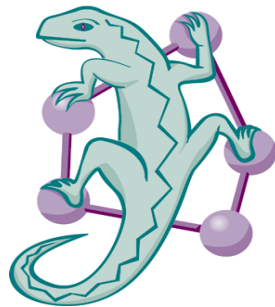


TimeScan NMS

Release 6.0

Administrator's Guide

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NetMonitor
Management Systems

Chapter 1 Introduction

Welcome to the Administrators Guide for the TimeScan NMS Suite of applications. The tools within the suite are used for administration and troubleshooting and this introduction describes each one of them and outlines its use.

Managed Object Configuration

Managed object configuration provides the ability to define new or modify existing, managed elements. This chapter provides a step-by-step description of how to define the existence of a new DCD element, include a new Network Browser view and make these new objects accessible to the operator.

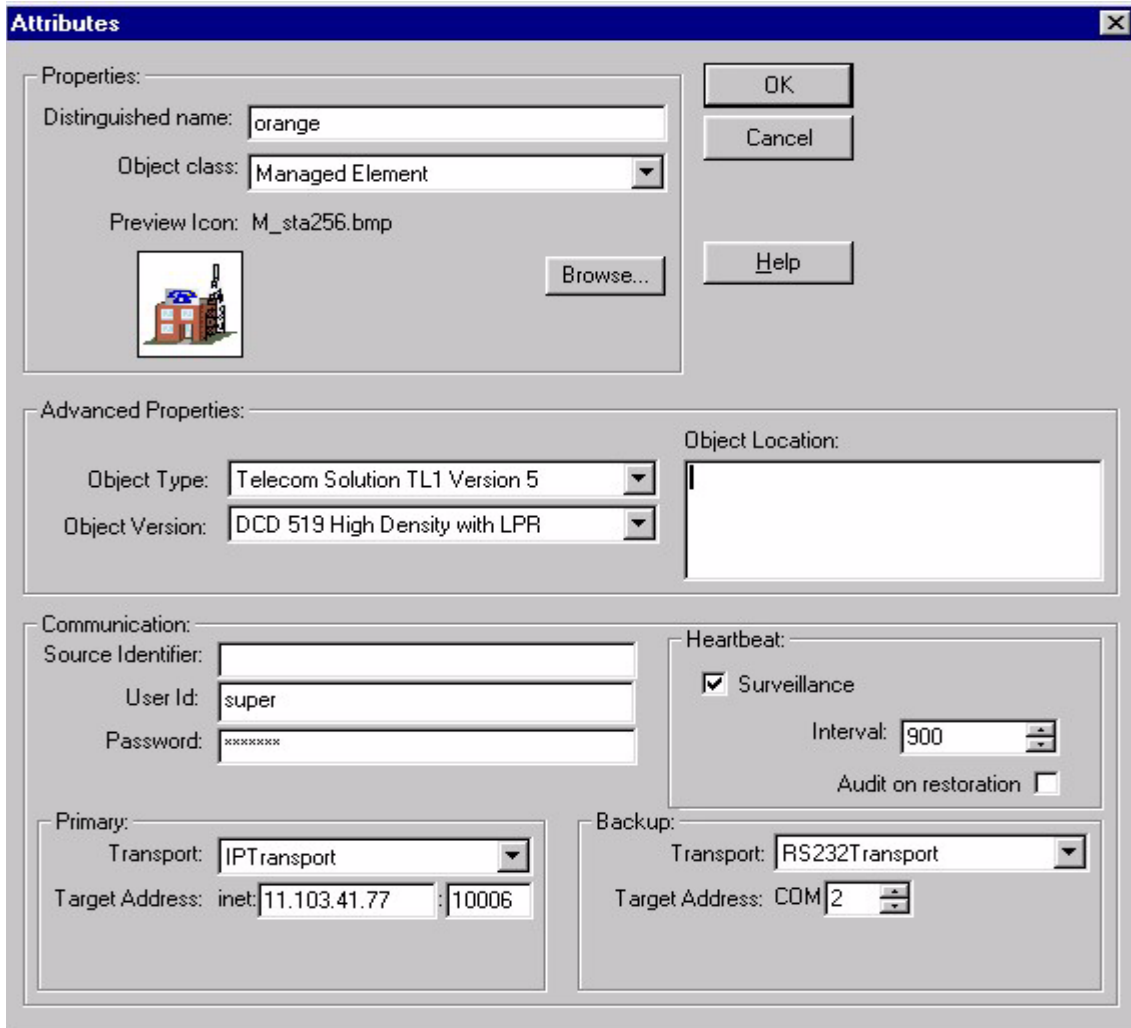


Figure 1 MOC Attributes

Managed Object Configuration is launched by selecting *Managed Object Configuration* icon from the *TimeScan NMS Administrator* item, on the Windows *Start* menu or the Unix *CDE Front Panel*.

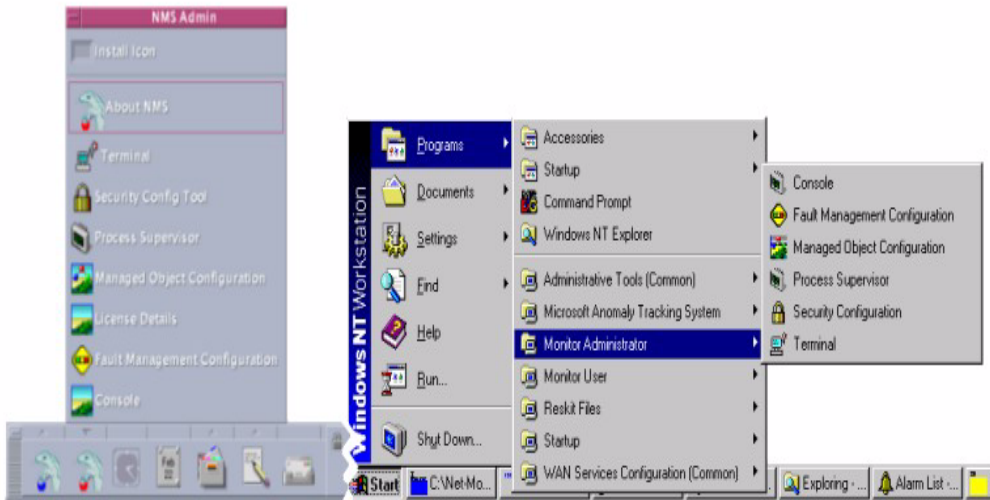


Figure 2 The Unix CDE Front Panel / Windows Start Menu

Security Manager

The TimeScan NMS Server has an in-built protection scheme against unauthorised users from accessing and manipulating the elements managed from the platform. The chapter describes how the Security Manager works and how the sub-system should be maintained.

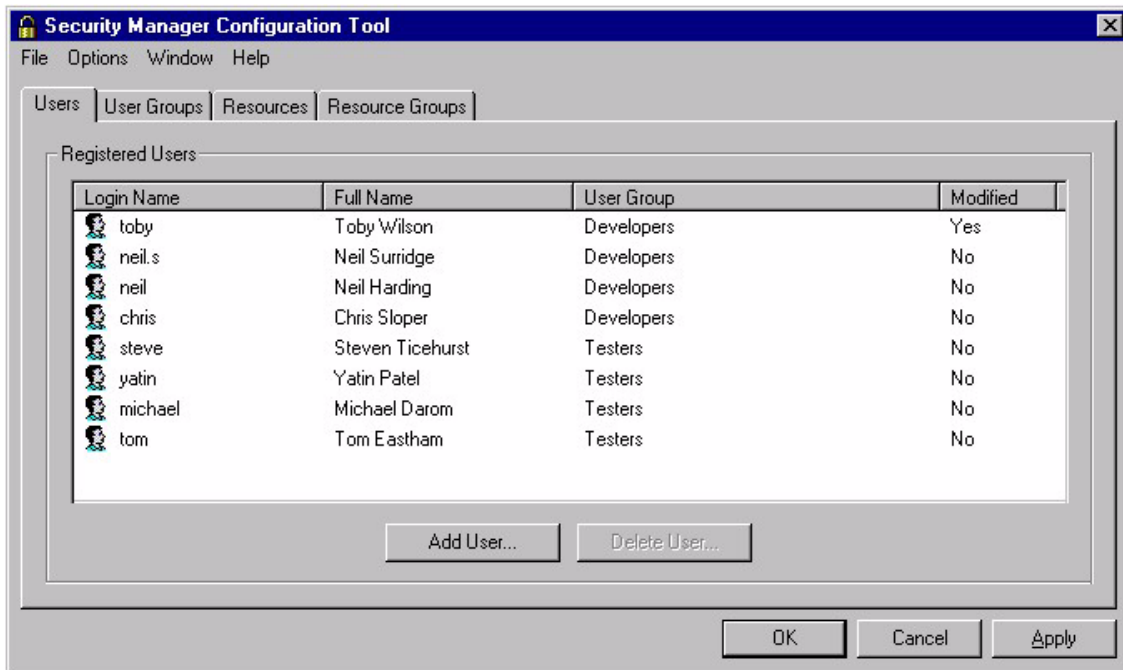


Figure 3 Security Manager Configuration Tool

The Security feature application is launched by selecting the *Security Manager* icon from the *TimeScan NMS Administrator* item on the Windows *Start* menu or the Unix *CDE Front Panel* (Figure 1).

Fault Management Configuration

All alarms within the TimeScan NMS system have an ID and a mapping for severity. Using this facility incoming alarm IDs can be configured and the severity mapping can be amended. If a mapping is changed it will only be effective on new alarms which are received *after* the amendment has taken place.

Alarm Forwarder

NMS may be set-up to forward alarms to an external system. The external system must listen on a TCP/IP socket and receive textual based alarm/event and clearing messages once a connection has been established. This document will describe how to set-up the NMS to forward alarm, including criteria that can be set, and the format of the forwarded messages.

Database Administration

The Database Administration chapter discusses archiving of the alarm database as well as viewing of archived data. This chapter discusses how to plan and perform basic maintenance tasks. The Maintenance schedule is a list of tasks that must be performed on a regular bases (daily, weekly, monthly), to keep the system running smoothly.

Troubleshooting

NMS Console

This facility reports internal TimeScan NMS events. If a problem arises with the system, which prevents communication use this console to record any faults. Information recorded should be included when any faults are reported.

NMS Free Text Console

This facility is similar to the NMS console except it reports all output of the TimeScan NMS system and not just alarms and faults.

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Chapter 2 Managed Object Configuration



A common requirement of any management system is the ability to define new, or modify existing, managed elements. This chapter provides a step-by-step description of how to define the existence of a new DCD element, include a new Network Browser view and make these new objects accessible to the operator.

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Opening The Application

The first task in defining a new Digital Clock Distributor (DCD) element is to insert a new entry into the Managed Object Configuration Database.

In the *TimeScan NMS Administrator* menu (in the Windows Start menu or Unix CDE Front Panel) is an entry for a tool, *Managed Object Configuration* item, which will enable us to do this.

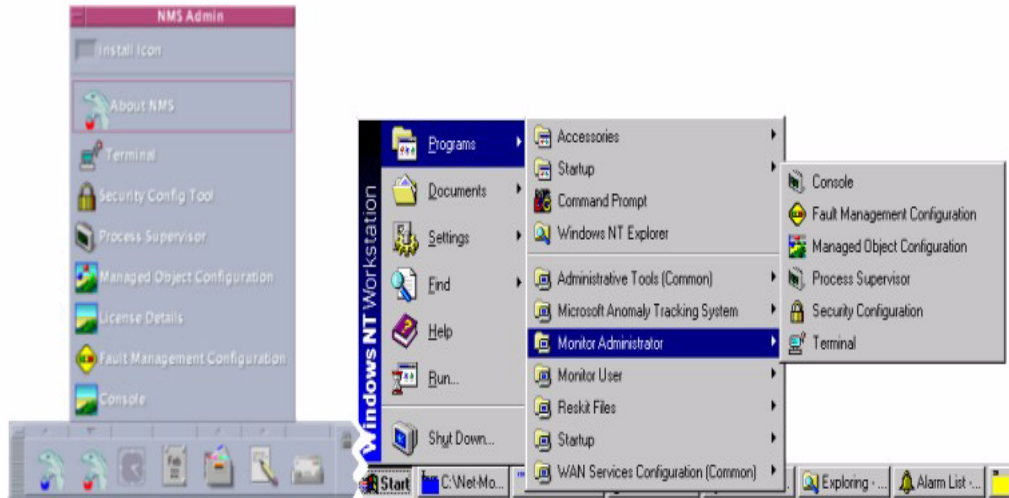


Figure 4 The Unix CDE Front Panel / Windows Start Menu

Selecting this icon will produce the Hierarchy View Window (page 7) which will provide access to information on all the objects defined within the Managed Object Configuration Database.

Before we look at the creating a new DCD element, let's look at the Managed Object Configuration Database.

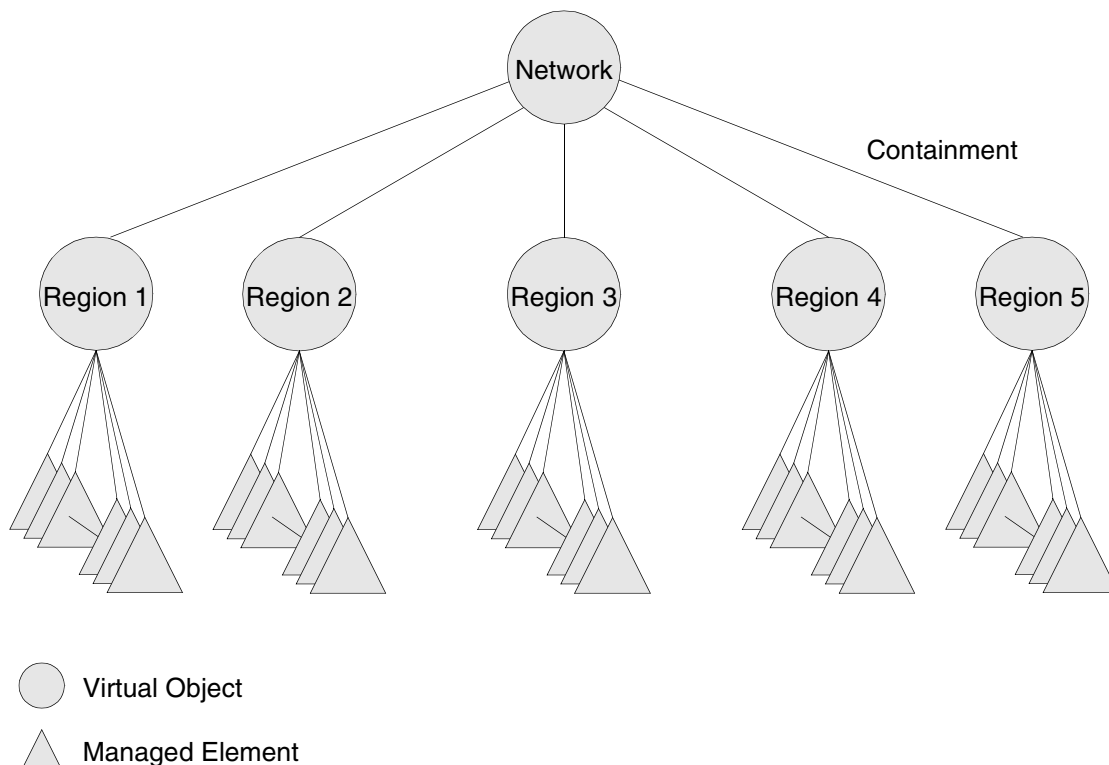
The Managed Object Configuration Database

The purpose of the Managed Object Configuration Database is to provide a store for all the information required by the system to realise and manage an arrangement of objects and elements. The distinction is made between objects and elements, because not only does the TimeScan NMS System support the existence of Managed Elements (ME's), it also supports the existence of *virtual objects* i.e. objects that do not have any tangible form.

In general these virtual objects form containers which may *contain* managed elements or other virtual objects. For example, a network is a virtual container - it contains managed elements.

The true value of virtual objects is their ability to define logical partitions in a network providing context and rationalisation for the user. Consider a network containing 100 elements. The main purpose of any network presentation system is to display the current notification state of all the elements in the network. To attempt this on one graphical view would result in a confusing clutter. However, if elements can be grouped together in containers and the containers displayed then the view can be simplified without losing status resolution.

The following figure provides a typical example of how such a network may be defined:

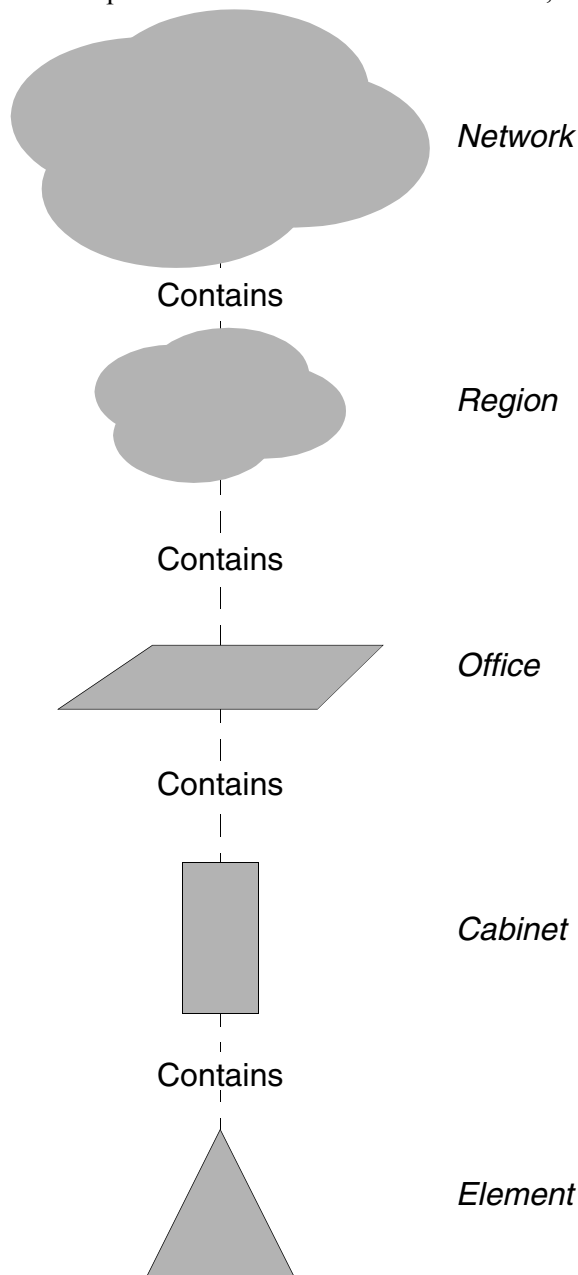


Six virtual objects are created. *Network* contains five *Regions* which in turn contain all the managed elements. Immediately the task of depicting and understanding the network because greatly simplified. These virtual objects are known as Sub-Network Objects because, in general, they represent parts of a network.

Sub-Networks

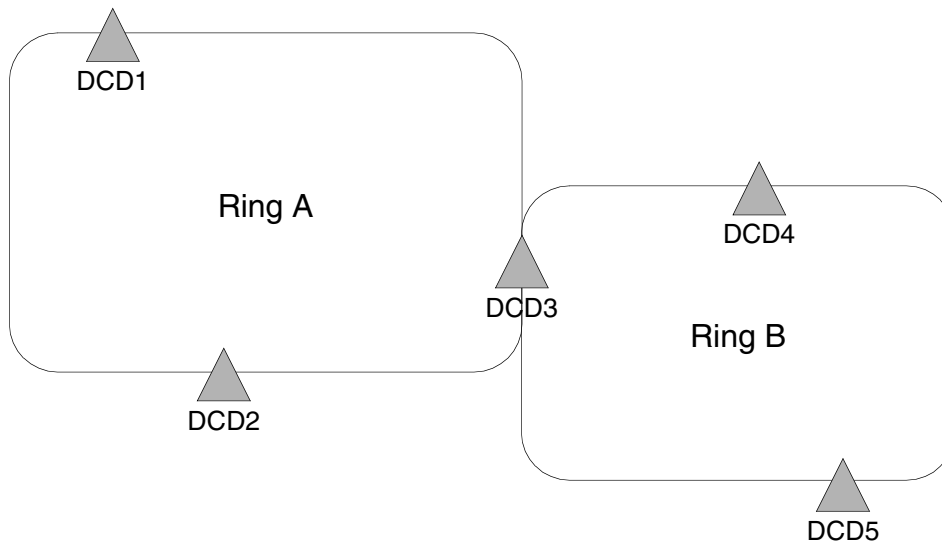
Sub-Network Objects have a special property which causes them to exhibit the same notification status as all the managed elements directly or indirectly contained within them. Therefore in the previous example the requirement to depict the notification state of all the elements in the network is fulfilled because each region will depict a notification status which will represent the summation of the notification states of all the managed elements contained within the region.

