

DB2 Query Management Facility



Installing and Managing DB2 QMF for Windows and DB2 QMF for WebSphere

Version 8 Release 1

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Note:

Before using this information and the product it supports, be sure to read the general information under "Notices."

First Edition (January 2004)

This edition applies to IBM DB2 QMF for Windows and IBM DB2 for WebSphere, Version 8, Release 1, a feature of QMF Distributed Edition Version 8.1, 5724-E86, and a feature of the QMF Family with Version 8.1 of DB2 Server for z/OS, 5625-DB2, and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this book

This book contains information about the QMF™ for Windows® Administrator and QMF for WebSphere® Administrator applications. The information includes instructions on how to:

- install the QMF for Windows Administrator application
- install the QMF for Windows user applications
- install the QMF for WebSphere applications
- configure the server definition file (SDF) for QMF for Windows
- configure the server definition file (SDF) for QMF for WebSphere
- create QMF for Windows catalog objects
- bind the QMF for Windows packages
- bind the QMF for WebSphere packages
- set up governing to control resource usage

Who should read this book

This book is intended for the person who is responsible for managing the QMF query environment. The administrator of the QMF query environment should have a working knowledge of:

- DB2®
- QMF
- Windows
- WebSphere

Conventions and terminology used in this book

This book uses the following highlighting conventions:

- **Boldface type** indicates commands or user interface controls such as names of fields, folders, icons or menu choices.
- **Monospaced type** Used for system messages and command syntax. indicates examples of text that you enter exactly as shown such as commands and system messages.
- *Italic type* indicates variables that you should replace with a value, identifies publications, emphasizes significant words and specifies optional steps in a task.

Service updates and support information

To find service updates and support information, including software FixPaks, PTFs, Frequently Asked Questions (FAQs), technical notes, troubleshooting information, and downloads, refer to the following address:

www.ibm.com/software/data/qmf/support.html

Where to find information

The DB2 Information Management Web site provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the following:

www.ibm.com/software/data/qmf/library.html

An IBM® Redbook™ that covers QMF for Windows is available, refer to the following:

www.ibm.com/software/data/qmf/support.html

Accessibility features

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully. The major accessibility features in QMF for Windows Administrator enable users to:

- Use assistive technologies such as screen readers and screen magnifier software.
- Operate specific or equivalent features using only the keyboard.

For more information on accessibility for the QMF for Windows and QMF for WebSphere applications see Appendix E, “Accessibility,” on page 141.

How to order DB2 QMF books

To order hard copies, contact your IBM representative or visit the IBM Publications Center on the world wide web at:
<http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>. Or, you can call 1-800-879-2755 in the United States or any of its territories.

How to send comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book, go to <http://www.ibm.com/software/data/qmf/support.html>, and click on Feedback.

Summary of Changes

This manual reflects the revisions and enhancements made since the last release. These include:

Table 1. Revisions and enhancements

Chapter 4 - Defining servers	
Revision or enhancement	Description
Use this information for every server I connect to	The Use this information for every server I connect to check box has been added to the Set User Information dialog box, which applies the user information entered on the Set User Information dialog box when connecting to any server, to avoid repeat log-ons
Connection Parameters for [Server] dialog box: DRDA [®] over TCP/IP connection	<ul style="list-style-type: none"> • ANSI client CCSID, which identifies the codepage to use with the ANSI version of DB2 QMF for Windows when communicating with DB2 via DRDA over TCP/IP • Unicode client CCSID, which identifies the codepage to use with the Unicode version of DB2 QMF for Windows when communicating with DB2 via DRDA over TCP/IP
Connection Parameters for [Server] dialog box: DRDA over SNA connection	<ul style="list-style-type: none"> • ANSI client CCSID, which identifies the codepage to use with the ANSI version of DB2 QMF for Windows when communicating with DB2 via DRDA over SNA • Unicode client CCSID, which identifies the codepage to use with the Unicode version of DB2 QMF for Windows when communicating with DB2 via DRDA over SNA
QMF for WebSphere	A tab for QMF for WebSphere parameters has been added to the Parameters notebook in QMF for Windows Administrator. Use this page to define connection and validation parameters, and user information for QMF for WebSphere.
Long name support for catalogs	QMF for Windows now supports catalogs that store objects with short or long names. This support includes the ability to automatically convert short name catalog tables to long name catalog tables. Note: Converting to long name catalogs is not required even if the version of DB2 uses long names.

Chapter 1. Overview

QMF for Windows Administrator and QMF for WebSphere Administrator are both part of the Query Management Facility (QMF) query and reporting tool set for IBM's DB2 relational database management system.

The QMF for Windows Administrator application is used to configure and manage the query environment for the following QMF applications:

- QMF for Windows, the backbone of the tool set, provides extensive query and reporting capabilities for novice to expert users.
- QMF for Windows Report Center enables users to launch established, centrally-shared queries and reports; and send the results to spreadsheets, desktop databases and browsers.
- QMF for WebSphere extends query and reporting capabilities to users from their platform-independent web browsers.
- QMF for WebSphere Report Center allows users to view QMF reports from their web browsers.

The QMF for WebSphere Administrator application is used to perform administrative tasks for QMF for WebSphere applications.

Manage QMF query environment

The QMF for Windows Administrator and the QMF for WebSphere Administrator applications are used to perform the administrative tasks that enable the users of the DB2 QMF for Windows and DB2 QMF for WebSphere applications to access DB2 and non-DB2 data. Those tasks include:

- defining your physical servers to the QMF applications
- creating the QMF catalog objects
- binding the QMF for Windows packages
- binding the QMF for WebSphere packages
- installing the DB2 QMF for Windows and DB2 QMF for WebSphere applications for end users
- setting up governing to control resource consumption and user actions
- monitoring the performance of your query environment

In most instances, a single copy of QMF for Windows Administrator is installed and a single user is responsible for performing the necessary administrative tasks. The QMF for Windows administrator must have the authority and privileges to update tables.

In most cases a single user is allowed access to the QMF for WebSphere administrative functionality.

Audience

This book is intended for the person that is responsible for configuring and maintaining the QMF query and reporting toolset which consists of the following applications:

- DB2 QMF for Windows
- QMF for Windows Report Center
- DB2 QMF for WebSphere
- QMF for WebSphere Report Center

Note: This book is not intended for end-users.

Prerequisites

Operating system

- Microsoft® Windows 98
- Microsoft Windows ME
- Microsoft Windows NT 4.0
- Microsoft Windows 2000
- Microsoft Windows XP
- Microsoft Windows Server 2003

Connectivity

TCP/IP

The Microsoft TCP protocol installed with the Windows operating system should work with any product that provides a Winsock interface.

SNA

IBM Personal Communications 4.1 or later. Other products that provide a standard Winsock or WinCPI-C interface are supported.

ODBC

Microsoft ODBC Driver Manager 3.0 or later is recommended.

CLI

IBM DB2 UDB runtime client 6.1 or later.

Other functionality

Add-in applications

These applications can be selected during installation:

- Microsoft Excel 7.0 or later
- Lotus[®] 1-2-3[®] 97 or later

QMF for WebSphere

IBM WebSphere Application Server for AIX[®], version 4.0 or higher; WebSphere Application Server for zSeries, version 4.0 or higher; or WebSphere Application Server for Windows NT[®]/2000, version 2.0 or higher are required for the WebApplication Server, based on your platform.

Use a JDBC driver for DB2 client version 5.2 or higher. The JDBC driver support required for DB2 servers is included with DB2 UDB database servers and DB2 connect.

Use a browser that supports HTML, including Microsoft Internet Explorer, version 5.0 or higher (version 5.5 is recommended); Netscape Navigator, version 6.2 or higher (version 7.0 is recommended); or any browser compatible with Microsoft Internet Explorer or Netscape Navigator.

ObjectREXX

IBM ObjectREXX for Windows 1.0.2.3 or later.

Natural language query

- Linguistic Technology English Wizard (R) 3.1
- EasyAsk (R) 6.0

System requirements

Minimum requirements

Workstation

- DB2 QMF for Windows 8.1
- Microsoft Windows 98, NT 4.0, ME, XP, 2000, or Server 2003
- 386- or higher processor
- 10 MB hard disk space
- 64 MB of RAM
- DB2

iSeries

- iSeries[™], 4.3 or higher
- Latest cumulative and DB2 group PTF applied

- iSeries TCP/IP services configured with valid host name and address
- DDM TCP/IP server started
- Local RDB name configured for the iSeries
- iSeries user profile CCSID not equal to 65525

Connection

- For a CLI connection, 5.2 DB2 UDB, or higher
- For DB2 UDB Personal Edition (C), use a CLI connection
- For TCP/IP, 5.0 DB2 or higher

Benefits of using QMF for Windows Administrator

The benefits of using QMF for Windows Administrator are:

- Centralized installation/elimination of database gateways and middleware
- Centralized control over QMF query environment including all the QMF for Windows and QMF for WebSphere applications
- Use of existing DB2 security
- Flexible and robust options that regulate users access to database server resources.
- Protect DB2 from runaway queries and novice users

iSeries terminology

QMF for Windows uses SQL terminology. The following table lists iSeries system terms and corresponding SQL relational database terms. For more information, refer to *DB2 UDB for iSeries Database Programming*.

Table 2. iSeries and SQL terminology

iSeries Term	SQL Term
Library: Groups related objects and allows you to find objects by name.	Collection: Consists of a library, journal, journal receiver, SQL catalog, and, optionally, a data dictionary. A collection groups related objects and allows you to find the objects by name.
Physical file: A set of records.	Table: A set of columns and rows.
Record: A set of fields.	Row: The horizontal part of a table containing a serial set of columns.
Field: One or more characters of related information of one data type.	Column: The vertical part of a table of one data type.
Logical file: A subset of fields and records of one or more physical files.	Package: An object type that is used to run SQL statements.
User profile	Authorization name or authorization ID

Chapter 2. Installing QMF for Windows

This chapter describes how to install the QMF for Windows application files on each machine on which the product will run. Additional configuration is required after installation, as described in Chapter 4, “Configuring database servers for QMF for Windows,” on page 31.

Installation summary

There are two main options when installing QMF for Windows: whether or not to customize the installation files and what type of installation to perform.

You can install QMF for Windows using the *standard installation files* originally included on the distribution CD or in the downloaded distribution package. Using the standard installation files allows you to perform the most common type of installation, selecting from the most commonly used installation options. Alternatively, you can use *customized installation files*. When using customized installation files, more installation options are available.

There are two basic types of QMF for Windows installations. In a *full installation*, the entire set of QMF for Windows files is installed on each user’s machine. In a *file server installation*, the full set of QMF for Windows files is installed only once, on a file server, and only a small set of system files are installed on each user’s machine. A file server installation can make it easier to support a large number of QMF for Windows users’ machines.

If you want to perform a full installation, you can use either standard or customized installation files. If you want to perform a file server installation, you must use customized installation files. No matter what type of installation is performed, the installation program must be run on each machine on which QMF for Windows will be run (although this process can be automated with customized installation files).

Full installation using standard installation files

You can perform a full installation of QMF for Windows either using files on a DB2 QMF for Windows distribution CD or files stored on a local hard drive or remote file server.

To start the installation from a CD, insert the CD into a CD-ROM drive on your machine. Depending on your machine settings, the installation wizard may start automatically. If it does not, start Windows Explorer, and use it to navigate to the files on the CD for the national language version you wish to

install. Double-click on the setup.exe file to start the installation wizard.

Table 3. Language Subfolders

Subfolder	National Language
are	Arabic
cht	Chinese (Traditional)
dan	Danish
des	German (Swiss)
deu	German (Standard)
enu	English (U.S.)
esn	Spanish
fra	French (Standard)
frb	French (Belgian)
frc	French (Canadian)
frs	French (Swiss)
heb	Hebrew
ita	Italian (Standard)
its	Italian (Swiss)
jpn	Japanese
kor	Korean
ptb	Portuguese (Brazilian)
ptg	Portuguese (Standard)
sve	Swedish

To start the installation from files on a hard drive or file server, start Windows Explorer, and use it to navigate to the installation files. Double-click on the setup.exe file to start the installation wizard.

Installation wizard

The installation wizard presents a series of pages allowing you to choose options to control how to install QMF for Windows. On each page, you must select the desired options and click Next to continue. After you select all of the options, the installation wizard copies the appropriate QMF for Windows files to your machine and then completes the installation. In some cases, you may be required to restart the machine after the installation is complete. After restarting, or if restarting is not necessary, QMF for Windows is ready for you to use.

Welcome page

The first page of the installation wizard is a welcome screen, introducing you to the installation process.

Setup Type page

The next page of the wizard allows you to select which components of the product to install. The available components are:

Table 4. Components

Component	Description
Program Files	This component consists of the main DB2 QMF for Windows application files. You must install this component to use any part of QMF for Windows.
Spatial Data Support	This component includes the files required to display spatial data in a map. Spatial data can be retrieved from a database server that has the IBM DB2 Spatial Extender installed, or from shapefiles. Without this component, spatial data can be retrieved and exported to files, but cannot be displayed in a map.
Microsoft Excel Add-In	This component gives you the ability to launch QMF for Windows directly from and return query results directly to Microsoft Excel.
Lotus 1-2-3 Add-In	This component gives you the ability to launch QMF for Windows directly from and return query results directly to Lotus 1-2-3.
Report Center	This component allows users to create reports that run specified queries, forms, and procedures, and publish results to a variety of targets, using a simple point-and-click tree interface.
Administrator Program Files	This component consists of the QMF for Windows Administrator application files, and should only be installed by administrators. Administrators use this application to define database servers, create database objects (for example, tables), bind the application packages, grant package permissions, define user profiles, and define resource limits and assign them to users.

On the Setup Type page, you can select one of the following types of setup to perform:

Table 5. Setup Types

Setup Type	Included components
Typical	Program Files Spatial Data Support Microsoft Excel Add-In Lotus 1-2-3 Add-In Report Center Administrator Program Files
Compact	Program Files Administrator Program Files
Custom	User-specified

Choose Destination Location page

If you choose a Typical or Compact setup, the next page allows you to select the folder in which to install QMF for Windows.

Select Components page

If you choose a Custom setup, the next page allows you to select which components to install, as well as the folder in which to install QMF for Windows.

Select Program Folder page

For all setup types, the next page allows you to select the program folder in which to create shortcuts to start QMF for Windows.

Note: When installing on operating systems that allow program folders per-user as well as program folders for all users, the installation wizard will create shortcuts only for the current user (that is, the user running the setup program). In order to create shortcuts available for all users, you must use customized installation files. See “[Shortcuts] section” on page 10 for more information.

Start Copying Files page

The last page displays all of the options you selected. When you click Next on this page, the installation wizard will begin installing the required files. If you want to change any of the selected options, click Back.

Completing the installation

After the installation wizard finished installing the required files, you may be prompted to restart your machine. This is to allow certain system files to be updated, which may be in use by other programs. After restarting your machine, you will be ready to use QMF for Windows.

If you are not prompted to restart your machine, then you are ready to use QMF for Windows once the installation wizard finishes.

Full installation using customized installation files

You can control many aspects of the full installation process (including making it completely unattended) and pre-set product settings by customizing the installation files.

Copying the installation files

If you are using a DB2 QMF for Windows CD to install the product, then before customizing the files, you must copy the contents of the CD to a folder on a local hard disk or a remote file server. When copying you must include the entire contents of the language subfolder on CD corresponding to the national language version of the product that you are going to install.

Customizing setup.ini

The setup.ini file is a text file that controls the installation process. You can edit this file using a text editor (such as Notepad). The default contents of this file are similar to:

```
[Startup]
AppName=QMF for Windows 8.1
FreeDiskSpace=481
```

You should not modify the contents of the [Startup] section, but you can add three sections, [Options], [Components], and [Shortcuts].

[Options] section

The [Options] section contains settings that pre-select various options in the installation wizard. Settings in the [Components] section pre-select components to install. settings in the [Shortcuts] section control whether and how to create the various program folder shortcuts.

Table 6. [Options] Section

Setting	Description
AutoInstall=0 or 1	Specifies how the installation wizard should behave. Value can be 0 (display all pages as usual) or 1 (suppress display of pages and perform installation automatically). Default value is 0.
SetupType=0 or 1 or 2	Controls the type of setup to perform. Value can be 0 (typical), 1 (compact), or 2 (custom). Default value is 0. Used only if AutoInstall=1.
InstallPath=<folder>	Specifies the folder in which to install the product. There is no default value. Used only if AutoInstall=1.
ProgramGroup=<program-folder>	Specifies the program folder in which to create shortcuts to start QMF for Windows. There is no default value. Used only if AutoInstall=1.

Table 6. [Options] Section (continued)

Setting	Description
AutoExit=0 or 1	Specifies whether or not the installation wizard should exit automatically after installation. Value can be 0 (display a completion page when the installation is finished) or 1 (exit automatically when the installation is finished). Default value is 0. Used only if AutoInstall=1.
FileServerInstall=0 or 1	Specifies whether or not the installation wizard should perform a file server installation. Value can be 0 (perform a normal installation) or 1 (perform a file server installation). See "File server installation" on page 13 for more information about file server installations.

[Components] section

Settings in the [Components] section pre-select components to install. The [Components] section is used only if the SetupType value in the [Options] section is set to 2 (for a custom setup type).

Table 7. [Components] Section

Setting	Description
Spatial=0 or 1	Specifies whether to install the Spatial Data Support component. Value can be 0 (do not install) or 1 (install). Default value is 1.
Excel=0 or 1	Specifies whether to install the Microsoft Excel Add-In component. Value can be 0 (do not install) or 1 (install). Default value is 1.
L123=0 or 1	Specifies whether to install the Lotus 1-2-3 Add-In component. Value can be 0 (do not install) or 1 (install). Default value is 1.
ReportCenter=0 or 1	Specifies whether to install the Report Center component. Value can be 0 (do not install) or 1 (install). Default value is 1.
Admin=0 or 1	Specifies whether to install the Administrator Program Files component. Value can be 0 (do not install) or 1 (install). Default value is 1.

[Shortcuts] section

Settings in the [Shortcuts] section control whether and how to create the various program folder shortcuts.

Table 8. [Shortcuts] Section

Setting	Description
Common=0 or 1	Specifies whether program folder shortcuts should be created for the current user only or for all users. Value can be 0 (current user only) or 1 (all users). Default value is 0.
Main=0 or 1	Specifies whether to create a shortcut to start QMF for Windows. Value can be 0 (no) or 1 (yes). Default value is 1.
MainWorkingDir=<folder>	Specifies the initial working folder to specify when creating the shortcut to start QMF for Windows. Default value is empty.
ReportCenter=0 or 1	Specifies whether to create a shortcut to start Report Center. Value can be 0 (no) or 1 (yes). Default value is 1.
ReportCenterWorkingDir=<folder>	Specifies the initial working folder to specify when creating the shortcut to start Report Center. Default value is empty.
Admin=0 or 1	Specifies whether to create a shortcut to start QMF for Windows Administrator. Value can be 0 (no) or 1 (yes). Default value is 1.
AdminWorkingDir=<folder>	Specifies the initial working folder to specify when creating the shortcut to start QMF for Windows Administrator. Default value is empty.
UserHelp=0 or 1	Specifies whether to create a shortcut to start QMF for Windows help. Value can be 0 (no) or 1 (yes). Default value is 1.
ReportCenterHelp=0 or 1	Specifies whether to create a shortcut to start Report Center help. Value can be 0 (no) or 1 (yes). Default value is 1.
AdminHelp=0 or 1	Specifies whether to create a shortcut to start QMF for Windows Administrator help. Value can be 0 (no) or 1 (yes). Default value is 1.
APIHelp=0 or 1	Specifies whether to create a shortcut to start QMF for Windows API help. Value can be 0 (no) or 1 (yes). Default value is 1.
ReadMe=0 or 1	Specifies whether to create a shortcut to view the QMF for Windows readme.txt file. Value can be 0 (no) or 1 (yes). Default value is 1.
WhatsNew=0 or 1	Specifies whether to create a shortcut to view the What's New help. Value can be 0 (no) or 1 (yes). Default value is 1.

Table 8. [Shortcuts] Section (continued)

Setting	Description
ResourceCenter=0 or 1	Specifies whether to create a shortcut to visit the QMF for Windows Resource on the Web site. Value can be 0 (no) or 1 (yes). Default value is 1.
Uninstall=0 or 1	Specifies whether to create a shortcut to uninstall QMF for Windows. Value can be 0 (no) or 1 (yes). Default value is 1.

Settings for unattended installation

You can make the installation process *unattended*, meaning that it requires no input from a user during the installation. To perform an unattended installation, set both `AutoInstall` and `AutoExit` in the [Options] section to 1. Note that when you set `AutoInstall` to 1, you must also set `InstallPath` and `ProgramGroup`.

Applying the changes

After you have finished editing the `setup.ini` file, save the modified file in its original location in the installation files. Now, when running `setup.exe` from these files, the custom options you specified in `setup.ini` will take effect.

Customizing `qmfwin4.reg`

The installation files include a file named `qmfwin4.reg`. This is a file containing Windows registry settings that affect the operation of QMF for Windows itself, after installation. During installation, this file is copied to the machine, and its contents are loaded into the current user's registry.

You can customize the contents of this file to pre-set virtually any QMF for Windows option. A very reason for customizing this file is to pre-set the server definition file to be used by the application after installation. For example, in order to specify that a server definition file named `\\server1\share\qmfsdf.ini` should be used, you would edit `qmfwin4.reg` to include these lines:

```
[HKEY_CURRENT_USER\Software\IBM\RDBI\Options]
"ServerDefinitionsFile"="\\\\server1\share\qmfsdf.ini"
```

Note that back slashes in the value you specify must be doubled, as shown. This is not true of forward slashes. For example, in order to specify that the server definition file should be obtained from a URL such as `http://webserver/qmfsdf.ini`, you would include these lines:

```
[HKEY_CURRENT_USER\Software\IBM\RDBI\Options]
"ServerDefinitionsFile"="http://webserver/qmfsdf.ini"
```

Note that the forward slashes in the URL are not doubled.

Registry settings are loaded in the context of the user running the installation program. This means that the user must have the privileges required to update whatever registry settings are specified. If not, the updates will fail. In addition, this means that any references to HKEY_CURRENT_USER will be resolved to that user's registry hive.

Note: All registry settings you include in qmfwin4.reg will be loaded into the registry during installation, including settings not related to QMF for Windows. It is possible to inadvertently make adverse changes to the machine's configuration, including changes that might make the machine fail to start. You should be extremely cautious when including non-QMF for Windows settings in qmfwin4.reg.

Applying the changes

After you have finished editing the qmfwin4.reg file, save the modified file in its original location in the installation files. Now, when running setup.exe from these files, the custom options you specified in qmfwin4.reg will be loaded into the registry.

File server installation

Instead of installing the full set of QMF for Windows files on each machine, you can instead install them once on a central file server, and configure other machines to run QMF for Windows using those shared files.

The primary advantage to using a file server installation is that it makes it easier to maintain QMF for Windows for a large number of end users. With a full installation, if you need to apply a DB2 QMF for Windows fix pack, you must run the fix pack installation wizard to apply the fix pack to every machine. With a file server installation, you only need to apply the fix pack one time. Note that even with a file server installation, the initial installation wizard must be run on each machine (as described below); it is only when applying fix packs that it needs to be run only one time.

There are three steps to performing file server installations: installing on the file server, preparing for client installations, and installing on clients.

Installing on the file server

The first step in performing file server installations is to install the full set of QMF for Windows files on the file server. This step is no different from performing a full installation, as described above. You can run the installation wizard from any client machine. When prompted by the installation wizard, you should specify an installation folder on a shared drive of a central file server (the *target folder*). Make sure that all components of the product are installed (either using a Typical setup type, or a Custom setup type, selecting all of the components).

Preparing for client installations

The second step is to prepare the installation files for client installations. The step is similar to the process described in “Full installation using customized installation files” on page 9. This section describes additional elements of that process as they apply to file server installations.

Copying the installation files

You should copy the QMF for Windows installation files to a shared folder on a file server (the *installation folder*). Do not use the same folder as the target folder in which you previously installed QMF for Windows on the file server.

Customizing setup.ini

With a file server installation, you can use all of the previously described options for customizing the setup.ini file. There are two additional considerations for file server installations.

- In the [Options] section, set the FileServerInstall setting to 1.
- Also in the [Options] section, set the InstallPath setting to the name of the target folder on the file server where you previously installed the QMF for Windows files.

These two settings cause the installation wizard to simply create shortcuts pointing to the files already installed on the file server, rather than copying new files.

Customizing qmfwin4.reg

With a file server installation, you can customize the qmfwin4.reg file as previously described. Note that the qmfwin4.reg file in the installation files also gets installed into the target folder, and so it will be present both in the installation folder and the target folder. You must be sure to customize the copy in the installation folder, or else the changes will not be applied when performing client installations.

Installing on clients

Once the installation files have been customized, you are ready to install on each client machine. To do so, simply run the setup.exe program in the installation folder on the file server. This will create shortcuts to run the programs installed on the file server.

System components installed on the client machine

Although the bulk of the QMF for Windows files are installed only on the file server, the installation wizard may install a set of system components on each client machine. These are standard Microsoft components that typically are already installed on an up-to-date machine. If the components are already installed, and are up-to-date, they are not installed again.

Table 9. System Components Installed on the Client

File names	Description
mfc42.dll	Microsoft Foundation Classes Shared Library (always required)
msvc60.dll	Microsoft C++ Runtime Library (always required)
msvcrt.dll	Microsoft C Runtime Library (always required)
regsvr32.exe	Microsoft Register Server (always required)
shfolder.dll	Microsoft Shell Folder Service (always required)
asycfilt.dll, stdole2.tlb, oleaut32.dll, olepro32.dll	Microsoft OLE (required only for Report Center)
mstext35.dll, mstext40.dll, mstx3032.dll	Microsoft Jet Text ISAM (required only for Report Center)
odtext32.dll	Microsoft ODBC driver for text files (required only for Report Center)
comcat.dll	Microsoft Component Category Manager Library (required only for Report Center)
comctl32.ocx, comdlg32.ocx, msflxgrd.ocx, msmask32.ocx, tabctl32.ocx	Microsoft ActiveX Control DLLs (required only for Report Center)
msvbvm60.dll	Microsoft Visual Basic Virtual Machine (required only for Report Center)

Unattended installation

You can make the installation process on the client machines *unattended*, meaning that it requires no input from a user during the installation. To perform an unattended installation, customize the setup.ini file in the installation folder, setting both AutoInstall and AutoExit in the [Options] section to 1. Note that when you set AutoInstall to 1, you must also set InstallPath and ProgramGroup.

Sample setup.ini files

Sample 1

The following setup.ini file will result in a custom installation, including the Program Files and Administrator Program Files components. The files will be installed in the D:\Program Files\IBM\QMF for Windows folder. A folder named QMF will be created on the Startup menu. The installation will be unattended, but will display a window when the installation is complete.

```
[Startup]
AppName=QMF for Windows 8.1
FreeDiskSpace=481
```

```
[Options]
AutoInstall=1
SetupType=2
InstallPath=D:\Program Files\IBM\QMF for Windows
ProgramGroup=QMF
```

Sample 2

The following setup.ini file will result in a client installation from a file server, using previously installed files in the \\server1\share\QMF for Windows folder. A folder named QMF will be created on the Startup menu, shared by all users. The installation will be completely unattended, and will exit automatically when complete.

```
[Startup]
AppName=QMF for Windows 8.1
FreeDiskSpace=481

[Options]
AutoInstall=1
FileServerInstall=1
SetupType=0
InstallPath=\\server1\share\QMF for Windows
ProgramGroup=QMF
AutoExit=1

[Shortcuts]
Common=1
```

Chapter 3. Installing QMF for WebSphere

This chapter describes how to install QMF for WebSphere on the WebSphere Application Server machine where the product will run. Additional configuration is required after installation, as described in Chapter 4, “Configuring database servers for QMF for Windows,” on page 31 and Chapter 5, “Configuring database servers for QMF for WebSphere,” on page 79.

Installation Summary

There are three steps to installing QMF for WebSphere:

- Install the QMF for WebSphere files.
- Deploy the QMF for WebSphere web applications in WebSphere Application Server (WAS). This makes the main QMF for WebSphere application, QMF for WebSphere Administrator, and QMF for WebSphere Report Center available.
- Deploy the QMF for WebSphere web service in WAS.

Installing the QMF for WebSphere files

You must install the application files on either:

- the machine running WAS
- the machine where you will run the WAS Administrative Console

Based on the operating system of this target machine, choose one of the following methods to install the files:

1. If the target machine is running an operating system supported by the InstallShield MultiPlatform (ISMP) distribution package, you can use it to install the files.
2. If the target machine is not running an operating system supported by ISMP, you must first install the files on an intermediate machine that is supported by ISMP, and then manually transfer the files to the target machine.
3. If the target machine is running z/OS[®] with Unix System Services, you can use the SMP/E distribution package to install the files.

Installation on a platform supported by ISMP

To start the ISMP installation from a CD, insert the CD into a CD-ROM drive on the target machine. If you are using a downloaded distribution package rather than a CD, locate the downloaded files on the machine’s hard drive.

Use the following table to determine how to start the installation wizard, depending on the machine's operating system:

Table 10. Setup files and operating system

Operating system	Setup file
AIX	setupaix.bin
HP-UX 10.20	setuphp1020.bin
HP-UX 11	setuphp11x.bin
Linux (IA-32)	setuplinux.bin
Solaris (Sparc)	setupsolarisSparc.bin
Solaris (x86)	setupsolarisX86.bin
Windows 98, ME, NT, 2000, or XP	setupwin32.exe

If the operating system of the target machine is not listed, you cannot use this option to install the files; see "Installation on a platform not supported by ISMP" or "Installation on z/OS Unix System Services with SMP/E" for other options.

