager (OAM) uses to grant authorization to use MQSeries resources, for example, channels, queues, and queue managers. When no name is specified, the OAM service is disabled. For further information see the *MQSeries System Administration* on-line manual.

Log type

All actions performed by the queue manager are recorded into log files. The number and size of log files used to record data is determined during the MQSeries installation. The default number is 3 files. These logs are provided for error recovery and backup. There are two ways of maintaining records of queue manager activities: circular logging and linear logging.

Circular log

Use circular logging if all you want is restart recovery, using the log to roll back transactions that were in progress when the system stopped.

Circular logging keeps all restart data in a ring of log files. Logging fills the first file in the ring, then moves on to the next, and so on, until all the files are filled. It then goes back to the first file in the ring and starts again. This continues as long as the product is in use, and has the advantage that you never run out of log files.

Linear log

Use linear logging if you want both restart recovery and media or forward recovery (recreating lost or damaged data by replaying the contents of the log).

Linear logging keeps the log data in a continuous sequence of files. Space is not reused, so you can always retrieve any record logged from the time that the queue manager was created. As disk space is finite, you may have to think about some form of archiving.

Communication protocol

The communication protocol used by MQSeries. To select the communications protocol to be used, you must specify:

- The IP address or host name and port number if TCP/IP is the communication protocol used.
- The local NetBios name if NetBios is the communication protocol used.
- The fully-qualified CP name if APPC is the communication protocol used.

Client channel definition table

A file that contains definitions and algorithms that are used to connect the components of an MQ Workflow system together. This file is created when you installed the MQ Workflow server and is updated during the configuration stage with the information you previously entered.

Configuring Runtime Database Utilities

Before using any of the configuration tools to configure runtime database utilities, make sure that:

- **DB2 has been installed and started.**⁴
- **A DB2 instance exists.**⁵



For OS/2 Warp and any of the Windows based operating platforms, if you accepted the default values provided when installing DB2, DB2 is configured to start during system startup and a DB2 instance is created automatically.



If the DB2 instance you want to use exists on a remote workstation, it has to be made accessible to the MQ Workflow server running on your workstation. “Access a remote DB2 instance” on page 118 describes the steps you need to take to do this.



Additionally, for AIX, HP-UX, and Sun Solaris, you must also add the following line to the DB2 script file after the line that initializes the **DB2DIR** variable:

```
export DB2DIR
```

For details about the DB2 script file, refer to the *IBM DB2 Universal Database for UNIX: Quick Beginnings* online manual.

To configure runtime database utilities, you must supply the same information about the Runtime database you intend using as described in “Runtime database information” on page 68.

Configuring clients

The following MQ Workflow components are configured in the same way and for this reason can be thought of belonging to a general client category:

- The Administration Utility
- The Standard client
- The Client for Lotus Notes
- The API Runtime Libraries
- Development Kit

Before using any of the configuration tools to configure these client components, make sure that:

- **MQSeries has been installed and started on the client machine.**⁶

4. “Start DB2” on page 117 provides information about starting DB2.

5. If a DB2 instance does not exist, create a new one as explained in the *IBM DB2 Universal Database: Quick Beginnings* online manual. Either a remote or local instance can be used.

6. “Start MQSeries” on page 120 provides information about starting MQSeries. Starting MQSeries is only necessary on Windows NT.



For OS/2 Warp and any of the Windows based operating platforms, if you accepted the default values provided when installing MQSeries, MQSeries is configured to start during system startup automatically.

Configuring client components involves supplying information required for communication purposes. The information you supply is used to make a connection between the client and the MQSeries queue manager on the MQ Workflow server machine. The information you need to supply to do this includes:

Client channel definition channel

A file that contains definitions and algorithms that are used to connect the components of an MQ Workflow system together. This file is created on the MQ Workflow server machine and is updated during the MQ Workflow server configuration stage. This file must be made available to your MQ Workflow client. If you have installed the MQ Workflow server and client on different workstations within a network, you have two options. You can either copy the file from the MQ Workflow server workstation to your local MQ Workflow client component workstation or access the file directly over the network. To access the file directly, your MQ Workflow client component machine must be given read access to the file.

System group

A name for the system group that contains the system that the client is a member of.

System

A name for the system that contains the client component you are configuring and the MQ Workflow server you want to connect to.

Queue prefix

A high-level qualifier for queue names in an MQ Workflow system as explained on page 69.

Queue manager

A name for the queue manager associated with your system as explained on page 69.



Note about the Client for Lotus Notes: After installing and configuring a Client for Lotus Notes and the Lotus notes database templates, if you want to implement the sample database template, you must:

Use the Import/Export utility to import the sample FDL file FMC4SMP.FDL into the Runtime database that you want to use, and translate the NotesCreditRequest process. (The Import/Export utility is part of the Runtime Database Utilities component.) For details on how to import an FDL file, see the *IBM MQSeries Workflow: Getting Started with Buildtime* book.

Configuring Buildtime

MQ Workflow Buildtime requires access to a relational database for storing process models and process-relevant data created using Buildtime. Configuring Buildtime is necessary for accessing a relational database. The Buildtime component can be configured to use either of the following database management systems:

- IBM DB2 Universal Database
- Microsoft Jet Engine

The information you need to supply to configure Buildtime depends on the database type you select.

IBM DB2 Universal Database

If you intend using **IBM DB2 Universal Database** as the database type, before using any of the configuration tools to configure Buildtime, make sure that:

- **DB2 has been installed and started.**⁷
- **A DB2 instance exists.**⁸



For any of the Windows based operating platforms, if you accepted the default values provided when installing DB2, DB2 is configured to start during system startup and a DB2 instance is created automatically.



If the DB2 instance you want to use exists on a remote workstation, it has to be made accessible to your MQ Workflow Buildtime workstation. “Access a remote DB2 instance” on page 118 describes the steps you need to take to do this.

7. “Start DB2” on page 117 provides information about starting DB2.

8. If a DB2 instance does not exist, create a new one as explained in the *IBM DB2 Universal Database: Quick Beginnings* online manual. Either a remote or local instance can be used.

If you have previously configured MQ Workflow, it is possible that a database already exists that can be used by Buildtime. If a Buildtime database already exists, you can access it by simply selecting it from the configuration utility.



If you want to access a database installed on a remote workstation, there are additional steps you must perform. “Access a remote DB2 database” on page 119 describes the steps you need to take before access to a remote database is possible.

If the Buildtime database you select already exists, the MQ Workflow systems that are defined within it are displayed.

If the database does not yet exist or you prefer to use a new Buildtime database, you must create one. To create a new database you must provide certain information to the configuration utility that includes:

Database name

The name of the new Buildtime database you want to use.

Database location

The drive on the database server where the database is to be created, for example, D:

Containers location

The directory path where the database containers are to be created.

The database must also contain some basic settings that are required to make it a valid MQ Workflow Buildtime database. The settings associate the database with an MQ Workflow system and allow the Buildtime component of that system to access the database. The settings required are:

System group

A name for the system group that contains your system.

System

A name for the system that the MQ Workflow Buildtime component you are configuring belongs to.

Queue prefix

A high-level qualifier for queue names in an MQ Workflow system as explained on page 69.

Queue manager

A name for the queue manager associated with your system as explained on page 69.

Microsoft Jet Engine

As with IBM DB2 Universal Database, if you have previously configured MQ Workflow, it is possible that a Buildtime database already exists that can be

accessed using Microsoft Jet Engine. If the database already exists, you can access it by simply selecting it from the configuration utility.

If the database you select is already used by one or more MQ Workflow systems, the systems that use it are displayed. Selecting a system from the list displayed configures your Buildtime component to be a member of this system. If you want, you can configure your Buildtime component to be a member of a new system by entering a new system name.

If the database does not yet exist or you prefer to use a new Buildtime database, you must create one. To create a new database you must provide the name and path of the new Microsoft Jet Engine Buildtime database that you want to use.

The database must also contain some basic settings that are required to associate it with an MQ Workflow system. The settings are the same as those required for the IBM DB2 Universal Database type already explained.

IBM FlowMark Version 2.3 compatibility

During configuration, the Buildtime database is prepared for using the new features of MQ Workflow Version 3.2.

The IBM FlowMark Version 2.3 compatibility FDL file **fmczrf23.fdl** must be imported manually into the Buildtime database to have processing characteristics similar to those in IBM FlowMark Version 2.3. How to import is described in the *IBM MQSeries Workflow: Getting Started with Buildtime* book.

The IBM FlowMark Version 2.3 compatibility FDL file **fmczrf23.fdl** is located on the MQ Workflow installation disk in the directory:

x:\FMCWINNT\FDL	for Windows NT
x:\FMCWIN98\FDL	for Windows 98
x:\FMCWIN95\FDL	for Windows 95

Configuring a Java CORBA Agent

Before using any of the configuration tools to configure a Java CORBA agent, make sure that:

- **MQSeries has been installed and started on the Java CORBA Agent machine.**⁹

9. "Start MQSeries" on page 120 provides information about starting MQSeries. Starting MQSeries is only necessary on Windows NT.



For any of the Windows based operating platforms, if you accepted the default values provided when installing MQSeries, MQSeries is configured to start during system startup automatically.

Configuring a Java CORBA Agent is necessary in order to make a connection between the MQSeries client on the Java CORBA Agent machine and the MQSeries queue manager on the MQ Workflow server machine, and to specify the naming service and protocol that is used for connecting the Java CORBA agent and the Java API together. You can also use the configuration tools to set parameters for garbage collection.

To make a connection to the MQSeries queue manager on the MQ Workflow server machine, the same information used to configure MQ Workflow clients explained in “Configuring clients” on page 72 must be supplied.

To specify a naming service and protocol that is used for connecting the Java CORBA Agent and the Java API together you need to specify one of the following locator policies:

Local bindings

Used to directly access the C++ API via JNI. This locator policy instantiates an embedded agent rather than looking up a reference to an existing (remote) agent.

Visibroker Smart Agent

Used to specify the Visibroker Smart Agent directory for agent lookup and to use CORBA IIOP for communication with the agent. For more details, see the Inprise Visibroker for Java documentation.

CORBA Naming Service

Used to specify the CORBA Naming Service for agent lookup and to use CORBA IIOP for communication with the agent.

If you select this locator policy, you must also specify the **root name context** the Java CORBA Agent uses to register the agent name.

Java RMI

Used to specify the Java RMI registry for agent lookup and to use the Java RMI protocol for communication with the agent.

Interoperable Object Reference

Used to interpret the agent name as an interoperable object reference and to use CORBA IIOP for communication with the agent.

If you select this locator policy, you must also specify where the agent will publish its Interoperable Object Reference file. You must specify a valid existing directory path with a trailing slash. Only a slash (/)

character is accepted as a valid directory separator, for example, E:/InetPub/WWWroot/MQWFJAVA/Agent/. During runtime the platform-specific directory separator is used.

Additionally, you need to supply information used to identify the Java CORBA Agent and values used to determine when garbage collection is performed. The information you supply for this includes:

Agent name

Used to identify the Java CORBA Agent.

Agent Cycle

Used to specify the length of time between periodic garbage collection. This is optional. If you do not enter a value, 300 000 milliseconds is used as default. You can enter a value anywhere between 30 000 milliseconds and 86 400 000 milliseconds.

Client Threshold

Used to specify the maximum number of unreferenced objects tolerated by each client before nonperiodic garbage collection is triggered. This is optional. If you do not enter a value, 1 000 is used as default. You can enter a value anywhere between 0 and 500 000.

Client Cycle

Used to specify the ratio between the client-side keep-alive message cycle and the agent-side liveness check. This is optional. If you do not enter a value, 90% is used as default. For Internet applications the recommended value is 50%. You can enter a value anywhere between 0 and 100.

MQ Workflow profiles

As previously described, the configuration tools are used to create and prepare Runtime and Buildtime databases, configure MQSeries and supply general information about your MQ Workflow setup. The data you supply is recorded in an MQ Workflow profile. Several profiles exist. The MQ Workflow profile used depends on the type of configuration information you supply:

User profile

The user profile contains data which is specific for the user. Each user has his own user profile. Initial values for variables contained within the user profile are set during configuration and modified when Clients or Buildtime are used.

Installation profile

The installation profile contains data that is set during the MQ

Workflow installation stage and is independent of the configuration stage. Data such as the MQ Workflow installation directory, language, version number, and MQ Workflow components installed are contained in the installation profile.

General configuration profile

The general configuration profile contains configuration independent data. Currently the general configuration profile is only used to contain the identifier for your default configuration.

Configuration profile

The configuration profile contains data that you specify during the configuration stage and is used to describe the behavior of a specific configuration. The configuration profile is created during configuration and can be updated and deleted.

The profiles previously described are collectively referred to as the MQ Workflow profile. Only where necessary are the specific profile names used.

Definitions, descriptions, and default values for information you are required to enter using any of the configuration tools and which are recorded in the MQ Workflow profile are given in “Appendix B. MQ Workflow profile and system environment settings” on page 123.

Multiple MQ Workflow setups

MQ Workflow components installed only once can be configured multiple times. By doing so, you can create multiple MQ Workflow setups, where an MQ Workflow component installed on a single workstation can be configured to be a member of one or several different MQ Workflow systems.

All MQ Workflow components are defined by the set of values you enter using one of the configuration tools. Each set of values is recorded in the MQ Workflow profile. A *configuration identifier* is then used by the MQ Workflow component to point to this set of values. Each set of values then associates the component with a particular MQ Workflow system.

To explain this concept, take an example. Say you have installed an MQ Workflow Server on a workstation called machine 1, another on a workstation called machine 2, and an MQ Workflow Java Agent only once on a workstation called machine 3. See Figure 6 on page 80.

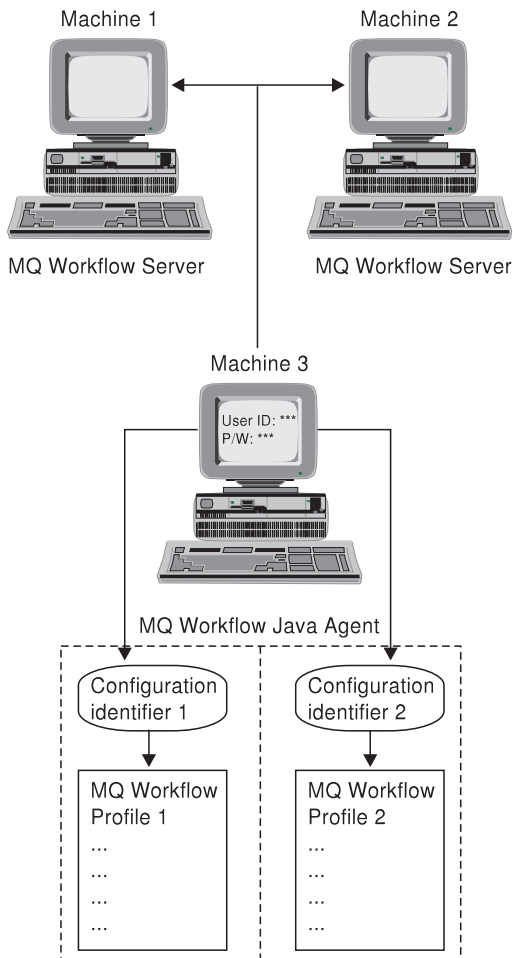


Figure 6. Example of an MQ Workflow Java Agent configured multiple times

By configuring the Java Agent twice, you can connect to both servers. This effectively gives you the impression that two MQ Workflow Java Agent applications are running on one machine. In fact, what happens is that, each time you configure the Java Agent, you supply a new set of configuration data, one for connecting to the MQ Workflow Server installed on machine one and another for connecting to machine two. This results in two Java Agent instances being created on the same workstation. Both instances use the same software, just the configuration data changes.

The configuration data for both instances is recorded in the MQ Workflow profile. Each set of data within the profile is then identified by the configuration identifiers that you specified during the configuration process. The password and user ID you use to log on to the Java Agent calls the

configuration identifier associated with the MQ Workflow profile that holds the data for connecting to the desired MQ Workflow Server. Using the data contained in the MQ Workflow profile, the Java Agent knows which MQ Workflow Server to connect to.

Similarly, all MQ Workflow components can be configured multiple times. This means that components installed on a single workstation can be configured to be members of multiple systems.

Part 5. After installing and configuring MQ Workflow

Chapter 11. Checking your installation	85	Stopping the administration utility	108
Checking the configuration of a component	85	Stopping the standard Client	108
Starting the configuration-checking utility	85	Stopping Buildtime	109
Using command-line options	86		
The configuration-checking log file and online documentation	87		
Chapter 12. Starting and stopping MQ Workflow on UNIX	89	Chapter 15. Verifying your installation	111
Starting components in the right order	89	Verifying MQ Workflow components	111
Starting the Administration server	89	Server installation	111
Starting the administration utility	90	Administration utility installation	111
Starting other MQ Workflow servers	92	Client installation	112
Stopping servers	92	Buildtime installation	112
Via the administration utility	92	Verifying an MQSeries connection	112
From a command prompt	92		
Stopping the administration utility	93		
Chapter 13. Starting and stopping MQ Workflow on OS/2 Warp	95		
Starting components in the right order	95		
Starting the Administration server	96		
Starting the administration utility	96		
Starting other MQ Workflow servers	98		
Stopping servers	98		
Stopping the administration utility	98		
Chapter 14. Starting and stopping MQ Workflow on Windows	101		
Starting components in the right order	101		
Starting the Administration server	102		
Method 1: Manually as a Windows NT service	102		
Method 2: Automatically as a Windows NT service	103		
Method 3: From a command line	104		
Starting the administration utility	104		
Starting other MQ Workflow servers	106		
Starting the standard Client	106		
Starting Buildtime	106		
Password and user ID	107		
Stopping servers	107		
Via the administration utility	107		
Via the service panel	108		

Chapter 11. Checking your installation

This chapter describes how to check your MQ Workflow installation using the MQ Workflow configuration-checking utility. With this utility you can check the setup of all components and locate and diagnose configuration problems after installing MQ Workflow.