Any structure of Sub-Networks can be defined. A popular arrangement is to mimic the physical or conceptual containers found in the network, for example:



There is no limit on how many Sub-Networks can be defined or what is contained within them. It is also perfectly legal to have an object, either a Sub-Network or Element, contained by multiple Sub-Networks.

For example: consider two simple SDH ring structures...



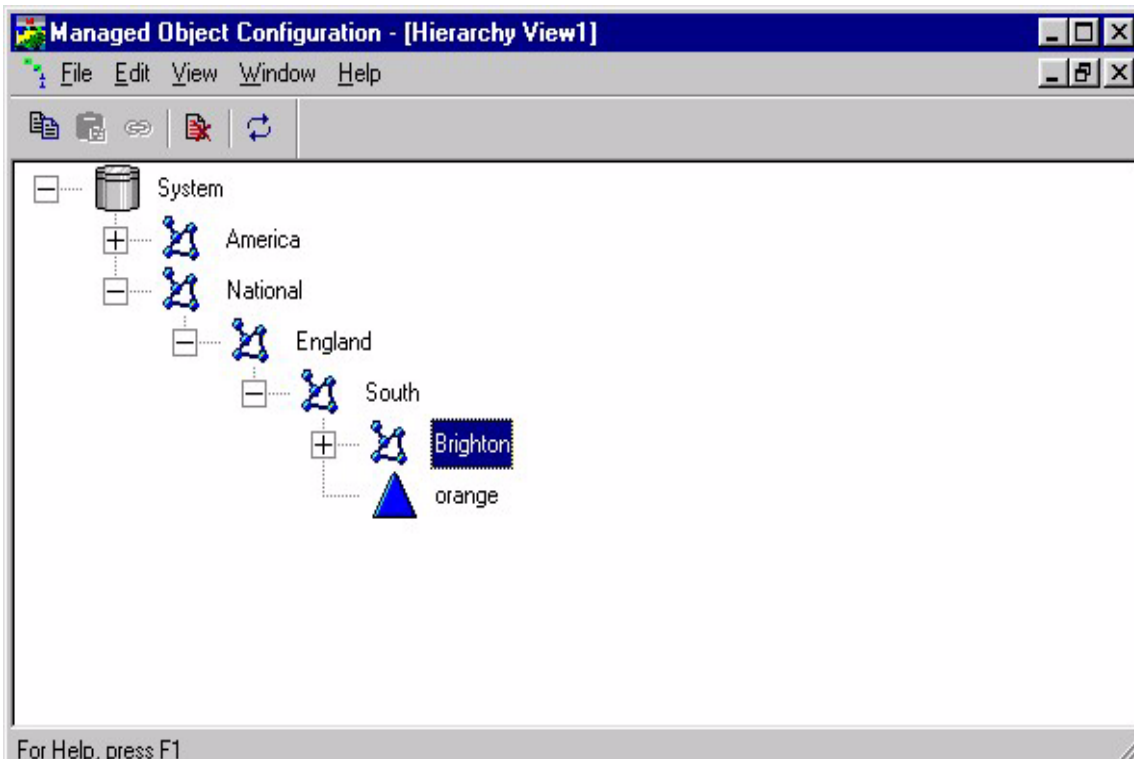
We could define Ring A and Ring B as two Sub-Networks. However, the element DCD3 exists in both rings. This does not cause a problem as DCD3 may be contained within Ring A Sub-Network *and* Ring A Sub-Network. If the notification status of DCD3 changes then the change will be propagated to both Ring A and Ring B.

Managed Elements

Managed Elements are defined as equipment, i.e. DCD Elements, directly managed by the local TimeScan NMS platform. Although it is possible to define a managed element as containing another Managed Element it should be noted that notification status will not be propagated to the containing managed element.

Managed Object Configuration Hierarchy View

When the Managed Object Configuration application has been launched you will be presented with the main hierarchy view window, this is where you will be able to configure the system by adding, deleting and modifying objects in the database.



The Toolbars


There are two toolbars that are used to configure the system. The first is present when the main view (above) is being displayed. The second is used when previewing a sub-network.


All of the options that are available through the toolbars are available from the drop down menus.


Main Tool Bar





The options on this toolbar are (from left to right):

Copy object  - This option is only available when an object other than the root is selected. When this button is pressed a copy of the current object is taken for future use (see Paste Object and Link Object, below)

Paste object  - Once an object has been copied (see above), selection of this button will make a copy of the object at the current location. The new object will be prefixed with the words "copy_of_". This option will remain 'greyed out' until an object has been copied and the destination is not the root object.

Link object  - Once an object has been copied (see above), selection of this button will create a link to the copied object at the current location. Any changes made to the original object will automatically be made to the linked object. This option will remain 'greyed out' until an object has been copied and the destination is not the root object.

Delete object  - Selection of this option will delete the current object from the system, if the object is a sub-network all contained objects will be moved to the root of the system.


Refresh from server  - Selection of this button will refresh the system from the server.


Preview Tool Bar


This tool bar will be available when the system is in preview mode, accessed by selecting preview from the drop down menu that appears when a sub-network is selected with the right mouse button.




The available buttons are (from left to right)

Save  - When a change has been made to the preview this button becomes active, when selected the changes that have been made will be updated to the database.

Change background image  - When this button is selected a dialogue is displayed that allows the selection of a new background image for the preview. Note: the image must be a bitmap file.

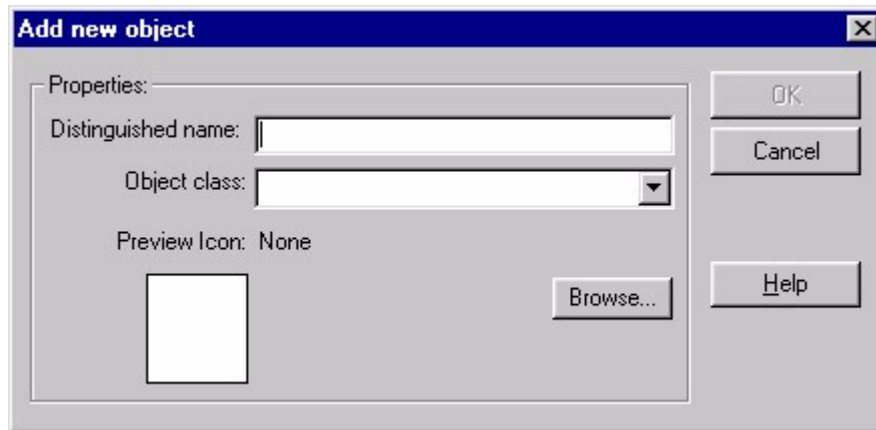
Test  - When this option is selected, selecting an object will allow you to test the currently selected toolbindings. i.e. selecting an object with the right mouse button will produce a popup menu with the available tools.

Change style  - Selection of this button will produce a dialogue that allows you to set the style of the icons and alarm bars.

Create New Object

To be able to create a new object in the system we must be at the main hierarchy view window.

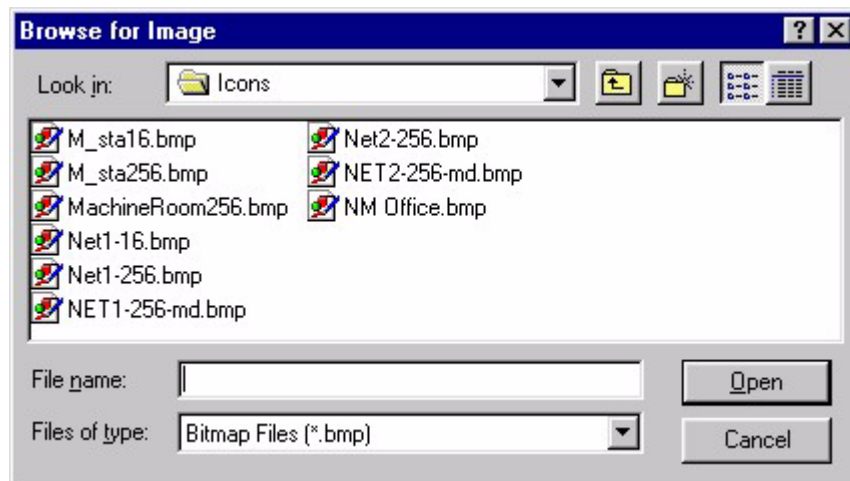
First select either the root object or a sub-network from the tree in the hierarchy view then bring up the popup menu by selecting with the right mouse button. Then select *Add new object...* from the available list of objects. You will then be presented with the following dialogue.



You must then enter a unique identifier in the *Distinguished Name* text box. The name must not contain any spaces.

You must also select an object class from one of the available options. The dialogue will change depending on the choice that is made. These options will be discussed in later sections of this document

Preview Icon specifies the path to a bitmap image (*.bmp) which will be used to depict this object. The system is capable of displaying any size icon image. On selecting the square button immediately to the right of the *Icon Image* field a file selector window will be opened. The selector will automatically be scoped to the correct file type (*.bmp) and will point to the root of the directory structure set aside for icon graphics:



However, this path is not mandatory and may be modified. It should be noted, that if the path or file is subsequently renamed or deleted then the system will not be able to locate the icon image and an error message will be generated.

Attributes For Managed Element (ME)

When Managed Element is selected into the object class option the dialogue box will change and look like this:

The screenshot shows the 'Attributes' dialog box with the following fields and values:

- Properties:**
 - Distinguished name: orange
 - Object class: Managed Element
 - Preview Icon: M_sta256.bmp
- Advanced Properties:**
 - Object Type: Telecom Solution TL1 Version 5
 - Object Version: DCD 519 High Density with LPR
 - Object Location: (empty)
- Communication:**
 - Source Identifier: (empty)
 - User Id: super
 - Password: (masked with asterisks)
- Heartbeat:**
 - Surveillance
 - Interval: 900
 - Audit on restoration:
- Primary:**
 - Transport: IPTransport
 - Target Address: inet:11.103.41.77:10006
- Backup:**
 - Transport: RS232Ttransport
 - Target Address: COM2

Object Type is an attribute which conveys type information for objects of class 'Managed Element'. If the object is of class 'Sub-Network' no type information is required and this field should be left blank.

Object Version is an attribute which conveys variant information for objects of class 'Managed Element'. If the object is of class 'Sub-Network' no variant information is required and this field should be left blank.

Object Location is an optional attribute which may be used to convey the physical location of the object, e.g. "12th Street Office / Rack TQ1-0".

Source Identifier is an attribute which defines the unique identifier string the element reports to identify itself. This attribute is mandatory for elements that communicate with the local TimeScan NMS Server via PSTN modem.

UserId is a mandatory field is used to establish communications with the element. A user identity should be selected from the pull down list provided.

Password is an a mandatory field which is used to establish communications with the element. The password should be the appropriate password for the user identity selected in the UserId field. The password string is not displayed but is implied by a string of asterisk characters.

Protocol is a redundant field for this application.

Primary Transport defines the communication method which is considered to be the primary method for this element. The TimeScan NMS System supports two basic forms of connection - permanent and session based.

Permanent connections are recommended for IP and direct serial communication where spontaneous alarm message are sent over the same communications channel as configuration actions. On system start-up all permanent connection are established. If a permanent connections has failed, periodic attempts will automatically be made to re-establish the connection.

Session based connections are recommended for Modem and X.25 communications.

The TimeScan NMS System is capable of supporting two forms the communication transport methods for each managed element. The primary method is always attempted first, if this method fails, the system will automatically revert to the backup method if one is defined. Select the appropriate transport method form the list provided.

Primary Target Address (Prime Configuration Management Address) defines the address of the element associated with the primary transport method.

The Prime Configuration Management Address is defined as follows:

For IP communications the transport is defined as:

“inet:” < IP address >:< socket number>

For example:

inet:142.111.11.23:10000

For X.25 communications the Prime Configuration Management Address is defined as:

Remote X25 PAD address + port sub-address

Therefore, if the configuration channel of an element is connected to a remote PAD of address 12345 and the port sub-address is 6, then the Prime Configuration Management Address will be:

123456

For PSTN (dial-up modem) communications the Prime Configuration Management Address is defined as:

COM+internal port assignment+_+PSTN number

Therefore, if the configuration channel of an element is connected to a remote PSTN modem at PSTN number 01 234 567890, then the Backup Configuration Management Address will be:

COM1_01234567890

For RS232 serial communications the Prime Configuration Management Address is defined as:

“COM” + internal port assignment

Therefore, if the configuration channel of an element is connected to local serial port com 1, then the Prime Configuration Management Address will be:

COM1

Backup Configuration parameters are set and stored in exactly the same way as those for the Primary Configuration.

NOTE: For system configurations where there is no backup communication transport method available and the prime communication transport method is not based upon permanent connections. It is recommended that the prime transport parameters be duplicated for the backup transport parameters. This action will cause the system make up to three consecutive attempts to establish element communications before declaring a communication failure.

Heartbeat Interval is a user selectable value which dictates the period, in seconds, which may elapse before the system will attempt to Heart Beat the element. The default, and recommended, value is 900 seconds (15 minutes).

Heartbeat Surveillance is a box which, when ticked, enables Heartbeat.

Audit After HB is a box which, when ticked, causes the system to automatically perform an alarm audit on the element when a Heart Beat failure is cleared i.e. when communications with the element are restored. Alarm Audit is described in more detail in the User Instruction Manual: Alarm Audit and Heartbeat.

Attributes For Sub-network (SN)

When Sub-Network is selected into the object class option the dialogue box will change and look like this:

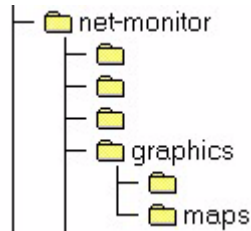
Object Type is an attribute which conveys type information for objects of class 'Managed Element'. If the object is of class 'Sub-Network' no type information is required and this field should be left blank.

Object Location is an optional attribute which may be used to convey the physical location of the object, e.g. *12th Street Office / Rack TQ1-0*.

Background Image specifies the path to a bitmap image (*.bmp) which will be used as a background image by the Network Browser Application.

The system is capable of displaying any size background image. On selecting the square button immediately to the right of the Background Image field a file selector window will be opened. The selector will automatically be scoped to the correct file type (*.bmp)

and will point to the root of the directory structure set aside for background or *map* graphics:



However, this path is not mandatory and may be modified. It should be noted, that if the path or file is subsequently renamed or deleted then the system will not be able to locate the background image and an error message will be generated.

Attributes For National Manager (NM)

Selection of National Manager in the object class dialogue box will cause the dialogue to change and look like this:

Add new object

Properties:

Distinguished name: NM1

Object class: National Manager

Preview Icon: None

Browse...

OK

Cancel

Help

Advanced Properties:

Object Type: TS_TL1

Object Version:

Object location:

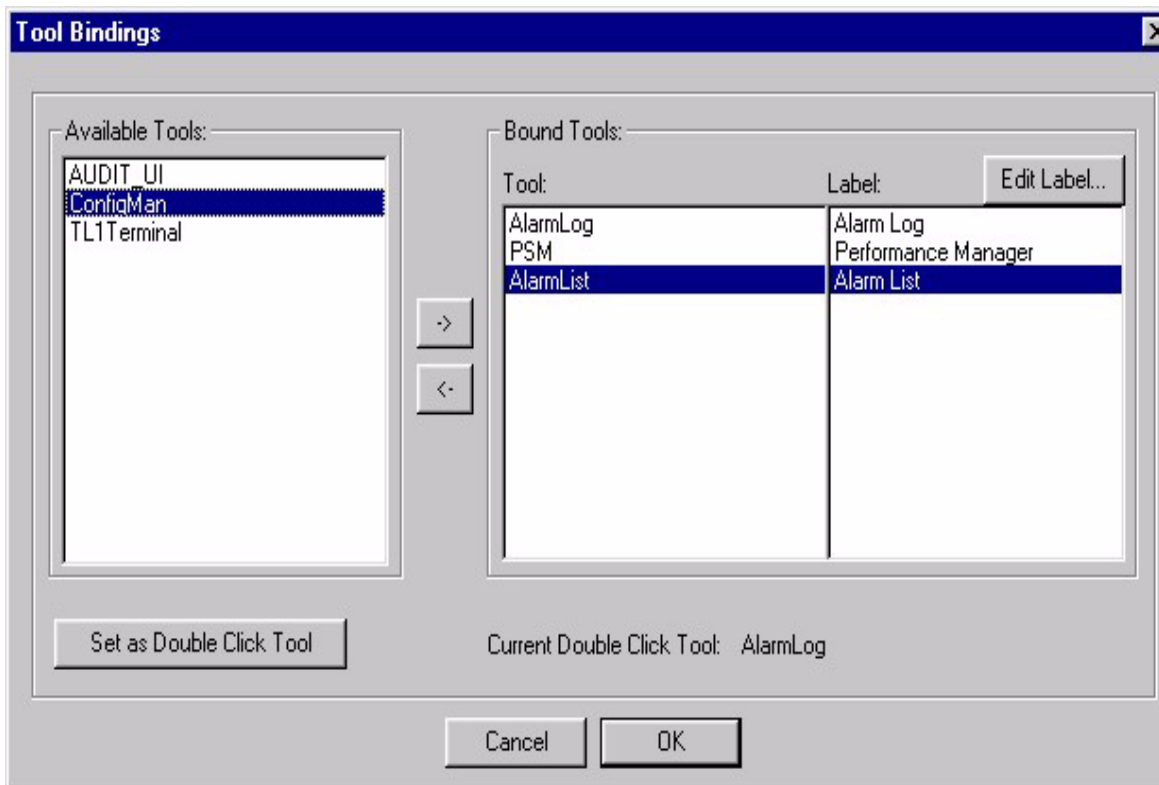
Object Type is an attribute which conveys type information for objects of class 'Managed Element'. If the object is of class 'Sub-Network' no type information is required and this field should be left blank.

Object Version is an attribute which conveys variant information for objects of class 'Managed Element'. If the object is of class 'Sub-Network' no variant information is required and this field should be left blank.

Object Location is an optional attribute which may be used to convey the physical location of the object, e.g. *12th Street Office / Rack TQ1-0*.

Toolbindings

Selecting *Tool Binding...* from the right click menu (available either from the main or preview windows) will display the following dialogue box:



Tool bindings allow you to set the tools that can be selected from the popup menu associated with the element when using the network browser.

The list box entitled *Available Tools* shows a list of the tools that are still available for use on this particular object. Selecting one or more of the tools and then the button *->* will bind the tools to the object (shown by the selected tools moving into the *Bound Tools* box. When tools are highlighted in the bound tools box then can be unbound by pressing the *<-* button.

Highlighting an item in the box titled *Label* and pressing the *Edit Label* button allows you to change the text that is displayed when the popup menu is shown.

Double Click Tool - selecting a bound tool and then clicking on the set as double click tool button will change the currently selected double click tool. This will be shown in the caption at the bottom of the box, marked *Current Double Click Tool*

Remove Object

You may find that you want to remove certain objects from the system. This is easily achieved by selecting the object that you wish to delete, then either pressing the *Delete* key (on your keyboard), selecting *Delete* from the right click popup menu, or pressing the *Delete* option on the main toolbar.

