StormTracker™ EMS 2.3

User's Guide

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Contents

5 Assurance Menu

6 Config Menu

7 Device Menu

About This Guide

Document Purpose and Intended Audience

This guide contains user instructions for administration and personnel tasked with maintaining network services and resources using StormTracker Element Management System, Version 2.3.

Document Summary

Section	Description
Chapter 1, *Introduction*	Provides an overview of the StormTracker EMS.
Chapter 2, *Logon*	Describes the logon process.
Chapter 3, *Launch Console*	Describes the functions of the Launch Console.
Chapter 4, *Service Menu*	Describes the functions of the Service menu.
Chapter 5, *Assurance Menu*	Describes the functions of the Assurance menu.
Chapter 6, *Config Menu*	Describes the functions of the Config menu.
Chapter 7, *Device Menu*	Describes the functions of the Device menu.
Chapter 8, *Control Menu*	Describes the functions of the Control menu.
Chapter 9, *Importing and Exporting*	Shows how to use the Import and Export utilities to copy files to and from StormTracker systems.
Index	Lists key terms, concepts, and sections in alphabetical order.

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Document Number	Document Title
EMS-A2-GN10	*StormTracker EMS 2.3 Installation Instructions*

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Introduction

1

Overview

StormTracker™ EMS 2.3 provides detailed management for the:

- BitStorm™ 1900 IP DSLAM
- BitStorm™ 2400 IP DSLAM

StormTracker EMS is a distributed application. The primary user interface runs on the client side. The client processes can be started and stopped on demand. Server processes must be manually started after installation, if they are stopped, or if the computer hosting them is restarted.

StormTracker EMS 2.3 Applications

The following associated applications are required for full StormTracker EMS functionality, and are launched before StormTracker EMS in the order below.

1. **Application Server**

   The application server runs continuously in the background and provides connectivity between all components.

2. **Agent Mapper**

   This application is run whenever a Mediation Agent must be configured. It provides the Mediation Agent with location information for an agent, as well as the kinds of messages that the agent will be mediating.

3. **Mediation Agent**

   This application runs continuously. It handles all communications between StormTracker EMS and managed objects, receives and translates SNMP traps, and converts traps into events.

Application Server

The StormTracker EMS Application Server runs in the background and enables the system to process incoming events and communicate with managed objects and network devices. Launch the Application Server by selecting the shortcut from the Oware Management Center launch bar. If you try to run StormTracker EMS without first starting the Application Server, a warning will appear and StormTracker EMS will not launch.

NOTE:

If the server has been restarted, StormTracker EMS must be manually reconnected to the application server. Select Connect to Application Server from the Control menu.

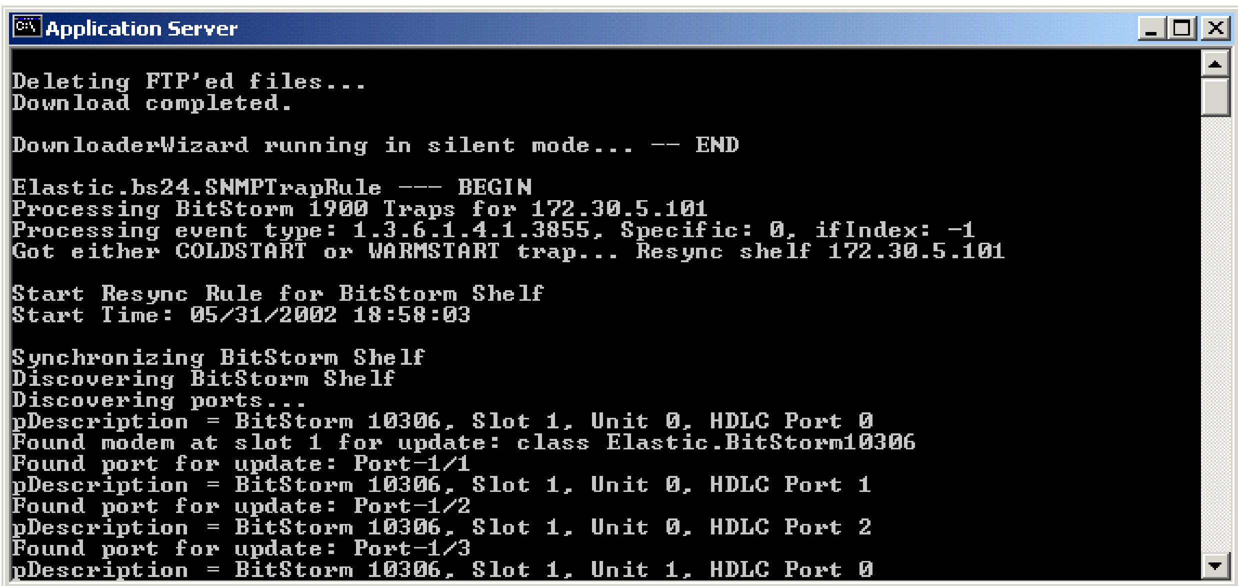


Figure 1-1. Application Server

Mediation Agent

The Mediation Agent is a translation service that provides an interface to external systems and devices. Default external protocols supported include:

- General ASCII
- TL1
- SNMP
- CORBA
- ICMP

The Mediation Agent contains Managed Beans (MBeans) that perform the physical connections to a mediation target system or device. Examples include communicating with a serial port device, a Telnet session, a TCP socket, and external databases. The Agent executes dialogs with the mediation target (at the instruction of the client application) to retrieve and/or send data with the connection. Mediation can be accessed through a rule or from client code.

The Mediation Agent is essential for normal use; if one is not running, administrative changes can still be made to the system, but no traps or other communication will be processed by StormTracker EMS.

Launch the Mediation Agent from the Oware Management Center launch console. This must be executed on the host that was specified in the Agent Mapper application. If multiple Agents are specified, each agent must be started from its own workstation. Mediation Agents will automatically find the Application Server and can be started before or after the Application Server has been started. The following figure illustrates an example of a Mediation Agent console.

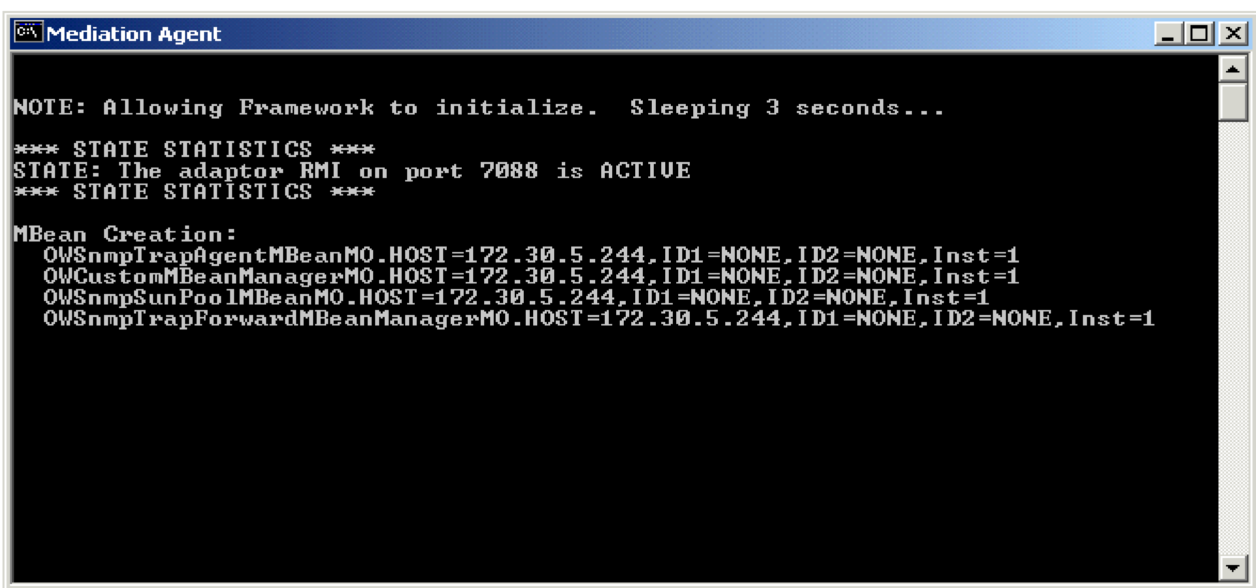


Figure 1-2. Mediation Agent Console

The Mediation Agent only displays operational messages in the Mediation Agent console of Windows 2000 (this dialog box does not appear in Solaris). During normal operation, there is no need to view this output, as the Agent is intended to run in the background.

Agent Mapper

The Agent Mapper enables the Mediation Agent to handle SNMP requests, SNMP traps, and ASCII grammars. When first installed, the Agent Mapper must be configured with each location of a Mediation Agent. It can be accessed any time a new Mediation Agent is required on a new computer, or the configuration of an existing agent is changed.

The Agent Mapper must be run after installation to set up one Mediation Agent, as at least one Agent is required for StormTracker EMS to communicate with a network element.

Configuring Mediation Agents

▶ Procedure

To configure a mediation agent:

1. Select Agent Mapper from the Oware Management Center launch console. The following screen appears:

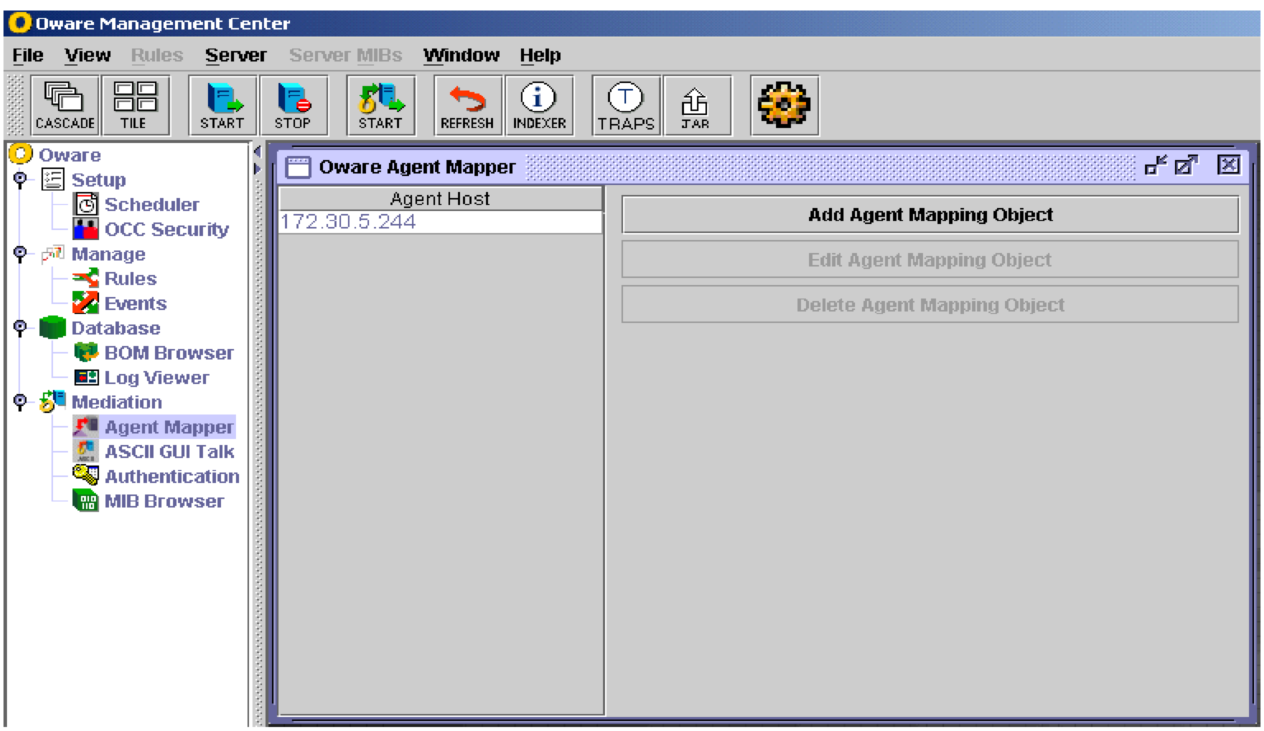


Figure 1-3. Agent Mapper

2. From the initial Agent Mapper screen, select Add Agent Mapping Object. The following screen appears:

Figure 1-4. Add Agent Dialog

3. Enter the required information in this dialog and click OK to add the agent or Cancel to cancel the operation. The fields in the Add Agent dialog are as follows:

Field	Description
Domain	This read-only field reflects Oware's distributed domain.
Remote Host	Type the hostname or IP address of the Server on which the Mediation Agent will run. Localhost is *not* a valid value.
Subnet Mask	Type the appropriate Subnet Mask.
Order	Type a number to specify the sequence of Mediation Agents. If there will only be one, this number should be 1. If there are to be multiple Agents that communicate with the same subnet, then this number will determine which is the primary and which are the backups.

4. Select the check boxes corresponding to the kinds of communications you wish to process. The choices are:

   — ASCII Terminal Server

   — SNMP

   — SNMP Trap Listener

   — SNMP Trap Forwarder

   — Custom Mediation MBean

   If StormTracker EMS is managing SNMP devices exclusively, then only the SNMP, SNMP Trap Listener, and SNMP Trap Forwarder options should be selected.

5. Select OK to implement the agent and close the dialog box. If there is only one Mediation Agent required, then exit the application. Otherwise, perform the same steps for each Agent. Only one Agent is allowed on each host.

Logon

2

Overview

The logon facility for StormTracker EMS enforces security at the client level. You must have a valid user and password to log on to StormTracker EMS and make use of its features.

Logging On

To log on to StormTracker EMS, type a valid user name and password at the logon prompt. When StormTracker EMS is installed, the default user name is **`admin`** and the default user password is **`stormtrackerems`**.

For best security, change the password the first time you use StormTracker EMS. See *Change Password* in Chapter 8, *Control Menu*.

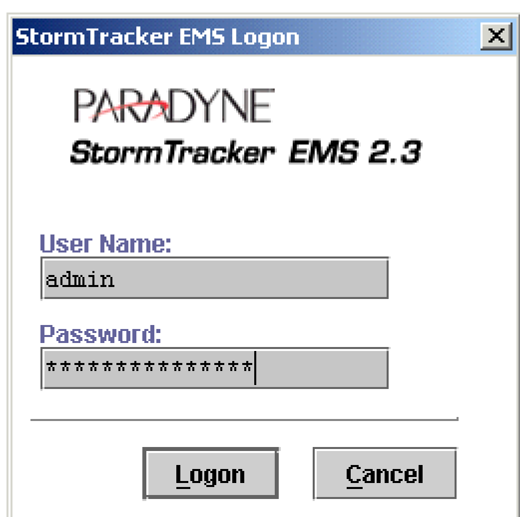


Figure 2-1. StormTracker EMS Logon Prompt

Disabled Accounts

If an incorrect password has been entered, the user will be prompted three times before the system disables the account, displays a warning dialog, and shuts down. The system will not allow a user with a disabled account to log on; a system administrator must re-enable the account before the user is allowed to re-access StormTracker EMS. Enabling user accounts is detailed in *Manage Users* in Chapter 8, *Control Menu*.

Logging Off

Occasionally, it is necessary for a user to log off without closing the application. By doing so, the current user can log off and another user can log on using a separate account. To log off, select Log Off from the Control menu. This option displays the Logon dialog. To log off and exit the application, select Log Off and Exit from the Control menu.

Launch Console

3

Overview

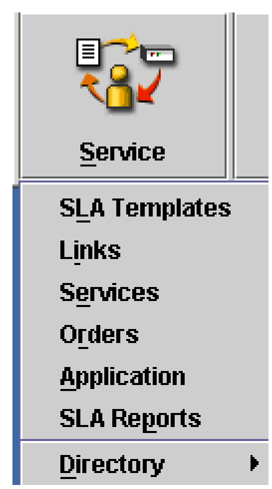
StormTracker EMS functions are divided into logical groupings, represented by the various icons on the Launch Console. Those functions are mentioned briefly here and covered in detail in following chapters. All Launch Console menus are accessed by clicking the appropriate icon or by entering the indicated command mnemonic; for example, Alt-S for the Service menu.

Figure 3-1. StormTracker EMS Launch Console.

Service

The Service menu options are used to create and manage service orders, applications, Service Level Agreements (SLAs), and contact information:

- SLA Templates
- Links (logical and physical)
- Services
- Orders
- Applications
- SLA Reports
- Directory Information

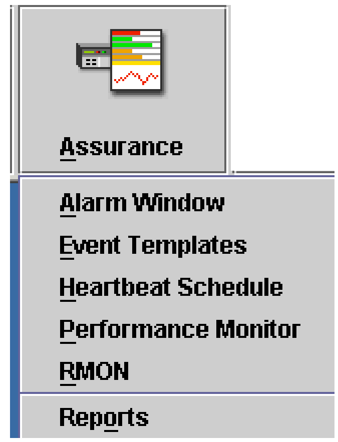


See Chapter 4, *Service Menu*, for information on the Service menu options.

Assurance

The Assurance menu options are used to monitor and report network events, perform remote monitoring, manage alarms, monitor performance, and generate reports:

- Manage Alarm-Level Events
- Create Event Templates
- Schedule Heartbeat Monitoring
- Monitor Performance
- Perform RMON monitoring
- Generate Reports

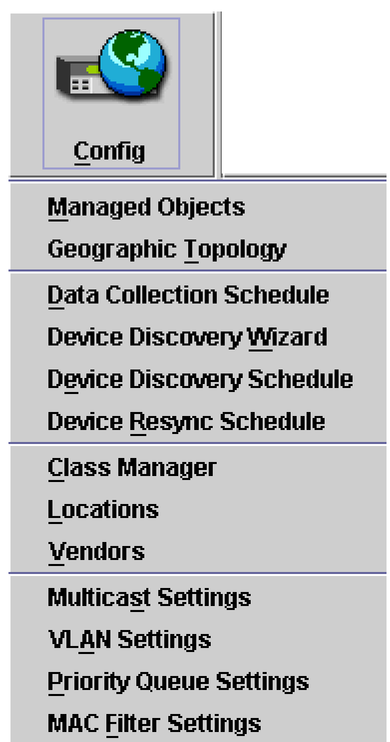


See Chapter 5, *Assurance Menu*, for information on the Assurance menu options.

Config

The Config (Configuration) menu options launch several network management functions for configuration managers such as a Managed Object Manager (MOM), Data Collection scheduleer, Discovery Scheduler, Location Manager, Vendor Manager, and Topology Viewer:

- Managed Object Manager (MOM)
- Geographic Topology
- Data Collection Schedule
- Device Discovery Wizard
- Device Discovery Schedule
- Device Resync Schedule
- Class Manager
- Location Manager
- Vendor Manager
- Multicast
- VLAN
- Priority Queue
- MAC Filter

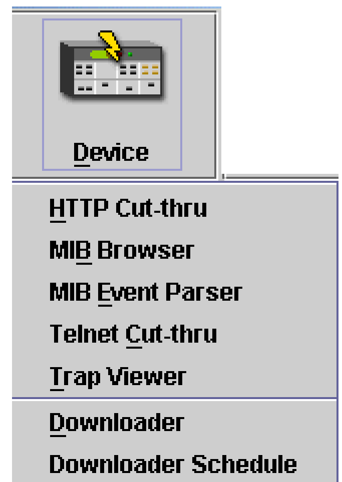


See Chapter 6, *Config Menu*, for information on the Config menu options.

Device

The Device menu options provides means of interaction with network devices using HTTP, Telnet, MIB loading/browsing capability, trap viewers, and firmware downloading utilities:

- HTTP Cut-thru
- MIB Browser
- MIB Event Parser
- Telnet Cut-thru
- Trap Viewer
- Downloader
- Downloader Schedule

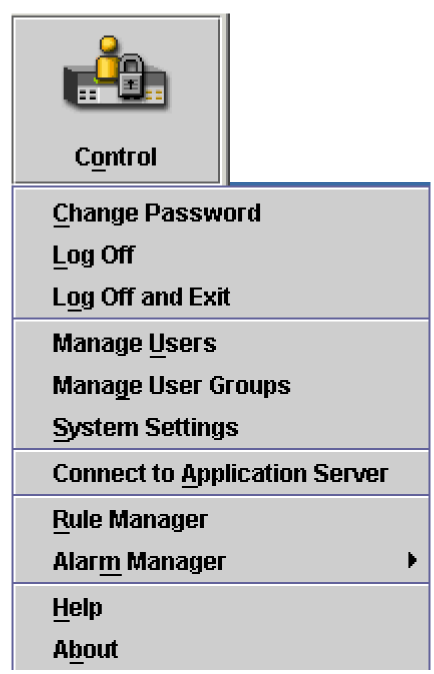


See Chapter 7, *Device Menu*, for information on the Device menu options.

Control

The Control menu options are used to change passwords, log on/off, manage users and groups, modify system settings, and connect to the application server:

- Change Passwords
- Log Off/Exit
- Manage Users/User Groups
- Provision System Settings
- Connect to Application Server
- Manage Rules/Alarms



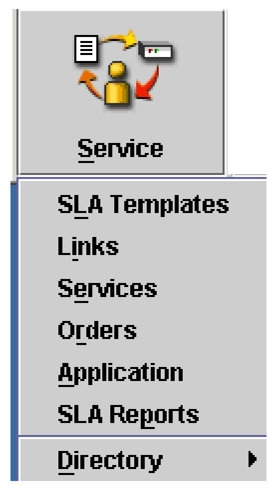
See Chapter 8, *Control Menu*, for information on the Control menu options.

