



Unisphere Management Center

# Micromuse Netcool Integration Pack

## User Guide

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Release 2.1.x  
Published 10/01

Part Number: 162-00272-01

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Ten Technology Park Drive, Westford, Massachusetts 01886**

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# About This Guide

## Introduction

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This book describes the installation and system configuration of the Unisphere Management Center (UMC) Micromuse Netcool Integration Pack for ERX. Netcool Integration Pack is powered by Netcool®/OMNIBus 3.4 software from Micromuse, Inc., and includes customizations that provide fault management for the Unisphere ERX edge routers.

This user guide includes:

- An overview of Netcool Integration Pack and its features
- Hardware and software requirements for workstations on which Netcool Integration Pack is installed
- Procedures for installing and removing Netcool Integration Pack
- Procedures for using Netcool/OMNIBus
- A list of files installed by Netcool Integration Pack
- A list of SNMP MIBs and traps supported by Netcool Integration Pack
- A list of enterprise IDs for traps supported by the standard Netcool Integration Pack rules files
- The procedure for launching the NMC-RX application from an event (that is, a trap)
- Processing syslog messages

## Audience

This guide is intended for experienced system and network specialists managing Unisphere ERX edge routers with Netcool Integration Pack.





**Note:** *Netcool Integration Pack supports only those configurations supplied by Micromuse for Netcool on Sun Solaris. Users should be familiar with Netcool/OMNibus 3.4.*

## Conventions

Table 1 and Table 2 list the conventions used in this guide. Table 1 defines icons. Table 2 lists text conventions.

**Table 1** Notice icons

Icon	Meaning	Description
	Information note	Indicates important features or instructions.
	Caution	Indicates that you may risk losing data or damaging your hardware.

**Table 2** Text conventions

Convention	Description
<b>Commands or Keywords</b>	<ul style="list-style-type: none"> <li>Always appear in bold typeface.</li> <li>› Command example: <b>show</b></li> <li>› Keyword example: <b>terminal-length</b></li> </ul>
<b>User Input</b>	<ul style="list-style-type: none"> <li>Always appears in bold Courier typeface.</li> <li>› Example: <b>user input</b></li> </ul>
Keyboard keys	<ul style="list-style-type: none"> <li>↵ – carriage return</li> <li>␣ – indicates a full carriage return</li> </ul>
Screen display	<ul style="list-style-type: none"> <li>Always appears in plain Courier typeface.</li> <li>Represents information as displayed on your terminal's screen.</li> <li>› Example: <pre> host1#show ip ospf 2 Routing Process OSPF 2 with Router ID 5.5.0.250 Router is an Area Border Router (ABR) Router is an Autonomous System Border Router (ASBR) </pre> </li> </ul>

**Table 2** Text conventions

Convention	Description
Words in <i>italics</i>	<ul style="list-style-type: none"> <li>• Emphasize words. <ul style="list-style-type: none"> <li>› Example: There are two levels of access, <i>user</i> and <i>privileged</i>.</li> </ul> </li> <li>• Identify parameters. <ul style="list-style-type: none"> <li>› Example: <i>cluster-id</i>, <i>ip-address</i>.</li> </ul> </li> <li>• Identify chapter, appendix, and book names. <ul style="list-style-type: none"> <li>› Example: <i>Appendix A</i>, <i>System Specifications</i></li> </ul> </li> </ul>

## Glossary of Terms

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Table 3 lists the acronyms used in this guide.

**Table 3** Glossary of terms

Acronym	Description
ERX	Edge Router
MIB	Management Information Base
SNMP	Simple Network Management Protocol
UMC	Unisphere Management Center

## Reference Documents

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Table 4 lists the available Unisphere Networks documents.

**Table 4** Release 3.2.x reference documents available from Unisphere Networks

Document Name and Release Number
<i>NMC-RX User's Guide, Release 3.2.x</i>
<i>ERX System Basics Configuration Guide, Release 3.2.x</i>
<i>ERX Physical and Link Layers Configuration Guide, Release 3.2.x</i>
<i>ERX Routing Protocols Configuration Guide, Vol.1, Release 3.2.x</i>
<i>ERX Routing Protocols Configuration Guide, Vol.2, Release 3.2.x</i>
<i>ERX Broadband Access Configuration Guide, Release 3.2.x</i>
<i>ERX Command Reference Guide, Release 3.2.x</i>
<i>ERX Installation and User Guide, Release 3.2.x</i>
<i>ERX Quick Start Guide, Release 3.2.x</i>
<i>ERX Product Overview Guide, Release 3.2.x</i>

Table 5 lists the available Netcool/OMNIbus documents.

**Table 5** Reference documents available from Micromuse, Inc.

Document Name and Release Number
<i>Netcool/OMNIbus Installation Guide, Version 3.4</i>
<i>Netcool/OMNIbus User Guide, Version 3.4</i>
<i>Netcool/OMNIbus Administration Guide, Version 3.4</i>
<i>Netcool/OMNIbus Probe Reference, Version 3.4</i>
<i>Netcool/OMNIbus Gateway Reference, Version 3.4</i>
<i>Netcool/OMNIbus Release Notes, Version 3.4</i>

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# Overview

# 1

UMC Micromuse Netcool Integration Pack for ERX provides advanced fault management of Unisphere ERX edge routers. Netcool Integration Pack is powered by Netcool/OMNIBus 3.4 software from Micromuse, Inc. and is used in conjunction with Unisphere NMC-RX element management system.

Netcool Integration Pack allows Micromuse Netcool to parse specific SNMP traps generated by ERX edge routers into the Common Event Format used by the Netcool ObjectServer.

## Features

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Netcool Integration Pack provides the following features:

- Recognition by Micromuse Netcool/OMNIBus of alarms generated by Unisphere ERX edge routers
- A plain language display in Netcool/OMNIBus of alarms generated by Unisphere ERX edge routers
- Clearing of paired alarm events generated by ERX edge routers
- Launching the NMC-RX application from a Netcool alarm
- Processing and displaying syslog messages
- Support for SNMP traps for ERX Release 3.2.x

## Devices Supported

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Netcool Integration Pack Release 2.1.x supports ERX edge routers (release 2.x, 3.0.x, 3.1.x, and 3.2.x).



**Note:** You must configure the ERX edge routers to send only SNMPv1 traps. For more information on trap configuration, refer to the ERX System Basics Configuration Guide, Chapter 3, Configuring SNMP.

# System Requirements

# 2

Netcool Integration Pack runs on the same Sun Solaris workstation that runs Micromuse Netcool/OMNIBus. To run Netcool Integration Pack, the workstation must meet specific hardware and software requirements.

## Hardware Requirements

---

This section identifies the hardware requirements for a Sun workstation on which you install Netcool Integration Pack.

The workstation must meet the following hardware requirements in addition to the requirements for Netcool/OMNIBus:

- CD-ROM drive
- 200 MB of free hard disk space
- Sun Solaris 2.7

## Software Requirements

---

This section identifies the software requirements for the Sun Solaris workstation on which you install Netcool Integration Pack.

The workstation must meet all software requirements for Netcool/OMNIBus and must have the following software installed:

- Sun Solaris, version 2.7
- Micromuse Netcool/OMNIBus for Solaris, version 3.4

If you intend to use Netcool Integration Pack in conjunction with Unisphere NMC-RX element manager software, you must also install

NMC-RX Release 3.2.0 in order to manage Release 2.x, 3.0.x, 3.1.x, and 3.2.x for ERX edge routers.



# 3

## Installing Netcool Integration Pack

You can install Netcool Integration Pack on any Sun Solaris workstation that meets the system requirements.

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### Overview

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This chapter provides the procedures for installing both Netcool/OMNIBus and Netcool Integration Pack on a Solaris system.

To use Netcool Integration Pack, you need to install the following components:

- Netcool/OMNIBus
- Netcool Integration Pack

## Installing Netcool/OMNIBus

---

For detailed information on installing Netcool/OMNIBus, see *Netcool/OMNIBus Installation Guide 3.4*.

To install Netcool/OMNIBus:

- 1 Log in to the Sun workstation as root:

```
login root
```

- 2 Run the install program:

```
#!/oinstall
```

The following question appears:

```
Do you wish to perform an upgrade, rather than a full
installation?
```

- 3 Enter N to install version 3.4.

The installation program menu displays a list of available components for version 3.4.

- 4 Enter S (Select All).

- 5 To change the default installation directory, select C and enter the new directory.



**Note:** If you do not have enough disk space, you must install Netcool/OMNIBus in `/opt/omnibus`.

Netcool/OMNIBus requires 38 MB in the root partition. Then, you must create a symbolic link to the directory:

```
#ln -s /export/home/omnibus /opt/omnibus
```

- 6 Once the required hardware and software components have been selected and the installation directory is correct, select I to install Netcool/OMNIBus.

- 7 When Netcool/OMNIBus is installed, set the environment variable:

```
CSH setenv OMNIHOME /opt/Omnibus
SH/KSHOMNIHOME=/opt/Omnibus; export OMNIHOME
```

- 8 Run `nco_xigen`:

```
#$OMNIHOME/bin/nco_xigen
```

- 9 In this file, replace `omnihost` with the name of your Sun workstation.

- 10 Apply the changes.

- 11 Edit the file `$OMNIHOME/etc/nco_pa.conf`.

- 12 In the file, replace omnihost with the name of your Sun workstation.
- 13 Save the file.

### **Installing the License**

After Netcool/OMNIBus has been installed, you need to install the license.

To install the license:

- 1 Run the command:

```
#/opt/Omnibus/install/nco_license
```

- 2 Enter Y if this is the correct machine.
- 3 Enter the number of license servers required.

