HP NonStop MXDM User Guide for SQL/MX Release 3.2

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Legal Notice

Contents

About this guide

This guide describes how to use MXDM to monitor and manage SQL/MX databases.

Related Topics

Publishing history

This guide supports HP NonStop SQL/MX Release 3.2 until otherwise indicated by its replacement publication. The publication date and part number indicate the current edition of the document.

Part Number	Product Version	Publication Date
691119-001	HP NonStop SQL/MX Release 3.2	August 2012

New and changed information

HP NonStop MXDM User Guide for SQL/MX Release 3.2 is a new document.

Supported Release Version Updates (RVUs)

This publication supports J06.14 and all subsequent J-series RVUs and H06.25 and all subsequent H-series RVUs, until otherwise indicated by its replacement publications. Additionally, all considerations for H-series throughout this manual will hold true for J-series also, unless mentioned otherwise.

Audience

This guide is intended for those who perform standard database administration tasks. It provides basic concepts and task information to get you started quickly and easily.

Organization

Table 1 (page 7) describes the chapters in the manual.

Table 1 Chapters in the manual

Chapter	Description
"Introduction to MXDM" (page 12)	Introduces MXDM, and discusses the features and the functional flow
"Installing and uninstalling MXDM" (page 15)	Discusses the prerequisites of MXDM and the procedures to install and uninstall MXDM
"Managing MXDM system objects" (page 18)	Discusses the procedures to start up MXDM, create system definitions, connect to, and disconnect from a system
"Navigating MXDM" (page 26)	Discusses the MXDM UI and its elements
"Performing basic MXDM operations" (page 38)	Discusses basic operations that you can perform in MXDM
"Viewing database objects" (page 47)	Discusses the procedures to view database objects on a system

Table 1 Chapters in the manual *(continued)*

Chapter	Description
"Managing MXCS objects" (page 76)	Discusses the procedures to view and manage MXCS objects
"Launching the NonStop SQL/MX Remote Conversational Interface" (page 96)	Discusses the procedures to launch and configure RMXCI settings using MXDM
"Using the SQL Whiteboard" (page 98)	Discusses the SQL Whiteboard and the procedures that you can perform using the SQL Whiteboard

Related documentation

This manual is part of the HP NonStop SQL/MX library of manuals.

NonStop SQL/MX customer library

The following are the manuals in the SQL/MX customer library:

- **Introductory guides**

SQL/MX Comparison Guide for SQL/MP Users	Describes differences between NonStop SQL/MP and NonStop SQL/MX databases.
SQL/MX Quick Start Guide	Describes basic techniques for using SQL in the SQL/MX conversational interface (MXCI). Includes information about installing the sample database.

- **Installation guides**

SQL/MX Installation and Upgrade Guide	Describes how to plan for, install, create, and upgrade a SQL/MX database.
SQL/MX Management Manual	Describes how to manage a SQL/MX database.
NSM/web Installation Guide	Describes how to install NSM/web and troubleshoot NSM/web installations.

- **Reference manuals**

SQL/MX Reference Manual	Describes the syntax of SQL/MX statements, MXCI commands, functions, and other SQL/MX language elements.
SQL/MX Messages Manual	Describes SQL/MX messages.
SQL/MX Glossary	Defines SQL/MX terminology.

- **Connectivity manuals**

SQL/MX Connectivity Service Manual	Describes how to install and manage SQL/MX Connectivity Service (MXCS), which enables ODBC and other connectivity APIs to use NonStop SQL/MX.
SQL/MX Connectivity Service Administrative Command Reference	Describes the SQL/MX Administrative Command Library (MACL) available with the SQL/MX conversational interface (MXCI).
ODBC/MX Driver for Windows	Describes how to install and configure HP NonStop ODBC/MX for Microsoft Windows, which enables applications developed with ODBC API to use NonStop SQL/MX.

SQL/MX Remote Conversational Interface (RMXCI) Guide	Describes how to use SQL/MX Remote Conversational Interface to run the RMXCI commands, and SQL statements interactively or from script files.
HP NonStop MXDM User Guide	Describes how to use the NonStop SQL/MX Database Manager (MXDM) to monitor and manage the SQL/MX database.
HP NonStop JDBC Type 2 Driver Programmer's Reference	Describes the NonStop JDBC Type 2 Driver functionality, which allows Java programmers to remotely develop applications deployed on client workstations to access NonStop SQL/MX databases.
HP NonStop JDBC Type 4 Driver 3.0 Programmer's Reference	Describes the NonStop JDBC Type 4 Driver functionality, which allows Java programmers to remotely develop applications deployed on client workstations to access NonStop SQL/MX databases.

- **Migration guides**

SQL/MX Database and Application Migration Guide	Describes how to migrate databases and applications to NonStop SQL/MX, and how to manage different versions of NonStop SQL/MX.
NonStop NS-Series Database Migration Guide	Describes how to migrate NonStop SQL/MX, NonStop SQL/MP, Enscribe databases and applications to HP Integrity NonStop NS-series systems.

- **Data management guides**

SQL/MX Data Mining Guide	Describes the SQL/MX data structures and operations for data mining.
SQL/MX Report Writer Guide	Describes how to produce formatted reports using data from an SQL/MX database.
DataLoader/MX Reference Manual	Describes the features and functions of the DataLoader/MX product, a tool to load SQL/MX databases.

- **Application development guides**

SQL/MX Programming Manual for C and COBOL	Describes how to embed SQL/MX statements in ANSI C and COBOL programs.
SQL/MX Query Guide	Describes how to understand query execution plans and write optimal queries for an SQL/MX database.
SQL/MX Queuing and Publish/Subscribe Services	Describes how NonStop SQL/MX integrates transactional queuing and publish/subscribe services into its database infrastructure.
SQL/MX Guide to Stored Procedures in Java	Describes how to use stored procedures that are written in Java within NonStop SQL/MX.

- **Online help**

SQL/MX Database Manager Help	Contents and reference entries from the SQL/MX Database Manager User Guide.
Reference Help	Overview and reference entries from the SQL/MX Reference Manual.
Messages Help	Individual messages grouped by source from the SQL/MX Messages Manual.
Glossary Help	Terms and definitions from the SQL/MX Glossary.
NSM/web Help	Context-sensitive help topics that describe how to use the NSM/web management tool.
Visual Query Planner Help	Context-sensitive help topics that describe how to use the Visual Query Planner graphical user interface.

The NSM/web, SQL/MX Database Manager, and Visual Query Planner help systems are accessible from their respective applications. You can download the Reference, Messages, and Glossary online help from the HP Software Depot, at http://www.software.hp.com. For more information about downloading online help, see the *SQL/MX Release 3.2 Installation and Upgrade Guide*.

Notation Conventions

Hypertext Links

Blue underline is used to indicate a hypertext link within text. By clicking a passage of text with a blue underline, you are taken to the location described. For example: This requirement is described under Backup DAM Volumes and Physical Disk Drives.

General Syntax Notation

This list summarizes the notation conventions for syntax presentation in this manual.

UPPERCASE LETTERS. Uppercase letters indicate keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required. For example:

```
MAXATTACH
```

lowercase italic letters. Lowercase italic letters indicate variable items that you supply. Items not enclosed in brackets are required. For example:

```
file-name
```

computer type. `Computer type` letters within text indicate C and Open System Services (OSS) keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required. For example:

```
myfile.c
```

italic computer type. `Italic computer type` letters within text indicate C and Open System Services (OSS) variable items that you supply. Items not enclosed in brackets are required. For example:

```
pathname
```

[ ] Brackets. Brackets enclose optional syntax items. For example:

```
TERM [\system-name.]$terminal-name
```

```
INT[ERRUPTS]
```

A group of items enclosed in brackets is a list from which you can choose one item or none. The items in the list can be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines. For example:

```
FC [ num ]
```

```
[ -num ]
```

```
[ text ]
```

```
K [ X | D ] address
```

{ } Braces. A group of items enclosed in braces is a list from which you are required to choose one item. The items in the list can be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines. For example:

```
LISTOPENS PROCESS { $appl-mgr-name }
```

```
{ $process-name }
```

```
ALLOWSU { ON | OFF }
```

| Vertical Line. A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces. For example:

```
INSPECT { OFF | ON | SAVEABEND }
```

… Ellipsis. An ellipsis immediately following a pair of brackets or braces indicates that you can repeat the enclosed sequence of syntax items any number of times. For example:

```
M address [ , new-value ]…
[ - ] {0|1|2|3|4|5|6|7|8|9}…
```

An ellipsis immediately following a single syntax item indicates that you can repeat that syntax item any number of times. For example:

```
"s-char…"
```

Punctuation. Parentheses, commas, semicolons, and other symbols not previously described must be typed as shown. For example:

```
error := NEXTFILENAME ( file-name ) ;
LISTOPENS SU $process-name.#su-name
```

Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must type as shown. For example:

```
"[" repetition-constant-list "]"
```

Item Spacing. Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma. For example:

```
CALL STEPMOM ( process-id ) ;
```

If there is no space between two items, spaces are not permitted. In this example, no spaces are permitted between the period and any other items:

```
$process-name.#su-name
```

Line Spacing. If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line. This spacing distinguishes items in a continuation line from items in a vertical list of selections. For example:

```
ALTER [ / OUT file-spec / ] LINE
[ , attribute-spec ]…
```

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Include the document title and part number of the document.

1 Introduction to MXDM

This chapter discusses the following topics:

Overview

MXDM is an integrated graphical user interface (GUI) client that enables you to connect to and manage multiple NonStop SQL/MX databases. Using MXDM, you can browse database and SQL/MX Connectivity Services (MXCS) objects, execute DDL and DML statements, view query results, manage MXCS objects, assign access permissions to system users, and launch the HP NonStop SQL/MX Remote Conversational Interface (RMXCI). RMXCI enables you to perform administrative and database management tasks by running SQL statements interactively or from script files.

For more information on RMXCI, see *HP NonStop SQL/MX Remote Conversational Interface (RMXCI) Guide*.

Related Topics

"MXDM features and functionalities" (page 12)

MXDM features and functionalities

MXDM provides the following features and functionalities:

- Database and MXCS objects—enables you to perform the following:
  - Browse database objects. For each schema, you can view its tables, indexes, views, procedures, and SQL/MP aliases. You can also view details of individual SQL/MX objects.
  - Browse MXCS objects. On a managed system, you can view the MXCS services, data sources, MXCS servers, and MXCS user permissions.
  - View a summary of groups of objects, such as, schemas in a catalog, tables in a schema, indexes on a table, and so on.
  - View information related to the size of the schema.
  - Use the SHOW DDL tool to generate and save the Data Definition Language (DDL) script for a group of SQL/MX objects.
  - View information related to table profiles and statistics.
  - View EMS logs.
- SQL Whiteboard —enables you to execute queries and view data results. Using the SQL Whiteboard, you can perform the following:
  - Execute DDL and Data Manipulation Language (DML) statements.
  - Persist queries across sessions for reuse.
  - Copy query results to a spreadsheet.
  - Highlight a portion of an SQL statement and execute (syntax highlighting).
  - Cancel an executing query.

- Open and save query text to a file.
- Use parameters in queries.

- MXDM Framework —enables you to perform the following:
  - Manage multiple SQL/MX databases using a single instance of MXDM.
  - Save the connection definition when you connect to a system the first time, and retrieve the definition automatically during subsequent attempts to connect to that system.
  - Access tools using menu and toolbar options.
  - Customize the elements displayed in the UI.
  - Copy grid contents to a spreadsheet.
  - Launch RMXCI.
- Data source and connectivity management — If you have the operator permission, MXDM enables you to perform the following:
  - Add information related to environmental variables, such as, Control Query Defaults (CQDs), DEFINEs and SETs, and Control Table Statements.
  - Start and stop data sources.
  - Stop server processes.
  - Start and stop MXCS services.
  - View user permissions.

NOTE: Only the SUPER.SUPER user can assign and change user permissions.

Related Topic
"Obtaining version and build information" (page 38)

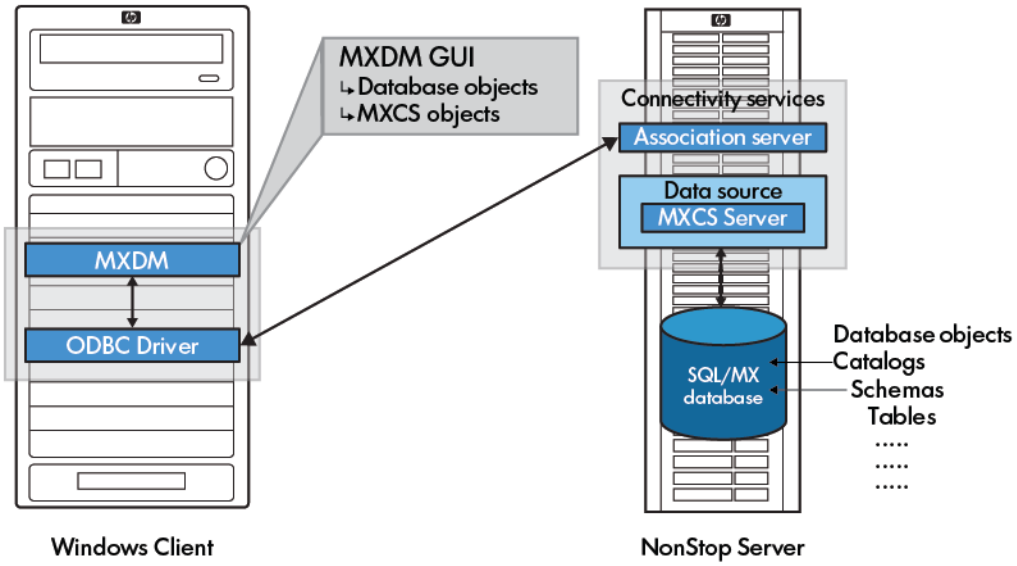
MXDM functional flow

The functional model within which MXDM operates includes the following components on the client workstation:

- MXDM
- Windows ODBC/MX driver

On the NonStop system, you must install the required MXCS objects and create those database objects that you want to manage using MXDM. Figure 1 (page 14) shows the MXDM functional flow.

Figure 1 MXDM functional flow



The following is the sequence of events involved in establishing the connection between MXDM and the server components, and in managing the objects:

1. MXDM sends a connection request to the MXCS using the Windows ODBC/MX driver. MXDM specifies an IP address or the NonStop server Domain Naming Service (DNS) name and port number that is defined when the Association server started up.
2. The ODBC/MX driver accesses an MXCS Association server on the NonStop system.
3. The Association server associates the client application with an available MXCS server for the data source.
4. MXDM sends a connection request to the MXCS server that was assigned by the Association server. After the user information is validated, a connection between MXDM and the SQL/MX database is established.

Subsequently, you can view and administer the database and MXCS objects on the system.

For more information, see the *HP NonStop SQL/MX Release 3.2 Connectivity Services Manual*.

2 Installing and uninstalling MXDM

This chapter discusses the following topics:

Supported version of SQL/MX

The MXDM client can connect to systems running SQL/MX Release 3.2 or later.

Contents of the installation package

MXDM is available in 32-bit and 64-bit versions. You can install the 32-bit version of MXDM on a 32-bit system. You can install either a 32-bit or a 64-bit version of MXDM on a 64-bit system. The installer is available at `$SYSTEM.ZMXODBC`.

The `MXDM32EX` file includes the required contents of the 32-bit version of MXDM. The `MXDM64EX` file includes the required contents of the 64-bit version of MXDM.

For information on the location of the installer, see the *HP NonStop ODBC/MX Driver for Windows for SQL/MX Release 3.2*.

After obtaining either a `MXDM32EX` or a `MXDM64EX` file, rename the file to `MXDM32EX.zip` or `MXDM64EX.zip` respectively, on the Windows client system.

`MXDM32EX.zip` contains the following files:

- `setup.exe`
- `MXDMInstaller.msi`

`MXDM64EX.zip` contains the following files:

- `setup.exe`
- `MXDMInstaller-x64.msi`

Prerequisites

The Windows client workstation must meet the following minimum requirements:

- At least 512 MB memory
- At least 10 MB disk space for installation and 64 MB free space
- Microsoft Windows XP, 32-bit or 64-bit Microsoft Windows Vista, or 32-bit or 64-bit Microsoft Windows 7
- Microsoft .NET Framework 3.5

  NOTE: MXDM requires .NET 3.5 runtime. If .NET 3.5 runtime is not available on your system, running `setup.exe` automatically detects and installs the .NET 3.5 runtime.

- Windows ODBC/MX 3.2 client driver for Windows to connect to SQL/MX databases
  - 32-bit version of MXDM requires the 32-bit Windows ODBC/MX client driver
  - 64-bit version of MXDM requires the 64-bit Windows ODBC/MX client driver

NOTE: If you want to use RMXCI, you must install RMXCI and the JDBC T4 V32 driver.

Installing MXDM

This section discusses the following topics:

NOTE: If you are installing MXDM on Microsoft Windows Vista, and you are not logged on as an administrator, you must install the files in alternate location, such as `C:\user\`*`your logon name`*`\NonStop SQLMX Database Manager`. Microsoft Windows Vista allows only administrators to install files in the `C:\Program Files` folder.

Installing the 32-bit version of MXDM

To install the 32-bit version of MXDM:

1. Save the `MXDM32EX` file on your Windows system, and rename the file to `MXDM32EX.zip`.
2. Extract the contents of the `MXDM32EX.zip` file into a temporary folder, such as `C:\temp`.
3. Double-click `setup.exe` or `MXDMInstaller.msi` to launch the NonStop SQL/MX Database Manager Installer program.
4. Follow the instructions in the Installer program and complete the installation.

   On a 32-bit system, the installer installs the application at: `C:\Program Files\Hewlett-Packard\NonStop SQLMX Database Manager\` unless you specify a different location.

   On a 64 bit system, the installer installs the application at: `C:\Program Files (x86)\Hewlett-Packard\NonStop SQLMX Database Manager\` unless you specify a different location.

Installing the 64-bit version of MXDM

To install the 64-bit version of MXDM:

1. Save the `MXDM64EX` file on your Windows system, and rename the file to `MXDM64EX.zip`.
2. Extract the contents of the `MXDM64EX.zip` file into a temporary folder, such as `C:\temp`.
3. Double-click `setup.exe` or `MXDMInstaller-x64.msi` to launch the NonStop SQL/MX Database Manager Installer program.
4. Follow the instructions in the Installer program and complete the installation.

   The installer installs the application at: `C:\Program Files\Hewlett-Packard\NonStop SQLMX Database Manager\` directory unless you specify an alternate directory.

Uninstalling MXDM

To uninstall the 32-bit version of MXDM, select **Start —> All Programs→NonStop SQL/MX Database Manager→Uninstall NonStop SQL/MX Database Manager**. You can also uninstall MXDM using the **Add and Remove Programs** option in the **Control Panel**.

To uninstall the 64-bit version of MXDM, select **Start —> All Programs→NonStop SQL/MX Database Manager 64-bit→Uninstall NonStop SQL/MX Database Manager**. You can also uninstall MXDM using the **Add and Remove Programs** option in the **Control Panel**.

Before uninstalling MXDM, you must consider the following:

- You do not have to uninstall the MXDM client before installing a newer version of MXDM.
- Uninstalling does not remove favorites or system definitions.
- If you uninstall from the **Start** menu, you are prompted to either repair or remove MXDM. Selecting **Repair** is nondestructive, and verifies the program files. Selecting **Remove** begins the uninstallation process.

Related Topics

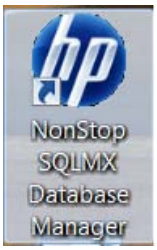
"Obtaining version and build information" (page 38)
"Saving and importing system definitions" (page 45)

3 Managing MXDM system objects

This chapter discusses the following topics:

Starting up MXDM

To start up the 32-bit version of MXDM, complete the following steps:

1. Launch MXDM in one of the following ways:
   - Double-click the 

icon on your desktop.
   - Select **Start —> All Programs→NonStop SQLMX Database Manager→NonStop SQLMX Database Manager**.
2. Perform the steps described in "Adding a system" (page 18).

To start up the 64-bit version of MXDM, complete the following steps:

1. Launch MXDM in one of the following ways:
   - Double-click the 

icon on your desktop.
   - Select **Start —> All Programs→NonStop SQLMX Database Manager 64-bit→NonStop SQLMX Database Manager**.
2. Perform the steps described in "Adding a system" (page 18).

Adding a system

Using MXDM, you must add a system definition for the NonStop system on which you want to manage the database and MXCS objects. Subsequently, you can connect to the system and manage

the objects. You can also use the **Save Persistence** option to save the system definition. During subsequent attempts to connect to that system, the saved system definition is automatically retrieved.

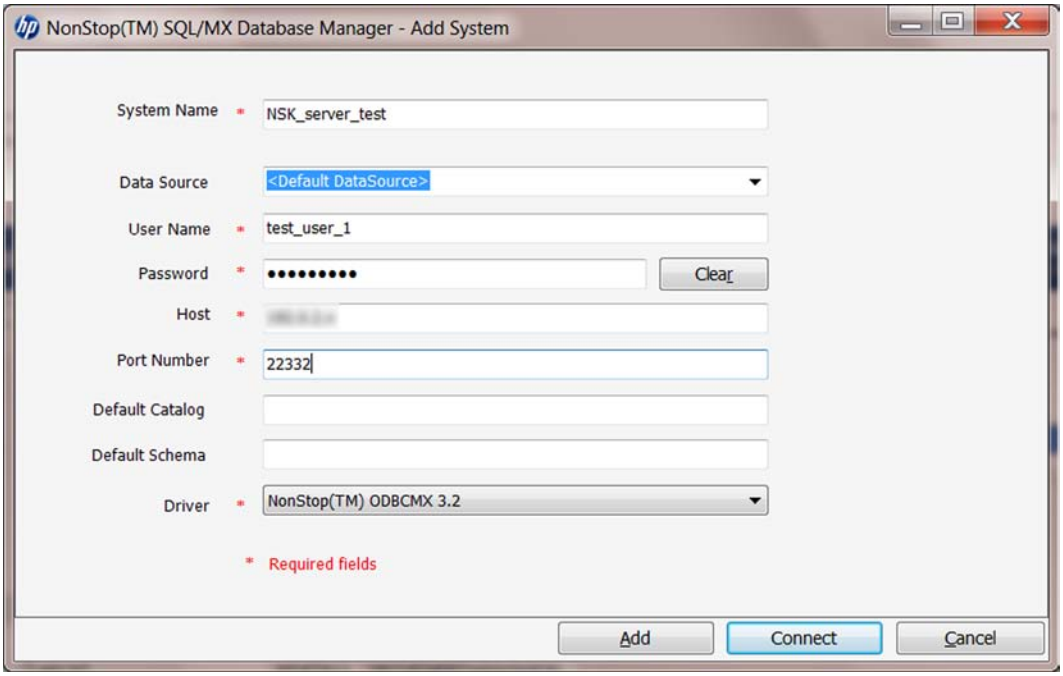
To add a new system definition:

1. Open the **Add System** dialog in one of the following ways:
   - In the navigation tree pane, right-click the **My Systems** folder, and select **Add...**.
   - Select **Tools→Systems Tool**, and click **Add...**.

   The **Add System** dialog appears.

   Figure 2 (page 19) shows the **Add System** dialog.

Figure 2 Add System dialog



2. Enter the SQL/MX database connection details.
   a. In the **System Name** field, enter a unique name to identify the system. The name can include letters, numerals, the underscore character, and can be up to 32 characters. For example, SYSTEM_1_A.
   b. In the **Port Number** field, enter the port number on which the MXCS server is listening.
   c. Click **Add**.

      The system definition is added. After the system is added, the system name is displayed in the navigation tree pane, under the **My Systems** folder.

NOTE: After a system is added, the system definition persists from session to session unless you remove it.

Related Topics

"Connecting to a system" (page 19)

Terms

system definition

Connecting to a system

After adding a system definition, you can connect to the NonStop system. To connect:

1. Open the **Connect / Edit System** dialog in one of the following ways:
   - In the navigation tree pane, right-click the system name, and select **Connect...**
   - In the navigation tree pane, click the system icon.
   - Select **Tools→Systems Tool**, and double-click the system definition of the system to which you want to connect. Alternatively, select the system definition, and click **Edit...**

   The **Connect / Edit System** dialog appears. The saved system definition appears by default. You can modify the system definition, if required. For information on modifying the system definition, see "Adding a system" (page 18).
2. In the **Connect / Edit System** dialog, enter the following details:
   a. Optional: In the **Data Source** field, enter the client data source name. If you do not specify a data source, or the name of the client data source does not match the name of the server data source, the client connects to the default server data source, `TDM_Default_DataSource`. If the client data source exists, the fields in the dialog are loaded from the client data source fields.

      NOTE: If the data source that you specify already exists on the local system, the remaining fields are automatically loaded into this dialog.

   b. Mandatory: In the **User Name** field, enter the NonStop system user name. For example, `super.super`.
   c. Mandatory: In the **Password** field, enter the password of the NonStop system user.
   d. Mandatory: In the **Host** field, enter the host name or the IP address of the NonStop system.
   e. Mandatory: In the **Port Number** field, enter the port number on which the MXCS server is listening.

      NOTE: You can retain the port number that you specified while adding the system definition.

   f. Optional: In the **Default Catalog** field, if the catalog is not specified in your operations, enter the default catalog to be used while writing a query. If the catalog is not specified, MXDM selects `NONSTOP_SYSTEM_NSK`. If this catalog does not exist in the server, you can create it. You must be the `super.super` user to create this catalog.
   g. Optional: In the **Default Schema** field, enter the default schema to be used while writing a query. If the schema is not specified, MXDM selects `PUBLIC_ACCESS_SCHEMA`. If this schema does not exist in the database, you can create it. You must be the `super.super` user to create this schema.

   △ **CAUTION:** If the default catalog or schema name is a reserved word in SQL/MX, such as USER, you must enclose the catalog or schema name within double quotes ("USER"). Otherwise, the connection fails. For information on the list of reserved words, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

   h. Mandatory: In the **Driver** field, select the version of the Windows ODBC/MX driver to be used.
3. Click **Connect**.

   MXDM attempts to establish a connection. If the connection cannot be established within the specified timeout value, an error message appears. For information on changing the timeout value, see "Setting the connection timeout" (page 24).

NOTE: You can test whether the system definition is valid. In the left pane, click the system name, and in the right pane, enter the details required to connect to the system, and click **Test**. A dialog appears indicating whether the test is successful.

