NOKIA

NMS/1000/100

Starting with the Nokia NMS

User’s Guide

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Contents

Summary of changes

This document has been re-formatted and edited to comply with Nokia NMS Release H3.3.

1 About this manual

Starting with the Nokia NMS is intended for users who are new to the Nokia NMS Top-level User Interface. It provides information and instructions on the most common daily operations and operating principles. This operating manual relates to Nokia NMS Release H3.3.

We try to make the Nokia NMS manuals as useful for you as possible. Therefore, we would greatly appreciate any comments and suggestions you may have about how we could improve them. Should you find any errors or omissions in the manuals, forward comments to your local Nokia NMS support staff.

1.1 How to use this manual

This guide assumes no previous knowledge of the Nokia NMS, but you should have experience with a GUI (graphical user interface) such as Microsoft Windows™.

- Chapter 1 introduces the structure of the document and explains the conventions used there.
- Chapter 2 gives an overall description of the system without going into detail of how to use it.
- Chapter 3 briefly introduces the graphical user interface that the Nokia NMS is based on.
- Chapter 4 contains detailed instructions about how to use the Top-level User Interface of the Nokia NMS.
- Chapter 5 tells where to go after completing the introduction.

If you have already read *Feature Descriptions [3]*, or *Product Description [5]*, you can skip the first three sections of Chapter 2. If you are already well-versed in Hewlett Packard's VUE, you can skip Chapter 3. If you are already familiar with this or other versions of the Nokia NMS, you may just want to keep this guide for reference. In this case, Chapter 4 will be most useful to you. Both Chapter 3 and Chapter 4 are intended to be worked through while you are sitting at the workstation and using the Nokia NMS.

At the back of this document you will find "References" with suggestions for further reading, and "Glossary" with the most important technical terms used in the Nokia NMS. The full version of the glossary is provided as a separate document *Glossary [13]*.

1.2 Typographic conventions

The Nokia NMS manuals use the following typographic conventions:

Initial Upper Case	Names of applications, windows and dialogs
Initial Upper Case in Bold	Menu items, icons and buttons
Initial Upper Case in Italics	Referenced document titles
SMALL UPPER CASE LETTERS	Keys on the keyboard or mouse buttons. Mouse buttons are defined as SELECT (left), ADJUST (middle), and MENU (right). Since mouse buttons can be configured by the user, these functions do not always correspond to the same positions.
`The Courier font`	Output from the computer, user names, file and directory names, database table names and counters
`Courier bold`	Input the user types
Click **File** → **Exit**	Choose **Exit** from the **File** menu
< >	Variable information to be supplied by the user is identified between angle brackets < >
[ ]	Optional information in a command is indicated within brackets [ ]
%	System prompt for a normal user
#	System prompt for the `root` user
	Caution icon. Cautions indicate possible damage to equipment or system.
Note	Notes indicate additional information such as recommendations.
	Task sequence icon. Indicates the start of a procedure.

2 General description

This chapter gives a general description of the Nokia NMS. The following topics are covered in this chapter:

- purpose of the system
- hardware and interfaces
- user applications
- object model
- Top-level User Interface.

2.1 Purpose of the system

The Nokia NMS is a network management system for telecommunications networks which are based on modern telecommunications technology. The Nokia NMS offers functions for fault management, performance management, and configuration management.

A Nokia NMS system provides services for:

- achieving sufficient utilisation and an appropriate balance of load in all network elements while keeping up the required quality of service for the subscriber
- supporting the network operator in planning network evolution and restructuring of the network (for example by adding additional network elements)
- supporting efficient maintenance activities.

2.2 Hardware and interfaces

The Nokia NMS system consists of workstations, servers, X-terminals, and PCs. The user workstations and the servers are connected through a local or wide area network based on the TCP/IP protocol. The users work in a GUI environment running on either workstations or X-terminals and all applications and data are stored in the servers. Some functions are performed using PCs which retrieve data from the servers for further processing.

Logically, there are three kinds of servers in a Nokia NMS system. Database Servers provide the applications with an SQL interface for storing and retrieving network management data. Communication Servers act as gateways between the management applications and the managed network elements. Application Servers run the terminal sessions for the Nokia NMS users.

These functions can be performed by the same machine, so it would be possible to build a Nokia NMS system with just one physical server. In practice, there are usually at least two servers so that one can provide redundancy for the other. The actual hardware configuration varies according to your company's needs.

If the managed network is large, there may be multiple Communication Servers and a large number of Application Servers may be running the user interface. The workstations running the Nokia NMS can be distributed to different locations and connected via a LAN or WAN. The network elements are connected to the Nokia NMS via DCN (Data Communication Network) using X.25 or Ethernet (TCP/IP or ISO/IP) protocols. A typical hardware configuration of the Nokia NMS for a small network is shown in Figure 1.

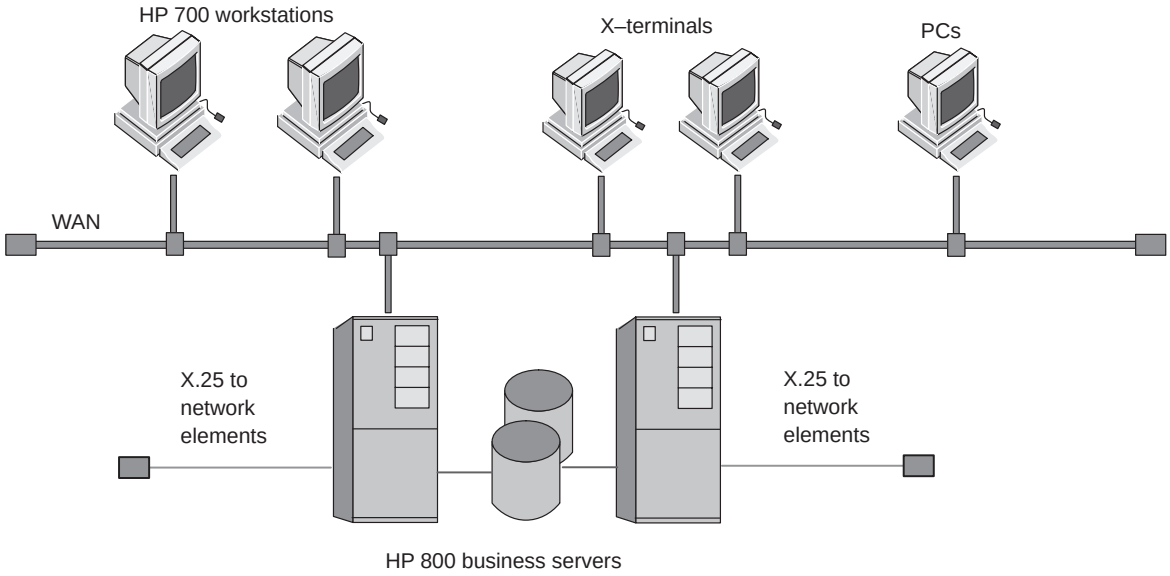

Figure 1. Example of the Nokia NMS configuration

In this example, there are two servers which are configured to provide redundancy to each other. Various hardware and software safeguards ensure that the system keeps running even if one server fails.

2.3 User applications

The user application software consists of independent parts that store their data in the common Nokia NMS database and communicate through shared

communication services. This software architecture facilitates a flexible distribution of the user applications in a local area network. You can start any specific Nokia NMS application from the Top-level User Interface. In addition, each application has its own user interface that includes application-specific information and options.

Most user interface facilities are GUI-based and conform with the OSF/Motif Style Guide. Some tasks, however, need to be performed by directly entering MML (Man-Machine Language) commands to the network elements. The Nokia NMS provides facilities to establish these connections quickly and easily.

There are four main groups of graphical network management applications:

The **Top-level User Interface** provides graphical representations of the managed network and offers access to all other Nokia NMS applications.

The **Performance Management** applications collect the performance measurement reports from all network elements into the Nokia NMS database. There are facilities for presenting the data in graphical form and for creating reports. Compressed measurement reports can be obtained from raw measurements on a daily, weekly, or monthly basis.

The **Fault Management** applications collect the alarm notifications from all network elements and allow the user to monitor the alarm situation and view the Alarm History database.

The **Configuration Management** applications provide tools for remote network element management, for network configuration management, and time management.

This guide only deals with the Top-level User Interface of the Nokia NMS. To find information on other applications, refer to Chapter 5.

2.4 Object model of the Nokia NMS

A *managed object* (MO) is a resource that forms part of a telecommunications network and is administered using the Nokia NMS. All elements of a telecommunications network are viewed as managed objects in the Nokia NMS. These objects are organised hierarchically in *classes*. Figure 2 shows the hierarchy of the managed object classes in the Nokia NMS.

Note
Figure 2 contains *all* the objects that can be managed with the Nokia NMS. The shaded objects represent the managed objects of a transmission network. The objects that you can see in your system depend on your configuration.

An object that is higher in the hierarchy than another is called its *parent*. The lower object is called the *child*. The child-parent relationship between managed

objects can mean two things. Either the parent object consists of the child objects or the parent object controls the child object. For example, a DX 210 consists of Functional Units, I/O Units, Subunits, etc. A Remote Switching Unit on the other hand is a self-contained piece of hardware that is controlled by a DX 210 or DX 220 switch.

The physical components of the network are called *instances* of the abstract classes of objects that are represented in the hierarchy. A real DX 210 switch would be an instance of the class of DX 210 switches. This terminology has been adopted from object oriented programming and is not always used consistently. Therefore, it is important to keep the distinction between classes and instances in mind. In everyday usage, both of these are usually referred to simply as objects.

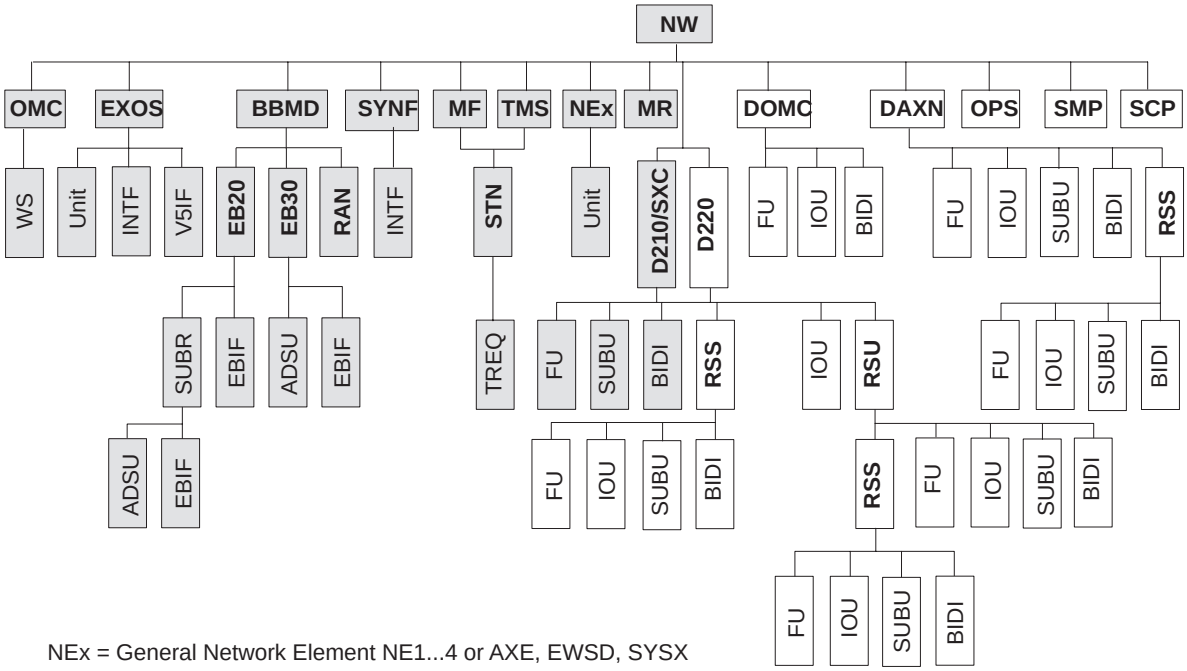

Figure 2. Hierarchy of managed object classes

2.5 Top-level User Interface

The Top-level User Interface has two main functions. It provides a starting point from which other Nokia NMS applications can be launched and it organises the managed objects of the telecommunications network into a hierarchy of views.