Service Menu

4

Overview

StormTracker EMS's Service Management framework gives you the tools to define and create services and their components, including orders, subscriptions, and service level agreements (SLAs). Menu options under the Service menu include:



- **SLA Templates**
  (See *SLA Templates* on page 4-2)
- **Links**
  (See *Links* on page 4-3)
- **Services**
  (See *Services* on page 4-5)
- **Orders**
  (See *Orders* on page 4-9)
- **Application**
  (See *Application* on page 4-10)
- **SLA Reports**
- **Directory**
  (See *Directory* on page 4-14)

Service Management Components

The Service Management Framework consists of a number of discrete managers, each of which performs a specific function. Most managers have a similar interface; features common to all Managers are detailed in the sections that follow.

The Service menu lets you create and manage services, orders, applications, service level templates, and contact information for individuals, groups, and subscribers.

SLA Templates

The first option in Service menu is SLA Templates. The SLA Template Manager is used to create and edit service level agreement templates.

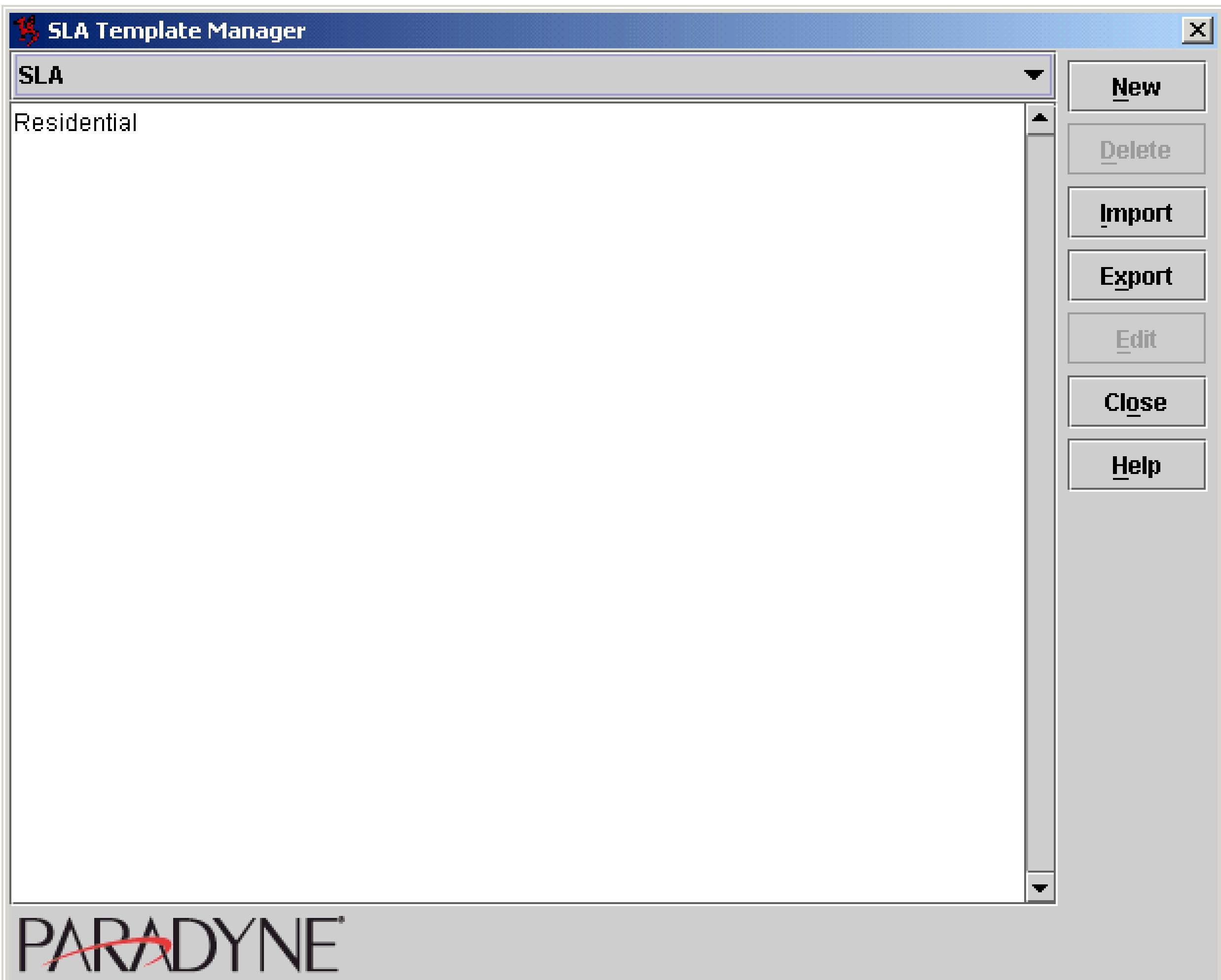


Figure 4-1. SLA Template Manager

▶ Procedure

To create a new service using the SLA Template Manager:

1. Identify the class of service required. StormTracker EMS provides three default services: Connection Service, Application Service, and a generic Service. Select the appropriate service from the drop-down menu.
2. Click on New to display the template editor for the selected class of service.
3. Give the new service a name and description, and associate it with a contact, if necessary.

4. Add any required orders to the service, then create a Service Level Agreement for the service.

   The fields in the SLA Template Editor are as follows:

Field	Description
SLA Name	A unique name for the template.
Description	An optional description of the template.
Period	The violation period of the SLA, specified in Days, Hours, or Minutes.
Availability	The required availability of the device or service to comply with the Service Level Agreement.

5. Click on OK to save the new Template.

Links

The Links option is used to create and edit logical and physical links.

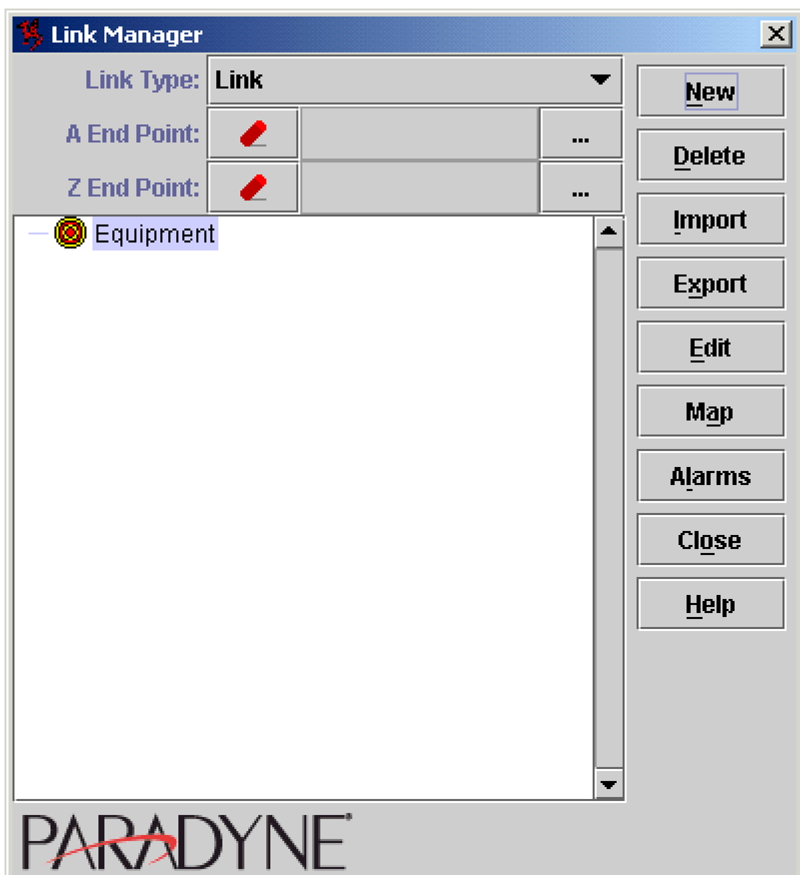


Figure 4-2. Link Manager

Using Logical and Physical Links

The Link Manager displays a tree listing of all defined links. The listing can be filtered by any combination of these fields:

- **Link type –** Select Link (displays all links), or select Physical or Logical from the drop-down menu to restrict the display to the specified link type.
- **A End Point, Z End Point –** These entries specify the head and the tail of the list. Click on the command button (...) to display a list of links. Select the appropriate link from this list and click on OK to set it as the A or Z end point. The list is then filtered to display only links between these points.

▶ Procedure

To create a new link or edit an existing link using the Link Manager:

1. Select a link from the list and click on Edit, or click New. These actions display the Link Editor in a blank state (for a new link) or prefilled with the values of the link being edited.
2. The Link Editor appears with the General tab active. Give the link a name and set the *A* and *Z* End Points. Both end point fields feature a command button (...), which can be used to select the appropriate end point from a list of links.
3. Click on OK to create the link.

Importing and Exporting Links

Links can be imported and exported through StormTracker EMS's Import and Export utilities. Exported files can serve as backups, as seed files, and can be imported by clients running on other servers. For more information, please see Chapter 9, *Importing and Exporting.*

Services

StormTracker EMS's Service Management Framework is a dynamic, highly customizable environment designed to let you create the tool you require. The exact nature of this tool will differ from one installation to the next, as will its appearance and functionality. Because of this, we will present a generalized outline of the Service Management framework.

Once the basic framework is in place, services can be created and managed. A typical service creation scenario will run along these lines:

- A subscriber must exist. Subscribers are created and modified through the Subscriber Manager.
- Typically, the subscriber is a member of a group. Groups are created and modified through the Group Manager.
- The subscriber can request a subscription to a specific service. Services are created and modified through the Service Manager.
- A service can require an Application. Applications are created through the Application Manager.
- Certain equipment may be associated with a service. This is done through the Service Equipment Manager.
- An order is created to fulfill the subscription, and a service is implemented according to the terms of a Service Level Agreement (SLA). Orders are orchestrated through the Order Manager. An individual Service Level Agreement can be created at any time, through any of the managers; Service Level Agreement Templates are created and modified through the SLA Template Manager.

Service Manager

Services can be created "from scratch" or from predefined templates.

The following example illustrates the creation of a new service (not from a template). The only required field is the Service Name.

▶ Procedure

To create a new service:

1. Select Services from the Service menu.
2. Select a service type from the Service Manager's drop-down menu and click on New (or press Alt-N) to create a new service. The types of service are configurable; StormTracker EMS ships with Connection Service, Application Service, and Service.

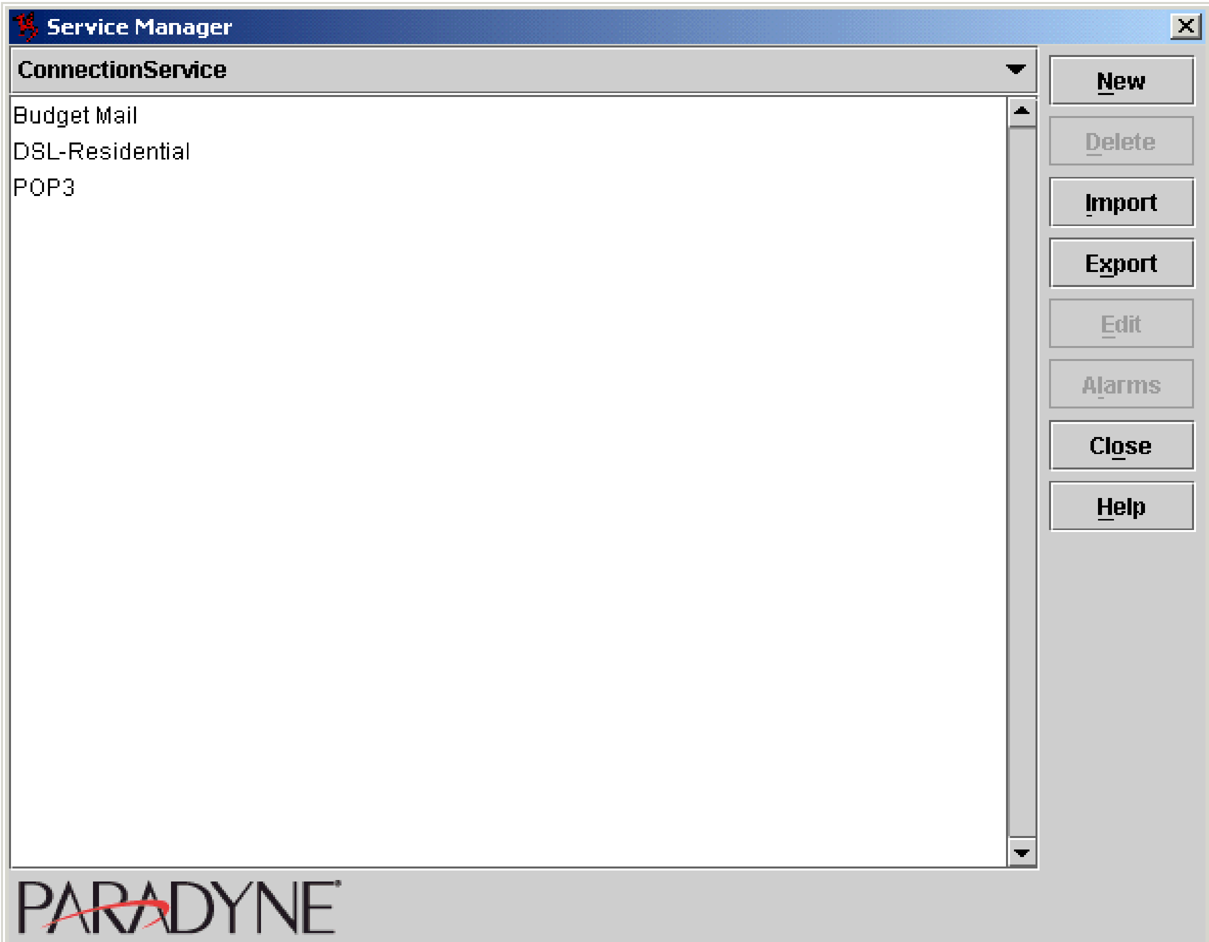


Figure 4-3. Service Manager Dialog Box – Connection Service

The Service Editor, which displays when you elect to edit an existing service or create a new one, is also configurable. Its display is dependent upon the type of service selected. The next example represents a new Connection Service, selected from the default Service Manager options.

Service Editor – Link Tab

Specify a link to associate a link with a service. Refer to *Links* on page 4-3.

Service Editor – General Tab

The fields in the General tab let you name and describe the service. The fields in this tab are as follows. Service and description names must be unique.

Field	Description
Service Name	The name of this service.
Description	An informative description of this service.

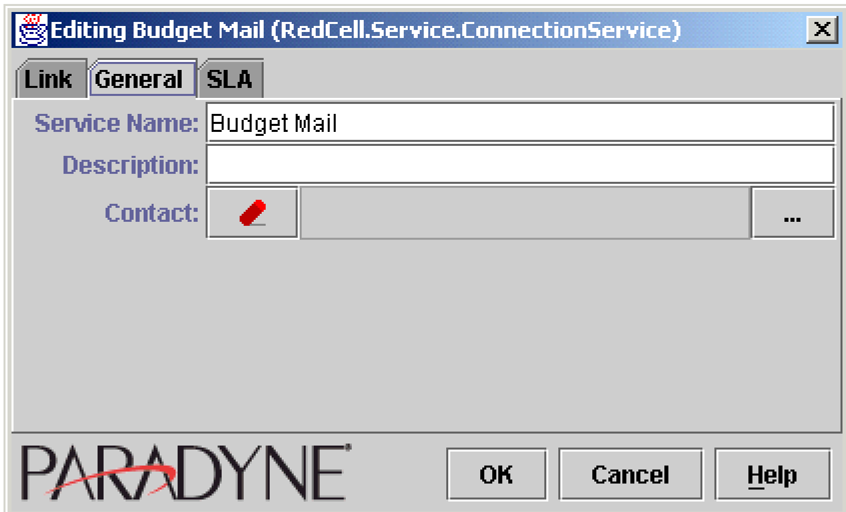


Figure 4-4. Service Editor – General

Service Editor – SLA Tab

The fields in the SLA tab let you define a Service Level Agreement Class for this service, as well as invoke a Service Level Agreement template.

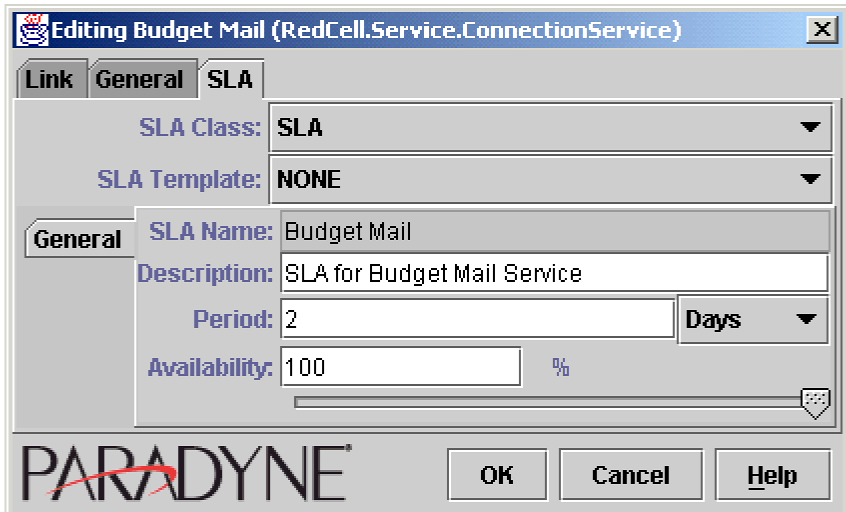


Figure 4-5. Service Editor – SLA

The fields in the SLA tab are as follows:

Field	Description
SLA Class	The class of this service. By default, either SLA or SLAConnectionService.
SLA Template	The SLA Template, if any, associated with this service.
SLA Name	The name of this service. This name is contained within the service and does not have to be unique. SLA Templates, however, exist outside of a service and must be given a unique name.
Description	An optional description of the SLA.
Period	The violation period of the SLA, specified in Days, Hours, or Minutes.
Availability	The required availability of the device or service to comply with the Service Level Agreement.

Once all the entries are made, click on OK to save the service.

Orders

The Order Manager provides a convenient mechanism for specifying and tracking services delivered to customers. Typically, an order is created after all the other pieces of the system are in place. All orders are created in the Order Manager.

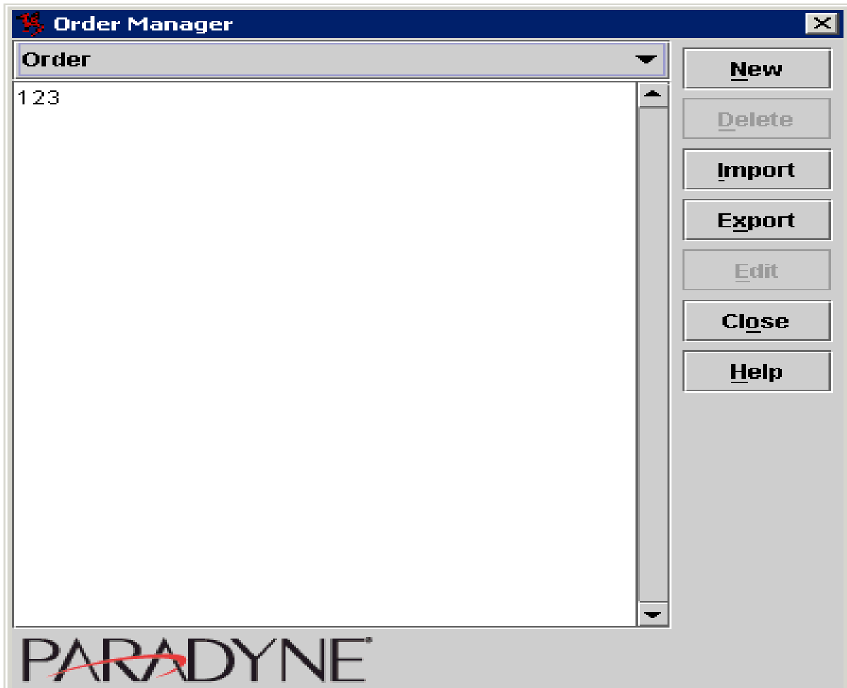


Figure 4-6. Order Manager

▶ Procedure

To create or edit an order using the Order Manager:

1. Click on New (or press Alt-N) to create a new order; select an existing order and click on Edit (or press Alt-E) to edit an order.
2. Give the order a unique ID and, if needed, an indication of its status.
3. Click on the Services and Subscription tabs, as needed, to add services and/or subscriptions to this order or to view any existing associations.
4. Click on OK to save the order and close the dialog, or Apply to save the order and leave the dialog open. Click on Cancel to discard any changes.

Application

The Application Manager lets you create, modify, and delete applications such as E-mail, HTTP, TCP, or UDP.

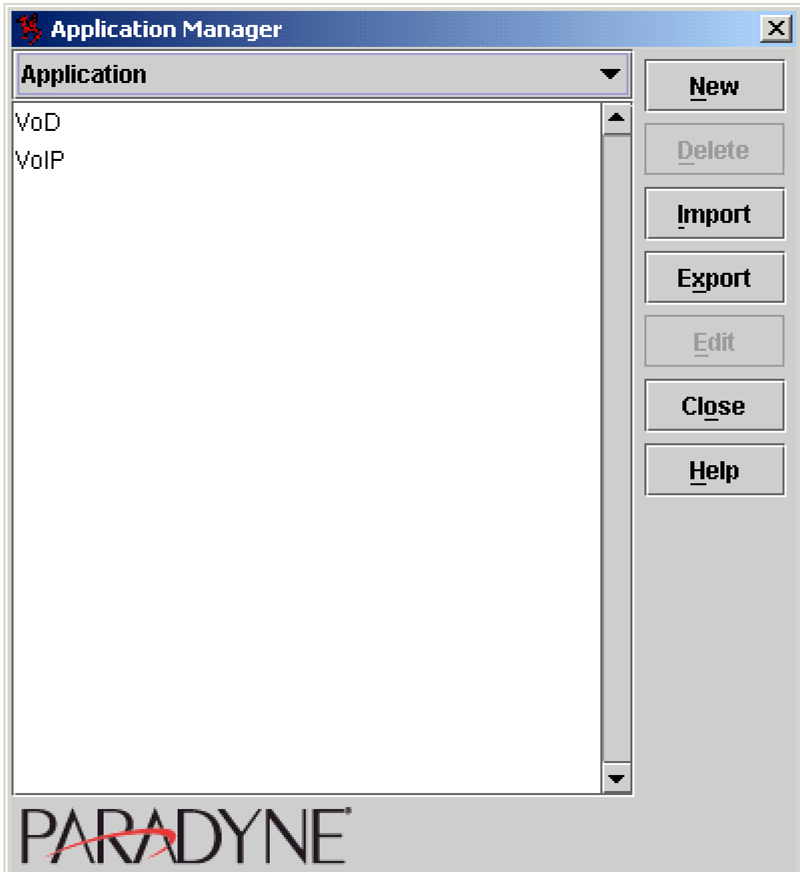


Figure 4-7. Application Manager

▶ Procedure

To create or edit applications using the Application Manager:

1. Click on the New button in the Application Manager to create a new application, or, select an application from the list and click on Edit to open it for modification. Either action displays the Application Editor.