You are then given the license server code. For example, the code for *hostname* is 194/8102 1550 1971 3489 5. This is the code you will use either to ask Netcool Customer Support or the UMC Technical Assistance Center (TAC) to give you the license key for your machine, or to find out the correct license key.

In the United States, call Unisphere Networks' Customer Service at 1-800-424-2344 and press 3. You will be connected to the UMC TAC.

- 4 When you receive the key from TAC, rerun:

```
#/opt/Omnibus/install/nco_license
```

- 5 Enter the license keys.

Once the keys have been entered, the license daemon starts automatically.

- 6 Start the ObjectServer by invoking Process Control with the following command:

```
$(OMNIHOME)/bin/nco_pad -name NCO_PA &
```

- 7 Use the following command to verify that the ObjectServer and Process Control processes are both running:

```
#ps -ef | grep nc
```

Look for *nco\_observ* and *nco\_pad* to be running.

- 8 (Optional) Run **\$(OMNIHOME)/bin/elusage** to check the number of probes you are allowed to start and the number of probes already running in your system.
- 9 Install Netcool Integration Pack. See the next section, *Installing Netcool Integration Pack*.

## Installing Netcool Integration Pack

---

The Netcool Integration Pack CD-ROM includes an installation package that installs the rules files and lookup files that Netcool Integration Pack uses.

Before installing Netcool Integration Pack, ensure that your workstation meets the system requirements described in the *Chapter 2, System Requirements*.

To install Netcool Integration Pack:

- 1 Log in to the Sun workstation as root user.
- 2 Mount the Netcool Integration Pack CD-ROM in the CD drive.
- 3 Execute the `./FMInstall.bin` file.
- 4 Follow the instructions displayed in the installation screens.
- 5 When the installation is finished, follow the setup instructions presented in the next section, *Setting Up Netcool Integration Pack*.

### **Setting Up Netcool Integration Pack**

Follow the instructions in this section to prepare the UNIX environment for using Netcool Integration Pack. This section provides information on using HP OpenView (HPOV). However, you do not have to use HPOV in order to use Netcool Integration Pack. Netcool/OMNIBus can work without HPOV. HPOV is discussed here for the following reasons:

- You may want to use HPOV. In this case, the port to receive traps may already be taken by HPOV; therefore, you need to integrate HPOV with Netcool/OMNIBus.
- For testing, you may use HPOV to simulate trap generation.

To set up Netcool Integration Pack:

- 1 Set `FM_HOME` to where you installed Netcool Integration Pack. For example, if you installed Netcool Integration Pack at

```
/export/home/FM
```

then set:

```
FM_HOME=/export/home/FM
export FM_HOME
```



**Note:** *The Installation Pack installation will set `FM_HOME` for you.*

- 2 If you do not want to integrate with HP OpenView, go to step 5.  
If you want to integrate Netcool Integration Pack with HP OpenView (HPOV), install HPOV on your Solaris system if it is not already installed, and then make sure all related HPOV processes are running.
- 3 Load (or replace if they are already loaded) the MIB files into HPOV if you are using HPOV.

There are three large MIB files under `$FM_HOME/loadmib/`: `Unisphere_MIBS_std`, `Unisphere_MIBS_unis`, and `Unisphere_MIBS_rs`. These files are generated by using the `cat` command to combine all the MIB files for a certain type of MIB into a single file:

- `Unisphere_MIBS_std` – combines all the Standard MIBs
- `Unisphere_MIBS_unis` – combines all the Unisphere MIBs
- `Unisphere_MIBS_rs` – combines all the Redstone MIBs

Doing this reduces the loading time to approximately two minutes, but you will only see these three files by using the HPOV `xnmloadmib` command.

To load the MIB files:

```
$FM_HOME/loadmib/load3BigMib
```

To unload the MIB files:

```
$FM_HOME/loadmib/unload3BigMib
```



**Note:** For debugging purposes, this is not a good way to load the MIB files, because you only see three files when you launch the HPOV `xnmloadmib` GUI.

- 4 Update (load and replace) HPOV `trapd.conf`.  
By doing this update, you can set user-defined trap formats:

```
$FM_HOME/loadmib/update_trapd_conf
```

- 5 Start Netcool/OMNIbus ObjectServer:

```
$OMNIHOME/bin/nco_pad -name NCO_PA &
```



**Note:** You need to install Netcool/OMNIbus if it is not already installed. See *Installing Netcool/OMNIbus earlier in this chapter*.

- 6 Make sure that both the ObjectServer and Process Control processes are running:

```
ps -ef | grep nco
```

Look for `nco_objserv` and `nco_pad`. The following commands under `$OMNIHOME/bin` are very useful:

```
nco_start_license - to start the license server if it is  
down
```

```
nco_objserv - to start ObjectServer if it is down
```

## 7 Start the nnm probe.

Before starting the probe for nnm, be sure that all the related HPOV processes are running and that `$PROBES_HOME` was set to:

```
$OMNIHOME/probes/solaris2
```

where the Netcool/OMNIBus directory for storing all the probes resides.

Then continue:

```
cd $FM_HOME/rules
```

To start nnm probe, do the following:

```
start_nco_p_nnm6_probe
```

## 8 Start the trapd probe.

Before running the trapd probe, which is not integrated with HPOV, be sure to stop all related HPOV processes that are running. Also, be sure that `PROBES_HOME` was set to:

```
$OMNIHOME/probes/solaris2
```

where the Netcool/OMNIBus directory for storing all the probes resides.

Then continue:

```
cd $FM_HOME/rules
```

To start trapd probe, do either of the following:

```
start_nco_p_trapd_probe
```

or:

```
start_nco_p_mttrapd_probe
```



**Note:** If you want to use `nco_p_mttrapd`, you may need to download `omnibus-3.4-solaris2-probe-nco-p-mttrapd_8.tar.Z` from the Micromuse web site. If you do not want to use `nco_p_mttrapd`, you can use `nco_p_trapd` instead, but it may have problems. The `nco_p_mttrapd` probe is a replacement for `nco_p_trapd`.

**9** Start the syslog probe.

- a**
- Configure your ERX edge router to send syslog events to your system; for example:

```
log destination syslog 10.10.135.51 facility 7 severity
debug
```

Be sure the facility number matches the number that you will use in the `syslog.conf`. The default facility number is 7.

- b**
- Either, find
- `syslog.conf`
- in your system (for example,
- `/etc/syslog.conf`
- ), and append the individual syslog files:

```
> local7.debug - $FM_HOME/syslog/local70_debug
> local7.info - $FM_HOME/syslog/local71_info
> local7.notice - $FM_HOME/syslog/local72_notice
> local7.warning - $FM_HOME/syslog/local73_warning
> local7.err - $FM_HOME/syslog/local74_error
> local7.crit - $FM_HOME/syslog/local75_critical
```

or, if `/etc/syslog.conf` is the syslog configuration file in your system, run:

```
$FM_HOME/syslog/appendsyslogcfg /etc/syslog.conf
```

You can use `ps -ef | grep syslogd` to find the `syslogd_process_id`.

- c**
- Restart
- `syslogd`
- :

```
kill -HUP syslogd_process_id
```

- d**
- Convert the syslog event that your system received to the correct format:

```
$FM_HOME/syslog/cvt reload_time_interval syslog_files_path
```

Example:

```
$FM_HOME/syslog/cvt 60 $FM_HOME/syslog
```

- e**
- Change to the rules directory:

```
cd $FM_HOME/rules
```

and run

```
startallsyslogprobes $FM_HOME/syslog
```

- f**
- To stop all syslog probes, run

```
stopallsyslogprobes
```

- 10 Start Netcool/OMNIbus events view:

```
$OMNIHOME/bin/nco_event &
```

Log in (without a password), and click View to see the event display.

## Starting and Restarting Netcool Integration Pack

---

You must start or restart Netcool/OMNIbus to activate the installed Netcool Integration Pack rules and lookup files. You must also restart Netcool/OMNIbus to activate any changes made to the Netcool Integration Pack rules or lookup files when updating Netcool Integration Pack for non-Unisphere devices.

To start or restart Netcool Integration Pack:

- 1 Ensure that the *trapd* probe and the *nnm6* probe are not running. Test this with the commands:

```
ps -ef | grep nco_p_trapd
ps -ef | grep nco_p_nnm6
ps -ef | grep nco_p_mttrapd
ps -ef | grep nco_p_syslog
```

If either process is running, stop the process by typing:

```
kill -9 xxxx
```

where *xxxx* is the process ID returned by the **ps -ef** command.

- 2 Start the *nnm* probe.

Before starting the probe for *nnm*, be sure that all the related HPOV processes are running and that `$PROBES_HOME` was set to:

```
$OMNIHOME/probes/solaris2
```

where the Netcool/OMNIbus directory for storing all the probes resides.

Then continue:

```
cd $FM_HOME/rules
```

To start *nnm* probe, do the following:

```
start_nco_p_nnm6_probe
```



### 3 Start the trapd probe.

Before running the trapd probe, which is not integrated with HPOV, be sure to stop all related HPOV processes that are running. Also, be sure that PROBES\_HOME was set to:

```
$OMNIHOME/probes/solaris2
```

where the Netcool/OMNIbus directory for storing all the probes resides.

Then continue:

```
cd $FM_HOME/rules
```

To start trapd probe, do either of the following:

```
start_nco_p_trapd_probe
```

or:

```
start_nco_p_mttrapd_probe
```



**Note:** If you want to use `nco_p_mttrapd`, you may need to download `omnibus-3.4-solaris2-probe-nco-p-mttrapd_8.tar.Z` from the Micromuse web site. If you do not want to use `nco_p_mttrapd`, you can use `nco_p_trapd` instead, but it may have problems. The `nco_p_mttrapd` probe is a replacement for `nco_p_trapd`.