Checking the configuration of a component

The MQ Workflow configuration-checking utility can be used to check the configuration of an MQ Workflow server, Client, or Buildtime running on any of the supported platforms in a standard MQ Workflow Client/Server network or stand-alone system.

To help you set up MQ Workflow, the configuration-checking utility can find and correct installation errors and inconsistencies. That is, you can check if:

- Environment variables are set correctly.
- Network drivers are installed properly.
- Network configuration files have been updated.
- The MQ Workflow profile contains consistent settings.

Start the utility immediately after each change to the MQ Workflow configuration. For example, if you have edited the MQ Workflow profile, and if MQ Workflow does not run, use the configuration-checking utility.

Starting the configuration-checking utility

The configuration-checking utility is started and used in the same way for all MQ Workflow components. It is a command-line utility in U.S. English only and is designed to be platform-independent. No additional installation or configuration steps are needed for the utility. It is a self-contained tool, which is copied to the MQ Workflow BIN directory during installation.

To start the utility, type at a command prompt:

```
fmcchk
```

Configuration checking is done in several phases. During each phase one particular MQ Workflow component is checked. Even if the checks for a component do not complete successfully, the configuration-checking utility proceeds with the checks for all other components. Problems are displayed as soon as they are detected.

In addition, the configuration-checking utility creates a log file called `fmczchk.log` which contains all error or warning messages, and other important information.

Using command-line options

The configuration-checking utility is a command-line utility. Although you can start the utility without any options, several command-line options are available which can be specified directly after the `fmczchk start` command.



The command-line options explained here are valid for MQ Workflow Version 3.2 only. For command-line options for earlier versions, see the MQ Workflow installation guide for that version or refer to the online documentation.

Command-line options start with a slash (/)¹⁰ or minus (-), and can be followed by an argument.

Arguments to options can be separated from the option letter by an empty string ("), a blank (' '), a colon (:), or an equals sign (=). The options are not case sensitive. Use the following options:

- 320** Specifies that you want to perform checks on MQ Workflow Version 3.2. The default is the version with which the utility was created. The checks that are available depend on the MQ Workflow version that you specify. When you start the utility, only those checks are displayed which apply to the defined version.
- e** Show error messages only. The default is to show error and warning messages and to suppress information messages.
- i** Show all messages, that is, error, warning, and information messages.
- d** Show debug messages. Debug messages are needed by support personnel to help analyze problems. Since these messages are intended for support personnel only, they are not documented here.
- html** Write messages to the `fmczchk0.htm` file instead of the `fmczchk.log` file. The `fmczchk0.htm` file provides links to online documentation that contains further information describing the configuration-checking utility. Error, warning, and information messages written to the `fmczchk0.htm` file are written as links. Clicking on each message takes you to an online description for that message, which gives you information regarding severity and the user action required for the message.

10. Does not apply to AIX, HP-UX, or Sun Solaris.

y qualifier

Allows you to specify a configuration ID other than the default. Specifying a different configuration ID allows you to perform checks on different systems. If this option is not used, the value of the **DefaultConfigurationID** variable set in the general configuration profile is used.

c command[:...]

Performs a task specified by the command. The following are valid commands:

tcp:service,port

Adds a port to the TCP/IP services file. For example, to add port definitions for MQSeries to your services file:

```
fmczchk -c tcp:MQSeries,1414
fmczchk -c tcp:MQSeries,1415
```



Port definitions are automatically added to the services file during installation.

sca[:filemask;...]

Specify this command to scan all MQ Workflow executables for the version string. You can restrict the scanning by specifying your own file mask as an optional argument:

```
fmczchk -c sca:dll\fmck*.dll;bin\fmce*.exe
```

@cmdfile

Alternatively, you can create a file containing several commands that you wish to run. For example, if you create a file `fmczchk.cmd` with the following lines in it:

```
prf:Language,enu
prf:m,DatabaseName,FMADB
tcp:MQSeries,1414
```

You can start the utility as follows:

```
fmczchk @fmczchk.cmd
```

The configuration-checking log file and online documentation

The configuration-checking utility writes a log file with the name `fmczchk.log` in the current directory, where all messages are stored. This log file is intended to be used by your support personnel. The message options you specify after the `fmczchk` command determine what messages are displayed on the screen during the configuration checking routine. These options are ignored when writing to the log file, that is, all messages are recorded in the log file. A list of all the messages that can be written in the log file is available in the online file `fmczchk.htm`. By specifying the `html` option after the `fmczchk`, as explained on page 86, an HTML file is created instead of the log file. This

HTML file contains links that give you access to online documentation. The online documentation gives an explanation, user response, and severity for each message. Each message is made up of a message identifier code and message text. The last character of the message identifier code denotes the message type or severity of the message. The following shows the format for each type of message identifier code, where *nnn* is a number used to identify each message:

FMC34*nnn***I** Informational message. No action is required.

FMC34*nnn***W** Warning message. An action may be required. Check the user response in the online documentation to see if any further action is required.

FMC34*nnn***E** Error message. An action is required. Check the user response in the online documentation for a solution to the problem.

The log file is not created if it cannot be opened, for example, due to missing write permission in the current directory. However, the configuration utility continues to display important error and warning messages on the screen. To display all messages on the screen, use option *i* as explained on page 86.

Chapter 12. Starting and stopping MQ Workflow on UNIX

This chapter describes how to start and stop MQ Workflow servers, and the Administration utility on workstations running AIX, HP-UX, and Sun Solaris.

Starting components in the right order

An MQ Workflow server consists of several server components, such as the Administration server, Scheduling server, Cleanup server, and Execution server. Each server component can be started together at the same time or individually, one after the other. How and when server components are started depends on settings contained within the Runtime database.

The order in which MQ Workflow server and other MQ Workflow components are started is important. Regardless of the operating system used, make sure that MQ Workflow components are started in the following order:

1. MQ Workflow Administration server



Other MQ Workflow servers may start at the same time as the MQ Workflow Administration server if set to do so in the Runtime database. If not, these servers must be started using the MQ Workflow Administration utility.

2. MQ Workflow Administration utility
3. Other MQ Workflow servers



Other MQ Workflow servers should be started now if they have not been set to start at the same time as the MQ Workflow Administration server.

4. Other MQ Workflow components

MQ Workflow Buildtime can be started before or after the MQ Workflow servers have been started.

Starting the Administration server

Starting the Administration server is always the first component started in an MQ Workflow system. To start an MQ Workflow Administration server installed on any of the supported UNIX based operating platforms:

1. Start DB2 if it is not already running.¹¹

11. "Start DB2" on page 117 provides information about starting DB2.

2. Start the MQSeries queue manager.¹²
3. Start the MQSeries trigger monitor.¹²
4. Open an AIX command prompt window.
5. Enter the command:

fmcamain

This starts the Administration server associated with the default configuration identifier set during the configuration stage. If values in the Runtime database have been set to do so, the Scheduling server, Cleanup server, and Execution server are also started.

Alternatively, you can start the Administration server associated with a different configuration by entering:

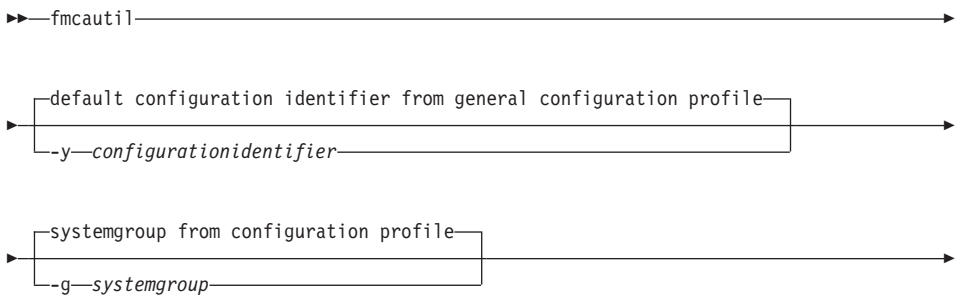
fmcamain -y <configurationidentifier>

where <configurationidentifier> is replaced by the configuration identifier for the system that contains the Administration server you want to start.

Starting the administration utility

Before proceeding, make sure that you have an MQ Workflow Administration server running for the administration utility to connect to.

To start the administration utility installed on any of the supported UNIX based operating platforms, open a command prompt window and enter the **fmcautil** start command and its arguments as shown in the following syntax diagram. (See “How to read the syntax diagrams” on page ix for details about syntax diagrams.)



12. “Basic MQSeries commands” on page 119 includes information about starting the MQSeries queue manager and trigger monitor.



The delimiters that precede values are used to indicate the meaning of the value that follows (for example, the **-p** delimiter indicates that the value that follows is the *password*). By using these delimiters you can specify values in any order you like.

-y *configurationidentifier*

If you do not specify a value for the *configurationidentifier*, the default value is read from the general configuration profile. Each MQ Workflow configuration is identified by a configuration identifier that is set during configuration.

-g *systemgroup* If you do not specify a *systemgroup* name, the default value¹³ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system group containing the system that you want to administer.

-s *system* If you do not specify a *system* name, the default value¹³ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system that you want to administer.

-u *userid* If you do not specify a *userid*, you are prompted to enter a value.

The user ID is automatically set to **ADMIN** during the configuration stage in the Runtime database. Use this value unless you changed the user ID in the Runtime database during or after configuration.

-p *password* If you do not specify a *password*, you are prompted to enter a value.

The password is automatically set to **password** during the configuration stage in the Runtime database. Use this value unless you changed the password in the Runtime database after configuration.

13. Default values are held in the MQ Workflow profile. For details regarding default values and the MQ Workflow profile refer to “Appendix B. MQ Workflow profile and system environment settings” on page 123.

For more details about the **fmcautil** start command, additional options not listed here, and how to use the administration utility, refer to the *IBM MQSeries Workflow: Administration Guide*.

Starting other MQ Workflow servers

If other MQ Workflow servers have not been set to start automatically in the Runtime database at the same time as the Administration server, they can be started manually using the administration utility. For information about starting other MQ Workflow servers, such as the Scheduling server, Cleanup server, and Execution server, refer to the *IBM MQSeries Workflow: Administration Guide*.

Stopping servers

UNIX based MQ Workflow servers can be stopped via the administration utility or from a command prompt.



The methods described here for stopping MQ Workflow servers are the only valid methods. You may find by using methods other than these that MQ Workflow resources are not cleaned up and DB2 and MQSeries are not deregistered.

Via the administration utility

To stop an MQ Workflow server via the administration utility:

1. Start the administration utility.
2. From the main menu, select **s**. The system commands menu is displayed.
3. From the system commands menu, select the shutdown system option **d**.
A message appears to tell you that a system shutdown has been requested.

As each MQ Workflow server component is stopped, a message is displayed informing you about the component's change in state.

From a command prompt



Caution is advised when using this method to stop MQ Workflow servers as additional system runtime processes may be removed other than those related to MQ Workflow only.

To stop an MQ Workflow server from a command prompt:

1. Open a command prompt window.
2. At a command prompt, enter:

fmcclean

This immediately stops all MQ Workflow processes and cleans up temporary system files.

Stopping the administration utility

To stop the administration utility installed on any of the UNIX based operating platforms, select **x** from the menu screen until you exit from the administration utility. When control passes to a command prompt, the administration utility has stopped.

For more details about the administration utility refer to the *IBM MQSeries Workflow: Administration Guide*.

Chapter 13. Starting and stopping MQ Workflow on OS/2 Warp

This chapter describes how to start and stop MQ Workflow servers, and the Administration utility on workstations running OS/2 Warp.

Starting components in the right order

An MQ Workflow server consists of several server components, such as the Administration server, Scheduling server, Cleanup server, and Execution server. Each server component can be started together at the same time or individually, one after the other. How and when server components are started depends on settings contained within the Runtime database.

The order in which MQ Workflow server and other MQ Workflow components are started is important. Regardless of the operating system used, make sure that MQ Workflow components are started in the following order:

1. MQ Workflow Administration server



Other MQ Workflow servers may start at the same time as the MQ Workflow Administration server if set to do so in the Runtime database. If not, these servers must be started using the MQ Workflow Administration utility.

2. MQ Workflow Administration utility
3. Other MQ Workflow servers



Other MQ Workflow servers should be started now if they have not been set to start at the same time as the MQ Workflow Administration server.

4. Other MQ Workflow components

MQ Workflow Buildtime can be started before or after the MQ Workflow servers have been started.

Starting the Administration server

Starting the Administration server is always the first component started in an MQ Workflow system. To start an MQ Workflow Administration server installed on OS/2 Warp:

1. Start DB2 if it is not already running.¹⁴
2. Start the MQSeries queue manager.¹⁵
3. Start the TCP/IP listener program.¹⁵
4. Start the MQSeries trigger monitor.¹⁵
5. Open an OS/2 command prompt window.
6. Enter the command:

fmcamain

This starts the Administration server associated with the default configuration identifier set during the configuration stage. If values in the Runtime database have been set to do so, the Scheduling server, Cleanup server, and Execution server are also started.

Alternatively, you can start the Administration server associated with a different configuration by entering:

fmcamain -y <configurationidentifier>

where <configurationidentifier> is replaced by the configuration identifier for the system that contains the Administration server you want to start.

Starting the administration utility

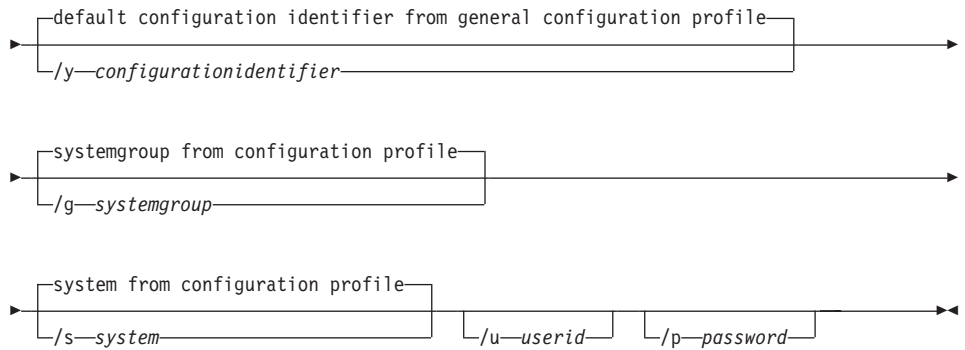
Before proceeding, make sure that you have an MQ Workflow server running for the administration utility to connect to.

To start the administration utility installed on OS/2 Warp, open a command prompt window and enter the **fmcautil** start command and its arguments as shown in the following syntax diagram. (See “How to read the syntax diagrams” on page ix for details about syntax diagrams.)

►►—fmcautil—►

14. “Start DB2” on page 117 provides information about starting DB2.

15. “Basic MQSeries commands” on page 119 includes information about starting the MQSeries queue manager, TCP/IP listener program, and trigger monitor.



The delimiters that precede values are used to indicate the meaning of the value that follows (for example, the `/p` delimiter indicates that the value that follows is the *password*). By using these delimiters you can specify values in any order you like.

`/y configurationidentifier`

If you do not specify a value for the *configurationidentifier*, the default value is read from the general configuration profile. Each MQ Workflow configuration is identified by a configuration identifier that is set during configuration.

`/g systemgroup`

If you do not specify a *systemgroup* name, the default value¹⁶ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system group containing the system that you want to administer.

`/s system`

If you do not specify a *system* name, the default value¹⁶ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system that you want to administer.

`/u userid`

If you do not specify a *userid*, you are prompted to enter a value.

The user ID is automatically set to **ADMIN** during the configuration stage in the Runtime database. Use this value unless you changed the user ID in the Runtime database during or after configuration.

16. Default values are held in the MQ Workflow profile. For details regarding default values and the MQ Workflow profile refer to "Appendix B. MQ Workflow profile and system environment settings" on page 123.

/p password If you do not specify a *password*, you are prompted to enter a value.

The password is automatically set to **password** during the configuration stage in the Runtime database. Use this value unless you changed the password in the Runtime database during or after configuration.

For more details about the **fmcautil** start command, additional options not listed here, and how to use the administration utility, refer to the *IBM MQSeries Workflow: Administration Guide*.

Starting other MQ Workflow servers

If other MQ Workflow servers have not been set to start automatically in the Runtime database at the same time as the Administration server, they can be started manually using the administration utility. For information about starting other MQ Workflow servers, such as the Scheduling server, Cleanup server, and Execution server, refer to the *IBM MQSeries Workflow: Administration Guide*.

Stopping servers



The method described here for stopping MQ Workflow servers is the only valid method. You may find by using methods other than this one that MQ Workflow resources are not cleaned up and DB2 and MQSeries are not deregistered.

MQ Workflow servers installed on OS/2 Warp are stopped via the administration utility. To stop an MQ Workflow server:

1. Start the administration utility.
2. From the main menu, select **s**. The system commands menu is displayed.
3. From the system commands menu, select the shutdown system option **d**. A message appears to tell you that a system shutdown has been requested. As each MQ Workflow server component is stopped, a message is displayed informing you about the component's change in state.

Stopping the administration utility

To stop the administration utility installed on OS/2 Warp, select **x** from the menu screen until you exit from the administration utility. When control passes to a command prompt, the administration utility has stopped.

For more details about the administration utility refer to the *IBM MQSeries Workflow: Administration Guide*.

Chapter 14. Starting and stopping MQ Workflow on Windows

This chapter describes how to start and stop the MQ Workflow servers, the standard Client, Administration utility, and Buildtime on workstations running either Windows NT, Windows 98, or Windows 95.

Starting components in the right order

An MQ Workflow server consists of several server components, such as the Administration server, Scheduling server, Cleanup server, and Execution server. Each server component can be started together at the same time or individually, one after the other. How and when server components are started depends on settings contained within the Runtime database.