Edit Object

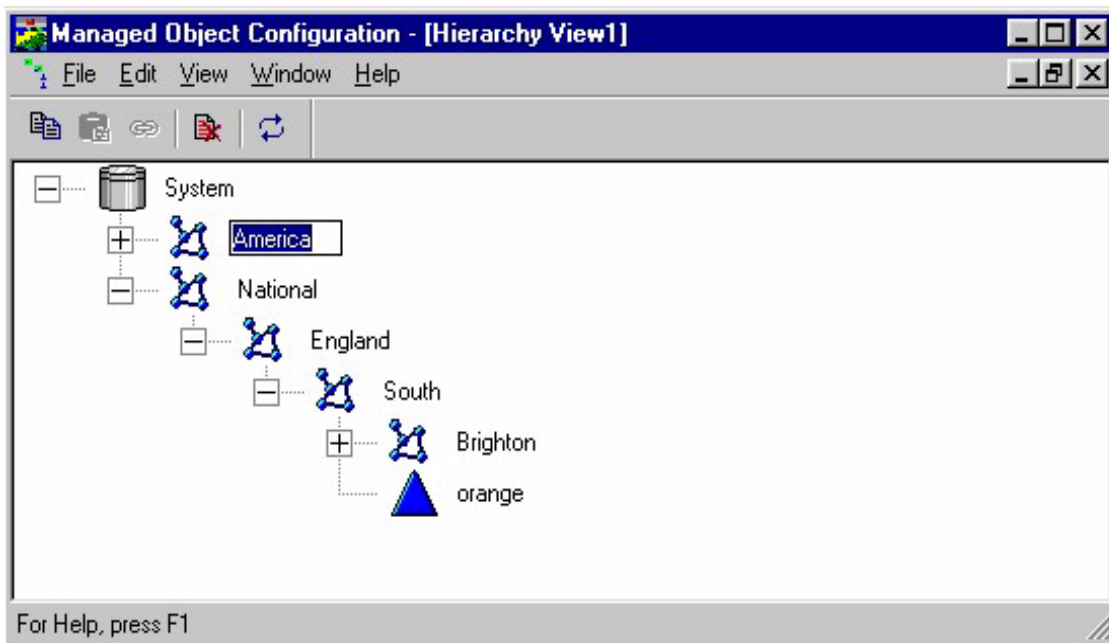
Edit Object Attributes

Should you wish to edit the attributes of an object in the system, all you have to do is select the object with the right mouse button and choose the '*Attributes...*' item from the right click menu. A dialogue appropriate for the object will then be displayed (see the Section: Attributes for Managed Elements, starting on page 17.)

You are able to edit the attributes for an object in either the main or preview windows.

Edit Object Name

It is possible to edit the name of an object in the system without having to go through the object attributes dialogue. By selecting *Edit Distinguished Name* from the right click popup menu or selecting the item text using the left mouse button, it is possible to edit the text in place.



Move Object

Moving objects from one location in the system to another is an easy task. First ensure that you are at the main window and not in the preview window. Then select the object that you want to move with the left mouse button, then with the left button still depressed 'drag' the object to its new location.

You will then be presented with a message box asking you to confirm the operation. If you are happy with the move select *OK*, otherwise choose *Cancel*.

Copy Object

Copying an object allows you to make an exact duplicate of an object and place it anywhere in the system. Changes made to either object will **not** be reflected in the other.

When an object is initially copied, the *Distinguished Name* is prefixed with the words "copy_of". This can be changed once the copy is complete. See the section entitled Edit Object (starting on page 23) for details of how to accomplish this.

To copy an object follow the following steps:

- 3 Select the object that you wish to copy
- 4 Choose the *Copy* option from the menu or toolbar
- 5 Select the location to copy to (must be a sub-network)
- 6 Choose the *Paste* option from the menu or toolbar
- 7 Confirm the operation by pressing *OK* on the dialogue box that is displayed

Link Object

Linking allows one object to be contained in two or more places in the system, i.e. any changes made to the object will appear in all of the linked objects.

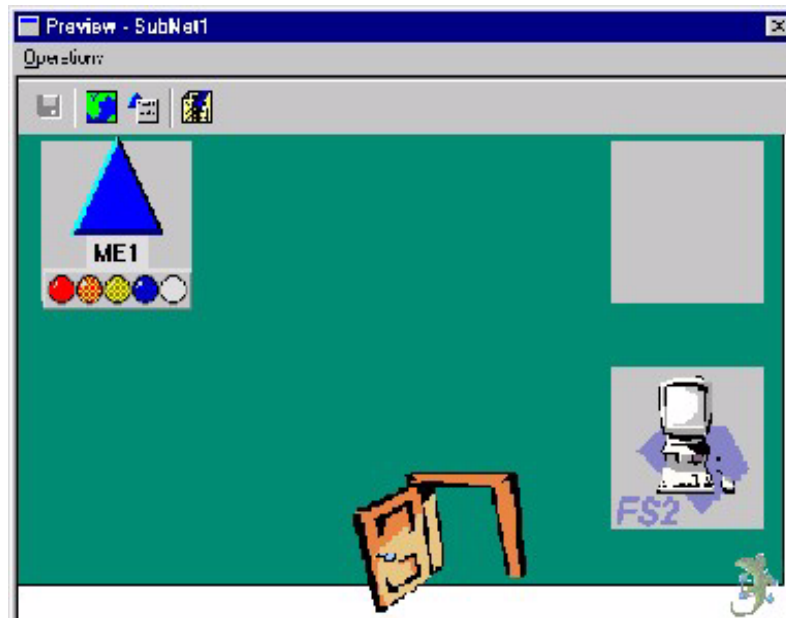
To copy an object follow the following steps:

- 8 Select the object that you wish to copy
- 9 Choose the *Copy* option from the menu or toolbar
- 10 Select the location to copy to (must be a sub-network)
- 11 Choose the *Link* option from the menu or toolbar
- 12 Confirm the operation by pressing *OK* on the dialogue box that is displayed

Preview Network

Managed Object Configuration provides the ability to preview and edit the contents of a sub-network to see how it will appear in the network browser.

To enter the preview view simply select *Preview* from the right click menu that is displayed when selecting a sub-network from the main window. You will be presented with a window that looks something like this:



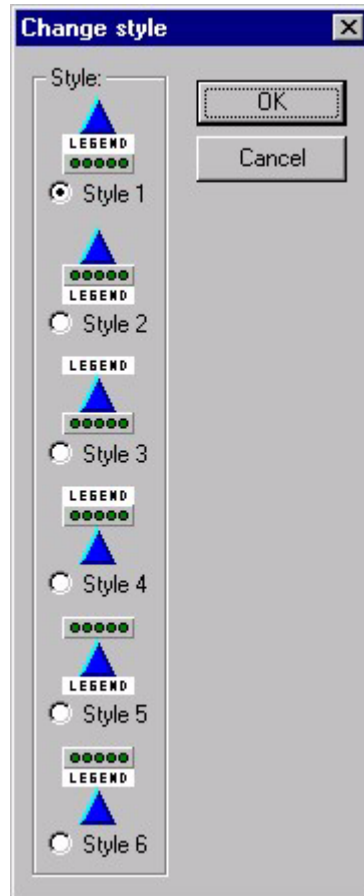
Change Background image

To change the background image, select the *Change background image...* item from the operations menu. A bitmap file and location can then be selected via the file selection dialogue that is provided. The window will then size itself to the new image.

Note: only bitmap images can be used for the background image.

Change Style

Selecting the *Change Style...* option from either the right click menu or the toolbar will allow you to change how the Managed Elements are displayed in the preview window. After selection you will be presented with the following dialogue



Simply choose the button next to the style that you want and press *OK* for all the icons on the window to be changed.

Test

When this option is selected, selecting an object will allow you to test the currently selected toolbindings. i.e. selecting an object with the right mouse button will produce a popup menu with the available tools.

Save

When a change has been made to the preview the *Save* option will become active. Selecting the *Save* option will save all of the changes that have been made

Using Imported Graphics In A Client / Server Setup

The Managed Object Configuration application will only look for the graphics files using the path that is given when the image is selected. This can cause a problem when trying to preview an object on a client when its attributes have been set on the server. This is because the path given (e.g. *c:\Net-Monitor\Graphics\Icons*) may not exist on the client machine. However, when the network that has been set up is used with the Network Browser this problem does not exist.

If the Browser is unable to load the images from the specified directory the Browser will then look in another directory that is made up from a combination of the original path and the GRAPHICS_LOCATION environment variable. Anything before the “*\Graphics*” part of the path is removed and is then replaced with the path set by the GRAPHICS_LOCATION variable.

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Chapter 3 Security Manager



The aim of Security Manager is to keep your records and applications safe from those who are not authorised to use them. It does this by checking that a given user has the security privileges necessary to complete a particular action.

What would I need to use the Security Manager Application?

The Security Manager can either be run as a standalone application or as part of a suite of NetMonitor applications. You will need a server (or database) that is already set up to exchange information with the Security Manager in order to run it effectively. Security Manager comes supplied with a set of templates suitable for Users, Administrators and Observers of the NMS applications.

What's in this chapter?


In order to make full use of the security management subsystem it is necessary for you to understand the concepts of the security system and how they interrelate. The 'Notes For Administrators' part of this chapter (page 20) outlines some key concepts needed in order to exploit the features of the Security Manager, including information about the supplied templates. There is a step by step guide to using Security Manager (starting on page 5). If you need to use the chapter as a quick reference guide, there is a keyword index starting on page 22.

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Opening the Security Manager Application

The application is launched by double clicking on its icon , found on the NMS Admin menu, in either the WindowsNT *Start* menu or the Unix *CDE Front Panel*. Once successfully launched the application will show a list of users registered with the system (Figure 1.)

The Security Manager Application can also be started by selecting its shortcut from the program group.

If launched from the command line, it can only take only one parameter, that for the NLS file. This provides non-English versions of the application. This is done in the form of '-nls *file.nls*', where '*file*' is name of your required language NLS file.

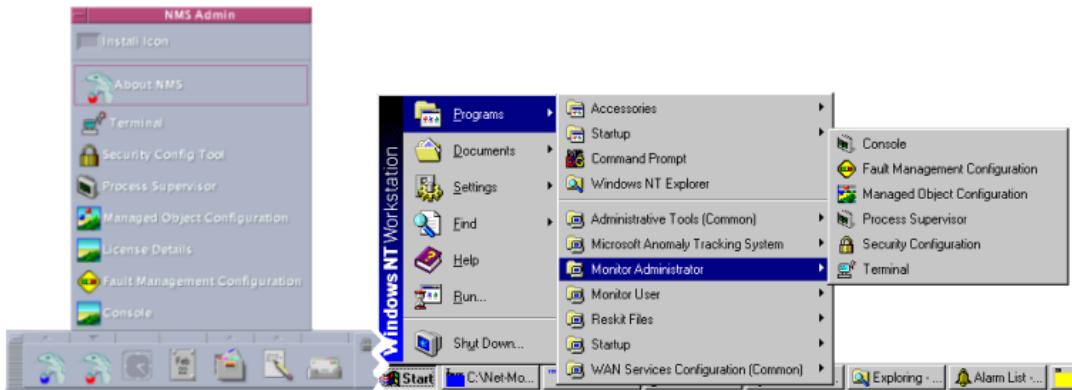


Figure 5 The Unix CDE Front Panel / Window Start Menu

Using the Security Manager Application

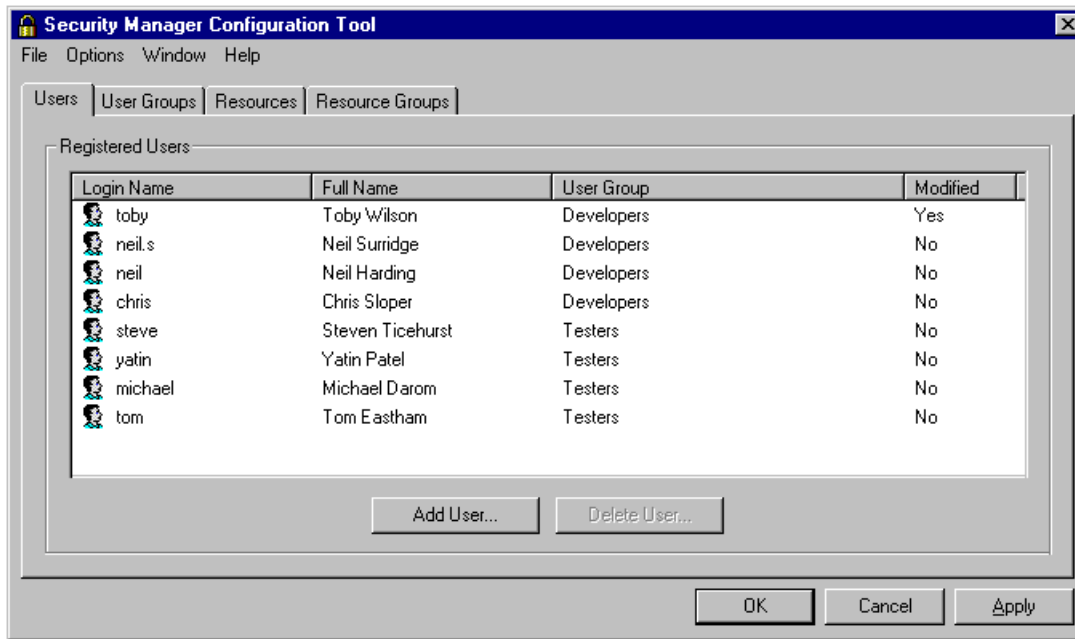


Figure 6 Security Manager at Startup

Once started successfully, the Security Manager will look similar to Figure 2. It is structured as a series of tabbed pages. You can select any page at any time (although the current page may require you to finish changing data before letting you leave it).

There is the usual menu bar under the title bar and three buttons at the bottom of the tool - *OK*, *Cancel* and *Apply*.

The *OK* button sends the current security set up to the server and closes the tool.

The *Cancel* button closes the tool without sending data to the server.

The *Apply* button updates the server but does not close the tool. This is particularly useful if you want to save changes that you have just made, but are unsure about a set of changes which you are about to attempt.

The Menu

The security configuration tool has four drop down menus -

File Menu

Import Data File: You can set up and save different security configurations without committing them to the server and consequently having them go 'live'. The *Import Data File* option is for reloading a previously saved data set.

Export Data File: The export data file option allows you to save the current security set up in the security tool to a data file. This option is also useful for making backups of the security configuration over and above that provided automatically by the security system.

Exit: Selecting this closes the security tool.

Options Menu

Show / Hide Advanced Administration Tab: This option either displays or removes the advanced administration page from the security tool. This feature is intended to ensure that settings on the advanced administration page are only modified intentionally, as they could have a severe impact on the rest of the security system.

Window Menu

Refresh from server:- Selecting this item will update the security tool's local copy of the security data from the server and refresh the window. Any changes which have been made in this session but not yet saved to the server (using the *Apply* button) will be lost. A warning to this effect will be issued before the refresh is begun.

Help Menu

Contents: The contents item brings up the help contents page

About: Selecting this item displays the security tool's About box, which shows version and copyright information.

Using Security Manager- Overview

There are five tab pages in all (one is hidden initially). The first four all look similar and work in the same way. They show a list of items with the information arranged as a series of columns, containing items. First we will examine actions which are common to all the pages in Security Manager, then we will move on to examine the contents of each page in detail. *Item* is a general term, meaning an entry or row in the list on any of the tab pages.

Sorting Security Manager Items

Clicking on each column heading will sort the list based on the data in that column. Clicking the same column twice will reverse the order in which the data is sorted.

Editing Items in Security Manager

To edit any item in the list double click on it in the left hand column and an appropriate details dialogue box will be displayed. This dialogue can also be produced by right clicking on the item and selecting the *Details..* option from the popup menu.

Adding Items to Security Manager

To add a new object click the *Add* button which will be under the list, or right click in a blank area of the list and select *Add...* from the popup menu. This will create a new object with a default name and bring up the appropriate details dialogue to allow you to edit the newly created object. Note that the name of an object is required and must be unique.

Deleting Items from Security Manager

Deleting an object requires selecting the object in the list and clicking the *Delete..* button at the bottom of the page, or right clicking the appropriate object and selecting *Delete..* from the popup menu. There is a confirmation dialogue before objects are deleted as this action cannot be undone.

Note: You cannot delete a User Group / Resource Group which still contains a User / Resource.

Filtering Items in Security Manager

Many of the dialogue boxes contain filter boxes. These are intended to assist you by decreasing the size of lists which may contain many items. The first item in the filter box will be *All*, which displays all of the data, followed by the options that limit the data. These filters only affect the display - they do not change the underlying data or security set up.

The five tab pages will now be examined in detail:

Users Page

The users page is the active page when the application first starts (see Figure 2 on page 4). The page consists of four columns.

User Name Column

The first of these columns is the user's login name. This must be the same as the name with which they identify themselves to the operating system at login time.

Full Name Column

This shows the real name of the user. This is particularly useful if their login is something meaningless, such as fb27.

User Group Column

The next column shows the user group to which the user currently belongs. Users can only belong to one group at a time.

Modified? Column

The final column indicates whether the user has any specific overrides in their security access.

Adding / Editing User Items

Double clicking on item in the user name column will bring up the user details dialogue box. This allows you to change the user's login, full name and user group (See "Using Security Manager- Overview" on page 5.)

To add a new user, either right click on an empty part of the list and select *Add* from the popup menu, or click the *Add User* button at the bottom of the window. An empty version of the User Details dialogue box will be displayed which you can fill in.

Note: You will need to have created a User Group before you can add a User.

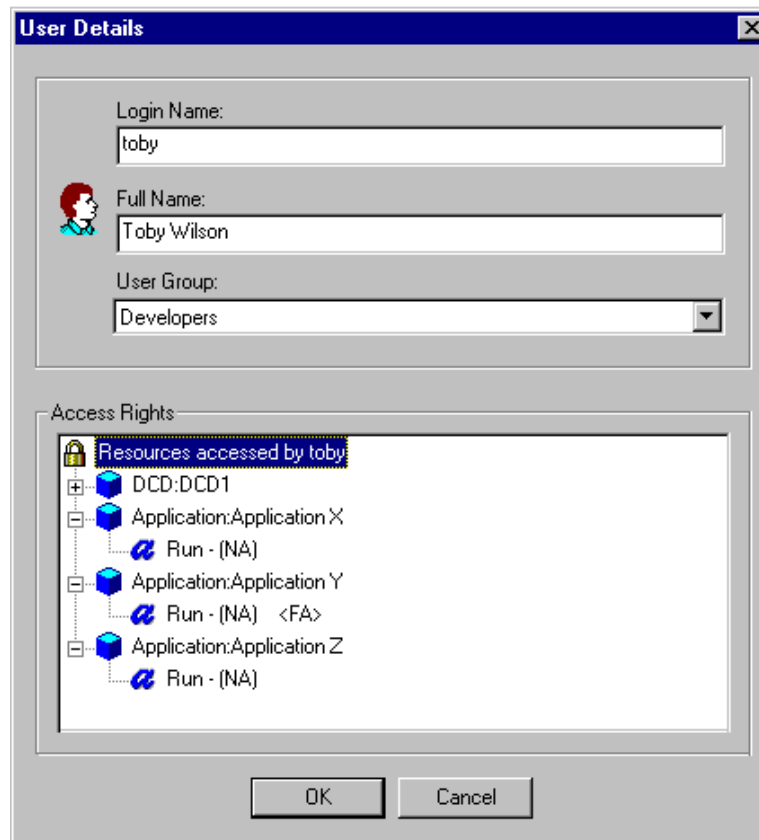


Figure 7 The User Details Dialogue Box.

Viewing / Modifying Access Levels Available To a User

The resources to which a user has access are also listed in the user details dialogue box (Figure 3). Expanding a resource, by either double clicking on its name or single clicking on the small + box to its left, will show all of that resource's attributes. The user's default access level for each attribute will be marked in brackets, e.g. *(NA-No Access*, as shown next to Application Y in Figure 3 on page 8.) This default access is inherited from the User Group to which they belong.