### 4 Start the syslog probe.

- a Configure your ERX edge router to send syslog events to your system; for example:

```
log destination syslog 10.10.135.51 facility 7 severity  
debug
```

Be sure the facility number matches the number that you will use in the `syslog.conf`. The default facility number is 7.

- b Either, find `syslog.conf` in your system (for example, `/etc/syslog.conf`), and append the individual syslog files:

```
> local7.debug – $FM_HOME/syslog/local70_debug  
> local7.info – $FM_HOME/syslog/local71_info  
> local7.notice – $FM_HOME/syslog/local72_notice  
> local7.warning – $FM_HOME/syslog/local73_warning  
> local7.err – $FM_HOME/syslog/local74_error  
> local7.crit – $FM_HOME/syslog/local75_critical
```

or, if `/etc/syslog.conf` is the syslog configuration file in your system, run:

```
$FM_HOME/syslog/appendsyslogcfg /etc/syslog.conf
```

You can use `ps -ef | grep syslogd` to find the `syslogd_process_id`.

- c Restart syslogd:

```
kill -HUP syslogd_process_id
```

- d Convert the syslog event that your system received to the correct format:

```
$FM_HOME/syslog/cvt reload_time_interval syslog_files_path
```

Example:

```
$FM_HOME/syslog/cvt 60 $FM_HOME/syslog
```

- e Change to the rules directory:

```
cd $FM_HOME/rules
```

and run

```
startallsyslogprobes $FM_HOME/syslog
```

- f To stop all syslog probes, run

```
stopallsyslogprobes
```

## Updating Netcool Integration Pack for Non-Unisphere Devices

---

When you add non-Unisphere devices to your Netcool-monitored network, you must edit the Netcool Integration Pack `trapd_unierx.rules` and `nmm6_unierx.rules` files if both of the following conditions apply:

- The new devices generate events that must be acquired by Netcool/OMNIbus `nmm6` or `trapd` probes.
- The new devices are not supported by Netcool/OMNIbus default rules files.

For more information on specific devices supported by Netcool/OMNIbus default rules files, see the *Netcool/OMNIbus Probe Reference 3.4*.

To update Netcool Integration Pack for non-Unisphere devices:

- 1 Open the appropriate Netcool Integration Pack rules file (*trapd\_unierx.rules* or *nmm6\_unierx.rules*) in a text editor.
- 2 If there are other devices not supported by Netcool/OMNIBus default rules files, then you must edit the following Netcool Integration Pack rules files:
  - *trapd\_unierx.rules*
  - *nmm6\_unierx.rules*
  - a Move the lookup tables and other tables defined at the top of the custom rules file for vendor-specific, non-default devices, to the top of the *trapd\_unierx.rules* or *nmm6\_unierx.rules* files where you see other table definitions.
  - b Edit the *trapd\_unierx.rules* or *nmm6\_unierx.rules* files to include the enterprise IDs that are defined in the custom rules files for vendor-specific, non-default devices.
- 3 Edit the Netcool Integration Pack rules file to add the rules file for the new device.

Below is an example of a portion of the *trapd\_unierx.rules* file, customized with rules files for additional non-Unisphere devices. Use the example as a guide for editing Netcool Integration Pack rules files to add rules files for other non-Unisphere devices:

```
switch ($enterprise)
{
case ".1.3.6.1.2.1.14.16.2":
include "/opt/Omnibus/probes/solaris2/erx700_1400.rules"
case ".1.3.6.1.4.1.4874.2.2.23.2":
#Unisphere file transfer traps
include "/opt/Omnibus/probes/solaris2/erx700_1400.rules"
#
#Add any vendor-specific rules files
#for other vendor devices
#here
#
default:
include "/opt/Omnibus/probes/solaris2/trapd.rules"
```



**Note:** Remove the Netcool/OMNIBus “comment” character (#) at the start of any line where you add the vendor-specific rules file.

The Netcool Integration Pack rules file is now ready for non-Unisphere devices.

- 4 Restart Netcool Integration Pack to activate the edited Netcool Integration Pack rules file. See *Starting and Restarting Netcool Integration Pack* earlier in this chapter.

## Removing Netcool Integration Pack

---

This section provides the steps for uninstalling Netcool Integration Pack and for returning OMNIbus to its original condition.

To uninstall Netcool Integration Pack:

- 1 Open the Netcool Integration Pack home directory:  

```
cd $FM_HOME/
```
- 2 Run the following command.  

```
./FM_Uninstaller
```
- 3 Log in again after you complete the uninstallation process.

# 4

## Using Netcool Integration Pack

This chapter provides the procedures for using Netcool Integration Pack to monitor the events on your ERX system and to graphically display their messages. Netcool Integration Pack is an application that uses Netcool/OMNIBus for its graphical user interface (GUI).

Topic	Page
Before Using Netcool Integration Pack	4-1
Running Micromuse Netcool with Netcool Integration Pack	4-2
Additional Features and Capabilities	4-9

### Before Using Netcool Integration Pack

---

Before running Netcool Integration Pack, be sure that OMNIBus is properly set up to be used.

To use OMNIBus:

- 1 Log into the Solaris system as a root user.
- 2 Make sure your OMNIHOME environment variable has been set:

```
%set | grep OMNIHOME
```

If it does not return OMNIHOME = /opt/Omnibus, set the environment variable:

```
CSH %setenv OMNIHOME /opt/Omnibus  
SH/KSH $OMNIHOME = /opt/Omnibus; export OMNIHOME
```

- 3 Check that `nco_objserv` and `nco_pad` are running:

```
%ps -ef | grep nco
```

- `nco_objserv` – Netcool/OMNIbus ObjectServer
- `nco_pad` – Netcool/OMNIbus Process Control

If these files are not running, see *Chapter 3, Installing Netcool Integration Pack*.

When Netcool/OMNIbus ObjectServer and Process Control are running, you are ready to start the probes and to run Netcool Integration Pack.

## Running Micromuse Netcool with Netcool Integration Pack

---

When Netcool/OMNIbus is running properly, you can run Netcool Integration Pack to monitor the alerts for your ERX devices.

To run Netcool Integration Pack:

- 1 Check that the correct Netcool/OMNIbus probe is running:

```
%ps -ef | grep nco_p_trapd
```

or

```
%ps -ef | grep nco_p_mttrapd
```

if you want to use the probe without integration with HP OpenView (HPOV).



**Note:** Step 1 depends on whether the `trapd` or `mttrapd` probe is running. If the process is not running, refer to *Chapter 3, Installing Netcool Integration Pack*. You must also ensure that your devices have the appropriate trap manager station set.

- 2 Run `ps -ef | grep nco_p_nnm6` to check that the `nco_p_nnm6` probe is running if you want to integrate with HPOV.
- 3 Run `ps -ef | grep nco_p_syslog` to check that the `nco_p_syslog` probe is running if you want to monitor syslog events.

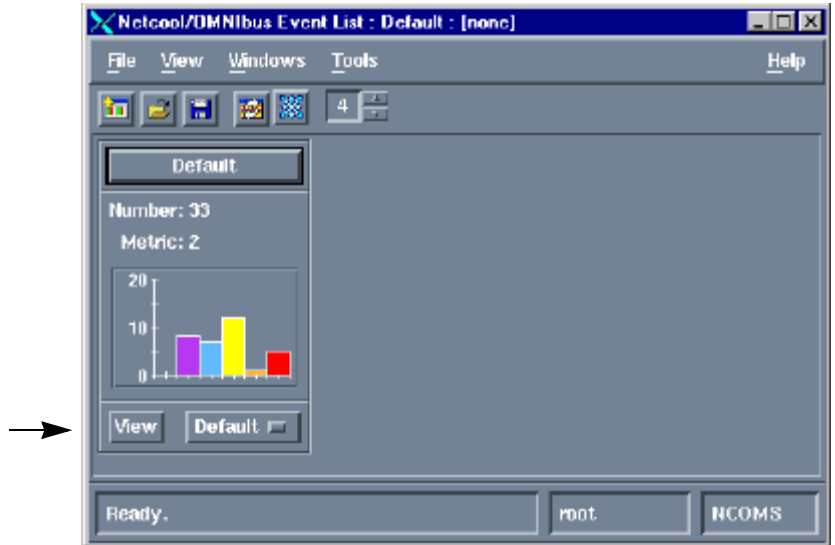
When all related probes are running, you can run `nco_event`.

The Netcool/OMNIBus Login dialog box appears.



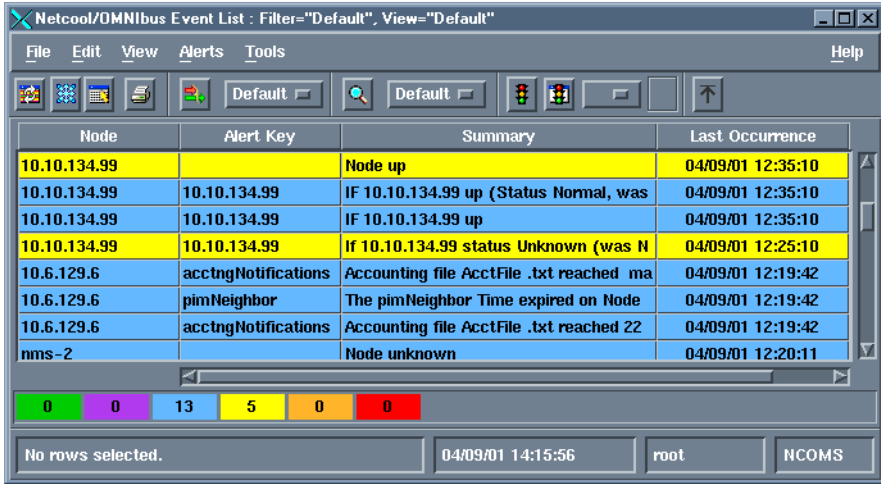
- 4 Enter your username and password.
- 5 Click OK.