A *view* is a graphical representation of a part of the network with a particular level of detail. A view may, for instance, present all the DX 220 switches in a particular area, such as a city. Each of these switches is represented by a symbol, called a *view object*.

The views that the system presents to the user have been designed beforehand to correspond to the telecommunications network that is managed by the Nokia NMS installation in question. Therefore ordinary users cannot change the views. Only system administrators and users with proper authorisation have the right to edit views (Figure 3).

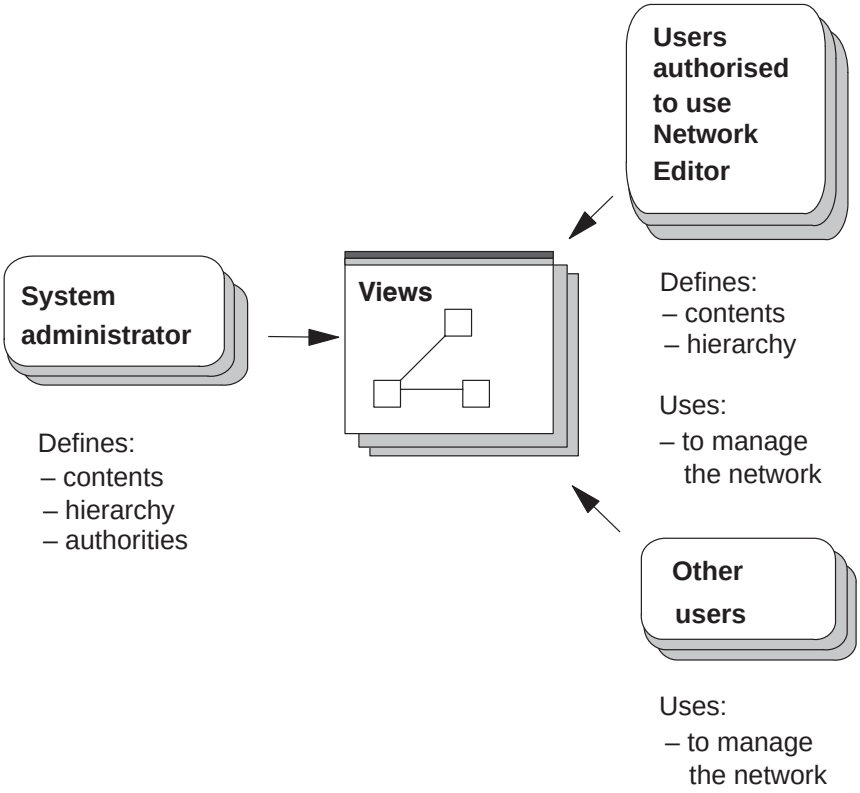

Figure 3. Use of views

Some symbols are linked to subviews which present a more concentrated level of detail, e.g., a symbol for a DX 220 switch may be linked to a subview that presents all the functional units which constitute the switch.

There are four types of view objects:

- *Managed objects* are view objects that represent the physical network elements such as DX 220 or SYNFONET Node. You can give various commands to managed objects. The parameters of managed objects are stored in the Nokia NMS database. Managed objects are always used hierarchically, and they can be used as a link to a subview. Refer to Section 2.4 for more information on the object model.
- A *grouping object* represents a group of other objects. All network elements in a particular location may be represented by a grouping object. For instance, all the switches in a city may be represented by a city grouping object in a view that shows the whole network with every city in the country.

- A *map object* is a graphical element that is used to build up a map. Such a map can be used to illustrate the geographical distribution of network elements.
- A *communication line* (CLine) represents a connection between managed objects.

When a view object has a subview, the symbol of the view object has what looks like a shadow underneath it. By clicking on it, the user can access another view that is lower in the hierarchy. Only managed objects represent pieces of equipment in the real world. All other view objects exist to give clear organisation and structure to the views. Figure 4 presents a simplified model of the view hierarchy.

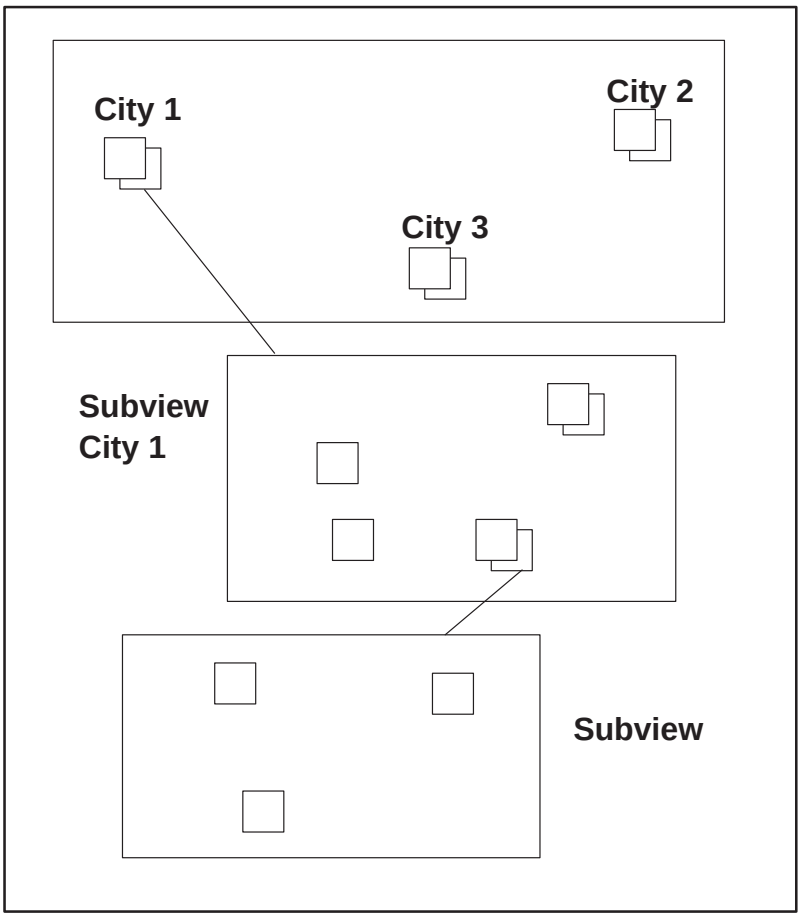

Figure 4. Example of the view hierarchy

3 Using Visual User Environment

This chapter is intended for readers who are not familiar with Hewlett-Packard's VUE (Visual User Environment) but who have used another graphical user interface such as Microsoft Windows™. If you have never used a computer with a GUI, you should refer to the detailed introduction to the system in *HP Visual User Environment 3.0 [53]*. If you are already familiar with VUE, you can skip this chapter.

The Nokia NMS GUI is based on Hewlett-Packard's VUE, a graphical shell which controls the UNIX environment of your Nokia NMS workstation. This chapter gives an overview of some important elements of the graphical user interface used by the Nokia NMS. VUE features are also standard in the Nokia NMS unless otherwise specified.

3.1 Logging in

Before you can operate the Nokia NMS, you need to get a username and password from your system administrator. The system uses them to identify you. Without them, you cannot use the Nokia NMS.

When you switch on your workstation, the system prompts you for your username and password with a dialog. Type the username in the first field and the (secret) password in the second. If both are correct, you are granted access to the system. Your session has started.

3.2 Logging out

The easiest way to log out is to click the **Exit** button on the VUE Workspace Manager. This brings up a dialog asking for confirmation before you are logged out of the workstation.

3.3 VUE mouse conventions

The mouse provided with the VUE has three buttons. See Figure 5 below for a diagram of the mouse and descriptions of its general functions.

Note
Since mouse buttons can be configured by the user, the functions of the left, middle, and right button in your mouse can differ from those in Figure 5.

Clicking is a simple action which consists of pressing and releasing the mouse button when the cursor is on top of a relevant item.

Double-clicking means clicking twice in rapid succession.

Selecting an item means clicking the desired item with the mouse button on the left.

Dragging means placing the mouse cursor on top of a managed object and holding the button down while moving the item to the required location.

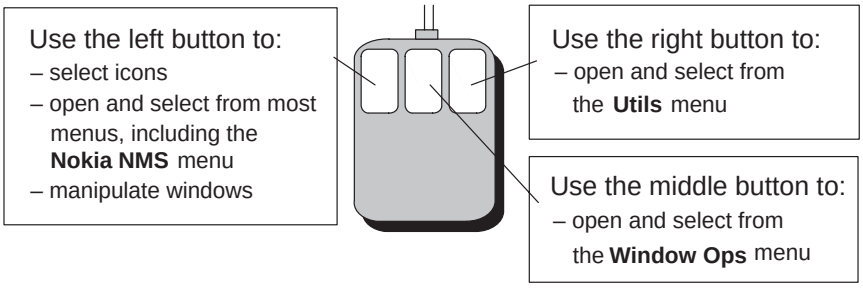

Figure 5. Functions of the mouse buttons in VUE

The button on the *left* is used for selecting icons, opening and selecting from most menus, and manipulating windows within the workspace. When not inside a window, it also opens the **Nokia NMS** menu. This menu allows you to start some Nokia NMS applications.

The button in the *middle* is used for opening and selecting from the **Window Ops** menu. This menu includes such actions as **Refresh Screen** and window manipulation through commands.

The button on the *right* is used for opening and selecting from the **Utils** menu. This menu contains such items as a clock, calendar, and xhost options.

Please note that the functions of the mouse in VUE and the Nokia NMS are different. These mouse instructions apply only when the cursor lies in VUE windows and workspaces. Refer to Section 4.2 for a summary of the functions of the mouse in the Nokia NMS. Further details on how to use the mouse are provided in the relevant sections for each application within VUE and the Nokia NMS.

3.4 The Workspace Manager

Figure 6 shows the VUE Workspace Manager under the Nokia NMS. This Workspace Manager always appears on your desktop when you are using the Nokia NMS. It is your starting point for accessing the system.

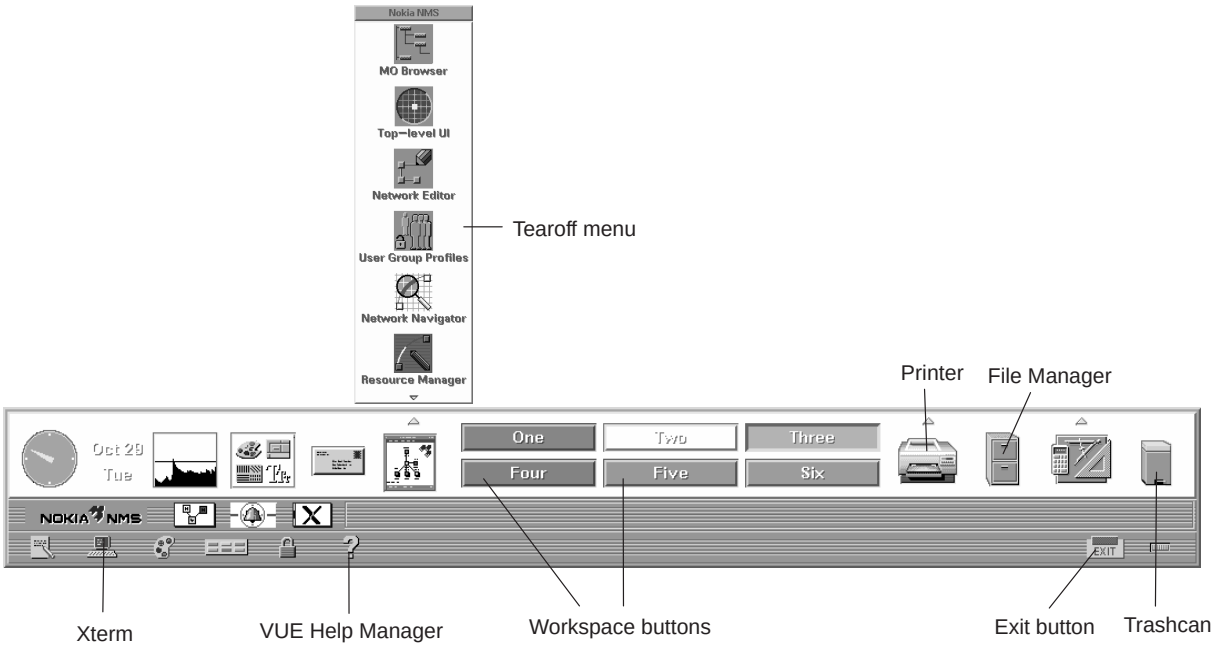

Figure 6. VUE Workspace Manager (front panel) in the Nokia NMS

The VUE Workspace Manager (also called front panel) provides a panel of controls for applications, sessions, workspaces, and subpanels (or tearoff menus). The most important Nokia NMS applications are configured as icons in Workspace Manager and can be started by clicking the icons with the mouse. The icons that appear in the Workspace Manager are configured by your system administrator. Therefore, it is possible that it looks different on your system. Ask your system administrator about the meaning of any icons that are not explained here or in *HP Visual User Environment 3.0 [53]*.