Related Topics
"Adding a system" (page 18)
"Disconnecting from a system" (page 21)
Terms
My Systems
Systems Tool
system definition

Disconnecting from a system

Disconnecting from a system closes all ODBC connections with that system. To disconnect from a selected system:

1. Perform one of the following:
   - In the navigation tree pane, right-click the connected system name, and select **Disconnect**.
   - In the navigation tree pane, click the system icon (see "MXDM interface" (page 26)), and select **Disconnect**( ) on the MXDM toolbar.
   - Select **Tools→Systems Tool**. Select the required system definition, and click **Disconnect**.

   The **Confirm** dialog box appears.
2. In the **Confirm** dialog, click **Yes**.

   The system is disconnected.

After you have disconnected, the system icon and icon label change to reflect the disconnected status. To disconnect from all systems, see "Exiting MXDM" (page 25).

Related Topics
"Using the Systems Tool" (page 21)
"Exiting MXDM" (page 25)
Terms
disconnect
Systems Tool

Using the Systems Tool

The **Systems Tool** feature enables you to define, add, edit, remove, duplicate, test, and connect to an SQL/MX database.

To open **Systems Tool**, use one of the following methods:

- Click **Systems Tool** ( ) on the MXDM toolbar.
- From the menu bar, select **Tools→Systems Tool**.

The **Systems Tool** dialog appears.

Figure 3 (page 22) shows the **Systems Tool** dialog.

Figure 3 Systems Tool dialog

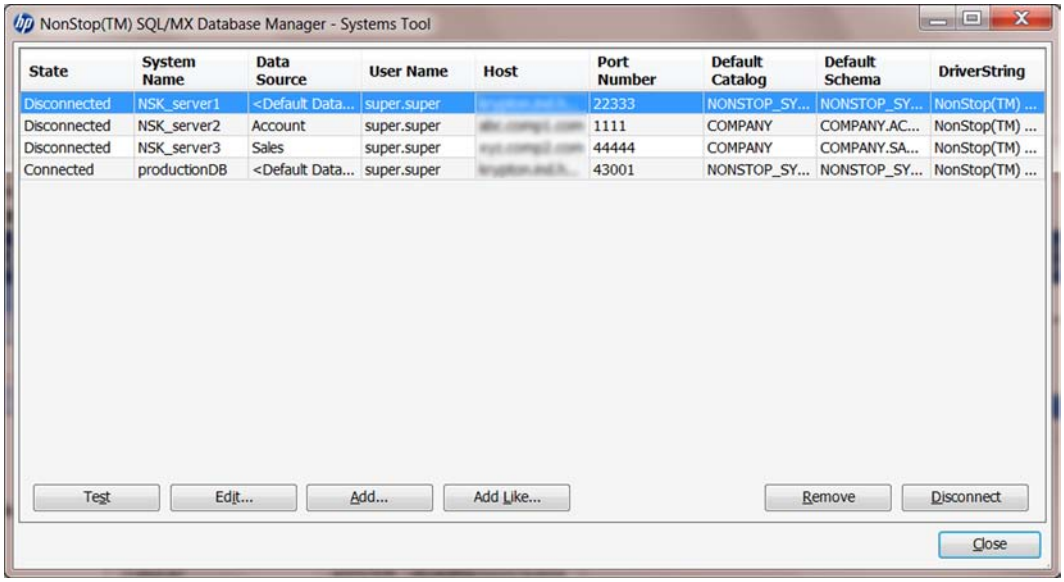


Table 2 (page 22) describes the settings in the **Systems Tool** dialog.

Table 2 Systems Tool settings

Setting	Description
State	Displays the current state of the system definition (`Connected` or `Disconnected`).
System Name	Displays the label that identifies this NonStop system. The system name can be up to 32 characters in length, and can consist of letters, numerals, and the underscore character.
Data Source	Displays the name of the client data source. If you do not specify a data source, or the name of the client data source does not match the name of the server data source, the client connects to the default server data source, `TDM_Default_DataSource`. If the client data source exists, the value of the other fields in the dialog are loaded from the client data source fields.
User Name	Displays the user name.
Host	Displays the DNS name or IP address of the target NonStop system.
Port Number	Displays the ODBC/MX server port number.
Default Catalog	Displays the default catalog to be used when writing a query.
Default Schema	Displays the default schema to be used when writing a query.
DriverString	Displays the ODBC/MX driver to be used.

△ **CAUTION:** If the default catalog or the default schema is a reserved word in SQL/MX (for example, USER), you must enclose the catalog or schema name in double quotes ("USER"). Otherwise, the connection fails. For information on reserved words, see the *SQL/MX Release 3.2 Reference Manual*.

Table 3 (page 23) describes the **Systems Tool** options.

Table 3 Systems Tool options

Setting	Description
Test	Enables you to test a selected system and displays the results in the **Connection Test Result** dialog. **Test** is enabled when you select one or more systems.
Edit...	Enables you to launch the **Connect / Edit System** dialog with the current settings of the selected system. **Edit** is enabled when you select one or more systems.
Add...	Enables you to launch the **Add** dialog.
Add Like...	Enables you to launch the **Add System Like** dialog with the current settings of the selected system. You can use these settings to add a new system. **Add Like** is enabled when you select only one system.
Remove	Enables you to remove the selected system. The selected system can be connected or disconnected. A **Confirm** dialog appears before the selected system is removed.
Disconnect	Enables you to disconnect a system. **Disconnect** is enabled when you select one or more systems. A **Confirm** dialog appears before the selected systems are disconnected.
Close	Enables you to close the **Systems Tool**.

Terms
system
data source
TDM_Default_DataSource

Editing a system definition

If you want to edit a system definition of a system, which is currently connected, you must first disconnect from the system.

To edit a system definition:

1. Disconnect from the system. For information on how to disconnect, see "Disconnecting from a system" (page 21).
2. Use one of the following methods to open the **Connect / Edit System** dialog:
   - In the navigation tree pane, right-click the required system name, and select **Connect...** or **Edit...**
   - Select **Tools→Systems Tool**. Select the required system definition, and click **Edit...**
3. In the **Connect / Edit System** dialog, enter the data. For information on the fields, see "Adding a system" (page 18).
4. Click **Save** to save the newly created system definition, or click **Connect** to connect to the system.

Related Topics
"Disconnecting from a system" (page 21)

Copying a system definition

You can add a system by copying an existing system definition. To add a new system definition using an existing system definition:

1. Open the **Add System Like** dialog using one of the following methods:
   - In the navigation tree pane, right-click the name of the system whose system definition you want to copy, and select **Add Like...**.
   - Select **Tools→Systems Tool** from the menu bar. Select the system definition that you want to copy, and click **Add Like...**.

   The **Add System Like** dialog appears.

2. In the **Add System Like** dialog:
   a. Specify a new name in the **System Name** field.
   b. Retain or modify the information specified in the fields of the selected system. For more information on the fields, see "Adding a system" (page 18).

      NOTE: If the data source that you specify already exists on the local system, the remaining fields are automatically loaded into this dialog.

   c. Click **Add**.

      The new system definition is added.

Removing a system

To remove a system from MXDM:

1. Perform one of the following steps:
   - In the navigation tree pane, right-click the system name, and select **Remove**.
   - Select **Tools→Systems Tool**. Select one or more systems that you want to remove, and click **Remove**.

   The **Confirm** dialog appears.
2. In the **Confirm** dialog box, click **Yes**.

   The system definitions are removed.

Testing a system definition

To test the system definition:

1. Select the system in the navigation tree pane.

   The **Connect/Edit System** fields appear in the right pane.
2. Enter the password.
3. Click **Test**.

   The **Connection Test Result** dialog appears, indicating whether the system definition is valid or not.

NOTE: Testing the system definition does not establish a connection to the system.

Terms
system definition
My Systems

Setting the connection timeout

If you frequently receive connection timeout errors, you must increase the connection timeout value. The ODBC/MX driver default for connection timeout is 60 seconds. When a system is heavily loaded, establishing an ODBC connection can take more than 60 seconds, and MXDM connections might time out. Therefore, the default timeout value for MXDM is set to 180 seconds, and overrides the default set in the ODBC/MX client data source. You can modify the default MXDM timeout value.

The following are the connection timeout rules:

- The default for the connection timeout option is 180 seconds (3 minutes).
- The range is an integer value from 0 to 2,147,483,647 seconds.
- Setting a value of 0 indicates no timeout.
- Setting the connection timeout does not address timeouts that might occur on query execution.

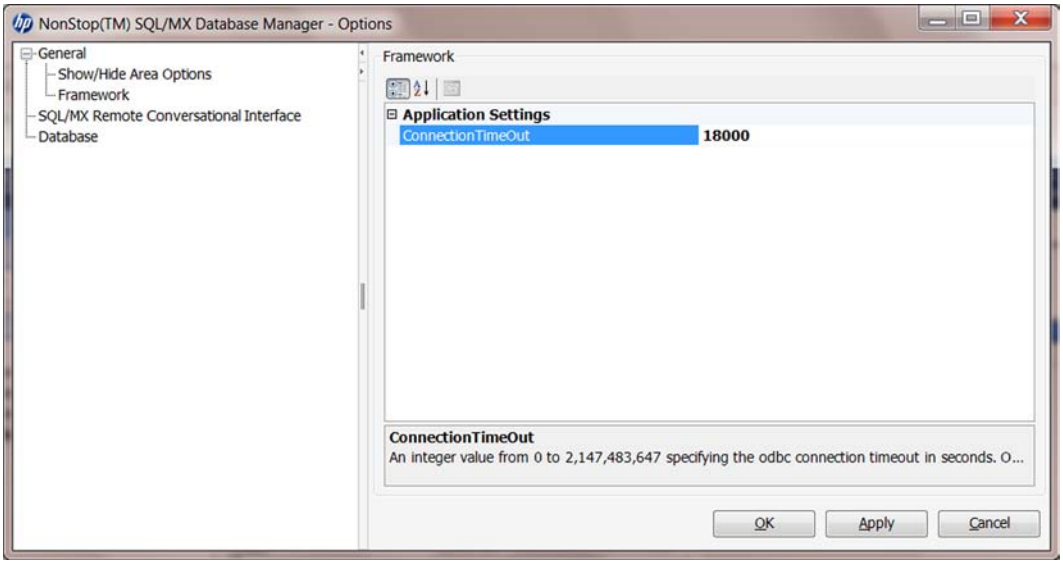
To set the connection timeout:

1. Perform one of the following:
   - On the MXDM toolbar, click **Options** ( )
   - Select **Tools→Options...**.

   The **Options** dialog appears.
2. Select **Framework** under **General**.
3. In the right pane of the **Options** dialog, enter the number of seconds that you want to specify for the connection timeout.

   Figure 4 (page 25) shows the **Options** dialog.

Figure 4 Options dialog



4. Click **OK**.

   The new timeout value is set.

Related Topics

"Adjusting the display of an area" (page 31)
"Using the MXDM toolbar" (page 29)

Exiting MXDM

To disconnect from a single active session without exiting MXDM, right-click the system name in the left pane and select **Disconnect**. For more information, see "Disconnecting from a system" (page 21).

To exit MXDM, select **File→Exit**. Exiting the application securely disconnects all active sessions.

4 Navigating MXDM

This chapter discusses the following topics:

MXDM interface

Figure 5 (page 26) shows the MXDM interface.

Figure 5 MXDM interface

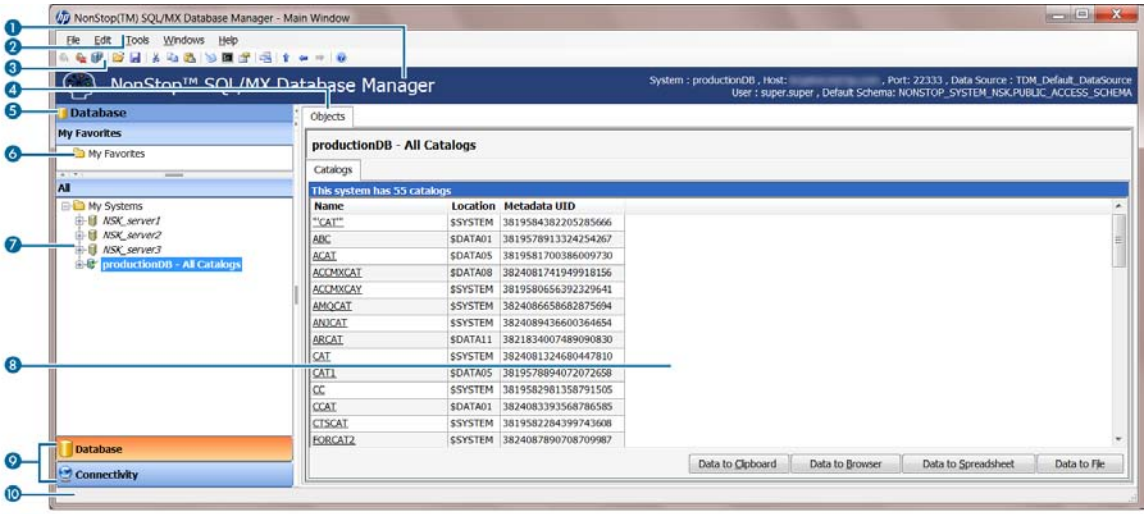


Table 4 (page 26) describes the parts in the MXDM interface.

Table 4 Parts of the MXDM interface

Number	Label	Description
1	MXDM banner	The MXDM banner displays information about the system, user, and the default schema. For more information, see "MXDM banner" (page 27).
2	Menu bar	Displays the menus available in MXDM. For more information, see "Using the MXDM menus" (page 27)
3	Tool bar	Displays the tools available in MXDM. For more information, see "Using the MXDM toolbar" (page 29)
4	Selected tab	Displays the objects in the selected area.

Table 4 Parts of the MXDM interface *(continued)*

Number	Label	Description
5	Selected area	Displays the selected area.
6	**My Favorites** pane	Favorites appear in the **My Favorites** pane. For more information, see "Using the My Favorites pane" (page 32).
7	Navigation tree pane	The navigation tree displays all the systems that you have added using the **Systems Tool**. For more information, see "Using the navigation tree" (page 33).
8	Right pane	The right pane displays information about the selected objects in the **My Favorites** pane or in the navigation tree. For more information, see "Using the right pane" (page 35)
9	Area tabs available	Displays the areas available in MXDM.
10	Status bar	The MXDM status bar.

Related Topics
"Using the MXDM toolbar" (page 29)
"MXDM banner" (page 27)
"Using the navigation tree" (page 33)
"Using the right pane" (page 35)
"Using the My Favorites pane" (page 32)
"Using the MXDM menus" (page 27)

MXDM banner

The MXDM banner appears above the right pane. Figure 6 (page 27) shows the MXDM banner.

Figure 6 MXDM banner

The banner displays the following information:

- The name of the system
- The host and port information for the current connection
- The currently connected data source
- The user name
- The default schema

Related Topics
"MXDM interface" (page 26)

Using the MXDM menus

MXDM includes the following menus:

- "Using the File menu options" (page 28)
- "Using the Edit menu options" (page 28)
- "Using the Tools menu options" (page 28)
- "Using the Windows menu options" (page 29)
- "Using the Help menu options" (page 29)

Using the File menu options

Table 5 (page 28) describes the **File** menu options.

Table 5 File menu options

Option	Description
Import Persistence	Imports persistence data from a file that was saved using MXDM. **NOTE:** All the current settings are replaced by the settings in the imported file. For more information, see "Saving and importing system definitions" (page 45).
Save Persistence	Saves the current configuration.
Export Persistence	Saves the configuration to any file. You can use the **Export Persistence** option to export a specific configuration to other users in the organization. For more information, see "Saving and importing system definitions" (page 45).
Exit	Securely disconnects all active sessions. For more information, see "Exiting MXDM" (page 25).

Related Topics

"MXDM interface" (page 26)
"Saving and importing system definitions" (page 45)
"Exiting MXDM" (page 25)
"Using the MXDM menus" (page 27)

Terms

menu bar
persistence file
system definition

Using the Edit menu options

Table 6 (page 28) describes the **Edit** menu options.

Table 6 Edit menu options

Option	Description
Undo	Cancels the last operation.
Redo	Reverses the last Undo command.
Cut	Removes the selected text and copies it to the clipboard.
Copy	Copies the selected text to the clipboard without removing it.
Paste	Inserts the selected text at the cursor position.
Select All	Highlights all text.

Related Topics

"Using the MXDM menus" (page 27)

Using the Tools menu options

Table 7 (page 29) describes the **Tools** menu options.

Table 7 Tools menu options

Option	Description
SQL Whiteboard	Launches the SQL Whiteboard. For more information on SQL Whiteboard, see "Using the SQL Whiteboard" (page 98).
SQL/MX Remote Conversational Interface	Launches RMXCI. For more information on RMXCI, see "Launching the NonStop SQL/MX Remote Conversational Interface" (page 96).
Systems Tool	Opens the **Systems Tool** dialog. For more information on **Systems Tool**, see "Using the Systems Tool" (page 21).
Options...	Opens the **Options** dialog. For more information, see the following: • "Adjusting the display of an area" (page 31) • "Setting the connection timeout" (page 24) • "Setting Auto Logon options" (page 97)

Related Topics
"Using the MXDM menus" (page 27)
"Using the MXDM toolbar" (page 29)

Using the Windows menu options

Table 8 (page 29) describes the **Windows** menu options.

Table 8 Windows menu options

Option	Description
Windows Manager...	Displays the Windows Manager.
Close All	Closes all open windows except the main window.

Related Topics
"Using the MXDM menus" (page 27)

Using the Help menu options

Table 9 (page 29) describes the **Help** menu options.

Table 9 Help menu options

Option	Description
Contents	Opens the MXDM online help and displays the **Contents** tab.
Index	Opens the MXDM online help and displays the **Index** tab.
Search	Opens the MXDM online help and displays the **Search** tab.
About...	Displays the **About** dialog. For more information, see "Obtaining version and build information" (page 38).

Related Topics
"Using the MXDM menus" (page 27)

Using the MXDM toolbar

MXDM includes tools in the toolbar that enable you to perform many common operations. Table 10 (page 30) describes the MXDM tools.

Table 10 MXDM tools

Tool	Description
	Displays the **Connect / Edit System** dialog and enables you to connect to a system or modify a system definition. For more information, see "Connecting to a system" (page 19).
	Enables you to disconnect the selected system. For more information, see "Disconnecting from a system" (page 21).
	Enables you to define, add, edit, remove, duplicate, test, and open connections to a SQL/MX database using MXDM. For more information, see "Using the Systems Tool" (page 21).
	Enables you to use system definitions from a saved persistence file. For more information, see "Saving and importing system definitions" (page 45).
	Enables you to save the current settings. For more information, see "Saving and importing system definitions" (page 45).
	Enables you to remove the selected text and copy to the clipboard. For more information, see "Using the Edit menu options" (page 28).
	Enables you to copy the selected text to the clipboard. For more information, see "Using the Edit menu options" (page 28).
	Enables you to insert the selected text at the cursor position. For more information, see "Using the Edit menu options" (page 28).
	Launches the SQL Whiteboard. For more information, see "Introduction to the SQL Whiteboard" (page 98).
	Launches RMXCI. For more information, see *HP NonStop SQL/MX Remote Conversational Interface (RMXCI) Guide* or "Launching the NonStop SQL/MX Remote Conversational Interface" (page 96).
	Enables you to configure options and views. For more information, see "Using the Tools menu options" (page 28).
	Opens the Windows Manager that lists all the open windows and provides functions to display and close these windows. For more information, see "Cloning tabs and managing multiple open windows" (page 36).
	Selects the next higher object in the navigation tree hierarchy. For example, if a table is currently selected, clicking **Go to Parent** selects the table folder. Clicking the icon again selects the schema icon.
	Selects the previous object in the navigation tree hierarchy. If no other objects exist, **Go to Previous** is disabled.
	Selects the next object in the navigation tree hierarchy. If no other objects exist, **Go to Next** is disabled.
	Displays the online help.

Related Topics

"MXDM interface" (page 26)

Selecting an area

In MXDM Release 3.2, Database and Connectivity areas are available. The Database area includes all the database objects that you can view and manage. The Connectivity area includes the MXCS objects that you can view and manage. To select an area, click the required tab below the navigation tree pane. Table 11 (page 31) describes the areas available in SQL/MX Release 3.2.

Table 11 Supported areas

Area	Description
Database	Provides information about the database objects. For more information, see "Viewing database objects" (page 47).
Connectivity	Provides information about MXCS objects. For more information, see "Managing MXCS objects" (page 76)

MXDM displays the currently selected area below the menu bar "MXDM interface" (page 26). When you select an area, MXDM displays the characteristics of that area for all connected systems.

Related Topics
"Adjusting the display of an area" (page 31)
Terms
area

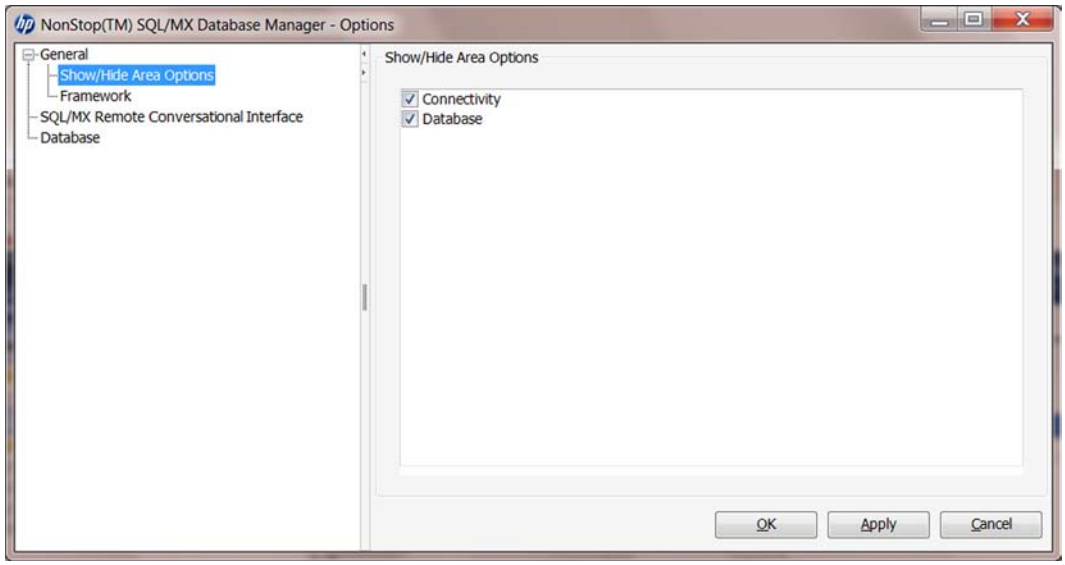
Adjusting the display of an area

By default, MXDM displays all the supported areas. However, you can choose to display or hide an area by using the **Options** menu.

To display the **Options** menu, click **Options**( ) on the MXDM toolbar, or select **Tools→Options...**. The **Options** dialog appears.

Figure 7 (page 31) shows the **Options** dialog.

Figure 7 Show/Hide Area options



To hide an area:

1. Clear the option for the required area in the **Show/Hide Area Options** pane.
2. Click **OK**.

To show an area that is hidden:

1. Select the option for the required area in the **Show/Hide Area Options** pane.
2. Click **OK**.

Related Topics
"Selecting an area" (page 30)
Terms
area

Using the My Favorites pane

MXDM enables you to create favorites and organize them in folders. Subsequently, you can use favorites to easily navigate to the required objects.

Favorites appear in the **My Favorites** pane.

Creating a folder to store favorites

In the **My Favorites** pane, you can create folders at the top level or folders within folders:

1. In the **My Favorites** pane, right-click the **My Favorites** folder and select **New Folder...**

   NOTE: To create a folder within an existing folder, right-click the folder, and select **New Folder...**

2. Assign a name for the folder, and click **OK**.

Creating a favorite

To create a favorite, use one of the following methods:

- Drag and drop an object into the **My Favorites** pane, as described in the following procedure:
  1. **Optional:** If you want to create a favorite within a folder in the **My Favorites** pane, you must create the folder first. For information on creating a folder, see "Creating a folder to store favorites" (page 32).
  2. In the navigation tree pane, navigate to the object.
  3. Click and drag the object into the **My Favorites** pane. Drop the object at the required location. A dialog prompts you to enter a name for the favorite.
  4. Assign a name.
  5. Click **OK**.

     The favorite is created.

- Right-click an object and use the context menu options to create the favorite, as described in the following procedure:
  1. **Optional:** If you want to create a favorite within a folder in the **My Favorites** pane, you must create the folder first. For information on creating a folder, see "Creating a folder to store favorites" (page 32).
  2. In the navigation tree pane, navigate to the object.
  3. Right-click the object, and select **Add To Favorites...** A dialog prompts you to enter a name for the favorite.
  4. Assign a name.
  5. Click **OK**.

     The favorite is created.

Using a favorite

To use a favorite, select the favorite in the **My Favorites** pane. Information about the favorite appears in the right pane.

Viewing a list of favorites

To view a list of current favorites and folders in **My Favorites**, including the path to each favorite, double-click the **My Favorites** folder in the **My Favorites** pane.

To view a list of favorites contained in a folder, including the path to each favorite, double-click the folder.

Removing a favorite

To remove a favorite, right-click the favorite, and select **Remove**.

Removing a favorites folder

To remove a folder, right-click the folder, and select **Remove**. The folder and all favorites contained within it are removed.