The Event List window appears.



- 6 Click the View button.

The View window appears.



This window lists the alerts currently received from the ERX system after filtering.

The alert status is displayed in a particular color. At the bottom of the window is a color-coded tally of the number of alerts for a particular level of severity. For example, there are 5 yellow alerts indicating 5 minor events.



**Note:** You are allowed to reset the severity level by going through the rules file to set your requirement.

- 7 In the Netcool/OMNIBus Event List window, from the Windows menu, click Colours.



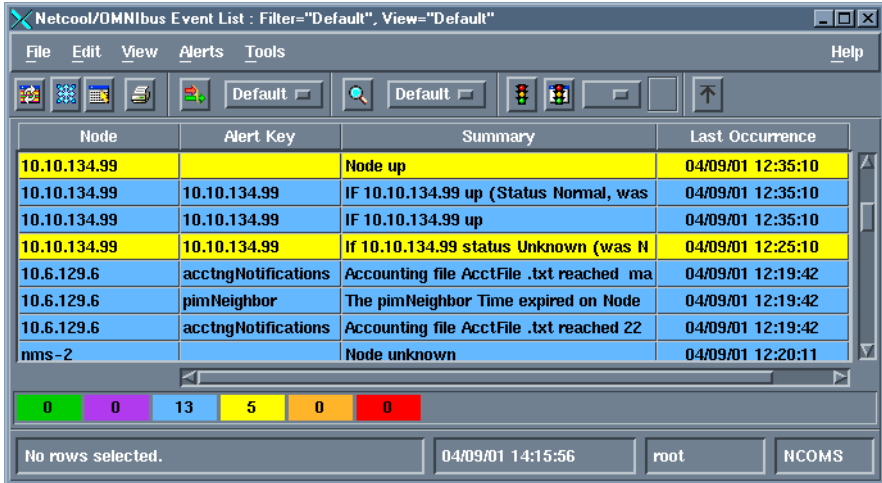
The Event List Colours dialog box appears. This dialog box identifies the severity of an event by color. See Table 4-1.



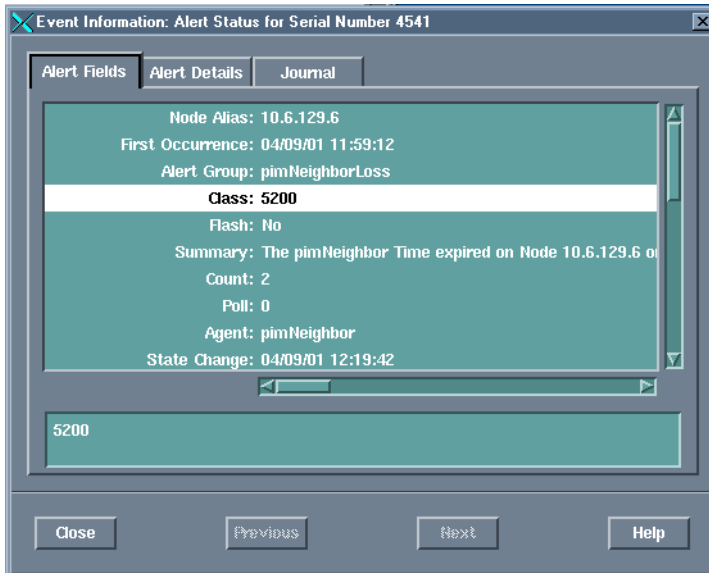
**Table 4-1** Color code for alert severity

Color	Severity
Red	Critical
Orange	Major
Yellow	Minor
Blue	Warning
Purple	Indeterminate
Green	Clear

- In the View window, select a node, and from the Alerts menu, click Information to access detailed information on the selected node's alert event.

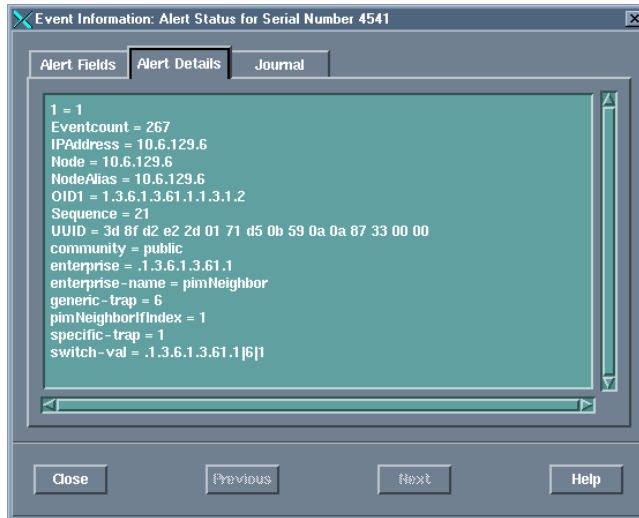


The Event Information dialog box appears. This dialog box displays alert information on the selected node.



The Alert Fields tab displays general status information, and the Alert Details tab displays detailed information. The Journal tab allows you to enter your own description of the alert event.

- 9 To display detailed information, click the Alert Details tab.



### **Acknowledging Events**

You can acknowledge that you have received an alert. When you do so, the severity color changes to a different tone of the same color.

To acknowledge an alert:

- 1 Select the alert from the list.
- 2 From the Alerts menu, click Acknowledged.

### **Prioritizing Events**

You can prioritize an alert. When you do so, the severity designation of the alert is changed.

To prioritize an alert:

- 1 Select the alert.
- 2 From the Alerts menu, click Prioritize.
- 3 Click the severity level you want to set.

### **Assigning Events**

You can assign the alert to yourself or in another way.


To assign an alert:

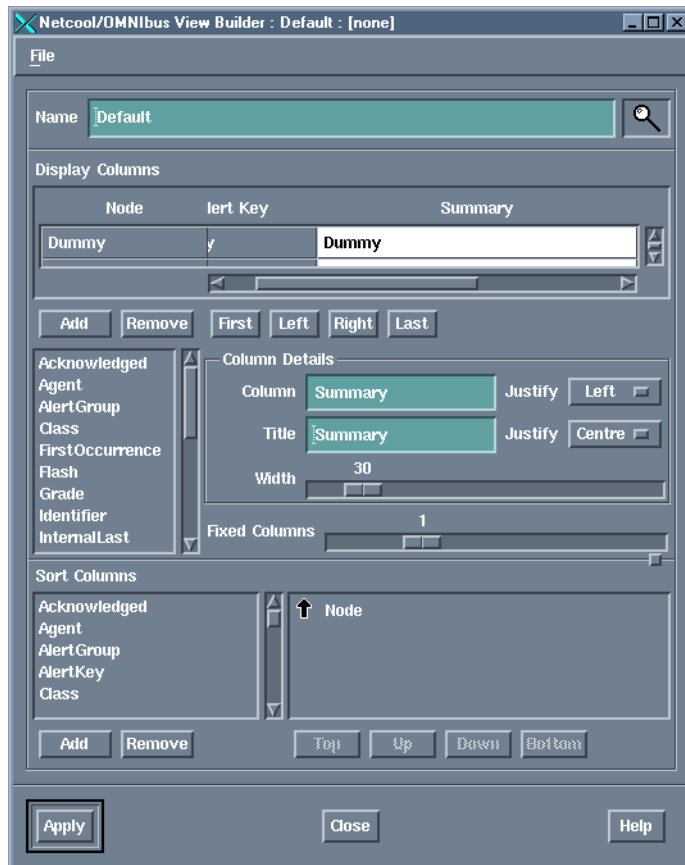
- 1 Select the alert.
- 2 From the Alerts menu, click either Take Ownership or Assign. If you choose Assign, select either nobody or root.

You can also assign the alert to a group you belong to by clicking Group in the Alerts menu.

### **Building a View**

You can modify the Netcool/OMNIbus View window by using the View Builder.

To access the View Builder, click the View builder icon  in the View window.



The View Builder allows you to modify the looks of the Netcool/OMNIBus View window.

## **Additional Features and Capabilities**

---

For information on using additional Netcool/OMNIBus features and capabilities, refer to the Netcool/OMNIBus documentation. See Table 5 in *About This Guide*.



# 5

## Integrating the NMC-RX Application

This chapter presents information on the integration of the NMC-RX application with the Netcool Integration Pack. It also provides the procedures for setting up Netcool/OMNIBus to start the NMC-RX application.

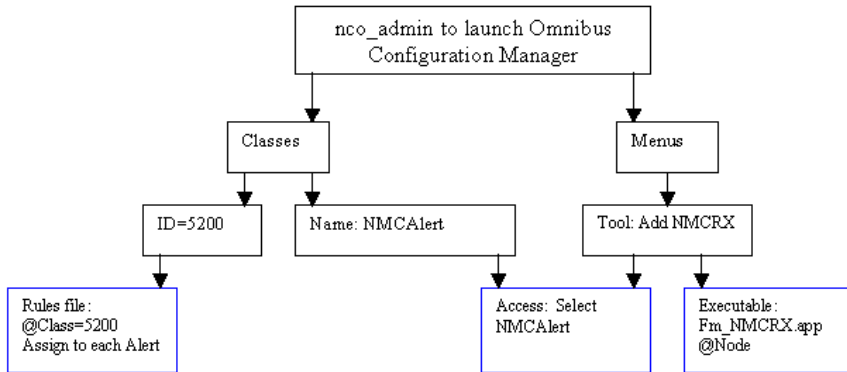
Topic	Page
Overview	5-1
Before You Begin	5-2
Integrating the NMC-RX Application with Netcool Integration Pack	5-3

### Overview

---

Integrating the NMC-RX application with Netcool Integration Pack allows you to start the NMC-RX application from a Netcool Integration Pack event. This capability allows you to use the NMC-RX application to display the configuration of the ERX system that originated the event. As a result, not only can you examine the ERX system's configuration, but you can also modify the system's configuration.