The order in which MQ Workflow server and other MQ Workflow components are started is important. Regardless of the operating system used, make sure that MQ Workflow components are started in the following order:

1. MQ Workflow Administration server



Other MQ Workflow servers may start at the same time as the MQ Workflow Administration server if set to do so in the Runtime database. If not, these servers must be started using the MQ Workflow Administration utility.

2. MQ Workflow Administration utility
3. Other MQ Workflow servers



Other MQ Workflow servers should be started now if they have not been set to start at the same time as the MQ Workflow Administration server.

4. Other MQ Workflow components

MQ Workflow Buildtime can be started before or after the MQ Workflow servers have been started.

Starting the Administration server

Starting the Administration server is always the first component started in an MQ Workflow system. To start an MQ Workflow Administration server installed on Windows NT:

1. Start DB2 if it is not already running.¹⁷
2. Start the MQSeries queue manager.¹⁸
3. Start the TCP/IP listener program.¹⁸
4. Start the MQSeries trigger monitor.¹⁸

After performing the above, you can start the Administration server by using any of the following methods:

- **Method 1:** Manually as a Windows NT service.
- **Method 2:** Automatically as a Windows NT service.
- **Method 3:** From a command line.

It is recommended to start the Administration server as a Windows NT service. Whether you start the Administration server as a Windows NT service **manually** after your system has started, or set up Windows NT so that the Administration server is started as a Windows NT service **automatically** during startup, is a matter of personal choice. The following describes the three methods.

Method 1: Manually as a Windows NT service

To start the MQ Workflow server manually after your workstation has started, do the following:

1. On the task bar, click on the Windows **Start** menu and select **Settings**.
2. From **Settings**, select **Control Panel**.
3. Within the **Control Panel**, select the **Services** icon. A dialog box appears.
4. Within the service window of the dialog box, locate the line that reads **MQSeries Workflow** *<configurationidentifier>*
where *<configurationidentifier>* is replaced by the configuration identifier for the system that contains the Administration server you want to start. Highlight this line.
5. Click on the **Start** button to the right of the window to start the MQ Workflow server.

17. "Start DB2" on page 117 provides information about starting DB2.

18. "Basic MQSeries commands" on page 119 includes information about starting the MQSeries queue manager, TCP/IP listener program, and trigger monitor.

Method 2: Automatically as a Windows NT service

To set up Windows NT to start the Administration server automatically during system startup, do the following:

1. On the task bar, click on the Windows **Start** menu and select **Settings**.
2. From **Settings**, select **Control Panel**.
3. Within the **Control Panel**, select the **Services** icon. A dialog box appears.
4. Within the service window of the dialog box, locate the line that reads **MQSeries Workflow** *<configurationidentifier>* where *<configurationidentifier>* is replaced by the configuration identifier for the system that contains the Administration server you want to start. Highlight this line.
5. Click on the **Startup** button to the right of the window to modify startup parameters for the Administration server. A dialog window appears titled **Service**.
6. Within the **Service** dialog, under **Startup Type** click on **Automatic** and select **OK**. The Administration server is now set to start automatically during the next system startup.



These steps also update the **IBM MQSeries** service. The updates involve adding the following file to the IBM MQSeries service:

```
<InstallationDirectory>/qmgrs/QueueManager/QueueManager.cmd
```

where:

```
<QueueManager>
```

is replaced by the queue manager name for your system.

```
<InstallationDirectory>
```

is replaced by the path to your MQ Workflow installation directory.

This file contains commands that are used to start the queue manager, trigger monitor, and TCP/IP listener.

7. The user ID and password for the Windows NT **IBM MQSeries** service are saved in the file **MQS.INI** of your queue manager directory. This is necessary to allow the two-phase commit. If, for security reasons, you do not want to leave the user ID and password in the MQS.INI file, delete them from the MQS.INI file and modify the Windows NT IBM MQSeries service as follows:
 - a. On the task bar, click the **Start** button and select **Settings**.
 - b. From **Settings**, select the **Control Panel**.
 - c. Within the **Control Panel**, select the **Services** icon. A dialog box appears.

Windows

- d. Within the service window of the dialog box, locate the line that reads **IBM MQSeries**. Highlight this line.
- e. Click on the **Startup** button to the right of the window to modify startup parameters for IBM MQSeries. A dialog window appears titled **Service**.
- f. Within the **Service** dialog, under **Log On As:** click on the radio button labeled **This account** and enter your user ID and password.
- g. Select **OK**.

Method 3: From a command line

To start the MQ Workflow server from a command line:

1. Open a command prompt window.
2. Enter the command:

fmcamain -c

This starts the Administration server associated with the default configuration identifier set during the configuration stage. If values in the Runtime database have been set to do so, the Scheduling server, Cleanup server, and Execution server are also started.

Alternatively, you can start the Administration server associated with a different configuration by entering:

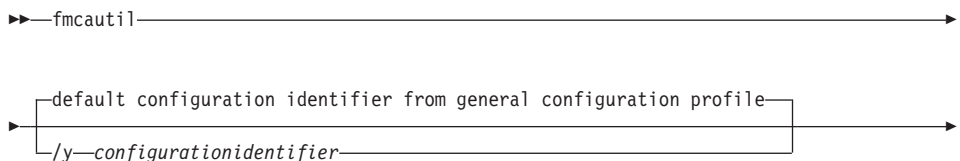
fmcamain -c -y <configurationidentifier>

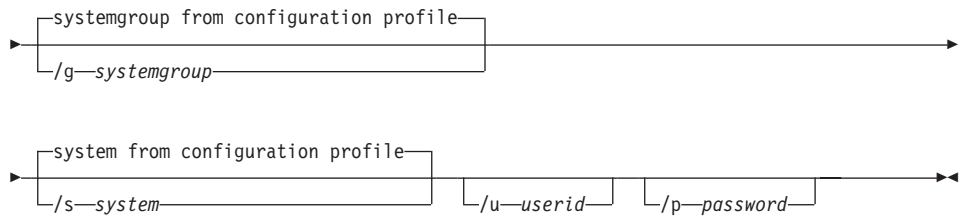
where <configurationidentifier> is replaced by the configuration identifier for the system that contains the Administration server you want to start.

Starting the administration utility

Before proceeding, make sure that you have an MQ Workflow server running for the administration utility to connect to.

To start the administration utility installed on any of the supported Windows based operating platforms, open a command prompt window and enter the **fmcautil** start command and its arguments as shown in the following syntax diagram. (See “How to read the syntax diagrams” on page ix for details about syntax diagrams.)





The delimiters that precede values are used to indicate the meaning of the value that follows (for example, the `/p` delimiter indicates that the value that follows is the *password*). By using these delimiters you can specify values in any order you like.

/y configurationidentifier

If you do not specify a value for the *configurationidentifier*, the default value is read from the general configuration profile. Each MQ Workflow configuration is identified by a configuration identifier that is set during configuration.

/g systemgroup If you do not specify a *systemgroup* name, the default value¹⁹ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system group containing the system that you want to administer.

/s system If you do not specify a *system* name, the default value¹⁹ is used. If no default value is specified in the MQ Workflow profile, you are prompted to enter a value. The value you enter should be the name of the system that you want to administer.

/u userid If you do not specify a *userid*, the value you used to log on to the operating system with is taken instead.

See "Password and user ID" on page 107 for details about the user ID and its default value.

/p password If you do not specify a *password*, you are prompted to enter a value unless *unified logon* has been set in the Runtime database. Unified logon means that when users have logged on to Windows NT with their password, there is no need to further log on to individual applications. MQ Workflow supports unified logon when it is specified in the system properties table during MQ Workflow Buildtime. Refer to the

19. Default values are held in the MQ Workflow profile. For details regarding default values and the MQ Workflow profile refer to "Appendix B. MQ Workflow profile and system environment settings" on page 123.

Windows

IBM MQSeries Workflow: Getting Started with Buildtime book for details about setting unified logon.

See “Password and user ID” on page 107 for details about the password and its default value.

For more details about the **fmcautil** start command, additional options not listed here, and how to use the administration utility, refer to the *IBM MQSeries Workflow: Administration Guide*.

Starting other MQ Workflow servers

If other MQ Workflow servers have not been set to start automatically in the Runtime database at the same time as the Administration server, they can be started manually using the administration utility. For information about starting other MQ Workflow servers, such as the Scheduling server, Cleanup server, and Execution server, refer to the *IBM MQSeries Workflow: Administration Guide*.

Starting the standard Client

Before proceeding, make sure that you have an MQ Workflow server running for the standard MQ Workflow Client to connect to.

To start a standard MQ Workflow Client installed on any of the supported Windows based operating platforms:

1. On the Windows task bar, click on the **Start** menu and select **Programs**.
2. Select the **MQSeries Workflow** program folder.
3. Select the **MQSeries Workflow Client** icon.
4. You are prompted for the Client’s user ID and password. When entered, you are logged on to the MQ Workflow system and the Client application starts. See “Password and user ID” on page 107 for details about the password and user ID.

Starting Buildtime

To start Buildtime installed on any of the supported Windows based operating platforms:

1. On the Windows task bar, click on the **Start** menu and select **Programs**.
2. Select the **MQSeries Workflow** program folder.
3. Select the **MQSeries Workflow Buildtime** icon.

4. You are prompted for the Buildtime's user ID and password. When entered, the Buildtime application starts. See "Password and user ID" for details about the password and user ID.

Password and user ID

The user ID and password for the MQ Workflow Client, Buildtime, and administration utility are set with initial values either in the Runtime or Buildtime database during installation. The initial values are:

ADMIN for the user ID
password for the password

The password and user ID are automatically set with these values in the Runtime and Buildtime databases during the configuration stage. Use these values unless you changed them during or after configuration.

If you changed the initial values for the user ID and password in the Runtime database after the configuration stage, start the MQ Workflow Client and administration utility with the new user ID and password values you set in the Runtime database.

If you changed the initial values for the user ID and password in the Buildtime database after the configuration stage, start Buildtime with the new user ID and password values you set in the Buildtime database.

Stopping servers

MQ Workflow servers can be stopped via the administration utility or via the service panel.



The methods described here for stopping MQ Workflow servers are the only valid methods. You may find by using methods other than these that MQ Workflow resources are not cleaned up and DB2 and MQSeries are not deregistered.

Via the administration utility

To stop MQ Workflow servers installed on Windows NT via the administration utility:

1. Start the administration utility.
2. From the main menu, select **s**. The system commands menu is displayed.
3. From the system commands menu, select the shutdown system option **d**. A message appears to tell you that a system shutdown has been requested.

Windows

As each MQ Workflow server component is stopped, a message is displayed informing you about the component's change in state.

Via the service panel

To stop MQ Workflow servers installed on Windows NT via the service panel:

1. On the task bar, click on the Windows **Start** menu and select **Settings**.
2. From **Settings**, select **Control Panel**.
3. Within the **Control Panel**, select the **Services** icon. A dialog box appears.
4. Within the service window of the dialog box, locate the line that reads **MQSeries Workflow** <configurationidentifier>.where <configurationidentifier> is replaced by the configuration identifier for the system that contains the MQ Workflow servers you want to stop.
Highlight this line.
5. Click on the **Stop** button to the right of the window.

Stopping the administration utility

To stop the administration utility installed on any of the supported Windows based operating platforms, select x from the menu screen until you exit from the administration utility. When control passes to a command prompt, the administration utility has stopped.

For more details about the administration utility refer to the *IBM MQSeries Workflow: Administration Guide*.

Stopping the standard Client

To stop a standard MQ Workflow Client installed on any of the supported Windows based operating platforms:

1. From the menu bar on the MQ Workflow Client interface, select **File**.
2. Select **Exit**.
3. A window opens automatically asking you **Do you really want to exit the MQ Workflow Client?** Click on the **Yes** button. The window closes and the Client stops.

Stopping Buildtime

To stop Buildtime installed on any of the supported Windows based operating platforms:

1. From the menu bar on the MQ Workflow Buildtime interface select **File**.
2. Select **Exit**.
3. A window opens automatically asking you **Do you really want to close the MQ Workflow Buildtime?** Click on the **Yes** button. The window closes and Buildtime stops.

Windows

Chapter 15. Verifying your installation

This chapter describes the steps you should take to verify that MQ Workflow has been installed correctly. It also describes how to verify that MQSeries has been configured correctly for your MQ Workflow installation.

Verifying MQ Workflow components

This section describes how to verify that your MQ Workflow Server, Administration utility, Client, and Buildtime components have been installed correctly.

Server installation

To verify that your MQ Workflow server has been installed correctly:

1. Start your MQ Workflow server.
2. Start the administration utility.
A message is displayed to show you that a connection to the administration server has been made. The **main menu** appears.
3. From the **main menu**, select **s**. The **system commands menu** is displayed.
4. From the **system commands menu**, select the query option **q** to verify that all MQ Workflow server components have started and are installed correctly.

Each MQ Workflow server component is checked and a message appears showing the status for each. The status for each component should be **'active'** if defined to start during system startup in the Runtime database. The default set during the configuration stage is that all MQ Workflow server components are started during system startup.

5. Select **x** to return to the **main menu**.
6. Select **x** to exit the administration utility.

Administration utility installation

To verify that your MQ Workflow administration utility has been installed correctly and a connection to an MQ Workflow server can be established:

1. Start your MQ Workflow server.
2. Start the MQ Workflow administration utility.
3. During the start procedure you must log on to the MQ Workflow system with your user ID and password.

A successful logon indicates that the MQ Workflow administration utility is installed correctly and a connection to the MQ Workflow server is established.

Client installation

To verify that your MQ Workflow Client has been installed correctly and a connection to an MQ Workflow server can be established:

1. Start the MQ Workflow Server.
2. Start the MQ Workflow Client.
3. During the start procedure you are prompted to log on to the MQ Workflow system with your user ID and password.

A successful logon indicates that the MQ Workflow Client is installed correctly and a connection to the MQ Workflow server is established.

Buildtime installation

To verify that your MQ Workflow Buildtime component has been installed correctly, start MQ Workflow Buildtime.

Buildtime is installed and running correctly when it starts without any error messages.

Verifying an MQSeries connection

To verify that MQSeries has been configured correctly for a client/server connection in an MQ Workflow system, a simple test that writes a message to the MQSeries input queue **RTSINPUTQ** and then reads the message back again is performed. To do this:

1. Ensure that the MQSeries queue manager, TCP/IP listener program, and MQSeries trigger monitor have been started. “Basic MQSeries commands” on page 119 describes how to start the MQSeries queue manager, TCP/IP listener program, and MQSeries trigger monitor.



Starting the TCP/IP listener program is only necessary on OS/2 Warp and any of the Windows based operating systems if TCP/IP is the communications protocol used by MQSeries.

For any of the UNIX based operating platforms, starting the MQSeries queue manager automatically starts the TCP/IP listener program.

2. To write a message to the queue **RTSINPUTQ**, enter at a command prompt²⁰:

```
amqsputc RTSINPUTQ <QueueManager>21
```

3. If MQSeries has not been configured correctly for a client/server connection, an MQSeries completion/reason code is displayed and control passes immediately back to the command prompt.
If MQSeries has been configured correctly, you are able to enter any message text on the control line. To test the connection, enter a test message, such as the word **Test**, and press enter twice. The message is sent to the input queue **RTSINPUTQ**.
4. To read the test message from the input queue **RTSINPUTQ**, at a command prompt enter²⁰:

amqsgetc RTSINPUTQ <QueueManager>²¹

The message you previously wrote to the input queue **RTSINPUTQ** is written on the screen and removed from the queue.



For the MQSeries verification process, make sure that no MQ Workflow Server is running before you send messages to the input queue **RTSINPUTQ**. If an MQ Workflow Server is running and you try to read a message from the input queue, the following message appears instead of the one you sent to the input queue:

No more messages found.

20. For any of the UNIX based operating platforms, change to the directory `/usr/lpp/mqm/samp/bin` and then enter this command.

21. `<QueueManager>` is replaced by the queue manager name for your system. The default queue manager name is `FMCQM`. Use this name unless you changed its value during the configuration stage, in which case, use the name you specified.

Part 6. Appendixes

Appendix A. Basic DB2 and MQSeries commands

This appendix contains basic DB2 and MQSeries commands that you need to use before, during, or after installing MQ Workflow.

Basic DB2 commands

The following contains information that explains how to:

1. Start DB2.
2. Stop DB2.
3. Access a remote DB2 instance.
4. Access a remote DB2 database.

For additional details not given here refer to the *IBM DB2 Universal Database: Quick Beginnings* online manual.



For **Windows**, all DB2 commands must be entered within a DB2 command window. To start a DB2 command window, enter **DB2CMD** at a command prompt.

For any of the **UNIX** based operating platforms and **OS/2 Warp**, DB2 commands can be entered at a command prompt.

Start DB2

To start DB2 on your workstation, enter the following DB2 command:

db2start

When DB2 starts, the following message appears:

```
SQL1063N DB2START processing was successful.
```

Stop DB2

To stop DB2 on your workstation, enter the following DB2 command:

db2stop

When DB2 stops, the following message appears:

Access a remote DB2 instance

A remote DB2 instance can be accessed from another workstation via:

- Named Pipes
- TCP/IP
- NetBIOS
- IPX/SPX
- APPC

Via any of these communications protocols, a DB2 instance on a remote workstation can be made accessible to your workstation by using the DB2 client configuration assistant, the DB2 control center, or by using the DB2 command **DB2 CATALOG**. The following describes how to use this command to access a remote DB2 instance via TCP/IP. For other communication protocols refer to the DB2 *Installing and Configuring DB2 Clients* manual.

1. To access a DB2 instance via TCP/IP, enter the following command and options:

```
DB2 CATALOG TCPIP NODE <node-name> REMOTE <computer-name>
REMOTE_INSTANCE <instance-name> SERVER <port-number>
```

where:

<node-name> A local alias, or nickname that describes the node where the database resides. You can choose any name you want, however, all node name values within your local node directory must be unique.

<computer-name> Either the hostname or IP address of the remote server workstation.