If the operating system of the target machine is listed, execute the listed setup file to start the ISMP installation wizard. The installation wizard allows you to choose an installation directory, and then installs the QMF for WebSphere files in that directory.

Installation on a platform not supported by ISMP

If you are installing on a target machine that is not listed in the operating systems supported by ISMP, you cannot use ISMP to install directly on that machine. This is the case, for example, when installing on z/Linux.

In this case, you must first install the QMF for WebSphere files on a machine that is supported by ISMP as described in "Installation on a platform supported by ISMP" on page 17, and then manually transfer the files to the target machine. In order to transfer the files, you should package them in an archive file in a format that is supported by both machines (such as *.zip or *.tar file), transfer the archive file (in binary mode), and then unpackage them on the target machine.

Installation on z/OS Unix System Services with SMP/E

If the target machine is running z/OS Unix System Services (USS), you can use an SMP/E distribution package to install the QMF for WebSphere files. See the QMF for WebSphere V8 Program Directory for information on installing with SMP/E.

Note: The SMP/E installation option is only recommended if the WAS under which you plan to run QMF for WebSphere is also running on that same z/OS system.

After Installation

Regardless of which installation option is used, the installation will end with the QMF for WebSphere files installed on the WAS server machine or the client machine on which you will run the WAS Administrative Console. The next step is to deploy the QMF for WebSphere application in WAS.

Deploying the QMF for WebSphere application

The exact steps used to deploy QMF for WebSphere under WAS depend on the version of WAS being run, and the platform on which it is run. However, in all cases, you use the WebSphere Administrative Console to perform the following tasks:

1. Install the application.
2. Map the qmfadmin role to users and groups.
3. Configure access to JDBC drivers.
4. Start the application.

Deploying under WAS version 5 (non-z/OS)

The following steps are used to deploy QMF for WebSphere under WAS version 5 (on non-z/OS platforms).

Note: The WAS support for web services changed between version 5.0 and 5.0.2. If you are using a version of WAS earlier than 5.0.2 and you plan on using the QMF for WebSphere web service, you should apply the appropriate WAS maintenance to upgrade to version 5.0.2 or later. You should apply this maintenance prior to continuing with the QMF for WebSphere installation.

Start the WebSphere Administrative Console

Start the WebSphere Administrative Console by opening a web browser on a client machine, and entering the appropriate URL. By default, the URL is `http://host:port/admin`, where *host* is the host name of the WAS server and *port* is the port on which the Administrative Console is configured to listen (9090, by default).

Install the application

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Applications**.
2. Click on **Install New Application**. The **Preparing for the application installation** page displays on the right side of the Administrative Console window.
3. On the first **Preparing for the application installation** page, you must specify the location of the module to install. If you installed the QMF for WebSphere files on the local machine, enter the local directory name followed by QMFWebSphere.ear in the **Local path** field. If you installed

the files on the WAS server machine, enter the remote directory name followed by QMFWebSphere.ear in the **Server path** field. Click **Next**.

4. On the second **Preparing for the application installation** page, click **Generate Default Bindings** and then click **Next**.
5. On the **Step 1** page, if you are installing on WAS 5.0.2 or later, select the **Deploy Web Services** check box. Otherwise, this check box will not display. Click **Next**.
6. On the **Step 2** page, accept the default values and click **Next**.
7. On the **Step 3** page, note the name of the application server listed for the QMF for WebSphere module and then click **Next**.
8. On the **Step 4** page, accept the default values and click **Next**. (Mapping the qmfadmin role to users or groups will be performed after installing the application.)
9. Click **Next** on any remaining pages, and finally click **Finish**.

After WAS has finished installing the application, save the configuration.

Map the qmfadmin role to users and groups

A single security role named **qmfadmin** is defined for the QMF for WebSphere application. This role is used to authenticate a user before performing various administrative tasks in QMF for WebSphere, such as binding packages. You use the WebSphere Administrative Console to map the **qmfadmin** role to users and groups.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Applications**.
2. Click **Enterprise Applications**. The Enterprise Applications page displays on the right side of the Administrative Console window.
3. In the display list of installed applications, click QMF for WebSphere.
4. In the **Additional Properties** list, click **Map security roles to users/groups**. The Mapping Users to Roles page displays. Use this page to specify whether the role should be mapped to all users (effectively eliminating authentication for the role), to all authenticated users (allowing any authenticated user to perform QMF administration functions), or only to users or groups that you specify.
5. When you have finished creating the mappings, click **OK**.

Save the configuration.

Configure access to JDBC drivers

The last element of configuration that you must perform using the WebSphere Administrative Console is to provide access to any JDBC drivers that will be used by QMF for WebSphere.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Servers**.
2. Click on **Application Servers**. The Application Servers page displays on the right side of the Administrative Console window.
3. In the displayed list of application servers, click on the application server where you installed the QMF for Windows application. The properties of the application server display.
4. In the **Additional Properties** list, click **Process Definition**. The **Process Definition** page displays.
5. In the **Additional Properties** list, click **Java™ Virtual Machine**. The **Java Virtual Machine** page displays.
6. In the **Classpath** list, add all of the *.zip or *.jar files that are required by the JDBC drivers that will be used by QMF for WebSphere. For example, for the DB2 Universal Database™ V8 Type 4 driver on Microsoft Windows, you might enter:

```
C:\Program Files\IBM\SQLLib\Java\db2jcc.jar  
C:\Program Files\IBM\SQLLib\Java\db2java.zip  
C:\Program Files\IBM\SQLLib\Java\sqlj.zip  
C:\Program Files\IBM\SQLLib\runtime.zip
```
7. When you have finished adding the required files, click **OK**.

Save the configuration. After the configuration is saved, you must restart the server for the changes to take effect.

Start the application

The installation and configuration of the application is complete, so you can now make it available.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Applications**.
2. Click **Enterprise Applications**. The **Enterprise Applications** page displays on the right side of the Administrative Console window.
3. In the displayed list of installed applications, select the check box next to **QMF for WebSphere**, then click **Start**.

The application is now available.

Deploying under WAS Advanced Edition or Enterprise Edition version 4 (non-z/OS)

The following steps are used to deploy QMF for WebSphere under WebSphere Application Server Advanced Edition or Enterprise Edition, version 4 (on non-z/OS platforms).

Start the WebSphere Advanced Administrative Console

Start the WebSphere Advanced Administrative Console by running the **adminclient** command from the WebSphere bin directory.

Install the application

In the navigation tree on the left side of the Administrative Console window:

1. Expand **WebSphere Administrative Domain**.
2. Right click on **Enterprise Applications**, and select **Install Enterprise Application** from the pop-up menu. The **Install Enterprise Application Wizard** displays.
3. On the first page of the wizard, **Specifying the Application or Module**, you must specify the location of the module to install. In the list of nodes, click the machine on which you installed the QMF for WebSphere files. Click **Install Application**, and then enter the name of the directory in which you installed the files, followed by QMFWebSphere.ear. Click **Next**.
4. On the **Mapping Users to Roles** page, click **Next**. (Mapping the qmfadmin role to users or groups will be performed after installing the application.)
5. Simply click Next on all of the following pages until the **Selecting Application Servers** page displays. Note the name of the application server and node (in parentheses) listed for the QMF for WebSphere module and then click **Next**.
6. On the **Completing the Application Installation Wizard** page, click **Finish**.

Map the qmfadmin role to users and groups

A single security role named qmfadmin is defined for the QMF for WebSphere application. This role is used to authenticate a user before performing various administrative tasks in QMF for WebSphere, such as binding packages. You use the WebSphere Advanced Administrative Console to map the qmfadmin role to users and groups.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **WebSphere Administrative Domain**.
2. Expand **Enterprise Applications**.
3. Click on **QMFWebSphere.ear**. The properties of the application display on the right side of the Administrative Console window.
4. Click on **User/Role Mappings**.
5. Click on **qmfadmin**.
6. Click **Select**. The **Select Users/Groups - qmfadmin** window displays. Use this window to specify whether the role should be mapped to everyone (effectively eliminating authentication for the role), to all authenticated users (allowing any authenticated user to perform QMF administration functions), or only to users or groups that you specify.

7. When you have finished creating the mappings, click **OK**.
8. Click **Apply**.

Save the configuration.

Configure access to JDBC drivers

The last element of configuration that you must perform using the WebSphere Advanced Administrative Console is to provide access to any JDBC drivers that will be used by QMF for WebSphere.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **WebSphere Administrative Domain**.
2. Expand **Nodes**.
3. Expand the node on which you installed the QMF for WebSphere application.
4. Expand **Application Servers**.
5. Click on the application server on which you installed the QMF for WebSphere application. The properties of the application server display on the right side of the Administrative Console window.
6. Click on **JVM Settings**.
7. In the **Classpaths** list, add all of the *.zip or *.jar files that are required by the JDBC drivers that will be used by QMF for WebSphere. For example, for the DB2 Universal Database V8 Type 4 driver on Microsoft Windows, you might enter:
C:\Program Files\IBM\SQLLib\Java\db2jcc.jar
C:\Program Files\IBM\SQLLib\Java\db2java.zip
C:\Program Files\IBM\SQLLib\Java\sqlj.zip
C:\Program Files\IBM\SQLLib\runtime.zip
8. When you have finished adding the required files, click **OK**.

Save the configuration. After the configuration is saved, you must restart the server for the changes to take effect.

Start the application

The installation and configuration of the application is complete, so you can now make it available.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **WebSphere Administrative Domain**.
2. Expand **Enterprise Applications**.
3. Right click on **QMFWebSphere.ear**, and select **Start** from the pop-up menu.

The application is now available.

Deploying under WAS Advanced Single Server Edition version 4 (non-z/OS)

The following steps are used to deploy QMF for WebSphere under WebSphere Application Server Advanced Single Server Edition, version 4 (on non-z/OS platforms).

Start the WebSphere Administrative Console

Start the WebSphere Administrative Console by opening a web browser on a client machine, and entering the appropriate URL. By default, the URL is `http://host:port/admin`, where *host* is the host name of the WAS server and *port* is the port on which the Administrative Console is configured to listen (9090, by default).

Install the application

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Nodes**.
2. Expand the node on which you wish to install the QMF for WebSphere application.
3. Click on **Enterprise Applications**. The **Enterprise Applications** page displays on the right side of the Administrative Console window, listing the installed applications.
4. Click **Install** to display the **Application Installation Wizard**.
5. On the first **Preparing for the application installation** page, you must specify the location of the module to install. If you installed the QMF for WebSphere files on the local machine, enter the local directory name followed by `QMFWebSphere.ear` in the **Path** field. If you installed the files on the WAS server machine, enter the remote directory name followed by `QMFWebSphere.ear` in the **Remote Path on server** field. Click the corresponding **Next** button.
6. On the **Mapping Users to Roles** page, click **Next**. (Mapping the `qmfadmin` role to users or groups will be performed after installing the application.)
7. Simply click **Next** on all of the following pages until the final confirmation page. On this page, click **Finish**.

Save the configuration.

Map the `qmfadmin` role to users and groups

A single security role named `qmfadmin` is defined for the QMF for WebSphere application. This role is used to authenticate a user before performing various administrative tasks in QMF for WebSphere, such as binding packages. You use the WebSphere Advanced Administrative Console to map the `qmfadmin` role to users and groups.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Nodes**.
2. Expand the node on which you installed the QMF for WebSphere application.
3. Expand **Enterprise Applications**.
4. Click on **QMF for WebSphere**. The application properties page displays on the right side of the Administrative Console window.
5. Click on **Modify Role to User Mappings**. The **Mapping Roles to Users** window displays. Use this window to specify whether the role should be mapped to everyone (effectively eliminating authentication for the role), to all authenticated users (allowing any authenticated user to perform QMF administration functions), or only to users or groups that you specify.
6. When you have finished creating the mappings, click **Next**, then click **Finish**.

Save the configuration.

Configure access to JDBC drivers

The last element of configuration that you must perform using the WebSphere Administrative Console is to provide access to any JDBC drivers that will be used by QMF for WebSphere.

In the navigation tree on the left side of the Administrative Console window:

1. Expand **Nodes**.
2. Expand the node on which you installed the QMF for WebSphere application.
3. Expand **Application Servers**.
4. Expand **Default Server**.
5. Expand **Process Definition**.
6. Click on **JVM Settings**. The **JVM Settings** page appears on the right side of the Administrative Console window.
7. In the **Classpath** field, add all of the *.zip or *.jar files that are required by the JDBC drivers that will be used by QMF for WebSphere. For example, for the DB2 Universal Database V8 Type 4 driver on Microsoft Windows, you might enter:
C:\Program Files\IBM\SQLLib\Java\db2jcc.jar
C:\Program Files\IBM\SQLLib\Java\db2java.zip
C:\Program Files\IBM\SQLLib\Java\sqlj.zip
C:\Program Files\IBM\SQLLib\runtime.zip
8. When you have finished adding the required files, click **OK**.

Save the configuration. After the configuration is saved, you must restart the server for the changes to take effect.

Deploying under WAS for z/OS

The following steps are used to deploy QMF for WebSphere under WAS for z/OS version 4:

- Start the administration application and connect to WAS.
- Add an administrative conversation.
- Use the conversation to install the application.
- Complete and activate the conversation.

Start the administration application and create a conversation

If you have not already done so, install the WAS for z/OS and OS/390® Administration application.

1. Start the administration application. The **Login** window displays.
2. Enter appropriate values for **Bootstrap server IP name**, **Port**, **Userid**, and **Password**. Click **OK**.
3. In the navigation tree on the left side of the administration application, right click on **Conversations**, and select **Add** from the pop-up menu. Properties for a new conversation are displayed on the right side of the administration application.
4. Enter any desired values for **Conversation name** and **Conversation description**.
5. Click the Save button on the toolbar.

Install the application

After the conversation is created, install the application:

1. In the navigation tree, expand the new conversation.
2. Expand **Sysplexes**.
3. Expand the sysplex on which you wish to install QMF for WebSphere.
4. Expand **J2EEServers**.
5. Right click on the server on which you wish to install QMF for WebSphere. The **Install J2EE application** window displays.
6. In the **EAR Filename** field, enter the directory in which you installed the QMF for WebSphere files, followed by **QMFWebSphereZOS.ear**. In the **Destination FTP Server** field, enter the host name of the WAS machine. Click **OK**. The **Reference and Resource Resolution** window displays.
7. Click **Set Default JNDI Path & Names for all Beans**, and then click **OK** to install the application.

Configure access to JDBC drivers

You must configure the J2EE application server on which you installed the QMF for WebSphere application to provide access to any JDBC drivers that will be used by QMF for WebSphere. This configuration may vary widely

depending on the types of JDBC driver to be used. Consult the JDBC driver documentation for installation and configuration information.

For accessing DB2, you must perform configuration as described in the "JDBC and SQLJ administration" section of the DB2 manual, *Application Programming Guide and Reference for Java*. In particular, described modifications to environment variable settings must be made to the J2EE server configuration:

1. In the navigation tree, expand the new conversation.
2. Expand **Sysplexes**.
3. Expand the sysplex on which you installed QMF for WebSphere.
4. Expand **J2EEServers**.
5. Click on the server on which you installed QMF for WebSphere. The server properties display on the right side of the administration application window.
6. At the bottom of the window, make required environment variable settings under **Environment variable list**.
7. Click the Save button on the toolbar.

Activate the application

After the application is installed, activate it:

1. In the navigation tree on the left side of the administration application, right click on the conversation, and select **Validate** from the pop-up menu.
2. Right click on the conversation and select **Commit** from the pop-up menu.
3. Right click on the conversation and select **Instructions...** from the pop-up menu.
4. Review the instructions on the right side of the administration application window, and complete the listed system tasks. At this time, you should also update the httpd.conf file. Add the following line:

```
Service /QMFWebSphere/*/  
usr/lpp/WebSphere/WebServerPlugIn/bin/was400plugin.so:service_exit
```

This directive must be contained in a single line in the file, with spaces after Service and *.

5. Right click on the conversation and select **Complete --> All Tasks** from the pop-up menu.
6. Right click on the conversation and select **Activate** from the pop-up menu.

Map the qmfadmin role to users and groups

A single security role named qmfadmin is defined for the QMF for WebSphere application. This role is used to authenticate a user before performing various administrative tasks in QMF for WebSphere, such as binding packages.

You must perform RACF® administration in order to map the qmfadmin role to users and groups. See the WebSphere for Application Server for z/OS and OS/390 manual, *Assembling Java 2 Platform, Enterprise Edition (J2EE) Applications* (SA22-7836) for more information on this process.

Start the application

After the application is activated and security configuration is complete, start (or restart) the http and J2EE servers. The application is now available.

Deploying the QMF for WebSphere web service

The QMF for WebSphere web applications provide web interfaces for end user and administrator functions. In addition to the web applications, QMF for WebSphere provides a web service, which is used to develop distributed QMF applications. After deploying the web application, you can also deploy the web service, to enable this type of application development. If you are not performing web service application development, you can skip this step.

Deploying under WAS version 5 (non-z/OS)

If you are using WAS version 5.0.2 or later, the QMF for WebSphere web service is deployed along with and at the same time as the web applications. No further configuration is required. If you are using a WAS version earlier than 5.0.2, you should follow the instructions for deploying the web service under WAS version 4.

After installation, the QMF for WebSphere web service can be accessed by client applications using the following URL:

```
http://host:port/QMFWebSphere/services/QMFService
```

where *host* is the host name of the WAS server machine and *port* is the port WAS uses for web services (by default, 6080).

For web service client applications, a web service description file (WSDL) named QMFWebSphere.wsdl is included with the QMF for WebSphere files that describes the QMFService web service.

Deploying under WAS version 4 (non-z/OS)

Prior to deploying the QMF for WebSphere web service under WAS version 4, you should install the open source Apache Axis application to enable the required SOAP support in WAS. Information about downloading, installing, and configuring Axis is available at <http://ws.apache.org/axis>. You must perform the following steps after downloading and installing Axis:

1. Package the Axis web application files with the QMF for WebSphere web service files into an enterprise application archive file.
2. Deploy this enterprise application in WAS.
3. Register the QMF for WebSphere web service with the Axis application.

Packaging the Axis files

Use the following steps to package the Axis web application files with the QMF for WebSphere web service files:

1. Run the following command from the `webapps/axis` subdirectory of the Axis installation:

```
jar xf axis.war *.*
```

This will create the `axis.war` web application file.

2. Start the WebSphere Application Assembly Tool.
3. Create a new application file.
4. On the right side of the window, click **General**.
5. In the **Display name** field, enter **Axis**.
6. Click **Apply** to save the change.
7. In the navigation tree on the left side of the window, right click on **Web Modules** and select **Import** from the pop-up menu.
8. Enter the name of the `axis.war` file you created and click **OK**. When prompted to confirm values, enter **axis.war** in the **File name** field and **/axis** in the **Context root** field.
9. Click **OK**.
10. In the navigation tree on the left side of the window, expand **Axis**.
11. Expand **Web Modules**.
12. Expand **Files**.
13. Right click on **Jar Files**, and select **Add Files** from the pop-up menu.
14. Browse to the directory where you installed the QMF for WebSphere files, select `QMFLIB.jar`, and click **Add**.
15. Click **OK**.
16. Save the application file as **axis.ear**.

Deploying the Axis application in WAS

After creating the Axis enterprise application archive (`axis.ear`), you must deploy it in WebSphere. The steps used to deploy this application are essentially the same as those previously described for deploying the QMF for WebSphere application, except deploying `axis.ear` instead of `QMFWebSphere.ear`.

Deploying the QMF for WebSphere web service in Axis

After the Axis application is deployed, you must use the Axis AdminClient tool to register the QMF for WebSphere web service with it. For example, use the following command:

```
java org.apache.axis.client.AdminClient  
-lhttp://host:port/axis/services/AdminService QMFWebSphere.wsdd
```

where *host* is the host name of the WAS server and *port* is the port on which the Axis application is configured to listen (9080, by default).

Accessing the web service

After installation, the QMF for WebSphere web service can be accessed by client applications using the following URL:

`http://host:port/axis/services/QMFService`

where *host* is the host name of the WAS server machine and *port* is the port WAS uses for web services (by default, 6080).

For web service client applications, a web service description file (WSDL) named QMFWebSphere.wsdl is included with the QMF for WebSphere files that describes the QMFService web service.

Using the QMF for WebSphere applications

To use QMF for WebSphere, open a web browser and go to:

`http://host:port/QMFWebSphere/Pages/QMFWebSphere.jsp`

where *host* is the host name of the WAS server machine and *port* is the port on which the QMF for WebSphere application is configured to listen.

To use QMF for WebSphere Report Center, go to:

`http://host:port/QMFWebSphere/Pages/RcMain.jsp`

To use QMF for WebSphere Directory, go to:

`http://host:port/QMFWebSphere/Pages/QMFSearch.jsp`

To start QMF for WebSphere Administrator, go to:

`http://host:port/QMFWebSphere/Util/Admin.jsp`

For further information

For information on using QMF for WebSphere and QMF for WebSphere Report Center, refer to *Getting Started with QMF for Windows and QMF for WebSphere*. For more information on using QMF for WebSphere Administrator see Chapter 5, "Configuring database servers for QMF for WebSphere," on page 79.

Chapter 4. Configuring database servers for QMF for Windows

This chapter describes how to configure a database server in the QMF for Windows server definition file (SDF). The following tasks describe the steps required to configure a database server in the SDF :

- Choosing the server definition file
- Specifying the configuration parameters
- Assigning a name to the database server in the SDF
- Specifying security parameters for the database server
- Specifying database server connectivity
- Creating catalog objects and binding packages
- Selecting the QMF catalog
- Granting permission to user IDs

This chapter also describes how to distribute the SDF to your users after you have completed the process of configuring the database servers.

Choosing the server definition file

The server definition file (SDF) is an initialization (.ini) file that contains the technical information that the QMF for Windows and QMF for WebSphere applications need to connect users to database servers. The QMF for Windows administrator is responsible for creating, configuring and maintaining the SDF for the QMF for Windows and QMF for WebSphere end users.

Note: Editing the SDF using any method or application other than QMF for Windows Administrator is not recommended and may cause the file to be corrupted.

You must supply at least one SDF for the QMF for Windows and QMF for WebSphere applications to use. You can choose to use the default SDF or create a new SDF.

Using the default SDF

QMF for Windows Administrator installs with a default SDF called `qmfsdf*.ini`. (where * stands for the version number). You can configure this default SDF for your environment and pass it to your users. If you choose to use this file, you do not need to create a new SDF.

A sample database server, **QMF for Windows Demo** is already configured in the default SDF. You can use this SDF, the sample database and a TCP/IP connection to learn about the QMF applications.

Creating a new SDF

There could be several reasons for creating a new SDF. For example, you might want to distribute multiple SDF files each containing different database servers for different users.

You can create a new SDF using another SDF as a model and then edit specific parameters or you can build a new SDF from scratch.

Create a new SDF for a user or group of users by selecting the **File --> New** or **File --> Save As** command from the QMF for Windows Administrator menu bar. Specify the name of the new.ini SDF file. Click Save.

Choosing a single SDF or multiple SDFs

With a single SDF file, you would define all physical servers that every QMF application user would need to access in the one file. All users would share the SDF file over a file sharing network. A single SDF file is advantageous because it minimizes and centralizes administrative tasks.

For multiple SDFs, you would define a select set of physical servers in several different SDFs. Users would access one or more SDFs depending on their requirements. Multiple SDFs increase your administrative tasks since you must make all changes to the SDFs using the QMF for Windows Administrator application.

Open an existing SDF

The name of the SDF that you are currently using with QMF for Windows administrator appears in the title bar. For example:

```
C:\WINNT\qmf sdf.ini - QMF for Windows Administrator
```

You can select another SDF by selecting **File --> Open** from the QMF for Windows Administrator menu bar. The Windows systems directory opens and the **Files of type** field is set to Server Definition Files (*.ini). Select the SDF that you want to use.

Specifying the configuration parameters for a database server

You must define in a SDF each licensed database server that you or your users will connect to using a QMF for Windows or QMF for WebSphere application. For each database server that you define in the SDF, you specify configuration parameters that provide the technical information QMF for Windows or QMF for WebSphere applications need to connect to that database server.

You use the Parameters window to specify the configuration parameters for a database server. The Parameters window consists of the following:

- The **General** page where you specify the database server name in the SDF.
- The **Security** page where you set QMF for Windows Administrator security parameters.
- The **Connection** page where you define the type of connectivity that will be used to connect to the database server.
- The **Packages** page where you create QMF catalog objects and bind QMF packages.
- The **Catalog** page where you specify the QMF catalog that the database server will use.
- The **Resource Limits** page where you specify governing resource limits for user access to this database server.
- the **User Profiles** page where you manage the user profiles that have been defined for users who will be allowed to access the database server.
- The **Sample Tables** page where you can create sample tables that may help users learn how to use the QMF for Windows or QMF for WebSphere applications.
- The **Object Tracking Reports** page where you can run detail and summary reports that include the latest information on object usage.
- The **WebSphere** page where you specify the connection parameters for accessing the database server using QMF for WebSphere.

Adding a database server to the SDF

When you add a database server to the SDF you must specify, at the very least, a minimum amount of information. QMF for Windows Administrator sequentially presents the first five pages of the Parameters window where the required configuration parameters are specified.

To add a database server to the SDF, click the Add icon from the QMF for Windows Administrator main window. QMF for Windows administrator application presents the following five windows sequentially:

- General
- Security
- Connection
- Packages
- Catalog

Once you have completed specifying the parameters in these windows, you can choose to set up resource limits, sample tables, run object tracking or set up QMF for WebSphere connectivity by editing the database server configuration parameters.

Editing a database server configuration parameters

You can edit the configuration parameters for a database server defined in the SDF using the Parameters window.

Procedure to edit a database server's configuration parameters

1. Select a database server from the Servers list in the QMF for Windows Administrator main window.
2. Click the Edit icon. The Parameters window opens.
3. Select the tab that includes the configuration parameters that you want to change.

Deleting a database server from the SDF

You can delete database servers from the SDF. When you delete the database server from the SDF, all configuration information about the database server will be removed from the SDF.

If you are deleting a database server that hosts a QMF catalog that other database servers share, you will get a message that lists the additional database servers. When you delete the selected database server that hosts a shared QMF catalog, all of the database servers that share the QMF catalog will also be deleted.

Procedure to delete a database server from the SDF

1. Select a database server from the Servers list in the QMF for Windows Administrator main window.
2. Click the Delete icon. The database server is removed from the SDF. If the database server hosts a QMF catalog, all database servers that share that catalog are deleted from the SDF as well.

Assigning the database server a name in the SDF

QMF for Windows and QMF for WebSphere users access the database server that you are configuring in the SDF using a descriptive name. The configuration parameters that you will specify for the database server are added to the SDF under the descriptive name.

Assigning a name to the database server in the SDF is part of the overall task of configuring the SDF. Use the General window to assign the database server a name in the SDF.

Multiple entries in SDF for a database server

You can define multiple entries in a SDF for one physical database server. Although accessing the same database server, each entry usually has different configuration parameters. For example, you could specify the same physical

database server be connected to with either a SNA or ODBC connection and have a different set of resource limits that govern each connection.

Each entry in the SDF for the database server must have a unique descriptive name.

Procedure to assign a name to the database server in the SDF

1. Type a name for the database server in the General window.
2. Click **Next** if you are adding the database server.
The Security dialog box opens.
3. Click **OK** or another tab if you are editing the database server configuration parameters.

Setting security parameters

QMF for Windows Administrator security parameters control how QMF for Windows and QMF for WebSphere interact with your database server. These security parameters do not override your database server's security requirements.

Use the Security page of the Parameters window to set the QMF for Windows Administrator security parameters for the database server that you are configuring in the SDF. Setting security parameters is part of configuring a database server in the SDF.

Considerations for security parameters

User ID and password are required

Use this parameter to require users to specify a user ID and password when connecting to the database server. When selected, QMF for Windows or QMF for WebSphere opens the Set User Information window and requests a valid user ID and password before connecting to this database server. If you do not select this option, you are specifying that the database server you are configuring in the SDF does not require a user ID and password. QMF for Windows or QMF for WebSphere will not automatically open the Set User Information window and request a valid user ID and password.

The default for this option is to require a user ID and password. QMF for Windows Administrator security parameters do not override the database server's security requirements. If the database server requires a user ID and password, QMF for Windows or QMF for WebSphere must pass this information in order to make the connection. By automatically prompting the user with the Set User Information window, QMF for Windows or QMF for WebSphere ensure they have the information.

There are some database servers, ODBC data sources for example, that do not require user IDs and passwords. There are some database servers that accept generic user IDs and passwords. In these cases users might not know a user ID or password. You can clear the User ID and password are required check box to prevent QMF for Windows or QMF for WebSphere from opening the Set User Information window, and allow users to bypass specifying a user ID or password.

Allow users to change passwords

Use this parameter to allow users to remotely change their passwords without logging on to the database server. The database server must support this capability and the user ID must have the required authority. This option is only available for DB2 UDB servers that are connected to using TCP/IP, SNA and CLI.