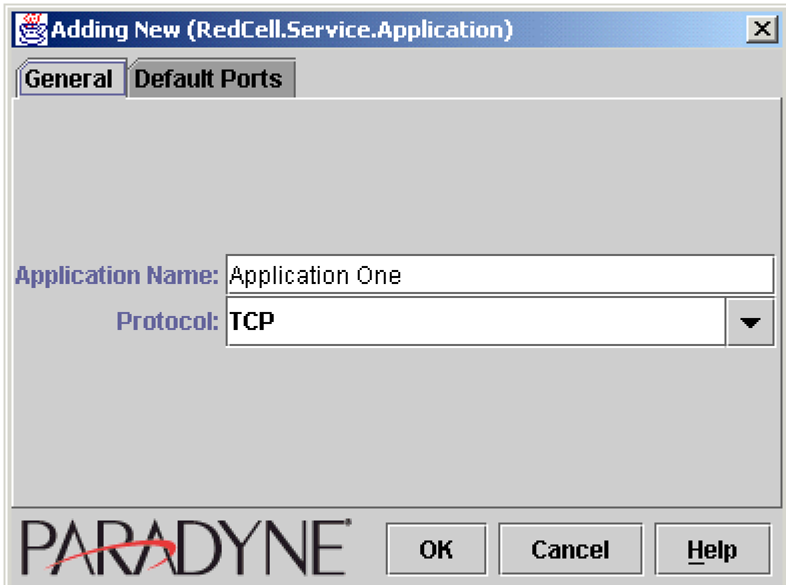


Figure 4-8. Application Editor

2. Under the General tab, enter the following:

Field	Description
Application Name	The name you wish to give this application.
Protocol	The protocol this application will be using. The default choices are TCP, UDP, and All.

3. Under the Default Ports tab, click on Add New Default Port to display the Port Editor.

4. Type the number of the default port and click on OK. If more than one port is needed, repeat this operation for each port.

Service Equipment Manager

The Service Equipment Manager lets you specify the equipment associated with a service order. The Service Equipment Manager is launched from the Add Service Equipment button in the Application Equipment panel of the Service Editor; the tab for this panel is visible when Application Service is selected as the type of service.

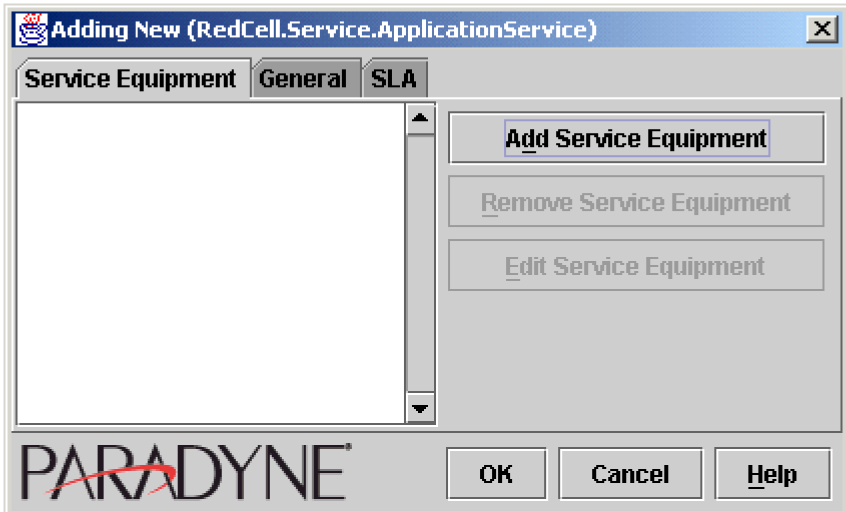


Figure 4-9. Service Editor

Service Equipment Manager – General

The General panel lets you specify the equipment and application associated with this service order.

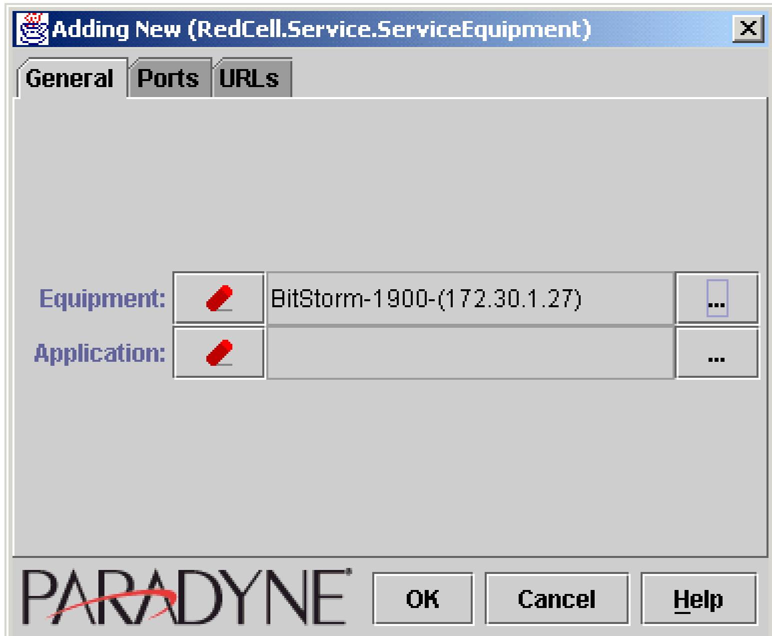


Figure 4-10. Service Equipment Manager – General

The fields in the General panel are as follows:

Field	Description
Equipment	The IP address of the equipment associated with this service. Click on the command button (...) if a Browser is needed to locate the equipment.
Application	The application associated with this service. Click on the command button (...) if a Browser is needed to locate the application.

Service Equipment Manager – Ports

The Ports panel lets you specify the ports that are to be used with this equipment. Add a port number to the list by clicking on Add Port and entering the port number in the resulting dialog.

Check the Override Application Ports box to override the default ports specified in the Application Manager.

Service Equipment Manager – URLs

The URLs panel lets you specify the URL associated with the service equipment. Add a new URL by clicking on Add URL and entering the URL in the resulting dialog.

Directory

The Directory manager manages information related to contacts, groups, and subscribers.

Contact Manager

The Contact Manager lets you organize and manage each contact. By default, the Contacts list includes all defined groups, subscribers, vendors, and system users. To access the Contact Manager, select Contacts from the Service menu.

If a contact is deleted through another Manager (for example, a vendor through the Vendor Manager) the relevant contacts must be deleted separately from the Contact Manager.

The Contact Manager dialog initially displays all defined contacts. You can filter the display by selecting one of the predefined filters from the drop-down menu at the top of the dialog, or you can search for a customer by typing text directly into the filter field. Searches are performed on Contact ID and Last Name, and are case-sensitive; if "one" is entered into the filter field, for example, "Customer One" will not be returned.

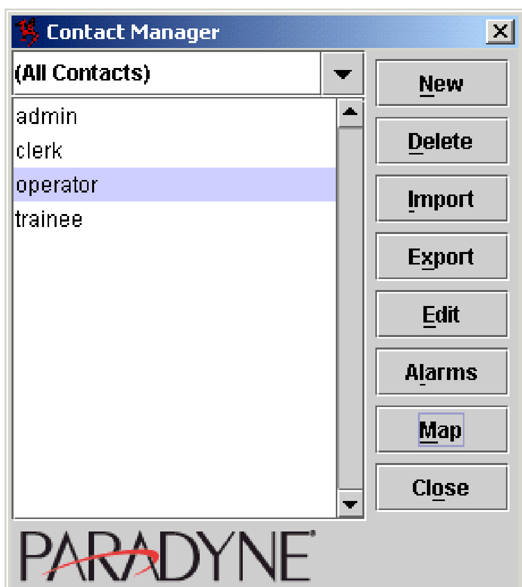


Figure 4-11. Contact Manager

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▶ Procedure

To add or edit contacts using the Contact Manager:

1. Select New (or press Alt-N) to display the Contact Editor.

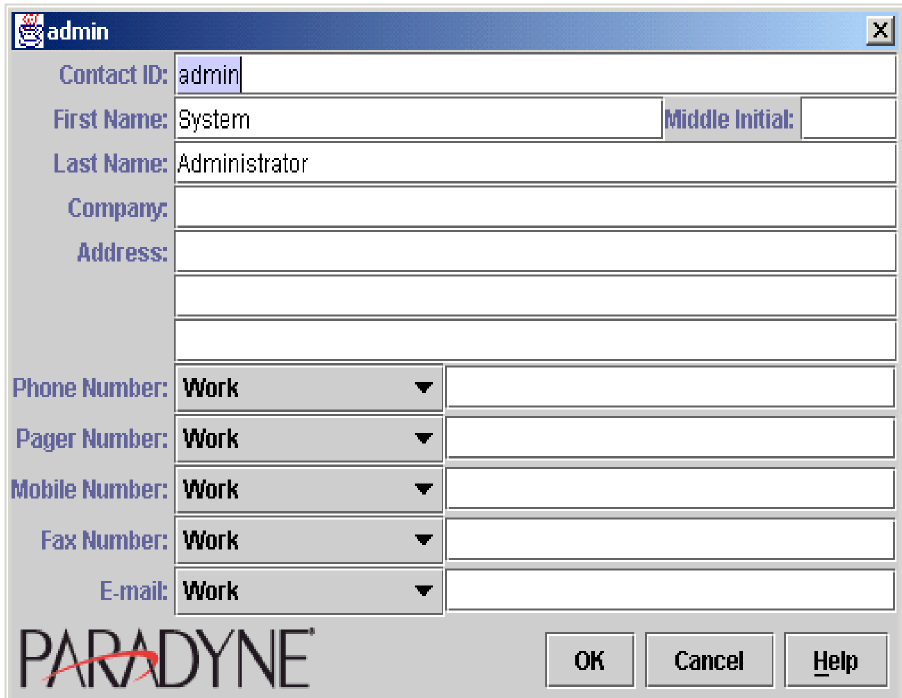


Figure 4-12. Contact Editor

2. Enter information in the fields as follows:

Field	Description
Contact ID	A unique identifier for this contact.
First Name	The first name of this contact.
Last Name	The last name of this contact.
Address	The address of this contact. Three lines are provided.
Phone Number	The drop-down menu associated with this field lets you define three phone numbers for this contact: Work, Home, Other.
Pager Number	The drop-down menu associated with this field lets you define three pager numbers for this contact: Work, Home, Other.
Mobile Number	The drop-down menu associated with this field lets you define three mobile numbers for this contact: Work, Home, Other.
Fax Number	The drop-down menu associated with this field lets you define three fax numbers for this contact: Work, Home, Other.

Field	Description
Email	The drop-down menu associated with this field lets you define four e-mail addresses for this contact: Work, Home, Pager, Other.

3. If necessary, delete a contact by highlighting a contact and selecting Delete (or press Alt-D).

NOTE:

The Contacts file can be exported and imported through StormTracker EMS's Import and Export utilities. Exported files can be used as backup files or seed files or they can be imported by clients running on other servers.

Group Manager

The Group Manager provides a mechanism for the creation of logical groups. The default Group Manager provides for two kinds of groups: generic groups and Customers. As with most StormTracker EMS dialogs, more choices can be added through customization.

▶ **Procedure**

To add a new group:

1. Select the group type from the drop-down menu and click on New (or press Alt-N).
2. To edit an existing group, select the group type from the drop-down menu and click on Edit (or press Alt-E). In both cases, the Group Editor appears. If you are editing an existing group, some or all fields will have information.

Subscriber Manager

Subscribers are created and modified through the Subscriber Manager.

▶ **Procedure**

To add a new subscriber:

1. Click on New (or press Alt-N).
2. Enter subscriber information in the fields provided in the General tab, then click on the Subscriber tab to add subscription.
3. To edit subscribers, select a subscriber and click on Edit (or press Alt-E) to edit that subscriber. The General panel of the Subscriber Editor is identical to the Contact Editor, with the exception of the name of the first field (Subscriber ID).

The other panels in the Subscriber Editor are as follows:

Panel	Description
IP Address	This panel, displayed when an IP Subscriber is being created or edited, lets you associate an IP address, subnet mask, and hardware (MAC) address with a subscriber. Make any required entries or changes, and click on OK to implement them, Cancel to discard them, or click on one of the panel's other tabs to enter additional information.
Subscriptions	This panel displays a list of subscriptions, and lets you add, remove, or edit subscriptions. The controls in this panel are as follows: ■ **Add Subscription –** Displays the Subscription Editor. ■ **Remove Subscription –** Deletes the selected subscription. ■ **Edit Subscription –** Displays the Subscription Editor, prefilled with the information for the selected subscription. When you have finished working with this panel, click on OK to implement your changes, Cancel to discard them, or click on one of the panel's tabs to move to a different area.

Subscription Editor

The Subscription Editor, displayed whenever a new subscription is created or an existing one is edited, lets you associate services and orders with a subscription.

The Subscription Editor has the following panels:

Panel	Description
Services	This panel lets you add, remove, and edit services.
Orders	This panel lets you add, remove, and edit orders.

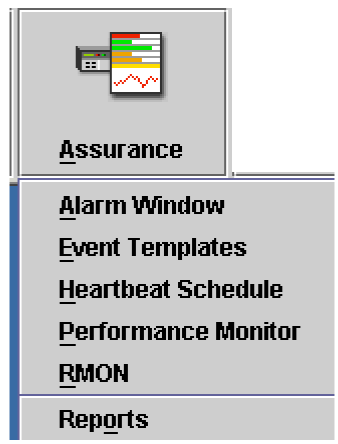
Assurance Menu

5

Overview

StormTracker EMS's Assurance menu options give you the following tools to define and create alarm and monitoring services:

- **Alarm Window**
  (See *Alarm Window* on page 5-2)
- **Event Templates**
  (See *Event Templates* on page 5-13)
- **Heartbeat Schedule**
  (See *Heartbeat Schedule* on page 5-18)
- **Performance Monitor**
  (See *Performance Monitor* on page 5-20)
- **RMON**
  (not supported in this release)
- **Reports**
  (See *Reports* on page 5-24)



Assurance Components

Assurance features consist of a number of alarm, monitor, and report managers to oversee your network operations.

The Assurance menu contains functions that monitor and report on network events, perform remote monitoring, manage alarms, monitor performance, and generate reports.

Alarm Window

The first option in the Assurance menu is Alarm Window. The Alarm Window is used to display information about and allow acknowledgement of received alarm-level events. Alarms displayed within the Alarm Window are color-coded based upon their severity, and are displayed until cleared. To aid in troubleshooting, alarms may be e-mailed from inside the Alarm Window.

To see more detailed information on a given alarm, double-click on the alarm, or right-click and select Show Detail from the pop-up menu. Although the window is listening for alarms by default, the user can quickly disconnect and reconnect by clicking on the Network Connection button.

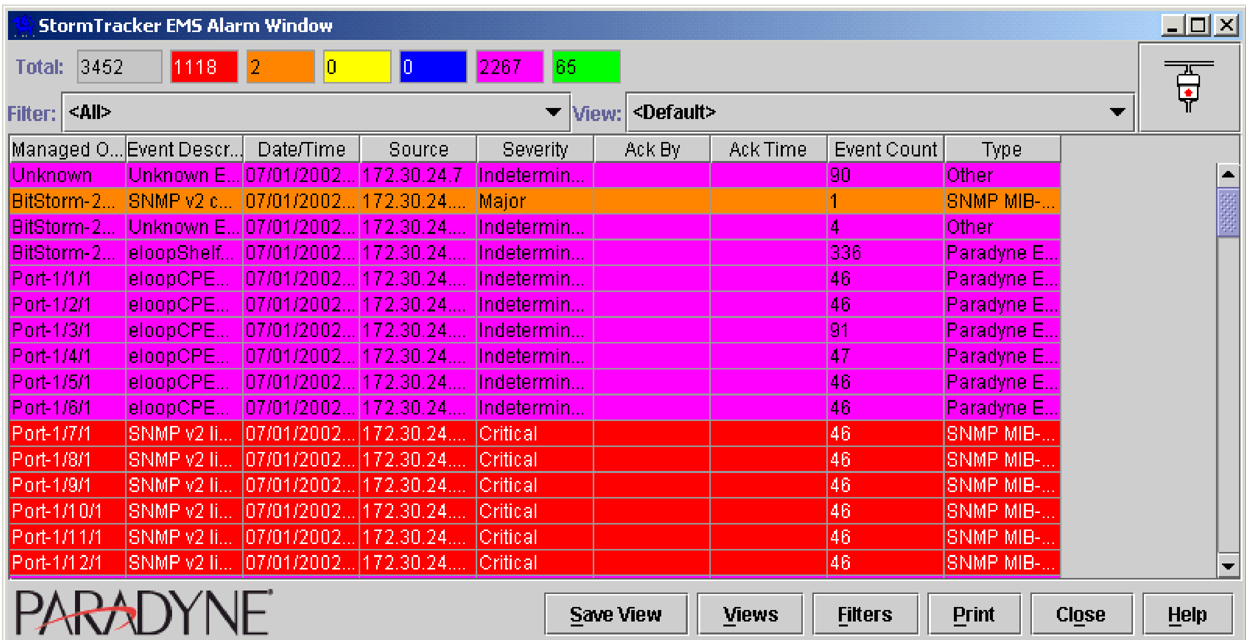


Figure 5-1. Alarm Window

Alarm Operations

Once an alarm has been received and displayed in StormTracker EMS Assure, a number of options are available to the operator. These are all accessible through a pop-up menu. To display this menu, select an alarm and right-click within that alarm.

The options in the Alarm pop-up menu are as follows:

Option	Description
Show Detail...	Select this option to display detailed information about the selected alarm.
Show Managed Object...	Displays the Managed Object Manager's General tab, with the managed object associated with the selected alarm preloaded.
Geographic Topology Map...	Displays the Geographic Topology Map, centered on the managed object associated with the selected alarm.
Logical Topology Map...	Opens the Logical Topology Map, which displays all icons logically representing and defining the managed object, the number of associated alarms, the physical location of the device, and the administrator.
Monitor Performance...	Opens the Performance Monitor window to display the performance data, if any, for the managed object associated with the selected alarm.
Telnet Cut thru	Opens a Telnet session to the device specified in the alarm.
HTTP Cut thru	Opens a browser window to the URL of the device specified in the alarm.
Email	Sends the selected alarm, via e-mail, to the specified recipient. The Properties file contains the name of the SMTP host through which e-mail is routed, as well as the return address included with the e-mail.
Acknowledge	Acknowledges the selected alarm. The current date and time are displayed in the Ack Time field, and the name of the user currently logged on is displayed in the Ack By field.
Unacknowledge	Once an alarm has been acknowledged, the Unacknowledge menu option is displayed in place of the Acknowledge option. Selecting this option removes the acknowledgement from the alarm, clearing the entries in the Ack By and Ack Time fields.
Clear	Clears the selected alarm only. The name of the user currently logged on is recorded, as well as the date and time. If the alarm has not been acknowledged, it is automatically acknowledged before being cleared.
Clear All Alarms	Clears all alarms. The name of the user currently logged on is recorded, as well as the date and time. If any alarms have not been acknowledged, they are automatically acknowledged before being cleared.

Alarm Severities

StormTracker EMS ships with the following alarm severity definitions:

Severity	Definition
Critical	A service-halting condition has occurred and immediate corrective action is required. Example: The managed object is totally out of service and its capability must be restored.
Major	A service-affecting condition has developed and corrective action is required. Example: There is a severe degradation in the capability of the managed object and its full capability must be restored.
Minor	A non-service-affecting fault condition exists and corrective action should be taken in order to prevent a more serious (for example, service-affecting) fault. Example: The detected alarm condition is not currently degrading the capacity of the managed object.
Warning	The detection of a potential or impending service-affecting fault, before any significant effects have been felt. Action should be taken to further diagnose (if necessary) and correct the problem in order to prevent it from becoming a more serious service-affecting fault. Example: The detected alarm condition does not currently pose a problem, but may degrade the capacity of the managed object if corrective action is not taken.
Indeterminate	The severity level cannot be determined.
Information	General information about the condition of the overall system.