<instance-name> The name of the DB2 instance on the remote workstation.

<port-number> Either the Connection Service name or Port Number.

The Connection Service name is an arbitrary name used to represent the port number on the client.

The Port Number for the client must be the same as the port number that the Connection Service name maps to in the services file on the server. The Connection Service name is located in the database manager configuration file on the DB2 server.

This value must not be used by any other applications.

2. Enter the following command:

```
DB2 TERMINATE
```

For example, to access a DB2 instance called `db2inst1`, located on a workstation named `deptsrv`, using the TCP/IP port number 60 000, make the remote instance located on the node `db2rem1` accessible to your workstation by entering the following command and options:

```
DB2 CATALOG TCPIP NODE db2rem1 REMOTE deptsrv SERVER 60000  
REMOTE_INSTANCE db2inst1
```

```
DB2 TERMINATE
```

Access a remote DB2 database

If a DB2 database is installed on a remote workstation, it can be made accessible to your workstation by using the DB2 client configuration assistant, the DB2 control center, or by entering the following DB2 command and options:

```
DB2 CATALOG DATABASE <database-name> AT NODE <node-name>
```

where:

<database-name>

is the name of the database on the remote workstation you want to access.

<node-name>

A local alias, or nickname that describes the node where the database resides. The name you specify must be the same as the name you specified for accessing the remote DB2 instance.

For example, to access a DB2 database called `testdb`, make the remote database accessible to your workstation by entering the following command and options:

```
DB2 CATALOG DATABASE testdb AT NODE srvinst1
```

Basic MQSeries commands

The following section contains instructions that explain how to:

1. Start MQSeries (applicable on Windows NT only).
2. Start the MQSeries queue manager.
3. Start the TCP/IP listener program.
4. Start the MQSeries trigger monitor.



For **OS/2 Warp** or any of the **UNIX** or **Windows** based operating platforms, MQSeries commands are entered at a command prompt.

For additional details not given here refer to the MQSeries online documentation.

Start MQSeries

For **Windows NT**, MQSeries is started as a Windows NT service. To start MQSeries on Windows NT, do the following:

1. On the task bar, click on the Windows **Start** menu and select **Settings**.
2. From **Settings**, select **Control Panel**.
3. Within the **Control Panel**, select the **Services** icon. A dialog box appears.
4. Within the service window of the dialog box, locate the line that reads **IBM MQSeries**. Highlight this line.
5. Click on the **Start** button to the right of the window to start MQSeries.

Start the MQSeries queue manager

To start the MQSeries queue manager, at a command prompt enter:

```
strmqm <QueueManager>
```

where <QueueManager> is replaced by the queue manager name for your system. The default queue manager name is FMCQM. Use this name unless you changed its value during the configuration stage, in which case, use the name you specified.



The queue manager name is case sensitive.

For example, to start the MQSeries queue manager called FMCQM, enter:

```
strmqm FMCQM
```

When the MQSeries queue manager starts, the following message appears:

```
MQSeries queue manager started.
```



For AIX, starting the MQSeries queue manager also starts the TCP/IP listener program.

Start the TCP/IP listener program



Starting the TCP/IP listener program is only necessary on OS/2 Warp and Windows NT if TCP/IP is the communications protocol used by MQSeries.

To start the TCP/IP listener program, at a command prompt enter:

```
Start "MQSeries TCP/IP listener" runmqtsr -t tcp -p <port-number> /M
<QueueManager>
```

where:

<port-number> is replaced by the TCP/IP port number for the queue manager. The default is 1414. Use this value unless you changed its value during the configuration stage, in which case, use the port number you specified.

<QueueManager> is replaced by the queue manager name for your system. The default queue manager name is FMCQM. Use this name unless you changed its value during the configuration stage, in which case, use the name you specified.



The queue manager name is case sensitive.

For example, if the MQSeries queue manager name is FMCQM, to start the MQSeries TCP/IP listener, enter:

```
Start "MQSeries TCP/IP listener" runmqtsr -t tcp -p 1414 /M FMCQM
```

Start the MQSeries trigger monitor

For **Windows NT** and **OS/2 Warp**, to start the MQSeries trigger monitor, at a command prompt enter:

```
Start "MQSeries Trigger Monitor" runmqtrm /M <QueueManager> /Q
FMCTRIGGER
```

For any of the **UNIX** based operating platforms, to start the MQSeries trigger monitor, at a command prompt enter:

```
runmqtrm -m <QueueManager> -q FMCTRIGGER
```

where <QueueManager> is replaced by the queue manager name for your system. The default queue manager name is FMCQM. Use this name unless you changed its value during the configuration stage, in which case, use the

name you specified.



The queue manager name is case sensitive.

For example, if the MQSeries queue manager name is FMCQM, to start the MQSeries trigger monitor:

For **Windows NT** and **OS/2 Warp**, at a command prompt enter:

**Start "MQSeries Trigger Monitor" runmqtrm /M FMCQM /Q
FMCTRIGGER**

For any of the **UNIX** based operating platforms, at a command prompt enter:

runmqtrm -m FMCQM -q FMCTRIGGER

Appendix B. MQ Workflow profile and system environment settings

During the configuration stage in the MQ Workflow setup process you are required to supply information that is used to set values of variables used for configuration purposes. The MQ Workflow variables that you set are then saved on your system in the MQ Workflow profile. A small number of these variables are also saved in your system's environment.

This appendix gives details about the information you are required to enter during the configuration stage in the MQ Workflow setup process by describing the MQ Workflow variables that are set, where the values for each variable are saved, and how to change the value of a variable after it has been set.

Locating the MQ Workflow profile and system environment

During the configuration process, information you supply is used to set the value of MQ Workflow variables. This information is saved in the MQ Workflow profile or the system environment. The location of the MQ Workflow profile and system environment for any of the supported operating platforms is as follows:

Table 2. Location of the system environment and MQ Workflow profile

Operating platform	Location of system environment	Location of MQ Workflow profile
AIX	/etc/environment	For AIX, the MQ Workflow profile is split into the following separate files: 1. /var/fmc/cfgs/<configurationidentifier>/fmcrc 2. /var/fmc/fmcrc
HP-UX	/etc/profile	/home/fmc/fmcrc
Sun Solaris	/etc/profile	/export/home/fmc/fmcrc

Table 2. Location of the system environment and MQ Workflow profile (continued)

OS/2 Warp	CONFIG.SYS	For OS/2 Warp, the MQ Workflow profile is split into the following separate files: <ol style="list-style-type: none"> 1. <i>bootdrive</i>\OS2\FMC.INI 2. <i>ConfigurationRootDirectory</i>\CFGS\FMC.INI 3. <i>ConfigurationRootDirectory</i>\CFGS\<i>ConfigurationID</i>\FMC.INI
Windows NT	Environment tab from system icon in control panel	Windows NT registry
Windows 98	AUTOEXEC.BAT	Windows 98 registry
Windows 95	AUTOEXEC.BAT	Windows 95 registry

Changing values of MQ Workflow variables

Values for each MQ Workflow variable set in the system environment and MQ Workflow profile during the configuration stage should be changed if they cause conflicts with other applications on your workstation.



Changing the values of variables in the system environment and MQ Workflow profile can affect additional files that use the same variables. “Appendix D. Updated files” on page 147 describes the affected files and updates you may need to make to these files after changing values of variables in the MQ Workflow profile or system environment.

Changing values in the MQ Workflow profile

To change values in the MQ Workflow profile, use the configuration tools explained in “Chapter 10. Configuring your installation” on page 65. If you cannot change a variable with the configuration tools, use the configuration-checking utility explained in “Chapter 11. Checking your installation” on page 85.



If you use the configuration-checking utility to change a variable which can also be changed using the configuration tools, your MQ Workflow system may stop running. Therefore, only use the configuration-checking utility to change variables when they can not be changed using the configuration tools.

The following describes the configuration-checking utility command you should use to change the value of variables in the MQ Workflow profile only when it is not possible to do so with the configuration tools.

There is no syntax checking or any other validation on the entered values when using this command.

To change the values of variables in the MQ Workflow profile using the configuration-checking utility, at a command prompt, enter the command:

```
fmczchk -c inst:[<profile>]<variable>[,<value>]
```

Where:

<profile> Replace this with the character that represents the profile you want to change:

- i** for installation profile
- g** for general configuration profile
- m** for configuration profile
- u** for user profile

Normally, there should be no need to use the parameter **i** or **g**.

<variable> Replace this with the MQ Workflow profile variable name you want to add or replace. See Table 3 on page 127 for a list of MQ Workflow profile variable names.

<value> Replace this with the new value of the MQ Workflow profile variable. If you do not specify any value here, the variable is deleted from the profile.

For any of the UNIX based systems, you can also change values of MQ Workflow profile variables by editing them in the profile file directly.

Changing values in the system environment

To change values set in the system environment:

- On AIX, open and edit values in the `/etc/environment` file.
- On HP-UX, open and edit values in the `/etc/profile` file.
- On Sun Solaris, open and edit values in the `/etc/profile` file.
- On OS/2 Warp, open and edit values in the `CONFIG.SYS` file.
- On Windows NT, select the Environment tab from the system icon in the control panel and edit values there.
- On Windows 98, open and edit values in the `AUTOEXEC.BAT` file.
- On Windows 95, open and edit values in the `AUTOEXEC.BAT` file.

Guidelines for changing values

When changing values of MQ Workflow variables in the MQ Workflow profile or system environment, adhere to the following guidelines:

- Use descriptive names. For example, use DB2 or MQSeries for the start of a name that describes a DB2 or MQSeries component, respectively.
- Use names that contain letters from A to Z or numbers from 0 to 9.

For details about using special characters for values that refer to DB2 and MQSeries variables see the DB2 and MQSeries documentation.

The conventions and rules to follow when choosing values for particular variables in the system environment and MQ Workflow profile are shown in Table 3 on page 127 where applicable.

MQ Workflow variables

The following table lists the variables that are set in the MQ Workflow profile and system environment with information you supply during the configuration stage. The table contains:

- A description for each variable.
- The default value for each variable.
- Where each variable is located. That is, whether it is contained in one of the MQ Workflow profiles or system environment.
- The naming conventions you must follow when changing the name or value of a variable.
- The name of the MQ Workflow component that uses the variable.

Table 3. Variables set in the MQ Workflow profile and system environment

MQ Workflow variable	Description	Default value	Used by
		Naming conventions	Contained in
Agent.CosNaming.Root	The root name context the agent uses to register the agent name. This variable must be specified if Agent.Locator is set to COS_LOCATOR.	No default	Java CORBA Agent
		Maximum length of 254 characters is possible. It can be any alphanumeric string (without slashes). It is case-sensitive.	Configuration profile
Agent.IorPath	Directory where the agent will publish its IOR file. This variable must be set if Agent.Locator is set to IOR_LOCATOR.	No default	Java CORBA Agent
		Must be a valid directory. Only a slash character is accepted as a valid directory separator. During runtime the platform-specific directory separator is used.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

Agent.Locator	The naming service used by the Java CORBA Agent.	LOC_LOCATOR	Java CORBA Agent
		Depending on the naming service, this variable can take any of the following values:	Configuration profile
		LOC_LOCATOR Uses local bindings to directly access the C++ API via JNI	
		COS_LOCATOR Uses CORBA Object Service Naming Service.	
		IOR_LOCATOR Uses an Interoperable Object Reference.	
		OSA_LOCATOR Uses the Visibroker Smart Agent	
		RMI_LOCATOR Uses the Java RMI Protocol.	
Agent.Name	Name of the Java CORBA Agent.	MQWFAGENT	Java CORBA Agent
		The name must adhere to the naming rules of the chosen policy	Configuration profile
Agent.Reaper.Cycle	The length of time between periodic garbage collection. It is specified in milliseconds.	300 000	Java CORBA Agent
		Values between 30 000 and 86 400 000 milliseconds can be specified	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

Agent.Reaper.Ratio	The percentage ratio between the client-side keep-alive message cycle and the agent-side liveness check.	90	Java CORBA Agent
		Any value between 0 and 100. For Internet applications the recommended value is 50.	Configuration profile
Agent.Reaper.Threshold	The maximum number of unreferenced objects tolerated by each client before nonperiodic garbage collection is triggered.	1 000	Java CORBA Agent
		Any value between 0 and 500 000	Configuration profile
APITimeOut	The timeout value is used for all functions/methods requiring communication between the client and the server.	180 000	Client
		Specified values are in microseconds.	Configuration profile
BTAuthWarning	Show the authorization warning message box in Buildtime.	1	Buildtime
		Can be either 1 for yes, or 0 for no.	User/ Configuration profile
BTConfirmDel	Show the deletion confirmation message box in Buildtime.	1	Buildtime
		Can be either 1 for yes, or 0 for no.	User/ Configuration profile
BTDatabaseName	Buildtime Database name. This value must only be set if DB2 is used and must be the same as the value specified for the variable BTODBCDataSourceName.	FMCBTDB	Buildtime
		<ul style="list-style-type: none"> • A maximum of 8 characters can be used. • The name must be unique, that is, no other database can have the same name. 	Configuration profile
BTDB2Instance	Name of a catalogued DB2 Instance to manage the Buildtime Database. Must be specified only when the Buildtime Database type is DB2.	No default	Buildtime
		Must be a valid DB2 instance name. For details see the DB2 manual.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

BTDatabaseUserID	User ID used to run Buildtime. Must be specified only when the Buildtime database type is DB2.	No default	Buildtime
		Only required if the Buildtime user ID is different to that used to create the database.	Configuration profile
BTDatabasePassword	Password for the user ID used for running Buildtime. Must be specified only when the Buildtime database type is DB2.	No default	Buildtime
		Only required if the Buildtime user ID is different to that used to create the database.	Configuration profile
BTGridSizeX	Dimension of the Buildtime diagram editor grid in the x-direction.	100	Buildtime
		Not applicable	Configuration profile
BTGridSizeY	Dimension of the Buildtime diagram editor grid in the y-direction.	100	Buildtime
		Not applicable	Configuration profile
BTGridVisible	Indicates if the grid within the Buildtime diagram editor is displayed.	1	Buildtime
		Can be either 1 for yes, or 0 for no.	Configuration profile
BTIconDirectory	Path name where the icons for Buildtime are located.	For Windows NT: D:\FMCWINNT\BIN\ICONINST For Windows 98: D:\FMCWIN98\BIN\ICONINST For Windows 95: D:\FMCWIN95\BIN\ICONINST	Buildtime
		Must be a valid path or directory name.	Configuration profile
BTInitialPalette	Name of the initial Buildtime tools palette.	Standard	Buildtime
		Only "Standard" is currently supported.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

BTInstDBContainerDirectory	Name of the directory where the Buildtime database containers are held. Only required if Buildtime uses DB2 as its database.	Default is the value set in the InstallationDirectory variable plus the subdirectory BT_DB. For Windows NT: D:\FMCWINNT\BT_DB For Windows 98: D:\FMCWIN98\BT_DB For Windows 95: D:\FMCWIN95\BT_DB	Buildtime
		The value contained here must be a valid path or drive name and must be different from the value specified for the variable InstDBContainerDirectory.	Configuration profile
BTInstDBLocation	Drive where the Buildtime database is created. Only required if Buildtime uses DB2 as its database.	D:	Buildtime
		The value contained here must be a valid drive name.	Configuration profile
BTInstDBManaged	Indicates whether Buildtime database is managed by the system (S) or by the database itself (D). Only required if Buildtime uses DB2 as its database.	S	Buildtime
		Only the value "S" is valid and cannot be changed.	Configuration profile
BTInstDBType	Database type used by Buildtime.	MSACCESS	Buildtime
		Only the values "MSACCESS" and "DB2" are valid.	Configuration profile
BTMDIBackground Color	Background in the Buildtime diagram editor is shown in this color, that is, "grey".	10461087	Buildtime
		Must be a valid decimal RGB code representing the desired color.	Configuration profile
BTODBCDataSourceName	ODBC Buildtime database driver name.	FMCBTDB	Buildtime
		Must be the same as the value specified for the variable BTDatabaseName.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

BTODBCDescription	Description for the Buildtime database.	No default	Buildtime
		Must be single-byte characters and less than 80 characters in length.	Configuration profile
BTSelectionColor	Selected symbols in the Buildtime diagram editor are shown in this color.	2834683	Buildtime
		Must be a valid decimal RGB code representing the desired color.	Configuration profile
ConfiguredComponents	Configured Components on your workstation. The values set for this variable cannot be changed manually.	No default	Server, Clients, Buildtime, Administration utility
		A maximum of 8 characters can be used. Characters from A-Z or a-z, and numbers from 0-9.	General Configuration profile
ConfigurationRootDirectory	Path or Directory used by configuration to store configurations.	For UNIX: /var/fmc For OS/2 Warp: D:\FMCOS2 For Windows NT: D:\FMCWINNT For Windows 98: D:\FMCWIN98 For Windows 95: D:\FMCWIN95	Server, Clients, Buildtime, Administration utility
		The value contained here must be a valid path or drive name and cannot be changed.	Installation profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

CustMQCommunicationAddress	Name or address of your MQ Workflow workstation.	For Windows NT, no default is set. For AIX, default is the machine IP address.	Server
		Must be a valid address where the MQ Workflow is running, that is: Fully qualified CP name if APPC is the communications protocol used. IP address if TCP/IP is the communications protocol used. Local NetBios name if NetBios is the communications protocol used.	Configuration profile
CustMQCommunicationProtocol	Communication protocol used by MQ Workflow.	T	Server
		Can only take one of the following values: T for TCP/IP N for NetBios S for APPC Note: For AIX, only possible value is T.	Configuration profile
CustMQPort	TCP/IP port number.	1414	Server
		A valid port number not used by other applications.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