Considerations

You can create a favorite and store it in a folder. You can save your favorites and other personalized client settings. However, you cannot perform the following actions:

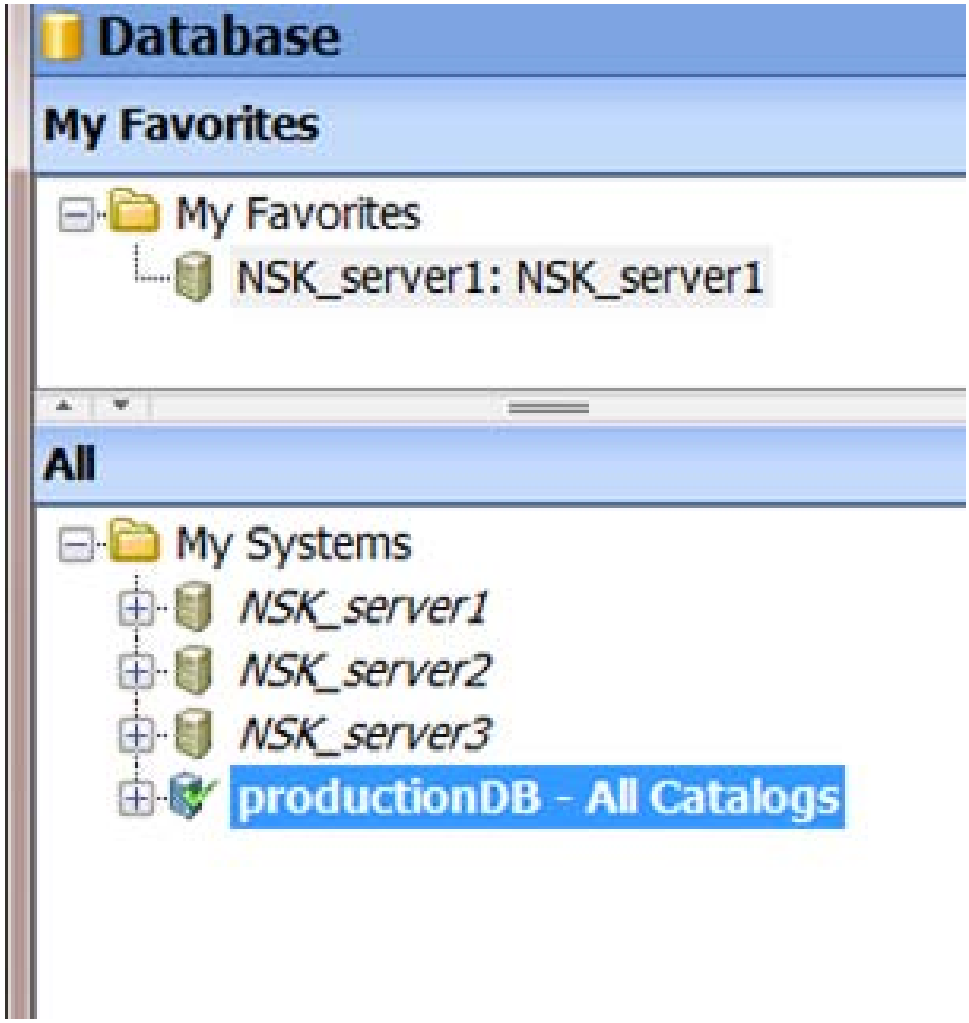
- Move a favorite from one folder to another folder.
- Move a favorite that already exists under **My Favorites** into a folder.
- Rename the favorite folder or a favorite object.

Using the navigation tree

The navigation tree pane is available in the left pane of the MXDM GUI. For more information, see "MXDM interface" (page 26). The navigation tree displays all the systems that you have added using the **Systems Tool**. System icons appear under the **My Systems** folder. A green check box next to the system name indicates that the system is connected.

Figure 8 (page 33) shows the navigation tree with sample system names.

Figure 8 Navigation tree



When you select the **Database** area, you can view the database objects on the connected systems, in the navigation tree.

The right pane displays more details about any object selected in the navigation tree pane. For more information, see "Using the right pane" (page 35).

To add a new system, click **Add...** at the bottom of the right pane. If systems have been added previously, the right pane displays the active systems.

To display the options related to **My Systems**, right-click the **My Systems** folder. Table 12 (page 34) describes the options.

Table 12 Options related to the My Systems folder

Option	Description
Refresh	Refreshes an object and its child objects in the navigation tree.
Add...	Adds a new system. For information on adding a system, see "Adding a system" (page 18).

To display the options related to a system that is connected, right-click the system name under **My Systems**. Table 13 (page 34) describes the options.

Table 13 Options related to a connected system

Option	Description
Add to Favorites...	Creates a shortcut for the object under **My Favorites**. You can launch the **New Favorite** dialog to provide an alias for the object. For more information, see "Using the My Favorites pane" (page 32).
Refresh	Refreshes the object and its child objects in the navigation tree.
Disconnect	Closes the connection with the system. For more information, see "Disconnecting from a system" (page 21).
Test	Tests whether the system definition is valid. For more information, see "Testing a system definition" (page 24).
Add Like...	Adds a system whose system definition is similar to the system definition of the selected system. For more information, see "Copying a system definition" (page 23).
Remove	Removes a selected system. For more information, see "Removing a system" (page 24).
OSM Event Viewer	Launches the OSM Event Viewer in the default browser. You can use the search criteria to search for events in the event log.

To display the options for a disconnected system, right-click the system name under **My Systems**. Table 14 (page 34) describes the options.

Table 14 Options related to a disconnected system

Option	Description
Add to Favorites...	Creates a shortcut to the selected system. For more information, see "Using the My Favorites pane" (page 32).
Refresh	Refreshes the object and its child objects in the navigation tree.
Connect...	Establishes a connection with the system by using the values defined in the system definition. For more information, see "Connecting to a system" (page 19).
Edit...	Edits the system definition of a disconnected system. For more information, see "Editing a system definition" (page 23).
Add Like...	Adds a system whose system definition is similar to the system definition of the selected system. For more information, see "Copying a system definition" (page 23).
Remove	Removes a selected system definition. For more information, see "Removing a system" (page 24).

Related Topics
"MXDM interface" (page 26)
"Adding a system" (page 18)
"Using the My Favorites pane" (page 32)
"Using the right pane" (page 35)
"Disconnecting from a system" (page 21)
Terms
My Systems

Using the right pane

The right pane displays information about the selected objects in the **My Favorites** pane or in the navigation tree. Table 15 (page 35) describes the options displayed in the right pane when you select the **My Systems** folder.

Table 15 Options in the right pane for a connected system

Option	Description
Test	Tests a selected system and displays the results in the **Connection Test Result** dialog. **Test** is enabled when you select one or more systems.
Edit...	Edits the system definition of a disconnected or an inactive system. **Edit...** is enabled when you select one or more disconnected systems.
Add...	Adds a new system. **Add...** is always enabled.
Add Like...	Adds a system whose system definition is similar to the system definition of the selected system. **Add Like...** is enabled when you select only one system.
Remove	Removes a selected system definition. You must confirm the removal in the **Confirm** dialog.
Disconnect	Closes the connection with the system. In the **Confirm** dialog, you must confirm whether you want to disconnect the system.

When a table is displayed in the right pane, another set of options appears at the bottom of the right pane. Table 16 (page 35) describes the options.

Table 16 Options in the right pane when a table is displayed

Option	Description
Data to Clipboard	Copies the table data to the Windows clipboard. For more information, see "Copying data" (page 44).
Data to Browser	Opens a browser to display the data in a tabular format. For more information, see "Copying data" (page 44).
Data to Spreadsheet	Displays the data in a Microsoft Excel application. For more information, see "Copying data" (page 44).
Data to File	Copies the data to a file in Comma Separated File (CSV) and HTML formats. For more information, see "Copying data" (page 44).

Related Topics
"MXDM interface" (page 26)
"Copying data" (page 44)
Terms
right pane
navigation tree pane

Working with windows, tabs, and panes

MXDM provides all of the conventional user-interface controls available in other Windows applications. MXDM windows can be resized within permissible limits. When a window is resized, graphical objects in a window get resized, if necessary.

To display information, MXDM provides the following features:

- Ability to clone windows and tabs, and manage multiple open windows from one dialog. For more information, see "Cloning tabs and managing multiple open windows" (page 36).
- Ability to expand and collapse window panes. For more information, see "Expanding and collapsing panes" (page 36)).

Cloning tabs and managing multiple open windows

MXDM enables you to clone the information available in some tabs, in a new window. A copy of the selected tab and its information is created in a new window. MXDM also supports launching multiple cloned windows simultaneously. As a result, you can launch multiple windows, resize the windows, and compare the data in those windows. Cloning data and launching multiple windows are useful when you want to monitor multiple systems or multiple aspects of the same system simultaneously.

To clone a tab, double-click the tab name, or right-click a tab name and select **Clone in Window**.

To manage multiple windows, MXDM includes the **Windows Manager** that lists all the open windows, and provides functions to display and close these windows.

To open the **Windows Manager**, click **Windows Manager** () on the MXDM toolbar, or select **Windows→Windows Manager...**.

Table 17 (page 36) describes the Windows Manager options.

Table 17 Windows Manager options

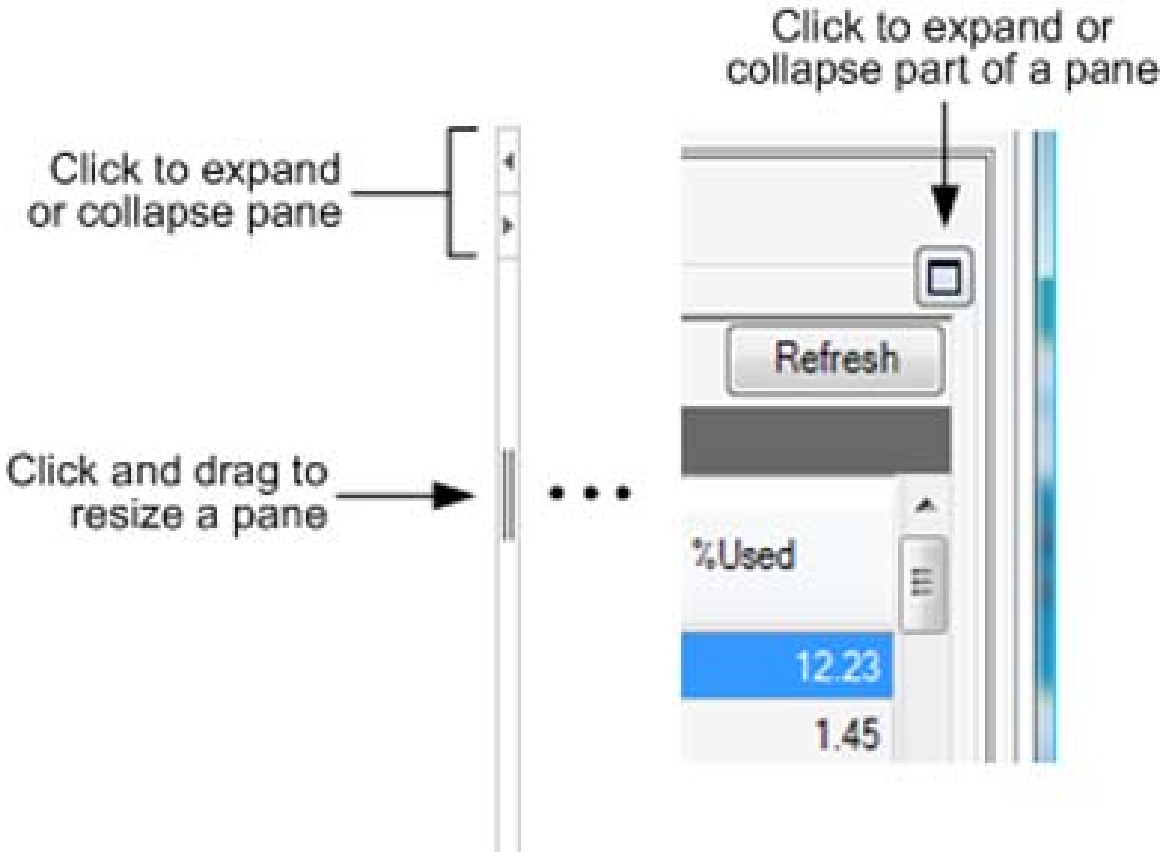
Option	Description
Activate	Moves the selected windows to the front.
Close Window(s)	Closes the selected windows. However, the main window remains open.
Main Window	Displays the main window.
OK	Closes **Windows Manager**.

Expanding and collapsing panes

Some MXDM windows contain controls that enable you to resize, expand, and collapse a pane or part of a pane.

Figure 9 (page 37) shows the controls.

Figure 9 Window controls



5 Performing basic MXDM operations

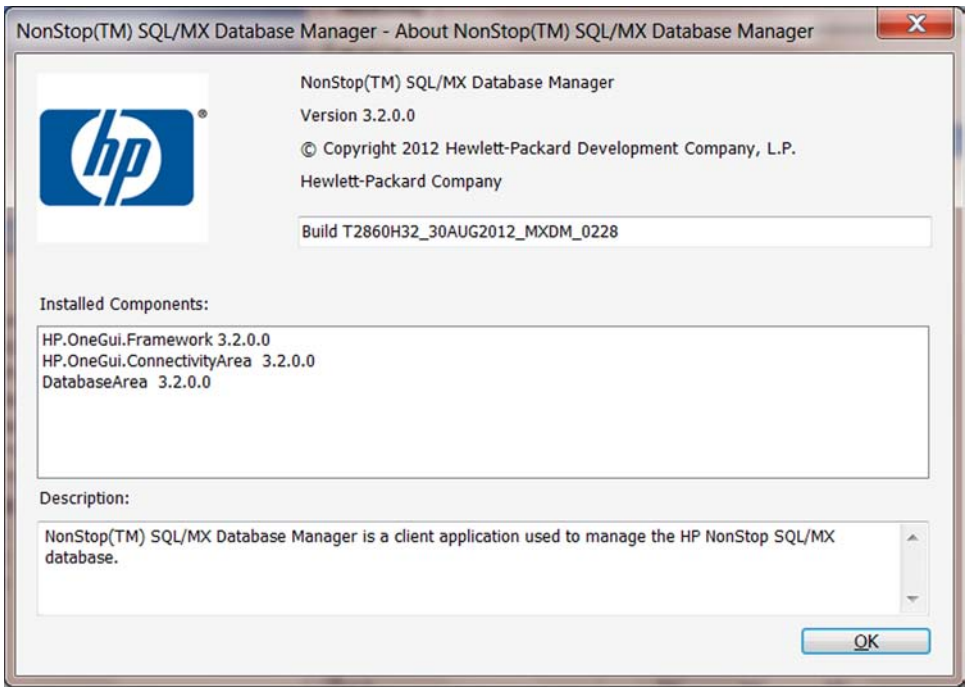
This chapter discusses the following topics:

Obtaining version and build information

The version and build information appears in the **About NonStop SQL/MX Database Manager** dialog. To open the dialog, select **Help→About...** The **About NonStop SQL/MX Database Manager** dialog displays the current build information.

Figure 10 (page 38) shows the **About NonStop SQL/MX Database Manager** dialog.

Figure 10 About MXDM dialog



Resolving errors and error messages

For information on error messages, see the *HP NonStop SQL/MX Release 3.2 Messages Manual*.

Related Topic

"Related documentation" (page 8)

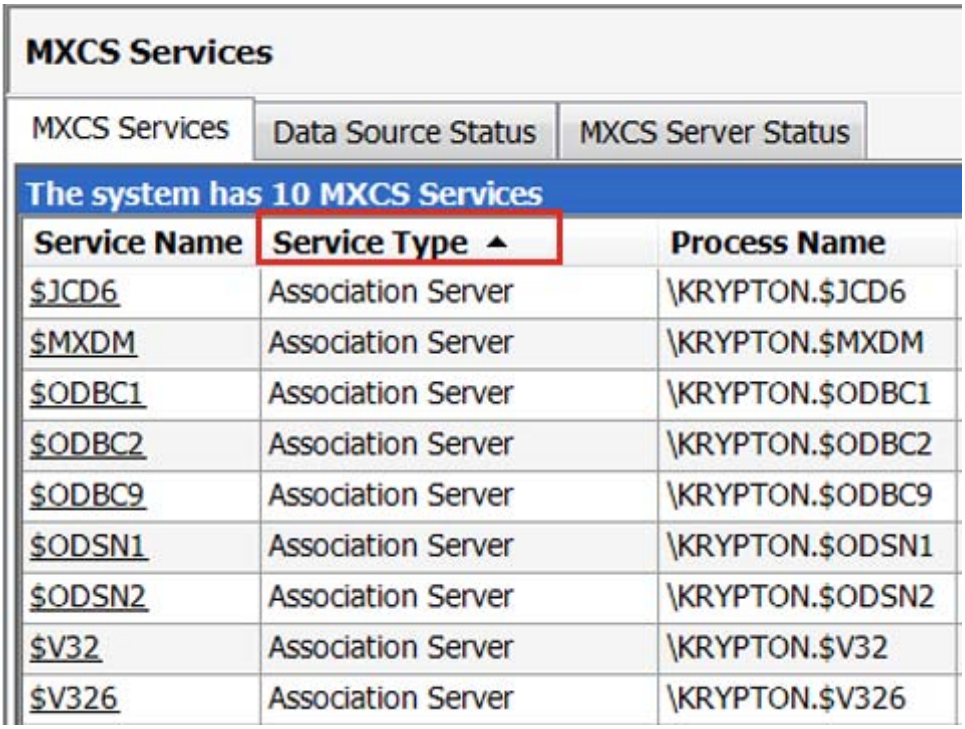
Sorting and moving data columns

You might want to see rows in an MXDM display (for example, a list of schemas) grouped on the basis of the information type. You can sort the displayed data in some tabs based on column values. You can also change the order of the columns by dragging a column heading to the left or right.

To change the sort order of a displayed column, click the heading of the column that you want to sort. A triangle appears at the right indicating the order.

Figure 11 (page 39) shows the column heading with the triangle.

Figure 11 Column sorting

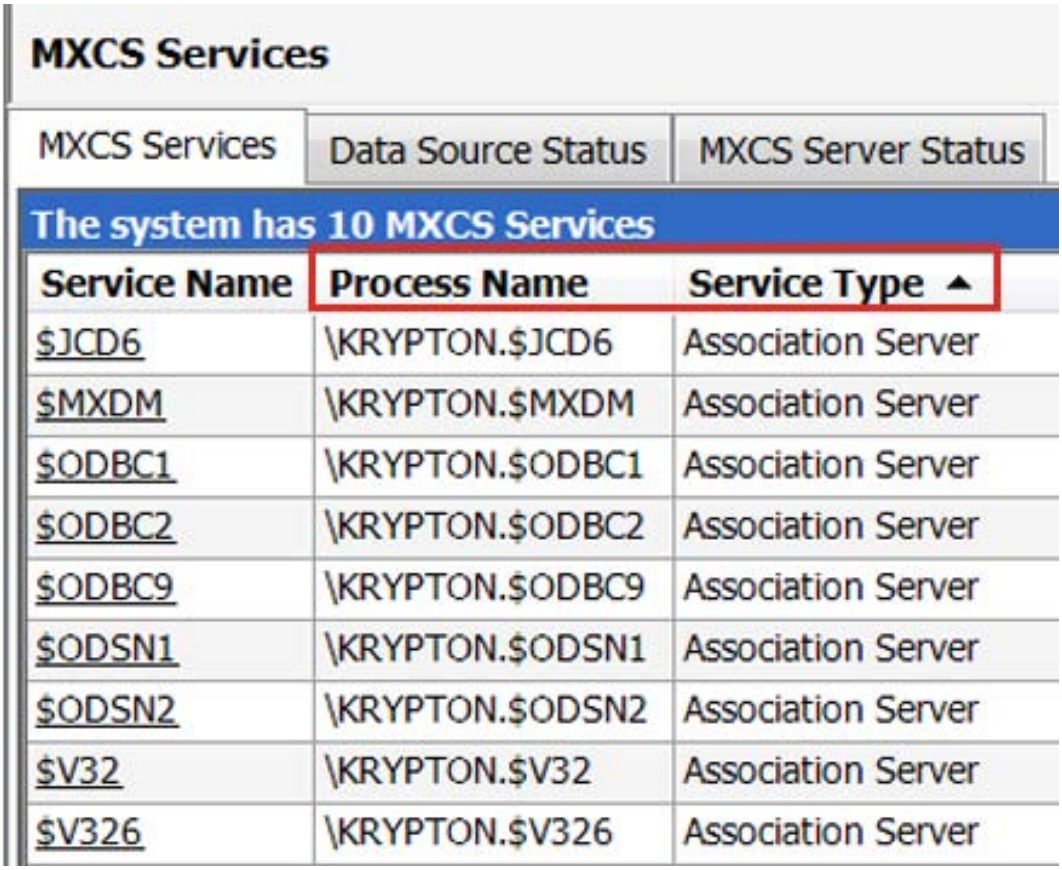


To sort multiple columns, use the **Ctrl** key. MXDM numbers the selected columns and sorts the data based on the order in which the columns are selected.

To move a displayed data column, drag the column heading and release at the required position.

Figure 12 (page 40) shows the changed order of **Process Name** and **Service Type** columns.

Figure 12 Changed order of columns



Working with data grids

This section discusses the following topics:

Introduction to data grids

The **SQL Whiteboard Statement Details** pane and the **Report Results** pane display information in a data grid. The data grid is a simple table with columns that display data. You can manipulate this data. Data grids enable you to perform the following tasks:

- Obtain details about a specific cell or a row.
- Issue commands.
- Sort data within a column.
- Rearrange columns.
- Copy cell or row information.
- Customize the display of information.
- Search for information in the grid.

Some MXDM tabs, such as the tabs in the **Database** area, do not provide data grids. You can sort single columns and copy the data in these tabs. However, you cannot obtain row details, search for items, or display context menus.

Related Topics

"Obtaining row details for a data grid" (page 41)
"Copying data grid information" (page 42)
"Customizing the data grid" (page 42)
"Searching the data grid" (page 43)

Terms

data grid

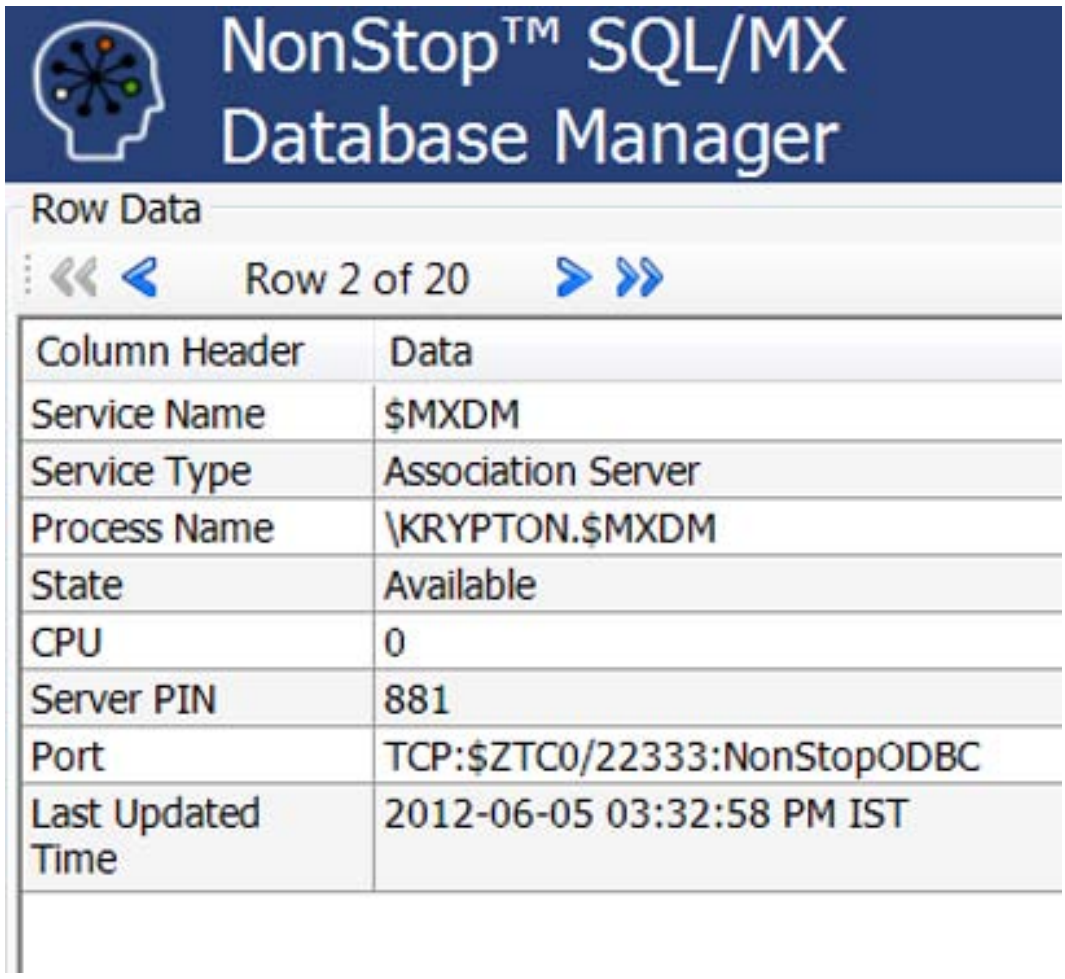
Obtaining row details for a data grid

To obtain information about any row in a data grid, use one of the following methods:

- Right-click a cell in the row, and select **Row Details**.
- Double-click any cell in the data grid.

The **Row Details** dialog appears. Figure 13 (page 41) shows the **Row Details** dialog for alerts.

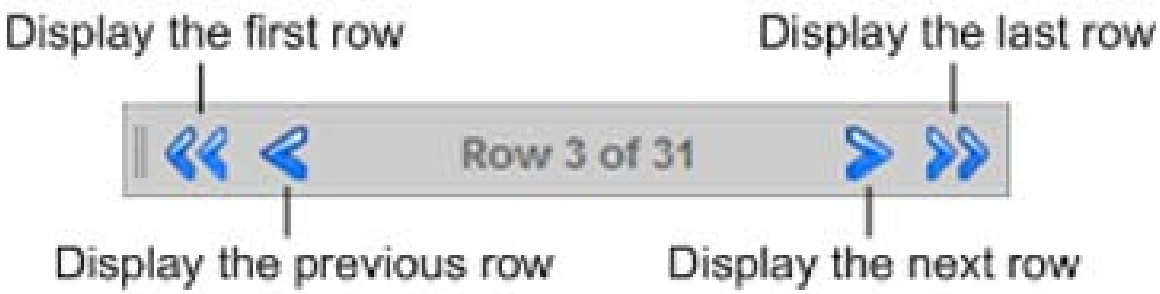
Figure 13 Row Details dialog



The **Row Details** dialog displays all possible column information, whereas the data grid displays only the grid columns that are currently configured using the **Show/Hide Grid Columns** command. Arrows at the top of the dialog enable you to display details for other rows in the data grid without exiting the **Row Details** dialog.

Figure 14 (page 42) displays the arrows that you can use to view details in multiple rows.