Allow users to save passwords

Use this parameter to allow users to save their passwords. Passwords are saved in encrypted format. When checked, QMF for Windows or QMF for WebSphere do not require the user to enter a password in the Set User Information window every time a connection is made to the database server. Instead QMF for Windows or QMF for WebSphere retrieves the saved password. The saved password is used across multiple sessions until a new password is saved or specified. This applies only to connections to DB2 UDB servers.

Encryption

Use this parameter to specify the type of encryption that should be used when communicating with the database server over the network. This option applies only to DRDA servers. As different types of servers support different encryption options, check with your database server administrator for more information on the type of encryption that the database server you are configuring in the SDF supports. You can select one of the following options:

- None to not encrypt any communications
- Encrypted password to encrypt just the password
- Encrypted user ID and password to encrypt both user ID and password
- Encrypted user ID and data to encrypt both user ID and any data that is sent
- Encrypted user ID, password and data to encrypt all information that is sent including user ID, password and data

Enable Kerberos security

Use the Enable and Target principal name parameters to allow Windows 2000 clients to use the Kerberos security protocol to communicate with the database server. This option only applies to database servers that are connected to

using DRDA. For CLI connections, security options can be set using DB2 Connect™ or Client Application Enabler (CAE).

The Target principal name is a string that is used by Kerberos for authentication. If your DRDA communication protocol is configured to do so, you can leave this field blank and the target principal name for Kerberos authentication will be supplied by your DRDA communication protocol.

Procedure

1. Select the security parameters that you want in place for the database server.
2. Click **Next** if you are adding the database server.
The Connections window opens.
3. If you are editing the database server configuration parameters, click **OK** or another tab.

Specifying database server connectivity

The connectivity parameters for a database server specify the method which will be used to connect to the database server. QMF for Windows and QMF for WebSphere applications support the following types of connections:

- DRDA over TCP/IP
- DRDA over SNA
- DB2 for Windows CLI
- ODBC

Use the Connections page of the Parameters notebook to specify how QMF for Windows or QMF for WebSphere will connect to a database server. Defining connectivity parameters is part of configuring a database server in the SDF.

Connect using DRDA over TCP/IP

Select this option to access the database server using DRDA over TCP/IP.

To access a database server using DRDA over TCP/IP, QMF for Windows or QMF for WebSphere must be able to establish a TCP/IP connection from the local host to the remote host and remote port. QMF for Windows or QMF for WebSphere requires a WinSock 1.1 (or later) interface for the installed TCP protocol stack.

Use your TCP/IP networking staff and your TCP/IP software vendor's technical support services to implement and support your network configuration.

Note: DB2 has been added to different platforms at different release points. Consult your DB2 database product documentation to determine whether its DRDA application server component supports TCP/IP.

Host name

Type the IP address of the machine housing the database.

If you enter a TCP domain name for the host name, QMF for Windows Administrator resolves the name to an address using the GetHostByName socket call. Otherwise, you can specify the host in dotted decimal notation (such as, 172.16.37.33).

Port number

Type the TCP/IP port number for the database server. The port number is the port that DB2 is assigned to listen for DRDA TCP/IP conversations.

Select one of the following options if you do not know the port number to use on DB2 UDB for z/OS.

1. Run the Print Log Map utility

- a. Run DSNJU004.
- b. Max to the bottom of the output.
- c. Locate the RDB name near the bottom of the output, such as:

```
LOCATION=DB2PDDF LUNAME=DB2PDDF PASSWORD=(NULL)
GENERICLU=(NULL) PORT=NULL RPORT=NULL
```

2. Use the DB2DMSTR job

- a. Look at the DB2DMSTR job that is running on the mainframe as an address space.
- b. Find the following DSNL004I message:

```
,-----,SDSF OUTPUT DISPLAY
DB2DMSTR ,COMMAND INPUT ==>,
19.24.18 STC01839 DSNL004I - DDF START COMPLETE
LOCATION DB2DDDF
LU FFX1.DB2DDDF
GENERICLU -NONE
DOMAIN -NONE
TCPPORT 0
RESPORT 0
```

In these two examples the TCPPORT has been set to zero. This is the de-activated state and it indicates that DB2 DRDA is not listening on any port.

Follow these steps to update your BSDS to set this port to **446** for DB2 to start listening, then run the Change Log Inventory utility to change this status:

1. Verify that the DB2 is down.
2. Run the utility with the following SYSIN card:

DDFPORT 446

3. Start up DB2 -start with DB2 on the console and then DDF facility -start DDF on the DB2I panel.
4. Modify the TCP/IP profile to include the following:
PORT 446 TCP OMVS ; DRDA port for DB2D
5. Restart TCP/IP.
DB2 should respond to your request.

The default port for DB2 to listen for DRDA TCP/IP conversations on the iSeries is **446**. The default port can already be assigned, but it might not be active. Or, the default port may have been changed to another value. If so, you receive the WSAECONNREFUSED error message when QMF for Windows tries to connect.

Verify Listen State for iSeries

Follow these steps to verify whether the DRDA port is in a listen state:

1. Type **NETSTAT** on the iSeries command line.
2. Select Option 3.
3. Look for DRDA under the *Local Port* column and verify that State=Listen.
4. *Optional:* Select one of the following options to start DDM services on the iSeries if DRDA is not in the *Local Port* column:
 - Type **STRTCPSVR *DDM** at the iSeries command line then verify that DRDA is under the Local Port column and State=Listen.
 - Type **GO TCPADM** at the command line, select Option 3, then verify that DRDA is under the Local Port column and State=Listen.

Follow these steps to ensure that the DDM server (which opens the DRDA port) will autostart when the **STRTCP** command is issued during system startup:

1. Type **GO TCPADM** at the command line.
2. Select Option 2.
3. Select Option 5.
4. Change the Autostart Server prompt to ***yes**.

RDB name

Type the name of the relational database (RDB) server that you are configuring in the SDF. The RDB name is not visible to end-users.

Table 11. RDB Names per Platform

Platform	RDB Name
DB2 z/OS, OS390, and MVS™	Location name

Table 11. RDB Names per Platform (continued)

Platform	RDB Name
DB2 Universal Database or DB2 Common Server	Database name
iSeries	Database name in the iSeries Relational Database Directory

If you do not know what value to enter, run the following query at the server (you can use any table if SYSIBM.SYSTABLES does not exist):

```
SELECT DISTINCT CURRENT SERVER FROM SYSIBM.SYSTABLES
```

The returned value is the RDB name for the database server.

The RDB name is the name of the database that is taken from the iSeries Relational Database Directory Entry. Type the following command to locate the RDB name:

```
DSPRDBDIRE
```

ANSI client CCSID

Specify the codepage to use with the ANSI version of QMF for Windows. The default codepage is the Windows CCSID.

Unicode client CCSID

Specify the codepage to use with the Unicode version of QMF for Windows. The default codepage is UTF-8 (1208).

Enable load balancing

Check this check box to use load balancing to maintain a balanced connection to the database server.

In DB2, load balancing distributes processing and communications activity evenly across a network so that no single device is overwhelmed. Load balancing is frequently used for networks where it is difficult to predict the number of requests that will be issued to a server.

QMF for Windows supports DB2 database servers that use load balancing. By checking **Enable load balancing** for DB2 database servers that support load balancing, QMF for Windows will receive a list of network addresses that can be used as alternatives after the initial connection to the DB2 database server is made. Subsequent connections can use one of the addresses returned by DB2. These addresses are not necessarily the same address that is configured in the SDF, but they will connect to the same set of database tables.

If you enable load balancing, and the DB2 supports this feature, QMF for Windows receives a list of IP addresses with rankings as to how often it wants to be connected to each address. QMF for Windows takes this list and goes to a specific IP address for its first connection. Next, it will go to the next address, then to the third address, and so on. If an IP address is busy or not working, load balancing will go to another address. This balances the load on each address and provides multiple addresses if the first address cannot be used.

Note: Disregard this setting if installing QMF for Windows on AIX or Windows UDB DB2. It applies only to z/OS and VM/VSE data sharing.

Connect using DRDA over SNA

Select this option to specify that QMF for Windows will connect to the database server using a DRDA over SNA connection.

SNA connectivity is not provided with QMF for Windows; instead, a third-party product that implements SNA connectivity is required. Whatever product you use to provide connectivity must be installed, configured and working before you install or use QMF for Windows Administrator.

In an SNA network, QMF for Windows must establish an LU 6.2 session between itself and DB2 using a CPI-C or WinCPIC interface. The ease in which LU 6.2 implements connectivity between Microsoft Windows and DB2 depends on your SNA network environment and its stability. Use your networking staff and the vendor's technical support team to implement and support your network configuration.

Because QMF for Windows implements the DRDA requestor specification, it is capable of connecting to any database that adheres to and implements the DRDA server component.

The following IBM database products that contain a DRDA server component can communicate directly with QMF for Windows via SNA:

- DB2 UDB for z/OS, DB2 for z/OS, and DB2 for MVS
- DB2 Server for VSE&VM, and SQL/DS™
- DB2 UDB for iSeries
- DB2 Universal Database and DB2 Common Server
- DB2 Parallel Edition
- DB2 Information Integrator™

Symbolic destination name

Use this field to specify the CPI-C or WINCPIC symbolic destination name that is defined in your SNA networking software.

The symbolic destination name refers to a set of parameters (the CPI-C side information record), which are used when establishing a connection to a partner application (such as DB2) over the network.

Note: If you are selecting SNA connectivity for a database server, you must also specify the CPI-C DLL. You specify the CPI-C DLL using the Options window. Select **Edit --> Options**.

RDB name

Type the name of the relational database (RDB) server that you are configuring in the SDF. The RDB name is not visible to end-users.

Table 12. RDB Names per Platform

Platform	RDB name
DB2 z/OS, OS390, and MVS	Location name
DB2 Universal Database or DB2 Common Server	Database name
iSeries	Database name in the iSeries Relational Database Directory

If you do not know what value to enter, run the following query at the server (you can use any table if SYSIBM.SYSTABLES does not exist):

```
SELECT DISTINCT CURRENT SERVER FROM SYSIBM.SYSTABLES
```

The returned value is the RDB name for the database server.

The RDB name is the name of the database that is taken from the iSeries Relational Database Directory Entry. Type the following command to locate the RDB name:

```
DSPRDBDIRE
```

ANSI client CCSID

Specify the codepage to use with the ANSI version of QMF for Windows. The default codepage is the Windows CCSID.

Unicode client CCSID

Specify the codepage to use with the Unicode version of QMF for Windows. The default codepage is UTF-8 (1208).

Enable load balancing

Check this check box to use load balancing to maintain a balanced connection to the database server.

In DB2, load balancing distributes processing and communications activity evenly across a network so that no single device is overwhelmed. Load

balancing is frequently used for networks where it is difficult to predict the number of requests that will be issued to a server.

QMF for Windows supports DB2 database servers that use load balancing. By checking **Enable load balancing** for DB2 database servers that supports load balancing, QMF for Windows will receive a list of network addresses that can be used as alternatives after the initial connection to the DB2 database server is made. Subsequent connections can use one of the addresses returned by DB2. These addresses are not necessarily the same address that is configured in the SDF, but they will connect to the same set of database tables.

If you enable load balancing, and the DB2 supports this feature, QMF for Windows receives a list of IP addresses with rankings as to how often it wants to be connected to each address. QMF for Windows takes this list and goes to a specific IP address for its first connection. Next, it will go to the next address, then to the third address, and so on. If an IP address is busy or not working, load balancing will go to another address. This balances the load on each address and provides multiple addresses if the first address cannot be used.

Note: Disregard this setting if installing QMF for Windows on AIX or Windows UDB DB2. It applies only to z/OS and VM/VSE data sharing.

Connect using DB2 for Windows CLI

Select this option to specify that QMF for Windows will connect to the DB2 database server that you are configuring in the SDF using DB2 for Windows CLI connectivity. To access a database server using DB2 for Windows CLI, the 32-bit version of QMF for Windows must establish a CLI connection from the local host to the remote host via the DB2 Universal Database client. All of the connectivity information is defined in the DB2 UDB client.

Note: This configuration is outside the control of QMF for Windows. Work with your in-house networking staff to implement and support your network configuration.

CLI connections require the runtime client from DB2 Universal Database Version 6.1 or later. CLI connections to the following databases are supported:

Table 13. Supported CLI Connections

Database	Version	Prerequisite
DB2 Universal Database Server for OS/390 and z/OS	7.1	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)

Table 13. Supported CLI Connections (continued)

Database	Version	Prerequisite
DB2 Universal Database Server for OS/390	6.1	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)
DB2 for OS/390	5.1	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)
DB2 for MVS	2.3; 3.1; 3.4; 4.1	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)
SQL/DS for VM/VSE	3.4	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)
DB2 for AS/400	4.3; 4.4	DB2 Connect personal edition (installed locally) or enterprise edition (installed on a gateway)
DB2 for iSeries	5.1	
DB2 Universal Database	5.1; 5.2; 6.1; 7.1; 7.2	
DB2 Common Server	2.1	
DB2 Information Integrator for AIX and Windows NT	2.1	
Information Integrator for AIX	1.2	
DB2 Parallel Edition for AIX	1.2	

Note: Although QMF for Windows supports CLI connectivity to DB2 for MVS, using a DRDA connection to the DB2 for MVS database is recommended.

Database alias

Use this field to specify the name of the database server that is defined in your DB2 Universal Database client software.

A CLI connection uses a simplified configuration. If a database is defined in the DB2 Universal Database client, QMF for Windows only needs its alias. The network configuration is performed as part of the DB2 Universal Database client configuration rather than as a part of QMF for Windows configuration.

Advanced

Optional: Use the Advanced button to specify driver-specific connection string keywords and their values that are to be used when connecting to a database

server using CLI connectivity. The syntax and allowable values for the keywords are determined by the driver; refer to the driver documentation for more information.

The Advanced DSN Settings window opens where you specify the connection string keywords that will be included in the connection string for the CLI network connection.

Connect using ODBC

Select this option to connect to the database server that you are configuring in the server definition file using ODBC connectivity. All DB2 and non-DB2 data sources are accessed via ODBC in the same way, as long as the data sources provide ODBC support. To connect to multiple data sources using ODBC, you need to configure each data source individually in the server definition file or dynamically enable all ODBC data source definitions.

Database applications' call functions in the ODBC interface are implemented in database-specific modules called drivers, which isolate applications from database-specific calls. ODBC drivers are loaded at run time. A new driver has to be added to access a new DBMS; it is not necessary to recompile or re-link the application.

For ODBC servers, QMF for Windows supports:

- all isolation levels if supported by data source
- binding methods by row and by column
- auto-commit-off if supported by data source
- user, machine, and file data source name (DSN)
- use of ODBC cursor library
- use of multi-row block fetch if supported by ODBC driver stored procedures
- large objects (LOBs) as long variable length objects

For ODBC servers, QMF for Windows does not support bookmarks and interval data types

The following ODBC drivers have been tested for use with QMF for Windows:

- CrossAccess 32(R) 2.21.3777.00
- IBM Client Access ODBC Driver (32-bit) 7.00.00.00
- IBM Client Access ODBC Driver (32-bit) 5.00.08.00
- IBM DB2 ODBC Driver 7.01.00.00
- IBM DB2 ODBC Driver 6.01.00.00
- IBM DB2 ODBC Driver 5.02.00.00

- Microsoft SQL Server 3.70.06.23
- Microsoft dbase Driver(*.dbf) 4.00.3711.08
- Microsoft dbase VPF Driver(*.dbf) 6.00.8428.00
- Microsoft Excel Driver(*.xls) 4.00.3711.08
- Microsoft Access Driver(*.mdb) 4.00.3711.08
- Microsoft Paradox Driver(*.db) 4.00.3711.08
- Microsoft Text Driver(*.txt, *.csv) 4.00.3711.08
- Oracle ODBC Driver 8.01.06.00

ODBC enables QMF for Windows to access DB2 and non-DB2 databases, such as Microsoft Access, Oracle, Sybase, and Informix[®].

Machine data source name

Use this field if the ODBC data source you are configuring in the server definition file is defined to your local machine's registry as a user data source name (DSN) or a system DSN. From the **Machine data source name** list, select the name of the ODBC data source from the list of available user and system DSNs. The machine data source name is the name of an ODBC data source that is defined in the registry of a client machine, either as a user data source name (DSN) or a system DSN.

Machine DSNs are available to all logged-on users of that machine. Machine DSNs are stored on the system with a user-defined name. The DSN provides the information that:

- the database driver needs to connect to the data source
- the driver manager needs to coordinate all data sources and drivers

Note: ODBC user DSNs and system DSNs defined to your local machine's registry are listed in the ODBC Data Source Administrator dialog box.

File data source name

Select this option if the ODBC data source you are configuring in the server definition file is a file data source name. File data source names can reside on your local machine or another machine or server that is part of your network.

The file data source name is the name of a file whose contents define how to connect to an ODBC data source. A file data source can reside on any client or server machine in the network. Unlike a machine data source, in which the connection information resides in the local machine's registry, file data sources can be shared by many users across a network.

Advanced

Optional: Use the Advanced button to specify driver-specific connection string keywords and their values that are to be used when connecting to a database

server using ODBC connectivity. The syntax and allowable values for the keywords are determined by the driver; refer to the driver documentation for more information.

The Advanced DSN Settings window opens where you specify the connection string keywords that will be included in the connection string for the ODBC connection.

Enable dynamic definition of ODBC servers

You must individually configure in the SDF every local ODBC data source that each or your users need to access. This can be a time consuming process. In order to avoid configuring each ODBC data source, you can use the **Enable dynamic definition of ODBC servers** option to dynamically configure in the SDF, every local ODBC data source for all QMF applications users. To dynamically define ODBC data sources, you first must configure a model ODBC database server in the SDF. When QMF for Windows runs on the local machine using this SDF, it dynamically creates an entry in the SDF for each ODBC data source known to the local machine's ODBC Data Source Manager. Each entry in the SDF uses the model ODBC database server's configuration parameters. The SDF entries for the local ODBC data sources are in effect for the length of the current QMF for Windows session. The next time QMF for Windows starts, the entries for the ODBC data sources in the SDF are rebuilt.

Procedure to dynamically define ODBC data sources

1. From the QMF for Windows Administrator main window, check the Enable dynamic definition of ODBC servers check box.
2. Click the Properties button. The Parameters window opens where you specify the configuration parameters for the model ODBC server.
3. The process of configuration is the same as any other database server with a few exceptions. The Connections, Packages, Sample Tables, and Object Tracking pages of the Parameters window are not available when configuring the model ODBC database server. This is because the type of connectivity is assumed to be ODBC and you cannot create objects, bind packages, create sample tables or access object tracking tables on any ODBC database server.
4. The name of the ODBC model database server, listed on the General page of the Parameters window, is automatically inserted as Dynamic ODBC Servers. You cannot change this name. When QMF for Windows dynamically configures each local ODBC data source it will use the local data source name as the dynamic entry database server name in the SDF. This ensures that each dynamic entry in the SDF has a unique name. QMF for Windows will not create a dynamic entry in the SDF for local data source names that exceed 64 characters. QMF for Windows will not create a dynamic entry in the SDF for any local data source name that already

exists in the SDF. This ensures that any individual ODBC database server's parameters already configured in the SDF will not be overridden.

5. You must specify whether the model ODBC database server and all the local ODBC data sources that are dynamically defined will use a QMF catalog. You use the Catalog page of the Parameters window to specify whether or not the model ODBC database server will use a QMF catalog. If you choose to specify that the model ODBC server will use a QMF catalog, then all of the datasources that are dynamically defined based on that model will use that QMF catalog. ODBC data sources cannot host a QMF catalog so you will have to select a QMF catalog that resides on a database server that hosts DB2 and is connected to using TCP/IP, SNA or CLI connectivity. If you choose to specify that the model ODBC server will not use a QMF catalog, then all of the datasources that are dynamically defined based on that model will not use a QMF catalog.
6. You can optionally choose to set up governing using the Resource Limits and User Profiles page, specify security parameters using the Security page or set up QMF for WebSphere connectivity using the QMF for WebSphere page.

Specifying user information

You must specify user information before any connection can be made to the database server. You use the Set User Information window to specify the user ID and password that will be used for the current connection to the database server.

Once specified, the same user ID and password is used for all subsequent database server connections made during the current session. To change the user ID and password that QMF for Windows uses, you must open the Set User Information window and specify a new user ID and password.

If you do not open the Set User Information window and specify a user ID and password, the Set User Information window will open automatically the first time it tries to connect to a database server.

When you are configuring the SDF file, there are several functions that require connecting to the database server in order to complete the function. In order to complete the function of specifying connectivity, you must connect to the database server.

For more information on specifying user information when connecting to a database server, see Appendix B, "Set user information," on page 127.

Creating catalog objects and binding packages

For each database server that you configure in the SDF with the exception of ODBC data servers, you must create the QMF catalog objects and bind a set of QMF packages. The QMF catalog objects consist of database tables, indexes and other objects that contain information used by QMF for Windows. The QMF for Windows packages contain the SQL that QMF for Windows needs to run and access tables, indexes, objects, lists, views and other miscellaneous information.

You use the Packages page of the Parameters window to create the catalog objects and bind packages for all servers connected to using TCP/IP, SNA or CLI. The Packages page is not available when configuring an ODBC database server. That is because ODBC database servers cannot host a catalog. Instead, ODBC servers can be configured to bypass the use of a QMF catalog or use a QMF for Windows catalog that resides on another DB2 database server. Use the Catalog page of the Parameters window to point to a catalog for the ODBC server.

Collection ID

Type the collection name for binding the QMF for Windows packages. Usually, this name refers to the version of QMF for Windows version that you are running on this database server, such as QFW81. The collection ID is limited to 30 characters for TCP and CLI connections.

In DB2, a collection is a group of packages that have the same qualifier or ID. These packages are bound with the ID and become part of the application plan. By identifying the application in the ID field, it makes it easier to spot packages that are related to a particular application.

The default Collection ID is NULLID.

Delimiters

Specify the type of decimal and string delimiters that will be used in the SQL statements. This should match what has been defined for the database server.

Decimal delimiter

1. Period

Select this option to use a period as the decimal delimiter in the SQL statements that are run on this database server

2. Comma

Select this option to use a comma as the decimal delimiter in SQL statements that are run on this database server

String delimiter

1. Apostrophe

Select this option to use an apostrophe as the string delimiter in SQL statements that are run on this database server

2. Quote

Select this option to use a quote as the string delimiter in the SQL statements that are run on this database server.

Packages Wizard

The Wizard button opens the Packages Wizard. Using the Packages Wizard you specify the options that will be used to create the QMF catalog objects and bind the QMF packages on the database server. The options that you select determine the processing course of the Wizard.

The Packages Wizard steps include:

- creating catalog tables
- specifying properties for binding packages
- checking existing objects
- specifying options for listing objects
- editing and running the DLL to create the objects
- binding the packages
- checking that all tables have authorizations
- granting permissions on tables that do not have authorizations.

Creating catalog tables

A QMF for Windows catalog is a set of database tables that contain resource limits, saved objects (queries, procedures, forms), users, reports, and other settings. This step of the Packages Wizard specifies whether the database server you are configuring hosts a QMF catalog and if so, whether a set of catalog tables needs to be created or updated.

Catalog tables have already been created

Select this option to specify that the QMF catalog tables have already been created on the database server and you are using the Packages Wizard to just rebind the QMF for Windows packages.

Create or upgrade catalog tables to support short names

Select this option to create QMF catalog tables on the database server that will support short names or update any existing QMF catalog tables that support short names.

You would select this option if you are configuring a new database server that has never had the QMF catalog tables installed and you will only use short names for objects, or you are upgrading from a previous version of QMF for Windows and the existing QMF catalog tables will continue to support only short names for objects.

Create catalog tables to support long names

Select this radio button to create QMF catalog tables on the database server that will support long names, to update any existing QMF catalog tables that support long names, or to convert existing QMF catalog tables that support short names to QMF catalog tables that support long names.

You would select this option if you are configuring a new database server that has never had the QMF catalog tables installed and you want to use long names for objects, you are upgrading from a previous version of QMF for Windows and the existing QMF catalog tables will continue to support only long names for objects, or you are converting existing QMF catalog tables that support short names to QMF catalog tables that support long names.

Note: QMF catalog tables long name support is only available for database servers that also support long names. Check with your database server administrator to ensure that the database server you are configuring supports the use of long names.

Note: Once you convert QMF catalog tables to support long names, only Version 8.1 or later of QMF for Windows, or QMF for WebSphere applications can be used to access those tables. Previous versions of QMF for Windows, or QMF for WebSphere cannot use long name QMF catalog tables.

Do not create catalog tables

Select this option to specify that you are not creating the QMF catalog tables on the selected database server. You would select this option if the database server is not hosting a QMF catalog but will be using a QMF catalog that resides on a different database server or if the selected database server is not going to use a QMF catalog at all.

Note: The QMF catalog tables can be shared by multiple database servers. To use a QMF catalog that already exists on a different database server, check the **Do not create catalog tables** check box for the database server that you are configuring. Then, using the Catalog page of the Parameters window, you can select the database server that hosts the QMF for Windows catalog that will be used by the database server you are configuring.

There are several reasons to have database servers share a QMF catalog. One reason is that ODBC database servers cannot host the QMF catalog. The QMF catalog for an ODBC database server must reside on a DB2 UDB database server that is connected using TCP/IP, SNA or CLI. Another reason to share a catalog is to streamline QMF for Windows catalog maintenance or to control an end-user's view of the database objects stored in the catalog.

Note: If this option is selected, only the RAARDBI1 and RAARDBIL packages will be bound.

Specifying properties for binding packages

Use the Packages Properties window to specify the bind options that should be used when binding the QMF for Windows packages.

Fields

Collection ID

Type the collection ID for binding the collection of QMF for Windows packages. Usually, this name refers to the version of QMF for Windows version that you are running on this database server, such as QFW81.

In DB2, a collection is a group of packages that have the same qualifier or ID. These packages are bound with the ID and become part of the application plan. By identifying the application in the ID field, it makes it easier to spot packages that are related to a particular application.

The default Collection ID is NULLID.

When you define multiple entries in the server definition file that access the same physical database server, but they use different network connection types, you must bind a set of QMF for Windows packages using a unique collection ID for each entry in the server definition file.

Decimal delimiter

- Period

Select this option to use a period as the decimal delimiter in the SQL statements that are run on this database server

- Comma

Select this option to use a comma as the decimal delimiter in SQL statements that are run on this database server

String delimiter

- Apostrophe

Select this option to use an apostrophe as the string delimiter in SQL statements that are run on this database server

- Quote

Select this option to use a quote as the string delimiter in the SQL statements that are run on this database server

Advanced

Optional: Click **Advanced** to open the Bind Options window to specify additional binding options for the QMF for Windows packages.

Procedures

1. Type the collection ID in the **Collection ID** field.
2. Select the decimal delimiter from the **Decimal Delimiter** field.
3. Select the string delimiter from the **String Delimiter** field.
4. Click **Advanced** to open the Bind Options window to specify additional binding options for the QMF for Windows package.

Advanced binding options

Optional: Click **Advanced** to specify additional binding options that will be used to bind the QMF for Windows packages. The Bind Options window has five tabs:

- Identification
- Formats
- Statement performance
- Statements
- Miscellaneous

Identification page

Use the Identification page to specify identification options such as the collection ID, owner ID, qualifier and comments, and to specify what to do with existing packages and authorizations.

FIELDS

Collection ID

Optional: Specify an identifying name that will be used to bind the collection of QMF for Windows packages.

The collection ID you specified in the **Collection ID** field of the Package Properties page of the Packages Wizard or the Collection ID field of the Packages page of the Parameters window is inserted in this field automatically. If you change the collection ID here, it is also changed in the other collection ID fields.

The Collection ID is used in conjunction with the Owner ID and the Qualifier to uniquely identify the collection.

Owner ID

Optional: Specify a user ID that will be used to bind the QMF for Windows packages. The ID that grants you authority at the server to execute the SQL contained in the package. The owner ID enables you to CREATE tables, bind packages, create views on system tables, and grant EXECUTE authority on these packages.

In order to bind the QMF for Windows packages, your user ID must have the authority at the database server to run the SQL that the packages contain. If your primary user ID has the required authority and privileges, you can leave this field blank.

If you have a secondary authorization ID that you use for administrative tasks, specify it in this field. The owner ID you specified in the **Owner ID** field of the Package Properties page of the Packages Wizard is inserted in this field automatically. If you change the owner ID here, it is also changed in the other owner ID field.

Qualifier

Optional: Specify a qualifier that will be used in addition to the Collection ID and the Owner ID to identify the QMF for Windows packages.

The name of the collection consists of the collection ID, owner ID, and qualifier, such as **DBA.Q.QFW81**.

Comments

Optional: Type a comment with a maximum of 80 characters.

Replace Existing Packages

Optional: Check this check box to replace the QMF for Windows packages on a database server with the specified Collection ID with the new QMF for Windows packages.

If you check this box all packages are replaced when you install a new version or service release of DB2 QMF for Windows. All clients with a full QMF for Windows installation will need to upgrade to the new version as well. Otherwise, all QMF for Windows installations with older versions will not be able to connect to the server.

Keep Existing Authorization

Optional: Check this check box to keep the authorizations that are specified for the existing QMF for Windows packages. If you check this check box, the Keep existing authorizations on packages check box on the Bind packages

page of the Packages wizard is also checked. Any changes made to one of these check boxes is also automatically made to the other check box.

Formats page

Use the Formats page to specify the decimal and string delimiters and the date and time formats to use on the database server.