DefaultConfigurationID	The default configuration identifier is used when MQ Workflow executables are called without specifying a configuration parameter (parameter -y).	No default	Server, Administration utility, Buildtime, Clients
		A maximum of 8 characters can be used. Characters from A-Z or a-z, and numbers from 0-9 are allowed.	General Configuration profile
FMLClientChannelLibRead	Name of the directory or path containing the Client Channel Table for the Clients.	Default is of the form: <i><ConfigurationRootDirectory></i> \chltabs For UNIX: var/fmc/chltabs For OS/2 Warp: D:\FMCOS2\CHLTABS For Windows NT: D:\FMCWINNT\CHLTABS For Windows 98: D:\FMCWIN98\CHLTABS For Windows 95: D:\FMCWIN95\CHLTABS	Client
		Must be a valid path or directory name.	Configuration Profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

FMLClientChannelLibWrite	Name of the directory or path where the Client Channel Table is created by the configuration and used by the server.	Default is of the form: <i><ConfigurationRootDirectory>\chl tabs</i> For UNIX: var/fmc/chltabs For OS/2 Warp: D:\FMCOS2\CHLTABS For Windows NT: D:\FMCWINNT\CHLTABS For Windows 98: D:\FMCWIN98\CHLTABS For Windows 95: D:\FMCWIN95\CHLTABS	Server
		Must be a valid path or directory name.	Configuration Profile
FMLClientChannelTable	File name of the Client Channel used by Clients.	AMQCLCHL.TAB	Client
		Must be a valid file name.	Configuration Profile
FMLConnectDelayTime			
FMLConnectName	Pointer to the queue manager of a certain MQ Workflow system which is a member of a certain system group.	FMC.SYS_GRP.FMCSYS,FMCQM	Clients
		Must take on the form queueprefix.systemgroup.system, queuemanager	Configuration profile
FMLSegmentation	Specifies whether MQSeries messages are split into segments. In a network containing OS/390 queue managers, messages must not be split into segments.	0	Client
		Can be either 0 for not splitting or 1 for splitting	Configuration Profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

FMLServerChannelTable	File name of the Client Channel used by the server.	AMQCLCHL.TAB Must be a valid file name.	Server Configuration Profile
FolderName	Name of the MQ Workflow folder including the icon to start the Configuration utility.	MQSeries Workflow	Server, Administration utility, Buildtime, Clients
		Only applicable for Windows. The value contained here must be a valid folder name.	Installation profile
InstallationDirectory	Directory where MQ Workflow is installed.	<p>For AIX: /usr/lpp/fmc</p> <p>For HP-UX: /opt/fmc</p> <p>For Sun Solaris: /opt/fmc</p> <p>For OS/2 Warp: D:\FMCOS2</p> <p>For Windows NT: D:\FMCWINNT</p> <p>For Windows 98: D:\FMCWIN98</p> <p>For Windows 95: D:\FMCWIN95</p>	Server, Administration utility, Clients, Buildtime
		The value contained here must be a valid path or drive name and cannot be changed.	Installation profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

InstalledComponents	Installed components on your workstation. The values set for this variable cannot be changed.	Default values depend on the components you installed.	Server, Administration utility, Clients, Buildtime
		<p>Can take one or several of the following values:</p> <p>A API Runtime Libraries</p> <p>B Buildtime</p> <p>C Java CORBA Agent (not available for OS/2 Warp)</p> <p>D Development Kit (only available for OS/2 Warp, Windows NT/98/95)</p> <p>I Runtime Database Utilities</p> <p>J Java API Beans (not available for OS/2 Warp)</p> <p>L Client for Lotus Notes</p> <p>M Samples (only available for Windows NT/98/95)</p> <p>N Lotus Notes Database Templates</p> <p>P Program Execution Agent</p> <p>R Runtime client (only available for Windows NT/98/95)</p> <p>S Server</p> <p>U Administration utility</p>	Installation profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

InstDBContainerdirectory	Name of the directory or path where the Runtime database containers are created.	<p>Default is the value set in the InstallationDirectory variable plus the subdirectory RT_DB for Windows NT and OS/2 Warp, and db for AIX.</p> <p>For Windows NT and OS/2 Warp: D:\FMCWINNT\RT_DB</p> <p>For UNIX: /var/fmc/db</p>	Server
		The value contained here must be a valid path or drive name.	Configuration profile
InstDBLocation	Directory or path where the Runtime database is created.	<p>For Windows NT and OS/2 Warp: D:</p> <p>For UNIX: /var/fmc/db</p>	Server
		The value contained here must be a valid path or drive name.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

InstDBManaged	<p>Indicates whether the Runtime database is managed by system (S) or by the database itself (D). The D option should only be chosen by an experienced DB2 administrator. If you select it, the most performance-critical table spaces are implemented as database managed. One container is preallocated for each table space with a maximal size. You should monitor the current size of each container using the DB2 control center and add new containers as soon as the available containers of any table space are 80% full. If the installation is for a UNIX based operating system, raw devices may be selected in conjunction with DB managed. A prerequisite is that the following devices have been defined:</p> <ul style="list-style-type: none"> • /dev/rCONTAINR 80MB • /dev/rPROCESS 24MB • /dev/rBLOCK 8MB • /dev/rPROGACT 16MB • /dev/rPROCACT 16MB • /dev/rBLOCKACT 16MB • /dev/rACTWI 16MB • /dev/rWORKITEM 64MB • /dev/rNTFYITEM 16MB • /dev/rINSTINDX 40MB • /dev/rADTTAIL 160MB 	S	Server
		Only the values "S" and "D" are valid.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

InstMQBackupQueues	Specifies whether to back up MQSeries queues or not. For this to have an effect, you must set its value before the queue manager has been created.	0 Can be either 1 for back up, or 0 for do not back up. The default value cannot be changed after the queue manager has been created and the channel definitions have been activated.	Server Configuration profile
InstMQQueueManager	Name of the queue manager to be used.	FMCQM <ul style="list-style-type: none">• The name must be unique, that is, no other queue manager can have the same name.• Use uppercase letters.• A maximum of 8 characters can be used. However, if you use more than 11 characters, you must define your own queues and channels. Examples are located in the subdirectory "mq5".	Server, Administration utility, Clients, Buildtime Configuration profile
Language	Sets the language version for the MQ Workflow component.	For OS/2 Warp, Windows NT/98/95: Depends on the language installed For AIX: enu Must be a valid 3-letter value representing the language version for the MQ Workflow component. A list of the possible 3-letter values is shown in "Appendix C. Language settings" on page 145.	Server, Administration utility, Clients, Buildtime Installation profile
MQPrincipal	User ID that the Object Authority Manager (OAM) uses to grant authorization to use MQSeries resources.	No default Must be a valid user ID. For further information see the MQSeries System Administration manual.	Server Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

MQPrefix	The queue prefix allows you to set a high-level qualifier for queue names in an MQ Workflow system.	FMC A maximum of 8 characters can be used.	Server, Client Configuration profile
NLSPATH	<p>Only valid for UNIX platforms. Sets the search path for the message catalogue file.</p> <p>For each language, a message catalogue file exists. MQWorkflow messages are translated into all of the supported languages which are then contained in the message catalogue file for that language.</p>	<p>On AIX: /usr/lib/nls/msg/%L/%N: /usr/lib/nls/msg/%L/%N.cat: /usr/lpp/fmc/msg/%N</p> <p>On HP-UX, Sun Solaris: /usr/lib/nls/msg/%L/%N: /usr/lib/nls/msg/%L/%N.cat: /opt/fmc/msg/%N</p> <p>where: %L is the system language %N is the MQWorkflow language For details regarding the system and MQWorkflow languages refer to “Appendix C. Language settings” on page 145.</p> <p>The value contained here must be a valid path name.</p>	<p>UNIX Server, Administration utility</p> <p>System environment</p>
RTDatabase	Name of the database used by MQ Workflow.	<p>FMCDDB</p> <ul style="list-style-type: none"> • A maximum of 8 characters can be used. • The name must be unique, that is, no other database can have the same name. 	<p>Server</p> <p>Configuration profile</p>
RTDatabasePassword	Password for the user ID used to start the server.	<p>No default</p> <p>Only required if the user ID for starting MQ Workflow is different to that used to create the database.</p>	<p>Server</p> <p>Configuration profile</p>

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

RTDatabaseUserid	User ID used to start the server.	No default	Server
		Only required if the user ID for starting MQ Workflow is different to that used to create the database.	Configuration profile
RTDB2Instance	Name of a catalogued DB2 Instance to manage the Runtime Database	No default	Server
		Must be a valid DB2 instance name. For details see the DB2 manuals.	Configuration profile
RTErrLogFile	Error Log File. For detailed information see the <i>MQSeries Administration Guide</i> .	<ConfigurationRootDirectory>\cfgs \<ConfigurationID>\log\fmcerr.log	Server
		Fully qualified file name	Configuration profile
RTIconDirectory	Path name where the Runtime Client icons are located.	For Windows NT: D:\FMCWINNT\BIN\ICONINST	Client
		For Windows 98: D:\FMCWIN98\BIN\ICONINST	
		For Windows 95: D:\FMCWIN95\BIN\ICONINST	
		Must be a valid path or directory name	Configuration profile
RTSystemLogFile	System Log File. For detailed information see the <i>MQSeries Administration Guide</i> .	<ConfigurationRootDirectory>\cfgs \<ConfigurationID>\log\fmcsys.log	Server
		Fully qualified file name	Configuration profile
RTExecutionServerOperationMode	Operation mode of the execution server.	Standalone	Server
		Only the value "Standalone" is valid and cannot be changed.	Configuration profile

Table 3. Variables set in the MQ Workflow profile and system environment (continued)

System	Name of the MQ Workflow system.	FMCSYS	Server, Administration utility, Clients, Buildtime
		A maximum of 8 characters can be used.	Configuration profile
SystemGroup	Name of the MQ Workflow system group.	FMCGRP	Server, Administration utility, Clients, Buildtime
		A maximum of 8 characters can be used.	Configuration profile
VRM	Installed version of MQ Workflow. The value set for this variable cannot be changed.	030200	Server, Administration utility, Clients, Buildtime
		VVRRMM (Version Release Mod. level)	Installation profile

Note: All variables starting with "Inst", "Cust", and "BTInst" are only used during installation and the MQSeries and DB2 customization.

Appendix C. Language settings

This appendix lists the various language versions for MQ Workflow.

Language settings for UNIX

When installing an MQ Workflow component on any of the UNIX based operating platforms, all language versions for that component that are supported by the operating system are installed. This means that it is possible to change the language version of an MQ Workflow component after installing it.

To change the language of an MQ Workflow component, set the value for the **Language** variable held in the MQ Workflow profile to the 3-letter code that represents the desired language. (See “Appendix B. MQ Workflow profile and system environment settings” on page 123 for details about the MQ Workflow profile.) For AIX, there are two sets of 3-letter codes. You can use either.

When you change the language in the MQ Workflow profile, make sure that you use the corresponding UNIX system language code to change the UNIX system language.

The following table lists the 3-letter codes, the corresponding UNIX system language codes, and the languages they represent:

Table 4. MQ Workflow language codes for UNIX

Language	Set one (ISO code page)		Set two (PC compatible code page. For AIX only.)	
	3-letter code	UNIX system language code	3-letter code	AIX system language code
U.S. English	enu	en_US	enu	En_US
Simplified Chinese	chs	zh_CN	CHS Chs	ZH_CN Zh_CN
Traditional Chinese	cht	zh_TW	CHT	Zh_TW
German	deu	de_DE	DEU	De_DE
Spanish	esp	es_ES	ESP	Es_ES
French	fra	fr_FR	FRA	Fr_FR
Italian	ita	it_IT	ITA	It_IT
Japanese	jpn	ja_JP	JPN	Ja_JP
Korean	kor	ko_KR	—	—
Brazilian Portuguese	ptb	pt_BR	—	—
Portuguese	ptg	pt_PT	PTG	Pt_PT

Language settings for OS/2 Warp and Windows

For OS/2 Warp, Windows NT, Windows 98, and Windows 95, the language version of an MQ Workflow component is set at the beginning of the installation. When the language version is set, it cannot be changed.

The **Language** variable in the MQ Workflow profile holds a 3-letter code that represents the installed language version of MQ Workflow. The list of possible 3-letter codes and the language they represent for OS/2 Warp, Windows NT, Windows 98, and Windows 95 are:

Table 5. MQ Workflow language codes for OS/2 Warp, Windows NT, Windows 98, and Windows 95

Language	3-letter Code
Chinese (Simplified)	CHS
Chinese (Traditional)	CHT
Danish	DAN
Dutch	NLD
English (U.S.)	ENU
Finnish	FIN
French	FRA
German	DEU
Hebrew	HEB
Hungarian	HUN
Italian	ITA
Japanese	JPN
Korean	KOR
Norwegian	NOR
Polish	PLK
Portuguese (Brazilian)	PTB
Portuguese (European)	PTG
Spanish	ESP
Swedish	SVE
Turkish	TRK

Appendix D. Updated files

This appendix describes files on your workstation that are updated during the installation and configuration process. The path and updates for each file are given.



If you change values in the MQ Workflow profile or system environment, you may need to make changes to the files listed in this Appendix. For details about the MQ Workflow profile or system environment see “Appendix B. MQ Workflow profile and system environment settings” on page 123.

Files updated on UNIX

The following lists files that are updated when MQ Workflow is set up on a UNIX based workstation.

*/var/fmc/cfgs/<configurationidentifier>/fmcrc*²²

*/var/fmc/fmcrc*²³

*/home/fmc/fmcrc*²⁴

*/export/home/fmc/fmcrc*²⁵

This is the MQ Workflow profile that contains information you supply during the installation and configuration stage. The information you supply is used to set the values of variables in this file.

If the values contained in this file cause conflicts with other applications, you should change them using one of the available configuration tools, or open the MQ Workflow profile and change the default values directly.

/etc/environment

This is the system environment that contains information you supply during the configuration stage. The information you supply is used to set the values of variables in this file.

22. For AIX

23. For AIX

24. For HP-UX

25. For Sun Solaris

If the values contained in this file cause conflicts with other applications, open the file and change the default values directly. If you change values in the system environment, you must log on again to activate the changes made.

/etc/inetd.conf

The following line is added to this file:

```
MQSeries stream tcp nowait mqm /usr/lpp/mqm/bin/amqcrsta amqcrsta -m  
<QueueManager>
```

Where *<QueueManager>* is the name for the queue manager that is set in the MQ Workflow profile during installation.

If you change the queue manager name within the MQ Workflow profile after installation, you must also change the queue manager name in this line to the same name. Refer to “Appendix B. MQ Workflow profile and system environment settings” on page 123 for details about the queue manager name.

If you make changes to this file, you must activate the changes made by entering at a command prompt:

refresh -s inetd

/etc/services

The following line is added to this file:

```
MQSeries <Port-Number>/tcp          #MQSeries
```

If you make changes to this file, you must activate the changes made by entering at a command prompt:

refresh -s inetd

Changing values in the MQ Workflow profile does not affect this file.

/var/mqm/qmgrs/FMCQM/qm.ini

This is the queue manager configuration file. During the MQSeries customization procedure the following lines are added to this file:

```
XAResourceManager:  
  Name=<DB2Instance> <RTDatabase>  
  SwitchFile=<InstallationDirectory>/db2swit/db2swit  
  XAOpenString=<RTDatabase>
```

Where:

<DB2Instance>

is the name of the DB2 instance you specified during the configuration stage.

<RTDatabase>

is the name of the DB2 database you specified during the configuration stage.

<InstallationDirectory>

is the MQ Workflow installation directory.

Changing the name of the queue manager in the MQ Workflow profile changes the path to this file. After changing the queue manager name the new path is:

/var/mqm/qmgrs/<QueueManager>/qm.ini

where *<QueueManager>* is replaced by the new name you specified for the queue manager in the MQ Workflow profile.

The values for *<InstallationDirectory>* and *<RTDatabase>* are taken from the MQ Workflow profile. The value for *<DB2Instance>* is taken from the system environment. If you change the values for these variables in the system environment or MQ Workflow profile, you must also make the same changes in the qm.ini file. Refer to “Appendix B. MQ Workflow profile and system environment settings” on page 123 for details about the *<InstallationDirectory>*, and *<RTDatabase>* variables. For details about the *<DB2Instance>* variable, refer to the DB2 documentation.

Files updated on OS/2 Warp

The following lists files that are updated when MQ Workflow is set up on an OS/2 Warp workstation.

Bootdrive\OS2\FMC.INI

<ConfigurationRootDirectory>\CFGS\FMC.INI

<ConfigurationRootDirectory>\CFGS\<ConfigurationID>FMC.INI

This is the MQ Workflow profile that contains information you supply during the installation and configuration stage. The information you supply is used to set the values of variables in this file.

If the values contained in this file cause conflicts with other applications, you should change them using one of the available configuration tools.

CONFIG.SYS

This is the system environment that contains information you supply during the installation stage.

<MQSeriesDirectory>\QMGRS\FMQQM\QM.INI

This is the queue manager configuration file, where <MQSeriesDirectory> is the directory where MQSeries is installed.

During the MQ Workflow installation procedure, the following lines are added to this file:

```
XAResourceManager:  
  Name=<DB2Instance> <RTDatabase>  
  SwitchFile=<InstallationDirectory>\DB2SWIT\DB2SWIT.DLL  
  XAOpenString=<RTDatabase>  
ThreadOfControl=PROCESS
```

Where:

<DB2Instance>
is the name of the DB2 instance you specified during the configuration stage.

<RTDatabase>
is the name of the DB2 database you specified during the configuration stage.

<InstallationDirectory>
is the MQ Workflow installation directory.

Changing the name for the queue manager in the MQ Workflow profile changes the path to this file. After changing the queue manager name, the new path is:

<MQSeriesDirectory>/QMGRS/<QueueManager>/QM.INI

where <QueueManager> is replaced by the new name you specified for the queue manager in the MQ Workflow profile.