Figure 14 Viewing multiple rows in the data grid

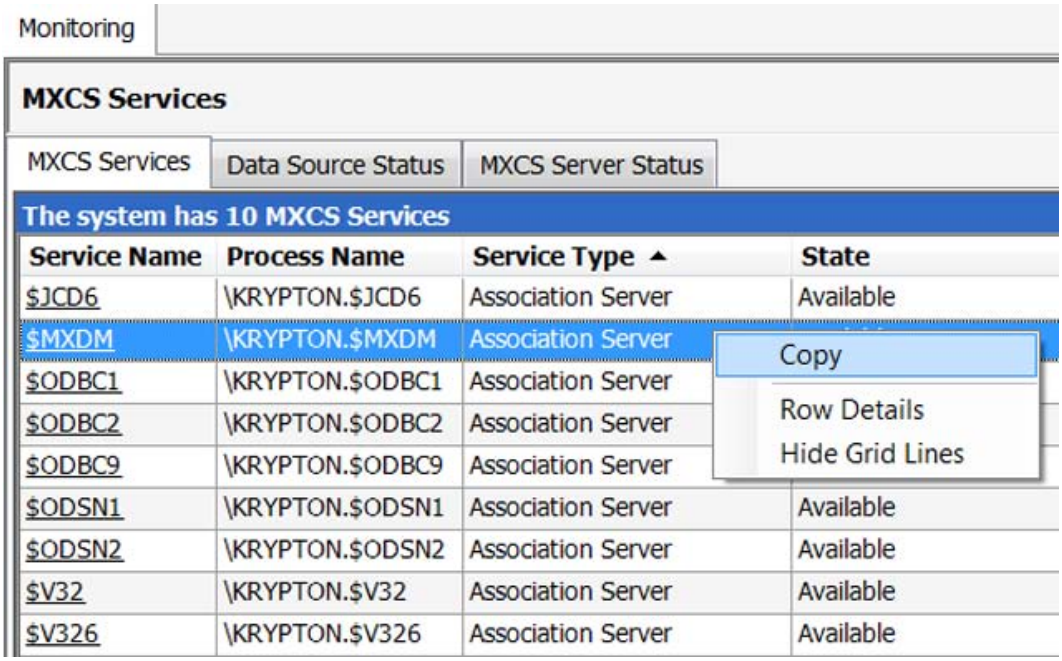


Related Topics
"Introduction to data grids" (page 40)
"Customizing the data grid" (page 42)

Copying data grid information

To copy the data in cells, select the cells you want to copy, and then right-click and select **Copy**. Figure 15 (page 42) shows how you can copy grid information.

Figure 15 Copying grid information



To copy data in noncontiguous cells, use the **Ctrl** key.

The cell values are copied into the Windows clipboard. From there, you can paste them into other Windows applications.

Related Topics
"Introduction to data grids" (page 40)
"Customizing the data grid" (page 42)

Customizing the data grid

You can customize the columns in data grids. Table 18 (page 43) describes how you can customize the columns.

Table 18 Procedures to customize the data grid

To	Do this
Show or hide columns	1. Right-click a column heading in any data grid, and select **Show/Hide Grid Columns**. The **Show/Hide Grid Columns** dialog appears. 2. Select the columns that you want to display, and click **OK**. **NOTE:** Click **Defaults** at any time to restore the default column selections.
Change the order of displayed columns	Use one of the following methods: • In the **Show/Hide Grid Columns** dialog, select a column, then click the up or down arrows to change the position of the column:  • Click **OK**. • In the data grid, click and drag the column to a new position. For more information, see "Sorting and moving data columns" (page 38).
Sort information in the columns	See "Sorting and moving data columns" (page 38).

Changes you make persist across MXDM sessions.

Related Topics

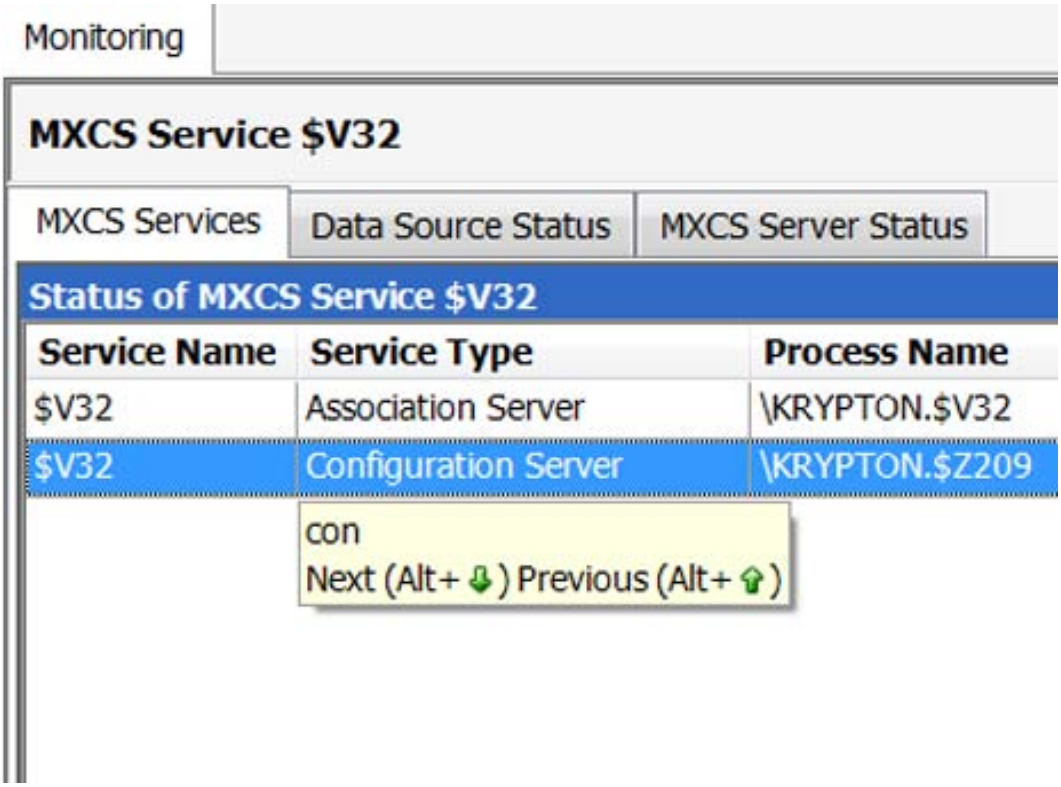
"Introduction to data grids" (page 40)

Searching the data grid

To search for a string, select any cell in the data grid, and then type the first few characters of a string. MXDM locates the first occurrence of a cell within the same column that contains the search string. Press Alt + ↓ and Alt + ↑ to switch to the next or previous occurrence of the search string.

Figure 16 (page 44) shows how you can search for information in the grids.

Figure 16 Searching for information



Related Topics
"Introduction to data grids" (page 40)

Copying data

You can copy data to different locations, and use the data for comparisons and analysis. This section discusses the following topics:

- "Copying data to the clipboard" (page 44)
- "Copying data to a file" (page 44)
- "Copying data to a spreadsheet" (page 44)
- "Copying data to a browser" (page 45)

Copying data to the clipboard

Data to Clipboard saves the data to the clipboard. Each value is a double-quoted string. Subsequently, you can paste the clipboard data to any Microsoft Windows document, such as, Microsoft Excel, Microsoft Notepad, or Microsoft Word.

Copying data to a file

Data to File displays a window to copy the contents to a file. You can save the data in the Comma Separated File Format (CSV) and HTML formats.

Copying data to a spreadsheet

Data to Spreadsheet transparently copies the table data to a temporary local file in standard HTML table format, and then executes the file. A Microsoft Excel file that includes the table data launches.

Copying data to a browser

Data to Browser invokes Internet Explorer or a default browser that displays the table data. The data is copied internally in standard HTML format. Internet Explorer is then invoked on a temporary HTML file. You can then use Internet Explorer to save the contents.

NOTE: If the table has no data, the **Copy** buttons are disabled.

Saving and importing system definitions

MXDM enables you to save multiple system definitions and share them with other client workstations. System definitions are saved in a persistence file. The persistence file is a binary file that contains state and user preference information. The persistence file includes the following information:

- System definitions
- User-specified options
- Favorites
- Statements executed from the SQL Whiteboard
- SQL Whiteboard layout information

The persistence file is located in the default directory for your Windows user name. For example, if your user name is `janedoe`, depending on the value of your HOME environment variable in your workstation, the persistence file is located at:

Windows XP: `C:\Documents and Settings\janedoe\MXDatabaseManager`
Windows Vista: `C:\Users\janedoe\MXDatabaseManager`

However, if a different directory is specified for the HOME environment variable of your workstation, you can save the persistence file to a different location.

To save the currently defined system definitions, perform one of the following:

- On the MXDM toolbar, click **Save Persistence** ().
- Select **File→Save Persistence**.

NOTE: You do not need to save the persistence file. The persistence file is saved automatically when you exit MXDM.

You can save system definitions in a data file. Subsequently, you can transfer the information to the persistence file. To export a copy of the currently defined system definitions:

1. Select **File→Export Persistence**.
   The **Export Persistence** dialog appears.
2. Specify a file name and a location for the copied persistence file.
3. Click **OK**.
   The file is exported with the `.mxdm` extension.

You can import system definitions from a saved `.mxdm` file. When you import a persistence file, active systems are disconnected. To import system definitions from a saved `.mxdm` file:

1. Perform one of the following:
   - Click **Import Persistence** () on the MXDM toolbar.
   - Select **File→Import Persistence**.

   The **Import Persistence** dialog appears.
2. Select the previously exported `.mxdm` file, and click **Open**.
   The **Confirm** dialog appears.

3. Click **Yes**.

   MXDM copies the information from the `.mxdm` file into the persistence file and prompts you to reconnect if you were connected to active systems.

Related Topics

"Using the MXDM menus" (page 27)
"Using the MXDM toolbar" (page 29)

Terms

persistence file
system definition
Systems Tool

6 Viewing database objects

This chapter discusses the following topics:

For information on the database objects, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing catalogs and their objects

To view the catalogs on a system:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.
   MXDM displays a list of existing systems.
3. Expand the contents of the system in the navigation tree.
   The list of catalogs appear.

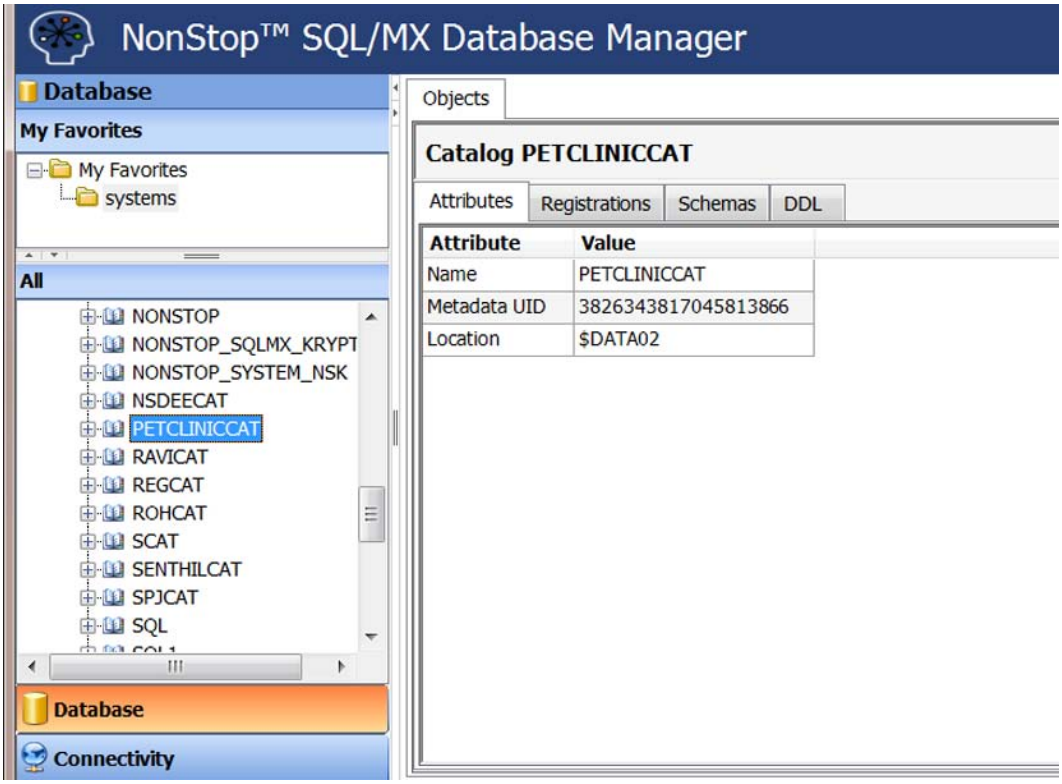
4. Click a catalog.

   The following tabs related to the catalog appear in the right pane:

   - **Attributes**
   - **Registrations**
   - **Schemas**
   - **DDL**

   Figure 17 (page 48) shows the catalog properties.

Figure 17 Catalog properties



Viewing catalog attributes

To view the catalog attributes and their values:

1. In the navigation tree, select the catalog.
2. In the right pane, click **Attributes**.

   The following attributes and their values appear:

   - **Name** — The name of the catalog.
   - **Metadata UID** — Internal UID number of the catalog.
   - **Location** — Disk volume where the catalog is located.

Viewing catalog registrations

To view the systems where the catalog is registered:

1. In the navigation tree, select the catalog.

2. In the right pane, click **Registrations**.
   The following details appear:
   - **System** — The system where this catalog is registered.
   - **Location** — The physical volume where the catalog is registered.
   - **Rule** — The replication rule. The rule can be automatic or manual.

Viewing schemas within a catalog

To view the schemas in the catalog:

1. In the navigation tree, select the catalog.
2. In the right pane or the **Schemas** folder within the catalog, click **Schemas**.
   The following details appear:
   - **Name** — The name of the schema.
   - **Owner** — The user who created the schema.
   - **Version** — The schema version.
   - **Location** — The physical volume where the schema is located.
   - **Metadata UID** — The Internal UID number of the schema.

Viewing catalog DDL

To view the catalog DDL:

1. In the navigation tree, select the catalog.
2. In the right pane, click **DDL**.
   The DDL statement appears.

Viewing schemas

To view the schemas in a catalog:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.
   MXDM displays a list of existing systems.
3. Expand the contents of the system in the navigation tree.
   The list of catalogs appear.
4. Expand the contents of a catalog.
   The list of schemas appear.

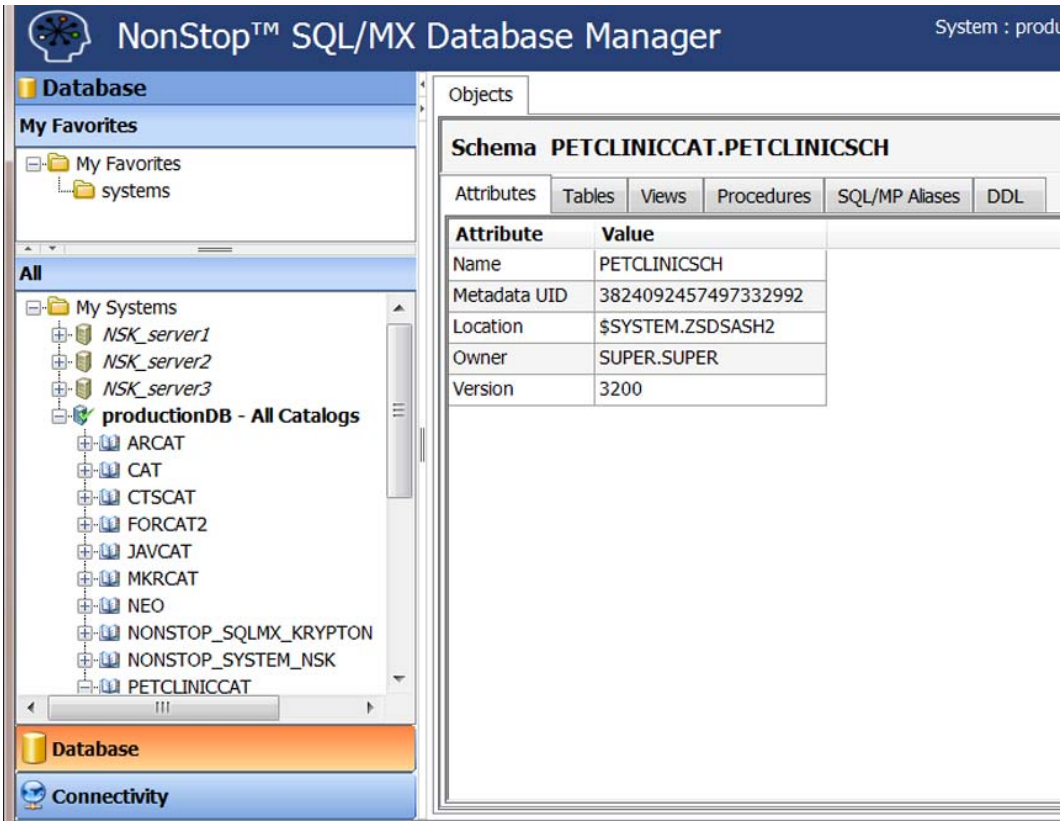
5. Click a schema.

   The following tabs related to the schema appear in the right pane:

   - **Attributes**
   - **Tables**
   - **Views**
   - **Procedures**
   - **SQL/MP Aliases**
   - **DDL**

   Figure 18 (page 50) shows the schema properties.

Figure 18 Schema properties



Viewing schema attributes

To view the schema attributes and their values:

1. In the navigation tree, select the schema.
2. In the right pane, click **Attributes**.

   The **Attributes** tab displays the following attributes and their values:

   - **Name** — The name of the schema.
   - **Metadata UID** — The internal UID number of the schema.
   - **Location** — The physical volume where the schema is located.
   - **Owner** — The user who created the schema.
   - **Version** — The schema version.

Viewing tables within a schema

To view the tables within a schema:

1. In the navigation tree, select the schema.
2. In the right pane or the **Tables** folder within the schema, click **Tables**.

   The following details appear:

   - **Name** — The name of the table. Each table name is a hyperlink. Clicking the hyperlink displays the details of the table.
   - **Metadata UID** — The internal UID number of the table.
   - **Creation Time:** — The time and date when the table was created. The **Creation Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the table was last redefined. The **Redefinition Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing schema views

To view the schema views:

1. In the navigation tree, select the schema.
2. In the right pane or the **Views** folder within the schema, click **Views**.

   The following details appear:

   - **Name** — The name of the view. Each view name is a hyperlink. Clicking the hyperlink displays the details of the view.
   - **Metadata UID** — The internal UID number of the view.
   - **Creation Time:** — The time and date when the view was created. The **Creation Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the view was last redefined. The **Redefinition Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing schema procedures

To view the schema procedures:

1. In the navigation tree, select the schema.
2. In the right pane or the **Procedures** folder within the schema, click **Procedures**.

   The following details appear:

   - **Name** — The name of the procedure. Each procedure name is a hyperlink. Clicking the hyperlink displays the details of the procedure.
   - **Metadata UID** — The internal UID number of the procedure.
   - **Creation Time:** — The time and date when the procedure was created. The **Creation Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the procedure was last redefined. The **Redefinition Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing SQL/MP aliases within a schema

To view the SQL/MP aliases that belong to a schema:

1. In the navigation tree, select the schema.

2. Do one of the following:
   - In the right pane, click **SQL/MP Aliases**.
   - Within the schema, click the **SQL/MP Alias** folder.

   The following details appear:
   - **Name** — The name of the SQL/MP alias. Each SQL/MP alias name is a hyperlink. Clicking the hyperlink displays the details of the SQL/MP alias.
   - **Metadata UID** — The internal UID number of the SQL/MP alias.
   - **Creation Time:** — The time and date when the SQL/MP alias was created. The **Creation Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the SQL/MP alias was last redefined. The **Redefinition Time:** attribute is in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing schema DDL

To view the DDL of the schema:

1. In the navigation tree, select the schema.
2. In the right pane, click **DDL**.

   In the right pane, a SQL statement to create the schema appears.

Viewing table properties

To view the table properties in a schema:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.

   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.

   The list of catalogs appears.
4. Expand the contents of a catalog.

   The list of schemas appears.
5. Expand the contents of a schema.

   The **Tables** folder appears.

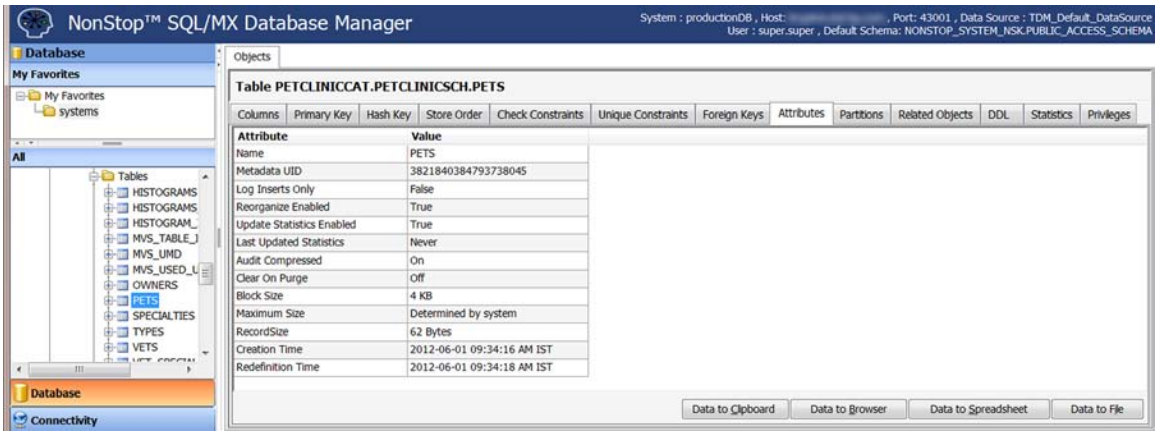
6. Select a table.

   The right pane displays the following tabs:

   - **Columns**
   - **Primary Key**
   - **Hash Key**
   - **Store Order**
   - **Check Constraints**
   - **Unique Constraints**
   - **Foreign Keys**
   - **Attributes**
   - **Partitions**
   - **Related Objects**
   - **DDL**
   - **Statistics**
   - **Privileges**

   Figure 19 (page 53) describes the table properties.

Figure 19 Table properties



Additionally, each table in the navigation tree contains two folders: **Indexes** and **Triggers**. The **Indexes** folder contains the list of indexes of the specified table. For more information on indexes, see "Displaying table indexes and their properties" (page 58). The **Triggers** folder contains a list of triggers on the specified table. For more information on triggers, see "Displaying table triggers and their properties" (page 61).

Viewing table column properties

To view the table column properties:

1. In the navigation tree, select the table.

2. In the right pane, click **Columns**.

   The following details appear:

   - **Primary Key** — An icon or special symbol to indicate that the column is part of the primary key. If the column is not a part of the primary key, the field is blank.
   - **Column Name** — The name of the column (string).
   - **Data Type:** — The SQL data type of the column.
   - **Nullable:** — If a column is `NOT NULL` or `NOT NULLABLE NOT DROPPABLE`, the value displayed is `Not Nullable Not Droppable`. Otherwise, the field is blank.
   - **Default:** — A constant selected by default if no value was specified for this column.
   - **Heading:** — The string displayed at the top of the column values when a `select` statement is executed on the table.

Viewing table primary key properties

To view the primary key properties:

1. In the navigation tree, select the table.
2. In the right pane, click **Primary Key**.

   The following details appear:

   - **Constraint Name:** — The name of the constraint when the table was created. For more information, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.
   - **Metadata UID:** — The internal UID number for the constraint.
   - **Droppable:** — This property indicates whether this constraint can be dropped. You can specify whether the constraint can be dropped while creating the table.
   - **Position:** — The position of the column in the primary key order.
   - **Column Name:** — The name of the column (string).
   - **Data Type:** — The SQL data type of the column.
   - **Sort Order:** — The order specified as `Ascending` or `Descending`.
   - **Added By:** — This property indicates whether the column was added by the system or by the user.

Viewing hash key properties

To view the hash key properties:

1. In the navigation tree, select the table.
2. In the right pane, click **Hash Key**.

   The following details appear:

   - **Key sequence:** — The position of the column in the hash key order.
   - **Column Name:** — The name of the column (string).
   - **Sort Order:** — The order specified as `Ascending` or `Descending`.

Viewing store order properties

You can specify the store order properties while creating a table. Alternatively, the store order properties can be determined by the system. For more information, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*. To view the store order properties:

1. In the navigation tree, select the table.

2. In the right pane, click **Store Order**.

   The following details appear:

   - **Position:** — The position of the column in the key, for the physical file.
   - **Column Name:** — The name of the column (string)
   - **Sort Order:** — The order specified as `Ascending` or `Descending`.
   - **Added by:** — The property indicates whether the column was added by the system or by the user.

Viewing check constraints

To view the check constraints for a table:

1. In the navigation tree, select the table.
2. In the right pane, click **Check Constraints**.

   The following details appear:

   - **Constraint Name:** — The name of the check constraint.
   - **Metadata UID:** — The internal UID number for the constraint.
   - **Text:** — A string that defines the constraint, as shown in the SHOW DDL output.

Viewing unique constraints

To view the unique constraints for a table:

1. In the navigation tree, select the table.
2. In the right pane, click **Unique Constraints**.

   The following details appear:

   - **Constraint Name:** — The name of the unique constraint.
   - **Metadata UID:** — The internal UID number for the constraint.
   - **Columns:** — The names of the columns that are constrained.

Viewing foreign key properties

To view the foreign key properties:

1. In the navigation tree, select the table.
2. In the right pane, click **Foreign Key**.

   The following details appear:

   - **Name:** — The name of the foreign key constraint.
   - **Metadata UID:** — The internal UID number of the foreign key.
   - **Foreign Table:** — The name of the foreign table.
   - **Local Column:** — The name of the local column of the foreign key.
   - **Foreign Column:** — The name of the foreign column of the foreign key.
   - **Enforced:** — The property indicates whether the referential integrity is enforced.

Viewing table attributes

To view the table attributes:

1. In the navigation tree, select the table.

2. In the right pane, click **Attributes**.

   The following details appear:

   - **Name** — The name of the table.
   - **Metadata UID** — The internal UID number of the table.
   - **Log Inserts Only:** — A string value of `True` or `False`.
   - **Reorganize Enabled:** — A string value of `True` or `False`.
   - **Update Statistics Enabled:** — A string value of `True` or `False`.
   - **Last Updated Statistics:** — A string value of `Never` or a timestamp in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Audit Compressed:** — The property indicates whether the compressed audit-checkpoint messages are generated for Disk Process 2 (DP2) files. It is expressed as `True` or `False`.
   - **Clear On Purge:** — The property indicates the disk erasure when the file is dropped. It is expressed as `True` or `False`.
   - **Block Size:** — The length of a block.
   - **Maximum Size:** — The maximum size, expressed in megabytes, to which a table can grow. If the maximum size is 0, then the string `Determined by system` appears.
   - **Record Size:** — The row size, expressed in bytes, in each logical record.
   - **Creation Time:** — The time and date when a table was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when a table was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing table partition properties

To view the partition properties:

1. In the navigation tree, select the table.

2. In the right pane, click **Partitions**.

   The following details appear:

   - **Partition Number:** — The index number of the partition.
   - **System:** — The name of the NonStop system where this partition is located.
   - **Name:** — The partition name that is created by the system.
   - **File:** — The physical file where the partition is located.
   - **Percent allocated:** — The percentage of the partition used.
   - **Row count:** — The number of rows in the partition.
   - **Rows Inserted Since Last Update Stats:** — The number of rows inserted after the `Update Statistics` command was last run.
   - **Rows Deleted Since Last Update Stats:** — The number of rows deleted after the `Update Statistics` command was last run.
   - **Rows Updated Since Last Update Stats:** — The number of rows updated after the `Update Statistics` command was last run.
   - **Primary Extents:** — The size of primary extent in pages.
   - **Secondary Extents:** — The size of secondary extents in pages.
   - **Max Extents:** — The maximum number of extents.
   - **Allocated Extents:** — The number of extents allocated.
   - **Max Size:** — The maximum size of the partition.
   - **Current EOF:** — The space used in the partition.