Alarm Window Views

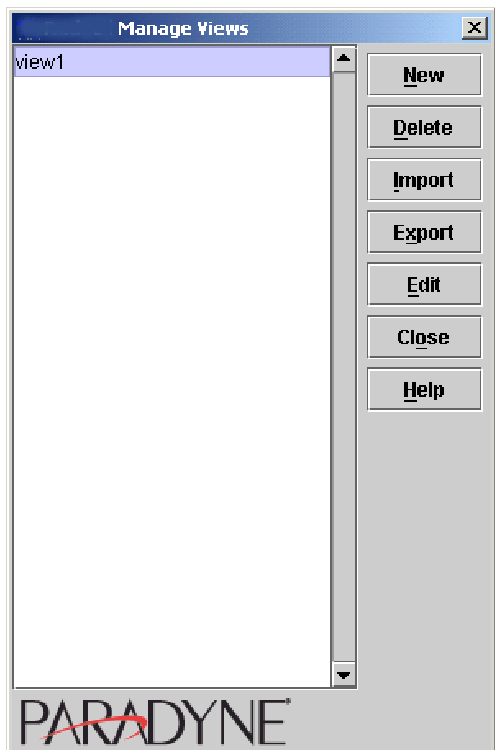
The Alarm Window contains fields that enable the operator to quickly determine the location, severity, and nature of an alarm. The Alarm Window display is fully customizable; columns can be added, deleted, sorted, or reorganized as the user sees fit. Once modifications have been made to an Alarm Window view, it can be saved and accessed later.

Previously created views can be accessed from the View menu. StormTracker EMS will remember the view used last, regardless of whether it was saved.

The following modifications can be made to customize alarm windows:

Modification	Description
Inserting Columns	To insert a column, right-click on a column header, select Insert Column from the resulting drop-down menu, and select the desired column from the submenu.
Removing Columns	To remove a column, right-click on the header of the column to be removed and select Remove Column from the resulting pop-up menu.
Moving Columns	Click on the heading of the column you wish to move and drag it to its new position.
Resizing Columns	Select the column margin and resize by dragging. The column will be resized accordingly.
Column Sort Direction	Right-click on the heading of the column you wish to sort and select Sort Ascending or Sort Descending from the resulting pop-up menu. The selected column is then resorted according to your selection.
Creating a View	A new view is created whenever you make changes to an existing view. Once a view is arranged to your liking, you can preserve it by saving the view.
Selecting a View	Select the desired view from the View drop-down box at the top of the alarm window. The alarm window’s display will change to the selected view.
Saving a View	To preserve the current arrangement of columns, click on Save View. The Create New View dialog appears.

The fields in the Create New View dialog are as follows:

Fields	Description
View Name	Type a unique name for the view. If a view already exists with this name, a warning dialog appears. If you save a view with the same name as an existing view, the existing view will be overwritten.
Public?	Specifies that the view can be used by anyone.
Group Owned?	Specifies that the view can be used by anyone in the same group as the view's creator.
Owned?	Specifies that the view can only be used by its creator. Click on Save to save the view, or Cancel to cancel the operation.
Deleting a View	To delete a view, click on the Views button to display the Manage Views dialog. All defined views are displayed in this dialog. To delete one, select it from the list and click on Delete. 

Alarm Window Columns

Any or all of the following columns can be inserted into a view:

Column	Description
Icon	The icon column displays a graphic appropriate to the severity level. While the alarm is unacknowledged, the icon blinks.
Managed Object	The name of the Managed Object sending the alarm.
Description	A description of the alarm.
Date/Time	The date and time an alarm was received. If more than one alarm has been received, the time displayed reflects the most recent alarm.
Source	The IP address of the object sending the alarm.
Severity	Severity of alarm. Acceptable values are Critical, Major, Minor, Warning, Indeterminate, and Information.
Ack By	Displays the logon name of the User, if any, who acknowledged the alarm. If new alarms have come in since the alarm was acknowledged, an asterisk (*) is displayed after the user name.
Ack Time	The date and time, if any, that the alarm was acknowledged.
Event count	Number of received alarms of the same type, both acknowledged and unacknowledged.
Event name	The name of the event generating the alarm (linkDown, for example).
Type	The type of alarm (SNMP, for example).

Alarm Window Filters

The Filter Manager lets you design a filter to limit the display of alarms in the Alarm Window to those meeting certain criteria. Click on the Filters button to display this dialog. Once filters have been created, they may be accessed from the Filter drop-down box at the top of the Alarm Window.

The Filter Manager displays, by default, a list of all defined filters. You can also select a group from the drop-down menu and restrict the display to Public filters, Group filters, or Private filters.

▶ Procedure

To create or edit a filter:

1. Click on New in the Filter Manager.
2. Type the name of your new filter in the Filter Name field.
3. To edit an existing filter, simply select it from the list and change values as necessary. Once you have made any changes, the Save button becomes active.

4. The Filter Manager dialog is divided into three tabbed panels: Dates, Event Props, and Owner. Enter the appropriate information in each of these panels. Once you have defined all the criteria for your filter, click on Save to save it or Cancel to cancel the operation. Click on Close to close the Filter Manager.

Dates

This tab of the Filter Manager lets you define the start and end dates and/or times for this filter.

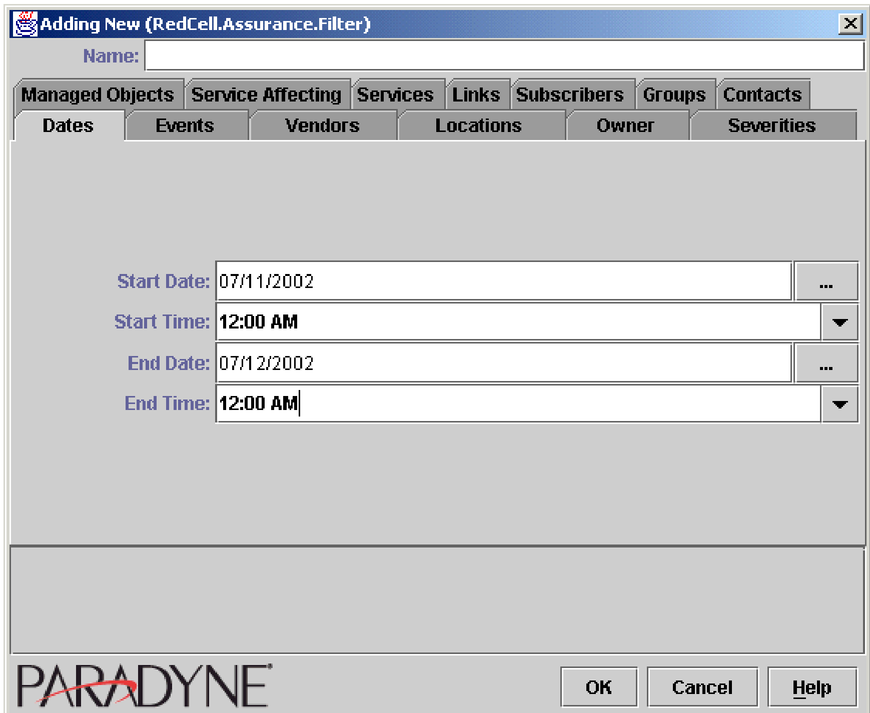


Figure 5-2. Filter Manager – Dates

Field	Description
Start Date	Type, in month/day/year format, the starting date for this filter. Only events occurring on or after this date will be displayed. You can also click on the command button (...) to display an interactive calendar. Select the appropriate year and month from the drop-down menus, then click on the appropriate day. The selected date is entered into the Start Date field.
Start Time	Type the start time for this filter, or select it from the drop-down menu.
End Date	Type the ending date for this filter, or select it from the interactive calendar in the same manner as for the Start Date.
End Time	Type the ending time for this filter or select it from the drop-down menu.

Events

The Event Props tab lets you define the Event Properties that this particular filter will monitor. The same applies to the other tabs where properties were set up in the Service menu: Vendors, Locations, Severities, Managed Objects, Links, Subscribers, Groups, and Contacts. You may choose any combination of Managed Objects, Events, Severities, and Locations.

Build this portion of the filter by selecting the appropriate tab. The properties associated with that tab appear in the Available column, on the left. To include any of the available properties, click on it and click on the single right bracket (>). The selected property moves into the Selected tab.

You can move all the properties into the Selected tab by clicking on the double right bracket (>>). Conversely, you can remove selected properties singly (<) or all at once (<<).

Owner

The Owner tab of the Filter Manager lets you set the availability of the filter. Select the radio button appropriate to the availability you desire.

- Public filters may be used by any user.
- Group filters may be used by any user belonging to the same group as the filter creator.
- Private filters (the default) may only be used by the filter creator.

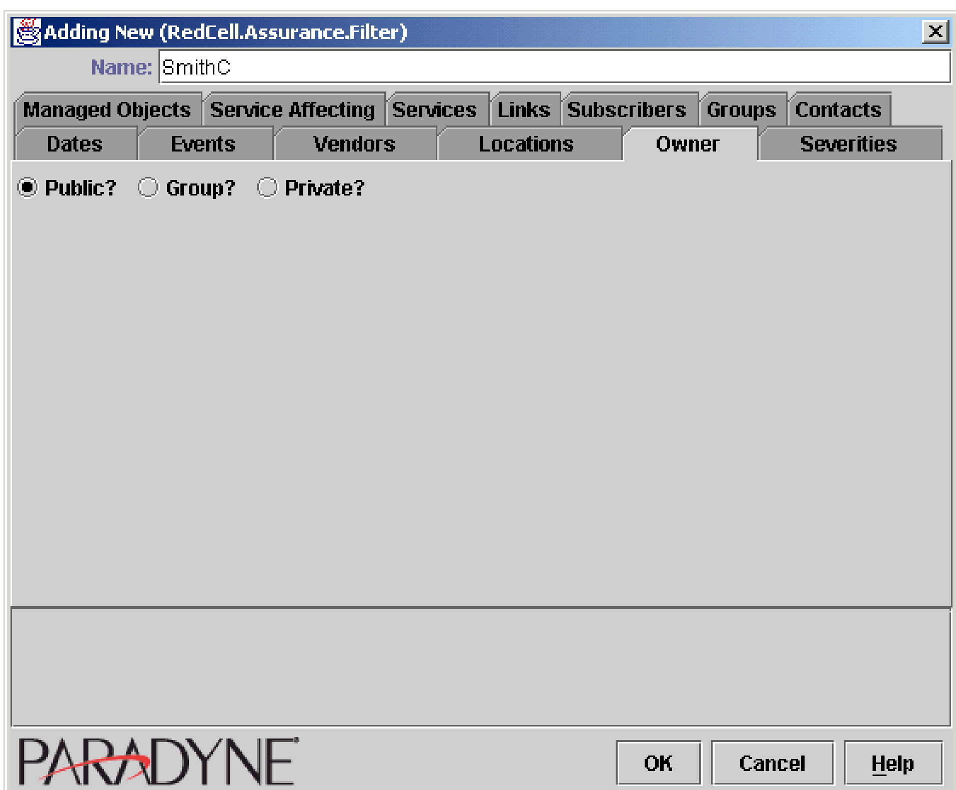


Figure 5-3. Filter Manager – Owner

Status

The Status area of the Filter Manager, on the lower part of the screen, shows you the current definition of the filter. The Status area indicates that the filter being constructed will display alarms of any severity, from any location, generated by any managed object, and is available to anyone. (This is the <All> filter.)

Selecting a Filter

Click the Filter drop-down box at the top of the alarm window and select the desired filter. The alarms are then displayed again according to the criteria of the selected filter.

Deleting a Filter

To delete a filter, select the Filters button at the bottom of the alarm window, highlight the filter you wish to delete, and click on Delete.

Online Alarm Operations

Once an alarm is received and displayed in StormTracker EMS, several options are accessible by right-clicking within that alarm.

Show Detail

Select this option to display detailed information about the selected alarm. The Event Detail is divided into four tabs.

The tabs in the Event Detail window display the following:

Field	Description
Managed Object	The associated Managed Object; if the object is unknown, **`NotFound`** will be displayed.
Description	Text description of alarm; defined in the relevant Event Template.
Date/Time	Date and time alarm was received.
Status	Current status of alarm; can be either Open or Closed.
Severity	Severity of alarm. The degrees of severity are: Critical, Major, Minor, Warning, Indeterminate, and Information.
Ack By	User acknowledging alarm. If new alarms have come in since the alarm was acknowledged, an asterisk (*) will be displayed after the user name.
Ack Time	Date and time alarm was acknowledged.
Event Count	Number of identical events that have occurred. Events are considered identical if they have the same Event ID / Type, Managed Object, and Severity.
EventInfo ID	Unique key describing the event; consists of the Managed Object and a time field.
Event Name	Name of the event; defined in the relevant Event Template.

Field	Description
SNMP OID	SNMP Object ID.
Type	Event type, or protocol; defined in the relevant Event Template. The choices are: SNMP, Other, ASCII, and TL1.
SNMP SysUpTime	Amount of time, in seconds, elapsed since the object was last rebooted.
SNMP Version	Version number, either SNMP v1 or v2c.
Source	IP of object sending the alarm.
Clear By	User clearing alarm.
Clear Time	Date and time alarm was cleared.
SNMP SysObjID	Identifier used for SNMP v1 traps.
Event	Trap value.
Icon	Graphic image.
Variable Binding List	Displays a list of the variable bindings for the selected alarm.
Advisor	Provides a description of the alarm, such as **`This device has received a protocol message that was not properly authorized. The message has been discarded`**. These messages derive from the relevant trap MIB. When an alarm level event occurs, these messages are displayed in the Advisor tab of the Event Detail. In addition, the message is set as the default for any e-mails sent.
Notes	Provides an area for the operator to provide information concerning the selected alarm. The note is stored with the alarm.

Show Managed Object

Displays the Managed Object Manager's General tab, with the managed object associated with the selected alarm preloaded.

Geographic Topology Map

Displays the Geographic Topology Map, centered on the managed object associated with the selected alarm.

Logical Topology Map

Opens the Logical Topology Map, which displays all icons logically representing and defining the managed object, the number of associated alarms, the physical location of the device, and the administrator.

Telnet Cut-thru

Opens a Telnet session to the device specified in the alarm.

HTTP Cut-thru

Opens a browser window to the URL of the device specified in the alarm.

Email

Sends the selected alarm, via e-mail, to the specified recipient.

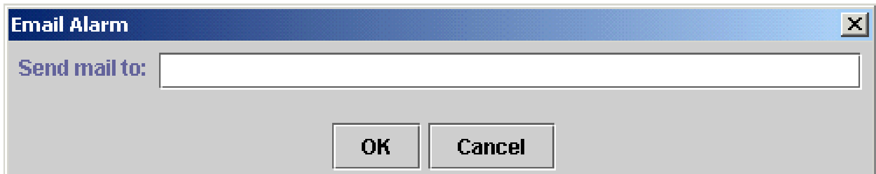


Figure 5-4. Email Alarm

The Properties file contains the name of the SMTP host through which e-mail is routed, as well as the return address included with the e-mail.

Acknowledge

Acknowledges the selected alarm. The current date and time are displayed in the Ack Time field, and the name of the user currently logged on is displayed in the Ack By field.

- **Unacknowledge** – Once an alarm has been acknowledged, the Unacknowledge menu option is displayed in place of the Acknowledge option. Selecting this option removes the acknowledgement from the alarm, clearing the entries in the Ack By and Ack Time fields.

Clear

Clears the selected alarm only. The name of the user currently logged on is recorded, as well as the date and time. If the alarm has not been acknowledged, it is automatically acknowledged before being cleared.

Clear All Alarms

Clears all alarms. The name of the user currently logged on is recorded, as well as the date and time. If any alarms have not been acknowledged, they are automatically acknowledged before being cleared.

Monitor Performance

Opens the Performance Monitor window to display the performance data, if any, for the managed object associated with the selected alarm.

Disconnecting and Reconnecting the Alarm Window

The Network Connection button at the top right-hand side of the Alarm window lets you disconnect and reconnect StormTracker EMS from the mediation agent. The Network Connection button indicates the current state of connection.

StormTracker EMS continues to process alarms while it is disconnected from the mediation agent, but they are no longer displayed. Once StormTracker EMS is reconnected, all alarms that occurred during disconnection are displayed.

Event Templates

StormTracker EMS's Event Templates determine whether, when, and how events are turned into alarms. A default set of Event Templates is provided with StormTracker EMS; these can be modified to better suit your own requirements or can be augmented with new ones.

Event Templates are created, modified, and deleted through the Event Template Manager. To display the Event Template Manager, select Event Templates from the Assurance menu.

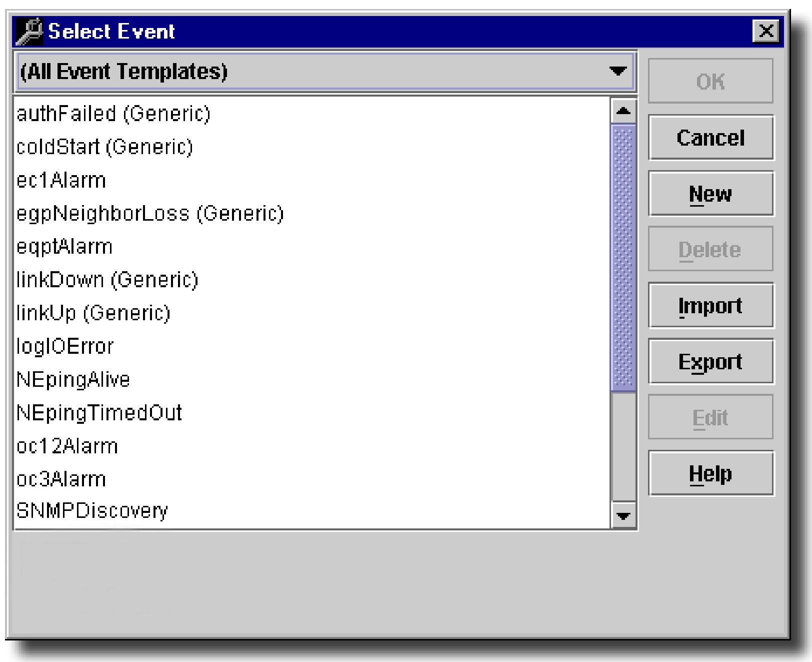


Figure 5-5. Event Template Manager

Event Template Organization

Event Templates are organized according to the general source of the event: ASCII, RMON Notification, SNMP Enterprise Trap, SNMP MIB-II Trap, SNMP Notification, TL1, and Other. You can view all event templates (the default), or you can select a category from the drop-down menu and view, for example, only TL1 event templates.

▶ Procedure

1. To edit an existing template, select it from the list of templates and click on Edit. The Event Template Editor displays with the selected template loaded.

The Event Template Editor is divided into five tabbed sections: Information, Behavior, Advisor, Email, and Icon. Each section is explained, in turn, in the sections that follow.

Information Tab

The Information tab contains entries that let you name and describe the event associated with the template, and the event category covered by the template.

The fields in the Information tab are as follows:

Field	Description
Event Name	Name of the Event.
Description	Short description of the Event.
Event Type	Classification of event; displayed as a drop-down box. Possible values are: Other, ASCII, RMON Notification, SNMP Enterprise Trap, SNMP MIB-II Trap, SNMP Notification, and TL1.
SysObjectID	(SNMP Enterprise Traps only.) The SysObjectID associated with the event.
Event Identifier	For SNMP, the trap value; for ASCII or TL1, a specified Identifier.
Service Affecting	Select this checkbox if the associated event affects service to this managed object.

Behavior Tab

The Behavior tab lets you specify how an event is handled and categorized, and what action is taken.

The options in the Behavior tab are as follows:

Options	Description
Log Event	Select this option to specify that all incoming events be written to a log file. Log file settings are specified in System Settings.
Generate Alarm	Select this option to generate an alarm (the default) when an event of this type is received. If this option is not selected, the event is still available for logging.
Alert Severity	This drop-down menu lets you specify a severity (Information, Indeterminate, Warning, Minor, Major, or Critical) to the event.

Options	Description
Apply Correlation	Select this option to enable simple correlation. When correlation is applied, StormTracker EMS will clear an initial event when a correlated event subsequently occurs. For example, if a linkDown event is subsequently followed by a linkUp event, the linkDown event is automatically cleared.
Event (...)	Click on the Event command button (...) to display the Select Event dialog. This event is the correlated event to be used when Apply Correlation is selected.
Apply Threshold	Select this option to put thresholding into effect. The threshold is the number of events that must be received before an alarm is raised.
Threshold Count	If Apply Threshold has been selected, this field lets you specify the number of events that must be received before an alarm is raised.
Threshold Window Minutes	This field is used in conjunction with the Threshold Count field when Apply Threshold has been selected. It specifies, in minutes, the period of time within which the specified number of events must be received.
Seconds	The value specified here is added to Threshold Window Minutes to precisely define the period of time within which the specified number of events must be received.
Forward Event	Select this option to specify that the event be forwarded to the specified host, using the default or specified community and port settings. ■ **Community –** If Forward Event has been selected, this entry defines the Community: Public, Group, or Private. This entry defaults to Public. ■ **Forward Host** – If Forward Event has been selected, this entry specifies the IP address of the host to which the event is forwarded. ■ **Port –** If Forward Event has been selected, this entry specifies the port to which the event will be forwarded. The default is port 162, the SNMP port. **CAUTION:** Contact Administrator prior to changing this setting.

Advisor Tab

The Advisor tab provides an explanation for the event and may propose a remedy. This message originates with the trap’s MIB.

The text in this tab can be edited. Make any appropriate changes and click on OK to save them or Cancel to cancel the operation. Advisor text appears within the detailed alarm view in the Alarm window, and is the default text for any e-mails sent.

Email Tab

The Email tab lets you define a subject and message for an email message to be associated with an event. If the Automatically Send Email option in the Behavior tab is selected, this email is sent automatically any time the associated event is received.

Note that although additional e-mail addresses can be defined, the Work address is used.

The fields in the Email tab are as follows:

Field	Description
Automatically Send Email	Select this option to send e-mail to the user(s) defined in the Email tab whenever this event is received.
Email Subject	This field is initially set to the Event Description, as defined in the Information tab. Edit it as appropriate.
Email Message	This field is initially set to the text defined in the Advisor tab. Edit it as appropriate.
Recipients	Click on this button to display the Automatic Email Recipients dialog, shown in the next illustration. This dialog displays all defined StormTracker EMS users; select one or more users from the Available list and click on the right (>) bracket to move them into the Selected list or click on the double-right (>>) bracket to move all the users into the Selected list. Remove users from the *Selected* list by selecting them and clicking on the left (<) bracket.