If you wish to override the user's access level to that attribute you can add a modification to the security level. Right clicking on the attribute will bring up the popup modifications menu. The first item (*Add modification*) cascades into a further menu that lists access levels. Selecting an access level from this menu will set the modification. Once set, a modification is shown to the right of the original access in angle brackets, e.g. *<FA>*, shown on Application Y in Figure 3.

Removing a modification is just as simple. Right click on an attribute with a modification and select *Remove Modification* from the menu.

Click *OK* to set the changes, or *Cancel* to return to the main window without applying them.

Making A New Resource Available To A User

Resources cannot be added directly to the user. If you need a user to have access to a resource which is currently unavailable to them, take the following steps:

- find out which resource groups the user's user group can access
- add the resource to one of these resource groups
- set the default access level to that resource to *NA* -No Access.
- modify the individual user's Access Level to this resource as outlined in the previous section

If this is not desirable, you could consider moving them to a group which does have access to the required resource.

Deleting a User

To delete a user, highlight their name in the list and press the *Delete User* button at the bottom of the window. You could also select *Delete* from the popup menu.

If you wish to commit these changes to the server immediately click *Apply* at the bottom of the main window.

User Groups Page

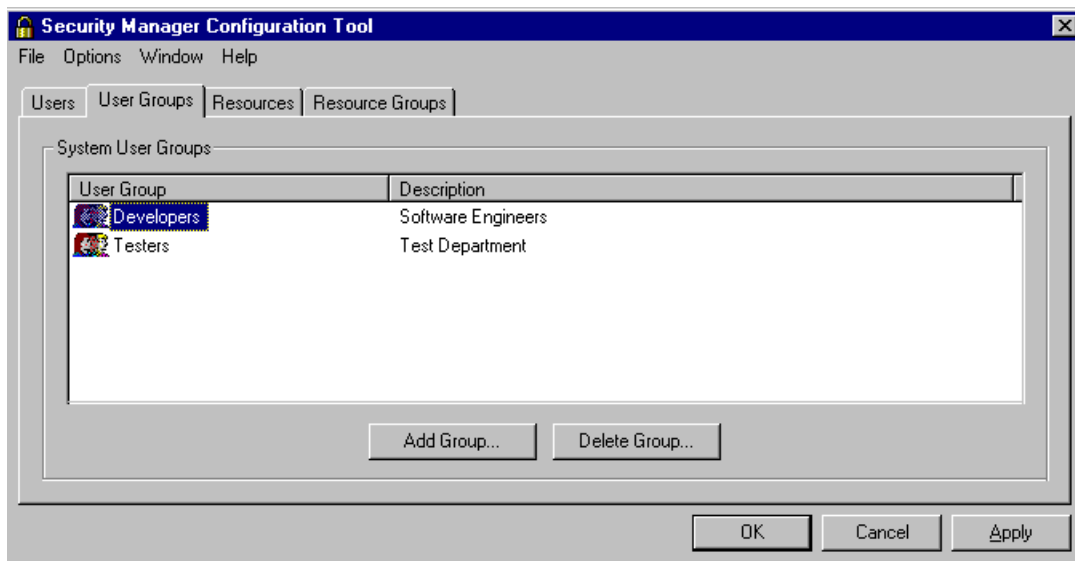


Figure 8 The User Groups Page

The user group page is shown in Figure 4. There is a column displaying the names of the user groups, and a column displaying an optional description of each user group.

Adding / Editing User Groups

Double click on an item in the *User Group* column to bring up the user group details dialogue box for the selected group. Pressing the *Add Group* button also brings up the User Group Details dialogue, but in this case it is empty.

The dialogue (Figure 5) consists of several tabs, each discussed in detail below.

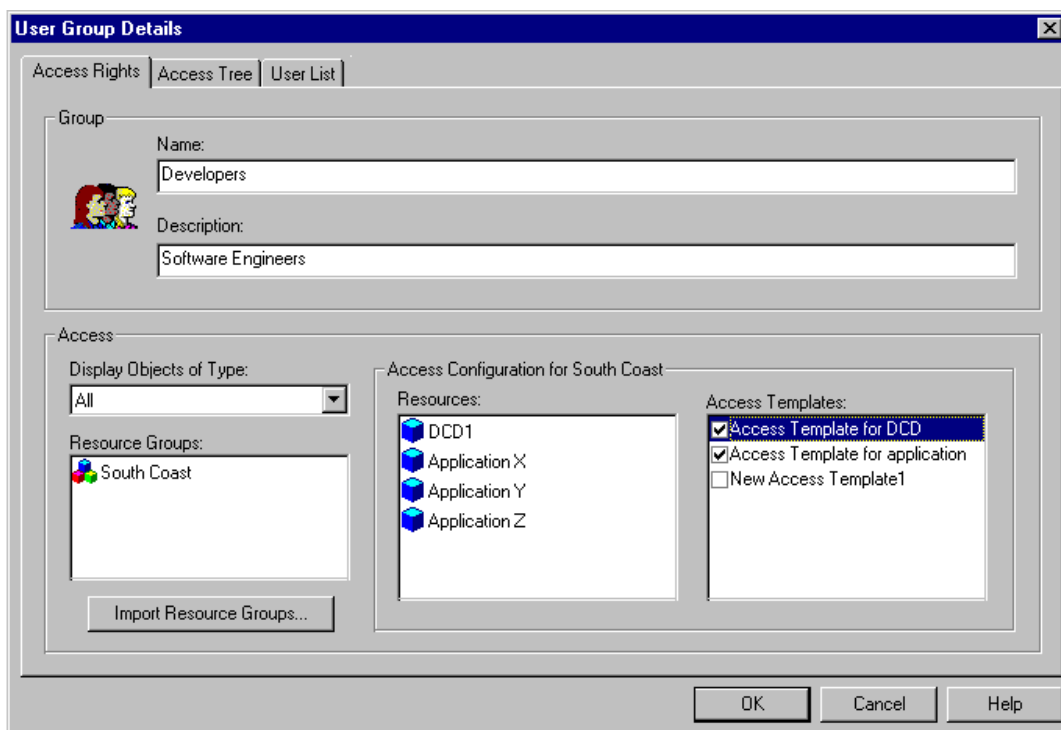


Figure 9 The User Group Details Dialogue

Access Rights

This tab is displayed when the dialogue opens. It is divided into two halves. The top half has the details of the user group. These are the name, and an optional description or comment about the group. The bottom half of the page is where you set up which resources can be accessed by members of the group.

The *Resource Groups* box shows a list of the resource groups currently selected into

this user group. Clicking the *Import Resource Groups* button or double clicking the *Resource Groups* box will bring up the *Import Resource Groups* dialogue box.



Figure 10 The Import Resource Groups Dialogue Box

In this box you can select which resource groups are included by ticking the check box next to the group's name. You can deselect resources by clearing the check box. Once you have the appropriate resource groups selected into the user group, you can set the access levels for the resources contained in them. Click *OK* to use this resource configuration, or *Cancel* to retain the existing resource set. Either button will return to the User Groups Details dialogue (Figure 5 on page 10).

Selecting a resource group in the list displays all of its resources in the *Resources* box and the *Access Templates* box shows all the available access templates. Selecting an access template by ticking its check box will apply that access template to all the resources in the selected resource group. Multiple access templates may be selected for any given resource group. Where access levels conflict, the higher access level will be applied.

There is also a filter box, marked *Display Objects of Type* which allows you to limit the resources and access templates displayed to a specific type only.

Access Tree

Click in the tab marked *Access Tree* to move to that page. This shows all the resources that can be accessed by this user group. Clicking in the + box to the left of each resource will expand it, showing attributes and sub attributes.

To the left of each attribute, its default access level is shown in round brackets. This access level is derived from the access templates selected into the group. If you wish to add an override to an access level it can be done on this page by right clicking on the appropriate attribute and selecting *Add Modification*. Then select the access level you want from the resulting menu.

Removing the override is done similarly by selecting *Remove Modification* from the right click menu.

To change to default access level that a user group has to a given resource, you will need to change the access template that is applied to that resource using the Advanced Administration Page, Figure 11 on page 17.

User List

The user list page simply shows which users are part of this group.

Deleting User Groups

To delete a resource group, select it in the main Resource Group Window and press the *Delete Group* button at the bottom of the page.

Note: You cannot delete a User Group that still contains Users. Reassign Users to another User Group before deleting the User Group.

If you wish to commit these changes to the server immediately click *Apply* at the bottom of the main window.

The Resources Page

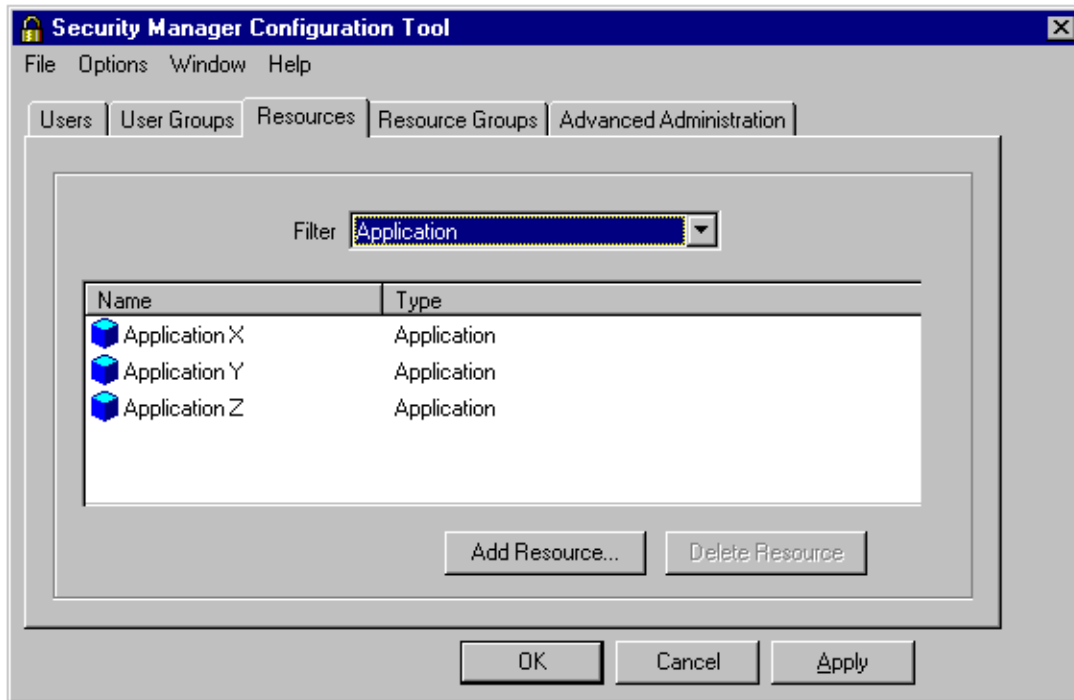


Figure 11 The Resources Page

The resource page shows all the resources that are in the system. There are two columns showing the name and the type of the resource. Above the list of resources is a filter that allows you to select the type of resources that you wish to view. In Figure 7, only resources of the type *Application* are shown.

Editing Existing Resources

Double clicking / right clicking on the name of a resource will bring up the resource details dialogue, which is similar to that shown in Figure 8 on page 14.

This shows you the name and type of the resource. Both of these can be edited. The facility of changing the type is provided in case the wrong type is initially selected, but should be used with care.

Click *OK* to return to the main resource page, saving the changes, or *Cancel* to abandon them.

Adding New Resources

In the main Resource Page, click on the *Add Resource* button at the bottom of the page, or right click on an empty part of the page, and select *Add* from the popup menu. This will bring up an empty resource dialogue details box.

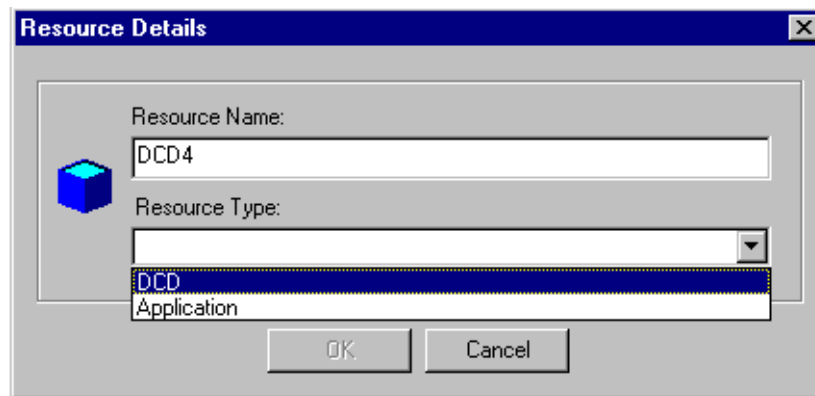


Figure 12 The Resource Details dialogue

This box allows you to set the name of a new resource, and to select the type of the resource from a drop down list that contains all the existing type definitions.

Note: a type must have been previously defined before a resource of that sort can be added. New types of resources are added in the Advanced Administration page, page 17.

Click *OK* to keep the newly defined resource, or *Cancel* to return to the main resource page without saving the changes.

Deleting Resources

To delete an existing resource, highlight it in the main resources dialogue page (Figure 7) and press the *Delete Resource* button at the bottom of the page. This will bring up a confirmation box, checking that you really want to lose this resource.

If you wish to commit these changes to the server immediately click *Apply* at the bottom of the main window.

Resource Groups Page

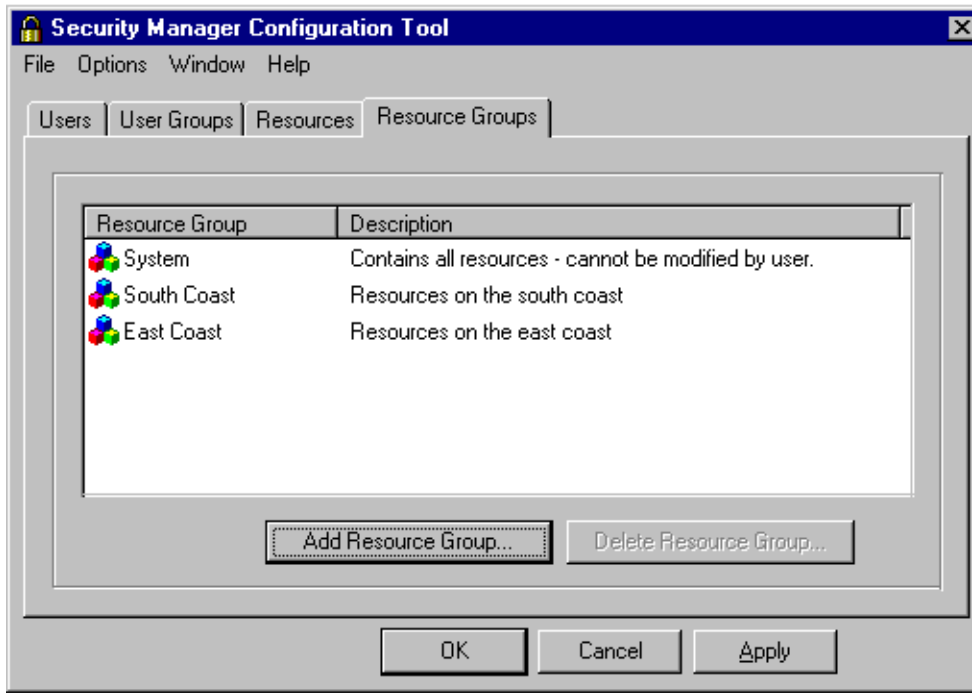


Figure 13 Resource Groups Page

The resource groups page shows all the resource groups in the system. It has two columns showing the name of the resource group and an optional description. Adding, deleting and editing of resource groups is done in the usual way.

Adding a New Resource Group

Either right click on an empty part of the page or click the *Add Resource Group* button at the bottom of the page. Both of these actions will bring up the Resource Group details dialogue. Fill this in with the Resource Group name (required) and Resource Group description (optional), then follow the instructions for adding resources to a group in Editing Existing Resource Groups, below.

Editing Existing Resource Groups

Double clicking / right clicking on a Resource Group will bring up the Resource Group details dialogue.

Note: The Resource Group called *System* is maintained automatically and cannot be modified by you. This group contains all the resources currently administered by the Security Manager application. Providing every user group with differing levels of access to this group (for example, access to Managed Elements) ensure that any new Managed Elements added will automatically be available to that user group.

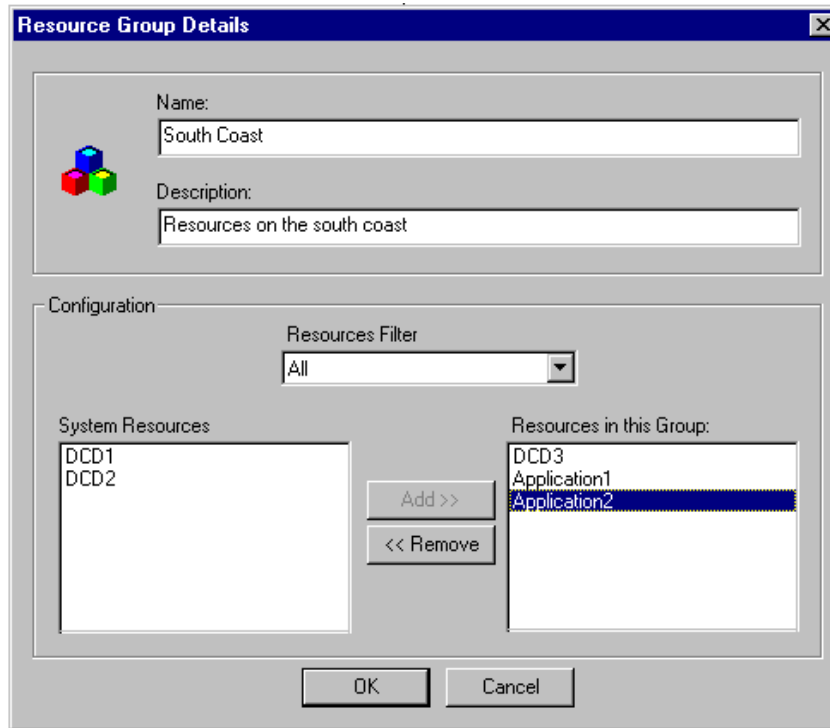


Figure 14 The Resource Group Details dialogue box

The resource group details dialogue box allows the name of the group to be changed, and an optional description to be added or edited. It also allows you to edit the resources that are in the group.

To add a resource, select the one you want to include from the box on the left labelled *System Resources* and click the *Add >>* button. At this point it will transfer across to the *Resources In This Group* box.

Resources can be removed from the group by selecting them in the right hand box and clicking the *<< Remove* button.

The *Resources Filter* box can be used to limit which resources will be displayed in both of the boxes.

Deleting Resource Groups

To delete a resource group simply highlight it in the main Resource Group page and press the *Delete Resource Group* button at the bottom of the page. A confirmation dialogue will be displayed, checking that you really want to do this.

Note: You cannot delete Resource Groups that still contain Resources. Reassign Resources to another Resource Group before deleting a Resource Group.

If you wish to commit these changes to the server immediately click *Apply* at the bottom of the main window.