FIELDS

Decimal Delimiter

Specify the character that will be used by QMF for Windows for a decimal point in the SQL statements that are run on this database server:

- Unspecified

There is no decimal delimiter specified for this database server.

- Period

A period will be used as the decimal delimiter in the text of the SQL statements that are run on a database server.

- Comma

A comma will be used as the decimal delimiter in the text of the SQL statements that are run on a database server.

String Delimiter

Specify the character used to separate character strings in the SQL statements that are run on this database server.

- Unspecified

Specify that there is no string delimiters specified for this database server.

- Apostrophe

Specify that an apostrophe will be used as the string delimiter in the text of the SQL statements that are run at this database server.

- Quote

Select this button to specify that a quote will be used as the string delimiter in the text of the SQL statements that are run at this database server.

Date Format

Specify how dates are to be formatted for this database server.

- Unspecified

Specify that there is no date formatting used when binding QMF for Windows packages.

- ISO

Specify that the International Organization for Standardization (ISO) date format will be used when binding the QMF for Windows packages. Dates will appear in the following format: YYYY:MM:DD.

- USA

Specify that the United States (USA) date format will be used when binding the QMF for Windows packages. Dates will appear in the following format: MM:DD:YYYY.

- EUR

Specify that the European (EUR) date format will be used when binding the QMF for Windows packages. Dates will appear in the following format: DD:MM:YYYY.

- JIS

Specify that the Japanese Industrial Standard (JIS) date format will be used when binding the QMF for Windows packages. Dates will appear in the following format: YYYY-MM-DD.

Time Format

Specify how times are to be formatted for this database server.

- Unspecified

Specify that there is no time formatting used when binding QMF for Windows packages.

- ISO

Specify that the International Organization for Standardization (ISO) time format will be used when binding the QMF for Windows packages. Times will appear in the following format: HH.MM.SS.

- USA

Specify that the United States (USA) time format will be used when binding the QMF for Windows packages. Times will appear in the following format: HH:MM AM or HH:MM PM.

- EUR

Specify that the European (EUR) time format will be used when binding the QMF for Windows packages. Times will appear in the following format: HH:MM:SS.

- JIS

Specify that the Japanese Industrial Standard (JIS) time format will be used when binding the QMF for Windows packages. Times will appear in the following format: HH:MM-SS.

Statement Performance page

Use the Statement Performance page to specify the isolation level, query blocking, data release, degree of parallelism, and query optimization options.

FIELDS

Isolation Level

Use this field to specify how much to isolate QMF for Windows from the effects of other running applications.

The isolation level describes the degree to which the data being updated is visible to other transactions.

- Unspecified
Check this radio button to specify that the isolation level for the QMF for Windows application will be the default specified for all applications. For more information on Isolation Level options, refer to your database product's documentation.
- Repeatable Read
Check this radio button to specify that the isolation level for the QMF for Windows packages will be Repeatable Read (RR). The RR isolation level provides the most protection from other applications. For more information on Isolation Level options, refer to your database product's documentation.
- All (RS)
Check this radio button to specify that the isolation level for the QMF for Windows packages will be Read Stability (RS). For more information on Isolation Level options, refer to your database product's documentation.
- Cursor Stability (CS)
Check this radio button to specify that the isolation level for the QMF for Windows packages will be Cursor Stability (CS). The CS isolation level provides the maximum concurrency with data integrity. For more information on Isolation Level options, refer to your database product's documentation.
- Change (UR)
Check this radio button to specify that the isolation level for the QMF for Windows packages will be Uncommitted Read (RS) which allows an application to read uncommitted data. For more information on Isolation Level options, refer to your database product's documentation.
- No Commit (NC)
Check this radio button to specify that the isolation level for the QMF for Windows packages will be No Commit (NC). An application running with an isolation level of NC does not make permanent database changes. For more information on Isolation Level options, refer to your database product's documentation.

Query Blocking

Use this option to specify the blocking protocol QMF for Windows will use.

The query blocking facility uses rules established by the administrator to govern end-user query times to avoid consuming system resources.

- Unspecified

Check this radio button to specify that no special query blocking options will be used in binding the QMF for Windows packages. QMF for Windows uses your database default values. For more information on Query Blocking options, refer to your database product's documentation.

- All

Check this radio button to specify that the query blocking option used in binding the QMF for Windows packages will be All. For more information on Query Blocking options, refer to your database product's documentation.

- Unambiguous

Check this radio button to specify that the query blocking option used in binding the QMF for Windows packages will be Unambiguous. For more information on Query Blocking options, refer to your database product's documentation.

- None

Check this radio button to specify that the query blocking option used in binding the QMF for Windows packages will be None. For more information on Query Blocking options, refer to your database product's documentation.

Release

Use this option to specify when the RDB will release the resources used by QMF for Windows.

This option controls whether to commit work with release at the completion of the stage, or roll back work with release when a negative return code is received from DB2.

- Unspecified

Check this radio button to specify that no special release options will be used in binding the QMF for Windows packages. QMF for Windows uses your database default values. For more information on Release options, refer to your database product's documentation.

- Commit

Check this radio button to specify that the release option used in binding the QMF for Windows packages will be Commit. Commit specifies that the RDB releases resources used by the package every time a unit of work is either committed or rolled back. For more information on Release options, refer to your database product's documentation.

- Deallocate

Check this radio button to specify that the release option used in binding the QMF for Windows packages will be Deallocate. Deallocate specifies that the target RDB releases resources used by the package when the conversation with the database server is finished or deallocated. For more information on Release options, refer to your database product's documentation.

Degree of Parallelism

Use this field to enter the required information if your database supports a degree of parallelism option. For more information on Degree of Parallelism options, refer to your database product's documentation.

This option optimizes (tunes) the SQL by running the SQL in different partitions or on different processors

Query Optimization

Use this field to enter the required information if your database supports query optimization. For more information on Query Optimization options, refer to your database product's documentation.

Query optimization identifies possible access paths for the SQL statements, computes the access cost for each, selects the lowest-cost access path, then produces executable code.

Statements page

Use the Statements page to specify the explain, time validation, and SQL warnings options.

FIELDS

Explain

Use this option to specify whether QMF for Windows will gather and record explain data during processing.

The EXPLAIN function lets you look at the access and processing choices actually made by the optimizer, which allows you to fine-tune your SQL code to improve performance. This is a useful tool when you BIND or REBIND.

- Unspecified

Check this radio button to specify that QMF for Windows will use your database default setting to determine whether or not explain data will be gathered. For more information on Explain options, refer to your database product's documentation.

- All

Check this radio button to specify that QMF for Windows will use the All option to determine whether or not explain data will be gathered. For more information on Explain options, refer to your database product's documentation.

- Yes

Check this radio button to specify that QMF for Windows will gather explain data. For more information on Explain data options, refer to your database product's documentation.

- No

Check this radio button to specify that QMF for Windows will not gather explain data. For more information on Explain options, refer to your database product's documentation.

Explain Snapshot

Use this option to specify whether QMF for Windows will gather and record a snapshot version of the explain data during processing.

Output from the EXPLAIN command is written to the PLAN_TABLE. The snapshot provides information for tuning queries.

- Unspecified

Check this radio button to specify that QMF for Windows will use your database default setting to determine whether or not a snapshot of the explain data will be gathered. For more information on the Explain Snapshot options, refer to your database product's documentation.

- All

Check this radio button to specify that QMF for Windows will use the All option to determine whether or not a snapshot of the explain data will be gathered. For more information on the Explain Snapshot options, refer to your database product's documentation.

- Yes

Check this radio button to specify that QMF for Windows will gather a snapshot of explain data. For more information on the Explain Snapshot options, refer to your database product's documentation.

- No

Check this radio button to specify that QMF for Windows will not gather a snapshot of explain data. For more information on Explain Snapshot options, refer to your database product's documentation.

Validate Time

Use this option to specify when packages are validated in your database environment.

- Unspecified

Check this radio button to specify that QMF for Windows will use your database default setting. For more information on the Validate Time options, refer to your database product's documentation.

- Bind

Check this radio button to specify that validation will be done during the bind process. For more information on the Validate Time options, refer to your database product's documentation.

- Run

Check this radio button to specify that validation will be done at runtime. For more information on the Validate Time options, refer to your database product's documentation.

Return SQL Warnings

Check this check box to have any SQL warnings issued during the validation process returned. For more information on the Return SQL Warnings options, refer to your database product's documentation.

Miscellaneous page

Use the Miscellaneous page to specify dynamic rules, character sub-types, and generic options.

FIELDS

Dynamic rules

Use this option to specify the dynamic rules that are specific to your database environment.

- Unspecified

Check this radio button to specify that QMF for Windows will use your database default settings. For more information on the Dynamic rules options, refer to your database product's documentation.

- Run

Check this radio button to specify that QMF for Windows will use run as a dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

- **Bind**

Check this radio button to specify that QMF for Windows will use bind as a dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

- **Invoke/Requestor**

Check this radio button to specify that QMF for Windows will use invoker/requestor as the dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

- **Invoke/Owner**

Check this radio button to specify that QMF for Windows will use invoker/owner as the dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

- **Definer/Requestor**

Check this radio button to specify that QMF for Windows will use definer/requestor as the dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

- **Definer/Owner**

Check this radio button to specify that QMF for Windows will use definer/owner as the dynamic rule. For more information on the Dynamic rules options, refer to your database product's documentation.

Character Sub-type

Use this option to specify the character sub-types for your database environment.

- **Unspecified**

Check this radio button to specify that there are no character sub-types defined. For more information on the Character Sub-Type options, refer to your database product's documentation.

- **FOR BIT DATA**

Check this radio button to specify that QMF for Windows will use bit data as the character sub-type. For more information on the Character Sub-Type options, refer to your database product's documentation.

- **FOR SBCS DATA**

Check this radio button to specify that QMF for Windows will use SBCS data as the character sub-type. For more information on the Character Sub-Type options, refer to your database product's documentation.

- **FOR MIXED DATA**

Check this radio button to specify that QMF for Windows will use mixed data as the character sub-type. For more information on the Character Sub-Type options, refer to your database product's documentation.

- **Default**

Check this radio button to specify that QMF for Windows will use the default set up in your database for all applications. For more information on the Character Sub-Type options, refer to your database product's documentation.

Generic options

Specify any generic options that are required in your database environment. For more information on Generic Options options, refer to your database product's documentation.

Checking existing objects

Use the Check Objects window to specify whether or not you want to check for existing objects on the database server.

The Packages Wizard opens the Check Objects dialog box if you selected one of the options that specifies to create catalog tables.

Assume that none of the objects already exist

Select this option to create all database objects, regardless of whether any exist. Select this option if you are defining a database server to the QMF for Windows server definition file for the first time.

Automatically check which objects already exist

This option checks for existing database objects, including databases, tablespaces, nodes, indexes, and views. Required objects will be created and existing objects will be retained. Select this option if you have previously bound QMF for Windows packages for the database server. Only database objects that do not exist at the database server will be created.

Specifying options for listing objects

Use the Object Listing Option window to specify the level of filtering that will apply when producing lists of objects for QMF for Windows users.

Fields

Include all objects without respect to whether the user is authorized to access them

Check this check box to have all database objects from the database server's system table SYSTBLS included in a list requested by a QMF for Windows user regardless of their primary user ID.

This option uses the smallest amount of database resources when producing lists. However, lists will include some objects that are irrelevant and inaccessible to the user. In some cases, lists can be quite large.

Include only those objects that the user's primary or current authorization ID is allowed to access

Check this check box to filter the database objects that are included in a list that a user requests. Only those database objects from the database server's system table SYSTBLS that the user can access using their primary user ID or a current authorization ID are included in the list.

This option uses more database resources but results in more manageable and meaningful lists for the user.

Include objects that the user's primary or secondary IDs are allowed to access

Check this check box to filter the database objects that are included in a list that a user requests to include all the objects from the database server's system table SYSTBLS that the user can access using their primary user ID, their current authorization ID, and any other authorization ID that is associated with their primary ID.

This option requires the most database resources when producing lists but it produces the most extensive list of a user's database objects.

Note: QMF for Windows uses the current SQL ID as the current authorization ID. All other authorization IDs that a user might have access to are defined outside of QMF for Windows. If you check this check box, you must edit the QMF for Windows RDBI.AUTHID_TABLE table to include all the authorization IDs.

Creating objects

Use the Create Objects window to view, edit, and run the SQL statements that will create the QMF for Windows database objects.

Fields

Proposed SQL statements

The Create Objects window lists the SQL statements that QMF for Windows will use to create its required database objects on the database server. These statements were generated based on the Packages Wizard processing options that you selected.

You can modify the SQL statements. For more information on modifying the SQL statements see Appendix C, “Customizing QMF for Windows objects,” on page 129.

Running the proposed SQL statements

After you have reviewed the SQL statements, you run the SQL statements to create the objects by clicking Next. Before running the SQL statements, verify that you have the necessary DB2 privileges to create the objects at the target server.

A message similar to the following is issued if you do not have the right authority to create these objects:

An error occurred while executing the specified SQL statements.

[User ID] does not have the privilege to perform operation [Operation].

(SQL code = -552, SQL state = 42502)

Binding the packages

Use the Bind Packages page to specify that the Packages Wizard will bind the packages. You can skip this step if you have already bound packages on this database server for the current version of QMF for Windows. The QMF for Windows packages refer to the set of objects that the product uses.

Package Names

Different packages are bound on the database server depending on the type of connectivity that will be used to access the database server.

Note: Packages are not bound for ODBC connections because dynamic SQL is used.

DRDA WITH TCP/IP OR SNA CONNECTIVITY

The following packages are bound for servers with DRDA using TCP/IP or SNA connectivity:

- **RAARDBII**

Package includes the dynamic SQL used during installation to check for database object existence.

- **RAARDBX1**

Package includes the dynamic user SQL run with RR isolation level. End users require EXECUTE authority to run the package.

- **RAARDBX2**

Package includes the dynamic user SQL run with RS isolation level. End users require EXECUTE authority to run the package.

- **RAARDBX3**

Package includes the dynamic user SQL run with CS isolation level. End users require EXECUTE authority to run the package.

- **RAARDBX4**

Package includes the dynamic user SQL run with UR isolation level. End users require EXECUTE authority to run the package.

- **RAARDBX5**

Package includes the dynamic user SQL run with NC isolation level. End users require EXECUTE authority to run the package.

- **RAARDBI1**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package.

- **RAARDBI2**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

- **RAARDBIA**

Package includes internal SQL for QMF for Windows administrative functions. This package is bound only if this server hosts a catalog.

- **RAARDBIL**

Package includes internal SQL for retrieving LOB values. End users require EXECUTE authority to run the package.

- **RAASHUT1**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

- **RAARC1**

Package includes internal SQL for Report Center. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

CLI CONNECTIVITY

The following packages are bound for servers with CLI connectivity:

- **RAARDBC1**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package.

- **RAARDBC2**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

- **RAARDBCA**

Package includes internal SQL for QMF for Windows administrative functions. This package is bound only if this server hosts a catalog.

- **RAARDBCL**

Package includes internal SQL for retrieving LOB values. End users require EXECUTE authority to run the package.

- **RAASHTC1**

Package includes internal SQL for QMF for Windows. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

- **RAARC1C**

Package includes internal SQL for Report Center. End users require EXECUTE authority to run the package. This package is bound only if this server hosts a catalog.

Fields

Do not bind the packages

Select this radio button to continue through the Packages Wizard without binding the QMF for Windows packages. Choose this option if you have already bound the QMF for Windows packages for this database server and there are no changes.

Bind the packages

Select this radio button to bind the QMF for Windows packages for this database server.

Note: Your user ID must have the authority to bind packages at the database server.

Replace existing packages

This option is available if you selected the Bind the packages option. When this check box is checked, all QMF for Windows packages that exist on this database server with the specified collection ID will be replaced with the newly bound packages.

Note: This option is recommended if you are binding new QMF for Windows packages.

Keep existing authorizations on packages

This option is available if you selected the Bind the packages option. When you check this check box, the authorizations on the QMF for Windows packages that exist on this database server with the specified collection ID are maintained.

Note: This option is recommended if you are binding new QMF for Windows packages.

Privileges required to bind packages

The actual set of privileges required to bind packages depends on the type and version of the database server, the configuration of the database server, and whether the package exists.

Note: Refer to your database documentation for more information about the privileges required to bind packages

The table privileges also vary by whether a QMF catalog is created at the server. Therefore, privileges differ based on the privileges that are always required and privileges that are required if you create a QMF catalog.

The following table describes what privileges are required to act on each of the QMF tables:

Table 14. Object Privileges

Table Name	Privileges
Q.OBJECT_DATA	SELECT, INSERT, UPDATE (except with DB2 UDB for workstation platforms, version 5 or later), DELETE
Q.OBJECT_DIRECTORY	SELECT, INSERT, UPDATE, DELETE
Q.OBJECT_REMARKS	SELECT (DB2 UDB for workstation platforms, version 5 or later), INSERT, UPDATE, DELETE
Q.OBJ_ACTIVITY_DTL	SELECT, INSERT, UPDATE, DELETE
Q.OBJ_ACTIVITY_SUMM	SELECT, INSERT, UPDATE, DELETE
Q.RAA_OA_DTL_X	SELECT, INSERT, UPDATE, DELETE
Q.RAA_OA_SUMM_X	SELECT, INSERT, UPDATE, DELETE
Q.RAA_OBJECT_VIEW	SELECT
Q.RAA_OBJECT_VIEW_X	SELECT
Q.RAA_OBJ_DATA_X	SELECT, INSERT, UPDATE, DELETE
Q.RAA_OBJ_DIR_X	SELECT, INSERT, UPDATE, DELETE
Q.RAA_OBJ_REM_X	SELECT (DB2 UDB for workstation platforms, version 5 or later), INSERT, UPADTE, DELETE
Q.RAA_SUBTYPE	SELECT, INSERT, UPDATE, DELETE

Table 14. Object Privileges (continued)

Table Name	Privileges
Q.RC_NODE	SELECT, INSERT, UPDATE, DELETE
Q.RC_NODE_AUTH	SELECT, INSERT, UPDATE, DELETE
RDBI.AUTH_VIEW	SELECT
RDBI.CATALOG_DIR_X	SELECT, INSERT, DELETE
RDBI.PROFILE_VIEW	SELECT, INSERT, UPDATE, DELETE
RDBI.PROFILE_VIEW_X	SELECT, INSERT, UPDATE, DELETE
RDBI.RESERVED	SELECT
RDBI.RESOURCE_VIEW	SELECT, INSERT, UPDATE, DELETE
RDBI.RESOURCE_VIEW_X	SELECT, INSERT, UPDATE, DELETE
RDBI.TABLE_VIEW2	SELECT
RDBI.TABLE_VIEW2_X	SELECT
RDBI.USER_ADMIN_VIEW	SELECT
RDBI.USER_ADMIN_VIEW_X	SELECT
RDBI.USER_AUTHID_VIEW	SELECT
RDBI.USER_AUTHID_VIEW_X	SELECT
SYSCAT.PROCPARMS	SELECT (DB2 for workstation platforms, version 5 or later)
SYSCAT.TABAUTH	SELECT (DB2 UDB for workstation platforms)
SYSCAT.TABLES	SELECT (DB2 UDB for workstation platforms)
SYSIBM.SYSPARMS	SELECT (DB2 UDB for z/OS version 6; DB2 UDB for z/OS; and z/OS version 7 and later)
SYSIBM.SYSPROCEDURES	SELECT (DB2 for MVS version 4; DB2 for z/OS version 5)
SYSIBM.SYSTABAUTH	SELECT (DB2 for MVS; DB2 for z/OS; DB2 UDB for z/OS; DB2 UDB for z/OS; and z/OS)
SYSIBM.SYSTABLES	SELECT (DB2 for MVS; DB2 for z/OS; DB2 UDB for z/OS; DB2 UDB for OS/390 and z/OS; DB2 UDB for workstation platforms)
SYSTEM.SYSCATALOG	SELECT (Database 2 Server for VSE & VM)
SYSTEM.SYSTABAUTH	SELECT(Database 2 Server for VSE & VM)
QSYS2.SYSPARMS	SELECT (DB2 for iSeries)
QSYS2.SYSTABLES	SELECT (DB2 for iSeries)

If one of your primary authorization IDs does not have these privileges but one of your secondary authorization IDs does, specify the secondary authorization ID as the Owner ID for the packages.

About Secondary Authorization IDs

About secondary authorization IDs: Many companies using DB2 UDB for z/OS use a security scheme featuring RACF and DB2 so that when a user signs on to DB2 with a user ID and password, the user is limited to setting the current SQLID to a secondary authorization ID maintained by RACF. The secondary ID is the owner of all the tables and queries. Some users share the same secondary ID and can gain access to the same data and objects.

QMF for Windows is not granted access to this set of secondary authorization IDs when the Object List is created. Instead, it has its own table, RDBI.AUTHID_TABLE that must be populated by the DBA so users can see all familiar tables in the list.

Note: If the RDBI_AUTHID_TABLE table is not populated, the users will not see these tables, but they will be able to write SQL queries against those tables.

Errors during bind

Binding packages opens a connection to the database server. The status line indicates the progress of the bind operation. If errors occur while binding packages, correct them, then repeat the bind. A few errors are described below.

SQL -204 error

An SQL code of -204 indicates that a required table does not exist. Click **Create Objects...** to create it.

SQL -551 or -552 error

An SQL code of -551 or -552 indicates that the authorization ID on the bind (your user ID or owner ID) is missing at least one authority required to bind the packages (create database objects at the selected database server). See "Required Table Authorities" for more information.

Permissions

After you bind the QMF for Windows packages, you must grant permission to users to execute the packages. Use the Permissions page of the Packages wizard to grant or revoke permission to the user IDs of QMF for Windows and QMF for WebSphere users, specifying what packages they can run on the database server. You can grant or revoke permission to all user IDs, or to specific IDs.

Note: The Permissions procedure grants the authority required to execute the packages contained within a collection. QMF for Windows creates the collection containing these packages on the iSeries with authority PUBLIC * EXCLUDE. Grant the appropriate authority for users of that collection and library on the iSeries.

Fields

User IDs

Type the user IDs of the users who will be granted permission to run QMF for Windows on the database server. Alternatively, type the user IDs for whom permission to run QMF for Windows on this database will be revoked.

To grant or revoke permission for all users, select the default ID PUBLIC. QMF for Windows stores valid user IDs for the database server in the User ID table.

Procedure

1. Type the user IDs for which you are granting authority to the packages.
2. Click **Grant** to give the user IDs permission at the server.

The following message is issued after permission is granted:

Permission to execute the user packages has been granted to the specified user IDs.

3. *Optional:* Type the user ID and click **Revoke** to prohibit the user IDs from running queries at the database server.
4. Click **Finish**.
5. *Optional:* The Check Table Authorizations page opens next if you selected the following option at the Object Listing Option page:

Include only those objects that any of the user's primary or secondary authorization IDs are authorized to access. This option requires the most database resources when producing lists.

Controls

Table 15. Permissions Controls

Control	Description
Grant	Grant the selected user IDs permission to run QMF for Windows on the database server Note: If you use the default user ID (PUBLIC), to grant all QMF for Windows users permission to run queries on the database server, you need to grant permission to the PUBLIC user ID by selecting the ID and clicking Grant .
Revoke	Prohibit the selected user IDs from running QMF for Windows queries at the database server

Table 15. Permissions Controls (continued)

Control	Description
Back	Close the Permissions page of the Packages wizard and open the Bind Packages page
Finish	Complete processing of the Packages wizard and open the Catalog page
Cancel	Close the Permissions page of the Packages wizard; no information is saved
Help	View online help for this page

Check table authorizations

Use the Check Table Authorizations page to specify whether to check for tables that exist on the database server without authorizations.

This page opens if you selected the following option at the Object Listing Option page, and tables without authorizations were found at the database server after the QMF for Windows packages were bound:

Include only those objects that any of the user's primary or secondary authorization IDs are authorized to access. This option requires the most database resources when producing lists.

Tables that are missing permissions are not visible to QMF for Windows and do not appear in table lists. There must be at least one authorization on each table, recorded in the authorizations catalog table. Some tables can exist without authorizations and will not cause errors. However, these tables do not appear in table lists. QMF for Windows can detect and correct the authorization status by granting privilege on the tables to the specified user ID.

You need to check for tables with no permissions after you bind the packages and assign permissions.

Fields

Do not check for tables with no authorizations

Select this option to specify that QMF for Windows will not check for tables that are missing authorizations on the database server.

Check for tables with no authorizations

Select this option to specify that QMF for Windows will check the database server for tables that do not have authorizations. QMF for Windows searches the database server after the packages are bound for tables that do not have

authorizations. If tables are found, the Grant Table Authorizations page opens; use this page to specify a user ID that will be used to grant authorization to the table.

Procedure

1. Select the **Check for tables with no authorizations** option.
2. Click **Next**.

The Grant Table Authorizations dialog box opens if unassigned tables are found.

Grant table authorizations

Use the Grant Table Authorizations page to select the tables that require authorizations and the user ID that will have SELECT authority to these tables on the database server.

This page opens if:

1. You selected the **Check for tables with no authorizations** option at the Check Table Authorizations page of the Packages wizard
2. Tables without authorizations are found on the database server after the QMF for Windows packages were bound

Fields

Tables

This field lists the tables found on the database server that do not have authorizations.

User IDs

Type the user IDs of the users for whom you are granting authorization on the tables you selected from the **Tables** field.

Procedure

1. Select one or more tables from the **Tables** field.
2. Click **Tab**.
3. Type the user ID that will have SELECT authority to the tables.
4. Click **Grant**.

A confirmation dialog box opens.

5. Click **OK**.
6. Click **Finish**.

The Packages dialog box opens.

Catalog

A QMF catalog is a set of database tables that contain resource limits, saved objects (queries, procedures, forms), reports, and other settings. QMF catalogs can only reside on database servers that host a DB2 database and are connected to using TCP/IP, SNA or CLI.

Note: Database servers connected to using ODBC cannot host a QMF catalog.

You specify that a database server will host a QMF catalog when you create the QMF catalog objects for a database server using the Packages Wizard.

Using the Catalog window, you must specify where the objects from the database server are stored in the QMF catalog. The objects can be stored in the QMF catalog server's main catalog or they can be stored in an extended catalog.

Note: ODBC servers do not require the use of a QMF catalog. When no QMF catalog is selected, however, the features that require a QMF catalog are disabled, such as saving a query to a server and using resource limits.

Main catalog called <default>

On each database server that hosts a QMF catalog, the main QMF catalog is called <Default>. All QMF for Windows objects and user objects for this database server are stored in the <default> catalog.

You can specify that the database server that you are configuring in the SDF use the default QMF catalog that resides on the same database server or a QMF catalog that resides on a different database server. All user objects from a database server that is sharing a QMF catalog on another database server are also, by default, stored in the main QMF catalog.

Using extended catalogs

You can create extended QMF catalogs to organize user access to objects. Instead of all objects going into the main default catalog, they can go into smaller extended catalogs.

There are many reasons to use extended catalogs, for example, you can control users views of objects. You can isolate objects from one database server that is sharing a QMF catalog by creating an extended catalog. The extended catalog will contain only the selected objects from a specific database server. You can also specify that multiple database servers can share extended catalogs.

That means, an extended catalog can contain objects from several database servers. The ability to have multiple extended catalogs residing on different

database servers can affect performance, the user's views of objects and overall maintenance of your query environment.

Fields

Use a catalog with the current server

Check this check box to specify that the database server you are configuring in the SDF will require the use of a QMF catalog. If this check box is unchecked, then the database server that you are configuring will not require the use of a QMF catalog.

If unchecked, none of the fields in the window are available. Only database servers that are being connected to using ODBC can be configured in the SDF to bypass the QMF catalog requirement. This check box is unavailable, if you have specified that your database server will be connected to using ODBC and the data source that you have chosen is a DB2 data source.

Server

Select the database server that hosts the QMF catalog that you want the database server (that you are configuring in the SDF) to use.

Note: Only DB2 UDB database servers can host a QMF catalog.

Catalog

The Catalog field lists the default and extended catalogs that are available on the database server that you selected in the **Server** field. Select a catalog for the database server that you are configuring in the SDF to use.

The main catalog on the server is always named <Default>. This catalog is created during the Create catalog objects and bind packages step when configuring a database server in the SDF. If you select the default catalog all users objects are stored in a single place.

Name

This field lists the name of the main catalogs and extended catalogs that are available on the database server.

CCSID

This field lists the operating system's codepage defined for this catalog that will be used when communicating with DB2.

Require the use of this catalog when accessing the current server

Check this check box to require all users of the database server that you are configuring in the SDF to use the specific catalog that you have selected. By checking this check box you can ensure that users will only have access to the

database server based on the resource limits that you have specified. That is because resource limits are stored in the QMF catalog for a database server.

Note: This setting is suggested for DRDA connections only.

Creating an extended catalog

You can add, edit or delete an extended catalog.

Note: You cannot delete the <Default> catalog.

Add extended catalog

Click the **Add** icon on the Catalog window to add an extended catalog.

Name

Type the name of the extended catalog that you are adding. The catalog named <Default> is the catalog shared with host and previous versions of QMF for Windows.

CCSID

Select the CCSID for the language codepage that the extended catalog will use.

Create system profile entry

Check this check box to create an entry in the System Profile table located on the catalog server, which is the database server on which the catalog resides. When you check this check box, QMF for Windows will create a user profile entry so users can access the database with their own user IDs; otherwise the user IDs must be assigned to a group.

Edit catalog

Click the **Edit** icon on the Catalog dialog box to change the attributes of an extended catalog.