Figure 4-1 illustrates the process for setting Netcool/OMNIBus to be able to start the NMC-RX element management system.



**Figure 5-1** Integrating the NMC-RX application with Netcool Integration Pack

## Before You Begin

Before you can start the NMC-RX application from a Netcool Integration Pack event, you need to do the following:

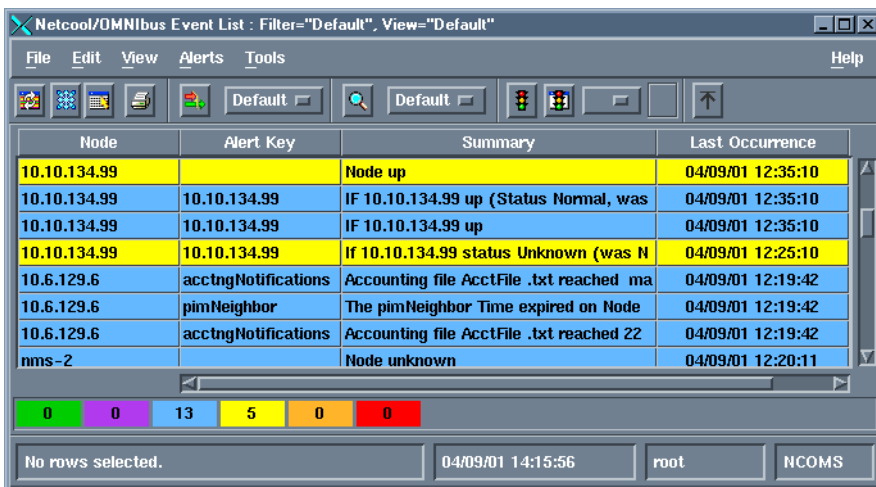
- Install the NMC-RX application in the same system in which Micromuse Netcool/OMNIBus 3.4 is running.
- Be sure the NMC-RX application release is compatible with the ERX release.
- Start the NMC-RX database, polling server, and ConfigSync server before starting NMC-RX.

The default RMI registry port number for the polling server and the ConfigSync server is 1099. If the default port number is already in use by another application, select another number.



## Integrating the NMC-RX Application with Netcool Integration Pack

Netcool/OMNIbus captures all the events (traps) happening on a particular ERX system. You can display these events. See Figure 5-2.



The screenshot shows the Netcool/OMNIbus Event List window. The window title is "Netcool/OMNIbus Event List : Filter='Default', View='Default'". The menu bar includes File, Edit, View, Alerts, Tools, and Help. Below the menu bar is a toolbar with various icons. The main area contains a table with the following data:

Node	Alert Key	Summary	Last Occurrence
10.10.134.99		Node up	04/09/01 12:35:10
10.10.134.99	10.10.134.99	IF 10.10.134.99 up (Status Normal, was	04/09/01 12:35:10
10.10.134.99	10.10.134.99	IF 10.10.134.99 up	04/09/01 12:35:10
10.10.134.99	10.10.134.99	If 10.10.134.99 status Unknown (was N	04/09/01 12:25:10
10.6.129.6	acctngNotifications	Accounting file AcctFile .txt reached ma	04/09/01 12:19:42
10.6.129.6	pimNeighbor	The pimNeighbor Time expired on Node	04/09/01 12:19:42
10.6.129.6	acctngNotifications	Accounting file AcctFile .txt reached 22	04/09/01 12:19:42
nms-2		Node unknown	04/09/01 12:20:11

Below the table is a status bar with colored boxes and numbers: 0 (green), 0 (purple), 13 (blue), 5 (yellow), 0 (orange), 0 (red). At the bottom of the window, there is a status bar with the text "No rows selected.", a timestamp "04/09/01 14:15:56", and buttons for "root" and "NCOMS".

**Figure 5-2** List of Netcool/OMNIbus events

To examine an event, start the NMC-RX application to check the configuration of the selected ERX system that generated the event or to reconfigure the system.

To start the NMC-RX application:

- 1 Select the event you want to examine.
- 2 From the Alerts menu, select Tool, and click NMC-RX.

The NMC-RX device workshop is started.



**Note:** Before you can start the NMC-RX application from Netcool Integration Pack for ERX, you need to add the NMC-RX item to the Alerts/Tool menu in the Netcool Integration Pack.

### Adding NMC-RX to the Menu

Currently, the Netcool Integration Pack does not provide the menu item for starting NMC-RX. Therefore, you need to create the menu item.

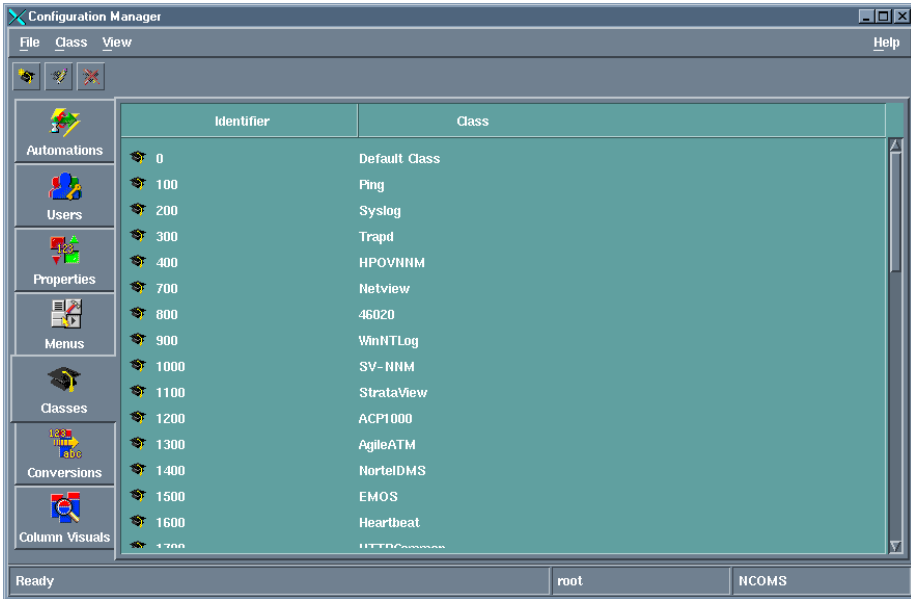
To add the NMC-RX item to the Netcool/OMNIBus Alerts>Tools menu:

- 1 Add a class to Netcool/OMNIBus:
  - a Load the Configuration Manager by issuing the following command at the Solaris prompt:

```
nco_admin -classes &
```

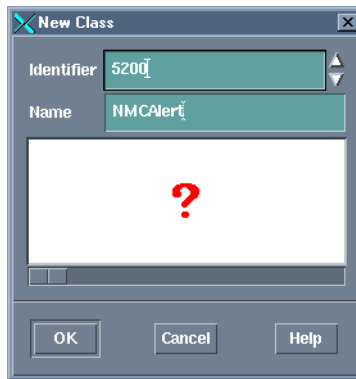
The Netcool/OMNIBus Login dialog box appears.

- b Log in to Netcool/OMNIBus.



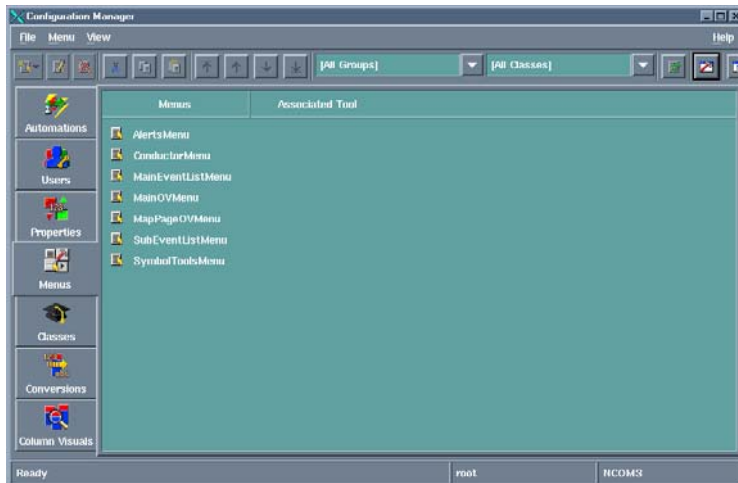
- c Click Classes to set the Main menu, and in the Main menu, click Class and New.

The New Class dialog box appears.