Once you have selected the desired recipients, click on OK to implement your choices or click on Cancel to cancel the operation.

Icon Tab

The Icon tab lets you associate an icon with the event. Select an icon from the list, based on the severity you want to associate with the selected event, and click on OK. Select (None) to display no icon.

Rules Tab

This tab includes rules that are predefined within the software and configured in the Rules Manager feature of the Control menu.

▶ Procedure

To add a new event using Event Templates:

1. Click on New (or press Alt-N) to display the Adding New Event Template dialog. This dialog is identical to the Event Template Editor.
2. Fill out the tabs in this dialog as appropriate, and click on OK to store the new template or Cancel to cancel the operation.

To delete an event template:

1. Highlight the Event Template to be deleted and select Delete (or press Alt-D).
2. StormTracker EMS prompts you to confirm the deletion.

Importing and Exporting Event Templates

Event Templates can be imported and exported through StormTracker EMS's Import and Export utilities. Exported files can serve as backups or as seed files, and can be imported by clients running on other servers. For more information, please see Chapter 9, *Importing and Exporting*.

Heartbeat Schedule

The Heartbeat Scheduler is used to schedule and perform an echo on predefined Managed Objects. To access the Heartbeat Scheduler, select Heartbeat Schedule from the Assurance menu.

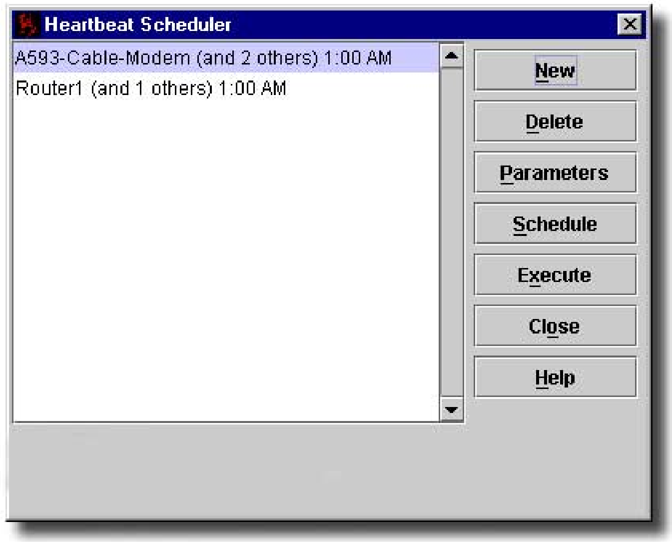


Figure 5-6. Heartbeat Scheduler

By default, the echo is executed daily, at 1:00 AM local time. The default time and frequency can be altered, and the event can be executed immediately through the Heartbeat Scheduler. An alarm is triggered if a device does not respond to the echo.

▶ Procedure

To create a Heartbeat process using Heartbeat Scheduler:

1. Execute a defined Heartbeat by selecting it and clicking on Execute.
2. Launch the Heartbeat Scheduler and click on New (or press Alt-N) to display the Scheduled Event dialog.
3. Select one or more Managed Objects from the list. Echoes are performed on devices in the order in which they appear on this list. To alter its position in the schedule, select a device and click on Move Up or Move Down.
4. If you need to add Managed Objects to this list, click on Add. The Select Managed Object dialog appears.
5. Remove Managed Objects from the list by selecting them and clicking on Remove.
6. Select one item from the list (only one can be selected at a time) and click on OK to add it to the schedule.
7. Execute a scheduled heartbeat by selecting it from the list and clicking on Execute (or press Alt-X).
8. Delete a scheduled heartbeat by selecting it from the list and clicking on Delete (or press Alt-D).

Modifying the Parameters of a Heartbeat Process

The Scheduled Event dialog box lets you alter information regarding scheduled Heartbeat processes. Double-click on the Heartbeat process to be modified, or highlight the process and click on Parameters (or press Alt-P) to display the Scheduled Event dialog.

Within the dialog, you can add or change the scheduled event position as well as remove a scheduled event.

Scheduling a Heartbeat Process

Highlight the process to be edited, and select Schedule (or press Alt-S). The Heartbeat Scheduler dialog appears.

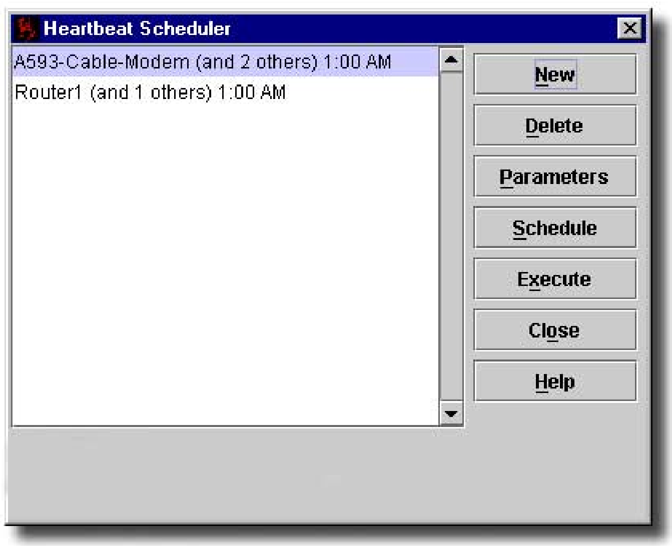


Figure 5-7. Heartbeat Scheduler

Define or alter the schedule for the selected item by making the appropriate entries in this dialog. The fields are as follows:

Field	Description
Active	Select this option to activate this schedule.
Start Time	Specify a start time for this process by selecting one of the twenty-four hourly options from the drop-down menu.
Interval	Specifies the interval between executions of this process.

Performance Monitor

The StormTracker EMS Performance Monitor provides real-time monitoring of selected Managed Objects associated with the BitStorm 2400 via SNMP MIB-II.

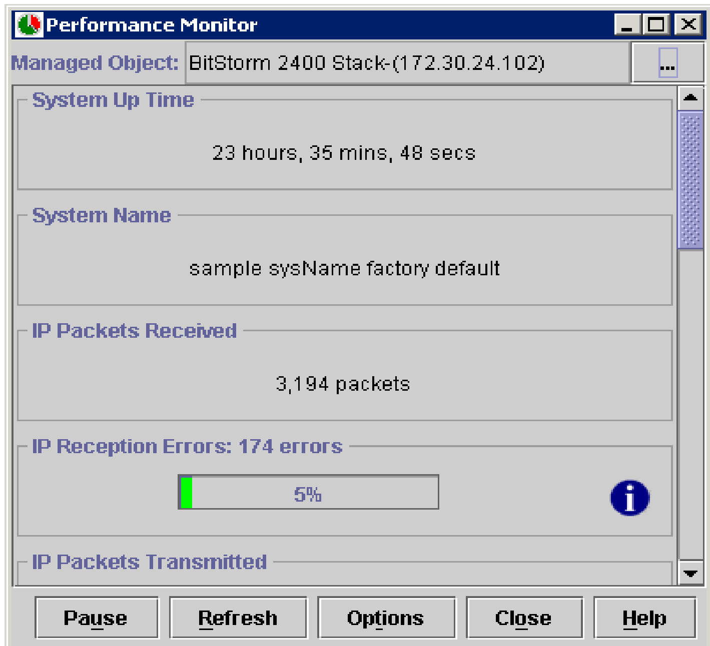


Figure 5-8. Performance Monitor

You can access the monitor by:

- From the Assurance menu, selecting Performance Monitor.
- Through the Managed Object Manager, by selecting Performance.
- From the Alarm Window, by selecting Monitor Performance from a highlighted event.

The polling rate for the device can also be changed; the default is 15 seconds.

NOTE:

Performance Monitor only operates with the BitStorm 2400.

Selecting a Managed Object to Monitor

Type the name of the device to be monitored in the Managed Object field at the top of the Performance Monitor or click on the command button (...) to display a Browser from which one can be located.

If the device you have chosen has not had its performance information defined, the error message **`There is no performance data defined for this class of equipment`** will appear.

The following data is monitored:

Data	Description
System Up Time	Displayed in days, hours, minutes, seconds.
System Name	User defined.
IP Packets Received	In packets.
IP Reception Errors	Displayed as a bar graph.
IP Packets Transmitted	In packets.
IP Transmission Errors	Displayed as a bar graph.
IP Forwarding Rate	Displayed as a bar graph.
ICMP Packets Received	In messages.
ICMP Reception Errors	Displayed as a bar graph.
ICMP Packets Transmitted	In messages.
ICMP Transmission Errors	Displayed as a bar graph.
UDP Packets Received	In datagrams.
UDP Reception Errors	Displayed as a bar graph.
Interface Name	Must be specified through the Options dialog box.
Bytes Received	Interface must be selected; displays in packets.
Reception Errors	Interface must be selected; displayed as a bar graph.
Bytes Transmitted	Interface must be selected.
Transmission Errors	Interface must be selected; displayed as a bar graph.
Bandwidth Utilization	Interface must be selected; displayed as a bar graph.

Additional Information

In some cases, more information is available than is displayed. Those fields for which this is true contain an information button. Click on this button to display a dialog with the additional information.

Performance Monitor Options

The Performance Monitor Options dialog has two modes of display. If a Monitored Object has been specified and is being monitored, the Performance Monitor appears with two tabs: General and SNMP MIB-II. If no device is being monitored, only the General settings are available.

General Tab

The settings on the General tab control general monitor functions.

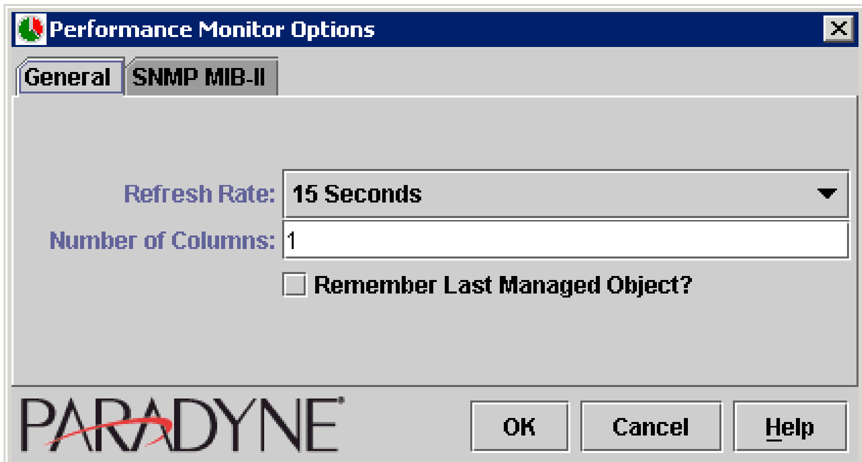


Figure 5-9. Performance Monitor Options – General Tab

The fields in the General tab are as follows:

Field	Description
Refresh Rate	This is the rate at which the monitor refreshes.
Number of Columns	This setting specifies the number of data columns in the monitor; the default is 1.
Remember Last Managed Object?	Select this option to specify that the Performance Monitor loads the last Managed Object, if any, when it is launched.

SNMP MIB-II Tab

The fields in the SNMP MIB-II tab control functions specific to the SNMP MIB-II interface.

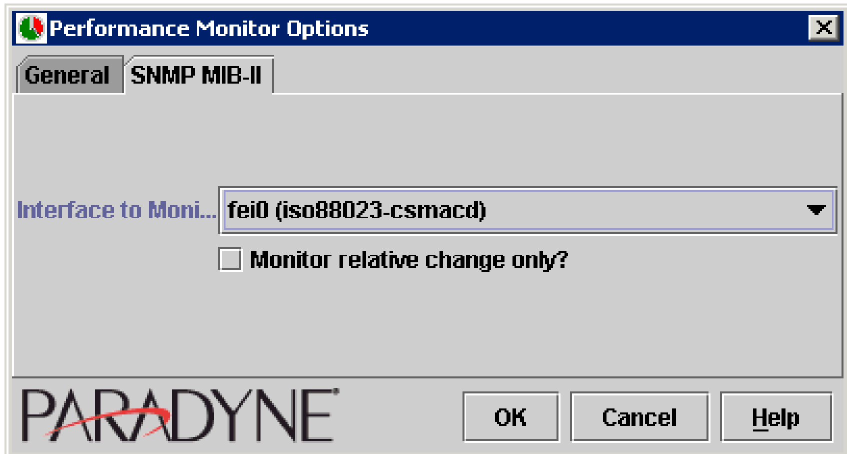


Figure 5-10. Performance Monitor Options – SNMP MIB-II Tab

Field	Description
Interface to Monitor	This option, selected from a drop-down menu, determines which available SNMP MIB-II interface on the selected Managed Object is monitored.
Monitor relative change only?	This option, when selected, specifies that changes in monitored values are tracked between readings. Otherwise, changes are tracked from the initial reading.

Pausing the Performance Monitor

From the Performance Monitor screen, select Pause to pause the Performance Monitor. The monitor will temporarily stop polling for information.

Manually Refreshing the Performance Monitor

From the Performance Monitor screen, select Refresh to manually refresh the Performance Monitor.

RMON

This feature is not supported in this release of the StormTracker EMS.

Reports

The Report Manager can generate reports regarding all data managed by StormTracker EMS, including incoming events, existing customers, contacts, and managed objects. Once reports have been created, they can be saved for later reference and shared among all users or members of a particular group. In addition, the Report Manager allows you to export reports to a text file, create colorful graphs and charts, and print the results.

To create a report, select Reports from the Assurance menu; the Report Manager appears.

Designing Reports

The Report Manager is split into several tabs, each allowing specialization of one aspect of the report. To use an item on a given tab, check the box next to the item (Severity, Event Type, Ack By, and so on), type the desired value in the box, and check the Use This Page box at the bottom of the tab. To design a report with multiple items, check the box next to the first item, select a logical operator, and check the box next to the next item desired. Items on multiple tabs can be utilized in a single report; merely check the Use This Page box at the bottom of each tab containing an item being used.

Logical Operators

Selectable items have two radio buttons associated with them: AND and OR. These logical operators determine which items appear in a report.

- **AND –** Select this radio button to specify that this item must be present in order to generate a report entry. For example, if you specify AND for both the Event Type and Cleared By items, a report entry will be generated only if an event of the type specified has occurred and has been cleared by the specified user.
- **OR –** Select this radio button to specify that only one of the specified items must be present in order to generate an entry. For example, if you specify OR for the Event Type, Cleared By, and Ack By items, a report entry will be generated for an event of the specified type, or an event cleared by the indicated user, or an event acknowledged by the indicated user.

Wildcard characters are also supported in Report Manager; if you would like to select all elements of a designated item, type an asterisk (*). Using the wildcard, a report can return multiple responses from a single command. For example, you enter **a*** in the Ack By field of the Events tab, all events with acknowledging users beginning with ‘a’ would be selected. Note, however, that the searches are case-sensitive; users beginning with ‘A’ would not be selected with the query.

Report Manager – Events Tab

The Events tab lets you use field values and boolean logic to specify the information that appears in a report.

The fields in the Report Manager Event Tab are as follows:

Field	Description
Severity	The severity of event.
Event Type	Event type, or protocol; defined in the Event Template Manager.
Ack By	User who acknowledged the alarm in the Alarm Window.
Cleared By	User who cleared the alarm in the Alarm Window.
Occurrence Date	Date the event occurred; selected with the Date Range button.
Use This Page	Design a report using data on this page.

Report Manager – Devices Tab

Using the Devices tab, the user can design a report on defined Managed Objects, and, in conjunction with the Events tab, on correlated devices and events.

The fields in the Report Manager Devices tab are as follows:

Field	Description
Device ID	The unique name of the managed object, as defined in the Managed Object Manager.
IP Address	The IP address of the device, as defined in the Managed Object Manager.
Device Type	Type of managed object, as defined in the Managed Object Manager. Possible entries include ATM, Bridge, Cable Modem, Card, DCS, Discovered Entities, Frame Relay, Interface, Mux, Port, Router, Server, SONETMux, Switch, and Workstation.
Device Location	Location of device, as defined in the Managed Object Manager. Locations must be defined in order to be valid entries.
Use This Page	Use the data on this page when generating a report.

Report Manager – Customers Tab

The Customers tab allows reporting on various aspects of customers, including name, account number, and customer contact phone numbers.

The fields in the Report Manager Customer tab are as follows:

Field	Description
Customer Name	ID of the Customer firm; defined in the Customer Manager.
Acct Number	Internal account number of the customer; defined in the Customer Manager.
Phone Number	Phone numbers for the Customer Contact; defined in the Contact Manager.
Use This Page	Design a report using data on this page.

Report Manager – Options Tab

The Options tab allows reports to be assigned to a particular set of users.

The buttons in this Options tab let you specify who can view the report:

Button	Description
Public	Makes reports available to all network users based on defined customers.
Group Owned	Makes reports available to users in a specific group.
Owned	Makes report available only to the owner, typically the report's creator.

Creating a New Report

Click on New and type in the name of the new report, then design the report and click on Save when finished. The newly designed report will be saved to the database. Once saved, the report can be retrieved from the Report drop-down list at the top of the Report Manager.

Running a Report

Design a new report, or select an existing report from the Report drop-down list at the top of the Report Manager, and click on Run to generate the report.

For more information on report design, refer to *Designing Reports* on page 5-24.

Loading or Altering an Existing Report

Select the previously saved report from the Report drop-down list at the top of the Report Manager. Make changes as desired and click on Save, if necessary.

Once loaded, the report values will automatically be populated in the various tabs. The loaded report can be modified and saved if any changes have been made.

Deleting an Existing Report

Select an existing report from the Report drop-down list at the top of the Report Manager, and click on Delete.

The specified report will be deleted; a dialog will prompt you before deletion.

Exporting a Report

Design a new report, or select an existing report from the Report drop-down list at the top of the Report Manager, and click on Export. At the Export Report prompt, type the report filename and browse to the desired export location.

The report is exported to the specified location using the supplied filename. Reports are exported using the settings entered in the Preferences dialog box, including field and string delimiters.

Changing the Report Display – Working With Columns

Once a report has been run, the display of the results can be altered by moving, sorting, resizing, or deleting selected columns. After modifying the display, the report can then be saved. When the report is reloaded and executed, the altered display will be loaded.

Deleting a Column from a Report

From an existing report, highlight a cell in the column you wish deleted. Right click and select Delete Column. The column will be deleted from the report. In case of an error, StormTracker EMS will remember the column that has been deleted, and it can be re-added to the display.

Adding a Deleted Column to a Report

From an existing report with a deleted column(s), highlight a cell in the report, right click, and select Add Column. Select the columns to restore from the displayed list. The column will be added before the column of the highlighted cell.

Moving Columns

Click on the column heading of the column you need to move and drag it to its new position.

Resizing Columns

Drag the border of a column to the right or left to resize it. Note, however, that resizing a column is not permanent. The columns will revert to their default sizes when the report is reloaded.

Sorting by Column Value

Double-click on the column heading of the column you want to sort. The report will be sorted according to the contents of that column.

Printing Reports

After designing and running your report, StormTracker EMS lets you print the information. In addition, the printout may be fully customized – from page orientation and size, to report-specific headers and footers. Headers and footers are modified within the Preferences dialog box; all other aspects of page formatting are handled in the Page Setup section of the Print menu.

Printing a Report

From a report, click on Print... and select Print from the resulting menu. The report is printed, using the settings set in Page Setup and Report.

Page Setup

From a report, click on Print... and select Page Setup from the resulting menu. This displays an operating system-specific Page Setup dialog through which you can set margins and specify a printer, as well as set paper size, source, and orientation.

Print Preview

From a report, click on Print... and select Print Preview from the resulting menu. StormTracker EMS's Print Preview lets the user see precisely how a report will look before printing, including margins and headers and footers. From the Print Preview window, the user can zoom in to examine the report in greater detail.

Creating Charts

After a report has been designed and run, you can create bar and pie charts from the results. Pie and simple bar charts can be created on a specified column within the report, and once created can be printed. In addition to these options, a complex bar chart can be created that plots the specified column against another column within the report.

Additional chart preferences, including 3-D effects and data labeling, can be found in the Report Preferences dialog.

Creating a Pie Chart

From an existing report, highlight a cell in the report, right-click, and select Create Pie Chart.

A chart is automatically generated from the values in the given column. If you wish to print the chart, click on Print from the chart dialog box.

To display additional information about the chart, including the percentage and title of each piece (data labels), move the mouse pointer over the specific chart area.

Creating a Simple Bar Chart

From an existing report, highlight a cell in the report, right-click, and select Create Bar Chart.

A chart will be automatically generated from the values in the given column. If you wish to print the chart, click on Print from the chart dialog box.

To display additional information about the chart, including the percentage and title of each bar (data labels), move the mouse pointer over the specific chart area.

Creating a Complex Bar Chart

From an existing report, right-click on a cell and select Create Complex Bar Chart from the resulting menu. This will display a dialog box that lets you select the column to be used for the Y-axis (the highlighted column is used for the X-axis). Select the desired column and click on OK.

A chart is automatically generated from the values in the given columns. If you wish to print the chart, click on Print from the chart dialog box. By default, data labels (the values of given bars) are displayed; this can be changed in the Preferences dialog box.

Report Preferences

The Report Preferences dialog lets you specify preferences for different actions available within the Report Manager. Changes to the way StormTracker EMS formats text for export, creates charts, and prints reports can be made through this dialog box.