Name

Type a new name for the catalog.

CCSID

Select a different CCSID for the language codepage that the extended catalog will use.

Create system profile entry

Check this check box to create an entry in the System Profile table located on the catalog server, which is the database server on which the catalog resides. When you check this check box, QMF for Windows will create a user profile entry so users can access the database with their own user IDs; otherwise the user IDs must be assigned to a group.

Delete catalog

Click **Delete** on the Catalog dialog box to delete a catalog and its corresponding CCSID.

The following message is issued:

WARNING: This action will delete all user profiles, resource limits groups, and other objects in the [name] catalog at [server], and cannot be undone!

Are you sure that you want to continue?

Click **Yes** to perform the deletion.

Publish the SDF

When you have completed the process of configuring the SDF you must distribute the file to your users. The process of configuring the SDF is completed when you finish all the steps as described in this chapter as well as optional steps described in the following chapters:

- Chapter 6, "Resource limits," on page 89
- Chapter 7, "User profiles," on page 107
- Chapter 8, "Sample tables," on page 111
- Chapter 9, "Object Tracking Reports," on page 113

Procedure

To publish the SDF:

1. Open QMF for Windows Administrator.
2. Select **File --> Publish** to open the SDF Publishing Wizard.
The SDF Publishing Wizard opens with an informational page. If you do not want to see this page check the **Do not show this introduction page in the future** check box.
3. Click the **Next** button.
4. The Publishing Wizard Protocol page opens.
Select the protocol **FTP** to publish the SDF to a server using the FTP protocol.
Select the protocol **HTTP**. This is the protocol that must be used to publish SDF to the WebSphere server where QMF for WebSphere is be running.
5. Click the **Next** button.

6. The Publishing Wizard Connect to Server page opens.

If you are publishing the SDF using FTP:

- Type the name or the address of the server in the **Server** field.
- Specify the user ID and password that will be used in the **User ID** and **Password** fields.

If the server to which you are connecting supports anonymous access, and you want to connect without specifying a user ID and password, then you can check the **Anonymous** check box.

If you are publishing the SDF using HTTP:

- Type the URL that points to the web server where QMF for WebSphere has been installed in the **URL** field.
- Specify the user ID and password that will be used in the **User ID** and **Password** fields.

7. Click the **Next** button.

8. The Publishing Wizard Save File page opens.

If you are publishing the SDF using FTP:

- Type the name of the folder where the SDF will be located in the **Folder** field.
- Type the name under which the SDF will be published in the **Name** field. The default file name is the current name of the SDF that you are using.

If you are publishing the SDF using HTTP:

- Type the path to the place on the web server where you want to save the SDF in the **Path** field.
- Type the name of the SDF in the **Name** field. The default file name is the current name of the SDF that you are using.

9. Click the **Finish** button.

The Publish SDF informational page of the Publishing Wizard opens displaying the progress of the processing. This window will close when processing is complete.

Configuring database servers is an ongoing process

Maintaining the SDF is an ongoing process. As the needs of your users change, you will make changes to the database server configuration parameters in the SDF. You can add, edit or delete the database server configuration parameters. Each time you make changes to the SDF, you must publish a new copy of the SDF to your users.

Chapter 5. Configuring database servers for QMF for WebSphere

This chapter describes the additional configuration steps required for database servers that will be accessed using QMF for WebSphere.

You will use both the QMF for Windows Administrator and the QMF for WebSphere Administrator applications to complete this process. So this chapter also discusses the functionality of QMF for WebSphere Administrator.

Complete the QMF for WebSphere Configuration

To complete the installation of QMF for WebSphere, you must perform the following steps:

1. Use QMF for Windows Administrator to specify the additional database server configuration parameters required by QMF for WebSphere.
2. Make the server definition file (SDF) available to QMF for WebSphere.
3. Use QMF for WebSphere Administrator to bind packages.

Configure database servers in the SDF

QMF for WebSphere and QMF for Windows both determine what database servers may be accessed by users, using a server definition file (SDF). The SDF contains the technical information that is needed to connect to database servers and control the use of database resources.

In the SDF, you must define all of the database servers that will be accessed, using QMF for Windows Administrator. See Chapter 4, “Configuring database servers for QMF for Windows,” on page 31 for more information on this process.

Using QMF for Windows Administrator, you must also specify the additional database configuration parameters required by QMF for WebSphere.

Specify QMF for WebSphere configuration parameters

To specify the QMF for WebSphere parameters:

1. Open QMF for Windows Administrator.
2. Click on the desired database server.
3. Click **Edit**.
4. Click the **QMF for WebSphere** page in the Parameters window.
5. In the **Connection Parameters** group, specify connection parameters that will be used by QMF for WebSphere to connect to the database server.

Driver Name

Type the JDBC driver name that QMF for WebSphere will use to connect to the database server. To use the default DB2 JDBC driver, leave this field blank.

JDBC URL

Type the URL that the JDBC driver will use to connect to the database server.

Advanced

Click **Advanced** to open the **Advanced JDBC Settings** dialog box. Use this dialog box to specify driver-specific connection string keywords and their values for the JDBC driver.

Note: Refer to the vendor documentation for specific information on the keywords supported by and required by the JDBC driver.

6. You can test that QMF for WebSphere can connect to the database server using the **Connection parameters** that you specified. This is an optional step. By validating the connection, you can ensure that what you have specified is correct. You can test this connection using the **Validation Parameters**.
 - a. In order to validate the connection between QMF for WebSphere and the database server, QMF for Windows Administrator must connect to QMF for WebSphere. You tell QMF for Windows Administrator how to connect to QMF for WebSphere using the **Validation Parameters**.
 - b. **URL**
Type the URL that QMF for Windows Administrator will use to connect to QMF for WebSphere. The format is:
`http://host:port/QMFWebSphere`
 - c. The Set User Information window opens requesting user ID and password information. Type a user ID with QMF for WebSphere administrative authority.
 - d. Click **Validate** to connect to QMF for WebSphere and confirm that the connection parameters are valid. A message will be returned that confirms successful database connection.
7. Click **OK** to complete the process of configuring database servers for QMF for WebSphere. Go to the next step which is publishing the SDF.

Publish the SDF

After you have finished configuring database servers in the SDF, you must upload the SDF to QMF for WebSphere:

1. Open QMF for Windows Administrator.
2. Click **File --> Publish** to open the SDF Publishing Wizard.

The SDF Publishing Wizard opens with an informational page. If you do not want to see this page in the future, select the **Do not show this introduction page in the future** check box.

3. Click **Next**.
4. The **Publishing Wizard - Protocol** page opens.
Select **HTTP**. You must use this protocol when publishing an SDF to QMF for WebSphere. The QMF for WebSphere application must be started. You should have started the QMF for WebSphere in the installation step, see Chapter 3, "Installing QMF for WebSphere," on page 17.

Note: You cannot use **FTP** to connect to QMF for WebSphere. However, you can use it to publish an SDF to an FTP server for use by QMF for Windows users.

5. Click **Next**.
6. The **Publishing Wizard - Connect to Server** page opens.

URL

Type the URL that will be used to connect to QMF for WebSphere. The format is:

`http://host:port/QMFWebSphere`

User ID

If required, type a user ID with QMF for WebSphere administrative authority.

Password

Type the password for the QMF for WebSphere administrator user ID.

7. Click **Next**.
8. QMF for Windows Administrator connects to QMF for WebSphere, and then the **Publishing Wizard - Save File** page opens.

Path

Type the path on the WebSphere server where you want to save the SDF.

Name

Type the name that you want to use to save the SDF. The default name is the current name of the SDF that you are using.

Modify the QMF for WebSphere configuration to use this file

Select this check box if you wish to make QMF for WebSphere use the newly uploaded file. Otherwise, the file is uploaded to the server, but is not activated.

9. Click **Finish**.

A progress window opens, displaying the progress of the upload. When the process is complete, click **Close**.

Bind the QMF for WebSphere packages

1. Open a web browser and enter the QMF for WebSphere Administrator URL. By default, the URL is `http://host:port/QMFWebSphere/Util/Admin.jsp`, where *host* is the host name of the WAS server and *port* is the port used by the QMF for WebSphere application server.
2. Click on the desired database server.
3. Click **Install Packages**.
4. The **Set User Information** window opens.

User ID

Type the user ID to connect to the database server. This user ID must have authority to bind the QMF for WebSphere packages.

Password

Type the password for the database server user ID.

5. Click **OK**.
6. A **Confirmation** window opens, confirming the collection ID in which the packages will be bound. This collection ID was defined in the SDF by QMF for Windows Administrator. Click **OK**.
7. The **Installation Log** opens.

The **Installation Log** provides detailed information regarding the installation process. Use this log to ensure that the installation process is successful, or to diagnose any errors that occur.

Note: When running with WAS for z/OS, the installation log will provide information about additional manual steps that must be taken to bind the packages. After you have completed those steps, continue with the following step.

Click **OK**.

8. The **Permissions** window opens.
Using the **Permissions** window, you can grant the EXECUTE privilege on the QMF for WebSphere packages to the desired QMF for WebSphere users. Enter the desired user IDs or select **PUBLIC** to grant permission to all users. Click **Grant**.

After binding the packages, QMF for WebSphere is ready for use.

Complete the database server configuration process

After you have completed the process of configuring a database server for QMF for WebSphere, you can choose to set up additional configuration parameters as described in the following chapters:

- Chapter 6, “Resource limits,” on page 89
- Chapter 7, “User profiles,” on page 107
- Chapter 8, “Sample tables,” on page 111
- Chapter 9, “Object Tracking Reports,” on page 113

Configuring database servers is an ongoing process

Maintaining the SDF is an ongoing process. As the needs of your users change, you will make changes to the database server configuration parameters in the SDF. You can add, edit or delete the database server configuration parameters. Each time you make changes to the SDF, you must publish a new copy of the SDF to QMF for WebSphere and bind packages for new or changed database servers.

QMF for WebSphere Administrator

QMF for WebSphere Administrator is used to perform various administrative tasks for QMF for WebSphere users. In order to use QMF for WebSphere Administrator, your user ID must have permission to perform these secured tasks. The permission is granted when QMF for WebSphere is deployed during the *Map the qmfadmin role to users and groups* step.

The tasks you can perform using QMF for WebSphere Administrator are:

- Select a server definition file
- Set user information for connecting to a database server
- Test a database server connection
- Install and uninstall packages
- Grant and revoke permissions to use packages
- Edit the `servlet.properties` file
- Backup or restore your configuration

Note: QMF for WebSphere Administrator is not used to create an SDF and configure database server connections. You must use QMF for Windows Administrator to perform these tasks.

Select a server definition file

All users of an instance of QMF for WebSphere use the same SDF. This SDF is made available to QMF for WebSphere in one of two ways:

- Using the **Publish** command in QMF for Windows Administrator (see “Publish the SDF” on page 80).

- Using the **Open** or **Upload** commands in QMF for WebSphere Administrator.

Open

To open an SDF that already resides on the WebSphere server:

1. In the **Actions** window or on the **File** menu, click **Open**.
2. The **Open** window displays.
3. Select the SDF that you want to open from the list of available SDFs in the file system on the server.
4. Click **Open**. The SDF that you selected is opened by QMF for WebSphere Administrator, and is also set as the current SDF for QMF for WebSphere.

Upload

To upload a server definition file that resides on your local or network drive to the WebSphere server:

1. In the **Actions** window or on the **File** menu, click **Upload**.
2. The **Upload** window displays.
3. Type the name of the SDF in the **File name** field. You can use the **Browse** button to search for a SDF. Select the encoding of the file in the **File encoding** field.
4. Click **Upload**. The SDF that you selected is uploaded to the WebSphere server and the **Save** window displays.
5. Type or select a path and file name in the file system on the WebSphere server where you would like to store the uploaded SDF. Click **Save**. The SDF is saved in the specified file and opened by QMF for WebSphere Administrator, and is also set as the current SDF for QMF for WebSphere.

Set user information for connecting to a database server

If you perform any action in QMF for WebSphere Administrator that requires a connection to a database server, you must provide a user ID and password for that server. If you have not already specified your user ID and password when you perform an action, QMF for WebSphere Administrator prompts you for the information.

To specify your user ID and password for a database server:

1. From the main QMF for WebSphere Administrator window, select the database server in the **Servers** list.
2. In the **Actions** window or on the **Server** menu, click **Set User Information**.
3. The **Set User Information** window opens. Type your database server user ID in the **User ID** field and your password in the **Password** field. Click **OK**.

Test a database server connection

You can verify the connection from QMF for WebSphere to a database server at any time, and for a variety of reasons. Although not required, it is recommended that you test the database server connection to ensure that users will have no problems accessing the database server.

To test a database server connection:

1. From the main QMF for WebSphere Administrator window, select the database server in the **Servers** list.
2. In the **Actions** window or on the **Server** menu, click **Test Connection**.
3. The **Set User Information** window may open. If so, type your database server user ID in the **User ID** field and your password in the **Password** field. Click **OK**.
4. You will receive a message specifying that the connection to the database server is successful. If unsuccessful, you will receive a message explaining why you were unable to connect to the database server.

Install and uninstall packages

You must bind QMF for WebSphere packages for each of the database servers that are configured in the SDF. You can also free these packages if a database server will no longer be accessed from QMF for WebSphere.

To install QMF for WebSphere packages

1. From the main QMF for WebSphere Administrator window, select the database server in the **Servers** list.
2. In the **Actions** window or on the **Server** menu, click **Install Packages**.
3. The **Set User Information** window may open. If so, type your database server user ID in the **User ID** field and your password in the **Password** field. Click **OK**.
4. A **Confirmation** window opens, confirming the collection ID in which the packages will be bound. This collection ID was defined in the SDF by QMF for Windows Administrator. Click **Yes**.
5. The **Installation Log** opens, providing detailed information regarding the installation process. Use this log to confirm that the process is successful, or to diagnose any errors that occur.
6. Click **OK**. If the process was successful, the **Permissions** window opens.

To uninstall QMF for WebSphere packages

1. From the main QMF for WebSphere Administrator window, select the database server in the **Servers** list.
2. In the **Actions** window or on the **Server** menu, click **Uninstall Packages**.

3. The **Set User Information** window may open. If so, type your database server user ID in the **User ID** field and your password in the **Password** field. Click **OK**.
4. A **Confirmation** window opens, confirming the collection ID from which the packages will be freed. This collection ID was defined in the SDF by QMF for Windows Administrator. Click **Yes**.
5. The **Installation Log** opens, providing detailed information regarding the uninstallation process. Use this log to confirm that the process is successful, or to diagnose any errors that occur.
6. Click **OK**.

Manage package permissions

All users of QMF for WebSphere must have the EXECUTE privilege on the QMF for WebSphere packages at each database server that they access. Use the following process to grant this privilege to or revoke this privilege from users:

1. From the main QMF for WebSphere Administrator window, select the database server in the **Servers** list.
2. In the **Actions** window or on the **Server** menu, click **Manage Permissions**.
3. The **Set User Information** window may open. If so, type your database server user ID in the **User ID** field and your password in the **Password** field. Click **OK**.
4. The **Permissions** window opens. In the **User IDs** field, type the user IDs to which the privilege will be granted (or from which it will be revoked). To grant the privilege to all users (or to revoke this blanket privilege), type PUBLIC.
5. To grant the privilege, click **Grant**. To revoke the privilege, click **Revoke**.
6. You can repeat these steps to grant or revoke the privilege from additional users. Once you are finished, click **Close**.

Edit servlet.properties file

Advanced users can directly edit the QMF for WebSphere servlet.properties file, which contains advanced QMF for WebSphere settings, including:

- font settings
- encoding settings
- server file system encoding
- user-defined edit routine registrations

Note: In general, there is no need for you to edit the servlet.properties file.

To edit the servlet.properties file:

1. In the **Actions** window or on the **Advanced** menu, click **Edit Properties**. The **Edit Properties** window opens.

2. Type any desired changes directly in the **Edit Properties** window.
3. To save your changes, click **OK**. The changes are saved and the **Edit Properties** window closes.
4. To discard your changes, click **Cancel**. The changes are discarded and the **Edit Properties** window closes.

Backup or restore your configuration

QMF for WebSphere application and user settings are stored in files on the WebSphere server. You can backup these settings in an archive file, and subsequently restore them. One reason for backing up the settings is if you need to uninstall and reinstall or apply maintenance to QMF for WebSphere. In this case, your settings will be lost unless you backup and restore them.

Note: Included in the application settings are any license files you may have received with your QMF for WebSphere distribution. If you do not backup these settings before you uninstall and install a fixpak, you will lose these license files and QMF for WebSphere will not function.

To backup your configuration:

1. In the **Actions** window or on the **Advanced** menu, click **Backup Configuration**.
2. QMF for WebSphere Administrator creates an archive file containing the user settings and sends the file to download to your web browser. Use your web browser to save the archive file on a local or network drive.

To restore your configuration:

1. In the **Actions** window or on the **Advanced** menu, click **Restore Configuration**.
2. The **Restore** window opens. In the **Backup file** field, type the name of the archive file from which you want to restore settings. You can use the **Browse** button to search for an archive file.
3. Click **Restore**. The archive file is uploaded to the WebSphere server, and the settings it contains are restored.

Chapter 6. Resource limits

Resource limits are part of QMF for Windows governing, the feature that helps you manage database server resource consumption. You implement QMF for Windows governing by setting limits on a user's access to a database server. The limits that you set are called resource limits.

QMF for Windows resource limits are checked before a query leaves the workstation. The query never reaches a database server for evaluation if a resource limit is violated. There are some QMF for Windows resource limits that are invoked after the query is running, such as rows returned or database server timeouts. QMF for Windows resource limits do not overrule any database server specifications.

There are four steps to setting up QMF for Windows governing:

1. Create a resource limits group.
2. Create a schedule that identifies when the resource limits specified for the group will be in effect.
3. Specify the individual resource limits that will be in effect during the schedule.
4. Assign users to the resource limits group.

Creating resource limits groups

A resource limits group is a set of resource limits that are implemented collectively, for each user that is assigned to the group, according to a specified schedule. You can create as many resource limits groups as you want, with each group having a different set of resource limits implemented according to different schedules.

There are many permutations available to you for setting up resource limits groups. The most common ways to set up resource limits groups and control resource usage are by:

- database server
- user
- day of the week
- time of day

For example, a resource limits group can contain one set of limits that is in effect weekdays between 8 AM and 6 PM and another that is in effect on

weekends and off-hours. In addition, each resource limits group can have different users assigned allowing them to perform only certain functions on specific database servers.

Default resource limits group

A default resource limits group, which is named <Default>, is delivered with QMF for Windows Administrator. Initially, all users are assigned to the <Default> resource limits group. Users who are not assigned to any other resource limits group are governed by the limits defined in the default resource limits group.

The <Default> resource limits group is assigned a set of default resource limits and a default schedule. The default resource limits are not restrictive and the default schedule implements the resource limits 24 hours a day, every day of the week. You can edit the <Default> resource limits group and change the resource limits and the schedule.

Note: The governing function of QMF for Windows is always active. Governing based on default resource limits is performed even if you do not set up resource limits groups. You should review the limits specified for the <Default> resource limits group to ensure that unassigned users that are governed by the <default> group are not granted limits that are more extensive or restrictive than you intend.

Ensuring resource limits groups security

In order to protect the limits that have been specified for each user, resource limits groups are securely stored in the table RDBI.RESOURCE_TABLE that is part of the QMF catalog and resides on a database server. You must have the authorization to execute the QMF for Windows Administrator package on the database server in order to make any changes to a resource limits group. This prevents unauthorized users from changing the resource limits.

A view named RDBI.RESOURCE_VIEW is defined for the resource limits table. QMF for Windows accesses the resource limits information using the view so the table remains intact.

Note: The <Default> resource limits group resource limit information is stored in the SDF and not in the RDBI.RESOURCE_TABLE on the database server. That means any user who can access the SDF can make changes to the resource limits of the <default> resource limits group.

Note: Database servers can be configured in the SDF to bypass the use of the QMF catalog. Access to those database servers that do not use a QMF catalog cannot be governed, since resource limits group information is stored in the QMF catalog.

Note: Database servers can also be configured in the SDF to always use a specific catalog. If you require the use of a specific catalog when accessing a database server, you can ensure that all users will only have access to the server based on the resource limits that you have specified.

Procedure to create resource limits groups

1. Open QMF for Windows Administrator.
2. From the Servers list, select a database server. Click **Edit**
3. The Parameters for [server] window opens.
4. Click the **Resource Limits** tab.

The Resource Limits window opens and lists the resource limits groups that have been defined for the database server including the <default> resource limits group that is installed with QMF for Windows.

5. Click **New** to create a new resource limits group.
The New Resource Limits Group dialog box opens.
6. Type a name for the group in the Group name field. There are no restrictions on the name.
7. Click **OK** to create the resource limits group.
8. A confirmation pop-up window confirms that the resource limits group has been created. Confirm the message by clicking **OK**.
9. The Edit Resource Limits Group window opens where you specify the schedule and the resource limits for the group.

Creating resource limits group schedules

The resource limits group schedule determines when the resource limits specified for a group are in effect. You can create as many schedules for a resource limits group as you need. Each schedule can be set up to implement a unique set of resource limits.

Multiple schedules for one resource limits group

When a user accesses a database server, QMF for Windows identifies the one or more resource limits groups to which the user has been assigned and verifies the schedules of the groups to determine which resource limits are currently in effect. Because users can be assigned to multiple resource limits groups, each will multiple schedules, there can easily be overlapping spans of time when technically multiple sets of resource limits could be in effect.

In the cases of overlapping schedules, QMF for Windows uses a unique schedule number to determine which schedule is in effect. The schedule with the lowest number takes precedence.

For example; if a resource group has the following four schedules:

Table 16. Resource Limits Group Schedules

Schedule #	1	2	3	4
From Day	Wednesday	Monday	Monday	Sunday
To Day	Wednesday	Friday	Friday	Saturday
From Time	10:30	9:00	17:00	00:00
To Time	11:30	17:00	9:00	24:00

You will notice that schedule #1 is embedded in schedule #2 and schedules #1, #2, and #3 are embedded in schedule #4. If a user accessed this database server on Wednesday at 11:00, schedules #1, #2, and #4 could be in effect. QMF for Windows will use the schedule with the lowest number.

When you create your resource limits group schedules, it is recommended that you stagger your numbering so additional schedules can be inserted where appropriate or deleted without impact. Keep in mind that schedules do not have to be numbered sequentially but once a schedule is assigned a number it cannot be changed.

All time and day ranges of the schedules are inclusive. That means if the From time is 08:00, the schedule is in effect exactly at 08:00. If the To time is 17:00 the schedule is in effect until 16:59:59. The from and to times can wrap around midnight, and the from and to days can wrap around weekends.

When users are accessing servers in different time zones, the clock used to determine time resides on the database server being accessed. For example, an end user in New York is accessing a database server in California and it is 9:00am Monday in New York. Based on the example schedules, schedule 3 is in effect because according to the database server it is 6:00 California time.

Procedure to create a resource limits group schedule

1. Open the **Resource Limits** tab of the Parameters for [server] window. The Resource Limits window opens and lists the resource limits groups that have been defined for the database server.
2. Click **New** to create a new resource limits group or select an existing group and click **Edit**.

If you clicked **New**, the New Resource Limits Group dialog box opens. Type a name for the group in the Group name field. Click **OK**. The Edit Resource Limits Group window opens where you specify the schedule. If you clicked **Edit**, the Edit Resource Limits Group window opens immediately.

3. Click in the Schedule list and then click the Add icon, the Edit Resource Limits Group Schedule window opens. You can edit an existing schedule by selecting the schedule from the Schedule list, and clicking the Edit icon.
4. Use the pages of the Edit Resource Limits Group Schedule window to specify the individual resource limits for the schedule.

Specifying the resource limits

From the Edit Resource Limits Group Schedule window you enter the resource limits that you want to be in effect for the schedule. You can use one or more of the following windows to specify the individual resource limits:

- Main
- Timeouts
- Limits
- SQL verbs
- Options
- Save data
- Binding
- Object tracking
- LOB options
- Report Center

Main

Use the Main page of the Parameters window to specify the schedule number, and the day and time when the schedule will be in effect.

Table 17. Resource Limits Fields

Field	Description
Number	<p>Is used to identify and prioritize the schedule.</p> <p>For example, if two schedules in the resource limits group span or overlap the same period, the schedule with the lower number is used.</p> <p>Specify a number greater than zero. No schedule can share the same schedule number; otherwise, the following message is issued: A schedule with this number is already defined.</p> <p>Once you assign a number to a schedule, it cannot be changed. Numbers do not have to be assigned sequentially. Since these numbers are also used to determine which schedule is in effect, with the lowest number having the highest priority, it is recommended that you stagger the number assignments, allowing you to add and delete schedules as needed.</p>
Day Range	<p>The schedule is active between the From Day and the To Day, inclusively. You can specify a range that wraps around the end of the week.</p> <p>For example, if you select Friday as the "From Day" and Monday as the "To Day," the schedule is active on Friday, Saturday, Sunday, and Monday, subject to time of day scheduling.</p>
Time Range	<p>The schedule is active between the From Time and the To Time, inclusively. You can specify a range that wraps around midnight.</p> <p>For example, if you select 20:00 as the "From Time" and 08:00 as the "To Time", the schedule is active from 8:00 PM to 12:00 midnight and from 12:00 midnight to 8:00 AM, subject to day of week scheduling.</p>
Status	<p>Click Active to enable the schedule, subject to day of week and time of day scheduling. The status of the schedule is also subject to the <i>Active</i> or <i>Inactive</i> status of the resource group. Click Inactive to disable the schedule, regardless of day-of-week or time-of-day scheduling.</p>

Timeouts

You use the **Timeouts** page to set timeout warning and cancellation limits for idle queries, idle connections, and server response time.

Table 18. Resource Limits Timeout Fields

Field	Description
Idle Query Timeouts	<p>This value limits the amount of time a query can remain idle. You can set two different timeouts:</p> <ul style="list-style-type: none"> • <i>Warning Limit:</i> When this timeout expires, QMF for Windows reminds the user that the query is idle and prompts the user asking if the query should be canceled. • <i>Cancel Limit:</i> When this timeout expires, QMF for Windows cancels the query automatically. <p>Note: A query might be idle when the first buffer of data has been returned to the user and QMF for Windows is waiting for that user to go to the bottom of the data before it fetches the next set of data.</p>
Server Response Timeouts	<p>This value limits the amount of time QMF for Windows waits for a response from the database server before canceling a request. QMF for Windows waits asynchronously for a response time each time it sends a request to the database server.</p> <p>You can set two different timeouts:</p> <ul style="list-style-type: none"> • <i>Warning Limit:</i> When this timeout expires, QMF for Windows prompts the user asking if the query should be canceled. • <i>Cancel Limit:</i> When this timeout expires, QMF for Windows cancels the request automatically. <p>Note: A lower timeout limit prevents long-running (runaway) queries. A higher timeout limit allows database requests to complete when the server is slow due to resource contention or other reasons.</p>
Idle Connection Timeout Cancel Limit	<p>Limits the amount of time QMF for Windows retains an idle connection to the database server. When this timeout expires, QMF for Windows closes the idle connection to the database server automatically.</p> <p>Note: A lower timeout limit helps minimize the resources consumed at servers by idle connections. A higher timeout helps minimize the overhead of establishing connections.</p>

Limits

Use the **Limits** page to set warning and cancellation limits for the maximum number of rows and bytes of data QMF for Windows can retrieve. In addition, you can specify the maximum number of simultaneous connections QMF for Windows can establish to the database server.

Table 19. Resource Limits Fields

Field	Description
Maximum Rows to Fetch	Limits the number of rows of data that QMF for Windows retrieves from a database server when running a query. <ul style="list-style-type: none"> • <i>Warning Limit:</i> When this limit is reached, QMF for Windows prompts the user asking if more data should be fetched • <i>Cancel Limit:</i> When this limit is reached, QMF for Windows cancels the query and does not fetch any more data
Maximum Bytes to Fetch	Limits the number of bytes of data that QMF for Windows retrieves from a database server when running a query. <ul style="list-style-type: none"> • <i>Warning Limit:</i> When this limit is reached, QMF for Windows prompts the user asking if more data should be fetched • <i>Cancel Limit:</i> When this limit is reached, QMF for Windows cancels the query and does not fetch more data
Maximum Connections Cancel Limit	Limits the number of simultaneous connections that QMF for Windows establishes to the database server. Generally, connections are reused, so that if you run one query at a server and then run another query at the same server, only one connection is required. <p>However, two connections are required if you run two queries simultaneously. If QMF for Windows requires another connection to a server and this limit is reached, an error is returned and the operation is not performed.</p>

Limiting data retrieval by rows or bytes

In QMF for Windows, specifying the maximum number of bytes of data that can be retrieved from a database server is a more accurate way of limiting data retrieval than specifying the maximum number of rows that can be retrieved.

Upon request from QMF for Window, a database server will continue to retrieve data and fill a buffer until the buffer is full or there is no more data. The buffer of data is returned to QMF for Windows. Immediately, QMF for Windows knows how many bytes of data are contained in the buffer. It does not know how many rows of data are contained in the buffer. QMF for Windows must process the data in the buffer and count the number of rows the buffer includes.

Meanwhile, after delivering the first buffer of data, the database server is ready to fill another buffer and will go ahead and fill another buffer unless it is told otherwise. If you are controlling the amount of data that can be

retrieved by byte, QMF for Windows knows the amount that has been sent, knows the maximum limit that you have specified and can make the decision whether to request more data or stop.