The values for <InstallationDirectory> and <RTDatabase> are taken from the MQ Workflow profile. The value for <DB2Instance> is taken from the system environment. If you change the values for these variables in the system environment or MQ Workflow profile, you must also make the same changes in the QM.INI file. Refer to “Appendix B. MQ Workflow profile and system environment settings” on page 123 for details about the <InstallationDirectory>, and <RTDatabase> variables. For details about the <DB2Instance> variable, refer to the DB2 documentation.

Services file

The Services file is located in the directory pointed to by the etc environment variable that is held in the CONFIG.SYS file on your workstation.

For each TCP/IP port number you specify during configuration, an entry with the following syntax is added to the services file:

```
MQSeries <Port-Number>/tcp          #MQSeries
```

Changing values in the MQ Workflow profile does not affect this file.

Files updated on Windows

The following lists files that are updated when MQ Workflow is set up on workstations running any of the following Windows based operating systems:

- Windows NT
- Windows 98
- Windows 95

Windows registry

The MQ Workflow profile that contains information you supply during the installation and configuration stage is stored in the Windows registry. The information you supply is used to set the values of variables in this file.

Environment

This is only updated when MQ Workflow components are installed and configured on Windows NT. This is the system environment and is found by selecting the Environment tab from the system icon in the control panel. Information you supply during the installation stage is used to set the values of variables in the Windows NT Environment.

If the default values contained in the Windows NT Environment cause conflicts with other applications, open the Environment and change the values directly. To ensure that all programs can use the changes you made, restart your system.

AUTOEXEC.BAT

This is only updated when MQ Workflow components are installed on Windows 98 and Windows 95. Information you supply during the installation stage is used to set the values of variables in the AUTOEXEC.BAT file.

If the default values contained in the AUTOEXEC.BAT file cause conflicts with other applications, open the AUTOEXEC.BAT file and change the values directly. To ensure that all programs can use the changes you made, restart your system.

<MQSeriesDirectory>\QMGRS\FMQM\QM.INI

This is the queue manager configuration file, where <MQSeriesDirectory> is the directory where MQSeries is installed.

During the MQ Workflow installation procedure, the following lines are added to this file:

```
XAResourceManager:  
  Name=<DB2Instance> <RTDatabase>  
  SwitchFile=<InstallationDirectory>\DB2SWIT\DB2SWIT.DLL  
  XAOpenString=<RTDatabase>  
ThreadOfControl=PROCESS
```

Where:

<DB2Instance>

is the name of the DB2 instance you specified during the configuration stage.

<RTDatabase>

is the name of the DB2 database you specified during the configuration stage.

<InstallationDirectory>

is the MQ Workflow installation directory.

Changing the name for the queue manager in the MQ Workflow profile changes the path to this file. After changing the queue manager name, the new path is:

```
<MQSeriesDirectory>/QMGRS/<QueueManager>/QM.INI
```

where <QueueManager> is replaced by the new name you specified for the queue manager in the MQ Workflow profile.

The values for <InstallationDirectory> and <RTDatabase> are taken from the MQ Workflow profile. The value for <DB2Instance> is taken from the system environment. If you change the values for these variables in the system environment or MQ Workflow profile, you must also make the same changes in the QM.INI file. Refer to “Appendix B. MQ Workflow profile and system environment settings” on page 123 for details about the <InstallationDirectory>, and <RTDatabase> variables. For details about the <DB2Instance> variable, refer to the DB2 documentation.

Services file

The Services file has the following path:

For Windows NT:

Bootdrive\WINNT\SYSTEM32\DRIVERS\ETC\SERVICES

For Windows 98 and Windows 95:

Bootdrive\WINDOWS\SERVICES

For each TCP/IP port number you specify during configuration, an entry with the following syntax is added to the services file:

```
MQSeries <Port-Number>/tcp          #MQSeries
```

Changing values in the MQ Workflow profile does not affect this file.

Appendix E. Installation messages

This appendix lists all information, warning, and error messages that can be displayed during the MQ Workflow installation and customization procedures. For each message, its message code, text, ID, severity, explanation, and user response is given.

36200 **unInstaller setup failed to initialize.**

Severity: Error

MsgID: FMC_ERROR_UNINSTSETUP_FAILED

Explanation: The unInstaller setup failed to initialize. The uninstallation key cannot be created or the uninstall log file Uninst.Isu cannot be initialized. The initialization may fail because the log file is corrupted by a previously unsuccessful installation of MQSeries Workflow.

User Response: Check that you have enough privileges to update the registry. If the log file Uninst.isu is on your system, check that it is not marked as read-only or system file. If it is from a previously unsuccessful installation, erase the log file.

36201 **You cannot install on a system without the correct type of operating system - you need Windows NT 4.0 or Windows 95/98 installed. The installation will stop.**

Severity: Error

MsgID: FMC_ERROR_OS_WRONG

36202 **MQSeries Workflow requires that the Windows NT 4.0 Service Pack %s or higher is installed.**

Severity: Error

MsgID: FMC_ERROR_NO_SERVICEPACK

User Response: Install the required fix pack for Windows NT 4.0.

36203 **MQSeries Workflow requires that the Windows 95 Version %s or higher is installed.**

Severity: Error

MsgID: FMC_ERROR_NO_SERVICEPACK_W95

User Response: Install the required operating system level.

36204 **MQSeries Workflow requires that the Windows 98 Service Pack %s or higher is installed.**

Severity: Error

MsgID: FMC_ERROR_NO_SERVICEPACK_W98

User Response: Install the required operating system level.

36210 **You must have Administrator rights to install IBM MQSeries Workflow on Windows NT. The installation will stop.**

Severity: Error

MsgID: FMC_ERROR_NO_ADMINISTRATOR

Explanation: If you want to perform the installation, you need Administrator rights on Windows NT.

User Response: Log on with a user ID with Administrator rights and start the installation again.

36211 **This program requires VGA or better resolution.**

Severity: Warning

MsgID: FMC_WNG_NO_VGARESOLUTION

Explanation: Some components of MQSeries Workflow require VGA or a better resolution.

User Response: If you need information about how to change the resolution, contact your local system support.

36212 **The installed video adapter is %s with a resolution of %d x %d. Some components like the Buildtime need a resolution of 800 x 600 or higher.**

Severity: Warning

MsgID: FMC_WNG_RESOLUTION_TOO_LESS

User Response: If you need information about how to change the resolution, contact your local system support.

36213 **Installation messages are saved in file %s.**

Severity: Information

MsgID: FMC_INFO_INSTALLATION_LOG_FILE

Explanation: The log file includes messages to help you determine problems during installation.

User Response: If you have encountered problems during installation, use this log file as part of your problem description. The location of the file fmcsetup.log is as follows: Before the MQSeries Workflow files are moved to your system, the file is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

36214 **This program will update your existing installation. Ensure that no MQSeries Workflow programs or services are running. There will be no backup version.**

Severity: Warning

MsgID: FMC_WNG_ALREADY_INSTALLED

User Response: Since the installation will update an existing installation, MQSeries Workflow programs and services must not be running. Stop all MQSeries Workflow programs and services.

36215 **This program will update your existing installation. Ensure that no MQSeries Workflow programs are running. There will be no backup version.**

Severity: Warning

MsgID: FMC_WNG_ALREADY_INSTALLED_OS2

User Response: Since the installation will update an existing installation, MQSeries Workflow programs must not be running. Stop all MQSeries Workflow programs.

36216 **With this installation program you can update MQSeries Workflow from version 3.1.2 to version 3.2. The MQSeries Workflow version installed on your workstation is at the wrong level. The installation will abort.**

Severity: Error

MsgID: FMC_ERROR_INSTALLED_MQWF_VERSION_TOO_LESS

User Response: Migrate your installation to MQSeries Workflow version 3.1.2 as described in file README.MIG on the MQSeries Workflow version 3.1.2 CD-ROM.

36217 **The installed MQSeries Workflow version is a later version than the MQSeries Workflow version 3.2 installation. The installation will abort.**

Severity: Error

MsgID: FMC_ERROR_INSTALLED_MQWF_VERSION_HIGHER

User Response: None

36218 **The existing MQSeries Workflow version 3.1.2 profile has not been migrated to a profile that can be used by MQSeries Workflow version 3.2. Do you want to migrate it now?**

Severity: Warning

MsgID: FMC_WNG_MIGRATE_PROFILE_MISSING

User Response: If you want to use the existing MQSeries Workflow version 3.1.2 profile settings, you must migrate the profile. “Appendix F. Migrating data from a previous release” on page 163 explains how to do this.

36219 **The existing MQSeries Workflow version 3.1.2 profile cannot be migrated.**

Severity: Error

MsgID: FMC_ERROR_MIGRATE_PROFILE_FAILED

User Response: Migrating the MQSeries Workflow profile from version 3.1.2 to version 3.2 failed. For more information, see the chapter ‘Migrating data from a previous release’ in the installation guide.

36220 **If you want to use Buildtime and Runtime data from your existing MQSeries Workflow installation, you must migrate the databases before continuing with this installation.**

Severity: Information

MsgID: FMC_INFO_MIGRATE_COMPONENTS

User Response: If you want to use Buildtime and Runtime data from your existing MQSeries Workflow installation with the new release of MQSeries Workflow, you need to migrate the databases before installing the new release. “Appendix F. Migrating data from a previous release” on page 163 explains how to do this.

36221 **If you want to use Runtime data from your existing MQSeries Workflow installation, you must migrate the database before continuing with this installation.**

Severity: Information

MsgID: FMC_INFO_MIGRATE_COMPONENTS_OS2

User Response: If you want to use Runtime data from your existing MQSeries Workflow installation with the new release of MQSeries Workflow, you need to migrate the databases before installing the new release. “Appendix F. Migrating data from a previous release” on page 163 explains how to do this.

36222 **There is not enough disk space available, %ld kilobytes, on the disk %s. %ld kilobytes are required. Set your environment variable TEMP to a directory with more disk space.**

Severity: Error

MsgID: FMC_ERROR_DISKFULL_TEMP

Explanation: The installation requires more temporary disk space.

User Response: Set the environment variable to

a directory with the required disk space and start the installation again.

36223 **There is not enough disk space available, %ld kilobytes, on the disk %s. %ld Kilo bytes are required. Make sure that more space is available.**

Severity: Warning

MsgID: FMC_WNG_DISKFULL

Explanation: The disk space available in the specified MQSeries Workflow directory is not enough.

User Response: Make sure that more disk space is available or choose another destination for the MQSeries Workflow directory.

36226 **You must select at least one component.**

Severity: Warning

MsgID: FMC_WNG_NO_COMPONENT_SELECTED

36227 **File(s) failed to self-register:**

Severity: Warning

MsgID: FMC_WNG_SELFREGISTER_FAILED

Explanation: During installation some system files and MQSeries Workflow files must be registered. Most of these files have dependencies to products that are prerequisites for MQSeries Workflow.

User Response: Check that you have the MQSeries Workflow prerequisite software installed on your system. Use a tool to find out which files are required by the failed self-registered file(s). Check that these files are located within the path of your system.

36228 **The following command failed: %s. Run this command again after installation.**

Severity: Warning

MsgID: FMC_WNG_COMMAND_FAILED

Explanation: During installation some commands are processed.

User Response: Open a command prompt and enter the command displayed in the message.

36229 **The update of the profile failed. Run the command '%s' again.**

Severity: Warning

MsgID: FMC_WNG_PROFILE_UPDATE_FAILED

Explanation: During installation the MQSeries Workflow installation profile is created. It is required later by the configuration.

User Response: Open a command prompt and enter the command displayed in the message.

36250 **An unexpected error has occurred. More information is included in file fmcsetup.log in directory %s.**

Severity: Severe

MsgID: FMC_ERROR_ABORT_INSTALLATION

Explanation: An unexpected error has occurred. The file fmcsetup.log contains more information. The location of the file fmcsetup.log is as follows: Before the MQSeries Workflow files are moved to your system, it is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

User Response: Contact the MQSeries Workflow Service and provide the file fmcsetup.log.

36251 **Access to the MQSeries Workflow media has been lost.**

Severity: Severe

MsgID: FMC_ERROR_MEDIA_NOT_AVAILABLE

Explanation: The MQSeries Workflow installation media is not available. Check that you still have access to the MQSeries installation media.

User Response: If you have removed the CD-ROM, insert the CD-ROM again and start the installation again. If you accessed the installation media over a network, establish the connection again.

36252 **A file cannot be copied to your system. More information is included in file fmcsetup.log in directory %s.**

Severity: Severe

MsgID: FMC_ERROR_INSTALLING_FILE

Explanation: A file cannot be copied to your system. The file fmcsetup.log contains more information. The location of the file fmcsetup.log can be as follows: Before the MQSeries Workflow files are moved to your system, it is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

User Response: Check that the file is not marked as read-only or system file. If the directory is on the network, check that you have the privileges to create files. Close any running program to ensure that the file is not in use by this program. Start the installation again.

36253 **A file cannot be copied to your system because the target disk is full. More information is included in file fmcsetup.log in directory %s.**

Severity: Severe

MsgID: FMC_ERROR_INSTALLING_FILE_DISKFULL

Explanation: A file cannot be copied to your system because the target disk is full. The file fmcsetup.log contains more information. The location of the file fmcsetup.log can be as follows: Before the MQSeries Workflow files are moved to your system, it is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

User Response: Provide more disk space on your disks.

36254 **Unable to allocate memory.**

Severity: Severe

MsgID: FMC_ERROR_MEMORY_NOT_ENOUGH

Explanation: The installation was unable to allocate memory.

User Response: Close some programs to free memory or provide more memory.

36255 **Unable to create directory %s.**

Severity: Severe

MsgID: FMC_ERROR_CREATE_DIRECTORY_FAILED

Explanation: The installation was unable to create the specified directory.

User Response: Check that the specified directory is correct. Check that the drive or any subdirectory in the specified directory is not write-protected. Check that the drive name is valid. If the drive is a network drive, check that

you have the network privileges to create subdirectories.

36256 **Unable to delete file %s in directory %s.**

Severity: Severe

MsgID: FMC_ERROR_DELETE_FILE

Explanation: The installation was unable to delete the specified file.

User Response: Check that the file is not a read-only, system, or hidden file. If the directory is on the network, check that you have the privileges to delete files.

36257 **Unable to update environment variable %s with value: %s.**

Severity: Severe

MsgID: FMC_ERROR_UPDATE_ENVIRONMENT_VARIABLE_W95

Explanation: The installation was unable to update an environment variable within the file autoexec.bat.

User Response: Check that the file autoexec.bat is not a read-only, system, or hidden file.

36258 **Unable to add or replace a line within AUTOEXEC.BAT with value %s.**

Severity: Severe

MsgID: FMC_ERROR_REPLACE_ENVIRONMENT_VARIABLE_W95

Explanation: The installation was unable to update an environment variable within the file autoexec.bat.

User Response: Check that the file autoexec.bat is not a read-only, system, or hidden file.

36259 **Unable to load %s.**

Severity: Error

MsgID: FMC_ERROR_UNABLE_LOADDLL

Explanation: The installation was unable to load the DLL into memory.

User Response: Check that the specified DLL is on your system. Use a tool to find out which files are required by the DLL. Check that these files are located within the path of your system. If the checks are successful, restart Windows again.

36262 **Failed to get environment variable Key: %s Name: %s, Return Code: %d.**

Severity: Error

MsgID: FMC_ERROR_GETENVVAR_FAILED

Explanation: Installation cannot retrieve the value for the specified environment variable name. The file fmcsetup.log contains more information. The location of the file fmcsetup.log can be as follows: Before the MQSeries Workflow files are moved to your system, it is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

User Response: Contact the MQSeries Workflow Service and provide the file fmcsetup.log.

36263 **Unable to set environment variable (Key: %s, Name: %s).**

Severity: Error

MsgID: FMC_ERROR_SETENVVAR_FAILED

Explanation: Installation cannot set the value for the specified environment variable name. The file fmcsetup.log contains more information. The location of the file fmcsetup.log depends on the following: Before the MQSeries Workflow files are moved to your system, it is located in the directory specified by the environment variable TEMP. After MQSeries Workflow files have been moved, the file is located in the subdirectory 'log' of your installation directory.

User Response: Check that you have enough privileges to update the environment.

36452 **The ODBC Setup Library is locked. ODBC setup will not continue.**

Severity: Error

MsgID: FMC_ERROR_ISODBC_
INSTALLERDLLLOCKED

User Response: Close any running program.
Start the installation again.

36453 **Unable to write to ODBC Template uninstallation log file _UNODBC.log.**

Severity: Error

MsgID: FMC_ERROR_ISODBC_
WRITETOLOGFILE

User Response: If the log file _UNODBC.log is on your system, make sure that it is not marked as read-only or system file. If the file exists from a previously unsuccessful installation, erase the log file.

Appendix F. Migrating data from a previous release

This appendix contains information and procedures for migrating from MQ Workflow Version 3.1.2. If you want to use Buildtime and Runtime data from your existing MQ Workflow installation with the new release of MQ Workflow, you need to migrate the databases before installing the new release.

To use the profile settings from your existing MQ Workflow installation with the new release, you must also migrate the MQ Workflow profile.

How to migrate Runtime data

To use Runtime data from your existing MQ Workflow installation with the new release of MQ Workflow, you must migrate the Runtime database.



You can only migrate the Runtime database from Version 3.1.2 to Version 3.2.

Migrating the Runtime database involves several steps:

1. Backing up the Runtime database data
It is recommended that you back up the existing data contained in the Runtime database in case problems occur during the migration and you need to restore it again. Details about how to back up a database are given in the DB2 Administration Guide.
2. Changing the schema of the Runtime database
The layout and underlying processes of the existing Runtime database must be prepared for MQ Workflow Version 3.2.
3. Preparing the Runtime database data
Existing data contained in the Version 3.1.2 Runtime database must be prepared for MQ Workflow Version 3.2.
4. Bind packages
New packages must be bound to the Version 3.2 Runtime database.