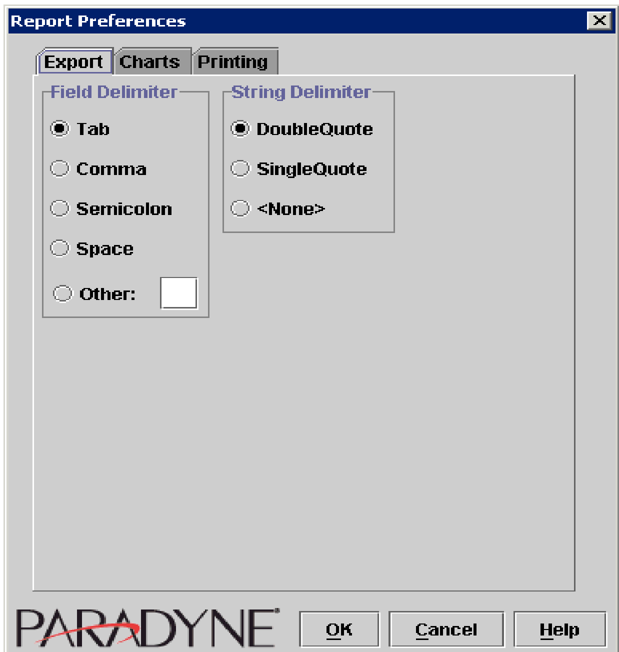


Figure 5-11. Report Preferences Window

Export Tab

The Export tab lets you set the delimiters used by Report text files. Delimiters separate values from one another; the default values are tab (field) and double quotes (string). The options are as follows:

Option	Description
Field Delimiter	Used to delimit fields within exported files; select from the following radio buttons: ■ Tab (default) ■ Comma ■ Semicolon ■ Space ■ Other (user defined) ■ StormTracker EMS Reports
String Delimiter	Used to delimit strings within exported files; select one delimiter from the following radio buttons: ■ Double Quotes (default) ■ Single Quotes ■ No string delimiter

Chart Tab

This tab lets you specify the effects used to create charts. The options are as follows:

Option	Description
3D Effect	Selected by default; if not selected, the chart is 2-D.
Data Labels	Data labels appear in pie and simple bar charts upon moving the mouse pointer over the chart, and consist of the name and percentage of the graph. In complex bar charts, the data labels are always visible and are the values of each bar. By default, this option is selected.

Printing Tab

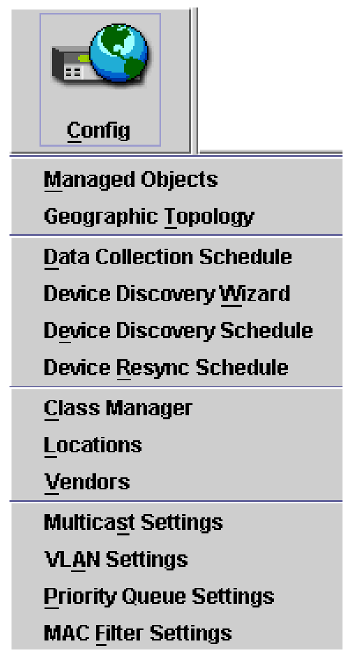
The Printing tab lets you set headers and footers for printed reports. Note that the footer of a printed report always displays **`Page x of y`** in the left margin and the time and date in the right margin; any additional footer added here is displayed above the default footer. Both headers and footers may be located in the left margin, right margin, or center of the page.

Config Menu

6

Overview

StormTracker EMS's Config menu options give you the following tools to define and create several configuration managers:



- **Managed Objects**
  (See *Managed Objects* on page 6-3)
- **Geographic Topology**
  (See *Geographic Topology* on page 6-38)
- **Data Collection Schedule**
  (See *Data Collection Schedule* on page 6-45)
- **Device Discovery Wizard**
  (See *Device Discovery Wizard* on page 6-48)
- **Device Discovery Schedule**
  (See *Device Discovery Schedule* on page 6-52)
- **Device Resync Schedul**e
  (See *Device Resync Schedule* on page 6-52)
- **Class Manager**
  (See *Class Manager* on page 6-56)
- **Locations**
  (See *Locations* on page 6-58)
- **Vendors**
  (See *Vendors* on page 6-61)
- **Multicast Settings**
- **VLAN Settings**
- **Priority Queue Settings**
- **MAC Filter Settings**

Config Components

Configuration features consist of a number of device management capabilities to oversee network operations.

The Config (Configuration) menu functions launch the various configuration managers, including the Managed Object Manager (MOM), Topology Viewer, Data Collection scheduler, Discovery Scheduler, Location Manager, Vendor Manager, and Multicast, VLAN, Priority Queue, and MAC Filter settings.

Managed Objects

The Managed Object Manager (MOM) provides StormTracker EMS's object management functions. The Managed Object Manager lets you view device-specific information, both general (name, description, location) and technical (IP address, vendor, model). In addition, the Managed Object Manager provides the facilities to define alternate behavior for an object, thereby overriding that object's Event Template settings. This ensures that events for an object automatically generate a log entry, trigger an alarm, or send an e-mail.

Managed Object Manager

The Managed Object Manager is used to manage components of the BitStorm 1900 and 2400. To access the Managed Object Manager, select Managed Object Manager from the Config menu.

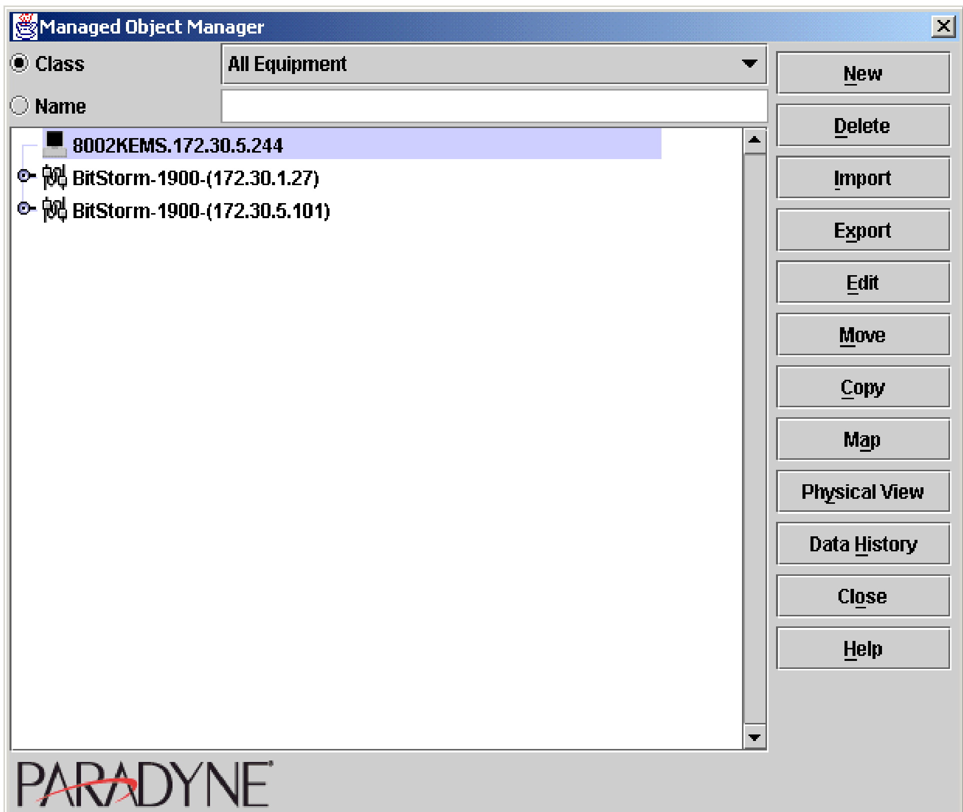


Figure 6-1. Managed Object Manager

This Manager uses a tree view. Note that managed objects are categorized by the top-level component; a port on a slot, for example, is displayed under the Slot type and not the Port type. To access a subcomponent of an object, select the node or double-click the object.

- **Creating, Editing or Deleting a Managed Object**

  To edit an existing object, select the object and click on Edit. To create a new managed object, click on New (or press Alt-N). Either action displays the Managed Object Editor, which is detailed in the pages that follow.To delete an existing object, select the object and click on Delete.

  Although objects can be manually created, the preferred method for adding objects to the Managed Object Manager is *Device Discovery Wizard* on page 6-48.

- **Importing and Exporting**

  Files may be imported or exported from this manager by clicking either button, then locating specified files.

- **Moving Managed Objects**

  There may be occasions when devices are not correctly categorized. You can move these to another category by selecting the object and clicking Move.

- **Displaying the Physical View of a Managed Object**

  Select a device from the Managed Object Manager, then click on Physical View to display the Physical Topology Viewer for that object.

- **Copying Managed Objects**

  Highlight the Managed Object you wish to copy and click on Copy (or press Alt-C), or right-click on the object and select Copy from the resulting pop-up menu. This function lets you copy the configuration of a managed object to a new object. The new object must be given a unique name.

- **Mapping Managed Objects**

  This function displays the Logical Topology map, centered on the selected object.

- **Viewing the Data History of Managed Objects**

  This function lets you view object data value changes within a networked environment. Highlight the Managed Object whose history you need to review and select View Data History (or press Alt-V), or right-click on the object and select View Data History from the resulting pop-up menu.

Accessing Managed Objects

The sections that follow detail the management functions of each BitStorm 1900 and 2400 discovered in your network.

BitStorm 1900

The BitStorm tab displays information related to the selected device, i.e., multiplexer, MIU, modem. Select the BitStorm device from the Managed Object Manager, then click on Edit to access settings.

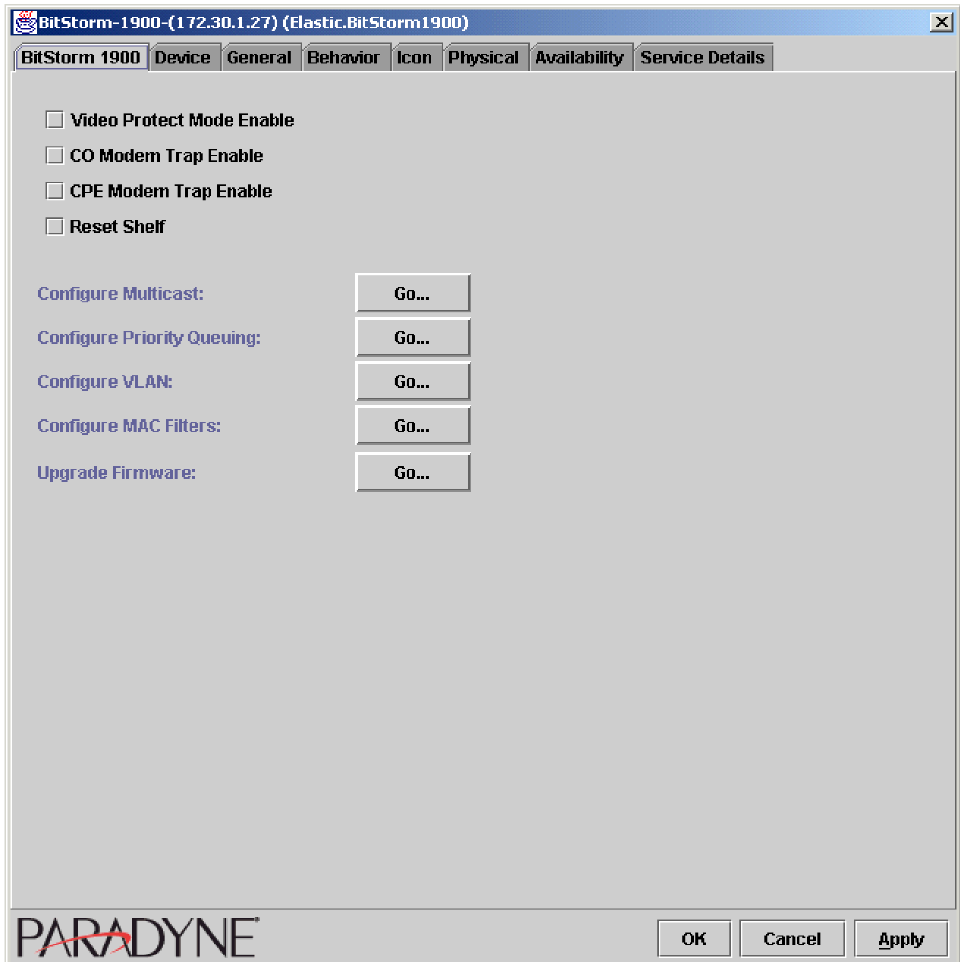


Figure 6-2. BitStorm 1900

The fields in the BitStorm tab are as follows:

Field	Description
Video Protect Mode Enable	Prioritizes downstream packets for video. When disabled, upstream and downstream speed is equal.
CO Modem Trap Enable	Sets the trap for CO modems associated with selected device.
CPE Modem Trap Enable	Sets the trap for CPE modems associated with selected device.
Reset Shelf	Resets Shelf settings.

■ Configure Multicast

Enables multicast for shelf and port settings for 6306 and 10306 CO modem cards in the BitStorm 1900 and CPE modems in the BitStorm 2400.

NOTE:

Multicast is not supported for CPE modems in the BitStorm 1900 or CO modems in the BitStorm 2400 using this version of StormTracker EMS.

The shelf tab enables the multicast functionality and allows you to set time parameters. Edit as necessary, then click on Apply to save settings. Click on Reload to return to original settings.

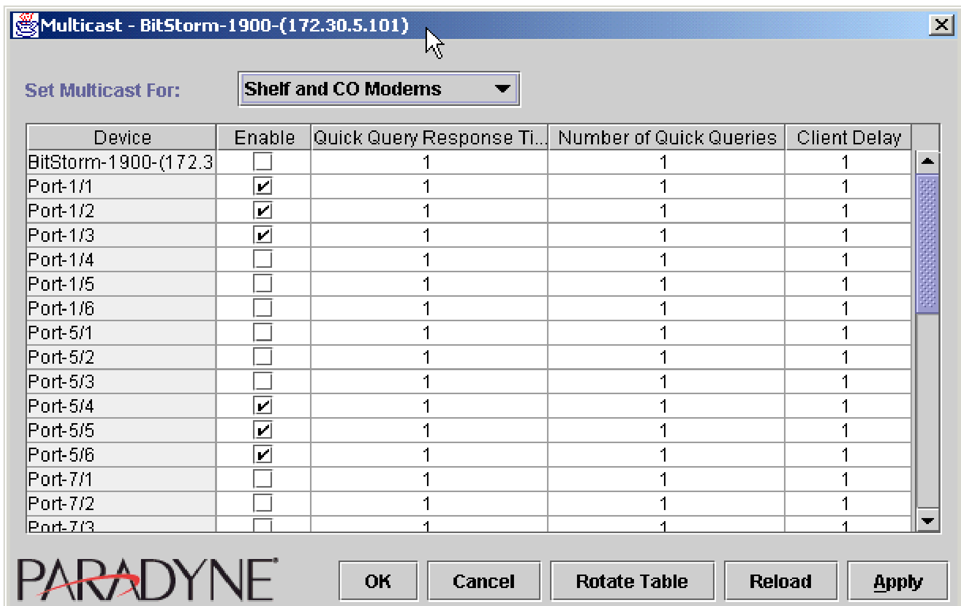


Figure 6-3. Multicast Configuration

▶ Procedure

The Port tab allows you to enable ports in groups of three, i.e., ports 1–3 are enabled/disabled as a group, as are ports 4–6, 7–9, etc.

1. Select Enable where appropriate.
2. Click on Apply to save settings.

■ Configure Priority Queuing

The priority queuing function lets you assign *low* and *high* priority queues to packets. High-priority queue packets are given priority over low-priority queue packets. When traffic levels exceed queue capacity, new packets are dropped.

NOTE:

Priority Queuing for CPE modems is not supported in this release of StormTracker EMS.

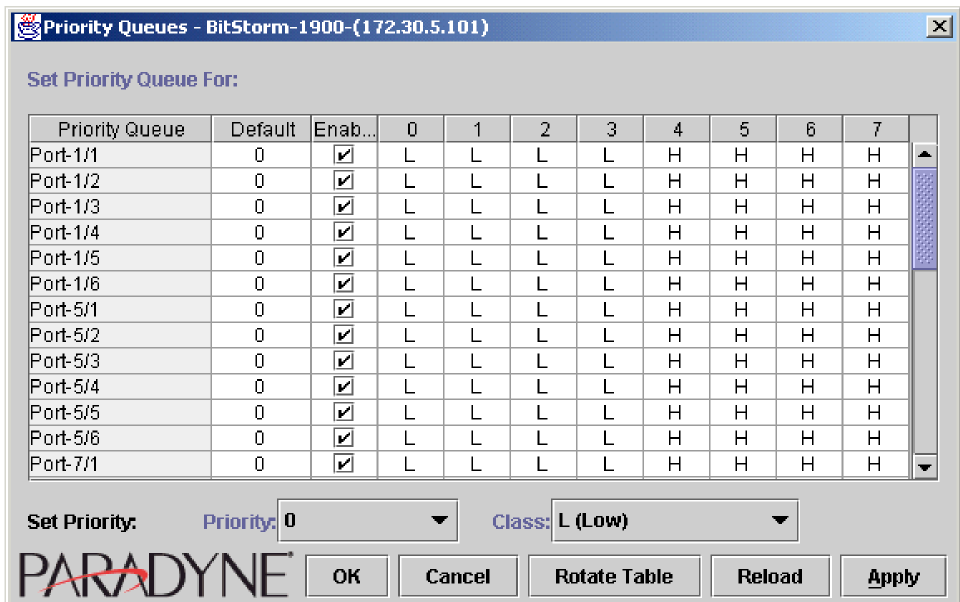


Figure 6-4. Priority Queues

▶ Procedure

To configure priority queuing:

1. Select Priority Queuing from the Config menu.
2. Select a BitStorm multiplexer shelf from the Managed Object Manager.
3. Click on Edit. This displays the BitStorm tab.
4. Click the Configure Priority Queuing Go button. This displays the Priority Queues screen.
5. Select the Queue Enabled checkbox.
6. Place cursor in each port field, then select Low or High from the drop-down menu.
7. Select a default priority setting from the drop-down menu (Tags 0–3 are low-priority, tags 4–7 are high-priority).
8. Click on Apply when finished.

■ Configure VLAN – BitStorm 1900

Enables you to create and edit a VLAN, setting membership access on a port-by-port basis. For the BitStorm 1900, the setting for Accept Frames is "All."

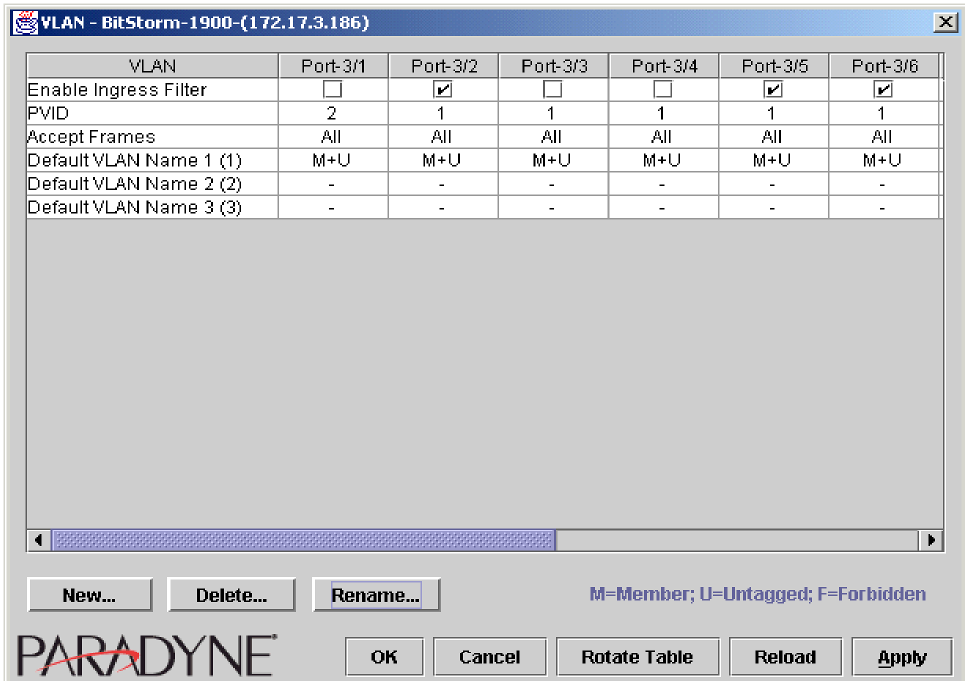


Figure 6-5. VLAN Configuration – BitStorm 1900

▶ Procedure

To create a new VLAN:

1. Click on New.
2. Enter a name in the VLAN field (the name can be changed by highlighting the field and re-entering a new name).

▶ Procedure

To set VLAN Membership:

1. Place cursor in each port field that requires a membership setting.
2. Select a membership option from the drop-down menu:

   M = Member
   U = Untagged
   F = Forbidden
   – = Ignored

3. Click on Apply to save settings.

■ Configure VLAN – BitStorm 2400

Enables you to create and edit a VLAN, setting membership access on a port-by-port basis.