Advanced Administration Page

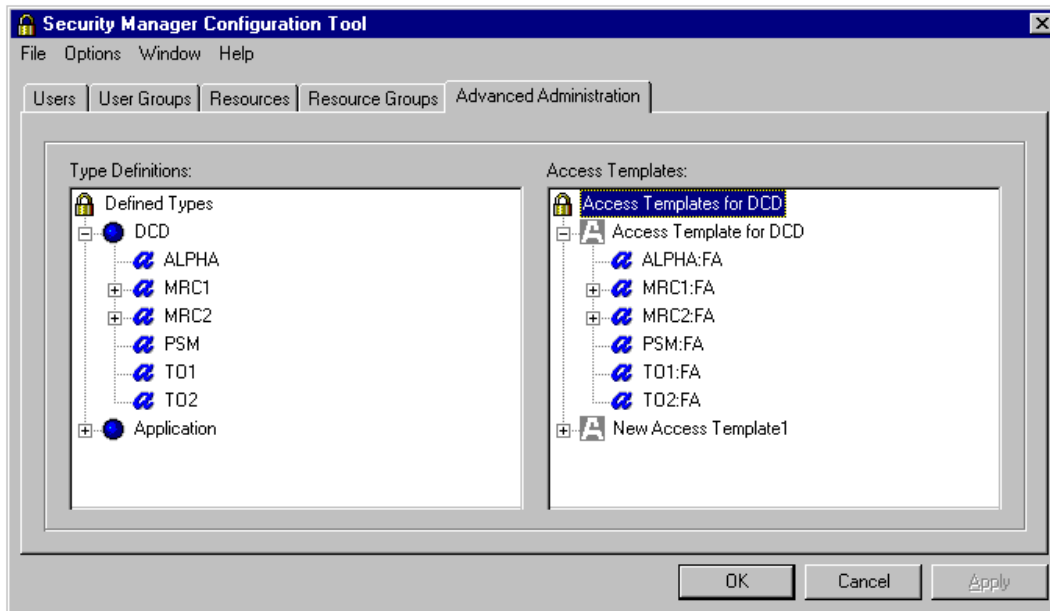


Figure 15 The Advanced Administration Page

The Advanced Administration Tab is different from the rest of the tabs because it does not display a list of items. Instead it displays two trees. All operations are performed using right click menus. The tab for the advanced administration page is not visible by default. In order to display this tab you need to go to the options menu and select *Show Advanced* tab item. The tab will now become visible to the right of the other tabs. The two trees on this page allow configuration of type definitions and access templates.

For a fuller discussion of Type Definitions and Access Templates see Notes for Administrators, page 20.

Type Definitions

Viewing Type Definitions

The types tree (on the left of the page) lists all the types that are defined in the security system. Double clicking on the name of a definition, or clicking the + box to the left of it (if present), will expand that type definition to show any attributes that it may have.

Adding a Type Definition

To do this, right click on the top of the tree, named *Defined Types*. This will bring up a menu with *Add Type Definition* on it. Selecting this will create a new type.

Adding / Renaming / Deleting Attributes In A Type Definition

Right clicking on a type brings up a menu with *Add Attribute*, *Rename* and *Delete* options. The add attribute option creates a new attribute under the type. New attributes can be created under the type and under other attributes. There is no limit to how deeply attributes can be nested.

Access Templates

The access templates tree (on the right of the page) is only active when a type definition is selected in the left hand pane of the page. When a type definition is selected the existing access templates based on that type will be displayed. Access templates are managed in a similar way to type definitions.

To show all of the attributes in an access template, expand it by clicking the + box to the left of the item. Each attribute has an individual access level.

Adding New Access Templates

Right clicking on the root tree item brings up a menu allowing the option to create a new access template. You will notice that once an access template is created it will always have the same set of attributes as its associated type - even if the type is subsequently modified. Changes are automatically propagated to all templates derived from the modified type. When an access template is created all of its attributes are set to full access by default.

Editing Access Templates

To change the access level right click on an attribute and select the new access level from the menu. Notice that in the case of cascaded attributes each attribute has its own access level.

Deleting Access Templates

To delete an Access Template, right click it and select *Delete* from the popup menu.

Automatic Idle Time Out

Only one copy of the security tool can be open at any one time. As the server to which the tool connects may be running on a different machine from that of the tool, it is possible that the security tool could inadvertently be left running and prevent other copies being started.

To avoid this, the security tool detects when it has been left idle for five minutes and prepares to close down automatically. Thirty seconds before closing down, Security Manager beeps and displays a dialogue. This informs the user that it is about to terminate and that changes will not automatically be saved, and counts down the remaining seconds. To stop the application from shutting down, press the cancel button on the dialogue box.

Frequently Asked Questions

- 1 **Q. Why can't I change the System Resource Group?**
A. This is not modifiable by the user. It shows all the resources which are currently being managed by the application. When resources are removed from or added to Security Manager, the System resource group is automatically updated.

- 2 **Q. Why can't I add a new resource type in the Resource Details dialogue box?**
A. You need to predefine your resource type first in the Advanced Administration page, before you can add a resource of its type to Security Manager.

- 3 **Q. Why do only some of my changes get saved?**
A. To ensure that a modification is saved, press the Apply button once you have completed it. Then the server will be updated with any unsaved changes.

- 4 **Q. Why can't I change the name of an attribute in the Access Templates?**
A. Access Templates (on the Advanced Administration page) always follow the Type Definitions. To change the name of the attribute, you will need to change it in the Type Definition. The change will then propagate to all Access Templates derived from it.

- 5 **Q. I've just started Security Manager, and can't add my first user. Why not?**
A. You need to define a user group before you can add any users to Security Manager.

- 6 **Q. Can I select more than one user / resource at a time?**
A. No.

- 7 **Q. Why can't I delete a User Group / Resource Group?**
A. You cannot delete a User Group or Resource Group which still has members. Reassign these members to another group before attempting to remove the original group.

8 Q. Why can't I start a copy of Security Manager?

- A. Only one copy of Security Manager can be running at a time. Check that either the home machine, or the server to which it connects, is not already running a copy of Security Manager.

Notes for Administrators

Terms Used In Security Manager

User

A *user* is a person registered with the security system. Their security access is derived from the user group to which they belong.

User Group

User groups are sets of individual users who have the same or similar access privileges. It is in a user group that most of the security access is set up. A user group contains a set of resource groups that specify which resources the user group members can access, and you can assign a set of access templates to act on each resource group.

Resource

A *resource* represents something that is secured. Resources have to be based on a *type definition* (page 20) and they inherit the *attribute* structure (page 21) of that type. If the definition subsequently changes so does the structure of all resources based on that type.

Resource Group

A *resource group* is simply a collection of resources. There is always one resource group defined, called System. This contains all resources currently supervised by the Security Manager. You can define as many resource groups as you wish. Resource groups may contain as many resources as necessary. Each resource can be included in more than one resource group. One example of a resource group could be to class resources by their geographical location.

Type Definition

A type is intended to model something that can be secured. Types are used as *templates* on which to base resources. They can have a set of attributes (page 21), each of which can be assigned an *access level* (page 21).

Attributes can also *contain* attributes, so for example you could have MRC1 as an attribute with ports 1 to 4 as sub attributes.

Another example of a type definition would be to have a *type* called *Application* with an *attribute Run* which would be used to specify who could launch that application.

Access Templates

An *access template* provides a way of specifying a set of *access levels* for a type. For any given type you can define as many access templates as necessary. Each access template can assign a different access level to each attribute. Access templates can be applied to all the resources in a resource group via a user group.

Attribute

An attribute is a specific part of, or action that can be performed on, a resource. Each attribute has an individual access level. Attributes are created in type definitions.

Access Levels

These are levels of access that a user has to a resource, or to one of its attributes. There are three access levels: *No Access (NA)*, *Read access (R)* and *Full Access (FA)*.

Modifications

The security system is designed to allow you to set up the likeliest access scenario for most situations quickly and easily. However in some circumstances you may want to tweak the specific access provided for a given user or user group. These tweaks are known as *modifications* and can be applied on a per attribute basis to both individual users and user groups.

Supplied Templates

The Security Manager comes with a ready to use set of templates already defined for you, providing you with instant security for the NMS set of applications. They contain the following groupings:

Resource Group

There are two designated Resource Groups:

- *System*- all of the resources controlled by Security Manager.
- *User Resource Group*- the resources which can be accessed by Users.

User Group

There are three designated User Groups with default access levels:

- *NMS Admin*- Full access to all resources in System, and hence all of the resources in the User Resource Group.
- *NMS Users*- Full access to all resources in the User Resource Group, and full access to all SubNetwork and Managed Element (ME) resources. Note that this group also has limited access to the System group, so that any Managed Elements or SubNetworks which are added to Security Manager control.
- *NMS Observers*- Read access to all resources in the User Resource Group.

Users

There is one designated User:

- *nms*- A member of the NMS Admin group.

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Chapter 4 Alarm Forwarding



Why would I Use Alarm Forwarding

NMS may be set-up to forward alarms to an external system. The external system must listen on a TCP/IP socket and receive textual based alarm / event and clearing messages once a connection has been established.

What's In This User Guide?

This document contains everything you need to know to use the NMS Alarm Forwarding System. There is a Contents list on page 60. If you need to use this guide as a quick reference, there is a keyword index at the end (page 68).

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Alarm forwarder NMS Service

A new NMS service “SimpleAlarmForwarder” can now be added to the *SupervisedProcesses.txt* files. This service controls the alarm forwarding function. On start-up the service reads a configuration file (default= *AlarmForwarder.txt*) which defines the forwarding destination, the severity filter, and a regular expression criteria. This file can be found in the *\$MONITORHOME/configs* directory.

```
// Simple alarm forwarding configuration file
DestinationAdresss=inet:11.103.41.99:1234567
SeverityFilter="WARNING" // values CRITICAL,MAJOR,MINOR,WARNING,NONE
AlarmMatchRE=".*" // matches all
Acknowledgments=NO // YES/NO
RetryIntervalOnFailedsocket=15000 // timeout in milliseconds
AckTimeout=15 // timeout in seconds
AlarmBufferSize=20 // number of alarms to buffer up in failure situation
```

Figure 16 Alarm Forwarder Configuration file

The parameters in the config file have the following format:

- *DestinationAdresss* = inet:<IP or known hostname>:<socket number>.
- *SeverityFilter* = <severity value> from the following list:
 - **CRITICAL:** Forward only critical alarms
 - **MAJOR:** Forward only Critical and major alarms
 - **MINOR:** Forward critical, major, and minor alarm
 - **WARNING:** Forward critical, major, minor, and warning alarms
 - **NONE:** Do not forward alarms.
- *AlarmMatchRE* = <a valid RE> this regular expression is matched against the alarm text. If it matches then the alarm is forwarded.

- *Acknowledgments* = *<YES or NO>* If yes the remote device is expected to send a message after each alarm containing the string *ACK=n* where *n* is the *ACK Number* sent in the alarm. If no acknowledgment is received within *<AckTimeout>* seconds the socket will be shutdown and reopened.
- *RetryIntervalOnFailedsocket* = *<0-32000>* a timeout in milliseconds that the Alarm Forward will delay for in between connection attempts to the remote socket.
- *AckTimeout* = *<1-300>* a timeout in seconds such that if no acknowledgment is received then the remote socket will be shutdown and restarted.
- *AlarmBufferSize* = *<0-2000>* the number of alarm that will be buffered and re-sent to the remote socket if a failure occurs.

The SimpleAlarmForwarder service will try to connect to the destination address specified in the configuration file. If this fails it will retry to connection every 15 seconds (or *RetryIntervalOnFailedsocket* value). Once a connection has been established incoming alarms will be compared to the specified criteria, and if matching they will be forwarded as text over the socket. If the socket fails, the retry mode will be re-entered. Alarms will be buffered up to the number specified by *AlarmBufferSize* value when the remote socket is in failure, or the remote end does not acknowledge an alarm.

When *Acknowledgments* is set to *YES*, the SimpleAlarmForwarder expects the remote socket to send a message back to over the socket, containing the *ACK Number* specified in the original alarm message. No more alarms will be sent until an *ACK* is received. Instead they will be buffered and sent after the *ACK* is received. If no *ACK* is received within *AckTimeout* second of the alarm being sent, the socket will be shutdown, then reopened.


```

DN=<NMS DistinguishedName>,ACK=<n><CR><LF>>
<Alarm Text>
eg.
DN=DCD1,ACK=1

    TELECOM 2000-01-03 01:24:52
A 217 REPT EVT EQPT
    "CLK-2:LOCKED,SC,2000-01-03,01-24-52:/* CLOCK CONVERGED ON
REFERENCE INPUT */"
;

```

Figure 17 Forwarded Alarm Format

```

ACK=<n>
eg.
ACK=1

```

Figure 18 Ack message format

The alarm text may contain white space before first line, depending on the text that was received from the ME.

Regular Expression Format

The regular expression (RE) is constructed as follows:

The following rules (1.1-1.5) determine one-character REs that match a single character:

Table 1:

1. Any character that is not a special character (to be defined) matches itself.

1

Table 2:

- 1 A backslash (\) followed by any special character matches the literal character itself. *i.e., "escapes" the special character.*

2

Table 3:

- 1 The "special characters" are:

. + * ? . [] ^ \$

3

- 1 The period (.) matches any character except the newline. e.g., ".umpty" matches either "Humpty" or "Dumpty."

4

Table 4:

- 1 A set of characters enclosed in brackets ([]) is a one-character RE that matches any of the characters in that set. E.g., "[akm]" matches either an "a", "k", or "m". A range of characters can be indicated with a dash. E.g., "[a-z]" matches any lower-case letter. However, if the first character of the set is the caret (^), then the RE matches any character except those in the set. It does not match the empty string. Example: [^akm] matches any character except "a", "k", or "m". The caret loses its special meaning if it is not the first character of the set.

The following rules (2.2-2.4) can be used to build a multicharacter RE:

Table 5:

- 2 A one-character RE followed by an asterisk (*) matches zero or more occurrences
. of the RE. Hence, [a-z]* matches zero or more lower-case characters.

1

Table 6:

- 2 A one-character RE followed by a plus (+) matches one or more occurrences of the
. RE. Hence, [a-z]+ matches one or more lower-case characters.

2

Table 7:

- 2 A question mark (?) is an optional element. The proceeding RE can occur zero or
. once in the string - no more. e.g. xy?z matches either xyz or xz.

3

Table 8:

- 2 The concatenation of REs is a RE that matches the corresponding concatenation of
. strings. e.g., [A-Z][a-z]* matches any capitalized word.

4

Finally, rules 3.1 and 3.2 show how the entire regular expression can be anchored to match only the beginning or end of a line:

Table 9:

- 3 If the caret (^) is at the beginning of the RE, then the matched string must be at the
 . beginning of a line.
 1

Table 10:

3. If the dollar sign (\$) is at the end of the RE, then the matched string must be at the
 2 end of the line.

The following escape codes can be used to match control characters:

Table 11:

\b	backspace
\e	ESC (escape)
\f	formfeed
\n	newline
\r	carriage return
\t	tab
\xdd	the literal hex number 0xdd
\ddd	the literal octal number ddd
\^C	Control code. e.g. \^D is "control-D"

Supervised Processes files

Figure 4 (page 8) shows an example of the *SupervisedProcesses.txt* file which can be found in the *\$MONITORHOME/configs* directory. Inserting the last line will cause start the SimpleAlarmForwarder to be started when the supervised processes are restarted.

```
IS
FM_SERVER
HB_SERVER
TSERVER
TSCV5 UI
SimpleAlarmForwarder
```

Figure 19 SupervisedProcesses.txt example

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Chapter 5 Process Supervisor



The Process Supervisor is a server application which looks after processes specified by you. A process is something which the operating system can run. It is also known as a programme or executable file. At startup the Process Supervisor will start up any processes which are stored within the ini file: PSFiles.ini.

The Process Supervisor User Interface (UI) allows you to view the processes which are being supervised. You will be unable to view processes for which you do not have read access, as defined by the NMS Security Manager application.

Why Would I Use The Process Supervisor Applications?

With these programmes you can monitor the CPU usage of each supervised process and set a maximum memory usage for it. All supervised processes are continually checked to see if they have crashed or are leaking memory. If so, they will be restarted automatically¹.

What Else Would I Need To Use The Process Supervisor Applications?

To run the Process Supervisor, you will need to be running either Windows NT or Unix.

The Process Supervisor's supervised processes can only be manipulated via requests from the Process Supervisor UI. Only one Process Supervisor UI can be connected to the Process Supervisor server at a time.

The Process Supervisor UI is a client application which allows you to manipulate the running of processes via a connection to the server application Process Supervisor. You can stop a process, start a process, restart a process, stop all processes, start all processes, remove a process and change the set memory usage value for a process.

(1) Processes that crash frequently will have a 15 second delay before restarting. Other processes will restart immediately.

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Opening the Process Supervisor Application

Windows NT or UNIX

To start the Process Supervisor, type the path and file name on the command line (found in the *Run* item of the *Start* menu of Windows NT).

Windows NT only

You could also double click the Process Supervisor item within Windows NT Explorer, or select the Process Supervisor icon  from the Windows NT *Start* menu.

Unix only

In Unix, you could double click on the Process Supervisor item in the *NMS Admin* menu on the Unix *CDE Front Panel* (Figure 1).

On startup the Process Supervisor will ensure that you have the appropriate security key and security access level before continuing. It will also start any processes contained within the file *PSFiles.ini*.

If startup has been successful and you are using a Windows NT, the application will appear in Windows Task Manager as ProcSup.exe, and a terminal style window will be displayed.

If you are using Unix, a flashing cursor will be shown within the terminal window from which the programme was started.

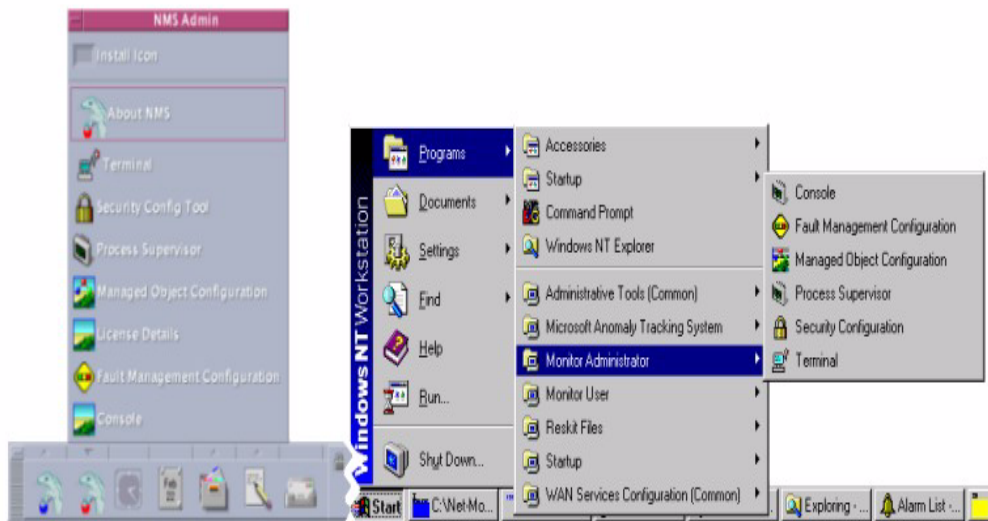


Figure 20 The Unix CDE Front Panel / Windows Front Panel

Opening The Process Supervisor UI

Windows NT or UNIX

To start the Process Supervisor UI, type its path on the command line, (found in the *Run* item on the *Start* menu of Windows NT). You will also need to supply the address of the Process Supervisor *server* application. The syntax for this is as follows:

Application path and name -sv Server Name

or

Application path and name -sv IP Address

e.g. If the application needs to connect to Process Supervisor located on a server known as *embersoft1*, the command line instruction would read as follows

PSUI -sv embersoft1.

If no address is supplied, the local machine will be checked for the Process Supervisor application.