If you are controlling the amount of data that can be retrieved by row limits, QMF for Windows has to process the data and count the number of rows. Therefore, it does not have the information it needs to stop the data retrieval process. So while QMF for Windows is parsing the current data in the buffer and counting the number of rows, the database server goes ahead and retrieves the next buffer of data. When the next buffer of data is delivered, QMF for Windows has the row count from the previous buffer. If the number of rows has been filled, retrieval of data is stopped. However, there can be extra rows of data that have been retrieved and that can mean extra overhead or users seeing more rows than intended.

Controlling buffer size

QMF for Windows allows you to control the size of the buffers using the QueryBlockSize parameter in the SDF. To set the query block size, edit the Server Definition File (SDF) with Notepad or comparable text editor. Find the section for the server you are accessing. Add a line in this section that reads QueryBlockSize=nnn where nnn is the desired block size in bytes.

If the query block size is set to a small value, the response time for receiving each block of data is quicker. However, the amount of time required to retrieve all of the data is higher, because a larger total number of blocks must be transmitted.

If the query block size is set to a large value, the response time for receiving each block of data is longer. However, the amount of time required to retrieve all of the data is smaller, because a smaller total number of blocks must be transmitted.

The smallest allowable query block size is 512. The largest allowable query block size is 32767. If you do not specify a query block size, the default 32,500 is used as the default.

SQL Verbs

Use the **SQL** page to specify the SQL verbs that users assigned to this resource limits group are allowed to use when this schedule is in effect.

If a user tries to run a query that contains a *disallowed verb*, QMF for Windows cancels the query without sending the SQL to the database server. If a user attempts to run a query that contains an *allowed verb*, QMF for Windows sends the query to the database server and the database server's security authorization validation takes place.

Note: Turning off the permissions for UPDATE, DELETE and INSERT does not affect the ability to perform these actions using the table editor.

You can allow one or more of the following SQL verbs from QMF for Windows:

Table 20. SQL Verbs that can be controlled

ACQUIRE	ALTER	CALL
COMMENT	CREATE	DELETE
DROP	EXPLAIN	GRANT
INSERT	LABEL	LOCK
REVOKE	SET	SELECT
SIGNAL	UPDATE	

Options

Use the **Options** page to specify levels of access users have to the database objects and the database server.

Table 21. Resource Limits Options Fields

Field	Description
Allow access to server from user interface	Users assigned to this resource limits group can access the database server using QMF for Windows.
Allow access to server from programming interface	Users assigned to this resource limits group can access the database server using the QMF for Windows application programming interface (API).
Fetch all rows automatically	<p>Determines how the database server sends query results to QMF for Windows. QMF for Windows typically requests data from the database server only as required to display query results.</p> <p>For example, if 20 rows fill up the query window, QMF for Windows requests only 20 rows. When the user scrolls down to view the 21st row, QMF for Windows requests more data. If the user runs the query and then waits before scrolling down, the query remains active for that wait time. This consumes resources at the database server while the query is active.</p> <p>If you enable this parameter, QMF for Windows requests data repeatedly until it receives all data, independent of the user's scrolling requests.</p>

Table 21. Resource Limits Options Fields (continued)

Field	Description
Confirm database updates	Determines whether QMF for Windows prompts the user to confirm database changes resulting from the queries they run or the actions they perform when editing tables. Enable this option if you want QMF for Windows to prompt users to confirm database changes. Disable this option if you want database changes to be made without confirmation.
Allow exporting of data	Permits use of the Export Data command on the File menu or in procedures.
Allow table editing	Permits the use of the table editor with QMF for Windows.
Allow running of saved queries only	When checked, this parameter limits the user to only running queries that have been saved at the database server. The user cannot create or save new queries at the database server.
Isolation Level for Queries	Sets the isolation level for queries run by users. This option applies to the following types of servers: <ul style="list-style-type: none"> • DB2 for MVS, version 4 • DB2 for z/OS, version 5 • DB2 UDB for z/OS, version 6 • DB2 Server for VM & VSE, version 5 or higher
Account	Sets the default string for accounting information being sent to the database server when users in the resource limits group connect to it.
Account can be overridden	Allows the user to override the default account by entering a new account string on the Set User Information dialog box. Uncheck this check box if this resource limits group should be prevented from accessing database objects that are not owned by the group.
Account must be specified	When selected, requires the user to specify a valid accounting string.

Save Data

Use the **Save Data** page to allow users assigned to this resource limits group and using this schedule to save data at the database server.

Table 22. Resource Limits - Save Data Fields

Field	Description
Allow Save Data command	Allow users to save data at the database server. Note: Saving data can be resource-intensive and have an impact on your database server and network performance.
Default tablespace	(Available only if you select <i>Allow Save Data</i> command.) The default table space name for tables created by the save data process. The syntax of the table space name you enter must conform to the database server's rules for tablespace names. This value is used as part of a CREATE TABLE SQL statement executed when the user saves data to a new table. Note: Entering an asterisk (*) will take the default tablespace from each user's profile in the table, RDBI.PROFILE_VIEW.
Default tablespace can be overridden	(Available only if you select the <i>Allow Save Data</i> command.) This parameter specifies whether the user must use the tablespace specified in the <i>Default table space</i> field or can specify any tablespace, subject to database security authorizations. Check this check box to allow the user to specify any tablespace name.

Binding

Use the **Binding** page to allow users assigned to this resource limits group and using this schedule to bind or drop static packages for their queries to or from the database server.

Table 23. Resource Limits - Binding Fields

Field	Description
Allow binding of packages	Specifies whether users can bind static packages for their queries.
Allow dropping of packages	Specifies whether users can drop static packages from the database server.
Default collection ID	Specifies the default collection ID for static packages bound by users.
Default collection ID can be overridden	Specifies whether a user must use the Default collection ID or can specify any collection ID, subject to database security authorizations.

Table 23. Resource Limits - Binding Fields (continued)

Field	Description
Default isolation level for packages	<p>The default isolation level for static packages bound by users:</p> <ul style="list-style-type: none"> • <i>Repeatable read (RR)</i>: The execution of SQL statements in the package is isolated (protected) from the actions of concurrent users for rows the requester reads and changes, including phantom rows. • <i>All (RS)</i>: The execution of SQL statements in the package is isolated (protected) from the actions of concurrent users for rows the requester reads and changes. • <i>Cursor stability (CS)</i>: The execution of SQL statements in the package and the current row to which the database cursor is positioned are isolated (protected) from the actions of concurrent users for changes that the requester makes. • <i>Change</i>: The execution of SQL statements in the package is isolated (protected) from the actions of concurrent users for changes the requester makes. • <i>No Commit (UR)</i>: The execution of SQL statements in the package is not isolated (protected) from the actions of concurrent users for changes the requester makes.
Default isolation level can be overridden	Specifies whether a user must use the Default isolation level or can specify any isolation level.

Object Tracking

Use the **Object Tracking** page to activate object tracking. With object tracking enabled you can collect the tracking data that will be used to run object tracking reports. Object tracking reports can help you locate unused objects, locate frequently accessed data sources such as tables or columns and spot potential problem areas.

Table 24. Resource Limits - Object Tracking Fields

Field	Description
Enable summary object tracking	<p>Whether the object's use is tracked. Enable this option to track the number of times an object has been run, and the most recent times it was run and modified.</p> <p>This information is kept in Q.OBJ_ACTIVITY_SUMM.</p>

Table 24. Resource Limits - Object Tracking Fields (continued)

Field	Description
Enable detailed object tracking	Whether to keep a detailed record of each action taken using the object. Enable this option to keep a record of each time an object has been run, who ran it, and the results. Note: This option must be enabled to use <i>ad hoc</i> object tracking or SQL text tracking. A large amount of data can be inserted into the Q.OBJ_ACTIVITY_DTL table if you enable this option.
Enable ad hoc object tracking	Whether to keep a record of each <i>ad hoc</i> query. Enable this option to keep a record of each <i>ad hoc</i> query, and the SQL text of that query. Note: Check "Detailed object tracking" to use <i>Ad hoc</i> object tracking.
Enable SQL text tracking	Whether to keep a record of the SQL text of each query. Note: Check "Detailed object tracking" to use SQL text tracking.

LOB Options

Use the LOB Options to control a users ability to access, retrieve, and save data to and from tables containing large objects (LOBs).

A Large Object (LOB) is a DB2 UDB data type that houses non-traditional data such as text, multimedia, image, video, photograph, sound, or any very large data file inside a database table.

Retrieving or saving LOB data can consume a substantial amount of resources. Even just accessing a table that contains LOB data can be resource consumptive. Using the LOB Options, you can control access to tables on the database server that include LOB data.

Table 25. LOB Options

Field	Description
Disable LOB columns	Disable LOB data retrieval and prevent any access to tables that contain LOB data. By selecting this option, members of the resource limits group will not be able to query any table that contains LOB data.
Disable LOB data retrieval	Disable LOB data retrieval but allow access to the other columns in the tables that contain LOB data. By selecting this option, members of the resource limits group can query tables that contain LOB data and QMF for Windows will return result data for all columns except those that contain LOBs.

Table 25. LOB Options (continued)

Field	Description
Retrieve LOB data on demand	Members of this resource limits group can query tables that contain LOB data. Result data will be returned for all columns including those that contain LOB objects. To conserve resources, QNF for Windows stores retrieved LOB data in a file. Pointers to the LOB data objects are displayed in the query results. LOB objects can be viewed on demand by selecting the LOB object in the query results.
Retrieve LOB data automatically	Members of this resource limits group can query tables that contain LOB data. Result data will be returned for all columns, including those that contain LOB objects. All result data is automatically displayed in the contents of the query results grid. This option can potentially consume a large amount of resources and time
Disable LOB data	Specifies that members of this resource limits group are not allowed to save large object data (LOB) data on the database server.
Enable LOB data	Specifies that members of this resource limits group are allowed to save large object data (LOB) data on the database server.
Maximum LOB column size (KB)	Specify the maximum size of a LOB column, in kilobytes, up to 2G (the maximum LOB size). The default is 0, no maximum. If a member of this resource limits group attempts to query a table with LOB data that is larger than the maximum, the LOB data will not be returned for display.
LOB options can be overridden	Provides users with the authority to override their default LOB options.

Report Center

Use the **Report Center** tab to control what users can do when using QMF for Windows Report Center.

The QMF for Windows Report Center application allows users to produce custom reports using shared QMF queries, forms, procedures, and tables. The custom reports can then be viewed and manipulated in a variety of applications.

The permissions that are granted to a user's ID determine what privileges they have when using QMF for Windows Report Center. The lowest level of user, a consumer, can just run reports that have already been created. The highest level of user, a power user, can run existing reports, access objects, create new reports, save reports on the database server, and grant access

privileges for reports to other users. Depending on the privileges assigned, users can fall somewhere in between a consumer and power user.

The privileges that control a user ID in Report Center are specified in the following places:

- DB2

User ID must have permission as granted by DB2 in order to view or run any of the objects that are on the database server and listed in the Report Center tree.
- QMF for Windows Administrator

User ID must have permission as granted by the QMF for Windows Administrator in order to:

 - Access the database server from the programming interface as specified on the Options page. QMF for Windows Report Center is an API application interface.
 - Access the database server from user interface as specified on the Options page. Allows users to launch QMF for Windows from the interface Report Center.
 - Allow display of all object types as specified on the Report Center page.
 - Allow administration of root node as specified on the Report Center page.
 - Allow taking ownership of node as specified on the Report Center page.
- Report Center Installation

A Public Favorites folder is created on the database server during the installation of QMF for Windows and Report Center. User Ids are assigned READ, WRITE, or ADMIN privileges for the folder during installation.
- Within Report Center

User ID are given permission to access reports and folders in Report Center. You must be a power user (resource limit to see objects is granted) with ADMIN permissions (set when Public Favorites was created during installation for the database server) to set Report Center security permissions.

Table 26. Report Center Fields

Field	Description
Allow display of all object types	YES identifies the Report Center user as a power user. A power user will see the Public Favorites folder as well as all database objects. Power users can run reports and create reports. NO identifies the Report Center user as a consumer. A consumer user is only going to see the Public Favorites folder that resides on the database. No database objects are listed in the Report Center tree. Consumer users can only run reports, they cannot create reports.

Table 26. Report Center Fields (continued)

Field	Description
Allow administration of root node	Specifies whether the power user can add folders and reports directly under the Public Favorites root folder. You must assign this permission to at least one user in order to start populating the Public Favorites branch of the Report Center tree. Once folders are added at this level other users (or the creator) can add reports to the high level folder. NO indicates that the power user cannot add folders to the Public Favorites root folder. YES indicates that the power user can add folders to the Public Favorites root folder.
Allow taking ownership of nodes	Specifies whether the power user can take ownership of another user's folder or report in the Public Favorites folder. NO indicates that the power user cannot take ownership of another user's folder or report in the Public Favorites folder. YES indicates that the power user can take ownership of another user's folder or report in the Public Favorites folder.

Assigning users to resource limits groups

By default, all QMF for Windows, QMF for WebSphere and QMF Report Center user ID's are assigned to the <default> resource limits group for a database server. If you want a user's resource usage to be controlled by the resource limits and schedules for a particular resource limits group, you must assign the user's ID to that resource limits group.

In order to assign a user ID to a resource limits group, the user ID must have a user profile. All resource limits group information for a user ID is stored by QMF for Windows Administrator in a user profile. The user profiles are stored in the table RDBI.PROFILE_VIEW that resides on the database server. When a user connects to a database server, QMF for Windows (or QMF for WebSphere or QMF Report Center) locates the correct user profile to determine which resource limits group to use.

The order in which you create user profiles or resource limits groups does not matter. You can create user profiles using the User Profiles page of the Parameters window. After you finish creating your user profiles, you would use the Resource Limits page of the Parameters window to create your resource limits groups and assign the user profiles to a resource limits group. For more information on user profiles, see the User Profiles chapter of this manual.

You can also create new user profiles during the process of assigning user profiles to resource limits groups.

How to assign user profiles to resource limits groups

1. Click **Assign** on the Resource Limits page of the Parameters for [server] window.

The Assign User Profiles dialog box opens.

Note: You cannot assign users to the default resource limits group.

2. Type the user ID that you want to assign in the **Show user profiles with creator matching** field or type a matching pattern if you want to work with multiple user IDs.
3. Click **Refresh List**.

QMF for Windows Administrator retrieves all the user profiles stored in the table, RDBI.PROFILE_VIEW that match the value you entered.

The user profiles are listed in the **Not Assigned** and **Assigned** columns.

Note: If the user ID you want to assign to a resource limits group does not have an entry in the table, RDBI.PROFILE_VIEW, click **Create New** to create a user profile.

4. Select the user IDs to assign to a resource limits group.
5. Click **Assign** or **Unassign** to move the user profiles to either list.
6. Click **OK**.

First Paragraph

Support for DB2 predictive governor

DB2 UDB for z/OS includes a predictive governing feature that is part of the Resource Limit Facility (RLF) functionality. This predictive governing feature can provide an estimate of the processing cost of SQL statements before they run.

Each database server must be set up by your DB2 administrator in order to support this predictive governing feature. If predictive governing is set up for the database server, QMF for Windows will respond to its limits. If an operation crosses a threshold set up in the predictive governor, DB2 will send an error message to QMF for Windows, and QMF for Windows will forward the message to the user.

If your installation uses predictive governing, QMF for Windows will check for the +495 and -495 SQLCODEs that predictive governing can generate after a PREPARE statement executes.

- Warning prompt (+495 SQL Error)
- Error message - Exceeded Limit (-495 SQL Warning)

Chapter 7. User profiles

What are user profiles

User profiles are part of QMF for Windows governing, the feature that helps you manage database server resource consumption. User profiles are used in conjunction with resource limits to control a user access to a database server. When a user connects to a database server, QMF for Windows (or QMF for WebSphere or QMF Report Center) locates the correct user profile for a user ID, verifies their enrollment status, and determines which resource limits group to use.

Open and restricted enrollment

Access to a database server will be granted to a user based on the following types of user ID enrollment:

- *Restricted enrollment*, where each user ID must have a matching user profile to gain access to a database server.
- *Open enrollment*, where user IDs can either have a matching user profile to gain access to a database server or automatically fall into a default user profile called SYSTEM.

With open enrollment, every user has access to the SYSTEM user profile, giving every user potential access to the database server. You can create unique profiles for some users and allow other users to use the SYSTEM default profile.

With restricted enrollment, every user must have a unique user profile in order to access the database server. When setting up restricted enrollment, you delete the SYSTEM profile, which prevents users without unique profiles from accessing the database server.

Determining which user profile to use

When QMF for Windows (QMF for WebSphere or QMF for Report Center) connects to a database server on behalf of a user, the user ID and password they provide are validated first by the database server. If the user information is valid, then QMF for Windows looks up the user ID in the user profile table, RDBI.PROFILE_TABLE.

The RDBI.PROFILE_TABLE is created when QMF for Windows is installed by copying the Q.PROFILE table. All user IDs that are included in the Q.PROFILE table at the time of installation, are included in the RDBI.PROFILE_TABLE.

Note: After the initial copy of Q.PROFILE, any user ID added directly to Q.PROFILE is not automatically added to the RDBI.PROFILE_TABLE. You must add those new user IDs using QMF for Windows Administrator.

The RDBI.PROFILE_TABLE includes the following columns:

Table 27. Determining Resource Limits

CREATOR	ENVIRONMENT	TRANSLATION	RESOURCE GROUP
userID	WINDOWS	English	TECH
userID	NULL	English	SALES
SYSTEM	WINDOWS	English	BASIC
SYSTEM	NULL	English	SYSTEM

When you create a new user profile, an entry is made in the table for the user ID that you enter. The Creator column is the user ID that you enter, the Environment and Translation fields are filled for you based on the environment and language of the system where QMF for Windows Administrator is installed. The Resource Group is the resource limits group to which this user is assigned.

Determining database access with user profiles

QMF for Windows determines which resource limits group to use by locating the user's profile from the RDBI.PROFILE_TABLE, finding the resource limits group name in the Resource Group column of the table, then finding that resource limits group in the RDBI.RESOURCE_TABLE, where the resource limits and schedule are retrieved.

When you are setting up your user profiles for your environment, there are many permutations that can be used to control database access. The following summarizes some of the different combinations that you might use:

For restricted enrollment:

- User ID matches a user profile. User profile names a resource limits group. Resource limits group exists. Access to database server is based on the resource limits and schedule for the group.
- User ID does not match a user profile. There is no default user profile called SYSTEM. User is denied access to the database server.

For open enrollment:

- User ID matches a user profile. User profile names a resource limits group. Resource limits group exists. Access to database server is based on the resource limits and schedule for the group.
- User ID does not match a user profile. There is a default user profile called SYSTEM. The default user profile SYSTEM names a resource limits group. The resource limits group exists. Access to database server is based on the resource limits and schedule for the group.
- User ID matches a user profile. No resource limits group is assigned. Access to the database server is based on the limits set for the <default> resource limits group.
- User ID does not match a user profile. There is a default user profile called SYSTEM. There is no resource limits group that has been defined for the SYSTEM user profile. User has access to the server based on the limits set for set for the <default> resource limits group.

Procedure to create a new user profile

1. Open QMF for Windows Administrator.
2. From the Servers list, select a database server. Click **Edit**.
3. The Parameters for [server] window opens.
4. Click the **User Profiles** tab.
The User Profiles window opens and lists the user profiles that have been defined for the database server including the SYSTEM user profile that is installed with QMF for Windows.

Note: If you are choosing to use restricted enrollment, you must delete the SYSTEM user profile.
5. Click the **New** icon to create a new user profile.
The New Profile window opens. Specify the user ID for the user profile, a resource limits group and a default tablespace name. You can browse for the resource limits group
6. Click **OK**. A confirmation window opens
7. Click **OK**.

Chapter 8. Sample tables

QMF for Windows provides nine sample tables that you can use while learning QMF for Windows. These tables contain information about a fictitious electrical parts manufacturing company.

How to create sample tables

1. Open QMF for Windows Administrator.
2. From the Servers list, select the database server where you want to see install the sample tables.
3. Click **Edit**.
The Parameters for [server] dialog box opens.
4. Click the **Sample Tables** tab.
5. From the **Sample Tables** window, click **Create**.
6. You are prompted with the message that says existing sample tables will be overwritten if new tables are created. Respond to the confirmation message by clicking **Yes**.
7. The Set User Information window opens. Enter your user ID and password to connect to the database server where the sample tables will be created. Click **OK**.
8. The status bar at the bottom of the dialog window lists the sample tables that are being created.
9. A message is issued when the sample tables are created. Click **OK** in response to the confirmation message. You return to the Parameters dialog box.

Table names and descriptions

These are the sample tables:

Table 28. Sample Tables List and Descriptions

Table name	Type of information
Q.APPLICANT	The company's prospective employees
Q.INTERVIEW	The interview schedule for the company's prospective employees
Q.ORG	Organization of the company by department, within division
Q.PARTS	Materials supplied by the company

Table 28. Sample Tables List and Descriptions (continued)

Table name	Type of information
Q.PRODUCTS	Products produced by the company
Q.PROJECT	The company's projects
Q.STAFF	The company's employees
Q.SALES	Sales information for the company
Q.SUPPLIER	Vendors that supply materials to the company

Chapter 9. Object Tracking Reports

Object Tracking Reports show you detailed and summary information on object usage by QMF for Windows users. With this information, you can spot potential problem areas and see where changes to resource limits group schedules are needed. To track user's object usage, you must activate object tracking for their resource limits group.

Note: If your user ID has the required authority, you can query the detail and summary tracking tables directly using QMF for Windows and see any tracking information contained within those tables.

Running Object Tracking Reports

Follow these steps to run object tracking reports:

1. Open QMF for Windows Administrator.
2. From the Servers list, select the database server where you want to see the object activity.
3. Click **Edit**.
The Parameters for [server] dialog box opens.
4. Select the **Object Tracking Reports** tab.
5. Nine default object tracking reports are available. Click on the report that you want to run.

Note: To track a user's object usage on a database server, you must activate object tracking for their resource limits group in order to collect summary and detail data. You activate object tracking for a resource limits group on a database server when you define the schedules for the resource limits group using the Resource Limits tab of the Parameters window.

Summary and detailed tracking reports

The following reports are available:

Cancellation details for single user

This report provides details about the queries that were cancelled for a specific user, including the query name, SQL text, and reason for cancellation.

Cancellation summary by user

This report shows which users most frequently have their queries cancelled. High rates of cancellation may indicate that the user needs more training or greater resource privileges.

Performance details for single query

This report shows detail statistics for each run of a query. It provides performance information, such as elapsed time and bytes fetched for each run.

Performance profile for single user

This report shows which queries have been run by a user and the resources consumed by the queries. The report is sorted in descending order to highlight the queries with the most resource consumption.

Performance summary (average) by query

This report shows performance data for queries, including their average elapsed time and number of times run. It is sorted in descending order to highlight the queries with the most resource consumption.

Performance summary (cumulative) by user

This report shows which users are most actively using QMF and consuming the most resources.

Performance summary (cumulative) for single query

This report shows which users most often run a specific query and the elapsed time of the query. Use this report once a problem query is identified to determine the users who run the query most frequently.

Performance summary (maximum) by query

This report shows performance data for queries, including their maximum elapsed time and number of times run. The report is sorted in descending order to highlight the queries with the most resource consumption.

Time period performance summary (cumulative) by user

This report shows, within a time period, which users most actively used QMF and consumed the most resources.

Using Object Tracking to reduce resource consumption

Object Tracking can help you improve query run times and reduce resource consumption at the database server. Using object tracking you can identify the queries that are executed most frequently on the database server. By converting those frequently run dynamic SQL queries (all queries created in QMF for Windows are dynamic SQL) to static SQL, you can improve their efficiency.

You can do the conversion using QMF for Windows. Open the query and select the Bind Static Package command from the File menu. Your user ID must have the authority to bind static packages on the database server. The QMF for Windows administrator's user ID should have that authority. You can grant permission to bind static packages on the database server to other users, using the Binding option page when specifying resource limits.

Maintaining Object Tracking Tables

QMF for Windows stores detailed object tracking data in the Q.OBJ_ACTIVITY_DTL table, and summarized data in the Q.OBJ_ACTIVITY_SUMM table. These two tables are created during the bind QMF for Windows packages process. These tables are always created but will not be used unless you tell QMF for Windows to actually collect data. You do this by activating object tracking for a resource group.

QMF for Windows adds a row to the Q.OBJ_ACTIVITY_DTL table for each use of an object. For example, if a user executes a query (object) 20 times, 20 rows are added to the table. Unlike the detail table, the summary table, Q.OBJ_ACTIVITY_SUMM, has only one row for each object. So in this example, the object usage count, a field in the table, would increase by 20, but no new rows are added. Rows are added to the summary table only when a new object is created and rows are automatically deleted when an object is deleted.

Since the summary table will not grow without boundaries and the detail table will; it is more important to perform maintenance on the detail table and its associated table space (RAADB.RAAX2) and index (Q.RAAX2) with greater frequency than the summary table.

The following are recommendations for optimum performance of the Q.OBJ_ACTIVITY_DTL table:

- Run RUNSTATS for the tablespace and index
- As the data volume increases, rebind the QMF for Windows packages to ensure the efficient use of the index.
- Delete old data periodically. For example you can run this query using QMF for Windows (or schedule a task) to delete (if your user ID has permission to access the summary and detail tables) all rows older than 30 days:

```
DELETE FROM Q.OBJ.ACTIVITY_DTL WHERE "DATE" < (CURRENT DATE - 30 DAYS)
```

Note: The first-used, last-used and last-modified summary statistics stored in the summary table are not affected when you delete detailed data.

Appendix A. Connectivity requirements

Architecture

QMF for Windows and DB2 are distributed relational database applications that operate together in a client/server relationship. Each component plays a separate and distinct role in this relationship:

- QMF for Windows, as the client or requester
- DB2, as the server

QMF for Windows and DB2 satisfy and adhere to a common architecture, IBM's Distributed Relational Database Architecture (DRDA). QMF for Windows uses DRDA to communicate to DB2. It does this by sending SQL requests (queries) to DB2. This means that QMF makes requests for the work then DB2 performs the requested work.

Note: QMF for Windows does not handle configuring DB2 to receive DRDA requests, nor does it configure the network connection from the client machine to your DB2. These tasks are performed at the DB2 level by your systems- or network administrator.

This architecture is a comprehensive and detailed blueprint that specifies the layers and functions required in a client/server distributed database application.

Because QMF for Windows implements the DRDA requester specification, it is capable of connecting to any database that adheres to and implements the DRDA server architecture. The following IBM database products contain a DRDA server component, and are capable of communicating with QMF for Windows:

- DB2 UDB for z/OS
- DB2 Server for VSE & VM
- DB2 Universal Database and DB2 Common Server
- DB2 Parallel Edition
- DB2 Information Integrator

Your DB2 QMF for Windows license determines the DB2 product on which you can install QMF for Windows and use for connections.

Communication

DRDA describes the required communications protocol for the architecture. Specifically, requesters and servers must communicate via the SNA LU 6.2 architecture or TCP/IP protocols.

Important: Because TCP/IP connectivity is a more recent addition to the architecture, not all versions of all DB2 database products support TCP/IP connectivity.

The following servers support TCP/IP connections from DRDA clients:

- DB2 UDB Server for z/OS Version 6
- DB2 for z/OS Version 5
- DB2 Universal Database Version 5

Note: Check your DB2 documentation to see if its DRDA application server component supports TCP/IP.

LU 6.2 and CPI-C

LU 6.2 is an SNA communications architecture. APPC (Advanced Program-to-Program Communication) is a language based on the LU 6.2 architecture. A developer of SNA transaction programs may choose from many different implementations of APPC. Even though each implementation of APPC adheres to the LU 6.2 architecture, two implementations of APPC might not be the same. Therefore, programs that rely on one vendor's APPC implementation might not work with another vendor's implementation. CPI-C (Common Programming Interface-Communications) is a standard, common programming interface that solves this problem.

CPI-C is a programming interface that implements the APPC verb set. Therefore, applications that require the APPC verb set can be written using CPI-C to achieve SNA vendor independence. QMF for Windows is written using CPI-C.

TCP/IP and WinSock

TCP/IP is a collection of *protocols*. WinSock (Windows Sockets) is a standard, common programming interface that implements the TCP protocol. Applications that require TCP/IP protocols can be written using WinSock to achieve TCP/IP vendor independence. QMF for Windows is written using WinSock. See "TCP/IP configuration" below for more information.

ODBC

ODBC (Open Database Connectivity) is a programming interface that enables applications to access data in database management systems that use Structured Query Language (SQL) as a data access standard. See "ODBC connectivity" below for more information.

Configuration

Network

Work with your in-house networking team to install and configure the network infrastructure before you install, configure, or use QMF for Windows. QMF for Windows Technical Support cannot provide support for configuring your network infrastructure.

SNA

In an SNA network, QMF for Windows must establish an LU 6.2 session between itself and DB2, using the CPI-C interface.

Implementing LU 6.2 connectivity between Microsoft Windows and DB2 can be complex, depending on your SNA environment. This manual does not focus on each Windows-based SNA product or explain how it can be used.

Note: This connectivity is not provided with QMF for Windows. Instead, you must have a third-party product implement this connection. The product you use to provide connectivity must be installed, configured, and working before you install or use QMF for Windows.

QMF for Windows should work with other products that provide a Win CPIC-C interface.