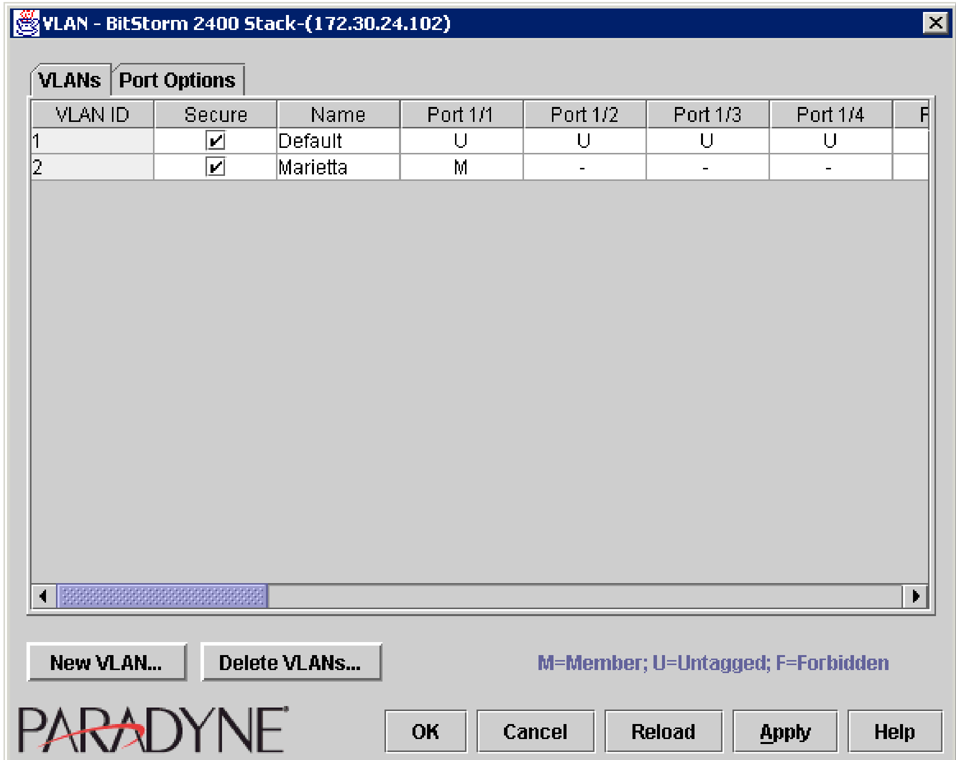
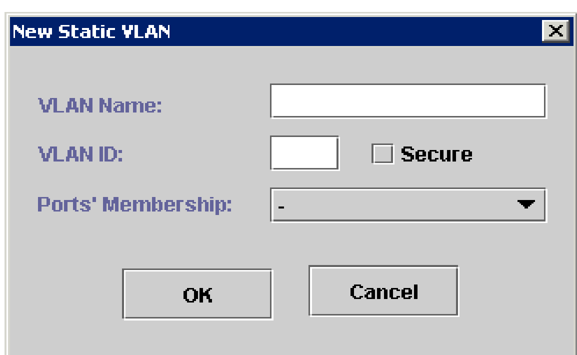


Figure 6-6. VLAN Configuration – BitStorm 2400

▶ Procedure

To create a new VLAN:

1. Click on New VLAN.



2. Enter a name in the VLAN Name field (the name can be changed by highlighting the field and re-entering a new name).

   Assign an ID.

   Select Secure, if necessary.

   Select Port Membership from the drop-down menu.

3. Click on OK when finished.

▶ Procedure

To set a VLAN parameters:

1. Select the VLANs tab.

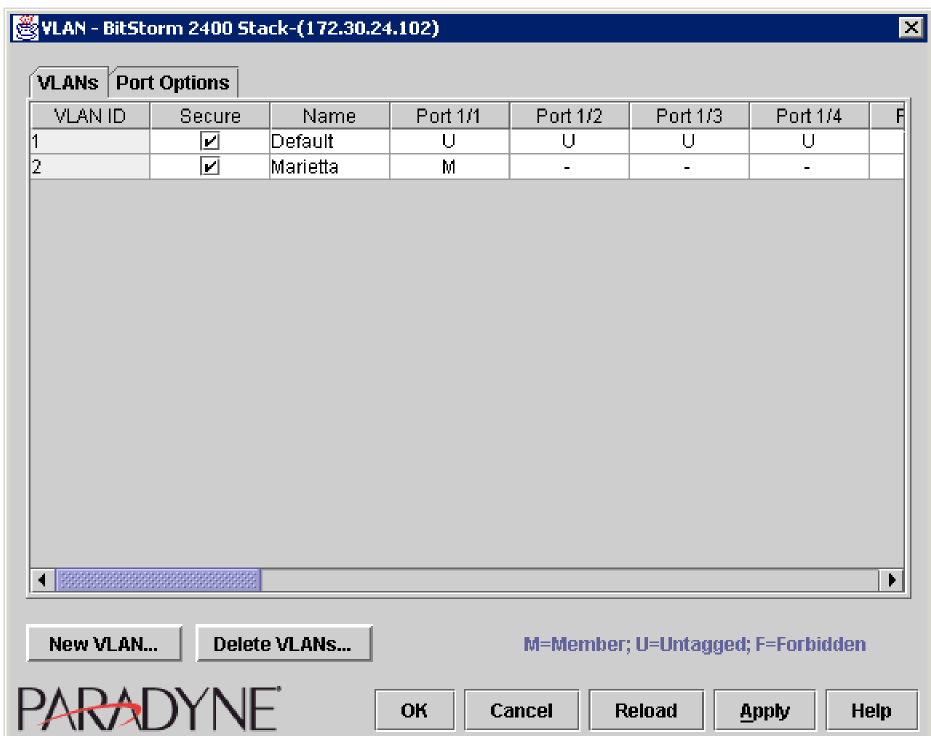


Figure 6-7. VLANs Tab

2. Edit the following as necessary:
   - — Secure: Select to secure VLAN.
   - — Port: Click in cell to access drop-down menu for membershop options.
3. Click on OK when finished.

4. Select the Ports Options tab.

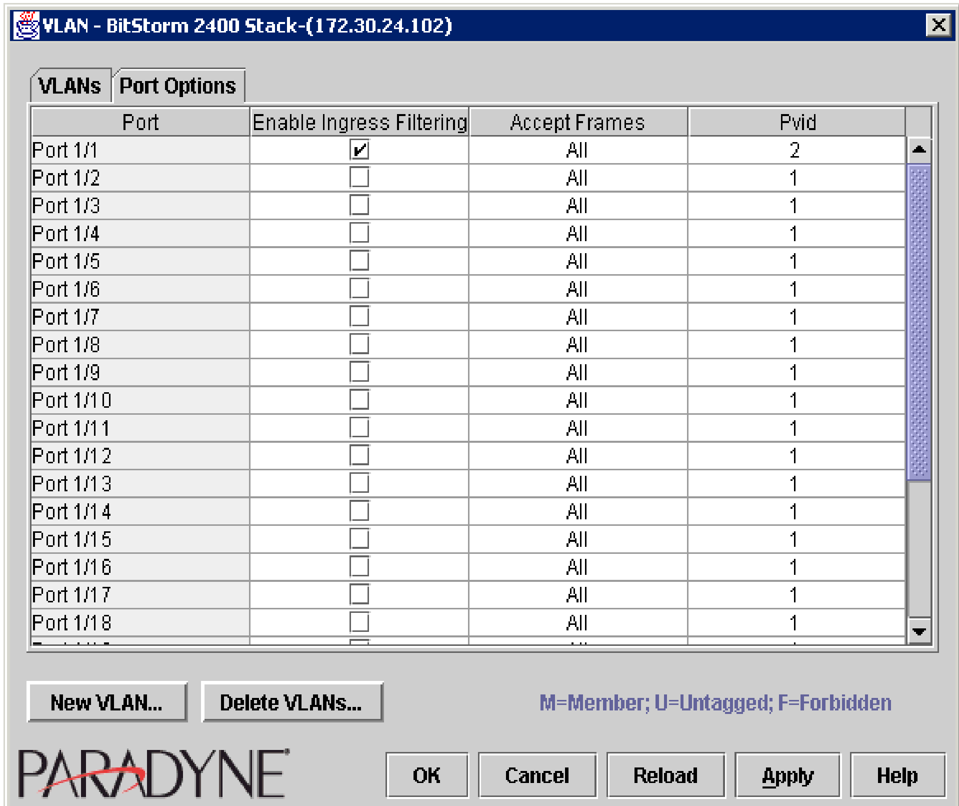


Figure 6-8. Port Options Tab

5. Edit the following as necessary:

   — Enable Ingress Filtering: Select to enable Ingress Filtering.

6. Click on Apply to save, then OK to exit.

■ MAC Filter Settings

Enables you to specify which packets from a select set of MAC addresses can pass through to the BitStorm 1900 or 2400.

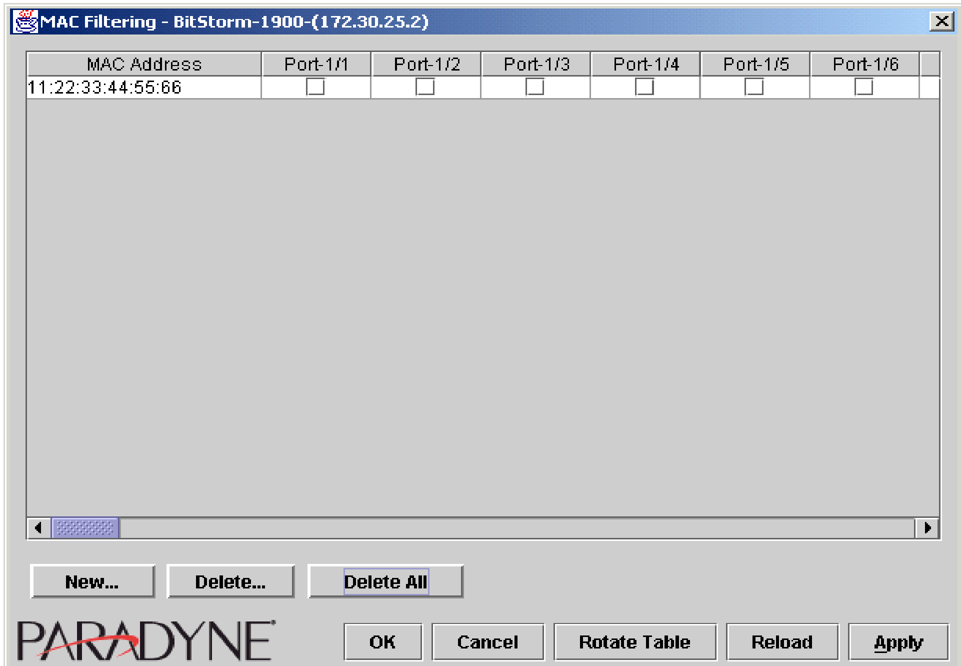


Figure 6-9. MAC Filtering

▶ Procedure

To create a new MAC filter setting:

1. Select MAC Filter Settings from the Config menu. The device selection window displays.
2. Select a BitStorm shelf you want to set MAC filters to, then click on OK to display the MAC Filtering window.
3. Click on New.
4. Enter MAC address when prompted, click on OK.
5. The MAC Filtering table lists all MAC addresses being filtered. For each MAC address, select the ports where packets from the MAC address are allowed to pass through, or deselect those ports where packets should be dropped.

NOTE:

MAC address filtering operates on a per-CPU basis. Therefore, all ports reflect changes made to any given port on a CPU.

▶ Procedure

To delete a MAC filter setting:

1. From the MAC Filter window, click on Delete. This displays the Remove MAC Address window.
2. Select MAC address, then click on OK to delete.

■ Upgrade Firmware

Enables you to download firmware for a select device. This feature can also be accessed from the Downloader option under the Device menu.

▶ Procedure

To upgrade firmware:

1. Click on the corresponding Go button from the BitStorm window.
2. Select the Select Firmware Files tab.
3. Click on Add to add a new file local to the machine running Downloader.
4. Check the corresponding checkboxes, then click on Download.
5. Select the Select Devices to Update tab. The following screen appears:

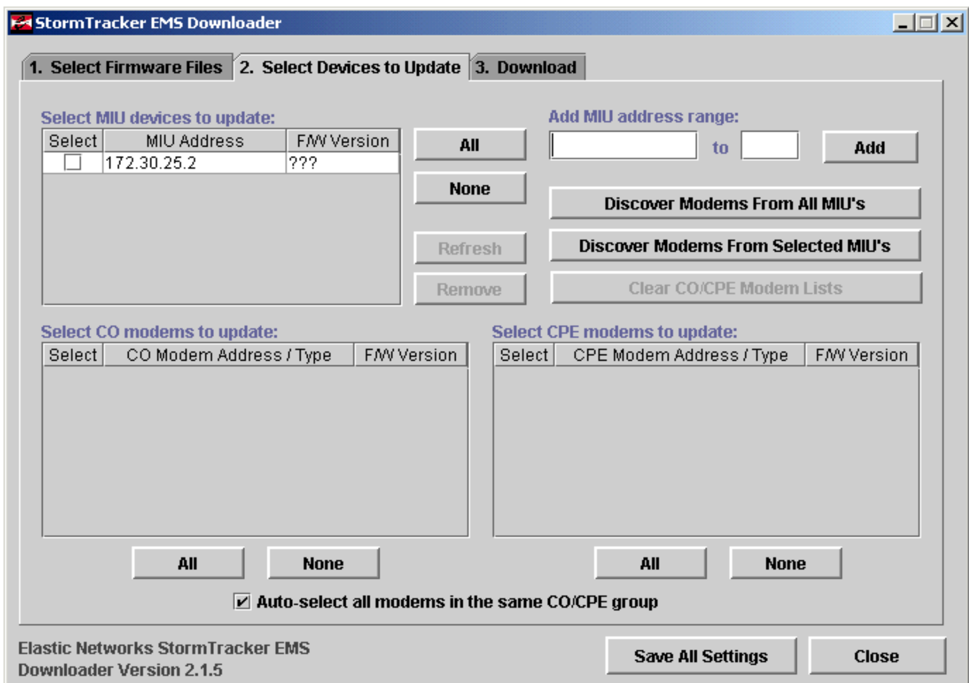


Figure 6-10. Select Devices to Update

6. Select the corresponding checkboxes for the devices you wish to update.
7. Select the Download tab.
8. Click on Start to begin downloading firmware.

Device

The Device tab displays information unique to the device and its deployment within the network.

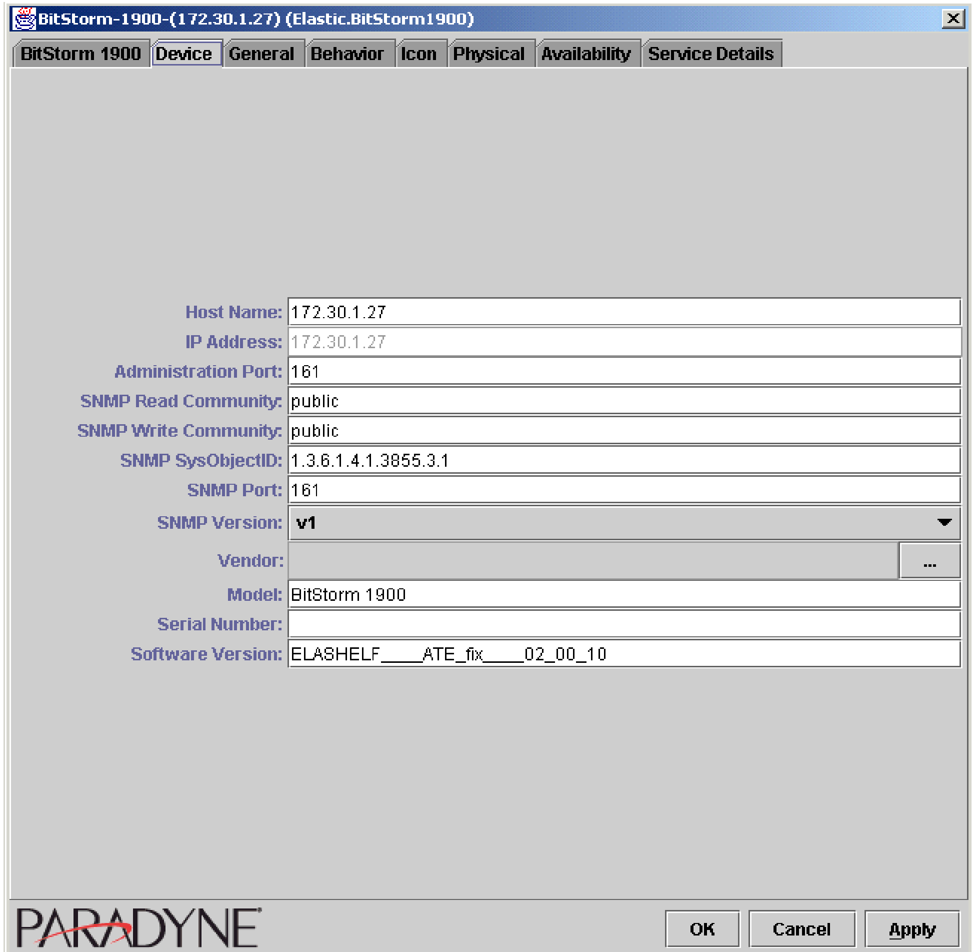


Figure 6-11. BitStorm 1900 – Device

The fields within the Device tab are as follows:

Field	Description
Host Name	Usually defined as the node name, but can be set to any value.
IP Address	IP address of the object.
Administration Port	The port to query the device; the default is 23 (Telnet).
SNMP Read Community	SNMP Read Community of the object. Valid entries are: public, private.
SNMP Write Community	SNMP Write Community of the object. Valid entries are: public, private.

Field	Description
SNMP sysUp Time	Length of time since the device was restarted.
Vendor	Vendor contact of device.
Model	Model of device.
Serial Number	Serial number of device.
Software Version	Software version number of device.

General

The General tab displays descriptive information for managed objects and associates them with a location and a contact.

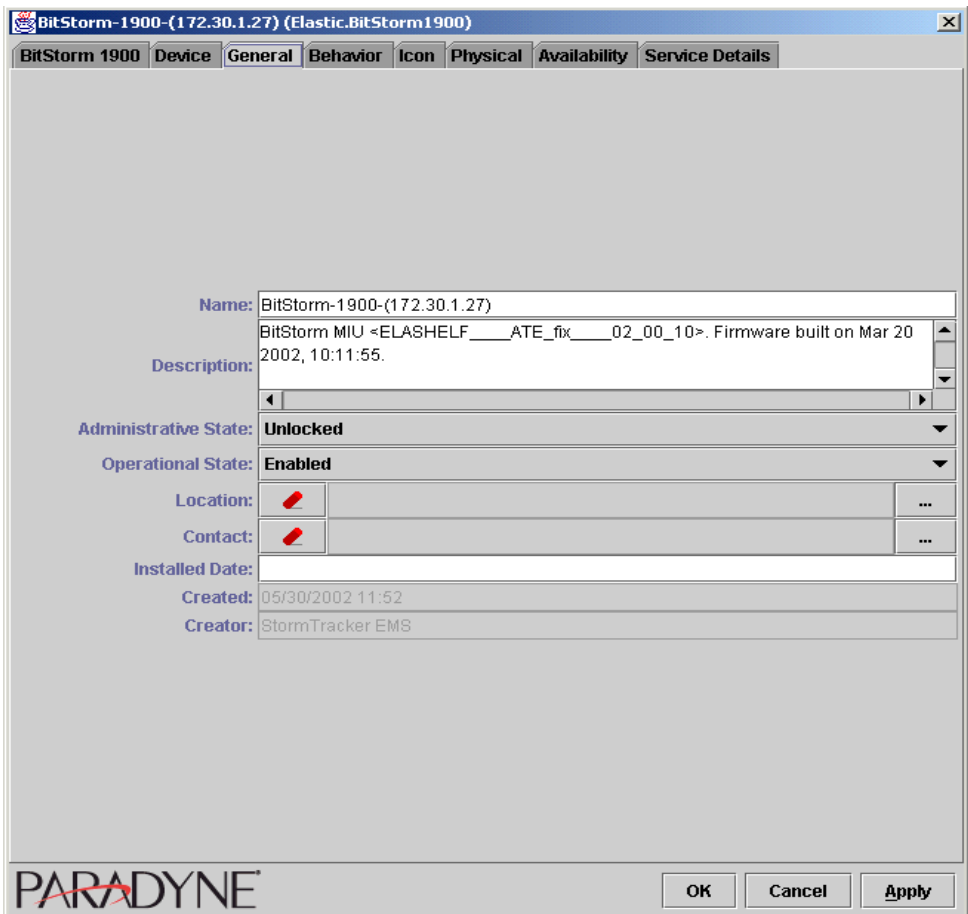


Figure 6-12. BitStorm 1900 – General

The fields in the General tab are as follows:

Field	Description
Name	The name of the managed object; this name must be unique.
Description	A description of the managed object.
Administrative State	One of three values, selected from a drop-down menu, defining how the object can be used. The options are: ■ **Locked:** Device is currently prohibited from use. ■ **Shutting Down:** Device use is permitted only to existing users. ■ **Unlocked:** Normal use of device is permitted.
Operational State	One of four possible values, selected from a drop-down menu, describing the availability of the managed object. The options are: ■ **Disabled:** Device is inoperable because of a fault, or resources are unavailable. ■ **Enabled:** Device is operable and available for use. ■ **Active:** Device is operable and currently in use with operating capacity available to support further services. ■ **Busy:** Device is operable and currently in use with no operating capacity to spare.
Location	Location of object, used for Geographic Topology.
Contact	Primary contact for object.
Installed Date	Date object was installed.
Created	Read-only field indicating the Date/Time the managed object was created.
Creator	Read-only field indicating the user who created the managed object.

Behavior

In certain circumstances, you need to assign unique behaviors to specific objects. The Behavior tab, shown below, lets you accomplish this by letting you specify an override for the object's Event Template Behavior.