3.5 Workspaces

A screen with its application windows is called a workspace. VUE can maintain several workspaces which let you organise your work by grouping related windows in the same workspace. It is like having several monitors in front of you, each with a different picture. On each screen you can work normally, e.g., open windows and run programs. The contents of all the screens you are not currently looking at are stored in memory. You can switch between the workspaces by clicking the workspace buttons in the VUE Workspace Manager.

3.6 Menus

Three kinds of menus are used in the VUE:

- A *pulldown* menu is reached through the menu bar at the top edge of a window or the window menu button in the top left corner of the window. Its content is displayed when you click on its title with the left mouse button.
- *Popup* menus are either general VUE menus or specific to objects in the Top-level User Interface. The general popup menus appear when you click a mouse button on the desktop and the mouse pointer is not inside any window. There is usually a different menu associated with each mouse button. For information on popup menus in the Nokia NMS, refer to Section 4.4.3.
- *Tearoff* menus (also called *subpanels* in VUE) are reached by clicking on the little triangles above some of the icons on the Workspace Manager with the left mouse button. They can be detached from the Workspace Manager by clicking on their title bar and moving them while holding down the mouse button. The menu then stays in place until it is removed. You can remove a tearoff menu by clicking the small triangle at the bottom of the menu with the left mouse button.

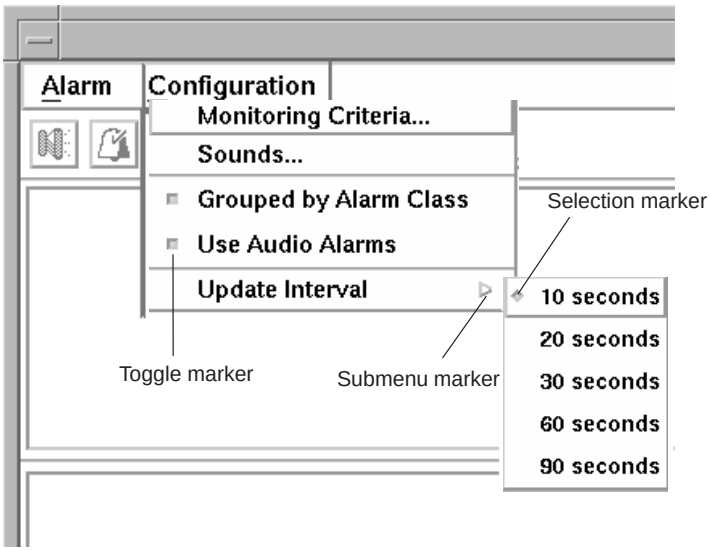

Figure 7. Markers of menu items

Three different markers may appear in menus to convey more information about the menu item. The markers are shown in Figure 7. A *toggle marker* is either visible or not visible. If it is visible, it means that the menu item has been selected earlier and is now active. If the menu item is chosen again, the marker will disappear and the option will become inactive. A *selection marker* applies to a range of menu options, only one of which can be active at a time. In the

example, only one update interval can be active. The one that has been chosen last will be the active one and carry the marker. The *submenu marker* indicates that the menu has a submenu. If you choose a menu item with three dots, a dialog appears for further selections by the user.

3.7 Option buttons

Analogous to the menu markers, there are several different kinds of option buttons in the graphical user interface. Figure 8 shows the four types of option buttons available.

- *Radio buttons* form a range. Only one of them can be active at a time. Thus, clicking on one radio button deselects any other in the range and the button most recently clicked becomes active.
- A *check* (or *toggle*) *button* indicates that the option it relates to has been selected. If several check buttons form a range, more than one of them can be selected at the same time.
- *Stepper buttons* permit the user to move up or down numerical options according to the arrows on the side. Clicking on the button pointing upwards causes the value to rise by one. Clicking on the button pointing downwards causes the value to drop by one.
- *Sliders* allow continuous values of different variables where exact numerical values are not so important.

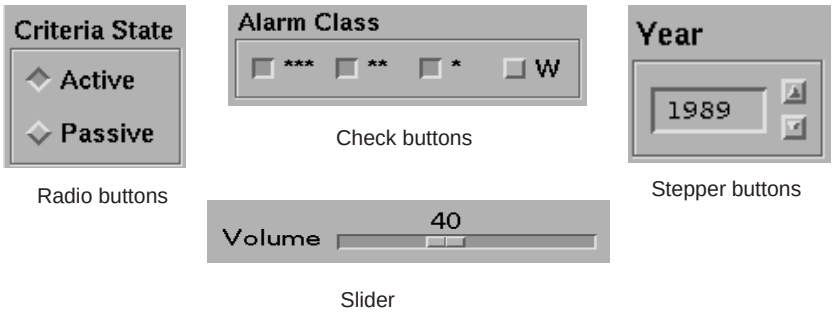

Figure 8. Types of buttons within the graphical user interface

3.8 Cut and paste

‘‘Cut and Paste” is a method of transferring text between windows. In a text editor, use the menu items **Cut**, **Copy**, and **Paste** from the **Edit** menu. In VUE (as in most UNIX based windowing systems), select text in a window by

moving the mouse cursor over it while holding down the left mouse button. The selected text appears inverted: the background goes light and the text goes dark. When all the required text is inverted, release the left mouse button. To paste the selected text into another window, place the text cursor where the text should appear. Click the middle mouse button. The originally selected text is not affected by this operation.

3.9 Drag-and-drop

‘‘Drag-and-Drop” is a quick way of transferring data between and within applications. In VUE, this is done in three steps:

1. Select the icon of the object to be moved by clicking it with the left mouse button.
2. Keep the button down and move the object to its target (that is, drag).
3. Release (that is, drop) the object into its target.

A simple example of drag-and-drop is selecting a file from File Manager and moving and dropping it on the printer object. As a result, the selected file is printed.

If an icon is dropped to a place that cannot receive it, the cursor will change to indicate this fact. In that case, the drag-and-drop operation will have no consequences.

For guidelines on drag-and-drop within the Nokia NMS, refer to Section 4.4.5.

3.10 File Manager

File Manager is a program that lets you view and manipulate the files and directories in your system. Start File Manager by clicking its icon on the Workspace Manager. It opens and displays the contents of your home directory. In your home directory, there are icons representing folders (directories) and documents. Change to a folder by double-clicking on it. Double-clicking on a document starts a text editor that displays the contents of the document. To exit File Manager, click **File → Close.**

3.11 Trashcan

To remove a file, simply drag-and-drop it onto the **Trashcan** icon. This removes the file. It is no longer displayed in File Manager. Note that files are not really deleted when they are moved to Trashcan. The process does not actually free any diskspace.

To recover a file from Trashcan:

1. Click the **Trashcan** icon to open Trashcan.
2. Select the file.
3. Click **File** → **Restore**.

To delete a file:

1. Move the file to Trashcan.
2. Click the **Trashcan** icon to open Trashcan.
3. Select the file.
4. Click **File** → **Remove**.

   After this, the file cannot be recovered.

Note
Trashcan is automatically emptied (that is, all files are deleted) when the user logs out.

To close Trashcan, click **File** → **Close**.

3.12 Xterm windows

Use an xterm window to directly type commands to the system. Open an xterm window by clicking the blue X icon on the VUE Workspace Manager. There are various customisation options available to change the appearance of xterm windows. These can be accessed by clicking the middle and right mouse buttons inside the xterm while holding down the CTRL key. For example, make the xterm window scrollable by clicking the middle mouse button while holding down the CTRL key. This brings up a popup menu from which you should choose the option **Enable Scrollbar**. To change the font in the xterm window, use the right mouse button menu in the same way.

3.13 Resources

Resources determine the appearance of an application. Change the look of the VUE session and its applications by specifying your own values for the resources used by these applications. How resources are used and specified is beyond the scope of this guide. Information on this topic can be found in *HP Visual User Environment 3.0 [53]*.

4 Using the Nokia NMS

This chapter introduces you to working with the Nokia NMS. It should be read by all new users. It is best understood while sitting in front of the workstation and working with the system. It concentrates on how to use the Top-level User Interface and on how to navigate the view hierarchy presented by it. Information on the other Nokia NMS applications can be found in the appropriate advanced guides. Refer to “References” for a list of these guides.

The layout of the graphical user interfaces described in Nokia NMS customer documentation may change without notice according to the application development demands. Therefore, there may be some minor differences between what you see on your screen and what you read in Nokia NMS manuals. Major changes are always accompanied by supporting documentation.

Some Nokia NMS manuals may describe features that are not included in your software package.

4.1 Getting started

Figure 9 once more shows the VUE Workspace Manager. This time the Nokia specific elements are labelled.

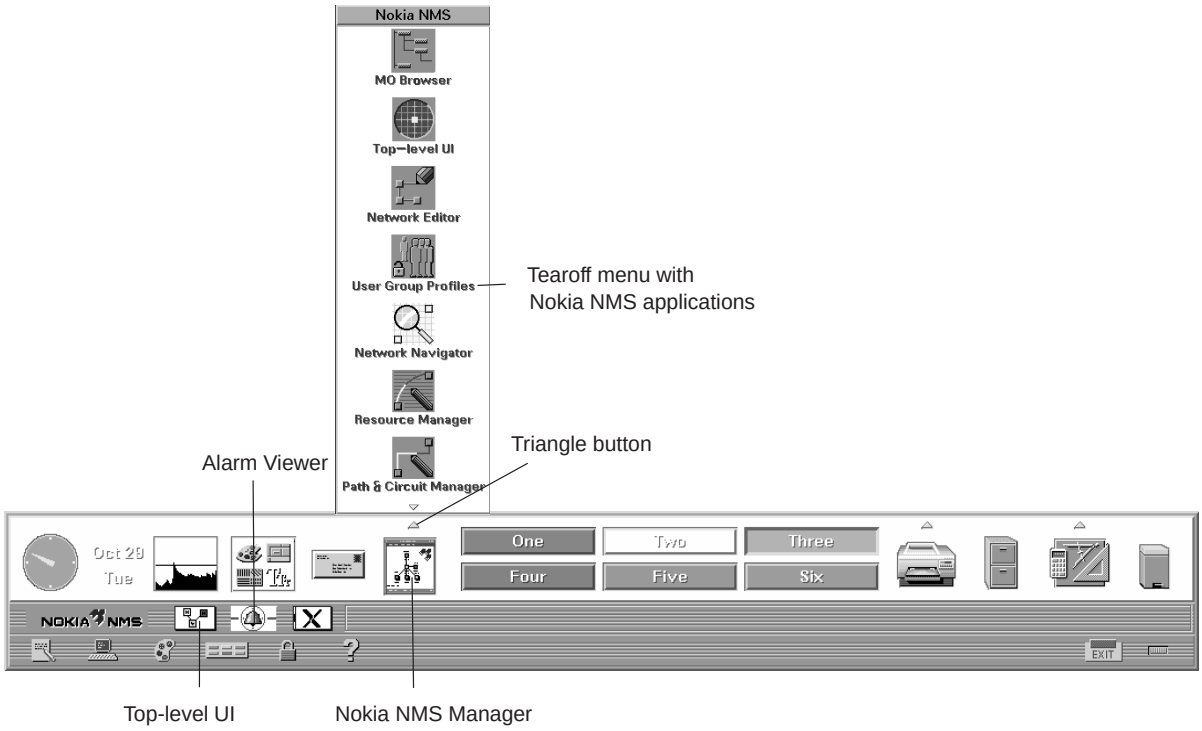

Figure 9. VUE Workspace Manager of the Nokia NMS

The first thing you will probably want to do when you log in to the Nokia NMS is start the Top-level User Interface. There are four alternative ways to do this:

a. Click the **Top-level UI** icon on the VUE Workspace Manager.

b. Click the triangle button above the **Nokia NMS Manager** icon to open the **Nokia NMS** tearoff menu. On the menu, click the **Top-level UI** icon.

c. Place the pointer in a vacant area of the screen and then click and hold the SELECT (left) mouse button. This opens up the **Nokia NMS** popup menu. Choose **Top-level UI** to start the Top-level User Interface.

d. Click the **Nokia NMS Manager** icon on the VUE Workspace Manager.