Note: Make sure that you have the latest corrective service or maintenance for your SNA product. Contact your SNA software vendor's technical support for fixes, if any.

TCP/IP

To access a DB2 server using TCP/IP, QMF for Windows must be able to establish a TCP/IP connection from the local host (the system on which QMF for Windows is running) to the remote port (the port on which DB2 is listening). QMF for Windows requires a WinSock 1.1 interface or later to the installed TCP protocol stack.

Note: Work with your in-house TCP/IP networking staff and your TCP/IP software vendor's technical support services to implement and support your network configuration. QMF for Windows cannot provide support for these networking issues.

Because DB2 has been added to different platforms at different release points, check your DB2 database product documentation to see if its DRDA application server component supports TCP/IP.

CLI

A call level interface (CLI) component is included as part of the DB2 UDB for Windows 95 or Windows NT client. CLI is an application programming

interface (API) for relational database access. Using CLI, client applications, such as QMF for Windows, can connect to DB2 UDB servers and execute SQL statements.

For QMF for Windows to use CLI to connect to DB2, you first use the DB2 UDB facilities to define your database servers and how to connect to them.

Note: This configuration is outside the control of QMF for Windows.

Connectivity information is defined in the DB2 UDB client. Work with your in-house networking staff to implement and support your network configuration. QMF for Windows Technical Support cannot provide support for these networking issues.

Once this configuration is complete, QMF for Windows needs the **database alias** in order to connect to it.

The primary advantage to using CLI is simplified configuration. If a database is defined in the DB2 UDB client, its alias is the only piece of configuration information needed in QMF for Windows.

The disadvantages to using CLI are:

- Generally, performance is substantially worse than when using a DRDA connection
- QMF for Windows only supports connecting to workstation and z/OS databases
- You must use DRDA connections to access VSE and VM or iSeries databases

To access a DB2 UDB server using CLI, the 32-bit version of QMF for Windows must be able to establish a CLI connection from the local host to the remote host via the DB2 UDB client.

Supported database connections

CLI connections require the runtime client from DB2 Universal Database (UDB), version 5.2 or later. CLI connections are supported to the following databases:

- DB2 for MVS - Version 2.3, Version 3.1, Version 4.1
- DB2 for z/OS - Version 5
- DB2 UDB Server for z/OS - Version 6 and later
- Database2 Server for VM/VSE - Version 3
- DB2 for iSeries - Version 4, release 3, and later
- DB2 Common Server - Version 1 and Version 2
- DB2 UDB (for workstation databases) - Version 5 and later

- DB2 Information Integrator

DB2 Connect is required (either the Personal Edition installed locally or the Enterprise Edition installed on a gateway) for all databases except:

- DB2 Common Server - Version 1 and Version 2
- DB2 UDB (for workstation databases) - Version 5 and later
- DB2 Information Integrator

Note: CLI is not supported for DB2 for VSE and VM.

CLI configuration considerations

To configure a CLI connection with QMF for Windows, you need to configure a connection to the DB2 Database using DB2 Connect or CAE or the Client Configuration Assistant.

This section describes how to make a connection via various protocols, including TCP/IP, to the database on a server.

Note: You will need the host name, port number, and database name of the system to which you are connecting.

Add a database

The first phase in configuring a CLI connection with QMF for Windows is to add a database:

1. Start Client Configuration Assistant.
2. Add a new database.
The Add Database SmartGuide dialog box opens.
3. Choose the option, *Manually configure a connection to a DB2 database*.
4. Press **Next**.
5. Specify the protocol you are using.
6. Select the target operating system.
7. Specify the hostname and port number of the system to which you are connecting.
8. Press **Next**.
9. Enter the database name, which is the location name or RDB name.

Note: If you do not know the database name, run the following SQL statement from any querying utility:

```
SELECT DISTINCT CURRENT SERVER FROM SYSIBM.SYSTABLES
```

10. Press **Next**.
11. Assign an alias to the database. The default is database name from the prior dialog box.

12. Press **Done**.

Set server parameters

The next phase is to set server parameters:

1. Go to QMF for Windows Administrator.
2. Click **New**.

The General dialog box opens.

3. Enter a server name and set server security parameters.

The server name can be any label you want to assign to the server definition on the main QMF for Windows Administrator screen.

4. Click **Next**.

The Connection dialog box opens.

5. Select *Connect using DB2 UDB for Windows CLI*.

6. In the *Database alias* field at the bottom of the window, enter the name of the database from Step 3.

Bind packages directly on the server

Use a CLI connection to bypass QMF for Windows to bind packages on the server using DB2 Connect or CAE.

1. Identify which files to bind.
 - a. Access your QMF for Windows directory and expand the `bnd\` folder.
 - b. Select the folder that corresponds to your server's OS and version:
 - **DSN** (02, 03, 04) = MVS
 - **DSN** (05, 06) = z/OS
 - **SQLxx** = UDBs, such as Windows 95, Windows NT, Windows 2000, UNIX[®] (AIX)
 - **QSQ** (03, 04) = iSeries (in QMF for Windows, version 7.0)
 - **ARI** (03, 05, 06, 07) = VM/VSE (in QMF for Windows, version 7.0)

The binding files reside in the server folders.

2. Go to your DB2 Connect or CAE program and launch the Client Configuration Assistant.

- a. Select the server on which you want to bind the files.
- b. Click **Bind**.

The Bind Database dialog box opens.

- c. Select *Bind user applications*.
- d. Click **Continue**.
- e. Enter your user name and password.
- f. Click **OK**.

The Bind Applications dialog box opens.

- g. Return to the files you accessed in Step 1.
- h. Select these files to **Add**.
- i. Click **OK**.

ODBC

ODBC enables QMF for Windows to access non-DB2 databases, including Microsoft Access, Oracle, Sybase, and Informix. QMF for Windows can catalog the data source information from these non-DB2 servers and allows you to assign a catalog server. ODBC does not require you to bind packages because dynamic SQL is used.

To access an ODBC data source using QMF for Windows, To access ODBC data sources using ODBC, QMF for Windows must be able to establish an ODBC connection from the local host to the remote host via the ODBC driver manager.

QMF for Windows requires the Microsoft ODBC Driver Manager (R) 3.0 (or later) to access ODBC data sources on various databases. The ODBC driver managers may also be used. Connections are supported to any data source that supports the ODBC protocols listed in your ODBC driver manager.

Note: QMF for Windows can connect using ODBC, as long as the ODBC protocol is supported by the data source, the ODBC driver manager, and the appropriate driver is installed on your computer. The connectivity information is defined in your ODBC driver manager.

Work with your in-house networking staff to implement and support your network configuration. QMF for Windows Technical Support cannot provide support for these issues.

ODBC driver manager files

The following files are included in the Microsoft ODBC Driver Manager 3.0 (or later):

- odbccp32.dll
- odbccp32.cpl
- odbccr32.dll
- odbcc32.dll
- odbccint.dll
- odbccu32.dll
- odbcad32.exe

What ODBC supports

Within QMF for Windows, ODBC supports:

- all isolation levels, as long as they are supported by data sources

- binding methods by row and by column
- auto-commit-off, as long as they are supported by data sources
- user DSN, machine DSN, and file DSN
- the ODBC cursor library, if needed
- multi-row block fetch if the ODBC driver supports it
- stored procedures
- large objects (LOB), as long variable length objects

Table 29. What ODBC Supports

ODBC supports	ODBC does not support	Data sources
All isolation levels, as long as they are supported by data sources	Large objects (LOB)	Cross Access
Binding methods by row and column	Stored procedures	iSeries
Auto-commit-off, as long as they are supported by data sources	Bookmarks and any operations regarding bookmarks	MS Access
Long, varying binary and character values, up to 32,700 bytes	Any interval data types	MS Excel
User DSN, machine DSN, and file data sources		SQL Server
The use of the ODBC cursor library, if needed		Oracle
The use of multi-row block fetch, if the ODBC driver supports it		dBASE
		Paradox
		Delimited Text Files (*.CSV, *.TXT)

Data sources

Data sources are referenced in the QMF for Windows program by their DSN names. A user ID and password are required to make the connection if it is required by the ODBC data sources.

Most data sources can be used as long as the particular data source drivers are available. Here is a sample list of data sources that can be accessed by QMF for Windows via ODBC:

- CrossAccess

- IBM iSeries
- Microsoft Access
- Microsoft Excel
- Microsoft SQL Server
- Oracle
- dBase
- Paradox
- Sybase
- Informix
- Delimited Text Files (*.CSV, *.TXT)

ODBC drivers

The following ODBC drivers have been tested for use with QMF for Windows.

Table 30. Tested ODBC Drivers

Model	Version	Manufacturer
CrossAccess 32	2.21.3777.00	CrossAccess
Client Access ODBC Driver (32-bit)	7.00.00.00	IBM
Client Access ODBC Driver (32-bit)	5.00.08.00	IBM
Informix 3.80 (32-bit)	3.80.00.10841	IBM
IBM DB2 ODBC Driver	7.01.00.00	IBM
IBM DB2 ODBC Driver	6.01.00.00	IBM
IBM DB2 ODBC Driver	5.02.00.00	IBM
SQL Server	3.70.06.23	Microsoft
Microsoft dBase Driver (*.dbf)	4.00.3711.08	Microsoft
Microsoft dBase VFP Driver (*.dbf)	6.00.8428.00	Microsoft
Microsoft Excel Driver (*.xls)	4.00.3711.08	Microsoft
Microsoft Access Driver (*.mdb)	4.00.3711.08	Microsoft
Microsoft Paradox Driver (*.db)	4.00.3711.08	Microsoft
Microsoft Text Driver (*.txt, *.csv)	4.00.3711.08	Microsoft
Oracle ODBC Driver	8.01.06.00	Oracle

Appendix B. Set user information

While performing the various tasks required to configure the SDF, you will be connecting to the database servers. You must specify user information before any connection can be made to the database server. You use the Set User Information window to specify the user ID and password that will be used for the current connection to the database server.

Once specified, the same user ID and password is used for all subsequent database server connections made during the current session. To change the user ID and password that QMF for Windows uses, you must open the Set User Information window and specify a new user ID and password.

If you do not open the Set User Information window and specify a user ID and password, the Set User Information window will open automatically the first time it tries to connect to a database server.

From the Set User Information window you can:

- specify user ID and password
- change passwords at the database server
- have your password remembered across sessions
- use the same ID and password for every database server

Changing passwords

Click **Change** on the Set User Information dialog box to change the password information. The Change Password window opens where you specify a new password. The new password will be changed permanently at the database server.

The user ID that you are using must have permission at the database server and in QMF for Windows, as specified by the QMF for Windows security parameters set by your QMF for Windows Administrator, to change a password at the database server.

You can change the password at the Change Password window only if RACF (Resource Access Control Facility), a component of the SecureWay[®] Security Server for OS/390, allows you to change the password at the server.

Note: An error message similar to the following appears if the server does not allow you to change passwords:

An error occurred while changing the password.

Changing passwords is not supported by server [].

Remember Password

Check the Remember Password check box to have QMF for Windows use the password specified in the Password or New Password fields across multiple QMF for Windows sessions. If unchecked, QMF for Windows uses the password only for the duration of the current session

The user ID must have permission, as specified by the security parameters, to save passwords for QMF for Windows to use across multiple sessions.

Use the same ID and password for every database server

Check the Use this information for every server I connect to check box to use the most recently entered ID and password when connecting to all database servers. If checked, QMF for Windows will use the same user ID and password for all connections to all database servers unless you open the Set User Information window and make a change

Appendix C. Customizing QMF for Windows objects

This appendix gives examples of the SQL that is used to create the QMF for Windows objects. It also describes some modifications that you might make to the SQL.

Sample Generated SQL

The following example shows the SQL that can be generated to create required database objects; this SQL is proposed and it can be modified:

You can edit the SQL. For example:

```
CREATE NODEGROUP RDBING1 ON NODE (0);

CREATE NODEGROUP RDBING2 ON NODE (0);

CREATE REGULAR TABLESPACE RDBITSSC
  IN NODEGROUP RDBING1
  MANAGED BY SYSTEM USING('RDBITSSC');

CREATE TABLE RDBI.AUTHID_TABLE
(
  PRIMARY_ID CHAR(8) NOT NULL,
  SECONDARY_ID CHAR(8) NOT NULL
)
  IN RDBITSSC
  PARTITIONING KEY (SECONDARY_ID) USING HASHING
;
COMMENT ON TABLE RDBI.AUTHID_TABLE
  IS 'Secondary authorization ID table FOR RDBI';
```

List physical and logical files for iSeries

Follow these steps to list iSeries physical and logical files:

1. On the Create Objects page, scroll down to the statement:
CREATE VIEW RDBI.TABLE_VIEW2
2. In the "CREATE" statement, modify the "WHERE" clause by adding a 'P' for physical files and an 'L' for logical files. For example:
WHERE A.TABLE_TYPE IN ('T','V','P','L')
3. Click **OK** to create the object.

Object views

The following views are created when objects are created. It is these views that determine how QMF for Windows lists are built:

- RDBI.TABLE_VIEW
- Q.RAA_OBJECT_VIEW

You can alter these views when you install QMF for Windows to tailor the list building. These views differ based on the DB2 platform.

QMF for Windows lists for the extended catalog are built by the views that are created when you select the Create Objects option. For queries, forms, and procs, the view Q.RAA_OBJECT_VIEW_X is the key and it interacts with other views and tables.

The sample object view is for the DB2 z/OS catalog server:

Table 31. Object Views: Q.RAA_OBJECT_VIEW_X

Q.RAA_OBJECT_VIEW_X
Look at the catalog_ids and owner names in Q.RAA_OBJ_DIR_X and display or fail to display each object based on the conditions below. "Yes" to any of the following questions causes the query, procedure or form to be displayed in the list:
1. Does the object owner match the current user ID?
2. Does the object owner match the current SQLID?
3. Does the object owner match the secondary authorization ID of the current user ID having the same catalog ID?
4. Is the object SHARED? (Restricted = N)
5. Is the user a SYSADM having the same catalog_ID?

Table 32. Object Views: RDBI.USER_ADMIN_VIEW_X

RDBI.USER_ADMIN_VIEW_X
This view determines whether the user or a secondary authorization ID of the user is a SYSADM. It checks RDBI.ADMIN_VIEW and RDBI.CATALOG_DIR_X for:
• The current user ID or SQLID
• Secondary authorization ID of the current user having the same catalog_ID in RDBI.CATALOG_DIR_X

Table 33. Object Views: RDBIUSER_AUTHID_VIEW_X

RDBI.USER_AUTHID_VIEW_X
This view retrieves all rows from the base table RDBI.AUTHID_VIEW_X, where the primary ID is that of the current user. It will list all secondary authorization IDs for the current user.

Table 34. Object Views: RDBI.ADMIN_VIEW

RDBI.ADMIN_VIEW
This view obtains a list of GRANTEEs from the base table SYSIBM.SYSUSERAUTH. It takes GRANTEEs who have been granted G or Y for SYSADMAUTH.

Table 35. Object Views: RDBI.CATALOG_DIR_X

RDBI.CATALOG_DIR_X
This table contains all rows of internal identifier of the distinct catalog and name of the distinct catalog.

Table 36. Object Views: RDBI.AUTHID_VIEW_X

RDBI.AUTHID_VIEW_X
This table copies all rows from the base table RDBI.AUTHID_TABLE_X.

Table 37. Object Views: SYSIBM.SYSUSERAUTH

SYSIBM.SYSUSERAUTH

Table 38. Object Views: RDBI.AUTHID_TABLE_X

RDBI.AUTHID_TABLE_X
A base table listing primary and secondary authorization IDs. This table must be populated by the system or database administrator. QMF for Windows does not have access to the preexisting RACF/DB2 relationships during or after installation, unless they are stored in a custom DB2 table of the administrator's design.

For queries, forms, and procedures, the view Q.RAA_OBJECT_VIEW_X is the key and it interacts with the other views and tables, as shown below.

Note: This view is for the Object Listing Option:

"Include only those objects that any of the user's primary or secondary authorization IDs are authorized to access. This option requires the most database resources when producing lists."

Table 39. Create View Q.RAA_OBJECT_VIEW_X

```
CREATE VIEW Q.RAA_OBJECT_VIEW_X (          CATALOG_ID,          OWNER, NAME,
TYPE, SUBTYPE, OBJECTLEVEL, RESTRICTED, MODEL, REMARKS
DELETED_BY_USER, DELETED_BY_SQLID, DELETED_TIMESTAMP ) AS SELECT
A.CATALOG_ID,          A.OWNER, A.NAME, A.TYPE, A.SUBTYPE,
A.OBJECTLEVEL, A.RESTRICTED, A.MODEL,          B.REMARKS,
A.DELETED_BY_USER, A.DELETED_BY_SQLID, A.DELETED_TIMESTAMP FROM
Q.RAA_OBJ_DIR_X A, Q.RAA_OBJ_REM_X B WHERE (A.CATALOG_ID = B.CATALOG_ID AND
          A.OWNER = B.OWNER AND          A.NAME = B.NAME AND
A.DELETED_TIMESTAMP IS NULL AND B.DELETED_TIMESTAMP IS NULL) AND
(A.RESTRICTED = 'N'          OR A.OWNER IN (USER, CURRENT SQLID)          OR
A.OWNER IN (SELECT C.SECONDARY_ID          FROM
RDBI.USER_AUTHID_VIEW_X C          WHERE C.CATALOG_ID =
A.CATALOG_ID)          OR EXISTS (SELECT D.AUTHID          FROM
RDBI.USER_ADMIN_VIEW_X D          WHERE D.CATALOG_ID = A.CATALOG_ID)
)
```

Table 40. Create VIEW RDBI.USER_ADMIN_VIEW_X

```
CREATE VIEW RDBI.USER_ADMIN_VIEW_X (          CATALOG_ID,          "AUTHID" ) AS SELECT
B.ID, A."AUTHID" FROM RDBI.ADMIN_VIEW A., RDBI.CATALOG_DIR_X B WHERE
A."AUTHID" IN (USER, CURRENT SQLID)          OR A."AUTHID" IN (SELECT
C.SECONDARY_ID          FROM RDBI.USER_AUTHID_VIEW_X C
WHERE B.ID = C.CATALOG_ID)
```

Table 41. Create View RDBI.USER_AUTHID_VIEW_X

```
CREATE VIEW RDBI.USER_AUTHID_VIEW_X (          CATALOG_ID,          PRIMARY_ID,
SECONDARY_ID ) AS SELECT A.CATALOG_ID, A.PRIMARY_ID, A.SECONDARY_ID FROM
RDBI.AUTHID_VIEW_X A WHERE A.PRIMARY_ID = USER
```

Table 42. Create View RDBI.ADMIN_VIEW

```
CREATE VIEW RDBI.ADMIN_VIEW ( "AUTHID" ) AS SELECT A.GRANTEE FROM
SYSIBM.SYSUSERAUTH A WHERE A.SYSADMAUTH IN ('Y', 'G')
```

Table 43. Create Table RDBI.CATALOG_DIR_X

```
CREATE TABLE RDBI.CATALOG_DIR_X (          ID SMALLINT NOT NULL          NAME VARCHAR
(128) NOT NULL )          IN RDBIDBX.RDBITSX1          CCSID EBCDIC
```

Table 44. Create View RDBI.AUTHID_VIEW_X

```
CREATE VIEW RDBI.AUTHID_VIEW_X (          CATALOG_ID,          PRIMARY_ID,
SECONDARY_ID ) AS SELECT A.CATALOG_ID, A.PRIMARY_ID, A.SECONDARY_ID FROM
RDBI.AUTHID_TABLE_X A
```

Table 45. Create SYSIBM.SYSUSERAUTH

SYSIBM.SYSUSERAUTH

Table 46. Create Table RDBI.AUTHID_TABLE_X

```
CREATE TABLE RDBI.AUTHID_TABLE_X (  CATALOG_ID SMALL INIT NOT NULL,  
PRIMARY_ID CHAR (8) NOT NULL,  SECONDARY_ID CHAR (8) NOT NULL )  IN  
RDBIDBX.RDBITSX  CCSID EBCDIC
```

Note: This table must be populated by the system or database administrator. QMF for Windows does not have access to the pre-existing RACF/DB2 relationships during or after installation.

For other tables, the view RDBI.TABLE_VIEW2_X is the key and interacts with the other views and tables, as shown below.

Table 47. Object Views for Tables

RDBI.TABLE_VIEW2_X constructs a list of tables. First, it checks for tables listed in the base table SYSIBM.SYSTABAUTH. All tables in SYSIBM.SYSTABAUTH have, by definition, already had some type of authority granted to at least one user. SYSIBM.SYSTABAUTH must answer "Yes" to one of the following questions:

1. Is the GRANTEE = the current user?
2. Is the GRANTEE = the current SQLID?
3. Is the GRANTEE = PUBLIC?
4. Is the GRANTEE = PUBLIC*?
5. Is the GRANTEE = a secondary authorization ID of the current USER having the same catalog_ID?
6. Is the user a SYSADM having the same catalog_ID?
7. Is the user a SYSADM having the same catalog_ID?

The table must have one of the following GRANTEE types:

- ''
- U
- G

The GRANTEE of the table must have Y or G authority on one of the following four categories:

- DELETEAUTH
- INSERTAUTH
- SELECTAUTH
- UPDATEAUTH

Table 48. Authority to RDBI.USER_ADMIN_VIEW_X

RDBI.USER_ADMIN_VIEW_X
This view determines whether the user or a secondary user ID of the user is a SYSADM. It checks the RDBI.ADMIN_VIEW and RDBI.CATALOG_DIR_X for: <ul style="list-style-type: none">• The current user ID• Secondary user ID of the current user having the same catalog ID

Table 49. Authority to RDBI.USER_AUTHID_VIEW_X

RDBI.USER_AUTHID_VIEW_X
This view retrieves all rows from the base table RDBI.AUTHID_VIEW_X where the primary ID is that of the current user. It will list all secondary authorization IDs for the current user.

Table 50. Authority to RDBI.ADMIN_VIEW

RDBI.ADMIN_VIEW
This view retrieves a list of GRANTEE's from the base table SYSIBM.SYSUSERAUTH. It takes GRANTEE's who have been granted G or Y for SYSADMAUTH.

Table 51. Authority to RDBI.AUTHID_VIEW_X

RDBI.AUTHID_VIEW_X
This view copies all rows from the base table RDBI.AUTHID_TABLE_X.

Table 52. Tables and Views: SYSIBM.SYSUSERAUTH

SYSIBM.SYSUSERAUTH

Table 53. Authority to RDBI.AUTHID_VIEW_X

RDBI.AUTHID_TABLE_X
A base table listing catalogued, and primary and secondary authorization IDs. Note: This table must be populated by the system or database administrator. QMF for Windows does not have access to the pre-existing RACF/DB2 relationships during or after installation, unless they are stored in a custom DB2 table of the administrator's design.
Also, for tables, the view RDBI.TABLE_VIEW2_X is the key and interacts with the other views and tables, as shown below.

Table 54. Tables and Views: SYSIBM.SYSTABAUTH

SYSIBM.SYSTABAUTH

Table 55. Tables and Views: RDBI.USER_ADMIN_VIEW_X

RDBI.USER_ADMIN_VIEW_X
CREATE VIEW RDBI.USER_ADMIN_VIEW_X (CATALOG_ID, "AUTHID") AS SELECT B.ID, A."AUTHID" FROM RDBI.ADMIN_VIEW A, RDBI.CATALOG_DIR_X B WHERE A."AUTHID" IN (USER, CURRENT SQLID) OR A."AUTHID" IN (SELECT C.SECONDARY_ID FROM RDBI.USER_AUTHID_VIEW_X C WHERE B.ID = C.CATALOG_ID)

Table 56. Tables and Views: RDBI.USER_AUTHID_VIEW_X

RDBI.USER_AUTHID_VIEW_X
CREATE VIEW RDBI.USER_AUTHID_VIEW_X (CATALOG_ID, PRIMARY_ID, SECONDARY_ID) AS SELECT A.CATALOG_ID, A.PRIMARY_ID, A.SECONDARY_ID FROM RDBI.AUTHID_VIEW_X A WHERE A.PRIMARY_ID = USER

Table 57. Tables and Views: RDBI.ADMIN_VIEW

RDBI.ADMIN_VIEW
CREATE VIEW RDBI.ADMIN_VIEW ("AUTHID") AS SELECT A.GRANTEE FROM SYSIBM.SYSUSERAUTH A WHERE A.SYSADMAUTH IN('Y', 'G')

Table 58. Tables and Views: RDBI.AUTHID_VIEW_X

RDBI.AUTHID_VIEW_X
CREATE VIEW RDBI.AUTHID_VIEW_X (CATALOG_ID, PRIMARY_ID, SECONDARY_ID) AS SELECT A.CATALOG_ID, A.PRIMARY_ID, A.SECONDARY_ID FROM RDBI.AUTHID_TABLE_X A

Table 59. Tables and Views: SYSIBM.SYSUSERAUTH

SYSIBM.SYSUSERAUTH

Table 60. Tables and Views: RDBI.AUTHID_TABLE_X

RDBI.AUTHID_TABLE_X
CREATE TABLE RDBI.AUTHID_TABLE_X (CATALOG_ID SMALLINT NOT NULL, PRIMARY_ID CHAR (8) NOT NULL, SECONDARY_ID CHAR (8) NOT NULL) IN RDBIDBX.RDBITSX2 CCSID EBCDIC Note: This table must be populated by the system or the database administrator. QMF for Windows does not have access to the pre-existing RACF/DB2 relationships during or after installation.

Host tables in versions prior to 6.1

QMF for Windows Version 6.1 and later stores user profile, resource limits, and authorization ID information in different tables, and uses different views than previous versions of QMF for Windows.

The tables and views used to access these tables are created when you choose the option to check objects. If you view the generated SQL used to create these tables and views, you will notice that:

- If any previous host tables are detected, INSERT statements will be created to copy all of the data stored in the old tables to the new tables
- In the CREATE VIEW statements for each of RDBI.PROFILE_VIEW and RDBI.RESOURCE_VIEW views, there are two versions of the FROM clause:
 - one refers to a table owned by RDBI
 - one refers to a table owned by Q (which is commented out by default)

To continue sharing information between the host and Windows version of QMF for Windows,

- comment out the line referring to RDBI
- uncomment the line referring to Q

Otherwise, the information in the tables owned by Q will be unaffected, but will also not be used by QMF for Windows.

Appendix D. Tracing

Use the Traces function to diagnose a database connectivity problem with your technical support services and your software vendor. The tracing function traces the specified error conditions dynamically and writes the results to a log file.

Turn tracing on only when diagnosing a problem. Tracing can affect the performance of QMF for Windows.

QMF for Windows writes to a specified trace file.

Note: The user ID, password, and other sensitive data will be written in **clear text** in the trace files.

Starting the trace

1. Click **Copy** from an open error message dialog box.
The error message is copied to the clipboard.
2. Open QMF for Windows Administrator.
3. Select a database server.
4. Select **Edit --> Options**.
The Options dialog box opens.
5. Select the **Traces** tab.
6. In the **Trace file** field, specify the file to which tracing information will be logged.
7. Check the check box for each component to trace for errors.
Refer to "Selecting components for tracing" on page 138 for more information.
8. Repeat the action that caused the error.
9. Contact your vendor or technical support.

Selecting components for tracing

Check box next to each component you want to trace on the Traces page.

Table 61. Types of traces

Component	Description
DDM	[Distributed data management architecture]: used by the distributed file management and distributed relational database protocol to define the protocol for communicating between two systems using the distributed file management and the distributed relational database. Note: Select this option only if using a DRDA connection.
TCP	[Transmission control protocol]: a host-to-host protocol that provides transmission in an Internet environment. TCP assumes Internet Protocol (IP) is the underlying protocol. Note: Select this option only if using a TCP/IP connection.
CPI-C	[Common Programming Interface for Communications]: a programming interface that implements the APPC [Advanced Program to Program Communications] verb set. Applications that require the APPC verb set can be written using CPI-C to achieve SNA vendor independence. QMF for Windows is written using CPI-C. Note: Select this option only if using an SNA connection.
CLI	[Call Level Interface]: an application programming interface for relational database access. Using CLI, client applications, such as QMF for Windows, can connect to DB2 UDB servers and execute SQL statements. Note: Select this option only if using CLI to access data in a database management system.
ODBC	[Open Database Connectivity]: a standard that provides applications with a common interface to data held in relational databases. Any application that can act as an ODBC client can access data held in any relational database that has a suitable ODBC driver. ODBC accepts Structured Query Language (SQL) data requests from the client application and translates these into a form acceptable to the target database engine. Note: Select this option only if using ODBC to access data in a database management system.

Table 61. Types of traces (continued)

Component	Description
Embedded SQL	<p>SQL statements are embedded within a host language program and are prepared (with the BIND process) before the program is executed.</p> <p>Embedded SQL allows programmers to connect to a DB2 database using the DB2 native interface to manipulate and process data.</p>
SQLAM	[SQL Application Manager]: a function that represents an application to the remote relational database manager. The SQL application manager can be present in an application requestor and an application server.
REXX	<p>[IBM Object REXX]: a programming language available for the mainframe and Windows environments. IBM Object REXX handles simple and complex calculations, logic, column definitions, detail variations, and conditions in QMF for Windows</p> <p>Note: Select this option only if you are tracing a procedure that uses IBM Object REXX.</p>
Internet Mail	Traces Internet Mail operations.
Messages	<p>Logs system messages issued by QMF for Windows and QMF for Windows Administrator by message ID, date, time, message text, message type, help ID, suppressed state and result.</p> <p>For example:</p> <pre> ===== Message ===== 00000434/000006B0 == Thu Apr 25 11:16:28.46 2006 Error dialog box: ----- An error occurred while binding the packages. "GUEST" does not have the privilege to perform operation "BIND" on object "QMFWIN8X.RAARDBI2". (SQL code = -551, SQL state = 42501) ----- Help ID: 0000811B Suppressed: false </pre>

Cleaning up trace logs

Follow these steps to clean up the trace logs when the trace completes.