Steps 2 to 4 are performed using the command-line utility described in “Command-line migration tool” on page 165.

Before migrating Runtime data

Before you can migrate Runtime data, you must create a temporary directory on your workstation and copy certain files into it from the MQ Workflow installation disk as follows:

1. At a command prompt, create a temporary directory called **temp** on your workstation.
2. Insert the MQ Workflow installation disk into the CD-ROM drive.
3. The following is a list of directories contained on the MQ Workflow installation disk:

For AIX:

- `x/mig/aix`
- `x/mig/aix/cat_iso`
- `x/mig/aix/cat_pc`
- `x/mig/aix/cat_utf`

For OS2: `x\MIG\OS2`

For Windows NT: `x\MIG\WINDOWS`

where:

`x` is the drive letter for the CD-ROM drive.

Change to the directory **temp** you created in step 1.

4. For your operating system, copy all files from the directory (or directories for AIX) on the MQ Workflow installation disk to the directory **temp** you created on your workstation by entering:

For AIX:

- `cp x/mig/aix/*.`
- `cp x/mig/aix/cat_iso/*.`
- `cp x/mig/aix/cat_pc/*.`
- `cp x/mig/aix/cat_utf/*.`

For OS2: `COPY x\MIG\OS2*.*`

For Windows NT: `COPY x\MIG\WINDOWS*.*`

where:

`x` is the drive letter for the CD-ROM drive.

5. Perform the migration using the command-line migration tool explained next.



The command and command-line options, explained next, that are used to migrate the Runtime data must be invoked from the temporary directory **temp** you created.

Command-line migration tool

To migrate your Runtime data from your existing Runtime database to the new version, a command-line tool is available.



Before you run the migration tool, make sure that all MQ Workflow servers are shut down, and that you have backed up the existing Runtime database data as previously mentioned in step 1 on page 163. Backup should be performed after all MQ Workflow servers have been shut down.

The command-line migration tool must be invoked from the temporary directory **temp** you previously created. It can be used with a number of command-line options, as follows:

```
fmczm320 [-h] [-d] [-c] [-b] [-n <DB_NAME>] [-u <UserID> -p <Pword>]
```

The command-line options are entered after the migration tool start command **fmczm320** without the square brackets, [].

The order in which command-line parameters are entered depends on whether you enter them all together after the start command or one at a time. If you enter them all together after the start command, the order is not important. If you want to enter them one at a time, you must first perform the schema changes using option **-d**. You can then perform data preparation using option **-c** or binding using option **-b** in any order you like.

The function of each command-line parameter is explained next.

- h** Invokes online help text that displays and describes all command-line options and the migration tool start command.
- d** Changes the schema of the existing database for MQ Workflow Version 3.2.
- c** Prepares existing data for MQ Workflow Version 3.2.
- b** Causes the new packages for Version 3.2 to be bound to the database.
- n <DB_NAME>**
Specifies which database to migrate. Replace **<DB_NAME>** with the name of the database you want to perform the migration on. If this command-line parameter is not specified, the database name from the MQ Workflow profile is used instead.

-u <UserID>

Specifies the user ID used to connect to the database. Replace <UserID> with a valid user ID. If no user ID is specified, a connection to the database is tried without user ID and password values.

-p <Pword>

Specifies the password used to connect to the database. Replace <Pword> with a valid password value. The password is only valid when a user ID has been previously specified. If no password is specified, a connection to the database is tried without a password value.

For example, if your existing Runtime database is called FMCDDB, to migrate to the new release of MQ Workflow, change to the temporary directory **temp**, and at a command prompt enter:

```
fmczm320 -d -c -b -n FMCDDB
```

The migration of your Runtime data is complete when the following message appears:

Runtime database migration to version 3.2.0 completed successfully.



If errors occur during the migration process, restore the Runtime database data you backed up and repeat the migration procedure using the command-line tool. How to restore backed up data is described in the DB2 Administration Guide.

If persistent errors exist, you can use the log files (*.log) contained in the temporary directory **temp** to find the cause.

How to migrate the Buildtime database

To use Buildtime data from your existing MQ Workflow installation with the new release of MQ Workflow, you must migrate the Buildtime database. To migrate the Buildtime database from Version 3.1.x to Version 3.2, you must do the following:

1. Before you install the new release of MQ Workflow, export your Buildtime data. How to do this is described under "Exporting from Buildtime" in the *IBM MQSeries Workflow: Getting Started with Buildtime* manual.
2. Install and configure the new release of MQ Workflow as described in this book.
3. Import the FDL file that is produced from step 1. How to do this is described under "Importing into Buildtime" in the *IBM MQSeries Workflow: Getting Started with Buildtime* manual.

You can now use your workflow model data in the new release of MQ Workflow.

How to migrate the MQ Workflow profile

To use profile settings from your existing MQ Workflow installation with the new release, you must migrate the MQ Workflow profile. To do this:

1. Insert the MQ Workflow installation disk into the CD-ROM drive.
2. From the following list, locate the relevant directory on the MQ Workflow installation disk for your operating system:

For AIX: `x/aix`

For OS2: `x\OS2`

For Windows NT and Windows 95:

`x\WINDOWS`

where:

`x` is the drive letter for the CD-ROM drive.

3. Change to the directory on the MQ Workflow installation disk for your operating system.
4. From the command prompt, migrate the MQ Workflow profile by entering the following command:

fmczp320

The MQ Workflow profile migration starts. This may take a few minutes. When control has been passed back to the command prompt, the migration is complete.

Appendix G. Deleting MQ Workflow

This appendix explains how to uninstall MQ Workflow installed on workstations running AIX, OS/2 Warp or any of the supported Windows based operating platforms. For information about uninstalling MQ Workflow from workstations running Sun Solaris or HP-UX, see the README.1ST file contained on the MQ Workflow CD-ROM.

Before deleting MQ Workflow

Before you can uninstall MQ Workflow you must:

1. Stop any running MQ Workflow components as explained in "Part 5. After installing and configuring MQ Workflow" on page 83.



On Windows NT, if MQ Workflow servers are running as a Windows NT service, they must be stopped via the service panel as explained in "Via the service panel" on page 108.

2. Use any of the configuration tools to remove all configurations.

After performing these steps you can delete MQ Workflow from workstations running any of the supported operating platforms as described in the following sections.

Deleting MQ Workflow from an AIX workstation

Use the System Management Interface Tool (smit) to delete selected MQ Workflow components from an AIX workstation.

To delete MQ Workflow components from an AIX workstation, do the following:

1. Log on to the workstation as root and enter the root password.
2. Start the System Management Interface Tool:
 - To use AIX windows, enter **smit** on the command line.
 - To use the character-based interface, enter **smitty** on the command line. The sequence of panels that is subsequently displayed is similar to those described in this section, but are character based.

The System Management Interface Tool window is displayed.

3. In the **System Management** list, select the **Software Installation and Maintenance** button.

- The Software Installation and Maintenance list is displayed.
4. Select the **Maintain Installed Software** button.
The Maintain Installed Software list is displayed.
 5. Select the **Remove Software Products** button.
The Remove Software Products list is displayed.
 6. Select the **List** button to the right of the **SOFTWARE name** field.
The Multi-select List window is displayed.
 7. Select the MQ Workflow components you want to delete from the workstation.
 8. Select the **OK** button.
The Remove Software Products window is displayed.
 9. If you want to remove the product installation completely, change the **REMOVE dependent software** field to yes.
To preview if you can remove the selected software products, select the **OK** button.
To finally remove the selected software products, change the **Preview only** field to no.
 10. Select the **OK** button.
 11. When you are prompted Are you sure?, select the **OK** button.
 12. When the deletion process is completed, leave smit from the **Exit** menu.

Deleting MQ Workflow from an OS/2 Warp workstation

Use the Install & Maintain icon located in the MQ Workflow folder on your OS/2 Warp desktop to delete MQ Workflow from a workstation.

To delete MQ Workflow from an OS/2 Warp workstation, do the following:

1. Open the **MQSeries Workflow folder** on your OS/2 desktop.
2. Select the **Install & Maintain** icon by double-clicking on it. The **Installation and Maintenance** panel appears containing an entry that you can select to delete.
3. If the entry is **IBM MQSeries Workflow V3**, highlight it and go to step 4 on page 171. If it is not **IBM MQSeries Workflow V3**, do the following:
 - a. Select **File** from the menu bar.
 - b. From **File**, open **Catalog**.
 - c. Select **Drive**.
 - d. From the Drive List box, select the drive where MQ Workflow is installed.

- e. Use the search button to search for the file **fmczi*lng*.icf**, where *lng* is the three-letter language abbreviation of the language you have installed. Refer to “Appendix C. Language settings” on page 145 for a list of the language abbreviations for OS/2 Warp.
 - f. Select **OK**.
 - g. Select **Open**. The **Installation and Maintenance** panel is shown with **IBM MQSeries Workflow V3** as the entry.
 - h. Go to step 4.
4. Select **Action**.
 5. Select **Delete** to delete all MQ Workflow components.

Deleting MQ Workflow from a Windows workstation

Use the Add/Remove Programs application located in the control panel to delete MQ Workflow from a Windows based workstation.

To delete MQ Workflow from a Windows NT, Windows 98, or Windows 95 workstation, do the following:

1. On the task bar, click on the Windows **Start** menu and select **Settings**.
2. From **Settings**, select **Control Panel**.
3. Within the **Control Panel**, select the **Add/Remove Programs** icon. A dialog box appears.
4. Under the **Install/Uninstall** tab, highlight **MQSeries Workflow**.
5. Click on the **Add/Remove** button.
6. The **Confirm File Deletion** window appears asking you if you want to remove MQ Workflow. Select the **Yes** button to delete all MQ Workflow components.
7. When the deletion is completed, select the **OK** button from the **Remove Programs From Your Computer** window.

Appendix H. Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document 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 document. The furnishing of this document 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 publication. IBM may make

improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

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 Deutschland
Informationssysteme GmbH
Department 3982
Pascalstrasse 100
70569 Stuttgart
Germany

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 or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these

names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_. All rights reserved.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

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

- IBM
- AIX
- DB2
- DB2 Universal Database
- FlowMark
- MQSeries
- MVS
- OS/2
- RS/6000
- SP2

- VisualAge

Lotus Notes is a registered trademark, and Domino and Lotus Go Webserver are trademarks of Lotus Development Corporation.

Microsoft, Windows, Windows NT and the Windows logo are registered trademarks 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.

Glossary

This glossary defines important terms and abbreviations used in this publication. If you do not find the term you are looking for, refer to the index or the *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994.

A

administration server. The MQSeries Workflow component that performs administration functions within an MQSeries Workflow system. Functions include starting and stopping of the MQSeries Workflow system, performing error management, and participating in administrative functions for a system group.

activity. One of the steps that make up a process model. This can be a program activity, process activity, or block activity.

activity information member. A predefined data structure member associated with the operating characteristics of an activity.

API. Application Programming Interface.

application programming interface. An interface provided by the MQSeries Workflow workflow manager that enables programs to request services from the MQSeries Workflow workflow manager. The services are provided synchronously.

audit trail. A relational table in the database that contains an entry for each major event during execution of a process instance.

authorization. The attributes of a user's staff definition that determine the user's level of authority in MQSeries Workflow. The system administrator is allowed to perform all functions.

B

bend point. A point at which a connector starts, ends, or changes direction.

block activity. A composite activity that consists of a group of activities, which can be connected with control and data connectors. A block activity is used to implement a Do-Until loop; all activities within the block activity are processed until the exit condition of the block activity evaluates to true. See also *composite activity*.

Buildtime. An MQSeries Workflow component with a graphical user interface for creating and maintaining workflow models, administering resources, and the system network definitions.

C

cardinality. (1) An attribute of a relationship that describes the membership quantity. There are four types of cardinality: One-to-one, one-to-many, many-to-many, and many-to-one. (2) The number of rows in a database table or the number of different values in a column of a database table.

child organization. An organization within the hierarchy of administrative units of an enterprise that has a parent organization. Each child organization can have one parent organization and several child organizations. The parent is one level above in the hierarchy. Contrast with *parent organization*.

cleanup server. The MQSeries Workflow component that physically deletes information in the MQSeries Workflow Runtime database, which had only been deleted logically.

composite activity. An activity which is composed of other activities. Composite activities are block activities and bundle activities.

container API. An MQSeries Workflow API that allows programs executing under the control of MQSeries Workflow to obtain data from the input and output container of the activity and to store data in the output container of the activity.

control connector. Defines the potential flow of control between two nodes in the process. The actual flow of control is determined at run time based on the truth value of the transition conditions associated with the control connector.

coordinator. A predefined role that is automatically assigned to the person designated to coordinate a role.

D

data connector. Defines the flow of data between containers.

data container. Storage for the input and output data of an activity or process. See *input container* and *output container*.

data mapping. Specifies, for a data connector, which fields from the associated source container are mapped to which fields in the associated target container.

data structure. A named entity that consists of a set of data structure members. Input and output containers are defined by reference to a data structure and adopt the layout of the referenced data structure type.

data structure member. One of the variables of which a data structure is composed.

default control connector. The graphical representation of a standard control connector, shown in the process diagram. Control flows along this connector if no other control path is valid.

domain. A set of MQSeries Workflow system groups which have the same meta-model, share the same staff information, and topology information. Communication between the components in the domain is via message queuing.

dynamic staff assignment. A method of assigning staff to an activity by specifying criteria such as role, organization, or level. When an activity is ready, the users who meet the selection criteria receive the activity to be worked on. See also *level*, *organization*, *process administrator*, and *role*.

E

end activity. An activity that has no outgoing control connector.

execution server. The MQSeries Workflow component that performs the processing of process instances at run time.

exit condition. A logical expression that specifies whether an activity is complete.

export. An MQSeries Workflow utility program for retrieving information from the MQSeries Workflow Buildtime database and making it available in MQSeries Workflow Definition Language (FDL) or HTML format. Contrast with *import*.

F

fixed member. A predefined data structure member that provides information about the current activity. The value of a fixed member is set by the MQSeries Workflow workflow manager.

(FDL) MQSeries Workflow Definition Language. The language used to exchange MQSeries Workflow information between MQSeries Workflow system groups. The language is used by the import and export function of MQSeries Workflow and contains the workflow definitions for staff, programs, data structures, and topology. This allows non-MQSeries Workflow components to interact with MQSeries Workflow. See also *export* and *import*.

fork activity. An activity that is the source of multiple control connectors.

form. In Lotus Notes, a form controls how you enter information into Lotus Notes and how that information is displayed and printed.

formula. In Lotus Notes, a mathematical expression that is used, for example, to select documents from a database or to calculate values for display.

fully-qualified name. A qualified name that is complete; that is, one that includes all names in the hierarchical sequence above the structure member to which the name refers, as well as the name of the member itself.

I

import. An MQSeries Workflow utility program that accepts information in the MQSeries Workflow definition language (FDL) format and places it in an MQSeries Workflow Buildtime database. Contrast with *export*.

input container. Storage for data used as input to an activity or process. See also *source* and *data mapping*.

L

level. A number from 0 through 9 that is assigned to each person in an MQSeries Workflow database. The person who defines staff in Buildtime can assign a meaning to these numbers such as rank and experience. Level is one of the criteria that can be used to dynamically assign activities to people.

local user. Identifies a user during staff resolution whose home server is in the same system group as the originating process.

local subprocess. A subprocess that is processed in the same MQSeries Workflow system group as the originating process.

logical expression. An expression composed of operators and operands that, when evaluated, gives a result of true, false, or an integer. (Nonzero integers are equivalent to false.) See also *exit condition* and *transition condition*.

M

manager. A predefined role that is automatically assigned to the person who is defined as head of an organization.

message queuing. A communication technique that uses asynchronous messages for communication between software components.

N

navigation. Movement from a completed activity to subsequent activities in a process. The paths followed are determined by control connectors, their associated transition conditions, and by the start conditions of activities. See also *control connector*, *exit condition*, *transition condition*, and *start condition*.

node. (1) The generic name for activities within a process diagram. (2) The operating system image that hosts MQSeries Workflow systems.

notification. An MQSeries Workflow facility that can notify a designated person when a process or activity is not completed within the specified time.

notification work item. A work item that represents an activity or process notification.

O

organization. An administrative unit of an enterprise. Organization is one of the criteria that can be used to dynamically assign activities to people. See *child organization* and *parent organization*.

output container. Storage for data produced by an activity or process for use by other activities or for evaluation of conditions. See also *sink*.

P

parent organization. An organization within the hierarchy of administrative units of an enterprise that has one or more child organizations. A child

is one level below its parent in the hierarchy. Contrast with *child organization*.

parent process. A process instance that contains the process activity which started the process as a subprocess.

pattern activity. A single and simple activity in a bundle activity from which multiple instances, called pattern activity instances, are created at run time.

person (pl. people). A member of staff in an enterprise who has been defined in the MQSeries Workflow database.

predefined data structure member. A data structure member predefined by MQSeries Workflow and used for communication between user applications and MQSeries Workflow Client.

process. Synonymously used for a process model and a process instance. The actual meaning is typically derived from the context.

process activity. An activity that is part of a process model. When a process activity is executed, an instance of the process model is created and executed.

process administrator. A person who is the administrator for a particular process instance. The administrator is authorized to perform all operations on a process instance. The administrator is also the target for staff resolution and notification.

process category. An attribute that a process modeler can specify for a process model to limit the set of users who are authorized to perform functions on the appropriate process instances.

process definition. Synonym for *process model*.

process diagram. A graphical representation of a process that shows the properties of a process model.

process instance. An instance of a process to be executed in MQSeries Workflow Runtime.

process instance list. A set of process instances that are selected and sorted according to user-defined criteria.

process instance monitor. An MQSeries Workflow client component that shows the state of a particular process instance graphically.

process management. The MQSeries Workflow Runtime tasks associated with process instances. These consist of creating, starting, suspending, resuming, terminating, restarting, and deleting process instances.

process model. A set of processes represented in a process model. The processes are represented in graphical form in the process diagram. The process model contains the definitions for staff, programs, and data structures associated with the activities of the process. After having translated the process model into a process template, the process template can be executed over and over again. *Workflow model* and *process definition* are synonyms.

process monitor API. An application programming interface that allows applications to implement the functions of a process instance monitor.

process-relevant data. Data that is used to control the sequence of activities in a process instance.

process status. The status of a process instance.

process template. A fixed form of a process model from which process instances can be created. It is the translated form in MQSeries Workflow Runtime. See also *process instance*.

process template list. A set of process templates that have been selected and sorted according to user-defined criteria.

program. A computer-based application that serves as the implementation of a program activity or as a support tool. Program activities reference executable programs using the logical

names associated with the programs in MQSeries Workflow program registrations. See also *program registration*.

program activity. An activity that is executed by a registered program. Starting this activity invokes the program. Contrast with *process activity*.

program execution agent. The MQSeries Workflow component that manages the implementations of program activities, such as .EXE and .DLL files.

program registration. Registering a program in MQSeries Workflow so that sufficient information is available for managing the program when it is executed by MQSeries Workflow.