The first three ways (a, b, c) bring up the Opening a View dialog. It prompts for the name of the view to be opened. It contains the names of all the views that are in the system. Only some of those views may be relevant for your particular purpose. If you are not sure which, ask your system administrator. Select a name and click the **OK** button. The Top-level User Interface (see Figure 10) is then loaded with the view you have selected.

The fourth alternative (d) automatically opens the default view which has been preset by the system administrator.

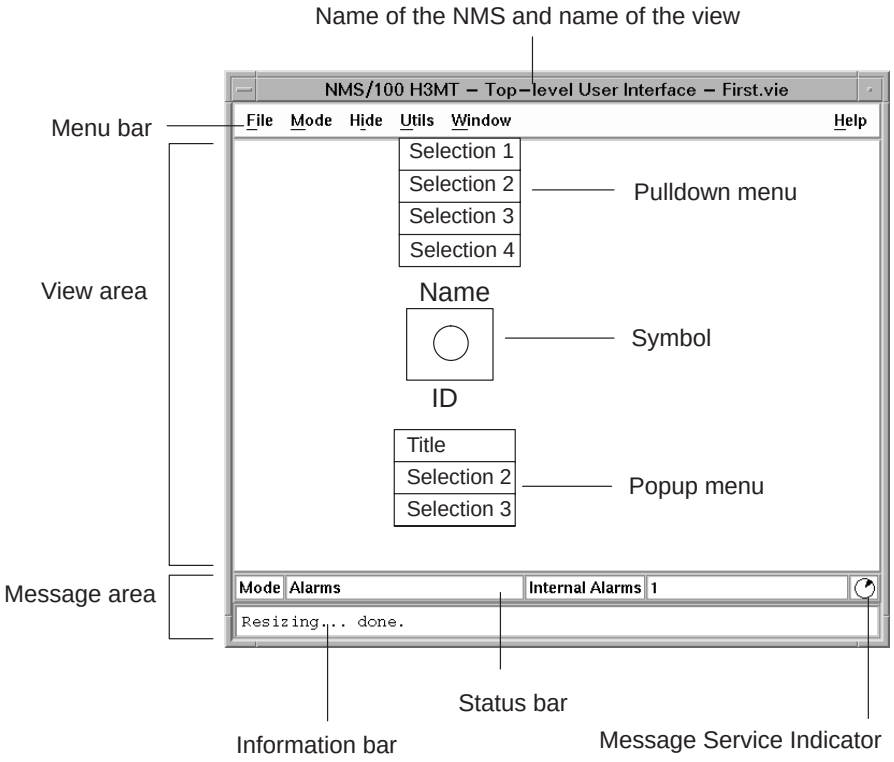

Figure 10. Areas of the Top-level User Interface window

4.2 Nokia NMS mouse conventions

The mouse provided with the Nokia NMS system has three buttons. See Figure 11 for a diagram of the mouse and lists of its general functions.

Note
Since mouse buttons can be configured by the user, the functions of the left, middle, and right button in your mouse can differ from those in Figure 11.

The SELECT button (default position on the *left*) is used for selecting view objects and choosing menu commands.

The ADJUST button (default position in the *middle*) is used in the drag-and-drop operation. The user drags managed objects from the Top-level User Interface to other applications. Refer to Section 4.4.5 for more detailed information on dragging and dropping within the Nokia NMS.

The MENU button (default position on the *right*) is used for calling popup menus and choosing commands on these menus.

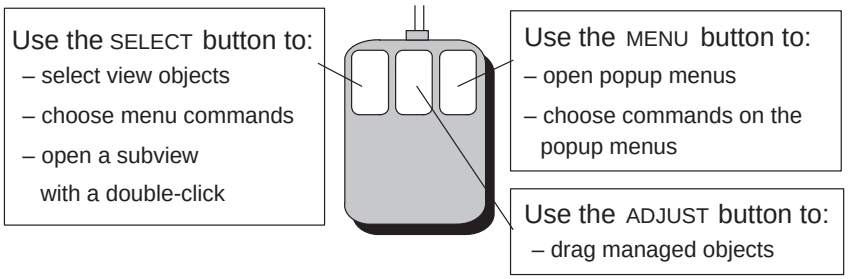

Figure 11. Function of the mouse buttons in the Nokia NMS

To select several items simultaneously, there are three possibilities:

- Select each item individually, holding the SHIFT or CTRL key at the same time.
- For lists, hold down the SELECT (left) mouse button and move it down the list. Each selected item in the list will be highlighted.
- For icons, hold down the SELECT (left) mouse button. A flexible rectangle pops up. It will be anchored at the place where it appears. Move the rectangle to surround the desired icons.

Please note that the functions of the mouse with the Nokia NMS and VUE are different. These mouse instructions only apply when the cursor lies within Nokia NMS windows. Refer to Section 3.3 for a summary of the functions of the mouse in VUE. Further details on the use of the mouse are provided in the relevant sections for each application within VUE and the Nokia NMS.

4.3 User interface

4.3.1 Menu bar

The menu bar of the Top-level User Interface lets you access most applications, allows you to switch between views, and lets you change the appearance of the view you see on the desktop. This section follows the structure of the menu bar, illustrated in Figure 12.

Figure 12. Top-level User Interface menu bar

Note
The system administrator can set up the system so that the **User** menu is not present.

File menu

Figure 13. **File** menu

Open...	Lets you open a new view in the current window. The command opens the Opening a View dialog. Select a new view and click **OK**. The new view opens. The system reads the view and all its subviews and loads them into memory. The old views disappear. You can also use this command to refresh the view. This command reads the contents of the view and its subviews from the disk. If it finds objects that are not already in the memory of the Top-level User Interface it reads those objects from the database.
Find Object	Lets you find any managed object, even if you do not know its location in the view hierarchy. The command opens a submenu that contains all classes of managed objects known to the system. When you select a class, a dialog appears that contains all the managed objects of that class known to your Nokia NMS installation. If you select one and click the **OK** button, *or* simply double-click one of the items, the Opening a Found View dialog appears listing all the views that contain the particular managed object you have selected. Select the view you want and click **OK** to open it.
Options...	Opens the Options dialog where you can choose whether you wish to turn on the blinking of unacknowledged alarms or adjust the blinking rate.
Duplicate...	Lets you look at two or more different views on the screen at the same time by opening another Top-level User Interface window. This second window is another instance of the Top-level User Interface and works independently.

Continued

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Refresh	Lets you update the view presented in the window. If the view has been modified, it will be marked by having its name in the name panel printed between two stars. Additionally, the information panel at the bottom of the window will display a notice. This command reads the contents of the view from the disk but it also reads objects from the database in order to update the colours of the objects in the view.
Exit	Ends the Top-level User Interface session. It does not affect any other Top-level User Interface windows that are open.

Mode menu

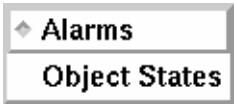

Figure 14. **Mode** menu

In the fault management applications of the Nokia NMS, managed object symbols have different colours reflecting the fault situation. The symbols are also blinking if there are unacknowledged alarms. For more information on colours and blinking, refer to *Managing Network Alarms [22]*. The **Mode** command lets you turn the colours and blinking on or off:

Alarms	Turns the colours and blinking on (default setting).
Object States	Turns the colours and blinking off.

Hide menu

Figure 15. **Hide** menu

Sometimes a view contains many view objects and therefore appears cluttered. The **Hide** command lets you select classes of view objects to remove from view. It contains the following options:

None	Turns all managed objects back into the *On* state, making them visible on the screen again.
All	Turns all managed objects into the *Off* state, making them invisible on the screen.
Map	Takes the map away from the background.
Cline	Takes the communication lines away.
Object Types	Opens a submenu which displays a list of all classes of view objects in the current view hierarchy. To hide a class, simply select it from the menu. Select the class again to make it visible.

Utils menu

This menu (Figure 16) lets you start some of the other applications that make up the Nokia NMS. For more information on the applications, refer to the appropriate user's guides.

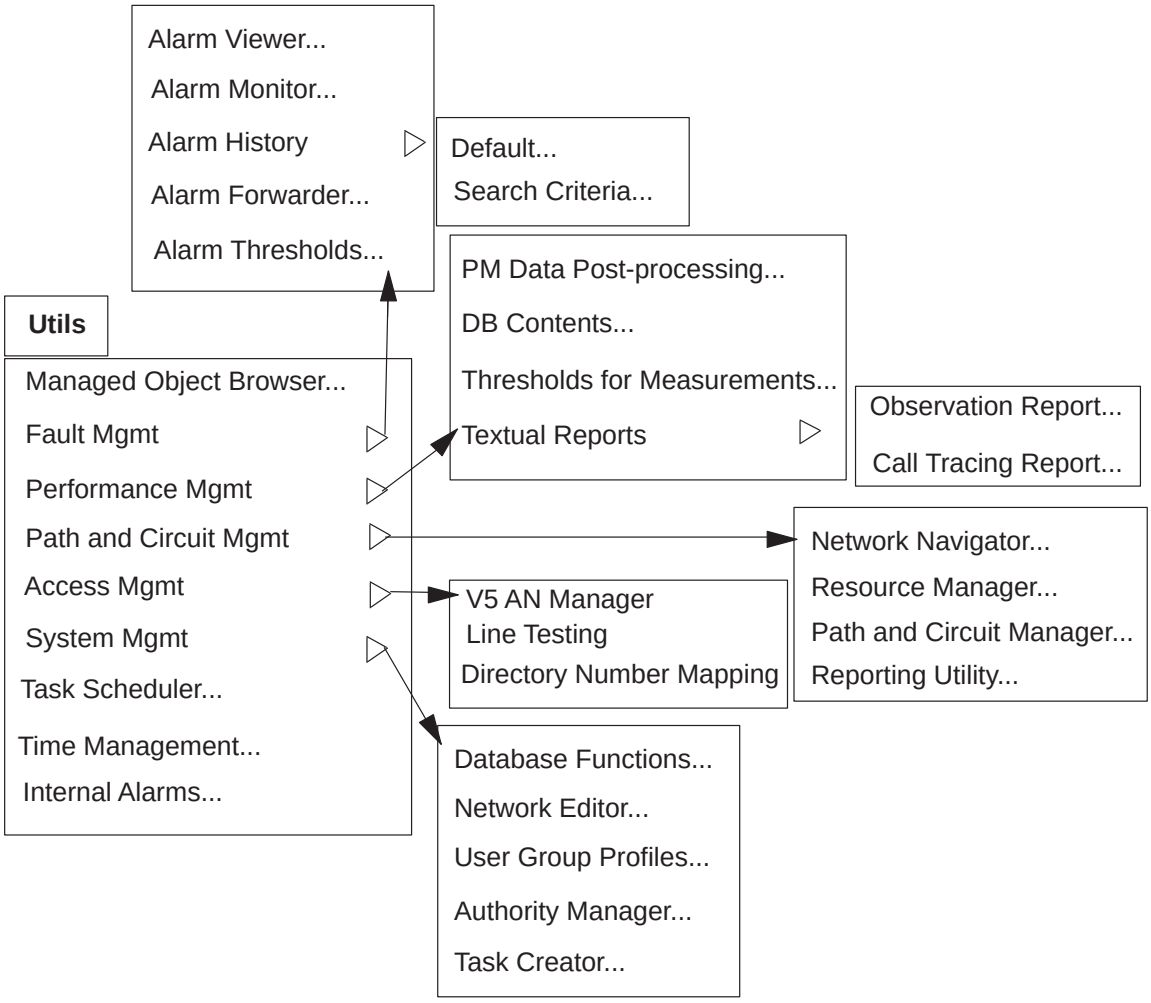

Figure 16. **Utils** menu of the Top-level User Interface

Note
Which applications appear on the menu depends on your particular installation and authorisation.