Viewing information on related objects

To view information on related objects:

1. In the navigation tree, select the table.
2. In the right pane, click **Related Objects**.

   The following details appear:

   - **Relationship:** — This property specifies the relationship of the table with the object. The available values for this field are `Uses`, `Used By`, and `Has`.
   - **Related Object Type:** — This property specifies the type of the related object. The available values are `Table` and `View`.
   - **Related Object Name:** — This property specifies the three-part ANSI object name. The object name is hyperlinked to the related object.
   - **Metadata UID:** — The internal UID number of the related object.
   - **Creation Time:** — The time and date when the related object was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the related object was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing DDL information of a table

To view DDL information related to the table:

1. In the navigation tree, select the table.

2. In the right pane, click **DDL**.

   The DDL tab displays the SHOW DDL output for the table. You can use this statement in MXCI to create the table. For more information on the `SHOW DDL` command, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing information related to table statistics

To view information related to table statistics:

1. In the navigation tree, select the table.
2. In the right pane, click **Statistics**.

   The histogram statistics for the table appear. For more information on viewing table statistics, see "Viewing table statistics and their properties" (page 72).

Viewing information related to table privileges

To view information related to the table privileges:

1. In the navigation tree, select the table.
2. In the right pane, click **Privileges**.

   The following details related to the table privileges appear:

   - **Grantee:** — The name of the user whose privilege is described.
   - **Grantor:** — The name of the user who granted the privileges or the special SQL user names `PUBLIC` and `SYSTEM`.
   - **With Grant:** — The property indicates whether the user has grant privileges.
   - **Grant Level:** — The level at which the permissions are visible. The column displays schema, object, and column values.
     - **Schema:** — Indicates that permissions have been applied to the schema.
     - **Object:** — Indicates that permissions were applied directly to the object whose permissions are being displayed.
     - **Column:** — Indicates that permissions are applied to the column. When an object-level privilege applies to all columns, the individual column privileges do not appear. Otherwise, the individual column permissions appear.
   - **Privileges:** — Describes the privilege of the user. The value is a list of granted privileges that are separated by a comma. DDL and DML privileges are grouped accordingly. For the list of privileges, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Displaying table indexes and their properties

To view the table indexes:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.

   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.

   The list of catalogs appears.
4. Expand the contents of a catalog.

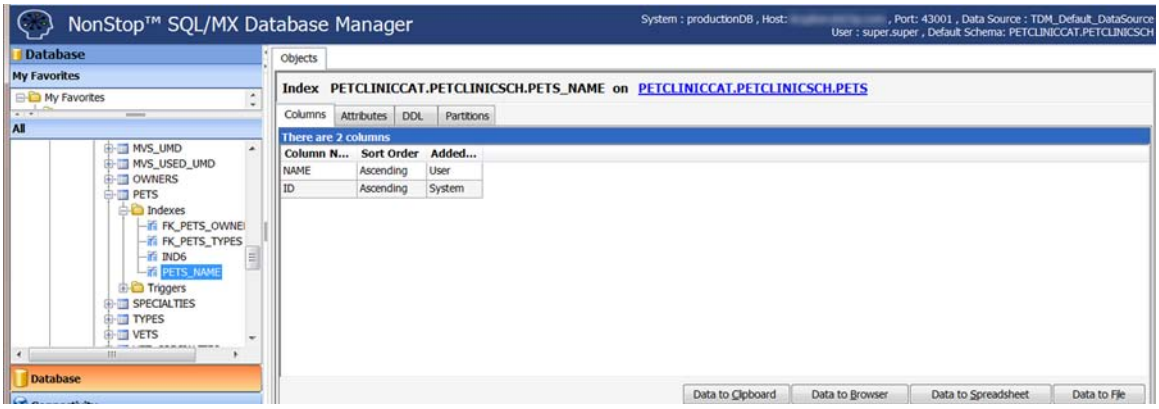
   The list of schemas appears.
5. Expand the contents of a schema.

   The **Tables** folder appears.

6. Expand the contents of a table.
   The **Indexes** and **Triggers** folders appear.
7. Within the **Indexes** folder, select the required Index.
   In the right pane, the following tabs related to the Index appear:
   - **Columns**
   - **Attributes**
   - **DDL**
   - **Partitions**

   Figure 20 (page 59) shows the table index properties.

Figure 20 Table index properties



Viewing the table index columns

To view the table index columns:

1. In the navigation tree, select the index.
2. In the right pane, click **Columns**.
   The following attributes and their values appear:
   - **Column Name:** — The name of the column (string).
   - **Sort Order:** — This attribute specifies the sort order as `Ascending` or `Descending`.
   - **Added By:** — This attribute ndicates whether the column was added by the system or a user.

Viewing the table index attributes

To view the table index attributes:

1. In the navigation tree, select the index.

2. In the right pane, click **Attributes**.

   The following attributes and their values appear:

   - **Name:** — The name of the index.
   - **Metadata UID:** — The internal UID number of the index.
   - **Unique:** — This attribute specifies whether the index is unique. The available values are `Yes` or `No`.
   - **Populated:** — This attribute specifies whether the index is populated. The available values are `Yes` or `No`.
   - **System Created:** — This attribute indicates whether the index was created by the system. The available values are `Yes` or `No`.
   - **Hash Partitioned:** — This attribute indicates whether the index is partitioned by a hashing key. The available values are `Yes` or `No`.
   - **Audit Compressed:** — This attribute indicates whether compressed audit-checkpoint messages are generated for Disk Process 2 (DP2) files. The available values are `ON` or `OFF`.
   - **Block Size:** — The length of a block in bytes.
   - **Clear On Purge:** — This attribute indicates whether the disk the erased when the index is dropped. The available values are `ON` or `OFF`.
   - **Creation Time:** — The time and date when the index was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the index was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing the DDL output for a table index

To view the DDL output for a table index:

1. In the navigation tree, select the index.
2. In the right pane, click **DDL**.

   The DDL tab displays the SHOW DDL output for the index. For more information on the SHOW DDL command, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing information related to table index partitions

To view information related to table index partitions:

1. In the navigation tree, select the index.

2. In the right pane, click **Partitions**.

   The following details related to table index partitions appear:

   - **Partition Number:** — The name of the column (string).
   - **System:** — This attribute specifies the sort order as `Ascending` or `Descending`.
   - **Name:** — This attribute specifies whether the column was added by the system or a user.
   - **File:** — The physical file where the partition is located.
   - **Percent allocated:** — The percentage of the partition used.
   - **Row count:** — The number of rows in the partition.
   - **Rows Inserted Since Last Update Stats:** — The number of rows inserted after the `Update Statistics` command was last run.
   - **Rows Deleted Since Last Update Stats:** — The number of rows deleted after the `Update Statistics` command was last run.
   - **Rows Updated Since Last Update Stats:** — The number of rows updated after the `Update Statistics` command was last run.
   - **Primary Extents:** — The size of the primary extent in pages.
   - **Secondary Extents:** — The size of the secondary extents in pages.
   - **Max Extents:** — The maximum number of extents.
   - **Allocated Extents:** — The number of extents allocated.
   - **Max Size:** — The maximum size of the partition.
   - **Current EOF:** — The space used in the partition.

Displaying table triggers and their properties

A trigger is a mechanism that resides in the database and specifies that when a particular action—an insert, delete, or update occurs on a table, SQL/MX should automatically perform one or more additional actions.

To view the table triggers:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.

   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system .

   The list of catalogs appears.
4. Expand the contents of a catalog.

   The list of schemas appears.
5. Expand the contents of a schema.

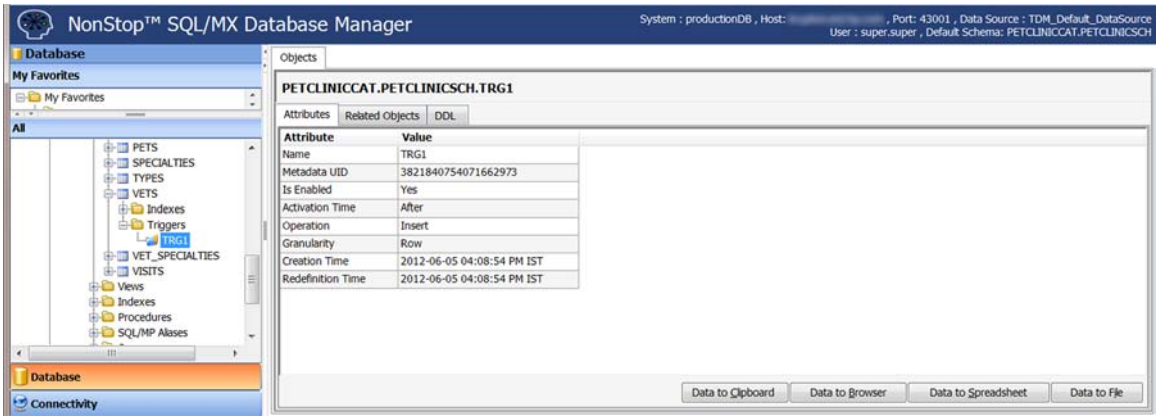
   The **Tables** folder appears.
6. Expand the contents of a table.

   The **Indexes** and **Triggers** folders appear.

7. Within the **Triggers** folder, select the required Trigger.
   In the right pane, the following tabs related to the trigger appear:
   - **Attributes**
   - **Related Objects**
   - **DDL**

   Figure 21 (page 62) shows the table trigger properties.

Figure 21 Table trigger properties



Viewing the table trigger attributes

To view the table trigger attributes:

1. In the navigation tree, select the trigger.
2. In the right pane, click **Attributes**.
   The following attributes and their values appear:
   - **Name:** — The name of the trigger.
   - **Metadata UID:** — A unique ID of the trigger.
   - **Is Enabled:** — The attribute specifies whether the trigger is enabled. The available values are `Yes` and `No`.
   - **Activation Time:** — The attribute specifies when the trigger is activated. This value is used in combination with an operation. The available values are `Before` and `After`.
   - **Operation:** — The attribute specifies the operation that causes the trigger to be activated. The available values are `Insert`, `Delete`, and `Update`.
   - **Granularity:** — The attribute specifies Row or Statement trigger. Row triggers are allowed for all Time and Event combinations. Statement triggers are allowed for AFTER events. For more information, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.
   - **Creation Time:** — The time and date when the trigger was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the trigger was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing information on related objects

To view information on related objects:

1. In the navigation tree, select the trigger.

2. In the right pane, click **Related Objects**.

   The following details appear:

   - **Relationship:** — This attribute specifies the relationship between this trigger and the object.
   - **Related Object Type:** — This attribute specifies the type of the object.
   - **Related Object Name:** — This attribute specifies the name of the object. The object name is linked to the object.
   - **Metadata UID:** — A unique ID of the related object. This ID is a long value.
   - **Creation Time:** — The time and date when the related object was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the related object was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Operation:** — This attribute specifies the types of operations that are performed on this object to activate the trigger. The value is one of the following:
     - `Delete`
     - `Insert`
     - `Select`
     - `Update`
     - `Call`
   - **Is Subject Table:** — This attribute specifies whether the target is a subject table. The available values are `True` and `False`.

Viewing the DDL output for a table trigger

To view the DDL output for a table trigger:

1. In the navigation tree, select the trigger.
2. In the right pane, click **DDL**.

   In the right pane, the DDL tab displays the DDL output for the SHOW DDL command. You can highlight and copy contents. However, you cannot edit the contents. For more information on the SHOW DDL command, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

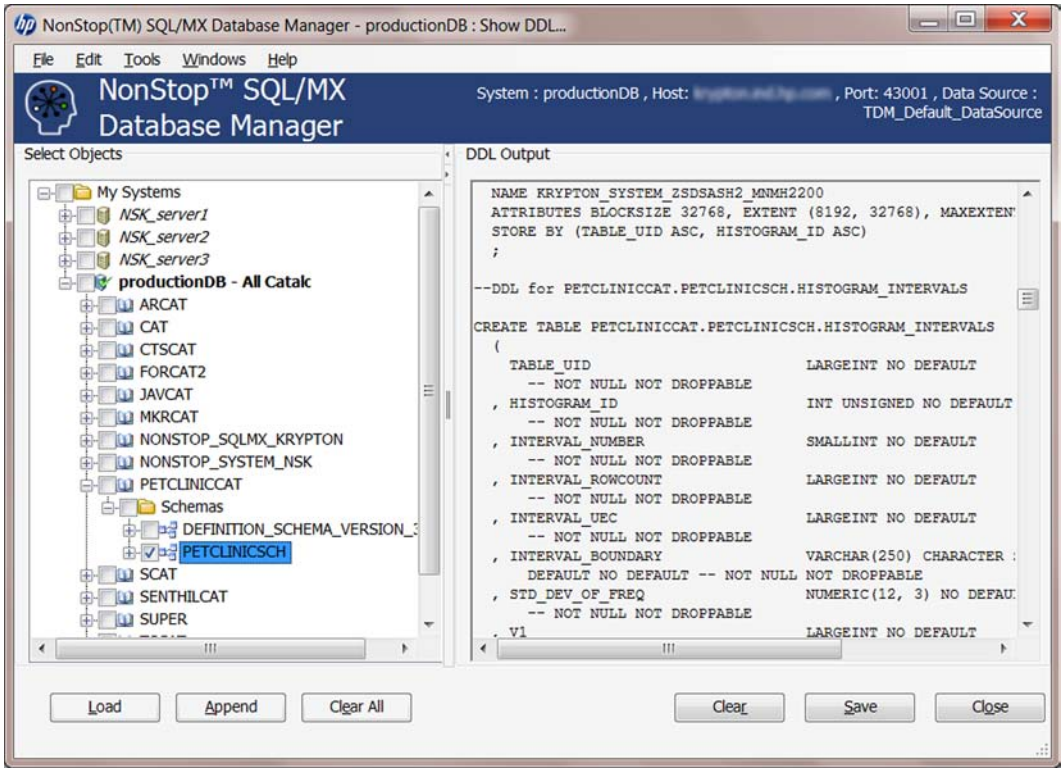
Managing objects using the SHOW DDL option

The SHOW DDL option enables you to view the DDL statements of multiple objects in a schema.

To use the SHOW DDL option for an object, right-click any object within the **Schemas** folder in the navigation tree, and select **SHOW DDL...**.

Figure 22 (page 64) shows the **SHOW DDL...** dialog.

Figure 22 SHOW DDL dialog



NOTE: The **SHOW DDL** option is available only for a schema node and its child nodes in the navigation tree. The **SHOW DDL** option is not available for catalogs and the **Schemas** folder.

In the **SHOW DDL...** dialog, the **Select Objects** pane displays the list of systems and the objects that they contain. You can select these objects.

If you select the **SHOW DDL** option on a folder node in the main navigation tree, the **Select Objects** pane displays the navigation tree with the corresponding folder node and all its child nodes selected. If you invoke the **SHOW DDL** option on a leaf node in the main navigation tree, the **Select Objects** pane displays the navigation tree with the corresponding leaf node selected.

You can select objects from only one schema. If you select objects from different schemas, an error message appears.

Table 19 (page 64) describes the options in the **SHOW DDL...** dialog.

Table 19 SHOW DDL options

Option	Description
Load	Loads the SHOW DDL output of the selected objects and replaces the contents in the **DDL Output** pane.
Append	Appends the selected objects to the existing contents in the **DDL Output** pane.
Clear All	Clears the check boxes against the selected objects in the **Selected Objects** pane.
Clear	Clears the **DDL Output** field.
Save	Saves the contents of the **DDL Output** field using the **File** menu dialog.
Close	Closes the **SHOW DDL...** dialog.

Viewing schema views and their properties

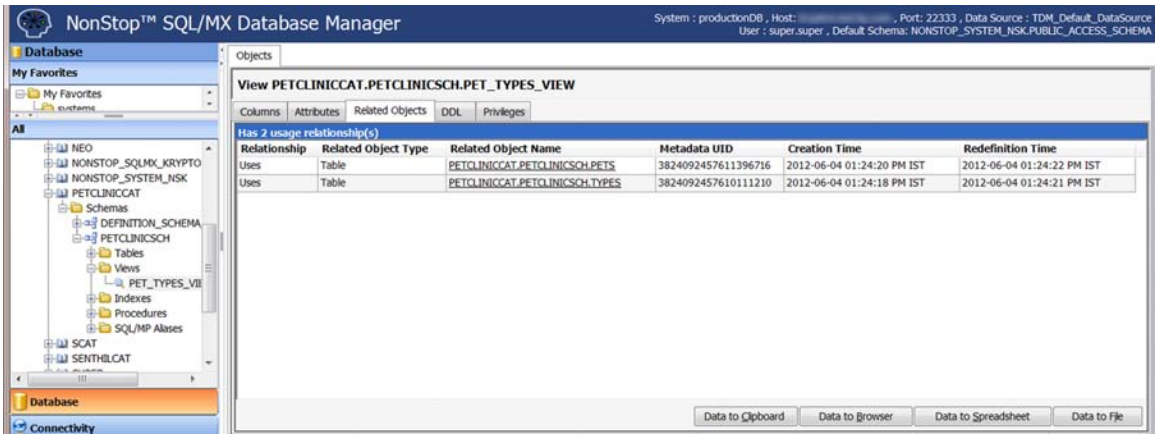
To view the schema views and their properties:

1. Log on to the HP NonStop SQL/MX Database Manager.

2. Under the navigation tree pane, click **Database**.
   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.
   The list of catalogs appears.
4. Expand the contents of a catalog.
   The list of schemas appears.
5. Expand the contents of a schema.
   The **Views** folder appears.
6. Select a view.
   In the right pane, the following tabs related to the view appear:
   - **Columns**
   - **Attributes**
   - **Related Objects**
   - **DDL**
   - **Privileges**

   Figure 23 (page 65) shows the View properties

Figure 23 View properties



Viewing properties related to view columns

To view the properties related to view columns:

1. In the navigation tree, select the view.

2. In the right pane, click **Columns**.

   The following details related to view columns appear:

   - **Column Name** — The name of the column (string).
   - **Source Object** — The name of the source object associated with the column. If it is a computed object, this field is blank. Clicking the source object name directs you to the location of the object.
   - **Data Type:** — The SQL data type of the column.
   - **Nullable:** — If a column is `NOT NULL` or `NOT NULLABLE NOT DROPPABLE`, the value displayed is `Not Nullable Not Droppable`. Otherwise, the field is blank.
   - **Default:** — The default value of the column.
   - **Heading:** — The string to be used as the column heading when a `SELECT` statement in MXCI is used to display the column.

Viewing attributes of a view

To view the attributes of a view:

1. In the navigation tree, select the view.
2. In the right pane, click **Attributes**.

   The following details related to view attributes appear:

   - **Name** — The name of the view.
   - **Metadata UID** — Internal UID number of the view.

Viewing information on related objects

To view information on related objects:

1. In the navigation tree, select the view.
2. In the right pane, click **Related Objects**.

   The following details appear:

   - **Relationship:** — The attribute specifies the relationship of the view with the object specified. The available values for this field are `Uses`, `Used By`, and `Has`.
   - **Related Object Type:** — This attribute specifies the type of the related object. The available values are `Table` and `View`.
   - **Related Object Name:** — This attribute specifies the three-part ANSI object name. The object name is linked to the related object.
   - **Metadata UID:** — The unique ID of the view.
   - **Creation Time:** — The time and date when the related object was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the related object was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing DDL information of a table

To view DDL output for a view:

1. In the navigation tree, select the view.
2. In the right pane, click **DDL**.

   In the right pane, the SQL statement used to create the view appears.

Viewing information related to view privileges

To view information related to the view privileges:

1. In the navigation tree, select the view.
2. In the right pane, click **Privileges**.

   The following details related to the view privileges appear:

   - **Grantee:** — The name of the user whose privilege is described.
   - **Grantor:** — The name of the user who granted the privileges or the special SQL user names `PUBLIC` and `SYSTEM`.
   - **With Grant:** — This attribute indicates whether the user has grant privileges.
   - **Grant Level:** — The level at which the permissions are visible. The values displayed in this column are schema, object, and column.
     - **Schema:** — This attribute indicates that permissions have been applied to the schema.
     - **Object:** — This attribute indicates that permissions were applied directly to the object whose permissions are displayed.
     - **Column:** — This attribute indicates that permissions are applied to the column. When an object-level privilege applies to all columns, the individual column privileges do not appear. Otherwise, the individual column permissions appear.
   - **Privileges:** — This attribute describes the privilege of the user. The value is a list of granted privileges that are separated by a comma. DDL and DML privileges are grouped accordingly. For the list of privileges, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing procedures and their properties

To view the schema procedures and their properties:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.

   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.

   The list of catalogs appears.
4. Expand the contents of a catalog.

   The list of schemas appears.
5. Expand the contents of a schema.

   The **Procedures** folder appears.

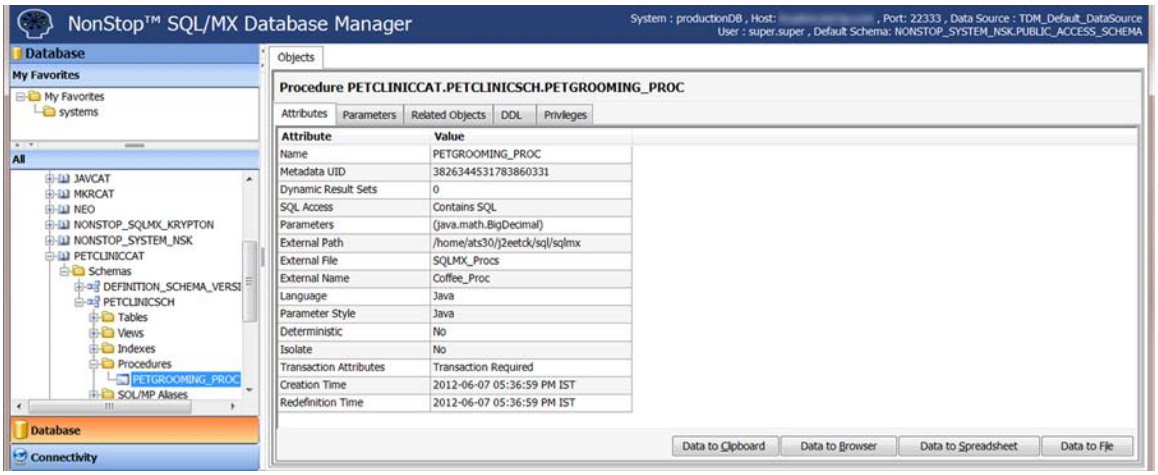
6. Select a procedure.

   In the right pane, the following tabs related to the procedure appear:

   - **Attributes**
   - **Parameters**
   - **Related Objects**
   - **DDL**
   - **Privileges**

   Figure 24 (page 68) shows the properties of a procedure.

Figure 24 Procedure properties



Viewing attributes of a procedure

To view the attributes of a procedure:

1. In the navigation tree, select the procedure.

2. In the right pane, click **Attributes**.

   The following details related to attributes appear:

   - **Name** — The name of the procedure.
   - **Metadata UID** — The unique ID number of the procedure.
   - **Dynamic Result Sets:** — The maximum number of result sets returned.
   - **SQL Access:** — This attribute specifies how the procedure accesses the SQL data. If the procedure does not perform SQL operations, the value displayed in this field is N. Otherwise, the value displayed in this field is one of the following:
     - `CONTAINS SQL`
     - `MODIFIES SQL DATA`
     - `READS SQL DATA`
   - **Parameters:** — The parameter type. For information on data types, see the *HP NonStop SQL/MX Guide to Stored Procedures in Java*.
   - **External Path:** — Either an OSS directory or a JAR file path that contains the SPJ class file.
   - **External File:** — The name of Java class file that contains the procedure code.
   - **External Name:** — This attribute specifies the case-sensitive name of the SPJ method. For more information, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.
   - **Language:** — The programming language in which the procedure code is written.
   - **Parameter Style:** — The programming language associated with the format of the procedure parameters.
   - **Deterministic:** — If in the `Create Procedure` statement you specified the option `DETERMINISTIC`, this column contains `Yes`. If you specified `NOT DETERMINISTIC`, this column contains a No. This value specifies whether the SPJ always returns the same values for OUT and INOUT parameters for a given set of argument values (`DETERMINISTIC`) or does not return the same values (`NOT DETERMINISTIC`, which is the default option). SQL/MX allows both options but always treats the SPJ as nondeterministic.
   - **Isolate:** — This attribute specifies that the SPJ executes either in the environment of the database server (`NO ISOLATE`) or in an isolated environment (`ISOLATE`, which is the default option). SQL/MX allows both options but always executes the SPJ in the SQL/MX user-defined routine (UDR) server process (`ISOLATE`).
   - **Transaction Attributes:** — This attribute indicates whether a transaction is required.
   - **Creation Time:** — The time and date when the procedure was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the procedure was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing parameters of a procedure

To view the parameters of a procedure:

1. In the navigation tree, select the procedure.

2. In the right pane, click **Parameters**.

   The following details related to parameters appear:

   - **Name** — The name of the parameter.
   - **Direction** — The following values appear:
     - `IN` — Passes data to the procedure.
     - `OUT` — Accepts data from the procedure. This value is the default for array parameters.
     - `INOUT` — Passes data to and accepts data from the procedure.
   - **SQL Data Type:** — This attribute specifies an SQL data type that corresponds to the Java parameter of the procedure's Java method. For information on SQL data types, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.
   - **Java Data Type:** — This attribute specifies a Java data type that can be mapped. For information on Java data types, see the *HP NonStop SQL/MX Guide to Stored Procedures in Java*.