Another (optional) flag can also be used within the command line. This will load non-English versions of the application. To do this, type in the name and server address, as shown above, followed by *-nls* and the name of the translation file you have been supplied with.

e.g. To expand the example given above to include translation files. The translation file is called *language.nls*:

PSUI -sv embersoft1 -nls language.nls

On startup, the Process Supervisor UI will first check your level of user access with the related Security System. There are three levels of access possible, shown in the following table:

Security Level	Access Rights
No Access	<i>Unable to run the program</i>
Read Access	<i>Able to run programme and scan process details, but not to send requests to the server</i>
Full Access	<i>Able to run the program, scan process details, and send requests to the server</i>

Press the *OK* button and the following window will be shown:

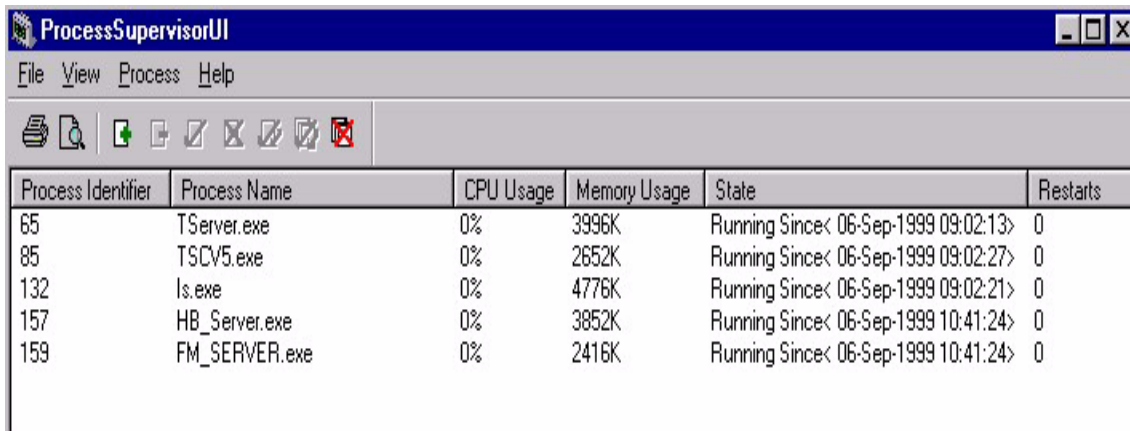


Figure 21 Process Supervisor UI Application Main Screen

If the server is supervising any processes at the time you started up the application, they will be shown in the main window (see Figure 2). If no processes are currently being supervised, the window will be empty.

Failure On Startup

If the server name or IP address you have defined cannot be found, a message box will be displayed saying *Server Name Specified Not Found*. The program will exit when the *OK* button is pressed.

If the Process Supervisor UI has failed to connect to the server a message box will be displayed saying: *Your Connection Has Been Unsuccessful*.

If another instance of the Process Supervisor UI is already connected to the Process Supervisor than a message box will be shown saying: *Connection Unsuccessful: Client Already Exists*.

Security Manager and Security Key failure error messages will also be shown.

The Process Supervisor UI Toolbar

Below are the tool bar item titles, with a reference to where further information can be found:

Start All Processes Tool

This will be discussed later. See “Starting All Of The Supervised Processes” on page 84.

Stop All Processes Tool

This will be discussed later. See “Stopping All Of The Supervised Processes” on page 85.

Restart Process Tool

This will be discussed later. See “Restarting A Supervised Process” on page 84..

Start Selected Process Tool

This will be discussed later. See “Starting A Supervised Process” on page 84..

Stop Selected Process Tool

This will be discussed later. See “Stopping A Supervised Process” on page 83.

Remove Selected Process Tool 

This will be discussed later. See “Removing A Process From The Supervised List” on page 84.

Add Process Tool 

This will be discussed later. See “Adding A Process” on page 80.

Print Tool 

This tool will print out a hardcopy version of the list of currently supervised processes.

Print Preview Tool 

This tool will display on screen the appearance of a printout.

The Process Record

Each process record contains the following information about a process:

Process ID

This is a unique number allocated by the operating system to each process

Process Name

The name of the process entered by you in the *Add Process* dialogue box (see Figure 22)

CPU Usage

A percentage of the totally available processing power that is currently being used by the process.

Memory Usage

The average amount of physical memory used by the process. It is an averaged out from the time the process was last started until the present time. Therefore the longer a process has been running, the more accurate this value is. Expressed in kilobytes.

State

This shows whether the process is currently running and if so, when it was started. If the process is currently stopped, it shows when it was terminated.


Restarts

This shows the total number of restarts made by this programme, either since it was registered by the Process Supervisor or since the Restart value was last set to zero.

Sorting Process Records

The process records can be sorted by any column (alphabetically A-Z or numerically in ascending order) by clicking in the column header (where the column title is).

Adding A Process

Either select the *Add Process* item from the *Process* menu or click on the *Add Process* icon  in the toolbar. The Add Process dialogue will be displayed.

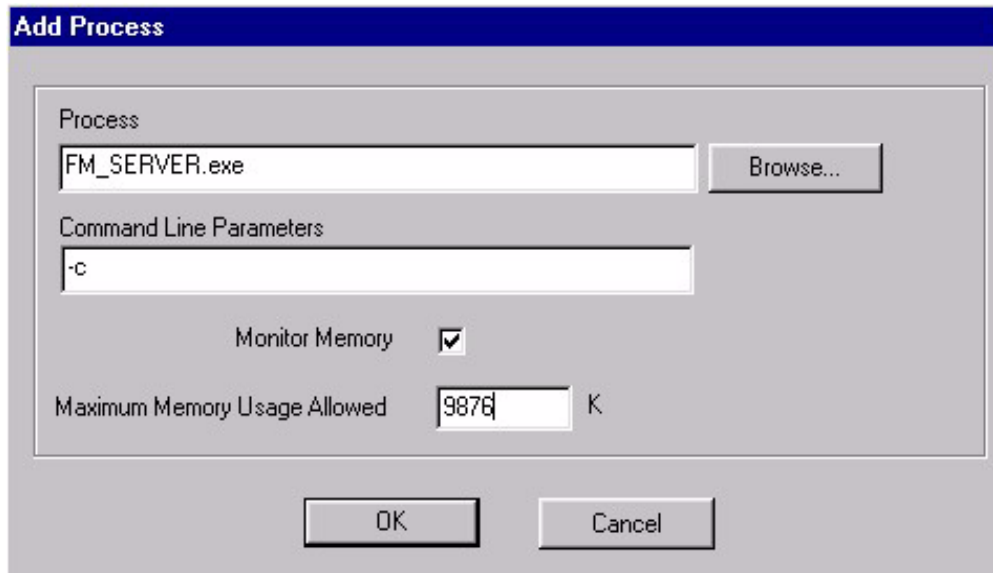


Figure 22 The Add Process Dialogue

Fill in either the name or address of the process in the top text box. If the full path is not known, you can press the *Browse* button and find the file using standard *Open File* box. Use this to find the process you wish to monitor. The name of the selected process will automatically be written to the edit box once you have pressed the *Open* button.

If the selected process has any required parameters, these can be inserted within the *Command Line Parameters* box.

Setting The Set Memory Usage Limit When Adding A Process

To set a limit for the amount of memory the process can use, click in the *Monitor Memory* tick box. You will now be able to insert a value, in kilobytes, in the *Maximum Memory Usage Allowed* box.

Clicking again in the *Monitor Memory* tick box will remove the tick, and stop memory use being monitored.

Any non-numeric entries within the *Maximum Memory Usage Allowed* box will also prevent the memory use of the process being monitored.

Any values set now can be changed once the Process Supervision has been set up. (See “Changing The Properties Of A Process” on page 82.)

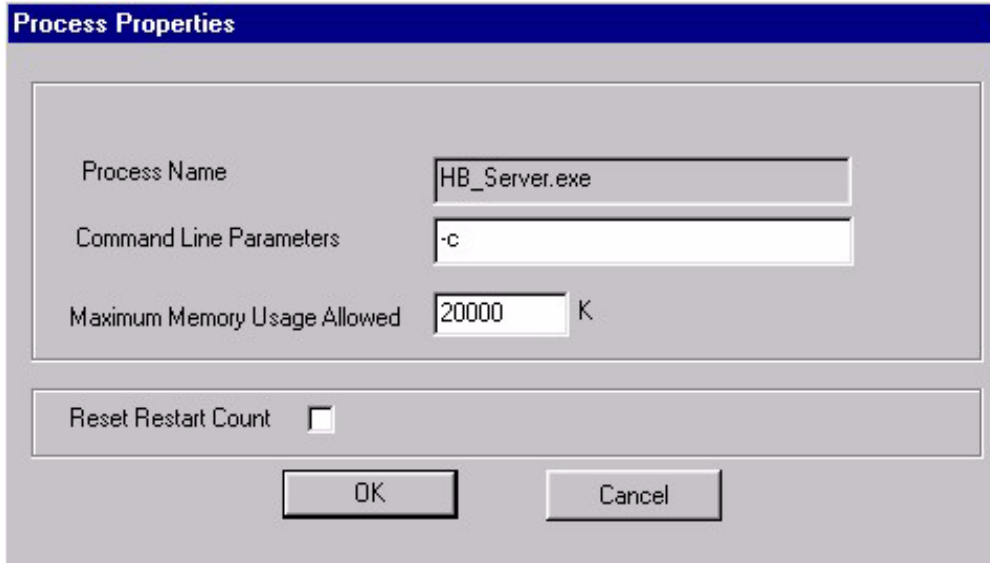
Press *OK*. If it is started successfully, the process details will be entered in the Process Supervisor UI screen.

If the attempt to monitor the process is unsuccessful, the process details will not be added to the main screen and a message box will appear, informing you of this. Common reasons for failure are that a process with the same name and parameters is already being supervised, or the server has failed to start the process.

If it was successful, an entry will be inserted in the PSFiles .ini file for the process. This will detail its name, parameters, set memory usage value and restart value. This will be updated as necessary. An example of this is shown in Figure 25

Changing The Properties Of A Process

Once a process has entered supervision, various values can be reset. Either double click on the process whose values you wish to change, or highlight it by single clicking on it and then select *Process Properties* from the *Process Menu*. The *Process Properties* dialogue will be displayed, showing the current set of values for this process.



The image shows a dialog box titled "Process Properties". It has a blue title bar. The main area is light gray and contains three input fields. The first is "Process Name" with the text "HB_Server.exe". The second is "Command Line Parameters" with the text "-c". The third is "Maximum Memory Usage Allowed" with the text "20000" and a "K" to its right. Below these fields is a checkbox labeled "Reset Restart Count" which is currently unchecked. At the bottom of the dialog are two buttons: "OK" and "Cancel".

Figure 23 The Process Properties Dialogue Box

Changing The Set Memory Usage Value Of A Process

The value in the *Memory Usage* box can be either set to zero or changed.

Resetting The Restart Count

The value in the *Restart Count* column can be reset to zero by clicking the *Reset Restart Count* box.

If you do not wish to keep the changes that you have made in the this box, press *Cancel*. Otherwise click the *OK* button.

A *Confirmation of Changes* dialogue box, shown below, will be displayed.

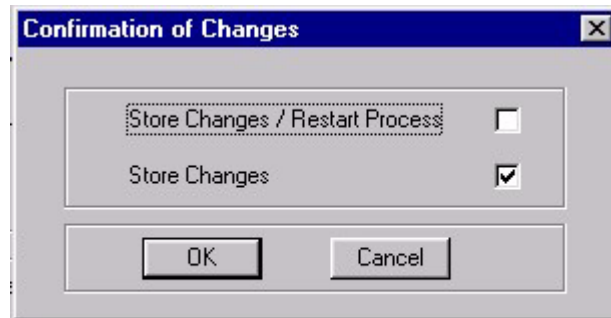


Figure 24 Confirmation of Changes Dialogue Box


There are three options available to you:

Store Changes: This will store the changes made in the Process Supervisor ini.files and show them in both the UI and server applications. The new details will be shown in this session and retained for future sessions. Tick the box and click the *OK* button to choose this option.

Store Changes / Restart Process: This stores the options as discussed previously. It also restarts the process. Tick the box and click the *OK* button to choose this option.


Cancel Changes. Press the *Cancel* button to discard any changes that you have made in the *Process Properties* box.

Stopping A Supervised Process

Select the process that you wish to stop by clicking on it within the main Process Supervisor UI window. Then either choose the *Stop Selected Process* item from the *Process* menu, or click on the *Stop Supervised Process* icon  in the toolbar.

A message will appear asking you to confirm that you wish to stop the process. Once you have pressed *OK* the chosen process will be killed and the *State* column will show the time that the process was stopped.


Starting A Supervised Process

First select the process you wish to start by clicking on it within the list box. Then choose the *Start Selected Process* item from the *Process* menu or click on the *Start Selected Process*  icon in the toolbar.

A dialogue will appear asking you to confirm that you wish to start the process. Once you have pressed *OK* the chosen process will be launched.

The *State* column of the Process Supervisor UI main window will now show that the process is running, and the time it was started.


Restarting A Supervised Process

Select the process you wish to re-start by clicking on it within the main Process Supervisor UI window. Then select the *Restart Selected Process* menu item from the *Process* menu, or click on the *Restart Process*  icon from the toolbar.

A dialogue will appear asking you to confirm that you wish to restart the process. Press *OK* and the chosen process will be restarted. This option will only be available if the process is already running. The *State* column will show the time at which the process was restarted.

Once the process has been started the value in the *Restarts* column for the process will be increased by one.


Removing A Process From The Supervised List

First select the process that you wish to stop monitoring in the main Process Supervisor UI window. Then choose the *Remove Process* item from the *Process* menu or click on the *Remove Process* icon  in the toolbar. A message box asking you to confirm that you wish to remove the process will be displayed.

If the process is currently running, you will also be asked whether you wish to leave it running after removing it from supervision.

Click *OK* to remove the process, or *Cancel* to retain it. Once a process is removed, it will no longer appear in the Process Supervisor UI window.

Starting All Of The Supervised Processes


To do this, either select the *Process* menu at the top of the Process Supervisor UI and then choose the *Start All Processes* item or click on the *Start All Supervised Processes* toolbar button .

A message box will appear asking you to confirm that you wish to start all of the processes. To continue, press *OK*, otherwise press *Cancel*.

All processes currently stopped will be started. Any running processes will be restarted. The *State* Column of the Process Supervisor UI list box will now show the time at which the processes were started / restarted.

The restart count of all the processes will be increased by one.

Stopping All Of The Supervised Processes


To do this, select the *Stop All Processes* item from the *Process* menu or click on the *Stop All Processes* toolbar button .

A message box will appear asking you to verify that you wish to stop all of the processes. To continue press *OK*. All processes that are running will now be stopped. The *State* Column of the Process Supervisor UI main window will now show the time at which the processes were stopped.


Shutting Down The Process Supervisor UI

The Process Supervisor UI can be closed either by selecting the *Exit* option from the *Window Menu* or by clicking on the X in the right hand corner of the main window.

Print Previewing The Contents Of The Process Supervisor Main Window

To print preview the contents of the Process Supervisor UI main window, either select the *Print Preview* item from the *Window* menu or the *Print Preview* icon  from the toolbar. A print preview window will be displayed, enabling you to see how the contents of the window would look if printed out. Press *Close* to return to the Process Supervisor UI window.

Printing A List Of Supervised Processes

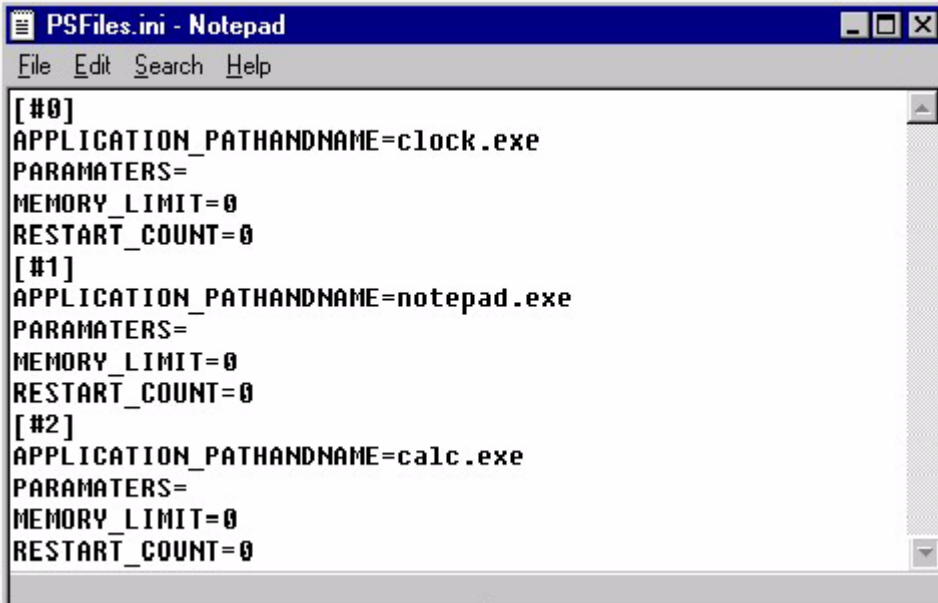
To print the contents of the Process Supervisor UI main window, either select the *Print* item from the *Window* menu or the *Print* icon  from the toolbar. A standard *Print Setup* dialogue box will be displayed. Here you can set the number of copies, select a printer from those available, and change the page settings. When you have made your selections, press *OK* to continue printing.

Constructing And Adding To The PSFile.ini

This action is not recommended unless it is absolutely essential, as making incorrect modifications to your system files could have unpredictable results.

You should not need to alter the .ini file as adding a process will enter an entry to it and removing a process will delete an entry from it. However if you do choose to do this, it is vital to remember the following points:

- Do not leave spaces within the section names of the entries or between the section headings and set values.
- Include a # before the next entry number if adding an entry to the file manually.
IMPORTANT: Always keep the numbers in order if you have to do this.
- Note that any duplicate entries within the ini file will be ignored



```
PSFiles.ini - Notepad
File Edit Search Help
[#0]
APPLICATION_PATHANDNAME=clock.exe
PARAMATERS=
MEMORY_LIMIT=0
RESTART_COUNT=0
[#1]
APPLICATION_PATHANDNAME=notepad.exe
PARAMATERS=
MEMORY_LIMIT=0
RESTART_COUNT=0
[#2]
APPLICATION_PATHANDNAME=calc.exe
PARAMATERS=
MEMORY_LIMIT=0
RESTART_COUNT=0
```

Figure 25 PSFiles.ini editing window

Frequently Asked Questions...

- 9 Q. **What has happened when I get the error *'Error ini file Constructed Incorrectly'*?**
- A. The Process Supervisor has had a problem with reading the PSFiles.ini. The file may have been amended manually and there may be headings missing or spaces included. Both of these problems will stop the Process Supervisor reading the file properly.
- The solution is to exist the Process Supervisor applications and amend the ini file so that:
- there are no spaces in any of the section names
 - the numbers all follow on from each other with a hash in front
 - there are no spaces between the = signs of the heading names and their values.
- When you've done this the Process Supervisor will be able to read the PSFiles.ini file.
- 10 Q. **Why did nothing happen when I requested an action on a process?**
- A. The socket used to send to the Process Supervisor UI is also used for sending new data to the screen. A result of this is that, occasionally, messages may collide and not reach the Process Supervisor. Simply repeat the request for an action.
- 11 Q. **Why did the Process Supervisor not add the process I requested?**
- A. A process is not added under the following circumstances:
- It is already being supervised.
 - Process Supervisor fails to start the process. Repeat the request to start the process.
 - The process cannot be found at the location you have specified. Recheck the location in the Add process dialogue box.
- Check each of the points listed above. If the process still does not get added, there may have been a collision between messages within the socket, so try resending the request.

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Chapter 6 Database Administration

This document gives advice on the basic procedures needed to keep your NMS System working efficiently and securely. The two main steps that we shall examine are the archiving and purging of records from the database.

In addition to the information contained here, you may need access to the set of help manuals that were provided with your database system.

What's in this chapter?

This User Guide chapter contains basic information about possible maintenance schedules, checking the status of your database and archiving records. If you need to use the chapter as a quick reference guide, there is a keyword index at the end.

Why Would I Need To Backup The Database?