User menu

This menu gives access to some standard Unix applications such as E-mail, a clock, the Unix command shell, and so on. The contents of this menu are determined by your system administrator. The system administrator can also set up the system so that the User menu will not be present.

Window menu

This menu contains all the views that belong to a particular view hierarchy and that you have visited already. When you start the Top-level User Interface, the

Window menu contains only one item: the name of the view you are in. If that view has subviews, and you change to one of those, both the view you are currently in and the previous one will appear in the menu. You can now change between them by simply choosing their names from the menu. All the subviews you visit are added to the menu, thus providing an easy way to navigate between views. When you click **File** → **Open...**, however, the system will forget all the previous views and only the views you have visited after the last **Open** command will appear on the menu.

Help menu

Every application of the Nokia NMS offers a **Help** item in its menu bar. This gives direct access to the help topics of the particular application. Another way to get help is by pressing F1. This starts the Help application and automatically loads the text that relates to the window or dialog that is currently active. If a Nokia NMS Help window is already open, it is updated with the new help text or index.

The following items are on the **Help** menu.

Figure 17. **Help** menu

About...	Displays the name of the application, the version number, and the copyright notice.
Index...	Provides a list of all available Help topics for the particular application in which help was requested. Figure 18 illustrates the Help window with the Main Index for the Top-level User Interface.The buttons on the button bar have the following functions: **Index** opens the Main Index for the Top-level User Interface. **Back** returns to the most recently opened Help page. **Browse <<** moves backward from the current Help page to the previous one. **Browse >>** moves forward from the current Help page to the next one. **Open** gives access to the currently selected Help page.
Current Topic F1...	Displays information on using the context-sensitive help feature, which is invoked by pressing F1.
How to Use Help...	Provides instructions on using Help.
Getting Started...	Gives instructions on how to begin using the particular application.
Help on Colours...	Brings up a window that shows which colours are used for the various alarm classes and object states. For more information on alarm colours, refer to *Managing Network Alarms [22].* Only available in the **Help** menu of the Top-level User Interface and Network Editor. The Network Editor **Help** menu does not show alarm colours, but does show the colours of object states. **Note:** Object states are not functional in the current version of the Nokia NMS.
Help on Symbols...	Every class of managed object has its own symbol. This command brings up a dialog that shows which symbols are used for the various classes. For more information on these symbols, refer to *View Management [42].* Only available in the **Help** menu of the Top-level User Interface, Network Editor, and Network Navigator. In the last-mentioned application, this command displays the transmission network specific symbols.

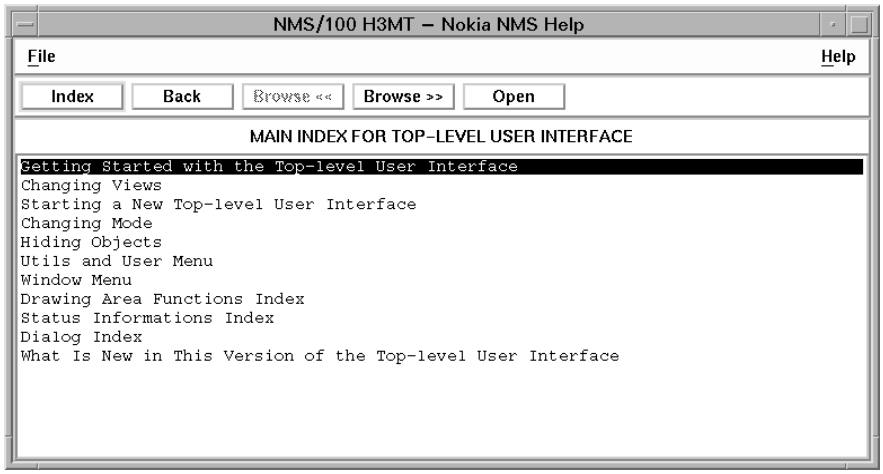

Figure 18. Nokia NMS Help with the Main Index Help page

4.3.2 View area

The view area contains the view objects, the popup menu of the whole view, as well as popup menus of managed objects in the current view.

4.3.3 Message area

The message area has the following components:

- The status bar shows the mode of the view. The status bar also shows the number of Internal Alarms, in other words, critical alarm situations such as local message service failures, database connection failures, or failures in the observation of the database connections.
- The information bar displays any additional information related to the current view, for example, `Changing mode to Alarms...done`.
- The Message Service Indicator denotes the message service. If the message service is working, the indicator is running. If the message service is not working, the symbol is crossed out.

Figure 19 illustrates a view in the Top-level User Interface window.

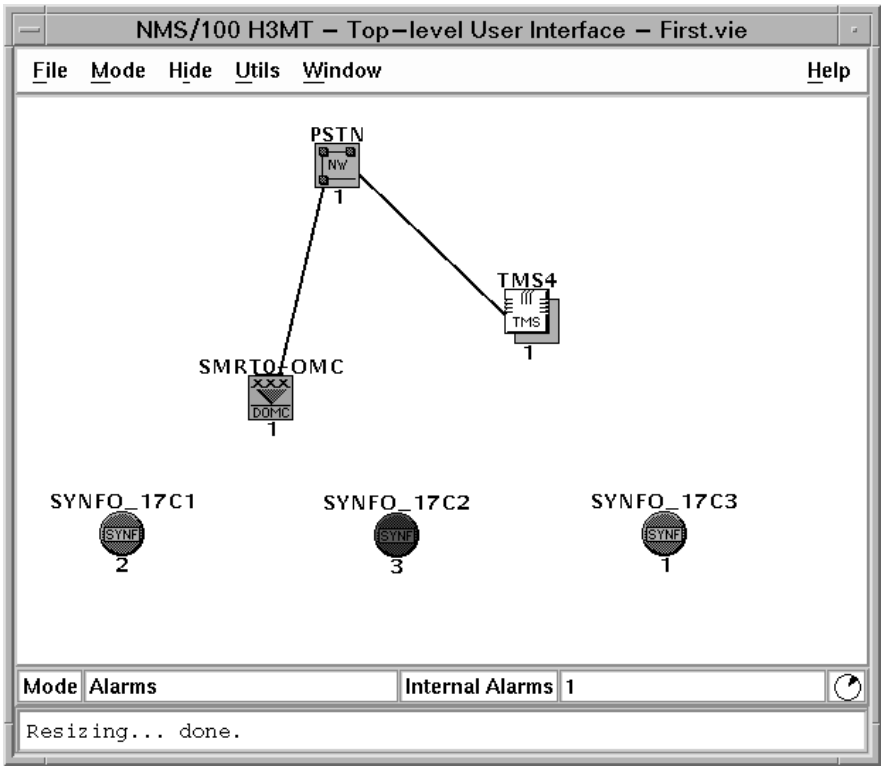

Figure 19. Example of a view

4.4 Working with views

4.4.1 View objects

Every view object provides several pieces of information about the managed object it represents.

- The *class* of the managed object is shown by its symbol. Click **Help** → **Help on Symbols...** in the Top-level User Interface for more information.
- The *alarm class* is shown by the colour of the symbol. If the object is blinking, the managed object has sent an alarm that has not yet been acknowledged. Click **Help** → **Help on Colours...** in the Top-level User Interface for more information.
- The *ID of the object* uniquely identifies the network element to the Nokia NMS database. It appears directly underneath the object symbol.
- The *object name* is another unique identifier for each network element. It appears directly above the symbol and its main purpose is to make the individual network elements easier to remember.
- Some view objects are *shaded*. This means they are linked to a subview.

Figure 20 points out each identifying part of a Nokia NMS icon. The full set of Nokia NMS view objects may be seen in the Top-level User Interface **Help** menu. See Section 4.3.1, “Help Menu”.

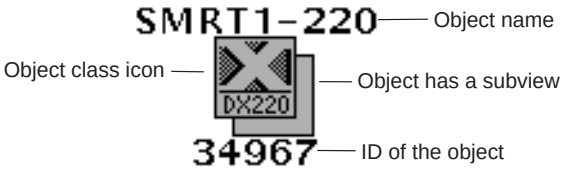

Figure 20. A view object in the Nokia NMS

4.4.2 Navigating the view hierarchy

There are several ways to change views.

a. Open a new view by clicking **File** → **Open...**, as described in Section 4.3.1 “File Menu”.

b. If a symbol is shaded, it has a subview. You can simply change to the symbol’s subview by double-clicking the symbol.

c. Find a managed object, as described in Section 4.3.1, “File Menu”.

d. Use the **Window** menu to return to a view you have opened earlier, as described in Section 4.3.1, “Window Menu”.

e. Use the popup menu, as described in Section 4.4.3.

f. You can locate all the views which contain a particular managed object from your current view by clicking that managed object with the *ADJUST* (middle) mouse button. The Opening a Found View dialog opens with a list of views containing that managed object. You can now open any of those views by selecting it and clicking **OK**.

4.4.3 Popup menu

All view objects except map objects have a popup menu associated with them. There is also a popup menu that applies to the whole view. The menus are activated by clicking an object with the MENU (right) mouse button, or, for the whole view, by clicking the MENU (right) mouse button somewhere inside the view window without pointing at any object. Figure 21 gives an example of a **Whole View** popup menu.

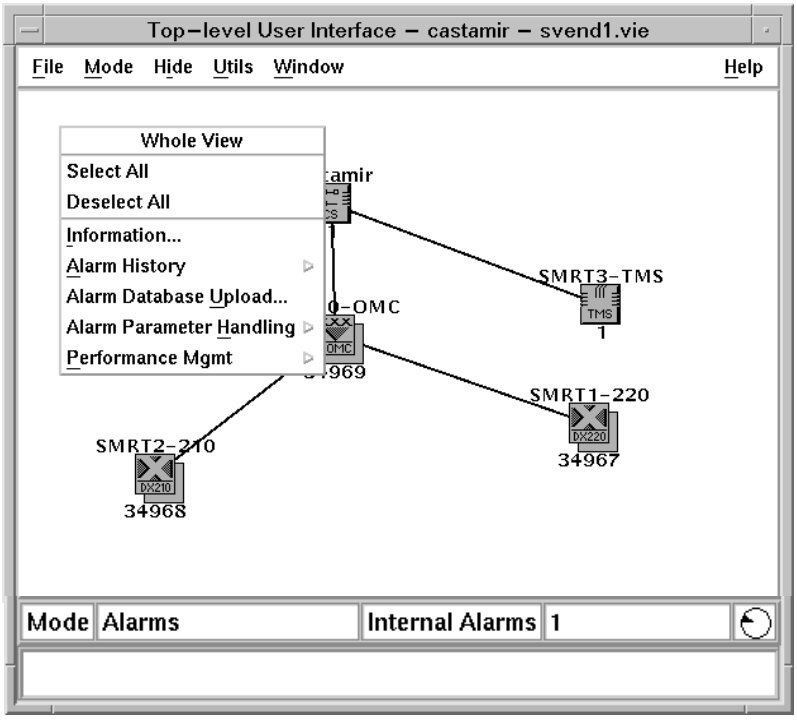

Figure 21. The Top-level User Interface with the **Whole View** popup menu

The commands which appear in a popup menu depend on the object associated with the menu. The exact composition of each menu may vary with your configuration and the context you are working in.

The following items can appear in a popup menu:

<name of the object>	The first item in every popup menu. The name is the same as the one shown above every symbol. As can be seen in Figure 21, if the popup menu applies to the whole view, the name will be **Whole View.**
Push Next View: <name of the view>	Applies only to single managed objects. It is in the menu if the object has a subview attached. Selecting this option moves the user down to the view which it names. The **Whole View** in Figure 21 cannot have subviews attached. An object is shaded if it has subviews. There are three managed objects in Figure 21 with subviews attached.
Pop Previous View: <name of the view>	Available in the menu if the current view is a subview. It moves up to the view which it names. The **Whole View** in Figure 21 is not a subview of a previous view.
Select All	Only available with the **Whole View** option. It selects all managed objects from the view for further action.