1. Open the Servers dialog box.
2. Select **Edit-> Options**.
3. Click the **Traces** tab.

4. Click **Delete Files** to clear the trace files from the file defined in the **Trace file** field.

Controls

Table 62. Traces Controls

Control	Description
...	Browse for a location to store the log file
Delete File	Delete the entries to the specified log files
Clear All	Uncheck the components selected for tracing
OK	Close the Traces dialog box, save any changes, and return to the previous dialog box
Cancel	Close the Traces dialog box; no information is saved
Help	View online help for the current dialog box

Appendix E. Accessibility

Software accessibility features help individuals with physical disabilities, such as restricted mobility or limited vision, to use their computers.

QMF for Windows accessibility features include:

- Standard keyboard equivalents
- Standard keyboard navigation
- Operating system accessibility
- Assistive technology products
- Navigation concepts

QMF for WebSphere accessibility features include:

- Standard keyboard navigation
- Operating system accessibility
- Assistive technology products
- Navigation concepts

QMF for Windows accessibility features

Standard keyboard equivalents

The keyboard is the most frequently used alternative for performing mouse functions. Keyboard equivalents use keyboard keys to perform mouse actions instead of using a mouse. For example, QMF for Windows supports the following keyboard equivalents:

- Shortcut, or accelerator keys, to perform the most frequently used functions in pull-down menus without going to the menu. For example:
 - **Ctrl+S** to save
 - **Ctrl+P** to print
 - **Ctrl+R** to run a query

Shortcuts display in the pull-down menu next to its function.

- Mnemonics, or access keys, are available to perform each function on a menu or dialog box. A mnemonic for a function is the underlined character in the function name. For example, press...
 - F to open the File menu
 - O to open the Open dialog box

Use **ALT** to activate the mnemonic and move the keyboard focus.

For more information, refer to the *Microsoft Windows Keyboard Design Guide* for a complete list of standard keyboard equivalents.

Standard keyboard navigation

"Keyboard navigation" refers to using keys instead of a mouse to move from item to item on your screen. The movement is usually in the order specified by the operating system or your application.

QMF for Windows follows the standards with regard to the typical keys used for keyboard navigation such as using **TAB** and **SHIFT+TAB** to move between controls, and arrow keys to move up, down, and sideways between items.

Operating system accessibility

The Windows operating system has a set of accessibility options that enable individuals with disabilities to customize system-wide settings. Individuals can set these options with the Accessibility Wizard on the Control Panel.

QMF for Windows:

- Inherits settings from the Microsoft Windows operating system
- Does not interfere with keyboard accessibility features built into the Windows operating system
- Complies with *IBM Software Accessibility Checklist*.

For more information, please go to:

<http://www.ibm.com/able/accesssoftware.html>

Assistive technology products

QMF for Windows supports assistive technology products, such as screen readers and voice synthesizers.

Note: QMF for Windows requires special navigation when using a screen reader with query results. See "Navigation in QMF for Windows" for more information.

Navigation in QMF for Windows

Table 63. Navigation Concepts

To...	Do the following...
Obtain online help	Press F1 or Alt+H . Note: In online help, use Tab to jump from link to link, then press Enter to open the link.

Table 63. Navigation Concepts (continued)

To...	Do the following...
Add object or condition	<ol style="list-style-type: none"> 1. Tab to a pane, such as in the Prompted Query dialog box. 2. Tab to the "Add" icon. 3. Press spacebar to display the "Add" dialog box.
Select multiple objects	<ol style="list-style-type: none"> 1. Tab to the list box. 2. Press Shift+Arrow to select rows. 3. Press Shift+Enter to add the objects.
View object properties in an object list	<ol style="list-style-type: none"> 1. Select the object from the object list. 2. Press Alt+Enter.
<p>Use screen reader for query results</p> <p>- or -</p> <p>Use browser to display query results in high-contrast mode for the visually impaired</p>	<p>Option 1</p> <ol style="list-style-type: none"> 1. Run the query. 2. Press Alt+R to open the Results menu. 3. Select Save to File. 4. Select HTML file (*.htm) for Save as Type. 5. Open the *.htm file in browser. <p>Option 2</p> <ol style="list-style-type: none"> 1. Run the query. 2. Press Alt+R to open the Results menu. 3. Select Display Report. 4. Select the form type. 5. Press OK. 6. Press Alt+O to open the Form menu. 7. Select Convert to HTML form. 8. Check the Include tabular data as HTML table check box. 9. Press OK. 10. Press Alt+O to open the Form menu. 11. Select View in Web browser <p>Option 3.</p> <ol style="list-style-type: none"> 1. Run the query. 2. Press Alt+R to open the Results menu. 3. Select Save to File. 4. Select CSV file (*.csv) for Save as type. 5. Open the *.csv file in Microsoft Explorer or Lotus 1-2-3.

Table 63. Navigation Concepts (continued)

To...	Do the following...
Edit (editable) rows in list box	<ol style="list-style-type: none"> 1. Tab to the list box, such as the Global Variables dialog box. 2. Press the spacebar or move the arrow key to select the row. 3. Press F2 to activate edit mode. 4. Use Tab to move between columns and rows. 5. Press Enter to accept edits. 6. Press Tab to exit the listbox and move to the next control in the dialog.
Edit query results	<ol style="list-style-type: none"> 1. Press Alt+E for the Edit menu. 2. Select Find. The Find dialog box opens. 3. Type the search text 4. Press Enter. 5. Press Esc to close the Find dialog box. 6. Press Enter to edit the cell.
Change font for query results	<ol style="list-style-type: none"> 1. Run the query 2. Press Ctrl+A to select all 3. Press Alt+R to display the Results menu 4. Press F to display the font dialog box

QMF for WebSphere accessibility

Standard keyboard navigation

"Keyboard navigation" refers to using keys instead of a mouse to move from item to item on your screen, usually in the order specified by the operating system or your application.

QMF for WebSphere follows the standards with regard to the common keys used for keyboard navigation such using **TAB** and **SHIFT+TAB** to move between controls, and arrow keys to move up, down, and sideways between items.

Operating system accessibility

Your operating system has a set of accessibility options that enable individuals with disabilities to customize system-wide settings to further enhance and improve their ability to use their computer. QMF for WebSphere inherits and does not interfere with the keyboard accessibility features that are set for the operating system.

Assistive technology products

QMF for WebSphere supports assistive technology products, such as screen readers and voice synthesizers, to deliver information in a more accessible manner.

Keyboard navigation in QMF for WebSphere

Table 64. Navigation Concepts

To...	Do the following...
Move focus through each element	Press TAB to move forward or SHIFT+TAB to move in the opposite direction.
Emulate clicks on a link	Use the TAB key to jump from link to link, then press the Enter key.
Emulate clicks on a button	Use the TAB key to jump from button to button, then press the Space key.
Within a dialog, activate the default action	Press the Enter key.
Within a dialog, cancel the action	Press the Esc key.
Move focus to the command line	Press the ALT+C keys.
Move focus to the main menu	Press the left ALT key. Navigate through the menu commands using the arrow keys.
Open context menus	Press the Context menu key if you have an extended keyboard. You can also press the right Ctrl key to open a context menu. Navigate through the menu commands using the arrow keys.

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Glossary

A

accelerators. Functions, also known as shortcut keys, available on pull-down menus to select an option via the keyboard rather than a mouse.

access keys. (*Mnemonics*): An underlined character that performs each menu or dialog function.

accessibility. Software and hardware accessibility features help those with physical disabilities to use their computer.

accessibility options. Options available through the Accessibility Wizard in the Windows operating system used to deliver information in a more accessible manner.

ad hoc query. A query that has not been named or saved; it has been submitted and executed "on the fly."

aggregation. Data that is the result of applying a process to combine data elements. Data that is taken collectively or in summary form.

application plan. The output produced by the BIND process. It contains information about resources (tables, indexes) required and the access path used by DB2 to satisfy an SQL request.

automatic bind. The process in which DB2 rebinds an invalid application plan automatically at execution time; for example, a plan is marked invalid if it is using an index and the index is dropped.

B

bind. A process that compiles one or more DBRMs into an application plan.

buffering. A portion of storage used to hold input or output data temporarily, which can

affect system overhead and can be limited by the amount of memory available to the executing program.

C

catalog. A collection of database tables that store database objects (such as tables) or QMF objects (such as queries, forms, and procedures). The catalog also stores resource limits, saved objects, and other settings used by QMF for Windows.

catalog server. The database on which the QMF for Windows catalog resides. The catalog contains database objects such as tables, views, and table spaces.

CCSID. (Coded Character Set ID) An ID to which data retrieved from a database server is converted. The CCSID is a number between 1 and 65535. QMF for Windows converts data from one CCSID to another when communicating with a database server.

CLI. (Call Level Interface): (SQL/CLI) A programming interface designed to support SQL access to databases from shrink-wrapped application programs. SQL/CLI provides an international standard implementation-independent CLI to access SQL databases. Client-server tools can easily access databases through dynamic link libraries (DLLs). It supports and encourages a rich set of client-server tools.

collection. A set of packages. Packages are bound together with a collection ID. If you use several versions of QMF for Windows, you can use different collection names for different versions to avoid naming conflicts.

collection ID. The name assigned to a collection of packages at a server. A collection ID can be any name, but it usually refers to the QMF for Windows version.

column. Contains values that have the same data type in the database. A value is similar to a field in a record. A value is the smallest unit of data that you can manipulate with SQL. The two basic components of the column definition are the name and the data type.

correlation ID. A unique identifier assigned to a table in a query. For example, in a query with two tables, the first table may be suffixed with A (such as A.MANGERS); whereas, the second table may be suffixed with B (such as B.PAYROLL).

The correlation ID is used to qualify column names for join conditions, columns, sort conditions, and row conditions.

CPI-C. (Common Programming Interface for Communications): Provides a cross-system-consistent and easy-to-use programming interface for applications that require program-to-program communication. CPI-C defines a single programming interface to the underlying network protocols across many different programming languages and environments.

CPI-C provider DLL. The name of the DLL that QMF for Windows uses to access CPI-C services.

CPI-C symbolic destination name. A name defined in your SNA software that refers to a set of parameters (known as a CPI-C side information record) for establishing a connection to a partner application (DB2) over the network.

csv. (Comma Separated Values): A file format used as a portable representation of a database. Each line is one entry or record and the fields in a record are separated by commas. Commas may be followed by arbitrary space and/or tab characters which are ignored. If field includes a comma, the whole field must be surrounded with double quotes.

D

database alias. Local synonyms given to local or remote databases. These names must be unique within the System Database Directory, in which all aliases are stored for the individual instance of the database manager. When a new database is created, the alias defaults to the database name. As a result, you cannot create a database using a name that exists as a database alias, even if there is no database with that name.

DB2 Query Patroller. A complementary tool packaged within DB2 Warehouse Manager. It enables DBAs to manage resources within the decision support system and users to determine the progress of their submitted queries.

DB2 Warehouse Manager. A tool that simplifies and speeds warehouse prototyping, development and deployment in order to integrate data from multiple and disparate sources, resulting in real-time analytics, and enabling customers and find relevant information easily.

dbf. (dBase database file): A file format for exporting a database file.

decimal delimiter. A character or string used to separate or mark the start of and end of items of data in a database, text file, or in source code. A decimal delimiter uses a period or comma to delimit this data.

default resource limits group. When the system administrator does not assign a user to a resource limits group or when there are no active schedules in the resource limits group to which a user is assigned, the user is assigned to the default resource limits group <Default> automatically.

DLL. (Dynamic Link Library): A library of executable functions or data that can be used by a Windows application, such as QMF for Windows. Typically, a DLL provides one or more particular functions by creating either a dynamic or static link to the DLL. A static link remains constant during program execution while a dynamic link is created by the program as needed.

DRDA. (Distributed Relational Database Architecture): A set of protocols that software developers can follow to develop connectivity solutions between heterogeneous RDBMs. DRDA coordinates communication between an application requestor (such as QMF for Windows) and an application server (such as DB2), by defining what must be exchanged and how it must be exchanged.

DSN. (Data Source Name): Provides connectivity to a database through an ODBC driver. The DSN contains database name, directory, database driver, User ID, password, and other information. Once you create a DSN for a particular database, you can use the DSN in an application to call information from the database.

There are three types of DSNs:

1. System DSN: used by anyone who has access to the machine because DSN info is stored in the registry
2. User DSN: created for a specific user; DSN information is also stored in the registry
3. File DSN: DSN info is stored in a text file with .dsn extension.

dynamic query. A query whose SQL text is passed to a database server each time it is executed. Dynamic queries can contain substitution variables.

dynamic SQL. A set of facilities that allow the development of generalized programs; these programs, in contrast to static SQL programs, can accept actual SQL statements at execution time and prepare and execute them.

E

edit codes. Codes that determine how a column is formatted in a report. You use different edit codes depending on the type of data you want to format. Some edit codes include: character, date, graphic, numeric, time, timestamp, and user-defined.

embedded SQL. SQL statements are embedded within a host language program and are prepared (via the BIND process) before the program is executed.

Expression Builder. A utility that assists in building expressions for SQL queries and prompted queries. The Expression Builder presents a palette of common elements used to create SQL expressions such as column names, constants, functions, and operations. When you click the Expression Builder buttons, templates for expression elements are inserted into the corresponding SQL query window or prompted query expression window.

F

file data source name. An ODBC data source connection is the logical join between the back-end database and the ODBC driver for the vendor. One of these connections is by File DSN (data source name), by which a local file on this machine contains information such as the DB2 logon name, password, and IP address. This information gives the ODBC driver manager the ability to act as the conduit between QMF for Windows and DB2.

form. An object that contains the specifications for printing or displaying a report or chart. The resulting report is based on certain default choices made by QMF about the format of the report. You can modify forms by specifying break information, calculations, column alignment, grouping and aggregations, and other attributes.

G

global variable. Used for executing queries, procedures, or forms. In a query or procedure, no dialog box displays for the user to enter a value if a user-defined global variable has been created. The value specified for that global variable will be used instead.

governing. Establishes certain limits and controls for database and communication resources.

H

high-contrast mode. A system setting by which visually impaired users can view the screen.

host name. The unique name by which a computer is known on a network, used to identify it in electronic mail, Usenet news, or other forms of electronic information interchange.

On the Internet the hostname is an ASCII string, e.g. "foldoc.doc.ic.ac.uk" which, consists of a local part (foldoc) and a domain name (doc.ic.ac.uk). The hostname is translated into an Internet address either via the /etc/hosts file, NIS or by the Domain Name System (DNS) or resolver.

It is possible for one computer to have several hostnames (aliases) though one is designated as its canonical name.

host variable. Host variables enable you to use the same static query to retrieve different data. To retrieve different data, you do not need to rebind a package for the static query; instead, you supply different values for the host variables in the query.

Database servers specify rules for where host variables can appear in a query. Refer to documentation for your database server for these rules.

Host variables must have a specific data type. A value that you provide for a host variable must conform to that variable's data type.

HTML. A platform independent programming code file. Contains unformatted ASCII text instructions used by a Web browser on the World Wide Web. Invented by Tim Berners-Lee, formerly of CERN-Geneva.

I

identifier. Object owners and object names, including column names. The maximum length of table owners and table names depends on the version and platform of DB2.

Normal characters include uppercase letters, digits, `_`, `@`, `#` and `$`. Enclose special characters in

quotes. If the identifier includes a quote character, double each occurrence of the quote character and enclose the entire identifier in quote characters, such as `pro"ject`, would be `"pro""ject"`. If you use lowercase letters and do not enclose the identifiers in quotes, and lowercase letters are changed to uppercase.

idle connection. The first time you run a query, QMF for Windows acquires a connection to the database server. There is overhead involved in establishing this connection. Once the query is complete, QMF for Windows can maintain the connection to the database server. A connection in this state is considered an idle connection, which still consumes resources at the database server.

idle query. A query that uses a database server connection but does not actively request data from the database server.

Information Catalog Manager. A component of DB2 Warehouse Manager that: populates the catalog through metadata interchange with Data Warehouse Center and other analytical and reporting tools; enables users to register shared information objects directly; provides direct navigation or searching across objects to find relevant information; displays metadata about the object; launches tools used to render the information for the end user.

Intelligent Miner Scoring. (IM Scoring): Provides data mining functionality to DB2. IM Scoring enables you to import certain types of mining models into a DB2 table and apply the models to data within DB2. The results of applying the model are known as scoring results, which differ in content according to the type of model applied.

ixf. (Integration Exchange Format): A file format used to import or export data.

J

job. A file used to schedule and run unattended procedures. A job file can store a user ID, encrypted password, and substitution variables.

K

keyboard equivalents. Keystrokes necessary to perform mouse functions using the keyboard.

keyboard navigation. A method of using the keyboard instead of the mouse to move from item to item on your screen.

L

large object. (LOB): A database entry containing a file that is stored within the database. LOBs can contain text files, multimedia files, or virtually any type of object.

linear procedure. Any procedure that does not begin with an IBM Object REXX comment. A linear procedure can run QMF commands, comments, blank lines, RUN commands, and substitution variables.

list. To display data in an ordered format. For example, the LIST command in BASIC displays lines of a program. A list is any ordered set of data.

load balancing. Method used to spread tasks among the processors in a parallel processor to avoid some processors being idle while others have tasks queueing for execution. Load balancing may be performed either by heavily loaded processors (with many tasks in their queues) sending tasks to other processors; by idle processors requesting work from others; by some centralized task distribution mechanism; or some combination of these. Some systems allow tasks to be moved after they have started executing ("task migration"), while others do not. It is important that the overhead of executing the load balancing algorithm does not contribute significantly to the overall processing or communications load.

LOB. (Large Object): A sequence of bytes representing bit data, single-byte characters, double-byte characters, or a mixture of single- and double-byte characters. A LOB can be up to 2 GB-1 byte in length.

LOB values may or may not be stored inline with other row data in the database. In either case, LOBs have the full transactional support of the database server. A database table stores a LOB locator which points to the LOB value which may be in a different storage space.

local host. The system on which QMF for Windows is running.

LU 6.2. (Logical Unit Type): The SNA logical unit type that supports general communication between programs in a distributed processing environment. A logical unit is a primary component of SNA, and is a type of NAU (Network Addressable Unit).

M

machine data source name. The ODBC term used to describe all of the information needed to locate and access a particular source of data. The DSN includes the ODBC driver used to access the data, the location of the data, plus any authentication information. Machine data source name (DSN) is specific to a particular machine and is stored in the Windows registry.

matching patterns. A character (such as % or _) used in a query, form or table name instead of a specific character.

Use the percent character to match a string of any length containing any characters. Use the underscore character to match a single character.

metadata. Data about data. In data processing, metadata is definitional data that provides information about or documentation of other data managed within an application or environment. For example, metadata would document data about data elements or attributes, (name, size, data type, etc.) and data about records or data structures (length, fields, columns, etc.) and data about data (where it is located, how it is associated, ownership, etc.). Metadata may include descriptive information about the context, quality and condition, or characteristics of the data.

mnemonics. (*access keys*): An underlined character that performs each menu or dialog function.

N

natural query. A query written in conversational English, such as, "Show me all the managers who work 45 hours or more." The query is converted to SQL and run normally at the database. You must have EasyAsk installed on your machine to use natural queries.

O

object. A query, form, procedure, or table.

object list. Tree-structured representations of the database objects available on the server. Which objects can be viewed depends upon your resource limits. Objects can be added and removed from the object list; also, the objects can be saved and shared with other users.

object tracking. An option that keeps a detailed record whenever a specific object is used, and identifies the time the object was run, who ran it, and the results.

ODBC. (Open DataBase Connectivity): A standard for accessing different database systems. There are interfaces for Visual Basic, Visual C++, SQL and the ODBC driver pack contains drivers for the Access, Paradox, dBase, Text, Excel and Btrieve databases.

An application can submit statements to ODBC using the ODBC flavor of SQL. ODBC then translates these to whatever flavor the database understands. ODBC is based on Call-Level Interface and was defined by the SQL Access Group.

P

package. An object containing a set of SQL statements that have been statically bound (access paths to the data are selected and some authorization checking is performed) and are available for processing.

port. A logical channel or channel endpoint in a communications system. The Transmission Control Protocol and User Datagram Protocol transport layer protocols used on Ethernet use port numbers to distinguish between (demultiplex) different logical channels on the same network interface on the same computer. Each application program has a unique port number associated with it, defined in /etc/services or the Network Information Service "services" database. Some protocols, e.g. telnet and HTTP (which is actually a special form of telnet) have default ports specified as above but can use other ports as well.

procedure. An object that contains QMF commands. A procedure can be run with a single RUN command.

A procedure is a set of commands that enable you to run queries, print reports, import and export data, and perform other functions with a single command.

procedure comments. Text that is not part of the actual commands that are executed when you run a procedure. Use comments within the procedure to store information for future reference about the procedure.

Procedure comments begin with two hyphens (- -) and can continue to the end of the line on which they appear. You can include as many comments as you want in a procedure. A procedure's comments, including the hyphens, are ignored by QMF for Windows until you remove the hyphens (uncomment) or remove the comments.

procedure continuation lines. Each line of a procedure typically contains a single command. You can, however, continue a command over multiple lines by placing a plus sign (+) in the first column of each additional line.

procedure with logic. Any QMF procedure beginning with an IBM Object REXX comment. In a procedure with logic, you can perform conditional logic, make calculations, build strings, and pass commands back to the host environment.

prompted query. A query that is built based on the user's responses to a set of dialog windows. Prompted queries are the recommended method for writing and editing queries if you are not familiar with SQL syntax.

provider DLL. The name of the DLL (dynamic link library) that QMF for Windows uses to access CPI-C services.

Q

query. A request for a specific result set of information from a database. You can work with an SQL query, a prompted query or a natural query.

query comments. Text that is not part of the SQL code executed by the database server. Use comments in the query to store information about the query for future reference.

Query comments begin with two hyphens (- -) and can continue to the end of the line on which they appear. The query comments and hyphens are ignored by QMF for Windows and the database server at which you run the query. For example:

```
SELECT ID, NAME --names of the columns used
FROM Q.STAFF -- the table containing
these columns
```

quoting characters. Characters used for character values and identifiers. Legal characters are the apostrophe (') and the quotation mark ("). Different quoting characters must be assigned for character values and identifiers.

R

RDB name. (Relational Database Name): The name of the relational database name that stores data in the form of related tables. The RDB name can have different meanings, depending on the platform:

- DB2 UDB for OS/390: *Location name*
- DB2 for VM & VSE: *Application server name*
- DB2 for iSeries: *System name*
- DB2 for workstation platforms: *Database name*

remote host. The system on which DB2 is running.

remote port. The TCP/IP port on which DB2 is listening.

report. A compiled program, typically converted from a QMF query, query and form, or procedure; or a non-compiled QMF query, query and form, or procedure.

resource limits. Limits and controls that govern the use of database and communication resources. These include setting schedules, time-outs, limits, authorization to SQL verbs, binding and object tracking privileges, LOB options, Report Center, and other options.

resource limits group. Users belonging to a group for which certain restrictions and permissions have been defined for schedules, time-outs, limits, SQL verbs, options, save data, binding, object tracking, LOB options, and the Report Center.

resource limits group schedule. The days and times during which the schedule for a resource limits group is active or inactive. The schedule includes parameters for time-outs, limits, SQL verbs, miscellaneous options, binding, save data, object tracking, LOB options, and Report Center.

restricted object. An object that is available only to its owner. Queries, forms, tables, and procedures are all objects.

results grid. The results of an SQL query, prompted query, or procedure. A preview of the results before the data is saved to a form, exported, or saved as a chart.

REXX. (Restructured Extended Executor): IBM Object REXX is an interpreted, structured, procedural script programming language that allows programs and algorithms to be written in a clear structured way.

It was designed so that it would be truly easy to use for both professionals and casual users and was designed to work in several diverse application areas -- such as personal programming, command processing, application

macro processing and application prototyping -- where different languages are typically used. It is, however, designed to be platform-independent.

S

screen reader. An assistive technology product used to deliver information in a more accessible manner to those who cannot use a mouse.

security. Techniques for ensuring that data stored in a computer cannot be read or compromised. Most security measures involve data encryption and passwords. Data encryption is the translation of data into a form that is unintelligible without a deciphering mechanism. A password is a secret word or phrase that gives a user access to a particular program or system.

server. A database server is a computer system that processes database queries, such as those from QMF for Windows.

server definition file. (SDF): A flat file (initialization file) created and maintained by QMF for Windows Administrator that defines server, connection, resource limits, and other crucial information for QMF for Windows to connect to the database server. The SDF is updated each time a database server is added, updated or deleted.

shared object. An object that is available to all users. Queries, forms, tables, and procedures are all objects.

shortcut keys. Functions, also known as accelerator keys, available on pull-down menus to select an option via the keyboard rather than a mouse.

shp. (Shape File): A file format for spatial data, which is exported data represented in multiple layers, such as in a topographical map.

SNA. (Systems Network Architecture): A set of network protocols developed by IBM. Originally designed in 1974 for IBM's mainframe

computers, SNA has evolved over the years so that it now also supports peer-to-peer networks of workstations.

spatial data. Any information about the location and shape of, and relationships among, geographic features. This includes remotely sensed data as well as map data.

special characters. Any characters that are not included in the list of regular characters, including:

- A through Z (uppercase)
- 0 through 9
- #
- \$
- @
- -

SQL query. (Structured Query Language): A standardized language for defining and manipulating data in a relational database. SQL is used to write queries in descriptive phrases.

static query. An SQL query that has been previously passed to a database server and bound into a package.

When a static query is executed, the database server uses the SQL text bound into the package, rather than the SQL text currently appearing in the query window. Static queries are more resource efficient than dynamic queries, but static queries cannot be edited.

static SQL. SQL statements, embedded within a program, that are prepared during the program preparation process, before the program is executed. After being prepared, the SQL statement does not change (although variable values that are specified by the statement might change).

stored procedure. A group of SQL statements that form a logical unit and perform a particular task. Stored procedures are used to encapsulate a set of operations or queries to execute on a database server. For example, operations on an employee database (hire, fire, promote, lookup) could be coded as stored procedures executed by

application code. Stored procedures can be compiled and executed with different parameters and results, and they may have any combination of input, output, and input/output parameters. Stored procedures are supported by most DBMSs, but there is a fair amount of variation in their syntax and capabilities.

string delimiter. A character or string used to separate or mark the start of and end of items of data in a database, text file, or in source code. A string delimiter uses an apostrophe or quote to delimit this data.

substitution variable. A variable in a procedure or query whose value is specified by a global variable or a run-time variable. Or, it is a variable in a form whose value is specified by a global variable.

Substitution variables must begin with an ampersand (&) and can contain up to 18 characters, which can be alphabetic, numeric or one of the following characters: [! \$ ~ { } ? @ # % \ _ .

T

table. A collection of stored data under the control of the relational database manager, consisting of a fixed number of rows and columns. You can interact with tables by running queries or by using the table editor.

table editor. A tool used to search for, add, edit or delete table data without writing QMF statements.

TCP/IP. (Transmission Control Protocol/Internet Protocol): The suite of communications protocols used to connect hosts on the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP. TCP/IP is built into the UNIX operating system and is used by the Internet, making it the *de facto* standard for transmitting data over networks.

thin client. A simple client program or hardware device which relies on most of the function of the system being in the server.

txt. A text-only file format.

U

usage code. Codes that control how data is summarized, such as at the end of a column or as a partial summary at the control breaks in a table. Which usage codes are available depend on the data in the column and the type of summary.

V

variable. A data element that specifies a value that can be changed. A variable is a symbol or name that stands for a value.

voice synthesizer. An assistive technology product used to deliver information in a more accessible manner to those who cannot use a mouse.

W

WinCPI-C. (Windows Common Programming Interface for Communications): A portable application programming interface (API), that enables peer-to-peer communications among programs in an SNA environment.

CPI-C enables application programs distributed across a network to work together. By communicating with each other and exchanging data, they can accomplish a single processing task, such as querying a remote database.

Winsock. (Windows sockets): A specification for Microsoft Windows network software, describing how applications can access network services, especially TCP/IP. Winsock is intended to provide a single API to which application developers should program and to which multiple network software vendors should conform. For any particular version of Microsoft Windows, it defines a binary interface (ABI) such that an application written to the Windows Sockets API can work with a conformant protocol implementation from any network software vendor. Windows Sockets is supported by Microsoft Windows, Windows for Workgroups, Win32s, Windows 95 and Windows NT. It will support protocols other than TCP/IP.

Under Windows NT, Microsoft will provide Windows Sockets support over TCP/IP and IPX/SPX. Windows NT will include mechanisms for multiple protocol support in Windows Sockets, both 32-bit and 16 bit.

wizard. An interactive help utility that guides the user through a potentially complex task, such as configuring a connection to a database server. Wizards are often implemented as a sequence of dialog boxes which the user can move forwards and backwards through, filling in the details required.

In QMF for Windows, the packages wizard creates the required database objects and binds the required packages during server setup. TCP/IP, SNA, and CLI packages must be bound.

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