Viewing information on related objects

To view information on related objects:

1. In the navigation tree, select the view.
2. In the right pane, click **Related Objects**.

   The following details appear:

   - **Relationship:** — This attribute specifies the relationship of the procedure with the object specified. The available value for this field is `References`, `Used By`, and `Has`.
   - **Related Object Type:** — This attribute specifies the type of the object that the procedure references. The available values are `Table` and `View`.
   - **Related Object Name:** — This attribute specifies the three-part ANSI object name. The object name is linked to the object.
   - **Metadata UID:** — A unique ID of the related object.
   - **Creation Time:** — The time and date when the related object was created. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.
   - **Redefinition Time:** — The time and date when the related object was last redefined. The time and date are expressed in the `yyyy-MM-dd HH:mm:ss.FFFFFF` format.

Viewing DDL information of a procedure

To view DDL information related to the table:

1. In the navigation tree, select the procedure.
2. In the right pane, click **DDL**.

   The DDL tab displays the SHOW DDL output for the procedure. For more information on the `SHOW DDL` command, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing information related to procedure privileges

To view information related to the procedure privileges:

1. In the navigation tree, select the procedure.

2. In the right pane, click **Privileges**.

   The following details related to the procedure privileges appear:

   - **Grantee:** — The name of the user whose privilege is described.
   - **Grantor:** — The name of the user who granted the privileges and the special SQL user names `PUBLIC` and `SYSTEM`.
   - **With Grant:** — This attribute indicates whether the user has grant privileges.
   - **Grant Level:** — The level at which the permissions are visible. The column displays the schema, object, and column values.
     - **Schema:** — This attribute indicates that permissions are applied to the schema.
     - **Object:** — This attribute indicates that permissions were applied directly to the object whose permissions are displayed.
     - **Column:** — This attribute indicates that permissions are applied to the column. When an object-level privilege applies to all columns, the individual column privileges do not appear. Otherwise, the individual column permissions appear.
   - **Privileges:** — This attribute describes the privilege of the user. The value is `Execute`. DDL and DML privileges are grouped accordingly. For the list of privileges, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

Viewing SQL/MP aliases and their properties

To view the SQL/MP aliases and their properties:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Database**.

   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.

   The list of catalogs appears.
4. Expand the contents of a catalog.

   The list of schemas appears.
5. Expand the contents of a schema.

   The **SQL/MP Aliases** folder appears.

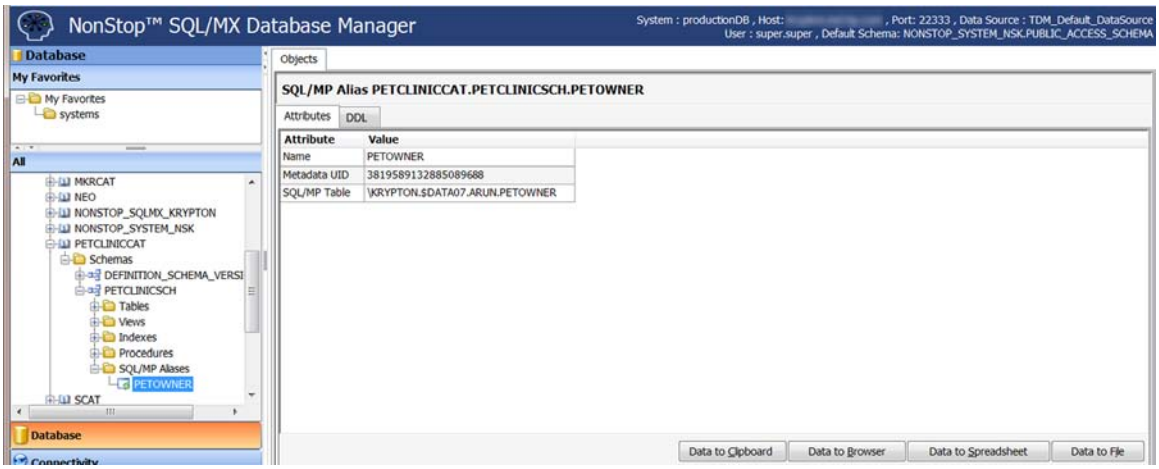
6. Select an SQL/MP alias.

   In the right pane, the following tabs related to the procedure appear:

   - **Attributes**
   - **DDL**

   Figure 25 (page 72) shows the properties of an SQL/MP alias.

Figure 25 SQL/MP alias properties



Viewing attributes of the SQL/MP alias

To view the attributes of a SQL/MP alias:

1. In the navigation tree, select the SQL/MP alias.
2. In the right pane, click **Attributes**.

   The following details related to attributes appear:

   - **Name** — The name of the SQL/MP alias.
   - **Metadata UID** — A unique ID number of the SQL/MP alias.
   - **SQL/MP table:** — The Guardian location of the SQL/MP table associated with the alias.

Viewing DDL information of a SQL/MP alias

To view DDL information related to the SQL/MP alias:

1. In the navigation tree, select the SQL/MP alias.
2. In the right pane, click **DDL**.

   The DDL tab displays a statement that you can use to create the SQL/MP Alias.

Viewing table statistics and their properties

MXDM enables you to view table statistics. You can use the table statistics to troubleshoot and to create additional indexes. To view table statistics, the default catalog (`NONSTOP_SYSTEM_NSK`) and the default schema (`PUBLIC_ACCESS_SCHEMA`) are required. If the default catalog and schema are not available, table statistics are not displayed. For information on creating the default catalog and schema, see the *HP NonStop SQL/MX Connectivity Service Manual for SQL/MX Release 3.2*.

To view information related to table statistics:

1. Log on to the HP NonStop SQL/MX Database Manager.

2. Under the navigation tree pane, click **Database**.
   MXDM displays a list of existing systems.
3. In the navigation tree, expand the contents of the system.
   The list of catalogs appears.
4. Expand the contents of a catalog.
   The list of schemas appears.
5. Expand the contents of a schema.
   The **Tables** folder appears.
6. Select a table.

7. In the right pane, click **Statistics**.

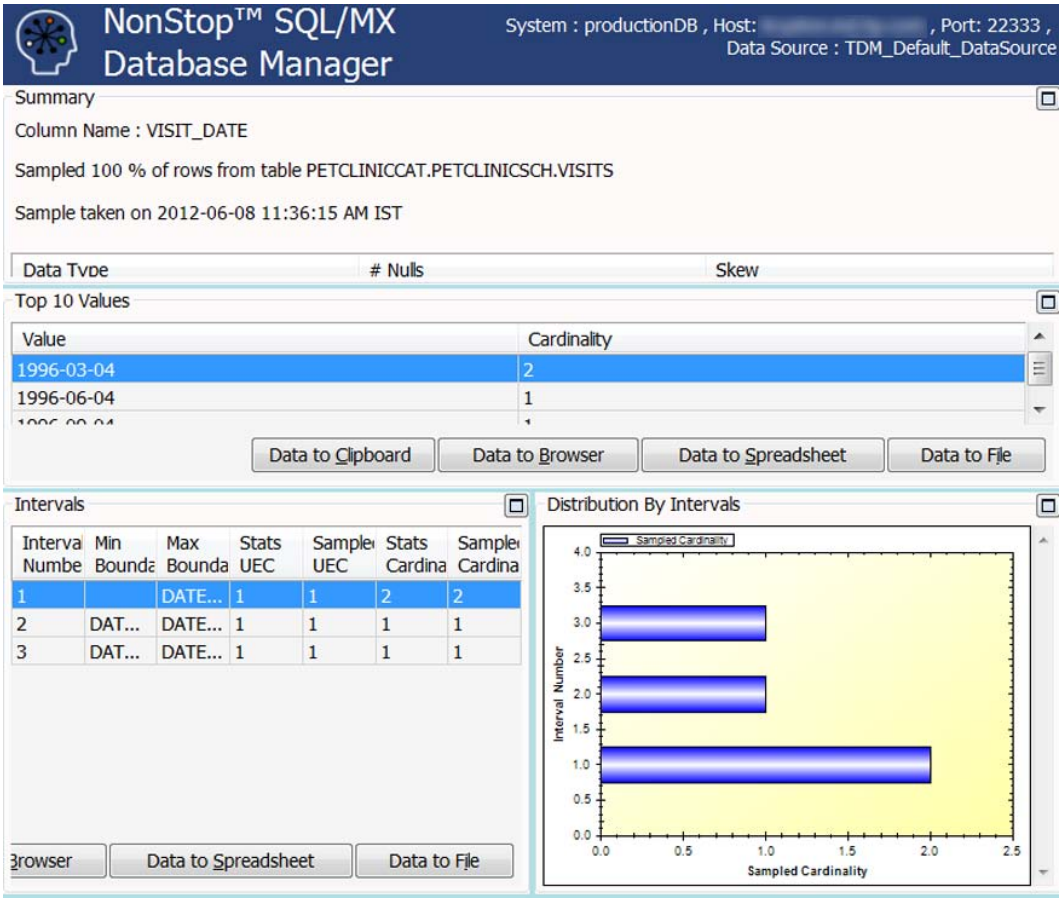
   The following histogram statistics for the table appear:

   - **Column Name:** — The name of the column.
   - **Data Type:** — This attribute specifies the column data type.
   - **# Nulls:** — The number of null values for the column.
   - **Min Value:** — The minimum value of the column.
   - **Max Value:** — The maximum value of the column.
   - **Skew:** — The CV entry in histograms table for the column.
   - **UEC:** — The `TOTAL_ UEC` (Unique Entry Count) entry from histograms table for the column.
   - **Cardinality:** — The `ROWCOUNT` entry from histograms table for the column.
   - **Last Stats Timestamp:** — The `STATS_TIME` from histogram table for the column.

NOTE: The **Statistics** tab includes information only if the table statistics are stored. To store the table statistics, you must execute the `Update Statistics` statement on the table.

Figure 26 (page 74) shows the table statistics.

Figure 26 Table statistics



For more information on the HISTOGRAMS table, see the *HP NonStop SQL/MX Release 3.2 Reference Manual*.

To display a sample view of the table column statistics, click the column name, double-click any row in the right pane, or click **View Sampled Column Statistics** located at the top right pane.

The top pane displays the column name, table name, the percentage sampled, and the time when the sample was taken.

The following details appear:

- **Data Type:** — Displays the column data type.
- **# Nulls:** — The number of null values for the column.
- **Skew:** — The CV entry from histograms table for this column.

The middle pane displays the ten most frequent values for the column. The value itself and its cardinality (number of occurrences) appear.

The bottom pane displays the following histogram intervals for the column data boundaries:

- **Interval Number:** — The `INTERVAL_NUMBER` entry from the `HISTOGRAM_INTERVALS` table.
- **Min Boundary:** — The minimum value for the interval, for the column.
- **Max Boundary:** — The maximum value for the interval, for the column.
- **Stats UEC:** — The `total UEC` entry from the HISTOGRAMS table for the column.
- **Sampled UEC:** — The `INTERVAL_UEC` from the `HISTOGRAM_INTERVALS` table.
- **Stats Cardinality:** — The `STATS_TIME` from the HISTOGRAMS table for the column.
- **Sampled Cardinality:** — The `sampled_UEC` from the HISTOGRAMS table for this column.

The diagram at the bottom right relates the Sampled Cardinality to the Interval Number from the Intervals table located at the left of the diagram.

7 Managing MXCS objects

This chapter discusses the following topics:

NOTE:

- Any user can view information related to MXCS objects. However, only users with OPERATOR permission can perform management tasks, such as starting and stopping MXCS services and MXCS servers.
- All users can view all data sources. Only MXCS users with OPERATOR permission can perform management tasks on a data source.

Viewing MXCS servers

To view all MXCS servers for a system:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Expand a system, and click **MXCS Services**.

4. In the right pane, click **MXCS Server Status**.
   The list of MXCS servers and their status appear.
   Figure 27 (page 77) shows the MXCS servers and their status.

Figure 27 MXCS Servers Status

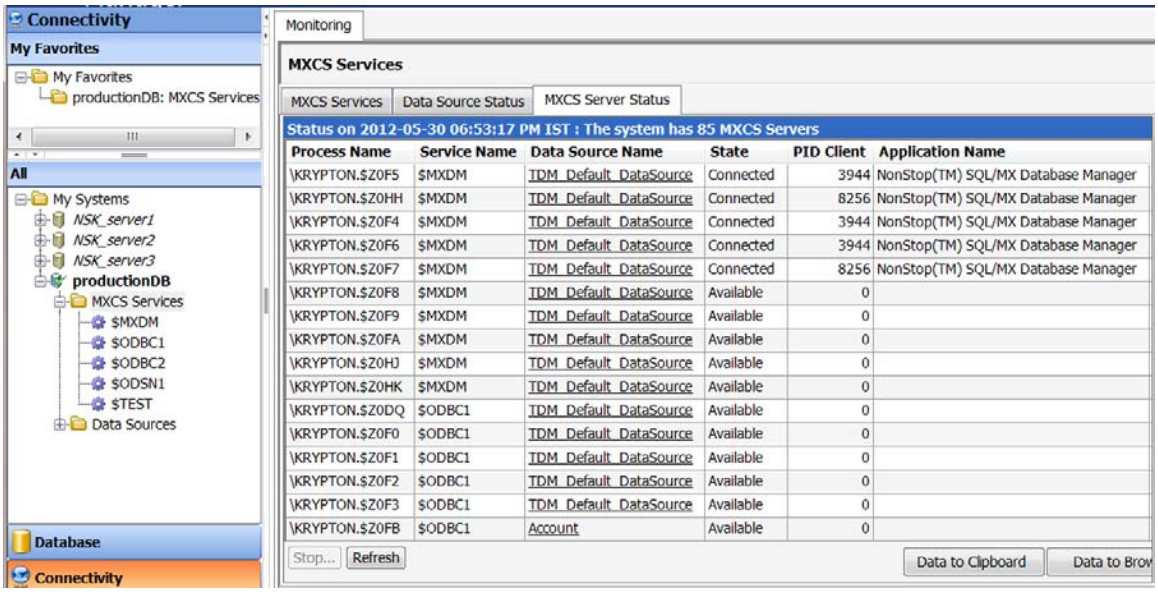


Table 20 (page 77) describes the fields in the **MXCS Server Status** tab.

Table 20 MXCS Server Status fields

Field	Description
Process Name	The operating system process name of the server.
Service Name	The MXCS service to which the process belongs.
Data Source Name	The user-defined name of the data source. A data source is a data structure that contains connection information such as CQDs, SETS, and Controls. The ODBC/MX driver uses this information to connect to the database.
State	The current state of the server, such as Available and Connected.
PID Client	The process ID of the client connected to the server. If there is no connection, the value is set to 0.
Application Name	The name of the client application connected to the server. If there is no connection, the field is blank.
User Name	The name of the user connected to the server. If there is no connection, the field is blank.
Computer Name	The system name where the client application is running. If there is no connection, the field is blank.
CPU	CPU number where the server is running.
Server PIN	The operating system process ID assigned to the server.
Port	The port number and object reference information for the service.
Last Updated Time	The date and time of the last update to the server's state.

Term
MXCS server

Stopping an MXCS server

To stop an MXCS server:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.
3. Expand the system that contains the MXCS servers that you want to stop.
4. Click **MXCS Services**.
5. In the right pane, click **MXCS Server Status** to display the list of MXCS servers.
6. Select the server that you want to stop. You can select more than one server.
7. Click **Stop...**

   The **Stopping Server** dialog appears.
8. Click **Stop Immediately**.

   The MXCS server stops.

△ **CAUTION:** **Stop Immediately** stops the server without waiting to finish any current database statements or server processes. The transaction manager rolls back all uncommitted transactions held by these MXCS servers. All client connections are closed.

NOTE: After you click a stop option, you cannot cancel the operation.

Terms

operator permission
MXCS server

Viewing MXCS Services

Any user can view MXCS services. To view all MXCS services for a system:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.
3. In the navigation tree pane, expand the system that contains the MXCS services.
4. Click **MXCS Services**.

5. In the right pane, click **MXCS Services** to display details of the Association and Configuration servers.

   Figure 28 (page 79) show the properties related to **MXCS Services**.

Figure 28 MXCS Services tab

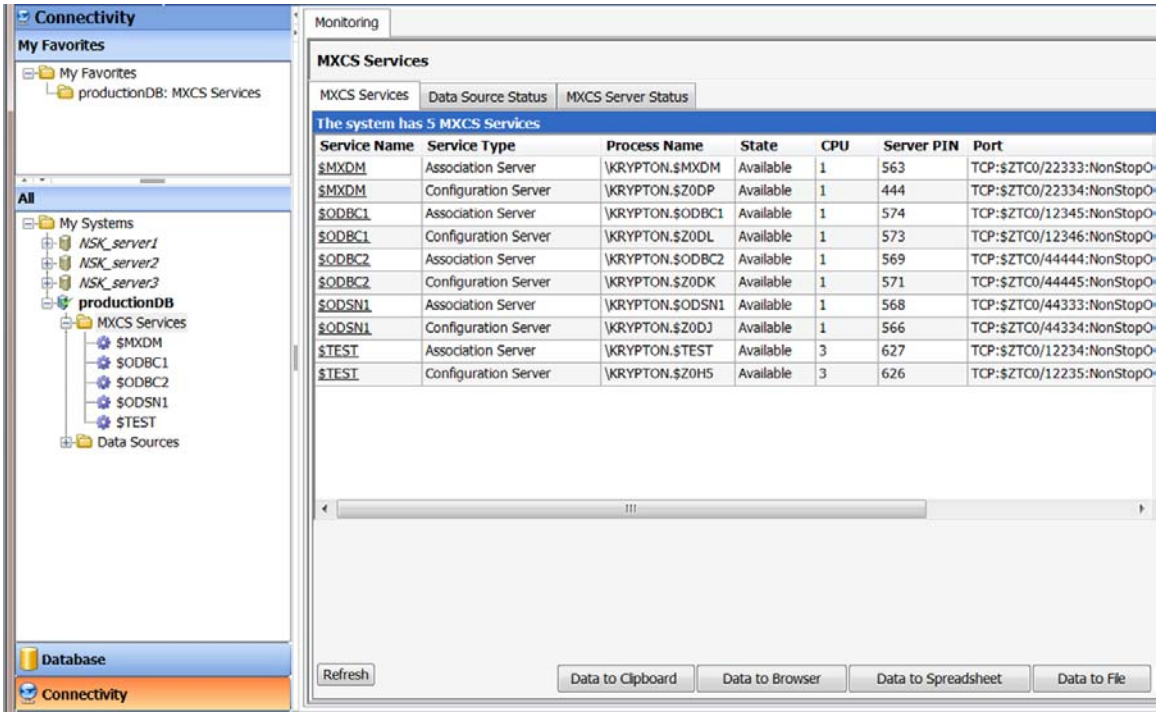


Table 21 (page 79) describes the fields in the **MXCS Services** tab.

Table 21 MXCS Services fields

Field	Description
Service Name	The MXCS service to which the process belongs.
Service Type	Association server or Configuration server. Association Servers (MXOAS) are persistent processes. MXOAS provides database connectivity to client applications. They spawn MXCS server processes, which handle database requests from clients. MXCS server processes execute the database queries for the clients. They can spawn Executor Server Processes (ESPs) to achieve parallelism in the execution of queries. Configuration Servers (MXOCFG) manage the MXCS configuration data. For more information on MXOAS, see *HP NonStop ODBC/MX Driver for Windows for SQL/MX Release 3.2*.
Process Name	The operating system process name of the server.
State	The current state of the service.
CPU	CPU number where the server is running.
Server PIN	The operating system process ID assigned to the component.
Port	The port number and object reference information for the service.
Last Updated Time	The date and time of the last update of the service state.

Starting up an MXCS service

Starting up an MXCS service changes the state of the service from Stopped to Available.

To start up an MXCS service:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.
3. In the navigation tree pane, select the system that contains the MXCS services.
4. In the navigation tree pane, expand the **MXCS Services** folder for the system.
5. Right-click the name of the service that you want to start up, and select **Start**.

   The MXCS service starts.

This action enables the MXCS service and the following components:

- Association server
- Configuration server
- Data sources configured with the automatic startup option

If the MXCS service state does not change to the Available state, contact HP support.

Related Topic
Terms
operator permission
Association server
Configuration server
Data sources
MXCS service

Stopping an MXCS service

When you stop an MXCS service, the configuration server remains Available, but the association server changes from the Available state to the Stopped state. This operation effectively stops any data source that is currently started.

To stop an MXCS service:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.
3. In the navigation tree pane, select the system that contains the MXCS services.
4. In the navigation tree pane, expand the **MXCS Services** folder for the system.
5. Right-click the name of the service that you want to stop, and select **Stop...**

   The **Stopping Service** dialog appears.
6. Enter a reason for stopping the service.
7. Click one of the following options:

   NOTE: After you click a stop option, you cannot cancel the operation.

   - **Stop on Client Disconnect**
   - **Stop Immediately**

   CAUTION: **Stop Immediately** disables the MXCS service without waiting for the MXCS servers to finish current operations. The transaction manager rolls back all uncommitted transactions held by these MXCS servers. All client connections are closed.

   The MXCS service stops.

Terms
operator permission
association server

Viewing data sources

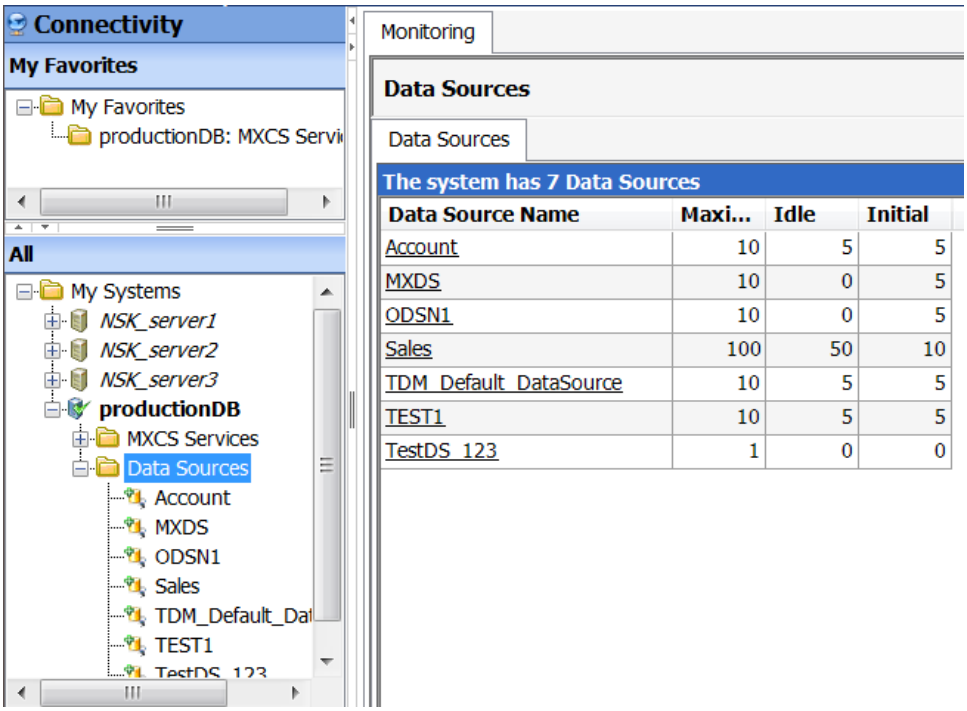
To view data sources:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Expand the system and click the **Data Sources** folder.

   Figure 29 (page 81) shows the data sources in the navigation tree. The right pane displays the details corresponding to the data sources.

Figure 29 Data sources



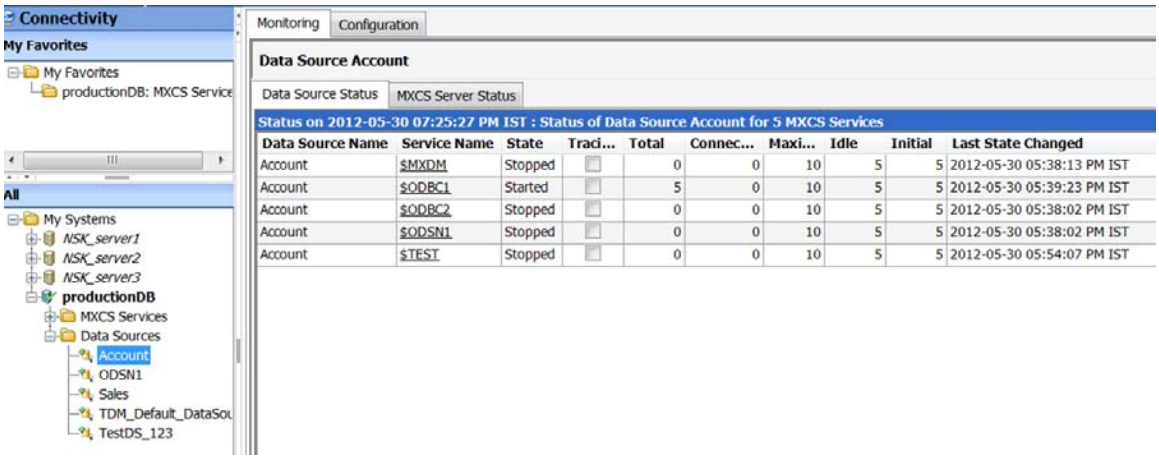
The **Data Sources** tab displays the following data source properties:

- **Data Source Name** — The name of the data source.
- **Maximum** — The upper limit of the servers that can be operational for the service on this data source.
- **Idle** — The lower limit of the available idle servers that are operational for the service on this data source. This value represents idle servers that are waiting for user connections.
- **Initial** — The suggested number of servers that each service starts when the data source is first started.

4. In the navigation tree pane, click a data source. In the right pane, the properties in the **Data Source Status** tab appear.

   Figure 30 (page 82) shows the properties in the **Data Source Status** tab.

Figure 30 Properties in the Data Source Status tab



In the right pane, the following details related to the data source appear:

- **Data Source Name** — The name of the data source.
- **Service Name** — The MXCS service to which the process belongs.
- **State** — The current state of the data source.
- **Tracing** — The current state of server tracing.
- **Total** — The total number of servers running.
- **Connected** — The number of servers connected to clients.
- **Maximum** — The upper limit of the servers that can be operational for the service on this data source.
- **Idle** — The lower limit of the available idle servers that are operational for the service on this data source. This value represents idle servers that are waiting for user connections.
- **Initial** — The number of servers that each service starts when the data source is first started.
- **Last State Changed** — The date and time when the data source state was last updated.