- d Type 5200 in the identifier field, if this number has not been used already.
  - e Type NMCAlert in the name field.
  - f (Optional) Slide the bar to display icon images and to select the appropriate one.
  - g Click OK to save the new class.
- 2 Add tools:
- a Load the Configuration Manager by issuing the following command at the Solaris prompt:

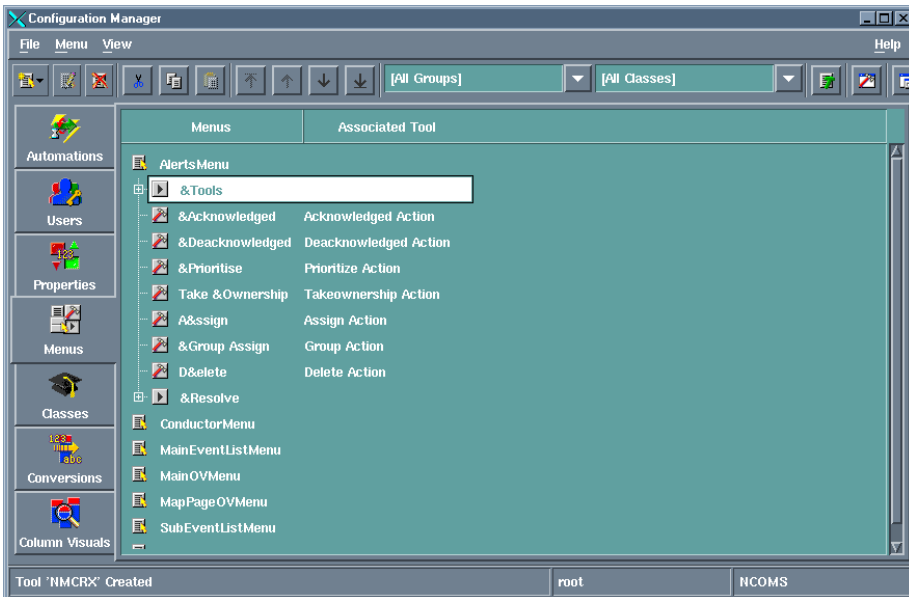
```
nco_admin -menu &
```



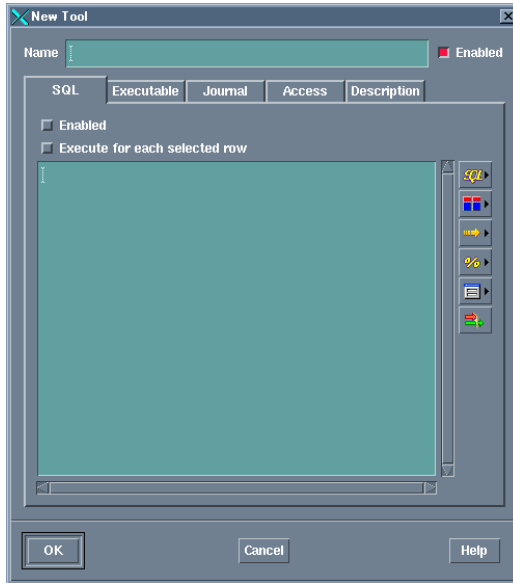
**b** Double-click AlertsMenu.



**c** Select Tools.

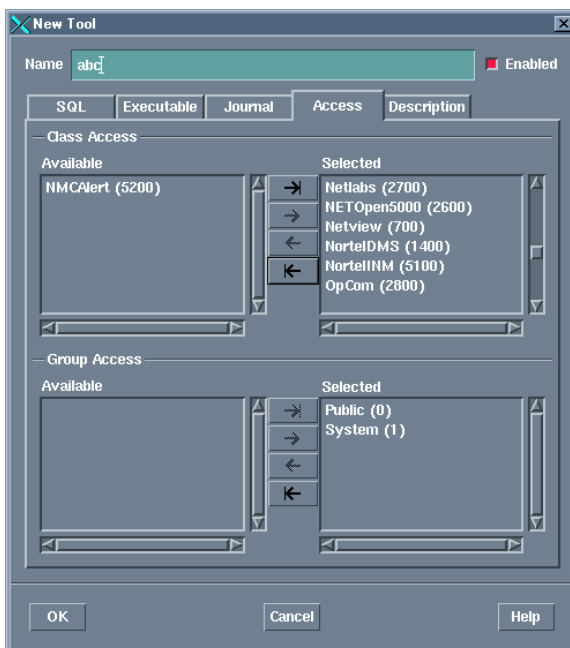


- d Click Menu from the main menu.
- e In the New Tools option, select New.  
 The New Tool window appears. You can add tools such as the NMC-RX application.



- f Type NMC-RX in the name field.
- g Click the Executable tab and type:  
`$FM_HOME/fm_NMCRX.app @Node`
  - > `fm_NMCRX.app` is the script used to start the NMC-RX application.
  - > `@Node` is the node in which OMNIbus will pass IP.
- h Click Enabled and Execute for each selected tool.
- i Click OK to save the new tool.

- 3 On the Access tab under New Tool/Class Access, select NMCAlert(5200) from the Available list, and add it to the Selected list.



- 4 Click OK to close the New Tool dialog box and to exit the Configuration Manager.
- 5 In the Netcool/OMNIBus Event List dialog box (see Figure 5-2), select the File menu and click Resync to put the new configuration into effect.

# 6

## Processing and Displaying ERX Syslog Events

This chapter discusses how to process ERX syslog events and how to display these events in the Netcool/OMNIBus event list. It also provides suggestions for maintaining syslog files.

Topic	Page
Overview	6-1
Processing ERX Syslog Events	6-1
Displaying ERX Syslog Events	6-3
Maintaining ERX Syslog Files	6-4

### Overview

---

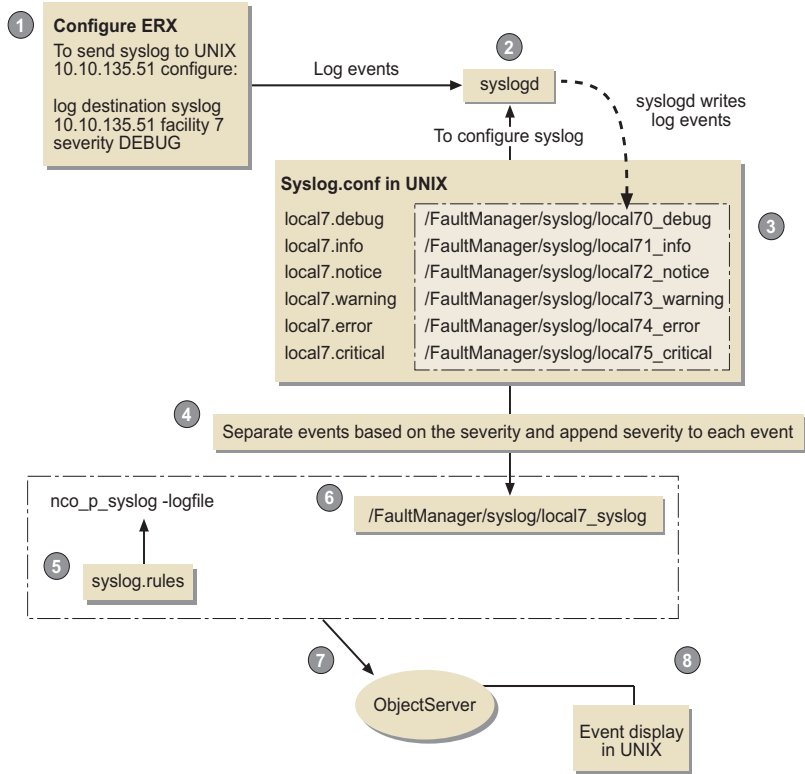
Syslog is a logging mechanism. It is able to centralize logging for a network. The syslog daemon logs messages that can be sorted by their source and severity level, and routed to log files. Syslog events are more general and less serious than SNMP trap events. They generally provide more information than the SNMP trap events.

### Processing ERX Syslog Events

---

Figure 6-1 illustrates the process of converting ERX syslog events to be displayed in Netcool/OMNIBus.

Your ERX system generates events that are converted and written into log file `local7_syslog`.



**Figure 6-1** Processing syslog events

For Netcool/OMNIBus to display ERX syslog events, follow these steps:

- 1 Configure your ERX edge router to send syslog events to your system; for example:

```
log destination syslog 10.10.135.51 facility 7 severity
debug
```

Be sure the facility number matches the number that you will use in the syslog.conf file. The default facility number is 7.

- 2 Either, find syslog.conf in your system (for example, /etc/syslog.conf), and append the individual syslog files:
  - local7.debug       \$FM\_HOME/syslog/local70\_debug
  - local7.info        \$FM\_HOME/syslog/local71\_info
  - local7.notice      \$FM\_HOME/syslog/local72\_notice
  - local7.warning     \$FM\_HOME/syslog/local73\_warning



- local7.err           \$FM\_HOME/syslog/local74\_error
- local7.crit         \$FM\_HOME/syslog/local75\_critical

or run:

```
$FM_HOME/syslog/appendsyslogcfg /etc/syslog.conf
```

**3** Restart syslogd:

```
kill -HUP syslogd_process_id
```

You can use **ps -ef | grep syslogd** to find the syslogd\_process\_id.

**4** Convert the syslog event that your system received to the correct format:

```
$FM_HOME/syslog/unisphere_syslog_cvt reload_time_interval  
syslog_files_path
```

Example:

```
$FM_HOME/syslog/unisphere_syslog_cvt 60 $FM_HOME/syslog
```

**5** Change to the rules directory:

```
cd $FM_HOME/rules
```

and run

```
startallsyslogprobes $FM_HOME/syslog
```

**6** To stop all syslog probes, run

```
stopallsyslogprobes
```

## Displaying ERX Syslog Events

---

When you have completed the process described in *Processing ERX Syslog Events*, you can use the Netcool/OMNIBus event list to display the ERX syslog events.

To display the ERX syslog events:

**1** Start Netcool/OMNIBus events view:

```
$OMNIHOME/bin/nco_event &
```

**2** Log in (without a password), and click View to see the event display.

The Netcool/OMNIBus Event List window appears.

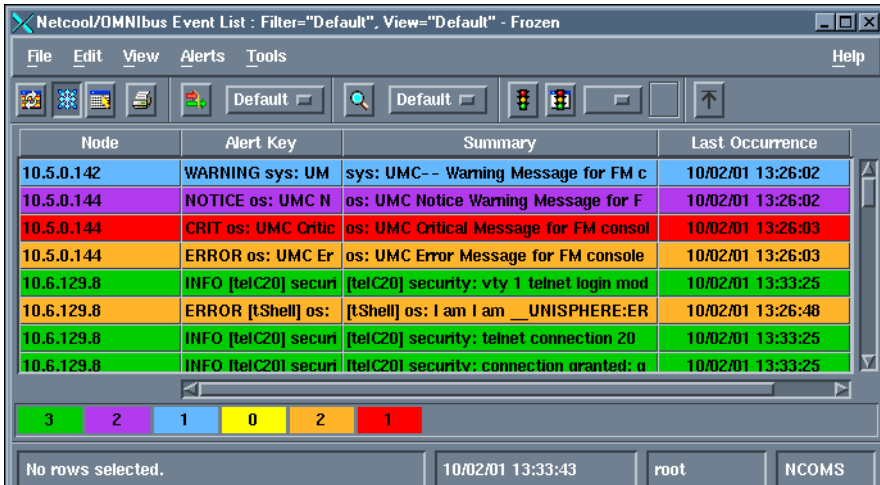


Figure 6-2 ERX syslog events

## Maintaining ERX Syslog Files

The **cleanSyslog** command allows you to maintain the syslog configuration files.