It is common practice to backup a database. Not only can hardware / software failure cause data to be lost, but data can be accidentally deleted, wrongly added or corrupted. When you make an organised backup up plan, you are guarding against loss of data, and ensuring that in the event of a major machine disaster to both your database and network you can quickly reconfigure all your elements in a combination that you know has been stable in the past. You are also able to delete records from the active database to keep it working efficiently.

nb. *There are very different methods used to maintain the Windows NT and Unix versions of the NMS / Timescan systems. Make sure that you read the appropriate part of this user guide for your setup.*

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Maintenance Schedule

The TimeScan NMS system collects notifications from various Managed Elements (e.g. DCDs), inserts them into a database and allows you to view the information contained in them in various ways. Over a relatively short period of time, the normal use of this system will generate many records in the database. A regular maintenance schedule will ensure the continued high performance of your system. The tables below outline a possible maintenance plan, but there are also other times at which you should backup your system, shown in the “Non-Routine Backup of Archives” section.

Table 12: Weekly Schedule

Action	Type	User
Backup database	Full (Level 0 if Informix)	Administrator

Unix / Informix only: If using the Unix / Informix based TimeScan NMS system, it is also recommended that you perform more frequent Level 1 or Level 2 backups if your database logs many records. A typical schedule would be to perform a Level 1 backup daily (for a very busy system) or half weekly (for a moderately busy system). The purpose of Level 1 backups is to minimise the time taken to restore the system completely.

Action	Type	User
Backup database	Incremental (Level 1 or 2 if Informix)	Administrator

You can only perform a *Level 1* archive if your previous archive was a Level 0.

You can only perform a *Level 2* archive if your previous archive was a Level 1.

If you are in any doubt about which level of archive, perform a Level 0 one. It may take a little longer, but you will be assured of maintaining all the required information.

End of Unix / Informix only information

Table 13: Monthly Schedule

Action	Type	User
Archive Log records	Delete Log records, up to end of LAST month	Administrator

The suggested schedule outlined above may not be suitable for your system, as this will depend on individual circumstances. The two main attributes to consider when planning a maintenance schedule are the **number of Managed Elements (MEs)** and the **number of notifications raised** by each ME. Even if there are only a few MEs, if they raise many alarms, you will need to perform housekeeping activities more frequently than if you have a larger, but less active, system.

As a very rough guideline, performance will start to deteriorate once the following sizes are reached:

- **Windows / Access-** about 10 MB total database size, or approximately 10 000 alarm records.
- **Unix / Informix-** This largely depends on your hardware setup. Contact your vendor for details.

At this point you should definitely start removing records from the database. This should be done as soon as you have performed a backup.

To find how large your current database is, take the following steps:

Unix / Informix

- Use the *ON-Monitor* facility to find out how large your database is. To start *ON-Monitor*, type the command *onmonitor* at the command prompt. You will then enter the *ON-Monitor* tabbed screen.
- The first tab page is titled *Status*. One of the items on this page is called *Spaces*. Use the arrow keys to move to this item. Press *Return*.
- You will now be presented with information about the size of various database files.

Windows / Access

- Find your current Access database file (*.mde).
- Right click on it and a popup menu will appear.
- Select the *Properties* item from this menu.
- The file size will be shown in the resulting information box.

Use the information gained to decide whether or not you need to remove some of the records in the database. If you do, see the section “Removing Log Records” on page 98.

Non-Routine Backup Of Archives

As well as backing up your system on a regular basis, there are other events which should prompt you to think about performing an additional backup.

- Changes have been made to the TimeScan NMS system with the MOC (Managed Object Configuration) programme.

Organisation Of Archives

It is recommended that you give some thought to organisation of your archived data, and ensure that it meets at least the following criteria:

- The saved data sets are copied from the disk on which they are originally saved and stored elsewhere.
- The most recent complete archive (Level 0, if in Informix) from which a successful restore has been made are kept, until it is superseded.
- **Unix / Informix only:** Any Level 1 or Level 2 archives subsequent the archive outlined above are also kept until they are superseded.

Backing Up The Database

Backing up your database should be done regularly, and as part of a routine. The better planned your system of backing up, the more likely you are to survive a (computer) disaster without significant loss of data. Ideally, the media containing the backup information (disks or tapes) should be stored in a physically separate location to the current database.

Unix / Informix

There are many different levels of backup to choose from with an Informix database, and the options chosen are largely up to you. The frequency and type of the backups will largely depend on the activity that takes place in your database, but a suggested plan for routine backups is given in the section “Maintenance Schedule”, on page 93.

At the very least, you will need to perform regular *Level 0* backups to provide a snapshot of the database structure and its records.

Level 1 and *Level 2* backups are smaller, incremental backups which will speed up the data restoration process. These are optional, but recommended if you have a very active database.

For more information on creating a backup schedule, see Section 1 of the “Backup and Restore Guide for Informix Dynamic Server”, one of the documents that came with your Informix database.

Outlined in this document is how to backup an Informix database using the *ontape* facility. This is quite straightforward, and despite the name, can be used to backup data to a disk drive.

To backup your Unix / Informix database, take the following steps:

- log on as user *informix*
- type
 - *ontape -s*.
- This performs an archive on the complete system managed by Informix.
- You will be prompted to enter the level of the archive that you would like to perform. As a default value, enter 0.
- The following message will appear:
 - *Please mount tape [number] on [file name] and press Return*
- The default files for archiving data are preset in the *onconfig.** file. Whilst there is a file in that location, that is where the archived data will be sent.
- Press *Return*. The message:
 - *Program over*will appear when the archiving is completed.

- Now you need to move the archived data to another location. This file (*../informix/backupdata/NMS.backup*) is the default value for all archives, so to prevent it from being overwritten, and to keep track of all of your archives, immediately rename it using the following command:
 - *mv NMS.backup archivedate*
 For example, if you perform an archive on 31 March 1999, the command will be as follows:
 - *mv NMS.backup archive310399.backup*
- Finally, recreate an empty file with the correct permissions to receive the next set of archived data. Type the following commands:
 - *touch NMS.backup*
 - *chown informix:informix NMS.backup*
 - *chmod 660 NMS.backup*
 - *chgrp informix NMS.backup*
- Once you have performed a backup, you are ready to delete records from the database (see page 98).

n.b. This will NOT purge records from the database- to do this you need to use the Alarm Archive programme, as described on page 100.

To backup your Windows / Access database, take the following steps:

- Find the current database file (*rmdata.mde*), whose default location is *net-monitor/db/data* and right click on it.
- A popup menu will appear. Select the *Copy* item from this menu.
- Move to the chosen backup location, and *Paste* the file into new position (from the right click menu).
- Rename the file, preferably including the date of backup in the new title.
- Now move this file to a different physical location to the active database.

Once you have performed a backup, you are ready to delete records from the database (see page 98).

Removing Log Records

To maintain your database at a reasonable size (see page 94 for sizing information), you will need to periodically remove some records from the active database and store them elsewhere. If you make backups, these can act as storage for cleared out records. If necessary you could recreate the database at a particular point in time from these backups. (The exactness with which you can recreate the file for a particular point in time depends on how often backups are performed on your system.)

For the TimeScan NMS database, it may be a sensible choice to archive *Log* (no longer active, usually cleared) records whose initial *Date* is over three months ago. (In the *alarmlog* table on the NMS / Timescan database, these conditions are shown when the *eventtime* is over three months ago and the *activealarm* value is 0.) Outlined below is a simple method of doing this in both the Unix and Windows based systems.

For both systems, it is recommended that you remove records immediately after making a complete (Level 0 in Informix) backup. Then, if necessary, you can recover records from your backup.

To remove records from either database running on you can run a special programme, called *ArchiveAlarms*. This is part of the Information Server (IS) programme.

Using ArchiveAlarms for the first time in Unix

*****IMPORTANT*** FIRST TIME USE****BEFORE USING ARCHIVE ALARMS (UNIX) FOR THE FIRST TIME YOU MUST TAKE THE FOLLOWING STEPS (1, 2, 3) TO CREATE A BACKUP DATABASE.**

There are three steps to creating a backup database:

7. Create a backup dbspace.
8. Create a backup database in the backup dbspace.
9. Create a table in the backup database.

Each will be discussed in more detail below.

1. Create A Backup dbspace

THIS SHOULD BE LOCATED ON A PHYSICALLY SEPERATE DISK TO YOUR CURRENT DATABASE. Then you will preserve your archived data in the event of (for example) a flood or a fire in your building. Create the backup database by typing the following command in a terminal. You should be logged on a user: *informix*.

- Make the space in the file structure by creating a file called *nmsarchivedbpace.dat* (not directory) in Unix, and ensuring that it has the correct set of permissions. To do this, log on as *informix* and type the following commands. Replace ***pathname*** with your chosen backup location.
 - ***cd pathname***
 - ***touch nmsarchivedbpace.dat***
 - ***chmod 660 nmsarchivedbpace.dat***
 - ***chgrp informix nmsarchivedbpace.dat***
- Make the space into a dbspace recognised by Informix by typing the following command (all on one line):
 - ***onspaces -c -d nmsarchivebpace -p /pathname nmsarchivedbpace.dat -o 0 -s 10000***
- You should now see a message telling you that dbspace creation was successful. Failure to create the dbspace is usually down to one of two reasons:
 - The space already exists. Proceed with no further action.
 - The file does not contain the correct read / write permissions, or does not exist. Change them by going through the steps listed at the beginning of this section "Create A Backup dbspace".

2. Create A Backup Database

Create the database NMSArchive for backup records as follows. Ensure you are logged on as user: *informix*.

- Open the dbaccess programme by typing *dbaccess* in a terminal window.
- Use the arrow keys to move along to the *Database* item in the menu along the top of the window. Press *Return*.
- Use the arrow keys to move along to the *Create* item in the new menu. Press *Return*.
- Type in *NMSArchive* as the name for the new database. Press *Return*.
- The next menu will have the item *Dbspace* highlighted. (If not, use the arrow keys to move to this item.) Press *Return*.
- From the list of dbspaces, use the arrow keys to move to the one that you created in the first step, "Create a Backup dbspace". Press *Return*.

- Move to the *Logs* item, using the arrow keys. Press *Return*.
- Select *Unbuffered Logging* from the list of Logging options. Press *Return*.
- Move along to the *Exit* item in the Create Database menu. Press *Return*.
- The *Create-New-Database* item will automatically be selected. (If not, use the arrow keys to move to it.) Press *Return*.

3. Create a table in the backup database

If you are not continuing directly from the last step, ensure that you are logged on as user: *informix*. Then follow the steps below.

- Type *dbaccess*.
- Use the arrow keys to select the *Database* item. Press *Return*.
- Use the arrow keys to move to the *Select* item. Press *Return*.
- Use the arrow keys to select the *nmsarchive* item. Press *Return*.
- Use the arrow keys to select the *Exit* item. Press *Return*.
- Use the arrow keys to select the *Query-language* item. Press *Return*.
- Use the arrow keys to select the *Choose* item. Press *Return*.
- Select the *CreateAlarmLogTable* item from the command files available. (If it is not present, a full listing is available in the Notes For Administrators section (page 108). Press *Return*.
- Use the arrow keys to move the *Run* item. Press *Return*.
- You should see a message telling you that the table has been created.
- Exit the *dbaccess* programme by moving along to the *Exit* item. Press *Return*. Again, move along to the *Exit* item and press *Return*.

Your backup database will now have been created. You can now proceed with using the *ArchiveAlarms* programme. *****END OF FIRST TIME USE INFORMATION*****

Starting ArchiveAlarms In Unix

Open the *NMS Administrator* menu on your Unix *CDE Front Panel*. Select the *ArchiveAlarms* item, with the icon shown above. Then follow the instructions below for “Using Archive Alarms”.

Starting ArchiveAlarms In Windows NT

A shortcut to *ArchiveAlarms* can be placed on the desktop, as part of the configuration of the IS programme. Click on this icon to start the *ArchiveAlarms* programme. Then follow the instructions below for “Using Archive Alarms”.

Using Archive Alarms

On starting the *ArchiveAlarms* programme, the dialogue box shown in Figure 1 will appear.

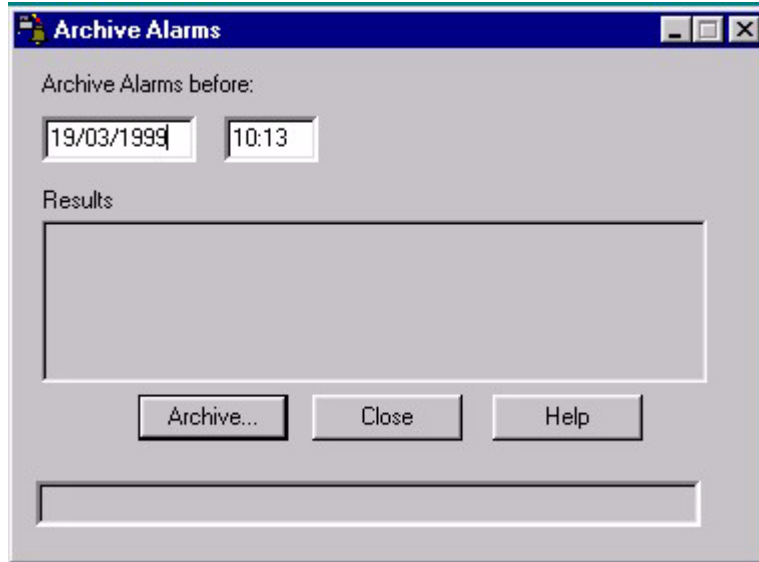


Figure 26 The ArchiveAlarms Main Window

Decide the cutoff point for records in your database, for example, records which are over three months old. Type this date in the leftmost box under the legend: *Archive Alarms before:* box. (The format for this is DD/MM/YYYY, e.g. the 31st January 1999 would be typed 31/01/1999). If you put in an invalid date a box will appear to inform you of this, and suggest a change. You can also put a time (in 24 hour format) in the box to the left of the date box.

Once the values in these boxes are set as you wish, press the *Archive* button. A dialogue box will appear, asking if you wish the archived records to be removed from the original database. Press *Yes* to remove the records, or *No* to leave these records on the database. Once you have answered this, the removal and / or deletion of records will begin. A progress bar will appear at the bottom of the *ArchiveAlarms* Main window, which will roughly indicate the completion of the archiving task. A *Cancel* button will appear in the place of the *Archive* button whilst the programme is executing. Pressing this will stop the archive and / or deletion of the specified records.

NB. This programme may take some time to execute, particularly in a Unix/Informix environment, but it can be run as a background task, and will not prevent other database usage.

Once the task is completed, the dialogue box will appear as below, with the central part showing the total number of affected records. The removed records are now stored in a database called *NMSArchive*.

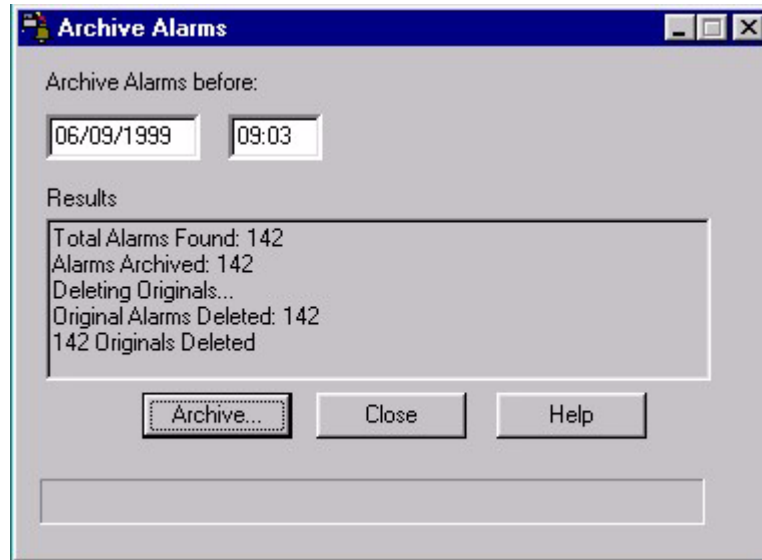


Figure 27 The ArchiveAlarms Main Window, (after archive)

Using Command Line Alarm Archive AA

A command line version of Alarm Archive is available which offer a far higher speed of archive. From either the NT command line or a UNIX shell.

AA has the following usage.

AA -date // dd-mm-yyyy archive alarms before this date if not given uses current data

-time // hh-mm archive time as above

-d // Delete Alarms

-a // Archive Alarms

e.g. AA -date 10-01-2000 -time 23-00 -d -a

Restoring Database Records From Previously Saved Sets

There are three main reasons why you might want to restore previously archived data. They are as follows:

- Some data has been lost, due to user or computer error.
- The complete database has been corrupted.
- You wish to view sets of previously archived data.

These different circumstances require slightly different approaches. Let us look at how we can deal with them. The Unix / Informix Instructions are immediately below and the Access / WindowsNT instruction are on page 105.

Unix / Informix

- If you wish to restore some lost data to an existing database, simply follow the instructions for “Retrieve and Restore Data”, on page 104.
- If the complete database has been lost, you need to follow the instructions to “Create The dbspaces” (page 103) and then those for “Retrieve and Restore Data” on page 104.
- If you wish to view set of previously archived data then follow the instructions in “Viewing Previously Archived Save Sets”page 105.

Create The dbspace (Unix / Informix)

To recreate the dbspace, take the following steps.

- Make the space in the file structure by creating a file called *monitordbpace.dat* (not directory) in Unix, and ensuring that it has the correct set of permissions. To do this, log on as *informix* and type the following commands.
 - `cd ~`
 - `cd data`
 - `touch monitordbpace.dat`
 - `chmod 660 monitordbpace.dat`
 - `chgrp informix monitordbpace.dat`
- Make the space into a dbspace recognised by Informix by typing the following command (all on one line):
 - `onspaces -c -d monitordbpace -p $INFORMIXDIR/data/monitordbpace.dat -o 0 -s 100000`
- You should now see a message telling you that dbspace creation was successful. Failure to create the dbspace is usually down to one of two reasons:

- The space already exists. Proceed with no further action.
- The file does not contain the correct read / write permissions, or does not exist. Change them by going through the steps listed at the beginning of this section “Create The Dbspace”.

Once you have created the dbspace, you can move on to “Retrieve And Restore Data”.

Retrieve and Restore Data (Unix / Informix)

To restore an existing database, you will need to have previously archived it. When you follow the steps outlined below, you will change the records held in the database to those held when the archive was created.

To restore a previously archived set of data, log on as *informix* and type the following commands to take the database off-line and restore the database:

- *onmode -k* (Press *Y* and *Return* when asked if you are sure)
- *ontape -r*
- You will be prompted to mount a tape - assuming that you have saved to disk as discussed here, you only need to press *Return*
- You will then be shown information about the dbspaces that will be restored and asked if you wish to continue. Press *Y* and *Return*.
- You will be asked if you want to backup the logs. Press *Y* and *Return*.
- You may be offered a list of log ids and asked which is the oldest log you wish to backup. If in doubt, enter the smallest number (for the oldest log). Once these files are backed up, the space they use will be freed. Press *Return*.
- You will be asked if you want to restore a Level 1 or Level 2 archive. Only do this if you made a Level 1 or Level 2 archive since the Level 0 archive you are restoring. Otherwise, press *n* and *Return*.
- You will be asked if you want to Restore Log tapes. Press *n* and *Return*.

Viewing Previously Archived Save Sets (Unix / Informix)

You will now be able to view the records using the `dbaccess` tool. To open this, log on as user *informix* and take the following steps.

- type *dbaccess*
- Use the arrows to select the *Query-Language* item at the top of the `dbaccess` window. Then press *Return*.
- You will be prompted to select a database. Use the arrows to select the *nmsarchive* database. This is one that the *ArchiveAlarms* database puts records into.
- Use the arrows at the top of the screen to select the *New* item. Then press *Return*.
- The cursor will have been placed in the empty screen. Type your SQL commands here, press *Esc* when you have finished editing your command and then use the arrows to move to the *Run* item at the top of the screen to execute your SQL query.
- Example SQL: To view all of the archived alarms, type the following command:
*Select * from alarmlog*

Windows / Access

- If the complete database has been lost, you need to follow the instructions to “Restore Database From Backup” (below).
- If you wish to view sets of previously archived records then follow the instructions in “Viewing Previously Archived Records” (below).