Term
data source

Creating a data source

To create a data source:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

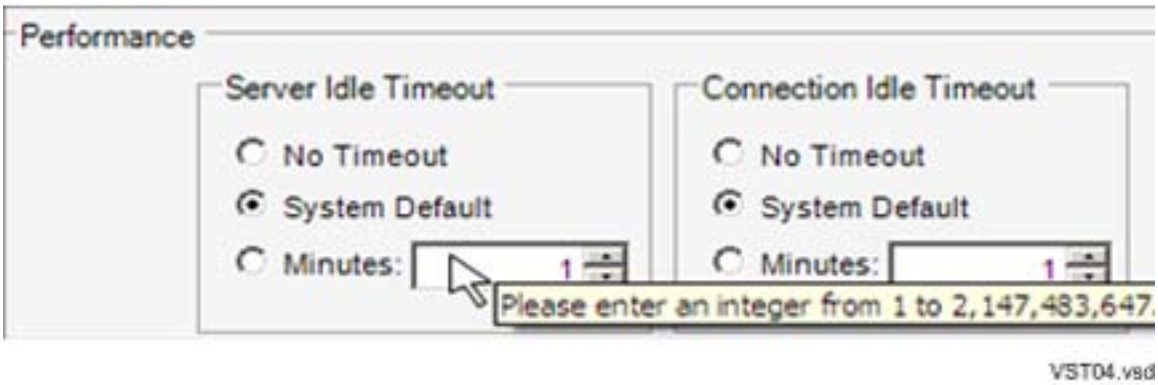
   MXDM displays a list of existing systems.
3. Expand the system for which you want to create a new data source.
4. Right-click **Data Sources**, and select **Create Data Source...**

   The **Create Data Source** window appears.
5. Configure the data source properties, as described in:
   - "Using General Properties" (page 83).
   - "Using the DEFINEs and SETs tab" (page 85)

- "Using the Control Query Defaults tab" (page 87)
- "Using the Control Table Statements tab" (page 87)

NOTE:
Some tabs provide tooltips that explain the use of an option or the range of values supported for a field. Figure 31 (page 83) shows a tool tip for one of the fields.

Figure 31 Tooltip in tabs



6. After configuring the data source properties, click **Create**.
7. Refresh the navigation tree pane.

   The new data source appears.
8. To start up the data source, see "Starting up a data source" (page 90).

Terms
data source
navigation tree pane

Using General Properties

Table 22 (page 83) describes the properties displayed in the **General Properties** tab.

Table 22 General Properties options

Group	Option	Description
Data Source Name	**Name**	You must assign a unique name for the new data source. The name can be a maximum of 128 characters (any characters) without leading or trailing spaces. Leading or trailing spaces are automatically removed before the name is sent to the server. Embedded spaces are not removed, and will return an error.
Start Mode	**Automatic**	Specifies that MXCS automatically starts up the initial MXCS servers for the data source when the MXCS service is started.
	Manual	You must manually start up the MXCS servers for the data source when the MXCS service is in the Started state. This value is the default.
Performance	**Server Idle Timeout**	Specifies the number of minutes that an MXCS server remains idle before it stops. This timeout occurs only under the following conditions: • The idle server is not connected to a client. • The number of servers exceeds the number of idle servers configured for the data source. The system default is 600 seconds. You can assign a value between 1 and 2,147,483,647.

Table 22 General Properties options *(continued)*

Group	Option	Description
	Connection Idle Timeout	Specifies the number of minutes that a client-server connection remains idle before the MXCS server terminates the connection. You must assign a value between 1 and 2,147,483,647. The system default is 600 seconds.
Session Statistics	**Connection Information**	You must select this option to collect statistics about the connection and the session. Data source statistics are stored in the Event Monitoring Service (EMS) log. The event ID is 21035.
	Session Summary	You must select this option to collect statistics about individual SQL statements. Data source statistics are stored in the EMS log. The event ID is 21035.
Number of Servers	**Maximum**	Specifies the upper limit of the servers that can be operational for a service on the data source. The default is 1. The range is 0 to 32767. 0 specifies the system default that is determined by the system at run time. If you use the default of 1000 ports for MXCS during installation, the range is 1 through 997. If you configure more than 1000 ports for MXCS, the value for Maximum is the number of configured ports minus 3. In this case, the actual maximum number of MXCS servers can sometimes be greater than the number of ports configured.
	Idle	Specifies the lower limit of the available idle MXCS servers that are operational for a service on the data source. The values range from 0 to 32767. The default is 0. This value cannot exceed the maximum server value. **CAUTION:** The sum of all the Idle values for a given system must not exceed the number of ports specified when the MXCS service was started up. HP recommends that this sum not exceed 200.
	Initial	Specifies the suggested number of MXCS servers that each service starts up when the data source is first started up. The default is 0. The values range from 0 to 32767. This value cannot exceed the maximum server value.
Process Priority	**Initial**	Specifies the priority assigned to a process started for this data source. The values range from 1 to 199.
	System Default	Specifies the priority of the MXOAS process when the servers are created.
CPU Utilization	**CPU Order**	Specifies the processing nodes (CPUs) you want to use for this data source. Enter a list of CPU numbers, separated by commas. For example: 1,2,4,5,15.
	System Default	Specifies that the SQL/MX software determines the CPU utilization automatically.
Statement Statistics	**SQL Statement**	Specifies the statistics about individual SQL statements.
	SQLExecute	Specifies the statistics about `SQLExecute`.
	SQLPrepare	Specifies the statistics about `SQLPrepare`.
	SQLExecDirect	Specifies the statistics about `SQLExecDirect`.
	SQLFetch	Specifies the statistics about `SQLFetch`.
Resource Management	**Add**	See "Adding and modifying the resource management policy" (page 85).

Table 22 General Properties options *(continued)*

Group	Option	Description
	Modify	See "Adding and modifying the resource management policy" (page 85).
	Remove	Removes the selected resource management policy.

Adding and modifying the resource management policy

The Resource Management field of the **Create New Data Source** dialog displays each resource management policy that is currently in effect for a data source. You can add, modify, and remove a resource management policy for the selected data source.

NOTE: You can enter only one resource management policy for each attribute name.

Table 23 (page 85) describes the fields in the **Add** and **Modify** dialogs.

Table 23 Fields in the Add and Modify dialogs

Field	Description
Attributes:	The name of a resource management policy attribute that limits the execution of user queries from a client application, based on cost.
Action:	The action to be taken by MXCS when the limit is exceeded. In all cases, an event message is sent to the event log. Valid values are: • **LOG** — The user query continues execution. • **LOG_WITH_INFO** — The user query returns a warning message to the client; the query execution continues. • **STOP** — The user query returns an error message to the client; the query execution stops.
Limit:	The maximum value for the attribute. This value is any positive number; the maximum is the value of the `LARGEINT SQL` data type.

Enter the details and click **OK**. The new resource management policy is added to the attribute list or the currently configured policy is modified. These changes are effective when you subsequently connect to a server in the data source.

Using the DEFINEs and SETs tab

This section describes the **DEFINEs** and **SETs** tabs.

About DEFINEs

A DEFINE statement is a named set of attribute-value pairs associated with a process. SQL/MX allows DEFINEs to be used as logical names for tables, views, or partitions in statements that query SQL/MP objects.

DEFINE statements are stored as part of the configuration data for the data source. They are retrieved and set by the association server when it reads the startup values for the data source.

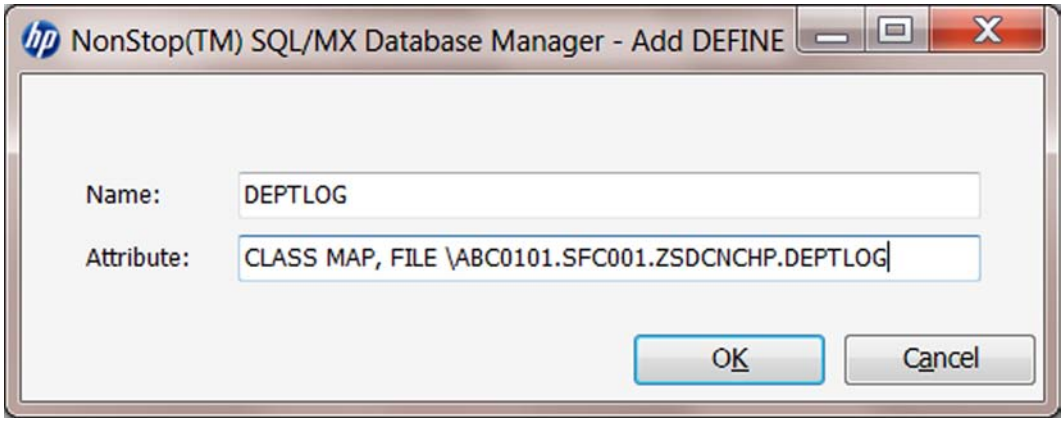
Changes become effective the next time a connection is made to a server in the data source.

Table 24 (page 85) describes the fields in the **DEFINEs** tab.

Table 24 DEFINEs tab buttons

Button	Function
Add...	Displays the Add DEFINE dialog.
Modify...	Displays the Edit DEFINE dialog.
Remove	Removes the selected DEFINE statement.

Figure 32 Add DEFINE



About SETs

SET variables affect the behavior of MXCS. For example, you can set default catalog and schema names for servers running in this data source when they are not set at the client data source. Client data source values take precedence over server data source values.

NOTE: SET variables are primarily used by HP support.

SET variables are stored as part of the configuration data for the data source. They are retrieved by the association server when it reads the startup values for the data source. The data source server then sets the value when a connection is established.

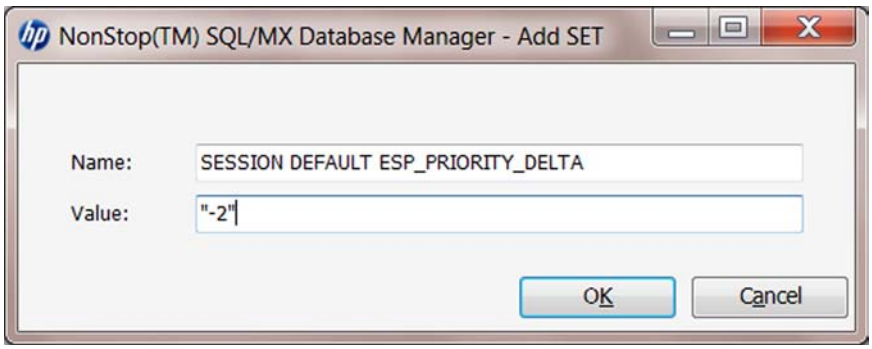
Table 25 (page 86) describes the **SET** tab functions.

Table 25 Functions on the SETs Tab

Button	Function
Add...	Displays the **Add SET** dialog.
Modify...	Displays the **Edit SET** dialog.
Remove	Removes the selected SET variable.

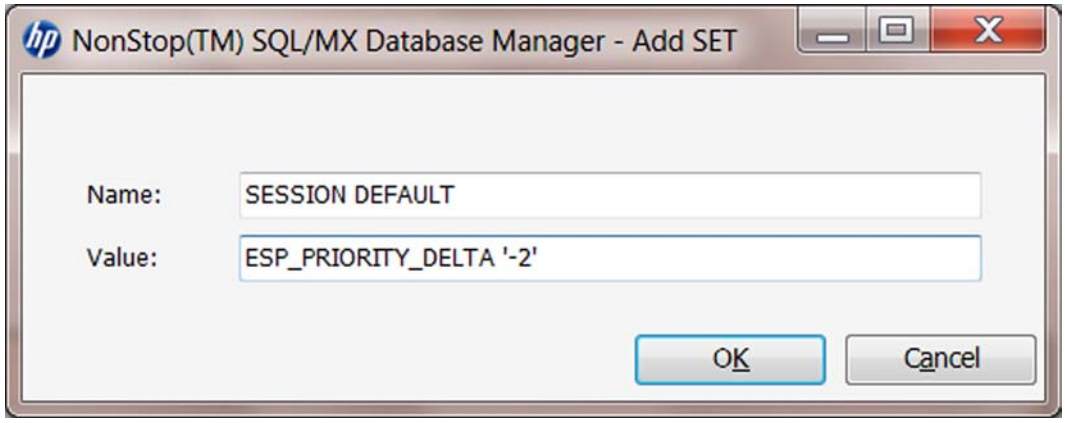
Some SET commands require that you specify a value in single quotes. For example, SET SESSION commands always require that the value be within single quotes. Figure 33 (page 86) shows an example of the SET SESSION command.

Figure 33 SET SESSION example 1



Internally, MXDM concatenates the **Name** and **Value** fields to form the SET command. Therefore, you can specify the value alone in the value field and the rest of the command in the **Name** field, as shown in the example. Alternatively, you can specify the type of the SET command in the **Name** field and the rest of the command in the **Value** field. HP recommends that you use this approach. Figure 34 (page 87) shows an example.

Figure 34 SET SESSION example 2

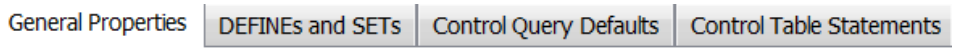


Using the Control Query Defaults tab

To add or modify a CQD configured for a data source:

1. Under the navigation tree pane, click **Connectivity**.
2. Complete the initial steps to create a data source until you see the following shown in Figure 35 (page 87).

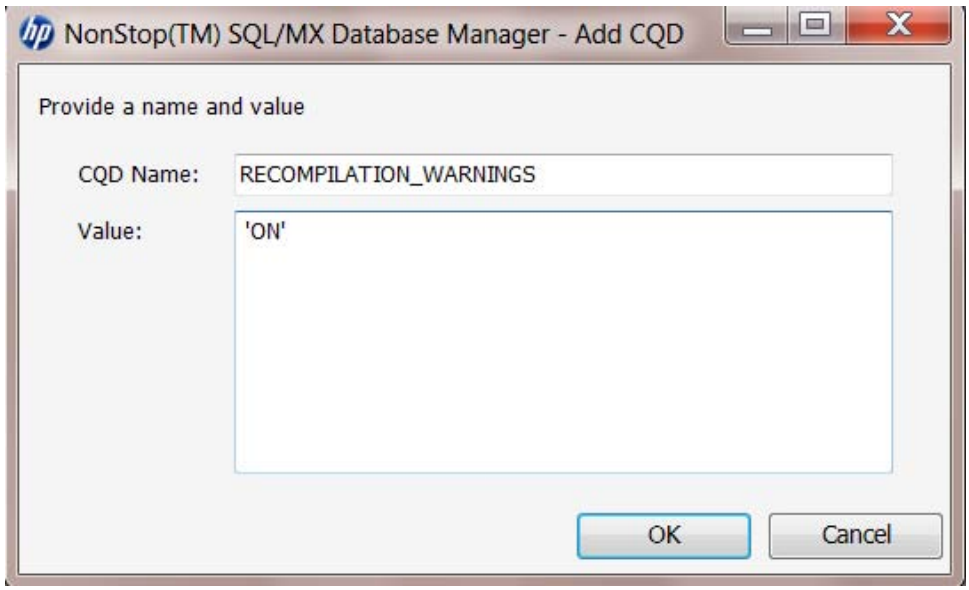
Figure 35 Data source configuration



For information on creating a data source, see "Creating a data source" (page 82) or "Updating a data source" (page 91))

3. Click **Control Query Defaults**.
4. Click **Add...** or **Modify...**
5. In the **CQD Name** field, enter a new name or change the existing name.
6. In the **Value** field, enter a new CQD value, or change the current value.

Figure 36 Add CQD



Using the Control Table Statements tab

The Control Table Statements tab allows you to modify certain options for specific tables.

Table 26 (page 88) describes the options.

Table 26 Options in the Control Table Statements tab

Value	Description
Name	Specifies name of the table.
If-Locked	Determines the result if you attempt to access data with read committed or if you serialize access, and the data is locked by another user.
MDAM	Specifies whether to use Multi-dimensional Access Method (MDAM) for subsequently compiled DML statements that access the index.
Priority	Specifies the priority for subsequent file system requests to MDAM. MDAM uses the priority to ensure efficient performance in a mixed workload environment.
Similarity Check	Specifies whether to perform similarity checks for new and previous tables to avoid statement recompilation. This option applies only to tables. It does not apply to views.
Table Lock	Determines whether to use table locks for subsequently compiled DML statements that access the table or view.
Timeout	Specifies the amount of time allowed to complete file-system requests from the DML operations. If the time elapses before the file system can grant a request to lock data, the DML statement fails and SQL/MX returns an error. **NOTE:** This timeout applies to static operations only.

If-Locked

Value	Description
<Not Set>	Specifies the value used is the system default setting that exists at the time of execution.
Return	Returns the file-system error 73. For more information on file-system errors, see the *HP NonStop SQL/MX Release 3.2 Messages Manual*.
Wait	Indicates that SQL/MX waits for another user to release the lock, until the timeout period elapses.

MDAM

Value	Description
<Not Set>	The value used is the system default setting that exists at execution.
Enable	SQL/MX determines whether to use MDAM.
Off	MDAM is not used.
On	MDAM is used.

Priority

The possible values are 1 through 9, where 9 is the highest value. You can specify a higher priority for short-duration OLTP-type requests running with concurrent long-duration query requests.

△ **CAUTION:** Using the highest possible value (9) can interfere with SQL/MX system-level activity.

Similarity check

Value	Description
<Not Set>	The value used is the system default setting that exists at execution.
Off	SQL/MX recompiles the statement at run time, depending on the outcome of late name resolution, timestamp comparison, or table redefinition.
On	SQL/MX performs similarity checks at run time to determine whether the new table is similar to the previous table. If similar, SQL/MX uses the table without recompilation. Otherwise, the SQL statement is recompiled with the new table name. This setting is the default.

Table Lock

Value	Description
<Not Set>	The value used is the system default setting that exists at execution.
Enable	This value indicates whether to use table locks for the specified table or view.
Off	Table locks are not used.
On	Table locks are used.

Timeout

Value	Description
<Not Set>	The value used is the system default setting that exists at execution.
No Timeout	No timeout is specified.
Will Not Wait	Does not wait for a table lock. If the lock cannot be acquired, SQL/MX returns an error.
Interval	1 through 2147483519 in hundredths of a second.

Copying a data source

If you want to create a data source that is similar to an already-configured data source, you can use the configured data source as a template for the new data source. This procedure makes a copy of an existing data source configuration and enables you to modify the copy as needed.

To make a copy of an existing data source:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Expand the system for which you want to create a new data source.
4. Right-click **Data Sources**, and select **Copy Data Source...**

   The **Copy Data Source** window appears.
5. Modify the required fields.
   - "Using General Properties" (page 83).

     NOTE: You must change the data source name. If you do not change the name, MXDM returns an error message indicating that the data source already exists.
   - "Using the DEFINEs and SETs tab" (page 85)

- "Using the Control Query Defaults tab" (page 87)
- "Using the Control Table Statements tab" (page 87)

NOTE: If you made changes to the values in a tab, but you did not apply the changes, you can reload the previously stored values on the server by clicking **Reload**.

6. Click **Create**.

   The new data source is created.

Term
data source

Starting up a data source

When you start up the MXCS service, data sources configured with the automatic startup option are started up.

To start up a data source:

1. Verify that the Association server for the data source is started up:
   a. Check the MXCS Server Status display for the data source by performing the steps in "Viewing MXCS Services" (page 78).
   b. If the Association server is not available, start up the Association server by following the steps in "Starting up an MXCS service" (page 79)
2. In the navigation tree pane, click the data source that you want to start up.
3. In the right pane, click the **Data Source Status** tab to display the list of services.
4. Select the row of the **Service Name** that you want to use with the data source.
5. Click **Start**.

   The data source starts up.

Terms
association server
data source

Stopping a data source

To stop a data source:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Expand the system for which you want to stop a data source.
4. Click **MXCS Services**.
5. In the right pane, click **Data Source Status**.
6. Select all of the services in which the data source is configured.
7. Click **Stop...**

   The **Stopping Data Source** dialog appears.
8. In the **Reason** field, enter a reason for stopping the data source.

9. Select one of the following options:

   NOTE: After you click one of the stop options, you cannot cancel the operation.

   - **Stop on Client Disconnect**
   - **Stop Immediately**

   CAUTION: Use **Stop Immediately** with caution. **Stop Immediately** stops the data source without waiting for its associated MXCS servers to finish any current database statements or sessions. The transaction manager rolls back all uncommitted transactions held by these MXCS servers. All client connections are closed.

   The data source stops.

Updating a data source

To update a data source:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Expand the system for which you want to update a data source.
4. Right-click the data source, and select **Edit...**

   The **Configuration** tab appears.
5. Modify the required fields.
   - "Using General Properties" (page 83).
   - "Using the DEFINEs and SETs tab" (page 85)
   - "Using the Control Query Defaults tab" (page 87)
   - "Using the Control Table Statements tab" (page 87)

   NOTE: If you made changes to the values in a tab, but you did not apply the changes, you can reload the previously stored values on the server by clicking **Reload**.
6. Click **Apply**.

   The changes are applied.

Deleting a data source

You must stop a data source before deleting it. You cannot delete the default data source, `TDM_Default_DataSource`.

To delete a data source:

1. Stop the data source by performing the steps described in "Stopping a data source" (page 90).
2. In the navigation tree pane, right-click the data source, and select **Delete**.
3. Click **Yes** to confirm the deletion.

   The data source is deleted.

Term
operator permission

Starting and stopping server traces

Data from server traces is stored in the EMS log. The event ID is 21034.

The tracing facility generates a pair of messages for each function that is traced:

- First message — Contains the input parameters to the function
- Second message — Contains the output from the function

After a trace is enabled for a data source, all servers that can write to the EMS alternate collector begin writing the input and the output data for each function executed during the trace period. The following data is collected for each function:

- Session ID
- Component name
- Object reference
- Sequence number
- Input values to the function or output from the function

To start tracing for data sources:

1. Under the navigation tree pane, click **Connectivity**.
2. In the navigation tree pane, expand the system that contains the data sources.
3. Click **MXCS Services**.
4. In the right pane, click **Data Source Status** to display the list of services.
5. In the **Tracing** column, select **Tracing** for each data source.
6. Click **Apply**.

   Tracing starts for the data sources.

To stop tracing for a data source:

1. Under the navigation tree pane, click **Connectivity**.
2. In the navigation tree pane, expand the system that contains the data sources.
3. Click **MXCS Services**.
4. In the right pane, click **Data Source Status** to display the list of services.
5. In the **Tracing** column, clear **Tracing** for each data source that you want to stop tracing.
6. Click **Apply**.

   Tracing stops for the data sources.

Related Topic

operator permission

Viewing MXCS user permissions

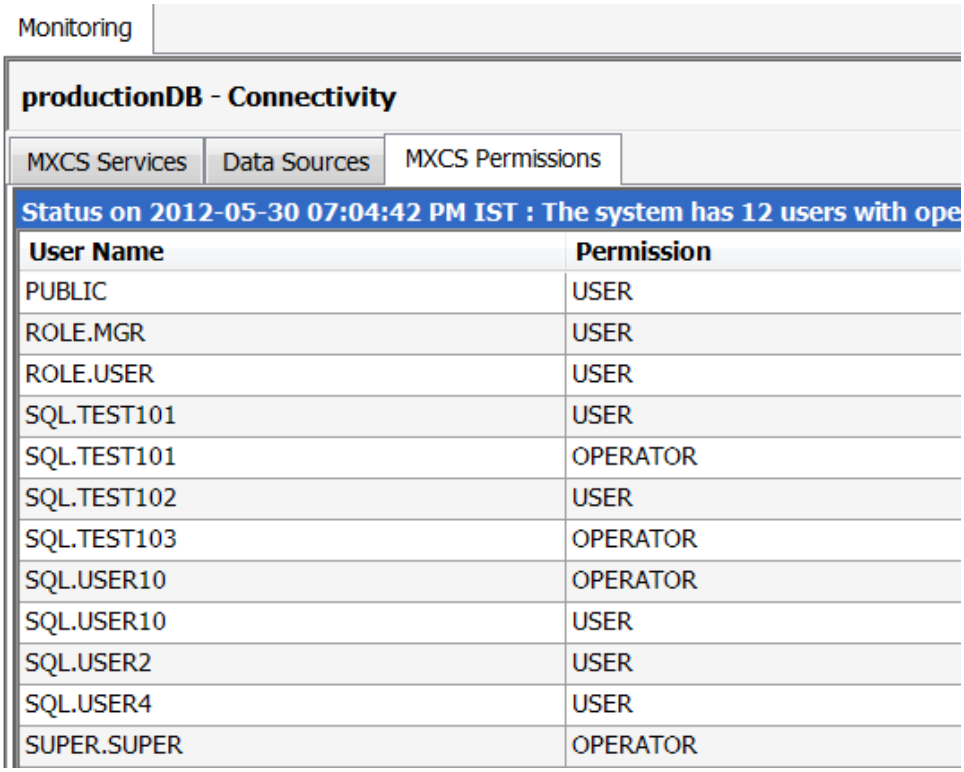
MXCS permissions define the type of access that a user has to manage MXCS objects on the SQL/MX database. Only a user with OPERATOR permission can view MXCS permissions. Initially, only the SUPER.SUPER user has OPERATOR permission.

The following are basic security rules for MXCS users:

- Only the user who installed SQL/MX (SUPER.SUPER or SUPER.SUPER alias) can manage the user list.
- Only users with OPERATOR permission can view the user list.
- Users with USER permission cannot manage or view the user list.

Figure 37 (page 93) shows the properties in the **MXCS Permissions** tab. The **MXCS Permission** tab indicates whether the user has OPERATOR or USER permission.

Figure 37 MXCS Permissions tab



User Name	Permission
PUBLIC	USER
ROLE.MGR	USER
ROLE.USER	USER
SQL.TEST101	USER
SQL.TEST101	OPERATOR
SQL.TEST102	USER
SQL.TEST103	OPERATOR
SQL.USER10	OPERATOR
SQL.USER10	USER
SQL.USER2	USER
SQL.USER4	USER
SUPER.SUPER	OPERATOR

To view the current MXCS users:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Under **My Systems**, select the system for which you want to view permissions.
4. In the right pane, click **MXCS Permissions**.

   In the right pane, the permissions appear.

Related Topics

"Adding an MXCS user" (page 93)
"Editing MXCS user permissions" (page 94)
"Deleting an MXCS user" (page 94)

Term

operator permission
user permission

Adding an MXCS user

Initially, only the SUPER.SUPER user has the OPERATOR permission.

Only a SUPER.SUPER or an alias of SUPER.SUPER user can add an MXCS user.

To add an MXCS user:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Under **My Systems**, select the system for which you want to add an MXCS user.
4. In the right pane, click **MXCS Permissions**.

5. Click **Add...**.

   The **Add User** dialog appears.
6. Under **System Users**, select **Operator** or **User**.
7. From the **System Users** grid, select the users that you want to add to the **MXCS Users** grid.
8. Click **Configure**.