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Deselect All	Only available with the **Whole View** option. As its name suggests, the opposite of **Select All**.
Information...	Available on every popup menu in the Top-level User Interface. If chosen from a *managed object popup menu*, the **Information...** command opens the Object Details - Int ID <XXXX> dialog which contains information about individual managed objects, such as its maintenance region, its parent object, and so on. If chosen from the **Whole View** popup menu, the **Information...** command opens an Information on Objects window listing all the managed objects on the Top-level User Interface. If you wish to view the details of any of the managed objects in the list, select the desired managed object, and click **View** → **Details...**, *or* simply double-click the desired object. If you wish to go down a level in the hierarchy, select the desired managed object, and click **View** → **Children...**. The Information on Objects window at the current level opens. If chosen from the popup menu of several selected managed objects (**Multiple Objects** menu), the **Information...** command opens an Information on Objects window listing the selected objects. To view the details, proceed as above.
Note...	Only available on the popup menus for individual managed objects. Choosing it brings up a dialog (Figure 22) into which you can type your own notes. Click into the text area to type or edit notes. When you have finished editing, click the **OK** button. If you click the **Cancel** button, your changes will not be saved. You can also print the notes by clicking the **Print** button. When you add a note or make changes to an already existing note, the note automatically becomes active. The next time you choose this command for the same object, you can read or edit your notes. A managed object with an active note attached to it has its name shown with a black background. Active notes are acknowledged as read by clicking the **Note Indicator** button in the Notepad dialog.

Continued

Continued

Alarm History **Alarm Database Upload...** **Alarm Parameter Handling**	These commands start Fault Management applications. More information on these applications can be found in *Managing Network Alarms [22].*
Performance Management	Starts the Performance Management Database Contents application. The details may be obtained from *Managing Network Performance Data [23].*
Database Maintenance	Allows you to delete, acknowledge, or cancel all alarms of a selected managed object. For more information, refer to *Database Maintenance* [35].
MML Session...	Starts an MML session if the selected managed object is a DX 200 switch,TMS4, or 10 MF. The Nokia NMS automatically logs in to the network element and you can enter MML commands to it. More information on using MML can be found in *Remote Management of Network Elements [26].*
MML Session to Parent...	Starts an MML session to the parent network element if the selected managed object is a subordinate object of a DX 200 switch, TMS4, or 10 MF. More information can be found in *Remote Management of Network Elements [26].*
Node Manager...	Opens a session to a node manager. More information can be found in *Remote Management of Network Elements [26].*
Service Terminal Emulator...	Used for starting the TMS4 Service Terminal Emulator. More information can be found in *Remote Management of Network Elements [26].*
Macro STE...	Used for starting the Macro Service Terminal Emulator. More information can be found in *Remote Management of Network Elements [26].*

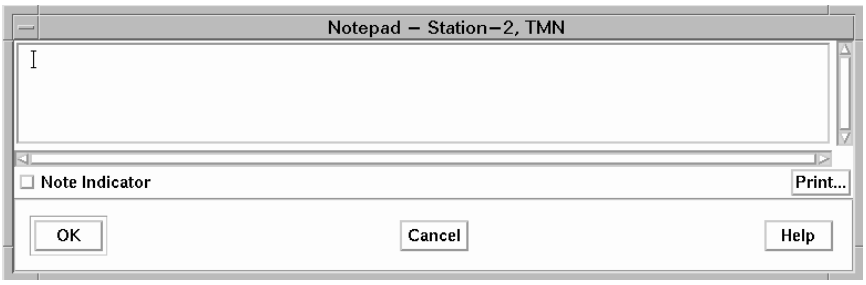


Figure 22. Notepad

4.4.4 Commands to objects

There are several ways of giving commands to objects in a view:

Commands to one object

1. Place the cursor on the desired objects.
2. Click the MENU (right) button to invoke the popup menu associated with that object.
3. Click the desired command on the popup menu.

Commands to an object and its subview

1. Select an object and its shadow. There are several ways of doing this:
   a. Click the shadow with the SELECT (left) mouse button.
   b. Click both the object and its shadow with the SELECT (left) mouse button.
   c. Follow the instructions in Section 4.2 on how to select several items simultaneously.
2. Place the cursor on the object or its shadow.
3. Click the MENU (right) button to invoke the Multiple Objects popup menu associated with that managed object and its subview.
4. Click the desired command on the popup menu.

Commands to all objects

1. Place the cursor on the background.
2. Click the MENU (right) button to invoke the Whole View popup menu.
3. Click the desired command on the popup menu.

Commands to a set of objects

You can form a non-permanent group of objects and give commands to the group:

1. Select multiple objects with the mouse, as described in Section 4.2.
2. Move the cursor onto one of the selected objects.
3. Press and hold the CTRL key and click the MENU (right) mouse button to invoke the Multiple Objects popup menu.
   – If all the objects belong to the same class, the popup menu is the one related to that class.
   – If the objects are from various classes, the popup menu does not contain class specific items.
4. Click the desired command on the popup menu.
5. You can deselect the objects by clicking on the background with the SELECT (left) mouse button.

4.4.5 Dragging and dropping within the Nokia NMS

The drag-and-drop feature in the Top-level User Interface allows you to select a view object in an application and copy it to another application.

1. Select the object(s) to drag, as described in Section 4.2.
2. Place the mouse cursor on top of the desired object(s). Hold down the ADJUST (middle) mouse button. If you have only one object, the cursor changes into the shape of the object. If you have more than one object, the cursor changes into the symbol shown in Figure 23a.
3. Place the cursor over the application to which you want to transfer the object. If the drop site is valid, it will look like Figure 23b. If the drop site is not valid, the cursor will look like Figure 23c.
4. Release the mouse button. If the drop site is valid, the cursor will disappear. If the drop site is not valid, the managed object is taken back to the Top-level User Interface.

If you drag a symbol that has a subview, all objects and subviews of the subview are transferred at the same time. You can also drag and drop a communication line that has a subview. In that case it is the subview that is dragged and dropped.

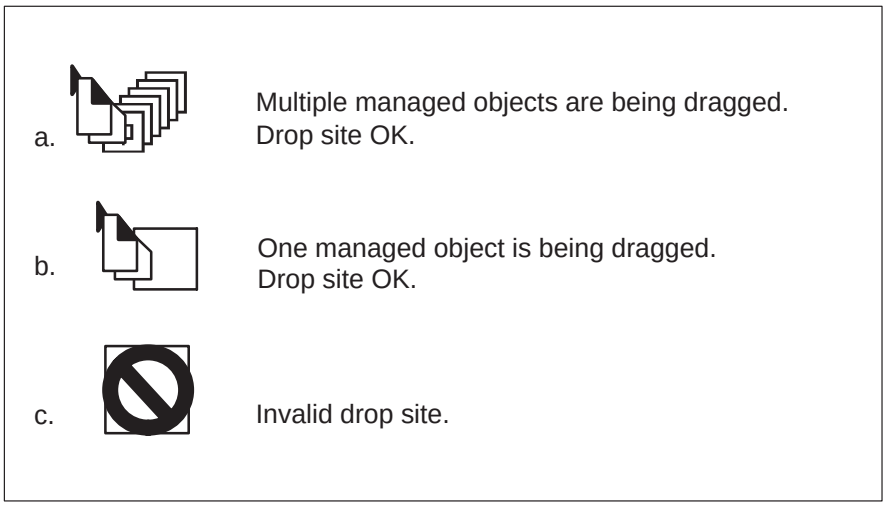


Figure 23. Drag-and-drop symbols

Note
When you have dragged an object to a valid drop site, you can access the Drop Help dialog by holding down the ADJUST (middle) mouse button and pressing the F1 key before dropping. If you click **OK** in the Drop Help dialog, the application will complete the operation. If you click **Cancel**, the whole operation will be cancelled.

5 What to do next

After reading this document, you should be familiar with the basic operating principles of the Nokia NMS and you should be able to use the Top-level User Interface. The next step should be for you to learn to use the applications that you will be using for your everyday work in the operations and maintenance centre.

If you are concerned with...	Look for more information in...
fault management	*Managing Network Alarms [22]*
performance management	*Managing Network Performance Data [23]*
operations on transmission network	*Path and Circuit Management [25]*
performing operations on network elements	*Remote Management of Network Elements [26]*

You can also use the *User's Quick Reference [17]* to find information on a particular topic and brief instructions on how to use the applications of the Nokia NMS.

5.1 Nokia NMS manuals on-line

You can also read, print, and run searches on Nokia NMS manuals on-line.

Opening on-line manuals

1. Place the pointer in a vacant area of the screen. Click and hold the left mouse button.
2. The **Nokia NMS** popup menu opens. Choose **On-line NMS manuals** to start the WorldView viewer.
3. The home page of the on-line manuals opens listing the Nokia NMS customer documents according to document categories.
4. To open a document, double–click the hyperlink symbol next to the name of the document.
5. The document opens to page one. Press the PAGE DOWN key to go to the document's table of contents.

6. Continue to page down to move through the whole document in the same window or double–click the hyperlink in the table of contents to open more than one page simultaneously.

To move from one page to another, click on the empty area in the scroll bar or use the PAGE DOWN or PAGE UP key.

It is also possible to open the document collection from the menu bar. **File** → **Open Collection...** displays the chapters of the entire documentation set. Double-click on a title to open a chapter.

Document titles are displayed in the WorldView windows headers.

Printing on-line manuals

You can print out the documents or only the pages that you need. You can print within a page or document that is open.

1. Open a chapter and select **File→Print** from the menu bar.
2. The print dialog opens. Select the printer (`$LPDEST` is the Nokia NMS default printer) and the range of pages you want to print.
3. Select **Print**. The message area tells when the printing is finished.
4. Click **Cancel** to quit the dialog.

For further instructions how to use the viewer, refer to WorldView documentation and on-line Help.

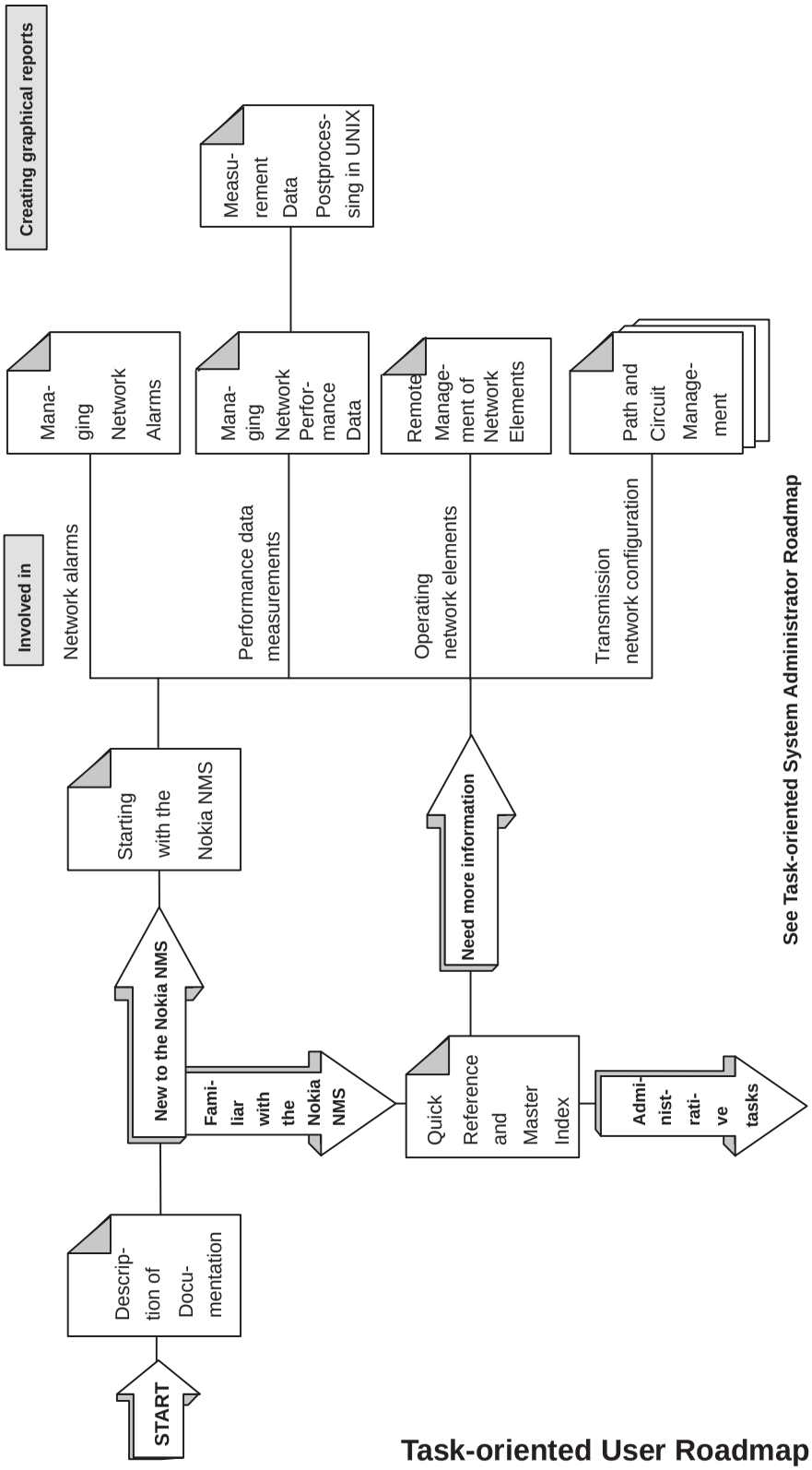
5.2 Nokia NMS Documentation Roadmaps

To further streamline your information search, the following roadmaps are designed to help you find the instructions you need in the Nokia NMS documentation.