In `$FM_HOME/syslog`, there is a script called `cleanSyslog` that allows you to maintain syslog files by cleaning up the following files:

- `local70_debug`
- `local71_info`
- `local72_notice`
- `local73_warning`
- `local74_error`
- `local75_critical`

This script returns the size of these files to 0.

The `cleanSyslog` script backs up the current `local7_syslog` file, which is the file your syslog probe is using, to a file with a dynamic name based on the time, and also returns the size of the `local7_syslog` file to 0.

You should run this script periodically before your `local7*` file becomes too large. Unisphere recommends that you run the `cleanSyslog` script whenever any of the `local70_debug`, `local71_info`, `local72_notice`,

local73\_warning, local74\_error, and local75\_critical files has more than 20,000 lines of events. The unisphere\_syslog\_cvt file displays the number of lines in each local7\* file periodically; the time period is based on the time interval you set to start this script.



# MIBs and Traps



This appendix describes:

- MIB files for ERX edge routers
- SNMP traps for ERX edge routers

## MIB Files for ERX Edge Routers

---

Refer to the following tables for a list of MIB files supported in NMC-RX Release 3.2.x:

- Table A-1: Standard MIB files
- Table A-2: Redstone MIB files
- Table A-3: Unisphere MIB files

### ***MIBs Installation Directories***

All MIBs are installed in the following directories:

- On Sun Solaris workstations:  
\$OV\_SNMP\_MIBS/Vendor/Unisphere
- On Windows NT workstations:  
%OV\_SNMP\_MIBS%\Vendor\Unisphere

This appendix lists the Management Information Base (MIB) files and the SNMP traps installed with UMC Micromuse Netcool Integration Pack for ERX on Sun Solaris and Windows NT workstations for ERX edge routers.

On both Sun Solaris and Windows NT workstations, the MIBs are consolidated in the following files:

- Unisphere\_MIBS\_rs
- Unisphere\_MIBS\_std
- Unisphere\_MIBS\_unis

**Table A-1** Standard MIB files for ERX edge routers

rfc1158.mib	rfc2096.mi2	rfc2737.mi2
rfc1213.mib	rfc2115.mi2	rfc2790.mi2
rfc1215.mib	rfc2233.mi2	rfc2851.mi2
rfc1406.mib	rfc2358.mi2	rfc2863.mi2
rfc1407.mib	rfc2493.mi2	rfc2925n.mi2
rfc1471.mib	rfc2495.mi2	rfc2925p.mi2
rfc1472.mib	rfc2496.mi2	rfc2925t.mi2
rfc1473.mib	rfc2513.mi2	rfc2932.mi2
rfc1595.mi2	rfc2514.mi2	rfc2933.mi2
rfc1657.mi2	rfc2515.mi2	rfc2934.mi2
rfc1695.mi2	rfc2558.mi2	ianaiftype.mi2
rfc1724.mi2	rfc2571.mi2	af-nm-0095_001_mib.mi2
rfc1850.mi2	rfc2572.mi2	ianaaddressfamilynumbers.mi2
rfc1850t.mi2	rfc2573n.mi2	iana-RtProto-Mib.mi2
rfc1903.mi2	rfc2573p.mi2	draft-ietf-atommib-atm2-15.mi2
rfc1907.mi2	rfc2573t.mi2	draft-ietf-idmr-dvmrp-mib-11.mib
rfc2011.mi2	rfc2574.mi2	draft-ietf-idmr-pim-mib-10.mi2
rfc2012.mi2	rfc2575.mi2	
rfc2013.mi2	rfc2576.mi2	

**Table A-2** Redstone MIB files for ERX edge routers

rsaaa.mi2	rsft1.mi2	rspppoe.mi2
rsacctng.mi2	rshdlc.mi2	rsradclient.mi2
rsaddrpool.mi2	rshost.mi2	rsrouter.mi2
rsatm.mi2	rsif.mi2	rsrxsys.mi2
rsautoconf.mi2	rsigmp.mi2	rsslep.mi2
rsbgp.mi2	rsip.mi2	rssmds.mi2
rsbridgeEthernet.mi2	rsippolicy.mi2	rssmi.mi2
rscbf.mi2	rsiptunnel.mi2	rssnmp.mi2
rscli.mi2	rsisis.mi2	rssonet.mi2
rscope.mi2	rsl2f.mi2	rsssclient.mi2
rsdhcp.mi2	rsl2tp.mi2	rsssubscriber.mi2
rsdns.mi2	rslog.mi2	rstc.mi2
rsds1.mi2	rsnslookup.mi2	rstmpl.mi2
rsds3.mi2	rsospf.mi2	rstmplip.mi2
rsDvmp.mi2	rspim.mi2	rstmplppp.mi2
rsethernet.mi2	rsping.mi2	rstmplpppoe.mi2
rsfilexfer.mi2	rspolicy.mi2	rsttraceroute.mi2
rsfr.mi2	rsppp.mi2	

**Table A-3** Unisphere MIB files for for ERX edge routers

dvmpEnt.mib	usDatahdlc.mi2	usDatarouter.mi2
usDataaaa.mi2	usDatahost.mi2	usDatalep.mi2
usDataacctng.mi2	usDataif.mi2	usDatamds.mi2
usDataaddrpool.mi2	usDataigmp.mi2	usDataSnmpAgent.mi2
usDataatm.mi2	usDataip.mi2	usDataonnet.mi2
usDataAutoconf.mi2	usDataippolicy.mi2	usDataSubscriber.mi2
usDataabgp.mi2	usDataiptunnel.mi2	usDataatc.mi2
usDatabridgeEthernet.mi2	usDataisis.mi2	usDataatmpl.mi2
usDatacbf.mi2	usData2f.mi2	usDataatmplip.mi2
usDatacli.mi2	usData2tp.mi2	usDataatmplppp.mi2
usDatacops.mi2	usDataLog.mi2	usDataatmplpppoe.mi2
usDatadhcp.mi2	usDataMibs.mi2	usErxRegistry.mi2
usDataadns.mi2	usDataanslookup.mi2	usErxSystem.mi2
usDataads1.mi2	usDataospf.mi2	usproducts.mi2
usDataads3.mi2	usDatapim.mi2	usDataping.mi2
usDataDvmp.mi2	usDatapolicy.mi2	usDatatraceroute.mi2
usDataethernet.mi2	usDatappp.mi2	usSmi.mi2
usDataExperiment.mi2	usDatapppoe.mi2	
usDatafilexfer.mi2	usDataradclient.mi2	
usDatafr.mi2	usDataRegistry.mi	
usDataft1.mi2		

## SNMP Traps for ERX Edge Routers

This section lists all the ERX SNMP traps with SNMP v1 trap OIDs installed by UMC Micromuse Netcool Integration Pack for ERX edge routers. Traps for the ERX edge routers are defined in SMIv2 MIB definition language.

See the following table for a list of current traps.

**Table A-4** Traps

Trap	OID
dsx1LineStatusChange	.1.3.6.1.2.2.1.10.18.15.0.1
dsx3LineStatusChange	.1.3.6.1.2.2.1.10.30.15.0.1
frDLCIStatusChange	.1.3.6.1.2.2.1.10.32.0.1
ospfVirtLfStateChange	.1.3.6.1.2.2.1.14.16.2.0.1
ospfNbrStateChange	.1.3.6.1.2.2.1.14.16.2.0.2
ospfVirtNbrStateChange	.1.3.6.1.2.2.1.14.16.2.0.3
ospflfConfigError	.1.3.6.1.2.2.1.14.16.2.0.4
ospfVirtLfConfigError	.1.3.6.1.2.2.1.14.16.2.0.5
ospflfAuthFailure	.1.3.6.1.2.2.1.14.16.2.0.6
ospfVirtLfAuthFailure	.1.3.6.1.2.2.1.14.16.2.0.7
ospflfRxBadPacket	.1.3.6.1.2.2.1.14.16.2.0.8
ospfVirtLfRxBadPacket	.1.3.6.1.2.2.1.14.16.2.0.9
ospfTxRetransmit	.1.3.6.1.2.2.1.14.16.2.0.10
ospfVirtLfTxRetransmit	.1.3.6.1.2.2.1.14.16.2.0.11
ospfOriginatLsa	.1.3.6.1.2.2.1.14.16.2.0.12
ospfMaxAgeLsa	.1.3.6.1.2.2.1.14.16.2.0.13
ospfLsdbOverflow	.1.3.6.1.2.2.1.14.16.2.0.14
ospfLsdbApproachingOverflow	.1.3.6.1.2.2.1.14.16.2.0.15
ospflfStateChange	.1.3.6.1.2.2.1.14.16.2.0.16
bgpEstablished	.1.3.6.1.2.2.1.15.7.0.1
bgpBackwardTransition	.1.3.6.1.2.2.1.15.7.0.2
RMON_Rise_Alarm	.1.3.6.1.2.2.1.16.0.1
RMON_Falling_Alarm	.1.3.6.1.2.2.1.16.0.2
RMON_Packet_Match	.1.3.6.1.2.2.1.16.0.3
atmIntfPvcFailuresTrap	.1.3.6.1.2.2.1.37.1.14.2.1.0.1
entConfigChange	.1.3.6.1.2.2.1.47.2.0.1
acctngFileNearlyFull	.1.3.6.1.2.2.1.60.2.0.1