   The user name is configured, and it appears in the **MXCS Users** pane.
9. Click **Add**.

   The user is added.

Related Topics

"Viewing MXCS user permissions" (page 92)
"Editing MXCS user permissions" (page 94)
"Deleting an MXCS user" (page 94)

Term

operator permission

Editing MXCS user permissions

Only a SUPER.SUPER user or an alias of the SUPER.SUPER user can edit MXCS user permissions.

To edit MXCS user permission:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Under **My Systems**, select the system on which you want to edit the MXCS user permissions.
4. In the right pane, click **MXCS Permissions**.
5. Select the MXCS users whose permission you want to change, and click **Edit...**

   A confirmation dialog appears.
6. Click **Yes** to confirm.
7. Select the permission type, and click **Ok**.

   The MXCS user permissions are modified.

Related Topics

"Viewing MXCS user permissions" (page 92)
"Adding an MXCS user" (page 93)
"Deleting an MXCS user" (page 94)

Term

operator permission

Deleting an MXCS user

Only a SUPER.SUPER user or an alias of the SUPER.SUPER user can delete MXCS user permissions.

To delete an MXCS user:

1. Log on to the HP NonStop SQL/MX Database Manager.
2. Under the navigation tree pane, click **Connectivity**.

   MXDM displays a list of existing systems.
3. Under **My Systems**, select the system on which you want to delete an MXCS user.
4. In the right pane, click **MXCS Permissions**.
5. Select the MXCS users, and click **Delete**.

   A confirmation dialog appears.

6. Click **Yes** to confirm.

   The MXCS user is deleted.

Related Topics

"Viewing MXCS user permissions" (page 92)
"Adding an MXCS user" (page 93)
"Editing MXCS user permissions" (page 94)

Term

operator permission

8 Launching the NonStop SQL/MX Remote Conversational Interface

This chapter discusses the following topics:

Introduction to RMXCI

The SQL/MX database supports a client-based utility, called NonStop SQL/MX Remote Conversational Interface (RMXCI), which enables you to enter SQL statements interactively, or from script files in its command-line interface. You can also execute SQL statements to RMXCI from a Perl or Python program.

For more information on RMXCI, see:

- *HP NonStop SQL/MX Remote Conversational Interface (RMXCI) Guide*
- Command-line help within RMXCI

The RMXCI help describes the commands supported in the current operating mode of RMXCI.

Related Topics

"Locating the RMXCI program" (page 96)
"Launching RMXCI" (page 96)
"Setting Auto Logon options" (page 97)

Locating the RMXCI program

MXDM launches RMXCI from its default installation location. If RMXCI is not found in the default location, you can browse to determine the installation location. After MXDM launches RMXCI, the location is cached. When required, you can change the location from where RMXCI is launched.

The MXDM application locates the RMXCI program in the RMXCI default install location. If the RMXCI program is not found at the default installation location, you can browse for the RMXCI installation location. After the RMXCI program is located, the location is saved. If you uninstall RMXCI, you must use the same procedure to locate the RMXCI program again. You can change the location of the RMXCI program at any time. To change the location, select **Tools→Options...**, and modify the location.

Related Topics

"Introduction to RMXCI" (page 96)
"Launching RMXCI" (page 96)
"Setting Auto Logon options" (page 97)

Launching RMXCI

To launch RMXCI, use one of the following methods:

- From the MXDM toolbar, click **SQL/MX Remote Conversational Interface** (). For more information on the MXDM toolbar, see "Using the MXDM toolbar" (page 29).
- Select **Tools→SQL/MX Remote Conversational Interface**.

The RMXCI window appears. If the **Auto Logon** option is enabled, you can use the user credentials of the currently selected SQL/MX database that is connected to log on to RMXCI. The data source,

catalog, and schema name also are considered while logging on. To set auto logon properties, see “Setting Auto Logon options” (page 97).

You can launch more than one RMXCI window using the described methods. If you set the **Auto Logon** option, the user credentials of the currently selected SQL/MX database that is connected to log on to RMXCI are used each time.

If you select **Tools→SQL/MX Remote Conversational Interface**, the RMXCI window appears with a prompt ready to execute the RMXCI commands. If RMXCI is launched and you are not logged on to a system, RMXCI does not use the Auto logon option. Instead, RMXCI launches and prompts you for an IP address and port number, which is the default in RMXCI.

Related Topics

“Introduction to RMXCI” (page 96)
“Locating the RMXCI program” (page 96)
“Setting Auto Logon options” (page 97)

Setting Auto Logon options

To set the RMXCI the Auto Logon option:

1. Perform one of the following:
   - From the MXDM toolbar, click ( ).

     The **Options** dialog appears.
   - Select **Tools→Options...**

     The **Options** dialog appears.
2. In the left pane of the **Options** dialog, select **SQL/MX Remote Conversational Interface**.
3. Enable or disable the **Auto Logon** option.

You can set the RMXCI prompt options. Table 27 (page 97) describes the RMXCI prompt options.

Table 27 RMXCI prompt options

Option	Description
Auto Logon	Enables RMXCI auto logon.
Prompt Options	Enables you to include the following options when you select **Auto Logon**: • **User** • **Server** • **Catalog** • **Schema** • **Datasource**
Custom Prompt	Enables you to enter a custom prompt in the text field. **NOTE:** If the custom prompt contains spaces, enclose it within double quotes.

Related Topics

“Introduction to RMXCI” (page 96)
“Locating the RMXCI program” (page 96)
“Launching RMXCI” (page 96)

A Using the SQL Whiteboard

This appendix discusses the following topics:

Introduction to the SQL Whiteboard

The SQL Whiteboard enables you to enter and execute SQL statements using MXDM, and provides execution information for each of the SQL statements.

The list of SQL statements of one MXDM session persists in other MXDM sessions. Currently, MXDM supports only one instance of the SQL Whiteboard.

You can specify SQL statements with parameters by enclosing parameter names within a double dollar sign ($$). When the statement is executed, the SQL Whiteboard obtains values for the parameters in the statement. You can reuse recently used values for those parameters.

Related Topics

"Viewing the SQL Whiteboard" (page 98)
"Saving and importing system definitions" (page 45)

Viewing the SQL Whiteboard

To view the SQL Whiteboard, use one of the following methods:

- On the MXDM toolbar, click **SQL Whiteboard** ( ).
- Select **Tools→SQL Whiteboard**.

Related Topics

"SQL Whiteboard panes" (page 98)
"Using the MXDM toolbar" (page 29)

SQL Whiteboard panes

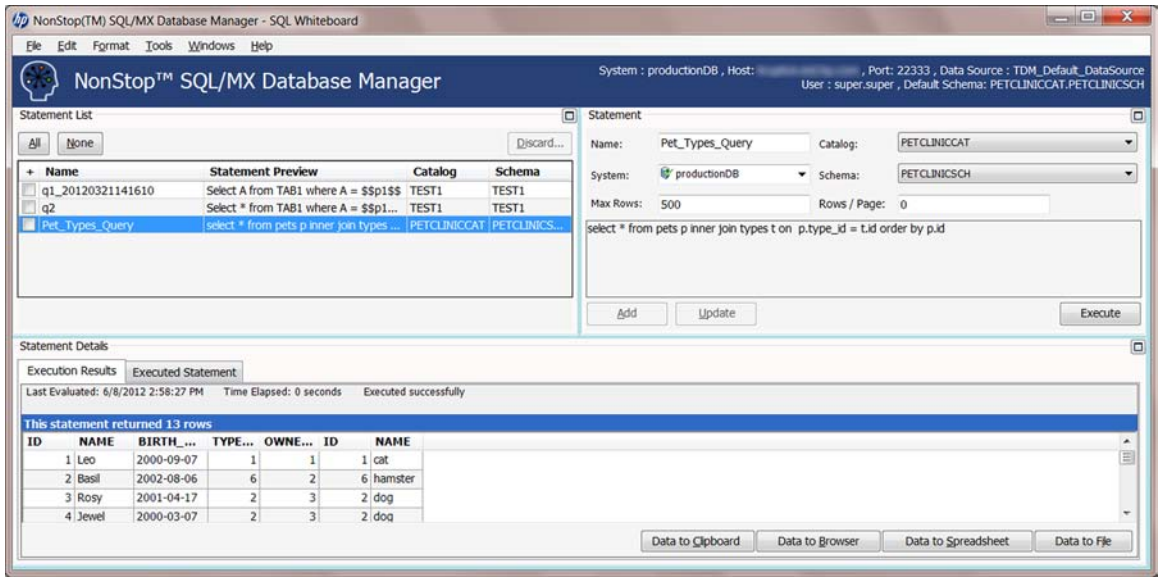
Table 28 (page 98) describes the panes in the SQL Whiteboard.

Table 28 SQL Whiteboard panes

Pane	Description
Statement List	Displays a list of the SQL statements that you added using the **Statement** pane.
Statement	Enables you to enter any DML or DDL statement, including SELECT, INSERT, UPDATE, DELETE, CREATE, ALTER, GRANT, DROP, REVOKE, and so on.
Statement Details	Displays detailed information about the execution results.

Figure 38 (page 99) shows the SQL Whiteboard.

Figure 38 SQL Whiteboard



Related Topics

"Statement List pane" (page 99)
"Statement pane" (page 100)
"Statement Details pane" (page 102)

Statement List pane

The **Statement List** pane provides a list of SQL statements that you added in the current session or earlier sessions of the SQL Whiteboard tool. The list of SQL statements in one MXDM session persists in other MXDM sessions similar to how connection information and favorites persist.

From the **Statement List** pane, you can perform the following tasks:

- View the name and statement that was previously added in the **Statement** pane. Optionally, you can explicitly add a statement to the statement list without executing it.
- Update an existing statement in the list.
- Execute a statement.
- Sort the statements based on the statement name or statement text.

Table 29 (page 99) describes the options at the top of the **Statement List** pane. These options enable you to select the statements that you want to execute.

Table 29 Statement List pane options

Button	Function
All	Selects all statements in the **Statement List** pane.
None	Clears all statements in the **Statement List** pane.
Discard	Removes the results only or the selected statements and the results. You cannot remove statements alone. **NOTE:** You cannot discard a statement or the results while the statement is executing. If a currently executing statement is part of a **Discard** selection, it is omitted. Use **Discard** when you want to free virtual memory or when MXDM indicates that system resources are running low. Until you exit the SQL Whiteboard, the result of every executed statement is cached. If you have already executed several large statements in the current session, the results are cached in memory. Therefore, less memory is available for new executions. "Page mode" (page 101) describes how the SQL Whiteboard caches and displays large result sets.

Statement pane

The **Statement** pane enables you to enter any SQL command (DDL or DML) in the text field. The maximum number of characters you can enter in the text field is 2,147,483,647.

Table 30 (page 100) describes the fields that define a statement in the **Statement** pane.

Table 30 Statement pane fields

Field name	Function
Name	Enables you to enter the name of the SQL statement. You can specify a name to identify the statement in the statement list.
System	Enables you to select a system from the **System** menu on which you want to execute the query.
Max Rows	Enables you to enter the maximum rows that you want returned and displayed in the **Statement Details** pane. The default is 500 rows and the maximum is 2,147,483,647.
Schema	Enables you to select a schema name from the **Schema** menu. If you do not explicitly qualify the query by specifying a three-part ANSI name, the default schema is the currently selected value in the menu.
Rows/Page	Enables you to enter the number of rows to be retrieved and displayed in one page of the statement result set. You can set a value between 1 and 100,000. Or, use the default **Rows/Page** value (0), which causes MXDM to retrieve and display the entire result set. If you specify a value of 1 or more, or if you use the default setting and MXDM cannot retrieve and cache the entire result set using available memory, MXDM automatically displays the result set in pages. For more information on page mode, see "Page mode" (page 101).

Table 31 (page 100) describes the options at the bottom of the **Statement** pane that enable you to test and modify the statement.

Table 31 Statement pane buttons

Button	Function
Add	Enables you to add a new SQL statement or duplicate a statement to the **Statement** list.
Update	Enables you to update the statement. Modify the required information, and click **Update**.
Execute	Executes the statement and displays the results in the **Statement Details** pane.

Terms

page mode

Parameter prompts

SQL statements can contain parameter names enclosed within $$ (double dollar signs). When you execute the statement, the SQL Whiteboard prompts you for values for all parameters in that statement. You can reuse values for those parameters.

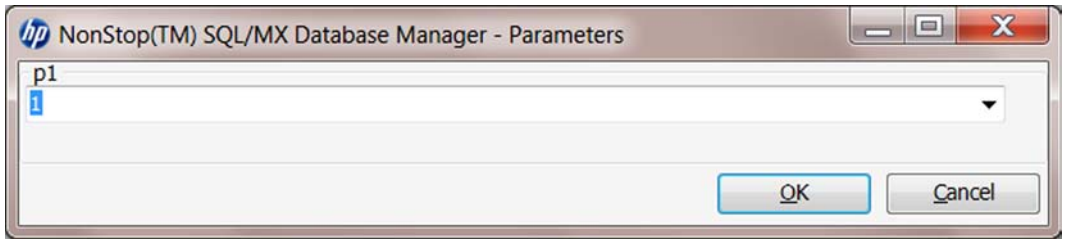
For example, consider a table, T that contains a column T1. You can enter the following statement in the **Statement** field:

```
Select T1 from T where T1 = $$p1$$
```

When you click **Execute**, the **Parameters** dialog appears.

Figure 39 (page 101) shows a sample **Parameters** dialog.

Figure 39 Parameters dialog



Enter a value, for example 1. The statement is executed, and the following tabs will appear in **Statement Details** dialog:

- **Execution Results** — Displays the output generated by the statement after the parameter is replaced by the value you entered.
- **Execution Parameters** — Lists p1 parameter with value 1.
- **Executed Statement** — Contains `Select t1 from T where t1 = 1`.

You can enter another statement that uses the parameter, p1. The statement will be executed. For example, if you enter `Select * from T where T1 = $$p1$$ + $$p2$$`, the same dialog appears. However, p1 (with value one) and p2 appear.

You can enter values again.

Page mode

When you execute a statement in the SQL Whiteboard, MXDM caches the results in virtual memory. The SQL Whiteboard displays these results, but the virtual memory allotted for the SQL Whiteboard can exhaust in the following scenarios:

- A single query has a large result set consisting of a large number of columns or a large number of rows, or both.
- Several queries with large result sets are executed in a single SQL Whiteboard session.

To prevent an out-of-memory condition and accommodate large result sets, the SQL Whiteboard can run in the page mode. In the page mode, the SQL Whiteboard breaks large result sets into pages and retrieves one page at a time instead of retrieving all the data and displaying all rows in the grid. The page mode reduces the memory usage because only a partial result is held in memory and displayed in the **Statement Details** pane.

Default page mode operation

By default, the SQL Whiteboard displays all the results of a statement. However, it automatically runs in page mode in the following scenarios:

- Insufficient memory is available to display the result set in one page.
- You specify a value from 1 to 100,000 in the **Rows/Page** field of the **Statement** pane. In this case, if sufficient memory is available, the SQL Whiteboard automatically uses page mode and allocates the number of rows per page that you specified.

Page mode considerations

The following considerations apply for page mode:

- During the course of statement execution, MXDM frequently computes the available virtual memory of the application. If the available virtual memory is less than an internal threshold, statement execution happens in the page mode. You cannot modify this behavior. In some cases, you must use the page mode to prevent MXDM from running out of memory and generating an exception.
- When a statement is executed and the number of rows is less than the **Rows/Page** threshold, all rows in the results are retrieved and displayed in the grid.

- When a statement is executed and the number of rows in the result set exceeds the **Rows/Page** threshold, statement execution happens in the page mode. Partial results are retrieved and displayed.
- When statement execution happens in the page mode, the **Statement Details** pane displays **Next Page**. The following considerations apply:
  - Until you click **Next Page**, the execution is paused, and the SQL cursor remains open. However, the **Time Elapsed** timer continues to run because it tracks the wait time.
  - When you click **Next Page**, the next page of results is retrieved from the server. The first page is deleted from the grid when the new page is loaded. The process repeats until you either view all the pages or cancel the query.
  - You cannot return to the previous page because the ODBC cursor operates in the FORWARD mode only. To display earlier results, you must re-execute the statement.
- Regardless of whether the number of rows in the result set exceeds the **Rows/Page** threshold, if the available virtual memory falls below the internal threshold, the statement execution goes into the page mode and displays the results that have been retrieved so far. In this case, the grid might display fewer rows than the **Rows/Page** threshold. This situation continues until garbage collection begins, and the memory occupied by the pages that have been disposed becomes available again. When the system resources are low, the **Statement Details** pane displays a message that execution is in the entering page mode.
- Grid sorting works only on the currently displayed page.
- In the page mode, the following options copy data for the current page only:
  - **Data to Clipboard**
  - **Data to Browser**
  - **Data to Spreadsheet**
  - **Data to File**
- To free workstation memory, you can discard the results of the selected statement(s) cached in the **Statement List** pane. For more information, see "Statement List pane" (page 99).

Executing SQL queries

If you highlight text, you can execute a part of a statement.

If you highlight text in the **Statement** pane, and click **Execute**, the query formed by that text is executed. For example, if the **Statement** pane contains the query, `select * from t`, where t1 = 1, and if you highlight the part `select * from t` and click **Execute**, `select * from t` is executed.

Cancelling a query from the SQL Whiteboard

You can cancel a running query if the query is wrong, the query is inefficient, or if the query is creating a performance issue and needs to be stopped.

After a query starts executing, the SQL Whiteboard **Execute** button changes to **Cancel**. Clicking **Cancel** terminates the SQL query.

Statement Details pane

The **Statement Details** pane contains statistics and details generated from the selected statement in the **Statement List** pane. You can use these details for reference only. The pane has no interactive functionality. Statistics appear only for statements that are loaded from the **Statement** pane.

Table 32 (page 103) describes the fields that appear in the **Execution Results** tab when a statement executes successfully.

Table 32 Execution Results fields

Field or button	Function
Last Evaluated	Indicates when the statement was last evaluated.
Query Execution Time	Indicates the time taken to execute the query.
Status	Displays the executed statement status. The status indicates whether the statement was executed successfully or whether the statement was canceled.
Next Page	Displays the next set of execution results when the statement execution happens in the page mode. For more information on the page mode, see "Page mode" (page 101).

For DML statements such as INSERT, DELETE, and UPDATE, the results indicate how many rows were affected if the execution is successful. For other SQL commands, the results appear in text form.

For SELECT statements, you can use the Copy options to copy the results to a file, clipboard, or a spreadsheet. The copy options are **Data to Clipboard, Data to Browser, Data to Spreadsheet,** and **Data to File**. The data is preserved only while the SQL Whiteboard remains open. The data is flushed when the SQL Whiteboard is closed. Also, when in the page mode, you can copy data in the current page only.

Table 33 (page 103) describes the tabs.

Table 33 Statement Details tabs

Tab	Function
Execution Error	Displays the statement execution error.
Execution Parameters	Displays values set for the current or earlier execution. The **Execution Parameters** tab is displayed only if the statement has parameters.
Executed Statement	Displays the statement that was executed with the parameters (if any), replaced with their values.

For more information on the page mode, see "Page mode" (page 101).

Related Topic
"Copying data" (page 44)
Term
page mode

Reusing a connection

The reuse connection feature is enabled by default in the SQL Whiteboard. As a result, all queries executed for the selected system use the same connection. This system appears in the **Statement Pane**, under **System**. To close the connection, right-click the system icon in the left pane and select **Disconnect**. As a result, if the SQL Whiteboard is using the same connection, it stops. HP recommends that you disconnect the system to release system resources.

Loading and saving SQL statements to a file

The SQL Whiteboard provides commands that enable you to import an SQL statement from a text file to the **Statement** pane. You can also copy SQL statements from the **Statement** pane to a specified text file.

Table 34 (page 104) describes the commands in the **File** menu that you can use to import and copy SQL statements.

Table 34 File menu options

Menu item	Function
Load SQL Statement	Loads the text of an SQL statement from an ASCII file to the **Statement** field.
Save SQL Statement	Saves the current SQL statement text from the **Statement** field to an ASCII file. This command saves only the statement text, but not the statement results. To save the results, use the **Data to Clipboard**, **Data To Spreadsheet**, or the **Data to File** options.

Related Topic
"Copying data" (page 44)

Highlighting the SQL syntax

To highlight the SQL syntax in the **Statement** pane, select **Format→Highlight Syntax**. The SQL keywords in the SQL text are highlighted.

Managing the layout of panes

The SQL Whiteboard enables you to move and resize individual panes. After setting the layout, select **File→Lock Layout** to lock the layout. Subsequently, you cannot move or resize the **Statement**, **Statement List**, and **Statement Detail** panes. To unlock the layout, select **File→Unlock Layout**.

To reset the layout to the default configuration, select **File→Reset Layout**.

To ensure that the layout persists across SQL Whiteboard or MXDM invocations, select **File→Save Persistence**. Subsequently, when you launch the SQL Whiteboard either in the current instance of MXDM or in a restarted MXDM instance, the layout is restored.

NOTE: The **Export Persistence** option in the **File** menu, in the SQL Whiteboard and the **Export Persistence** option in the main window have the same effect.

Related Topic
"Saving and importing system definitions" (page 45)

Glossary

area A broad category of features that you can manage or monitor using MXDM. See "Selecting an area" (page 30).

association server The logical component that starts up and manages MXCS SQL servers and associates a client connection request with a specific MXCS SQL server in a data source. See also "Viewing MXCS Services" (page 78).

connection When a user interaction requires interaction with a system, the relevant code uses the system definition for that system to transparently establish one or more ODBC connections, as needed.

data grid A tabular presentation of system data. MXDM data grids provide special features for displaying and manipulating data. The **SQL Whiteboard Statement Details** pane display information in a data grid. Tabs in the **Database** area do not provide data-grid features. For more information about data-grid features, see "Introduction to data grids" (page 40).

data source A logical name that defines the information required to access data. On the client side, the data source defines the driver name, network address, and specific attributes, such as the catalog and schema names. On the server side, it defines startup values, the number of servers in a pool, DEFINEs, SQL/MX control statements, and resource management policies.

disconnect Because connections are transient, there is no concept of logging on or logging off. The MXDM equivalent of logon is making a system usable by entering the correct settings. The MXDM equivalent of logoff is making a system unusable by disconnecting (or invalidating any of its other settings). Use the **Disconnect** function when you want the client application to continue running, but you want to deny continued access to a system without having to remove the system definition. See "Disconnecting from a system" (page 21).

favorite A favorite is a shortcut to an object on the navigation tree pane. Favorites appear in the **My Favorites** pane. Clicking a favorite enables you to navigate quickly to any object on the tree pane that might otherwise require scrolling through and expanding numerous parent objects. MXDM enables you to create favorites and organize them in folders.

menu bar The menu bar is the list of commands at the top of the MXDM main window. The menu bar commands are: **File**, **Edit**, **Tools**, **Windows**, and **Help**. "MXDM interface" (page 26) shows the menu bar.

MXCS (SQL/MX Database Connectivity Service) The server component that enables connectivity from client applications to the SQL/MX database. The SQL/MX Database Connectivity Service consists of an Association server (MXOAS or MXAS2), a configuration server (MXOCFG), and MXCS SQL servers.

MXCS server A process that manages an ODBC connection.

MXCS Service A process that uses data sources to launch MXCS SQL servers to manage connections.

MXDM HP NonStop SQL/MX Database Manager (MXDM) is an integrated graphical user interface (GUI) client that enables you to connect to and manage multiple NonStop SQL/MX databases.

MXOAS MXOAS is the component of the SQL/MX Database Connectivity Service (MXCS) that receives client connection requests for database access and associates the requestor with a server to execute the requested access. See also MXAS2.

My Systems In the navigation tree pane, a folder showing the group of SQL/MX platforms that are currently defined in the Systems Tool. The icon for each system shows the connection status for that system. For more information, see "Using the navigation tree" (page 33).

navigation tree pane The left pane of the NonStop SQL/MX Database Manager interface that displays a tree of the database objects in a hierarchical form. "MXDM interface" (page 26) shows the navigation tree pane.

operator permission An MXCS permission that allows a user to perform administrative tasks, such as managing data source configurations, MXCS services, data sources, and servers, by making changes to status and configuration. For more information, see "Viewing MXCS user permissions" (page 92) or "Adding an MXCS user" (page 93).

page mode A SQL Whiteboard feature that breaks large result sets into pages and fetches one page at a time. To prevent out-of-memory conditions, page mode limits the amount of memory used by the

	SQL Whiteboard. In page mode, only a partial result of a query is held in memory and displayed in the **Statement Details** page. For more information, see "Page mode" (page 101).
persistence file	A binary file that contains state and user preference information (for example, system definitions, user-specified options, favorites, and layout information). For more information, see "Saving and importing system definitions" (page 45).
query	A request for data from the database; specifically, the execution of a SQL statement, which requests columns and rows from one or more tables and views. In the context of the SQL/MX optimizer, a query is a request for data access through an DML statement.
right pane	The right pane of the NonStop SQL/MX Database Manager interface displays information about the selected objects in the navigation tree pane. "MXDM interface" (page 26).
segment	A subdivision of a SQL/MX cluster that consists of 16 processing nodes (CPUs). Each segment has a name (for example, HPQ0101), and the SQL/MX cluster contains one master segment. All other segments are considered slave segments.
SQL statement	Any DML or DDL statement including, but not limited to SELECT, INSERT, UPDATE, DELETE, CREATE, ALTER, DROP, GRANT, and REVOKE. For more information about SQL statements, see the *SQL/MX Reference Manual*.
SQL Whiteboard	A utility that allows you to enter and execute SQL statements from within MXDM. For more information, see "Introduction to the SQL Whiteboard" (page 98).
system	The user view of a system definition.
system definition	A user-named set of all of the information required to construct an ODBC connection string: server data source, username, password, server IP address or DNS name, port number, default schema, and ODBC driver version. The banner displays the system definition. See "MXDM banner" (page 27).
system monitor	The system monitor is a tool within MXDM that displays status and performance data for the SQL/MX platform. The displayed status and performance data includes seven performance metrics and four system status icons.
Systems Tool	The tool used to define, add, edit, remove, duplicate, test, and open a connection with a SQL/MX platform. The **Systems Tool** is available from the **Tools** menu.
TDM_Default_ DataSource	One of two default data sources for the SQL/MX platform. TDM_Default_DataSource is the default data source for database access. You cannot delete TDM_Default_DataSource, but you can configure other data sources.
user permission	MXCS permission that allows you to view data source configurations, MXCS services, MXCS servers, and data sources. See also "Viewing MXCS user permissions" (page 92).

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