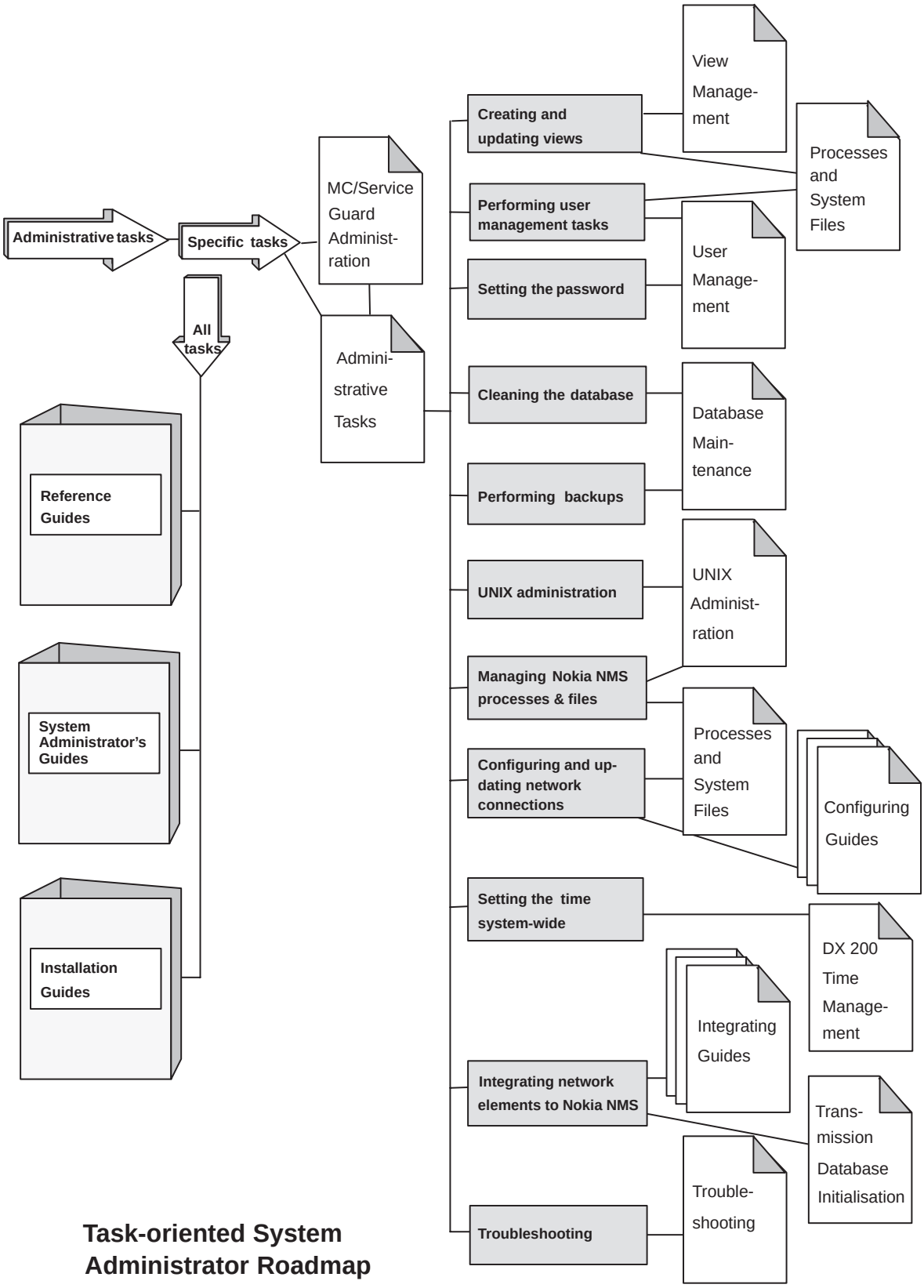
The Task-oriented User Roadmap is for those who want to use and know about Nokia NMS user applications.

The Task-oriented System Administrator Roadmap follows on directly from the previous figure. It helps you when you are performing administrative tasks.

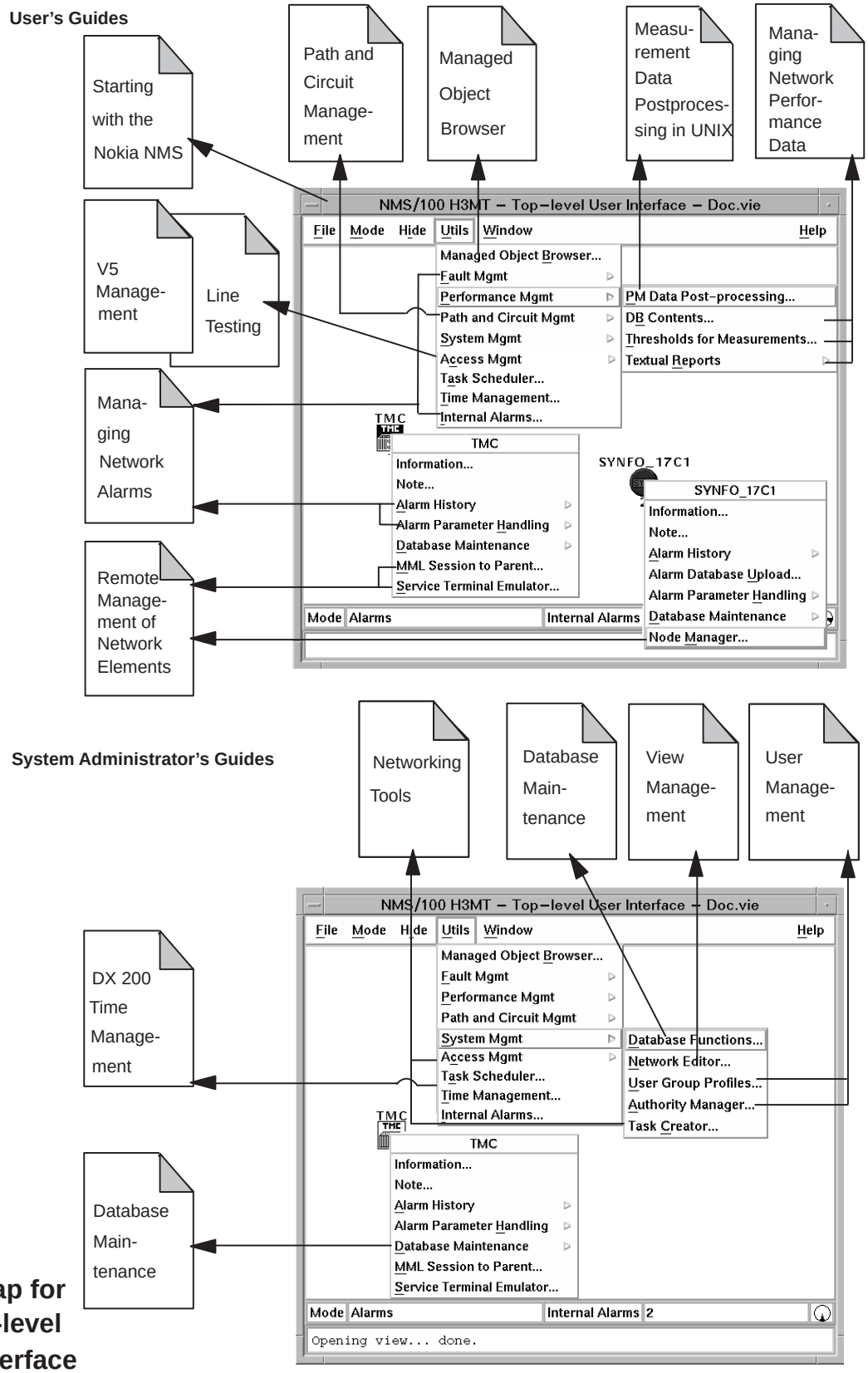
The Roadmap for the Top-level User Interface guides you to the right place in the documentation while you are using the Top-level User Interface.



Task-oriented User Roadmap



Task-oriented System Administrator Roadmap



Roadmap for the Top-level User Interface

References

This section lists only the documents that are referred to in this manual. For information about the complete set of Nokia NMS documentation, refer to *Description of Documentation [1]*.

Introductory Documents

[1] *Description of Documentation.* Outlines the contents of the Nokia NMS documentation set.

[2] *Description of Commissioning and Upgrading Procedures*. Describes the basics of installation and upgrading procedures and the different Nokia NMS server configurations.

[3] *Feature Descriptions*. Provides detailed information about the Nokia NMS/1000/100 user applications for those not yet familiar with Nokia NMS.

[4] *Feature Enhancements*. Explains new features of release H3.3.

[5] *Product Description*. Presents the architecture and functionality of the Nokia NMS/1000/100 for those not yet familiar with the Nokia NMS concept and product.

Reference Guides

[6] *Database Description for DX 200 Measurements*. Explains the contents and architecture of DX 200 measurements in the Nokia NMS database.

[7] *Database Description for DX 200 Time Management*. Contains the Time Management table.

[8] *Database Description for Fault Management*. Contains alarm tables.

[9] *Database Description for Managed Objects.* Contains the overall desciption of the architecture of the Nokia NMS database and the managed object tables.

[10] *Database Description for Transmission Network Configuration Management*. Explains transmission network configuration in the Nokia NMS database.

[11] *Database Description for Transmission Performance Data*. Explains contents and architecture of transmission performance data in the Nokia NMS database.

[12] *Database Description for V5 Management*. Explains contents and configuration for V5 in the Nokia NMS database.

[13] *Glossary.* Contains definitions for all the Nokia NMS manuals.

[14] *Master Index*. Index for all Nokia NMS documentation.

[15] *Processes and System Files.* Contains descriptions of the processes and configuration files used in the Nokia NMS.

[16] *System Administrator's Quick Reference*. Contains the following documents: *Administrative Tasks, Processes and System Files, Documentation Roadmaps*.

[17] *User's Quick Reference*. Short instructions on using different Nokia NMS applications. Also contains *Documentation Roadmaps*

User's Guides

[18] *<XX> Adaptation.* Network element-specific supplements to *Path and Circuit Management User's Guide,* containing information for the network element in question.

[19] *Basic Operating Procedures of Path and Circuit Management.* Step-by-step procedures for creating and modifying network elements and end-to-end connections with the Path and Circuit Management applications.

[20] *Line Testing User's Guide*. Explains how to use the Line Testing application, which allows a user to request line testing and display the results on selected lines connected to Nokia's V5 nodes.