R

role. A responsibility that is defined for staff members. Role is one of the criteria that can be used to dynamically assign activities to people.

S

scheduling server. The MQSeries Workflow component that schedules actions based on time events, such as resuming suspended work items, or detecting overdue processes.

server. The servers that make up an MQSeries Workflow system are called Execution server, Administration server, Scheduling server, and Cleanup server.

sink. The symbol that represents the output container of a process or a block activity.

source. The symbol that represents the input container of a process or a block activity.

specific resource assignment. A method of assigning resources to processes or activities by specifying their user IDs.

standard client. The MQSeries Workflow component, which enables creation and control

of process instances, working with worklists and work items, and manipulation of personal data of the logged-on user.

start activity. An activity that has no incoming control connector.

start condition. The condition that determines whether an activity with incoming control connectors can start after all of the incoming control connectors are evaluated.

subprocess. A process instance that is started by a process activity.

substitute. The person to whom an activity is automatically transferred when the person to whom the activity was originally assigned is declared as absent.

support tool. A program that end users can start from their worklists in the MQSeries Workflow Client to help complete an activity.

symbolic reference. A reference to a specific data item, the process name, or activity name in the description text of activities or in the command-line parameters of program registrations. Symbolic references are expressed as pairs of percent signs (%) that enclose the fully-qualified name of a data item, or either of the keywords `_PROCESS` or `_ACTIVITY`.

system. The smallest MQSeries Workflow unit within an MQSeries Workflow domain. It consists of a set of the MQSeries Workflow servers.

system group. A set of MQSeries Workflow systems that share the same Runtime database.

system administrator. (1) A predefined role that conveys all authorizations and that can be assigned to exactly one person in an MQSeries Workflow system. (2) The person at a computer installation who designs, controls, and manages the use of the computer system.

T

top-level process. A process instance that is not a subprocess and is started from a user's process instance list or from an application program.

transition condition. A logical expression associated with a conditional control connector. If specified, it must be true for control to flow along the associated control connector. See also *control connector*.

translate. The action that converts a process model into a Runtime process template.

U

user ID. An alphanumeric string that uniquely identifies an MQSeries Workflow user.

V

verify. The action that checks a process model for completeness.

W

workflow. The sequence of activities performed in accordance with the business processes of an enterprise.

Workflow Management Coalition (WfMC). A non-profit organization of vendors and users of workflow management systems. The Coalition's mission is to promote workflow standards for workflow management systems to allow interoperability between different implementations.

workflow model. Synonym for *process model*.

work item. Representation of work to be done in the context of an activity in a process instance.

work item set of a user. All work items assigned to a user.

worklist. A list of work items assigned to a user and retrieved from a workflow management system.

worklist view. List of work items and notifications selected from a work item set of a user according to filter criteria which are an attribute of a worklist. It can be sorted according to sort criteria if specified for this worklist.

Bibliography

To order any of the following publications, contact your IBM representative or IBM branch office.

MQSeries Workflow publications

This section lists the publications included in the MQSeries Workflow library.

- *IBM MQSeries Workflow: List of Workstation Server Processor Groups, GH12-6357*, lists the processor groups for MQSeries Workflow.
- *IBM MQSeries Workflow: Concepts and Architecture, GH12-6285*, explains the basic concepts of MQSeries Workflow. It also describes the architecture of MQSeries Workflow and how the components fit together.
- *IBM MQSeries Workflow: Getting Started with Buildtime, SH12-6286*, describes how to use Buildtime of MQSeries Workflow.
- *IBM MQSeries Workflow: Getting Started with Runtime, SH12-6287*, describes how to get started with the Client.
- *IBM MQSeries Workflow: Programming Guide, SH12-6291*, explains the application programming interfaces (APIs).
- *IBM MQSeries Workflow: Installation Guide, SH12-6288*, contains information and procedures for installing and customizing MQSeries Workflow.
- *IBM MQSeries Workflow: Administration Guide, SH12-6289*, explains how to administer an MQSeries Workflow system.

Related publications

- *Frank Leymann, Dieter Roller, "Workflow-based Applications", IBM Systems Journal 36, no. 1 (1997): 102–123*, you can also refer to the Internet:
<http://www.almaden.ibm.com/journal/sj361/leymann.html>
- *Workflow Handbook 1997, published in association with WfMC*, edited by Peter Lawrence

Index

A

- accessing a DB2 database 119
- accessing a DB2 instance 118
- administering database templates 58
- administration server
 - starting 89, 96, 102
- administration utility
 - fmcautil command 90, 96, 104
 - password 91, 98, 105, 107
 - starting 90, 96, 104
 - stopping 93, 98, 108
 - user ID 91, 97, 105
 - verifying installation 111
- advanced configuration utility 66
- Agent.CosNaming.Root 127
- agent cycle 78
- Agent.lorPath 127
- Agent.Locator 128
- agent name 78
- Agent.Name 128
- Agent.Reaper.Cycle 128
- Agent.Reaper.Ratio 129
- Agent.Reaper.Threshold 129
- amqsgetc command 113
- amqsputc command 112
- APITimeOut 129

B

- bibliography 183
- BTAuthWarning 129
- BTConfirmDel 129
- BTDatabaseName 129
- BTDatabasePassword 130
- BTDatabaseUserID 130
- BTDB2Instance 129
- BTGridSizeX 130
- BTGridSizeY 130
- BTGridVisible 130
- BTIconDirectory 130
- BTInitialPalette 130
- BTInstDBCContainerDirectory 131
- BTInstDBLocation 131
- BTInstDBManaged 131
- BTInstDBType 131
- BTMDIBackgroundColor 131
- BTODBCDataSourceName 131
- BTODBCDescription 132
- BTSelectionColor 132

Buildtime

- configuring 74
- password 107
- requirements 42
- starting 106
- stopping 109
- user ID 107
- verifying installation 112

Buildtime data, migrating 166

C

- changing values of variables
 - guidelines for 126
 - in the MQ Workflow profile 124
 - in the system environment 125
- checking your installation 85
- Client
 - configuring 72
 - for Lotus Notes 57
 - password 107
 - requirements 24, 32, 41
 - starting 106
 - stopping 108
 - user ID 107
 - verifying installation 112
- client channel definition channel 73
- client channel definition table 71
- client cycle 78
- client threshold 78
- commands
 - amqsgetc 113
 - amqsputc 112
 - DB2 117
 - db2 catalog 118, 119
 - db2 terminate 119
 - db2cmd 117
 - db2start 117
 - db2stop 117
 - export 68, 72
 - fmcamain 90, 96, 104
 - fmcautil 90, 96, 104
 - fmcclean 92
 - fmzczacfg 66
 - fmzczchk 85
 - fmczm320 165
 - fmczp320 167
 - fmczutil 66
 - MQSeries 119
 - start runmqslr 121
 - start runmqtrm 121

commands (continued)

- strmqm 120
- communication protocol 71
- compatibility
 - FlowMark Version 2.3 76
 - fmczrf23.fdl 76
- components
 - Buildtime 9
 - Client
 - Administration utility 8
 - API Runtime libraries 9
 - Client for Lotus Notes 9
 - Program Execution Agent 9
 - Standard client 8
 - Java Beans 9
 - Java CORBA Agent 9
 - miscellaneous
 - API Development Kit 9
 - Lotus Notes Database Templates 9
 - Samples 10
 - Runtime Database Utilities
 - Database Creation utility 9
 - Import/Export utility 9
 - server 8
 - starting in the right order 89, 95, 101
- configuration-checking utility
 - command-line options 86
 - fmzczk.log file 86, 87
 - fmzczk0.htm file 86
 - log file and online documentation 87
 - starting 85
- configuration identifier 79
- configuration profile 79
- configuration tools 65
- configuration utility 65
- ConfigurationRootDirectory 132
- ConfiguredComponents 132
- configuring
 - a server 67
 - Buildtime 74
 - clients 72
 - Java CORBA Agent 76
 - runtime database utilities 71
 - your installation 65
- containers location 69, 75
- CORBA naming service 77

creating databases from the database
template 60
CustMQCommunicationAddress 133
CustMQCommunicationProtocol 133
CustMQPort 133

D
database location 69
database name 68, 75
database templates 57
DB2 commands
accessing a DB2 database 119
accessing a DB2 instance 118
starting 117
stopping 117

dedicated database setup
scenario 13
DefaultConfigurationID 134
deleting MQ Workflow
before 169
from AIX 169
from OS/2 Warp 170
from Windows 171

E
error messages 155
export command 68, 72
external LotusScript files
EXMP4API.LSS 58
EXMP4ARC.LSS 58

F
files
updated on AIX 147
updated on OS/2 Warp 149
updated on Windows 151
FlowMark compatibility 76
FlowMark Version 2.3 compatibility
fmczrf23.fdl 76
FMC4SMP.FDL file 74
fmcain command 90, 96, 104
fmcautil start command 90, 96, 104
fmcclean command 92
fmczacf start command 66
fmczchk command 85, 125
fmczchk.log file 86
fmczchk0.htm file 86
fmczutil start command 66
FMLClientChannelLibRead 134
FMLClientChannelLibWrite 135
FMLClientChannelTable 135
FMLConnectDelayTime 135
FMLConnectName 135
FMLSegmentation 135
FMLServerChannelTable 136
FolderName 136

G
general configuration profile 79

H
hardware requirements
OS/2 Warp Client 32
OS/2 Warp Server 31
UNIX client 24
UNIX Server 23
Windows Buildtime 42
Windows Client 41
Windows NT Server 40

I
information messages 155
installable components 7
installation
messages 155
preparing for 47
verifying 111
installation profile 78
installing
Clients for Lotus Notes 57
external LotusScript files 58
Lotus Notes database
templates 57
on AIX 48
on HP-UX 50
on OS/2 53
on Sun Solaris 51
on Windows 55

InstDBContainerdirectory 138
InstDBLocation 75, 138
InstDBManaged 139
InstDirectory 136
InstMQBackupQueues 140
InstMQQueueManager 140
InstSelectedComponent 137
Interoperable Object Reference 77

J
Java CORBA Agent
configuring 76
Java RMI 77

L
Language 53, 140
language settings
on AIX 145
on OS/2 Warp 146
on Windows 146
local bindings 77
locating
the MQ Workflow profile 123
the system environment 123

log file
configuration-checking 87
log files location 69
log type
circular log 71
linear log 71
Lotus Notes Client
administrating the databases 58
before 164
Buildtime database 166
command-line tool 165
creating databases from the
database templates 60
fmczm320 command 165
fmczp320 command 167
from a previous release 163
installing 57
installing external LotusScript
files 58
installing the database
templates 57
MQ Workflow profile 167
Runtime data 163
Lotus Notes database templates 57

M
messages 155
MQ Workflow
components 7
deleting 169
migrating 163
profiles 78
variables
Agent.CosNaming.Root 127
Agent.IorPath 127
Agent.Locator 128
Agent.Name 128
Agent.Reaper.Cycle 128
Agent.Reaper.Ratio 129
Agent.Reaper.Threshold 129
APITimeOut 129
BTAuthWarning 129
BTConfirmDel 129
BTDatabaseName 129
BTDatabasePassword 130
BTDatabaseUserID 130
BTDB2Instance 129
BTGridSizeX 130
BTGridSizeY 130
BTGridVisible 130
BTIconDirectory 130
BTInitialPalette 130
BTInstDBContainerDirectory 131
BTInstDBLocation 131
BTInstDBManaged 131
BTInstDBType 131

- MQ Workflow (*continued*)
 - BTMDIBBackgroundColor 131
 - BTODBCDataSourceName 131
 - BTODBCDescription 132
 - BTSelectionColor 132
 - ConfigurationRootDirectory 132
 - ConfiguredComponents 132
 - CustMQCommunication
 - Address 133
 - CustMQCommunication
 - Protocol 133
 - CustMQPort 133
 - DefaultConfigurationID 134
 - FMLClientChannelLibRead 134
 - FMLClientChannelLibWrite 135
 - FMLClientChannelTable 135
 - FMLConnectDelayTime 135
 - FMLConnectName 135
 - FMLSegmentation 135
 - FMLServerChannelTable 136
 - FolderName 136
 - InstDBContainerdirectory 138
 - InstDBLocation 138
 - InstDBManaged 139
 - InstDirectory 136
 - InstMQBackupQueues 140
 - InstMQQueueManager 140
 - InstSelectedComponent 137
 - Language 140
 - MQPrefix 141
 - MQPrincipal 140
 - NLSPATH 141
 - RTDatabase 141
 - RTDatabasePassword 141
 - RTDatabaseUserid 142
 - RTDB2Instance 142
 - RTErrorLogFile 142
 - RTExecutionServer
 - OperationMode 142
 - RTIconDirectory 142
 - RTSystemLogFile 142
 - System 143
 - SystemGroup 143
 - version 143
 - MQ Workflow profile
 - changing variables in 124
 - locating 123
 - migrating 167
 - settings 123
 - MQPrefix 141
 - MQPrincipal 140
 - MQSeries
 - RTSINPUTQ input queue 112
 - verifying a connection 112
 - MQSeries commands
 - starting 120
 - starting the queue manager 120
 - starting the TCP/IP listener
 - program 121
 - starting the trigger monitor 121
 - multiple MQ Workflow setups 79
 - multiple servers setup scenario 14
- N**
- NLSPATH 141
 - Notices 173
- O**
- operating systems 7
- P**
- password 107
 - preparing for installation 47
 - preparing the directory
 - /var/fmc 47
 - prerequisite software
 - DB2 (OS/2 Warp) 28
 - DB2 (UNIX) 21
 - DB2 (Windows) 36
 - MQSeries (OS/2 Warp) 27
 - MQSeries (UNIX) 19
 - MQSeries (Windows) 35
 - principal name 70
- Q**
- queue manager
 - name 69, 70, 73, 75
 - starting 120
 - queue prefix 69, 70, 73, 75
- R**
- RTDatabase 141
 - RTDatabasePassword 141
 - RTDatabaseUserid 142
 - RTDB2Instance 142
 - RTErrorLogFile 142
 - RTExecutionServerOperationMode 142
 - RTIconDirectory 142
 - RTSystemLogFile 142
 - Runtime data, migrating 163
 - Runtime Database Utilities
 - configuring 71
- S**
- server
 - configuring 67
 - requirements 23, 31, 40
 - stopping 92, 98, 107
 - verifying installation 111
 - setup scenarios
 - dedicated database 13
- setup scenarios (*continued*)
- multiple servers 14
 - stand-alone 11
 - standard client/server 12
- software requirements
- OS/2 Warp Client 32
 - OS/2 Warp server 31
 - UNIX client 24
 - UNIX server 23
 - Windows Buildtime 43
 - Windows Client 41
 - Windows NT server 40
- stand-alone setup scenario 11
- standard client/server setup scenario 12
- starting
- administration server 89, 96, 102
 - administration utility 90, 96, 104
 - advanced configuration utility 66
 - Buildtime 106
 - components in the right order 89, 95, 101
 - configuration-checking utility 85
 - configuration utility 66
 - DB2 117
 - MQSeries 120
 - MQSeries queue manager 120
 - other servers 92, 98, 106
 - standard Client 106
 - TCP/IP listener program 121
 - trigger monitor 121
- stopping
- administration utility 93, 98, 108
 - Buildtime 109
 - Clients 108
 - DB2 117
- servers
- from a command prompt 92
 - via the administration utility 92, 98, 107
 - via the service panel 108
- system 69, 73, 75, 143
- system environment
 - changing variables in 125
 - locating 123
 - settings 123
- system group 69, 73, 75, 143
- T**
- TCP/IP listener program
 - starting 121
 - trigger monitor
 - starting 121

U

updated files

- on AIX 147
- on OS/2 Warp 149
- on Windows 151

user ID 107

user profile 78

V

verifying

- administration utility
installation 111
- Buildtime installation 112
- Client installation 112
- MQ Workflow installation 111
- MQSeries connection 112
- server installation 111

version 143

visibroker smart agent 77

W

warning messages 155

Readers' Comments — We'd Like to Hear from You

IBM MQSeries Workflow
Installation Guide
Version 3.2

Publication No. SH12-6288-03

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to find	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well organized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applicable to your tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us how we can improve this book:

Thank you for your responses. May we contact you? Yes No

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.

Name

Address

Company or Organization

Phone No.



Fold and Tape

Please do not staple

Fold and Tape

PLACE
POSTAGE
STAMP
HERE

GSDL Boeblingen
Information Development, Dept. 0446
Postfach 1380
71003 Boeblingen
Germany

Fold and Tape

Please do not staple

Fold and Tape



Part Number: 22L4283
Program Number: 5697-FM3

Printed in Denmark by IBM Danmark A/S

SH12-6288-03



22L4283



Spine information:



IBM MQSeries Workflow

Installation Guide

Version 3.2