Viewing Previously Archived Records (Windows / Access)

The records removed from the database using the *ArchiveAlarms* programme (page 100) are put into a database called *NMSArchive*. Simply double click on this database to view it, then use standard Access filtering techniques to display the required dataset.

Restore Database From Backup (Windows / Access)

To restore the complete database from a backup, first find the backup you made following the instructions in the section “To Backup Your Windows/Access Database”, on page 97. Double click on it to view it using Access. Once you have decided to make it your current (active) database, then simply rename it to “*rmdata.mde*”, and move it to location of your current active database (default location: *net-monitor/db/data*). You can import records to it from the *NMSArchive* database, again using standard Access techniques.

Frequently Asked Questions...

12 Q. **The message:**

Please mount tape [number] on [file name] and press Return
is repeated when you press *Return*.

A. The cause of this problem is that the file to which the backup data is to be sent has either been deleted or renamed. The solution is to move to the pathname given (default: *../informix/backupdata*) and create a new file, by typing all of the following commands:

- *touch NMS.backup*
- *chown informix:informix NMS.backup*
- *chmod 660 NMS.backup*
- *chgrp informix NMS.backup*

13 Q. **Sometimes when I use the ArchiveAlarms programme, it fails.**

A. i) The most common reason for this is that the database is offline. Bring the database back on line by logging on as user: *informix* and typing

- *onmode -m*

. Now try using ArchiveAlarms again.

A. ii) If you are deleting many thousands of records you may need to enlarge your logical log space. This is to provide space for the transaction to be completed before the designated high water mark is reached. Add an extra logical log first to the *monitordb*space, then try ArchiveAlarms again. If that does not work, add an extra logical log to the *nmsarchivedb*space and retry the ArchiveAlarms programme. Add an extra logical log by logging as user: *informix* and typing:

- *onparams -a -d dbspacename -s 10000*

Replace *dbspace* name with either *monitordb*space or *nmsarchivedb*space.

14 Q. **How do I change the Informix password on UNIX?**

A. i) Shutdown NMS and Informix. Use the *admintool* to change the password for the *informix* unix user. The user name and password that NMS uses to log on to the database are set using the following environment variables: *RWUserName=informix* and *RWPassword=informix*. These variable must to

updated to reflect the new password/user. They are normally setup in the following files \$MONITORHOME/configs/setupNMS.dt, \$MONITORHOME/configs/setupNMS.profile, and \$MONITORHOME/configs/setupNMS.csh. These files must all be updated with the new password. Restarting NMS should or re-booting the workstation will cause the scripts to e re-executed.

Notes For Administrators

Full SQL listing to add alarm log table to nmsarchive database.

```
CREATE TABLE alarmlog (  
    recordid INTEGER,  
    distinguishedname VARCHAR (50,0),  
    eventtime DATETIME YEAR TO FRACTION(3),  
    receptiontime DATETIME YEAR TO FRACTION (3),  
    event SMALLINT,  
    recordtype INTEGER,  
    perceivedseverity INTEGER,  
    pstext VARCHAR (9,0),  
    alarmid INTEGER,  
    slogan VARCHAR (80,0),  
    alarmnumber INTEGER,  
    likelyorigin VARCHAR (50,0),  
    sid VARCHAR (50,0),  
    printouttext VARCHAR (255),  
    cleartime DATETIME YEAR TO FRACTION (3),  
    cleartype INTEGER,  
    cleartext VARCHAR (255),  
    acknowledge SMALLINT,  
    acknowledgetime DATETIME YEAR TO FRACTION (3),  
    activealarm SMALLINT,  
    originalps INTEGER,  
    originalpstext VARCHAR (9,0),  
    audittime DATETIME YEAR TO FRACTION(3)  
)
```

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All trademarks are acknowledged.

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Chapter 7 Fault Management Configuration



The Fault Management Configuration Application provides a flexible utility which enables alarms and events to be mapped to unique identities. In turn notifications from given sources may have their perceived severities re-mapped.

What would I need to run the Fault Management Configuration Application?

You would need to have an appropriate information server to link to.

What's in this Chapter?

This chapter tells you all you need to know to use the features of the Fault Management Configuration Application. There is a description of the tools available, (page 114) and a step by step guide to using the application (starting on page 115). If you need to use this chapter as an quick reference guide, there is a keyword index starting on page 118.

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Opening the Fault Management Configuration Application

The Fault Management Configuration application can be found in the *NMS Administrator* menu, either in the *Windows Start* menu or the *Unix CDE Front Panel* (Figure 28). On start-up the system will determine whether you have the authority to access this facility. This decision will be based on your user identification.

If access is denied a dialogue will be displayed informing you of this.:

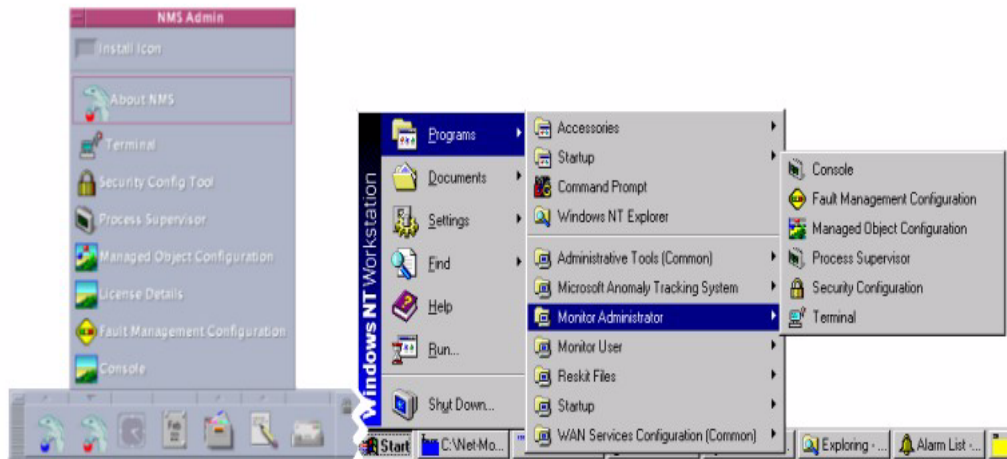


Figure 28 The Unix CDE Front Panel / Windows Start Menu

If access is granted the following window will be displayed:

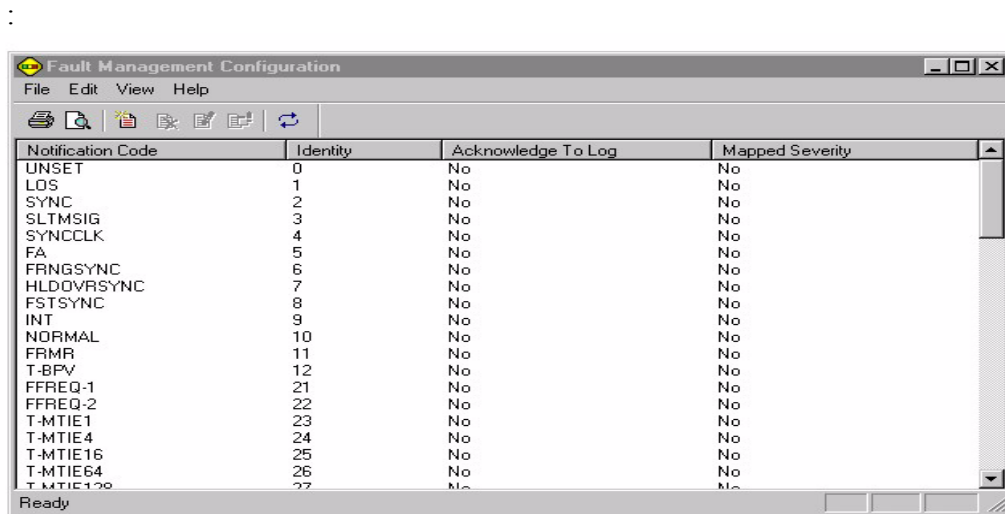


Figure 29 The Fault Management Configuration User Window

This is the Fault Management Configuration user window. It is composed of four columns which illustrate the notification mapping data already defined in your system.

The *Notification Code* field contains the notification codes, as defined by the interface description of the managed elements. These codes are used as *keys* for the mapping process.

The *Identity* field contains a numeric identifier which is unique for each mapping entry.

The *Acknowledge To Log* field shows whether the mapped notification is a revertive or non-revertive condition. If the value is NO alarms and events will only move to the log when they are both *cleared* and *acknowledged*. If the value is YES alarms and events will move to the log when they are only *acknowledged*.

The *Mapped Severity* field indicates whether the perceived severity of this notification has been re-mapped to another severity.

The Fault Management Configuration Tool Bar

On start-up the Fault Management Configuration application has a tool bar, just above the view illustration, containing seven tools:



This tool bar is dockable so if you are not happy with its position you can pick it up with the mouse and position it where you want around the view. If you drop it outside the window, or place it in the centre, it will transform itself in to a *fly-off* window:

Let's take a brief look at each tool...

Print Tool



Selection of the *Print* tool will cause a hard copy report of the current fault management configuration to be generated.

Print Setup Tool



Selection of the *Print Setup* tool will allow you to control the hard copy report generation.

New Alarm Tool



The *New Alarm* tool allows you to create a new mapping entry. This feature will be discussed further in the next section.

Delete Alarm Entry Tool

This tool will become active when a list entry is selected. Selection of this tool will remove the selected mapping from the system.

Edit Alarm Entry Tool

This tool will become active when a list entry is selected. Selection of this tool will enable you to edit the selected mapping.

Map Alarm Severities Tool

Again, this tool will become active when a list entry is selected. Selection of this tool will enable you to edit the perceived severity re-mapping of the selected entry.

Refresh List Tool

Selection of the *Refresh* Tool causes the contents of the alarm re-mapping list in the main window to be refreshed from the Fault MIB (Management Information dataBase) tables.

Managing Severity Mapping

The following section discusses both **adding** and **editing** severity mappings, as these are very similar operations.

To **add** an alarm or event mappings, select the *New Alarm* tool. The following dialogue will be provided for you to input the required information. To edit an alarm or event, select the *Edit Alarm*

Entry tool. A similar dialogue will be provided, which allows the available fields to be edited.

Figure 30 The Add Alarm Mapping Dialogue

For a new mapping, the *Notification Code* must be entered exactly as it is specified in the interface description of the alarm or event. The *Identity* is a mandatory numeric identifier, which will be automatically generated by the application. Both the *Notification Code* and *Identity* must be unique to the system. An attempt to enter a non unique value will result in a warning message.

If the mapped notification is revertive, i.e. has an associated clearing, the *Cleared Event* check box must be checked. To set-up a re-mapping for the perceived severity for the alarm or event, select the *Map* button. The following dialogue will be provided.:

Figure 31 An Empty Severity Mapping Dialogue

Multiple perceived severity re-mappings are supported from different source elements and likely origins. All will be listed in this dialogue.

As this is new mapping, no entries exist as yet. Selecting the *Add* button will cause the following configuration dialogue to appear:

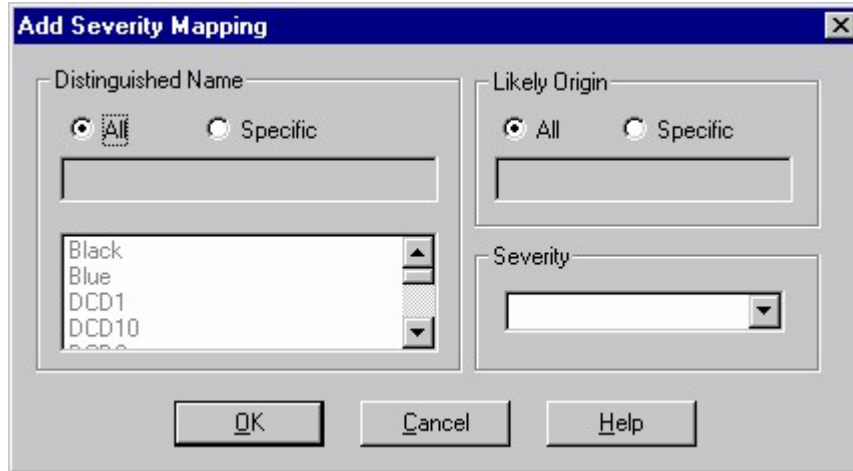


Figure 32 The Add Severity Mapping Dialogue

The *Distinguished Name* panel enables you to define the source for the perceived severity re-mapping. With *All* selected, any notification carrying the matching notification code from any source element will be re-mapped. If the re-mapping is to be specific to a single element, by selecting the *Specific* control the desired source element may be selected from the list box.

The *Likely Origin* panel enables you to define the origin within the selected sources for the perceived severity re-mapping. With *All* selected, any notification carrying the matching notification code from any likely origin will be re-mapped. If the re-mapping is to be specific to a single origin, by selecting the *Specific* control the desired origin may be defined in the edit box.

Finally the *Severity* panel provides a list box containing the mapped perceived severity, Critical, Major, Minor, or Warning.

On selecting the *OK* button the newly created entry will appear in the Severity Mapping dialogue list.

Note: For conflicting mapping entries the highest defined perceived severity is taken.

Deleting an Existing Notification Mapping

With a notification entry selected, press the *Delete Alarm Entry* tool. A confirmation dialogue will be provided. On confirmation the entry will be deleted from the system. Great care must be exercised when deleting mappings as there is no undo facility.

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Chapter 8 Troubleshooting

The ***Troubleshooting*** section gives information on work arounds for commonly appearing system wide faults. Faults for specific applications can be found in the relevant User Guides.

When trying to sort out a problem, if the solutions are numbered sequentially, as in Q1, then perform the actions outlined in the order given. If the solutions are lettered, as in Q5, choose from between them.

Frequently Asked Questions...

- 15 Q. **Why can't I communicate to a DCD using X.25?**
- A1. If using a permanent connection, first stop *NMS Services*. Then use XPAD and windows terminal (in *Accessories Program* Group) to try to communicate to the remote element. If this is successful (a TL1 command was sent and the correct response was received) the *NMS Services* should be restarted. If this fails restart the Eicon X.25 card, using commands "eccard stop" and "eccard start" in a "command prompt" the last message from "eccard start" should be "network connect established",. If it returns an error, check connection to the packet switch. If XPAD cannot connect to the DCD, the fault will probably lie in the X.25 network, or the far end. Contact your network administrator for further help.
 - A2. If communication is still not established, verify that the communication (X.121) address for the specific DCD is correct.
 - A3. If communication is still not established, run the terminal application from the *TimeScan NMS Administrator* menu and try to connect to the ME. The resulting error message report should indicate the fault condition.
- 16 Q. **Why can't I communicate to a DCD using a modem?**
- A1. Use *Windows Terminal* to try to communicate to remote element.. If *Terminal* cannot connect to the modem, consult the modem installation guide. If you can successfully dial the number but do not connect, verify that the phone number is correct, and the DCD end modem is setup correctly.
 - A2. If communications still do not work, verify that the communication address (phone number) for the specific DCD is correct.
 - A3. If communication is still not established, run the *Terminal* application from the *TimeScan NMS Administrator* menu and try to connect to the ME. The resulting error message report should indicate the fault condition.

- 17 Q. **Why can't I communicate to DCD using RS232?**
- A1. If using a permanent connection, first stop *NMS Services*. Then use windows *Terminal* to try to communicate with the remote element. If *Terminal* fails to connect you should check your cabling to the DCD.
 - A2. If communication is still not established, verify that the communication (com port e.g. "COM1") address for the specific DCD is correct.
 - A3. If communication is still not established run the *Terminal* application from the *TimeScan NMS Administrator* menu and try to connect to the ME. The resulting error message report should indicate the fault condition.
- 18 Q. **Why can't I connect to the DCD using the IP address?**
- A1. If using a permanent connection, first stop *NMS Services*. Then using *Telnet*, verify that you are able to communicate with the distant device.
 - A2. Ensure that the IP address is not already in use.
 - A3. Ensure that the correct port has been correctly specified.
 - A4. Ensure the Terminal Server is set up correctly.
 - A5. If communication is still not established, run the *Terminal* application from the *TimeScan / Scan Administrator* menu and try to connect to the ME. The resulting error message report should indicate the fault condition.
- 19 Q. **Programs will not start correctly. Either database corruption or 'no data found' errors are reported. Why?**
- A. This error may have one of three causes:
 - a ODBC Sources. Check ODBC Sources are still present with the correct settings.
 - b Database corruption. See "Repair/Compact database" on page 125.
 - c Database corruption and failed repair. If step two has failed, the database should be rolled back to a previous state see See "Roll-back to previous database" on page 125.

- 20 Q. **My disk appears to be full of TimeScan NMS files. Why?**
- A. The two parts of the TimeScan NMS system which will grow over a period of time are the Temporary files, and the database files. Restarting your machine may clear some temporary files. See also "Repair/Compact database" on page 125.
- 21 Q. **A disk crash, or other major hardware failure has occurred and the system installation has been corrupted. How do I recover?**
- A. If the system is too badly damaged for database repair/ roll-back. the system may need to be reinstalled from the original CD, and the database may be rolled back. See "Reinstallation" on page 124.
- 22 Q. **How do I recover from a system "lock up" after using all virtual memory?**
- A. Restart machine. See "Restarting machine" on page 124.
- 23 Q. **Why are alarms reported on the wrong ME?**
- A. It is possible to configure to ME with the same primary communications address. If this occurs, alarms report on one DCD may appear on the another with the same address. This can apply across transport types, i.e. if, for a given ME, both a permanent connection and modem receiver have been setup to use COM1. The Database Administration form can be used to look at the CmMIB table and a filter on the *Communication Address* field may be used to see if this is your problem.
- 24 Q. **Why are alarms reported to an "UNKNOWN" distinguished name**
- A. The source of an alarm can be determined in a number of ways:
- a A connection (permanent or transitory) is made to the ME. All alarms on this channel are associated with the connected ME.
 - b The communication source address is used and compared to the FM address (works with X.25).
 - c The alarm SID is used to match the SID defined in CM database (modems).

If all of the above fail the alarm is raised against an "UNKNOWN" distinguished name. This is most common with modems, and the cause is normally that the SID has not been configured in the CM database. Use MOC to set the SID correctly.

Repair Actions

The following is a list of repair action available for the *TimeScan NMS Platform*. The above section (Frequently Asked Questions...) has referred to these actions.

Reinstallation

Reinstallation is not a trivial task. A good knowledge of your operating system and the *TimeScan NMS* system are required. If you are uncertain you should not continue!

An installation guide is distributed with each system. This should be consulted before the installation. Before this installation takes place the old system should be removed, if possible using the following actions:

- Using the *Add/Remove* program application from the control panel to remove the TimeScan NMS system.
- Use the *Remove Access Run Time* item to remove all ODBC sources.
- Run the following command “C:\net-monitor\bin\supervisorservice -remove”
- Delete the “C:\net-monitor” directory

Some of these actions may fail depending on how much of the system remains on your hard disk. Once completed, installation may continue as specified in the installation guide. After a successful installation follow the “Roll-back to previous database” section, on page 125.

Restarting machine

Some applications with unsaved data will require you to save or discard the data before they will let you restart the system.

If, after a period of 5 minutes after requesting shutdown, you still have a blank screen, the hardware *Reset* button on the computer may be used.

Restart “Supervisor Service”

After restarting your computer, the *NMS Services* facility will be automatically restarted. You can check that it is running by looking at your Task Manager (Windows) or Process List (Unix).

Roll-back to previous database

During routine maintenance operations the database files will be backed-up. See the Operational Management chapter for more advice on this. If the database is damaged too badly for repair, these files may be used to recover the database

For more information on Restoring your database files, see both the Operational Management chapter, and your own proprietary database help.

Repair/Compact database

An tool is provided in the *TimeScan NMS Administrator* program group to repair and compact the database file. All programs must be shutdown, including stopping the *NMS Services* application, then the "Compact Database" programs should be run. A pop-up verifying that the Database was repaired successfully will be displayed on completion.

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