[21] *Managed Object Browser.* Explains how to use Managed Object Browser, which gives the user access to a quick but comprehensive view of the entire network.

[22] *Managing Network Alarms*. Discusses fault management operations and alarm handling in the Nokia NMS.

[23] *Managing Network Performance Data*. Includes instructions on how to enquire about the number of performance measurements, how to collect and view the observations coming from network elements, and how to set threshold rules for more effective control.

[24] *Measurement Data Postprocessing in UNIX*. Shows how to use the Nokia NMS to define, generate, and examine measurement data reports in UNIX.

[25] *Path and Circuit Management*. Explains how to use Network Navigator, Resource Manager, Path and Circuit Manager, and Reporting Utility to manage and edit transmission configuration data.

[26] *Remote Management of Network Elements*. Describes the user interface for remote operation of network elements from the Nokia NMS.

[27] *Starting with the Nokia NMS.* Starting point for learning to use the Nokia NMS. Describes the Visual User Environment and the Top-level User Interface of the Nokia NMS.

[28] *Using DX 200 Measurements*. Explains how to use DX 200 measurements to monitor error performance and quality of service and to forecast future trends in your network.

[29] *Using SYNFONET Performance Data Collection*. Contains general instructions on how to plan and implement performance data

collection with the Nokia NMS applications in the SYNFONET network.

[30] *V5 Management*. Explains how to use the V5 Management tool, which is an interactive graphical interface for configuring and maintaining V5-related settings of Nokia's V5 access network.

System Administrator's Guides

[31] *Administrative Tasks*. Helps the system administrator navigate the rest of the system administrator's guides by briefly explaining the periodic maintenance tasks and routine system management tasks and giving references to more detailed instructions when necessary.

[32] *Configuring Alarm Collection*. Describes how to configure the Mediation Function for Alarms application.

[33] *Configuring the Data Communication Network Interface*. Describes how to configure the Data Communication Network interface, with the Connection Server application.

[34] *Configuring Performance Data Collection*. Describes how to configure the Mediation Function for Measurement application and how SYNFONET and PDH performance data collection works.

[35] *Database Maintenance*. Explains to system administrators how to carry out routine database maintenance tasks such as database cleanup and backups.

[36] *MC/ServiceGuard Administration*. Describes Service Guard configuration as it applies to NMS/100.

[37] *DX 200 Time Management*. Provides instructions on how to display, monitor, and adjust the time in the network element clocks.

[38] *Networking Tools*. Describes a set of utilities that allow the user to transfer data to and from the Nokia NMS, and between network elements. The tools also streamline command sequences to network elements.

[39] *Transmission Database Initialisation*. Initialisation procedures for Connection Discovery and Configuration Uploader.

[40] *UNIX Administration*. Contains instructions on UNIX file system and process supervision management for system administrators.

[41] *User Management*. Explains how the system administrator can create environments and profiles for users or groups of users at lower privilege levels.

[42] *View Management*. Explains how to handle managed objects using the tools provided with the Nokia NMS View Management applications.

Troubleshooting Guides

[43] *Testing Installations*. Contains general instructions on how to verify the Nokia NMS installation.

[44] *Troubleshooting*. Contains recovery procedures for the most common types of problems that might occur in the Nokia NMS.

Installation Guides

[45] *Database Plan*. Contains instructions for the dimensioning of the database to ensure adequate disk space for the effective operation of different applications.

[46] *Installing Node Manager Server Software* Gives instructions on how to install the WTS package in the Node Manager Server.

[47] *Integrating DX 200*. Gives instructions on how to integrate DX 200 to the Nokia NMS.

[48] *Integrating Broadband Nodes*. Gives instructions on how to integrate Eksos B20, Eksos B30, and Eksos R700 to the Nokia NMS.

[49] *Integrating Eksos N20.* Gives instructions on how to integrate Eksos N20 to the Nokia NMS.

[50] *Integrating PDH Equipment*. Gives instructions on how to integrate PDH equipment to the Nokia NMS.

[51] *Integrating RPC Clients*. Gives instructions on how to integrate RPC Clients to the Nokia NMS.

[52] *Integrating SYNFONET.* Gives instructions on how to integrate SYNFONET to the Nokia NMS.

Other documents

The documents listed below are not part of the Nokia NMS document set.

[53] *HP Visual User Environment 3.0, User's Guide*. The complete reference about HP's VUE, which forms the basis of the Nokia NMS user interface.

Glossary

This section explains the terms and concepts that are used in this manual. For additional definitions, refer to *Glossary [13]*.

alarm
: Message in a telecommunications network that notifies the management system of an abnormal event in the network.

alarm class
: Identifies the severity of an alarm. There are four alarm classes in the Nokia NMS: critical, major, minor, and warning.

application
: Software that performs a particular function directly for the user. Some examples of applications in the Nokia NMS are: Alarm History, Network Editor, and ASCII Terminal.

AXE
: AXE Exchange

BIDI
: Bidirectional PCM

communication line (CLine)
: View object in a Top-level User Interface view. It represents communication facilities between network elements.

D210
: DX 210 Exchange

D220
: DX 220 Exchange

data communication network (DCN)
: Communications network used for data communications within a telecommunications management network. For example, a data communication network exists between network elements and the Nokia NMS.

DAXN
: DAXNode

dialog
: Subsidiary window called from the main window of the Top-level User Interface or an application. It contains settings and controls for further action by applications. A dialog does not have a menu bar.

DOMC
: DX 200 OMC

DX 200
: Family of products by Nokia Telecommunications covering a wide range of network elements for switching and network management.

DX 200 OMC	Product by Nokia Telecommunications that implements an operations and maintenance centre based on DX 200 technology.
DX 210	Compact stand-alone exchange with a capacity of up to 5000 subscriber lines. It runs with the same software and provides similar services as the DX 220.
DX 220	Exchange that provides all the services and features of the DX 200 switching system. It has been designed for the capacity range of medium- to large-size applications, with a line capacity of 100,000.
EWSD	EWSD Exchange
Fault Management	Set of telecommunications management network functions that enables the detection and localisation of failures, the scheduling of repairs, and the testing out and return to service of repaired equipment (ITU-T M.3010).
feature	Functionality within a computer program.
FU	Functional Unit
graphical user interface (GUI)	Work area for interacting with computer software based on windows and graphical icons.
I/O	Input/Output
IN	Intelligent Network
IF	Physical Interface
internal alarm	Serious alarm that indicates a local message server failure, a database connection failure, or a failure in the observation of the database connections. These alarms are seen in the view of the Top-level User Interface. Internal alarms are not saved into the database, thus sending internal alarms is possible also when the database is down. Because of the serious nature of these alarms their indication has been made as simple as possible in order to achieve great reliability. For more information, refer to *Managing Network Alarms [22]*.
International Standards Organization (ISO)	Organization which assists in the monitoring of standards and consistency in various industries.

International Telecommunication Union: Telecommunication Standardization Sector (ITU-T)
: Organization that assists in the monitoring of standards and consistency in the telecommunications industry.

IOU
: I/O Unit

IP
: Internet Protocol

local area network (LAN)
: Local area network provides a system for interconnection between computer terminals, PCs, and related equipment operating within the same general area. LANs are based on the sharing of information and resources within a local work group or department.

maintenance region (MR)
: Part of a telecommunications network maintained by a specific service organisation. Each managed object belongs to a maintenance region defined by the system administrator. Thus, the views of the Top-level User Interface are normally organised according to the division of the network into maintenance regions. Alarms are also shown by maintenance areas, which makes it easier to send fault reports to the service personnel.

Man-Machine Interface (MMI)
: Subsystem or function of network elements, which performs user interface functions.

Man-Machine Language (MML)
: Command language for controlling network elements.

managed object (MO)
: Management view of a network resource (logical or physical). An example is the DX 200 OMC or any of its functional units.

managed object class
: Named set of managed objects sharing the same attributes, notifications, and management operations (ITU-T M.3100).

managed object instance
: Particular managed object of a managed object class.

MR
: Maintenance Region

NE	Network Element
network element (NE)	Telecommunications equipment (or groups/parts of telecommunications equipment) and support equipment, located at the same site, which performs telecommunications functions. A network element normally contains many resources, which are managed as managed objects. In terms of administered objects, a network element is represented by the highest level managed object at a site.
NMS	Nokia NMS
Nokia NMS	Network management system, a product of Nokia Telecommunications for the operation and maintenance of telecommunications networks.
NW	Network
OPS	DX 200 OPS
OSF/Motif	Graphical user interface that provides a window manager, a user interface language, widget tools to build application interfaces, and a style guide to provide help in maintaining consistency in applications.
packet assembly/disassembly facility (PAD)	Protocol used to establish terminal or interactive sessions asynchronously to remote hosts in X.25 packet networks (ITU-T X.3, X.28, X.29).
PCM	Pulse Code Modulation
Performance Management	Set of telecommunications management network functions for the collection and presentation of measurement data about the performance of a network.
Remote Subscriber Stage (RSS)	Network element that can manage up to 1000 subscriber lines. It is used to connect small and remotely located subscriber groups to an exchange.
Remote Switching Unit (RSU)	Access network element with a capacity of up to 5000 subscriber lines connected to the parent exchange. It

provides all the services that are available to the subscribers connected directly to the exchanges.

RSS — Remote Subscriber Stage

RSU — Remote Subscriber Unit

SCP — IN Service Control Point

SDH — Synchronous Digital Hierarchy

SMP — IN Service Management Point

SQL — Structured Query Language

STN — Station

subordinate managed object, child
Managed object instance further from the root in the naming tree, contained within a superior managed object and named within the scope of its superior managed object (ISO IS 10165-1). In the naming tree a subordinate managed object can also be the superior managed object of another subordinate managed object.

SUBU — Subunit

superior managed object, parent
Managed object instance that contains another managed object instance. In the naming tree a superior managed object can also be the subordinate managed object of another superior managed object.

SXC — Digital cross-connector, a product of Nokia Telecommunications.

SYNF — SYNFONET Node

SYNFONET Node (SYNF)
Managed object that represents the SDH product family of Nokia Telecommunications.

system administrator — User of the Nokia NMS who is mainly concerned with maintaining the functioning of the Nokia NMS installation. A system administrator has the access rights for carrying out tasks like creating user accounts and modifying views, which a normal user is not allowed to do.

SYSX — SystemX Exchange

telecommunications management network (TMN)
: Concept which provides the architecture for the actual realisation of network management (ITU-T M.3010).

TMS — Transmission Management System

Top-level User Interface
: Application of the Nokia NMS. It allows the user to start the other applications and it presents graphical views of the telecommunications network.

Transport Control Protocol (TCP)
: Transport service located in the transport layer of the OSI model.

TREQ — Transmission Equipment

user — Any person who uses the Nokia NMS. There are two classes of users: normal users and system administrators. Normal users have fewer access rights to the network and to the operating system than system administrators.

view — Graphical representation of a part of the managed telecommunications network that is seen on the Top-level User Interface. The view consists of symbols for managed objects and auxiliary graphical symbols as well as connecting lines between these symbols. The views are created by the system administrator.

view object — Any graphical symbol in a view of the Top-level User Interface. There are four classes of view objects:

- managed objects
- grouping objects
- map objects
- communication lines.

All view objects, except for map objects, can have subviews.

Visual User Environment (VUE)
: Hewlett-Packard operating system used on the Nokia NMS workstations.

wide area network (WAN)
: Network extending over distances greater than one kilometre.

window	Rectangular area of the screen used to control an application. Applications can use more than one window, but one window is always the main window. Windows may be rearranged and adjusted in size within VUE. Most windows can be minimised to an icon and have a menu bar.
WS	Workstation
X.25	Interface between data terminal equipment for terminals operating in packet mode that are connected to public data networks by dedicated hardware. X.25 is connection oriented, that is, a connection has to be established before any data is sent (ITU-T X.25).
X-terminal	Terminal that allows you to use the X Window System in a networked environment.
X Window System	Network-based graphics window system that allows workstation users to use applications running on more than one host.
xterm	Program that displays a terminal window that emulates a DEC VT102 and Tektronix 4014 terminal. Also, an abbreviation for X-terminal.

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