**Table A-4** Traps (continued)

Trap	OID
acctngFileFull	.1.3.6.1.2.2.1.60.2.0.2
pingProbeFailed	.1.3.6.1.2.2.1.80.0.1
pingTestFailed	.1.3.6.1.2.2.1.80.0.2
pingTestCompleted	.1.3.6.1.2.2.1.80.0.3
traceRoutePathChange	.1.3.6.1.2.2.1.81.0.1
traceRouteTestFailed	.1.3.6.1.2.2.1.81.0.2
traceRouteTestCompleted	.1.3.6.1.2.2.1.81.0.3
pimNeighborLoss	.1.3.6.1.2.3.61.1.0.1
rsAtmVpPingTestCompleted	.1.3.6.1.2.4.1.2773.2.8.3.0.1
rsAtmVcPingTestCompleted	.1.3.6.1.2.4.1.2773.2.8.3.0.2
rsRXSysSlotOperStatusChange	.1.3.6.1.2.4.1.2773.2.17.0.1
rsRXSysPowerStatusChange	.1.3.6.1.2.4.1.2773.2.17.0.2
rsRXSysTempFanStatusChange	.1.3.6.1.2.4.1.2773.2.17.0.3
rsRXSysTempStatusChange	.1.3.6.1.2.4.1.2773.2.17.0.4
rsRXSysHighMemUtil	.1.3.6.1.2.4.1.2773.2.17.0.5
rsRXSysAbatedMemUtil	.1.3.6.1.2.4.1.2773.2.17.0.6
rsAddressPoolHighAddrUtil	.1.3.6.1.2.4.1.2773.2.21.3.0.1
rsAddressPoolAbatedAddrUtil	.1.3.6.1.2.4.1.2773.2.21.3.0.2
rsAddressPoolNoAddresses	.1.3.6.1.2.4.1.2773.2.21.3.0.3
rsFileXferTrap	.1.3.6.1.2.4.1.2773.2.23.2.0.1
rsLogMsgThresholdTrap	.1.3.6.1.2.4.1.2773.2.28.0.1
rsCliSecurityAlert	.1.3.6.1.2.4.1.2773.2.30.0.1
rsPingProbeFailed	.1.3.6.1.2.4.1.2773.2.39.0.1
rsPingTestFailed	.1.3.6.1.2.4.1.2773.2.39.0.2
rsPingTestCompleted	.1.3.6.1.2.4.1.2773.2.39.0.3
rsTraceRoutePathChange	.1.3.6.1.2.4.1.2773.2.41.0.1
rsTraceRouteTestFailed	.1.3.6.1.2.4.1.2773.2.41.0.2
rsTraceRouteTestCompleted	.1.3.6.1.2.4.1.2773.2.41.0.3
rsDvmrpRouteHogNotificationTrap	.1.3.6.1.2.4.1.2773.2.44.1.1.0.1
usdAtmVpPingTestCompleted	.1.3.6.1.2.4.1.4874.2.2.8.3.0.1
usdAtmVcPingTestCompleted	.1.3.6.1.2.4.1.4874.2.2.8.3.0.2
usdERXSysSlotOperStatusChange	.1.3.6.1.2.4.1.4874.2.2.17.0.1
usdERXSysPowerStatusChange	.1.3.6.1.2.4.1.4874.2.2.17.0.2
usdERXSysTempFanStatusChange	.1.3.6.1.2.4.1.4874.2.2.17.0.3

**Table A-4** Traps (continued)

Trap	OID
usdERXSysTempStatusChange	.1.3.6.1.2.4.1.4874.2.2.17.0.4
usdERXSysHighMemUtil	.1.3.6.1.2.4.1.4874.2.2.17.0.5
usdERXSysAbatedMemUtil	.1.3.6.1.2.4.1.4874.2.2.17.0.6
usdAddressPoolHighAddrUtil	.1.3.6.1.2.4.1.4874.2.2.21.3.0.1
usdAddressPoolAbatedAddrUtil	.1.3.6.1.2.4.1.4874.2.2.21.3.0.2
usdAddressPoolNoAddresses	.1.3.6.1.2.4.1.4874.2.2.21.3.0.3
usdFileXferTrap	.1.3.6.1.2.4.1.4874.2.2.23.2.0.1
usdLogMsgThresholdTrap	.1.3.6.1.2.4.1.4874.2.2.28.0.1
usdCliSecurityAlert	.1.3.6.1.2.4.1.4874.2.2.30.0.1
usdPingProbeFailed	.1.3.6.1.2.4.1.4874.2.2.39.0.1
usdPingTestFailed	.1.3.6.1.2.4.1.4874.2.2.39.0.2
usdPingTestCompleted	.1.3.6.1.2.4.1.4874.2.2.39.0.3
usdTraceRoutePathChange	.1.3.6.1.2.4.1.4874.2.2.41.0.1
usdTraceRouteTestFailed	.1.3.6.1.2.4.1.4874.2.2.41.0.2
usdTraceRouteTestCompleted	.1.3.6.1.2.4.1.4874.2.2.41.0.3
usdDvmpRouteHogNotificationTrap	.1.3.6.1.2.4.1.4874.2.2.44.1.1.0.1
usdCrxModuleOperStatusChange	.1.3.6.1.2.4.1.4874.2.2.55.0.1
usdCrxPowerStatusChange	.1.3.6.1.2.4.1.4874.2.2.55.0.2
usdCrxTempStatusChange	.1.3.6.1.2.4.1.4874.2.2.55.0.3
atmfM4IfAisAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.1
atmfM4IfLcdAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.2
atmfM4IfLofAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.3
atmfM4IfLopAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.4
atmfM4IfLosAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.5
atmfM4IfPayloadMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.6
atmfM4IfXmissionErrAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.7
atmfM4IfPathTraceMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.8
atmfM4IfRdiAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.9
atmfM4IfSignalLabelMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.10
atmfM4VplTpAisAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.11
atmfM4VplTpRdiAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.12
atmfM4VpcTpAisAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.13
atmfM4VpcTpRdiAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.14
atmfM4VclTpAisAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.15

**Table A-4** Traps (continued)

Trap	OID
atmfM4VclTpRdiAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.16
atmfM4VccTpAisAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.17
atmfM4VccTpRdiAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.18
atmfM4HwBackPlaneAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.19
atmfM4HwCallEstErrAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.20
atmfM4HwCongestionAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.21
atmfM4HwExtIfDevProbAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.22
atmfM4HwLineCardAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.23
atmfM4HwMultiplexerAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.24
atmfM4HwPowerAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.25
atmfM4HwProcessorAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.26
atmfM4HwProtectionPathAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.27
atmfM4HwReceiverFailAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.28
atmfM4HwPIUnitMissingAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.29
atmfM4HwPIUnitProbAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.30
atmfM4HwPIUnitMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.31
atmfM4HwTimingProbAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.32
atmfM4HwXmitterFailAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.33
atmfM4HwTrunkCardAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.34
atmfM4HwStorageCapacityAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.35
atmfM4HwMemoryMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.36
atmfM4HwCorruptDataAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.37
atmfM4HwSwEnvironAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.38
atmfM4HwSwDownloadFailAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.39
atmfM4HwVersionMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.40
atmfM4HwFanFailAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.41
atmfM4HwDoorOpenAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.42
atmfM4HwFuseFailAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.43
atmfM4HwHighTempAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.44
atmfM4SwVersionMismatchAlarm	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.45
atmfM4VplTpUp	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.46
atmfM4VplTpDown	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.47
atmfM4VclTpUp	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.48
atmfM4VclTpDown	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.49

**Table A-4** Traps (continued)

Trap	OID
atmfM4VplXConnUp	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.50
atmfM4VplXConnDown	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.51
atmfM4VclXConnUp	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.52
atmfM4VclXConnDown	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.53
atmfM4HwUnitUp	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.54
atmfM4HwUnitDown	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.55
atmfM4AtmCellIfCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.56
atmfM4AtmCellIfDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.57
atmfM4VpcTpCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.58
atmfM4VpcTpDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.59
atmfM4VccTpCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.60
atmfM4VccTpDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.61
atmfM4VplXConnCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.62
atmfM4VplXConnDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.63
atmfM4VclXConnCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.64
atmfM4VclXConnDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.65
atmfM4HwUnitCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.66
atmfM4HwUnitDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.67
atmfM4InstalledSwCreated	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.68
atmfM4InstalledSwDeleted	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.69
atmfM4IfChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.70
atmfM4VplTpChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.71
atmfM4VclTpChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.72
atmfM4VplXConnChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.73
atmfM4VclXConnChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.74
atmfM4HwUnitChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.75
atmfM4InstalledSwChanged	.1.3.6.1.2.4.1.353.5.1.3.1.2.0.76
dvmrpNeighborLoss	.1.3.6.1.2.4.1.4874.3.2.1.1.1.1.0.1
dvmrpNeighborNotPruning	.1.3.6.1.2.4.1.4874.3.2.1.1.1.1.0.2
coldStart	.1.3.6.1.2.6.3.1.1.5.1
warmStart	.1.3.6.1.2.6.3.1.1.5.2
linkDown	.1.3.6.1.2.6.3.1.1.5.3
linkUp	.1.3.6.1.2.6.3.1.1.5.4
authenticationFailure	.1.3.6.1.2.6.3.1.1.5.5

**Table A-4** Traps (continued)

<b>Trap</b>	<b>OID</b>
egpNeighborLoss	.1.3.6.1.2.6.3.1.1.5.6