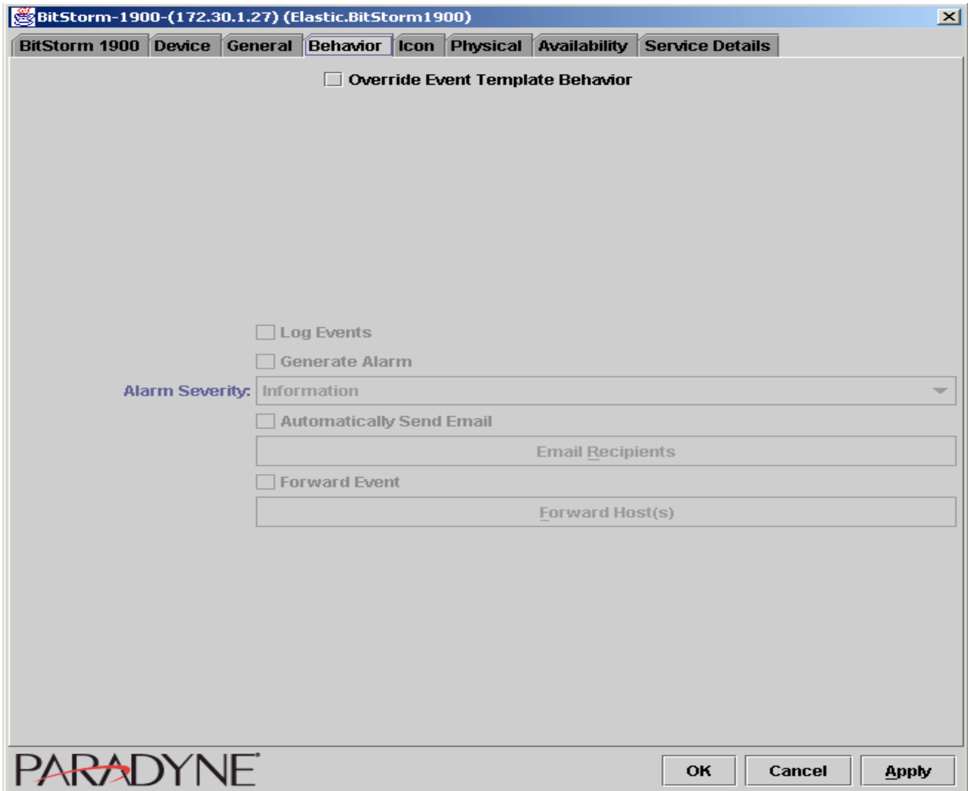


Figure 6-13. BitStorm 1900 – Behavior

The fields in the Behavior tab are as follows:

Field	Description
Override Event Template Behavior	Utilizes the behaviors specified on this tab for this particular object, instead of the behaviors specified in the Event Template. You can use this check box to turn a set of behaviors on and off as needed.
Log Events	Select this option to write all incoming events for this object to the log file specified in System Settings.
Generate Alarm	This option causes an alarm to be generated for all incoming events for this object.
Automatically Send Email	This option sends an e-mail message for every incoming event for this object. The e-mail is sent to the Address of those recipients defined through the Email Recipients dialog.

Field	Description
Email Recipients	Click on this button to display the Email Recipients dialog. This dialog lets you define the people to whom e-mail is sent whenever an event is generated by this object, if the Generate Alarm option has been selected. Select recipients from the Available panel and click on the right bracket (>) to move them into the Selected panel. You can click on the double-right bracket (>>) to move all the names from the Available panel to the Selected panel. Move names out of the Selected panel in the same manner, using the left (<) or double-left (<<) brackets.
Forward Event	This option forwards all events received for this object, using the specified settings. These settings are: ■ **Forward Host:** The IP address/hostname where this event is forwarded. ■ **Community:** Public or Private; the default is Public. ■ **Port:** The port where this event is forwarded; the default is 161. **CAUTION:** Contact your administrator prior to changing this setting.

Icon

The Icon tab lets you associate each Managed Object with an icon. Select an icon from the list displayed in this tab and click on OK.

Physical

The Physical tab displays the physical location within a multiplexer (this tab does not apply to the multiplexer itself) such as a slot within a BitStorm unit.

Availability

The Availability tab displays a chart of the selected Managed Object’s availability during a specified time period.

Service Details

The Service Details tab displays Groups, Subscribers, Services, and Links associated with the selected device. The information on this tab is read-only and cannot be modified.

BitStorm MIU

The BitStorm MIU panel displays information related to the MIU devices within each BitStorm unit in your network.

General

The General tab displays settings for the MIU.

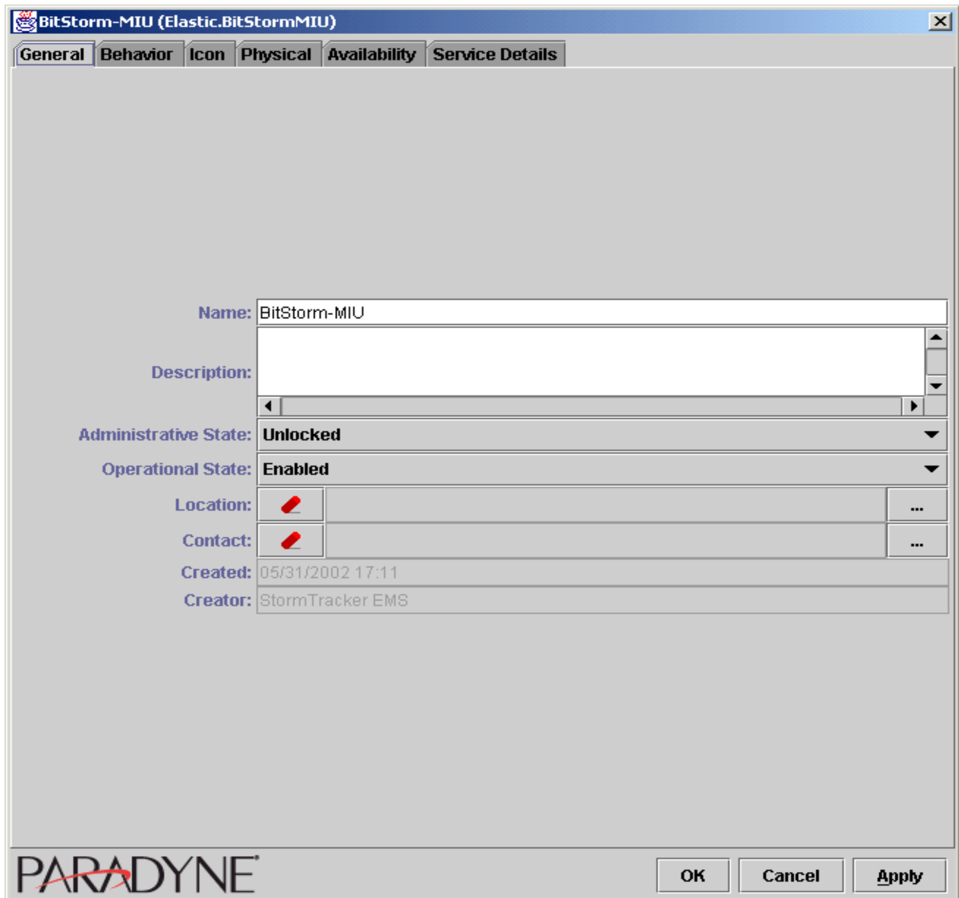


Figure 6-14. MIU – General

The fields in the General tab are as follows:

Field	Description
Name	The name of the managed object; this name must be unique.
Description	A description of the managed object.
Administrative State	One of three values, selected from a drop-down menu, defining how the object can be used. The options are:
Locked	Device is currently prohibited from use.
Shutting Down	Device use is permitted only to existing users.
Unlocked	Normal use of device is permitted.
Operational State	One of four possible values, selected from a drop-down menu, describing the availability of the managed object. The options are: ■ **Disabled:** Device is inoperable because of a fault, or resources are unavailable. ■ **Enabled:** Device is operable and available for use. ■ **Active:** Device is operable and currently in use with operating capacity available to support further services. ■ **Busy:** Device is operable and currently in use with no operating capacity to spare.
Location	Location of object, used for Geographic Topology.
Contact	Primary contact for object.
Installed Date	Date object was installed.
Created	Read-only field indicating the Date/Time the managed object was created.
Creator	Read-only field indicating the user who created the managed object.

Behavior

The Behavior tab includes options for overriding the system event template.

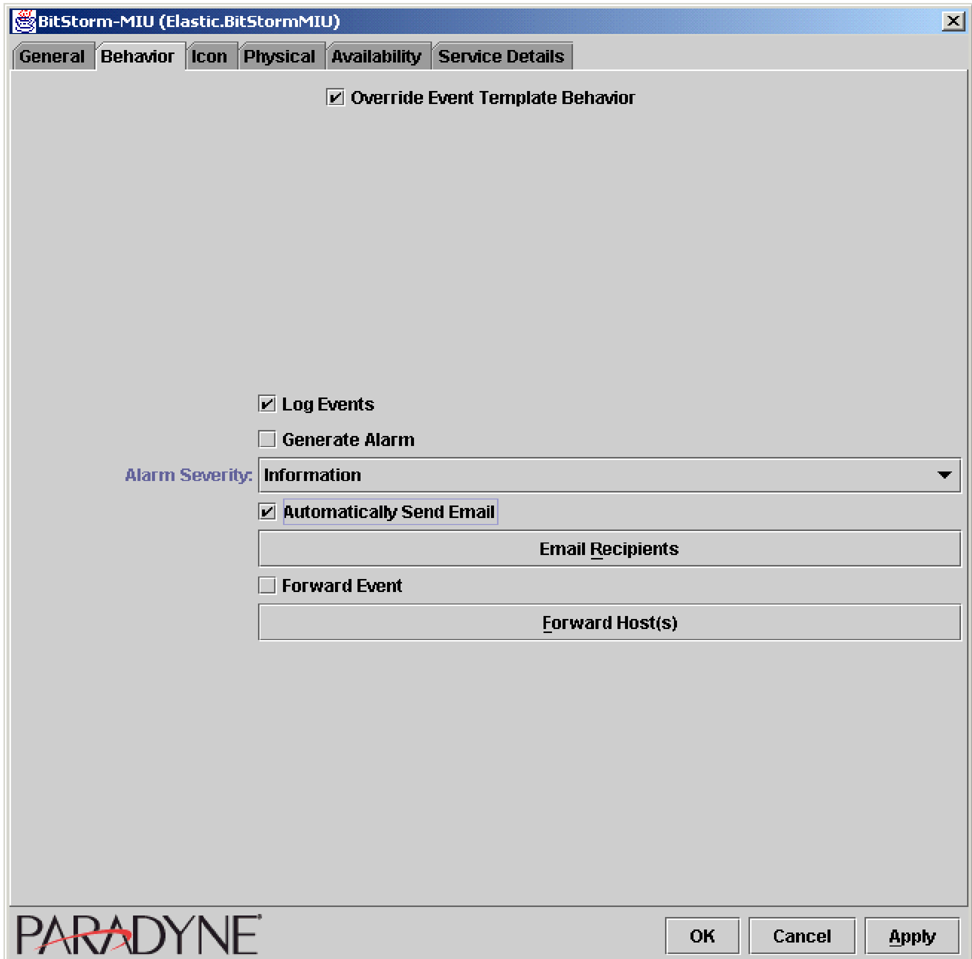


Figure 6-15. MIU – Behavior

The fields in the Behavior tab are as follows:

Field	Description
Override Event Template Behavior	Check this box to enable alarm notification features.
Log Events	Specifies that MIU events be written to a log file.
Generate Alarm	Generates an alarm when an MIU event is received.
Alarm Severity	Specifies severity of event (Information, Indeterminate, Warning, Minor, Major, or Critical).
Automatically Send Email	Sends email to recipients from the selection dialog.
Forward Event	Specifies that the event be forwarded to the specified host, using the default or specified community and port settings.
Forward Host	Specifies the IP address of the host to which the event is forwarded.
Port	Specifies the port to which the event is forwarded.

Icon

The Icon tab lets you associate each MIU with an icon. Select an icon from the list displayed in this tab and click on OK.

Physical

The Physical tab displays the physical location (slot number) of the MIU in the BitStorm multiplexer shelf.

Availability

The Availability tab displays a chart of the selected Managed Object's availability during a specified time period.

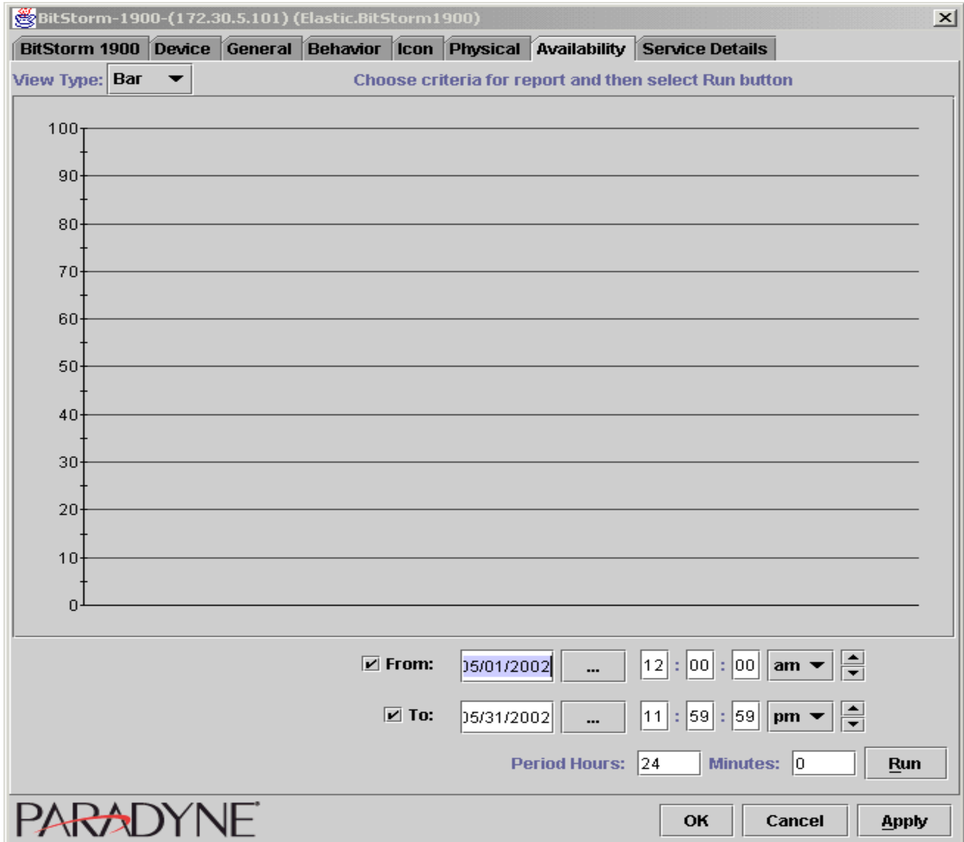


Figure 6-16. MIU – Availability

▶ Procedure

To establish availability:

1. Select or enter the following:
   - — **View Type:** Select the type of chart to generate: Area, Bar, or Plot.
   - — **From:** Specify a beginning date and time.
   - — **To:** Specify an end date and time.
   - — **Period:** Enter a report in hours and minutes.
2. Click on Run to generate the chart.

Service Details

The Service Details tab displays Groups, Subscribers, Services, Links, and Orders associated with the selected device. The information on this tab is read-only and cannot be modified.

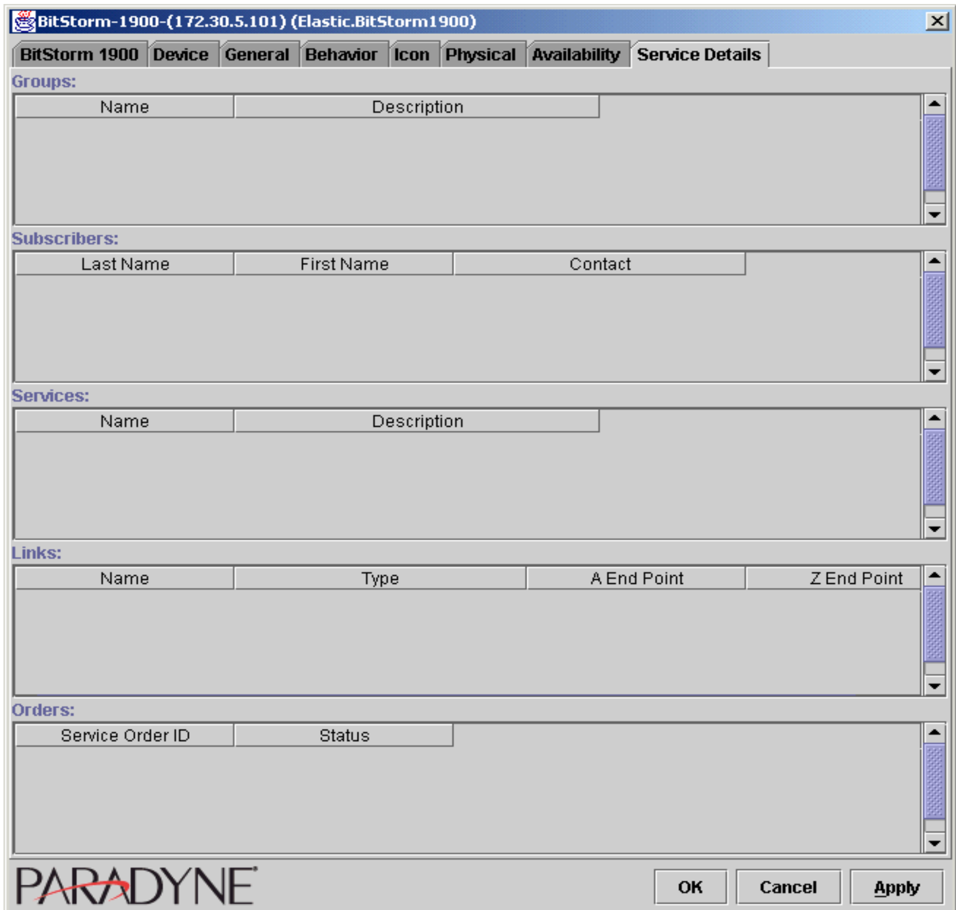


Figure 6-17. MIU – Service Details

Slot Modem Cards

The BitStorm modem card window displays the model number in the title and modem parameter throughout the panel selections. Adjust settings in each tab as necessary, then click on Apply. Click on OK to exit.

Port Configuration

The Configuration tab displays settings for the selected CO modem port. Click on Rotate to redistribute information in columns. Select an interval time to reload new data.

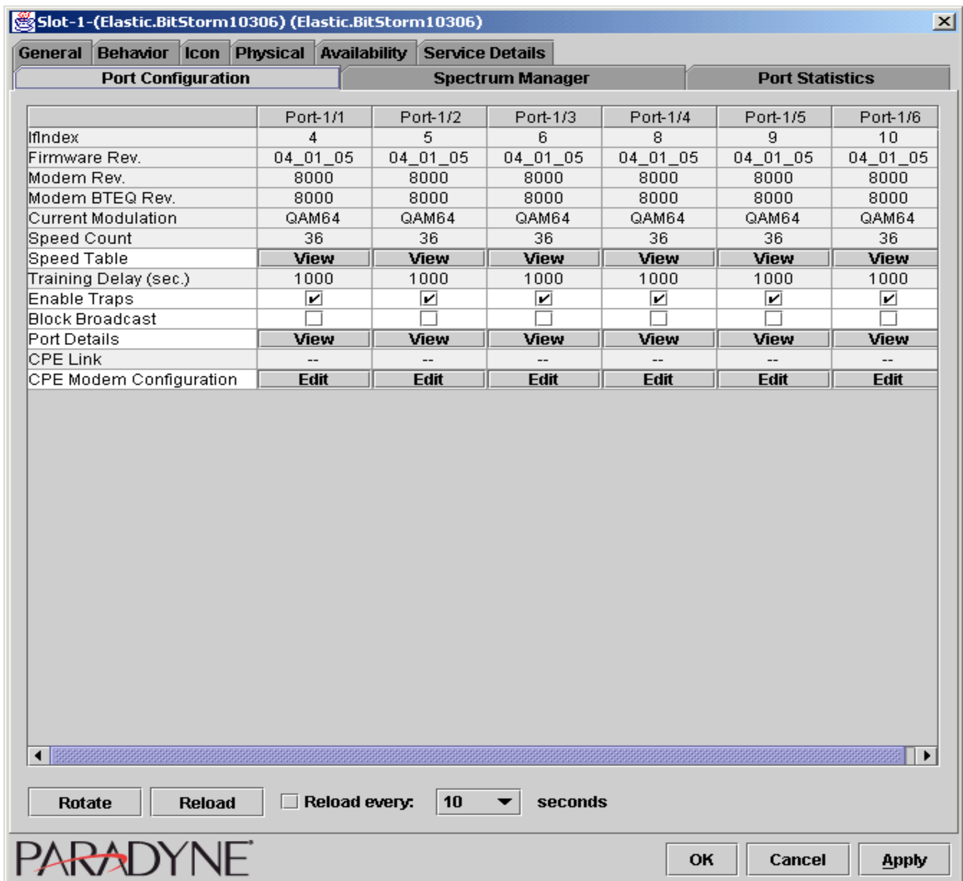


Figure 6-18. Slot – Port Configuration

The fields in the Port Configuration tab are as follows:

Field	Description
IfIndex	SNMP value defined by MIB.
Firmware Rev.	Version of firmware loaded for the modem.
Modem Rev.	Revision number of modem board.
Modem BTEQ Rev.	BTEQ version of modem board.
Current Modulation	Measured using QAM/QPSK speed values.
Speed Count	Automatically calculated based on speed and modulation.
Speed Table	Click to view transmit/receive speeds.
Training Delay	Delay incurred by training sequence when data connection is established.
Enable Traps	Select to enable traps sets for modem events, or deselect to disable traps.
Block Broadcast	Blocks broadcast over network to enable unicast communication.
Port Details	Click to bring up information in the General, Behavior, Icon, Physical, Availability, and Service Details tabs.
CPE Link	“Up” indicates the CPE modem is operating, dashes indicate there is no connection.
CPE Modem Configuration	Displays parameters for CPE modem, the traffic classes field may be edited as needed.

General

Field	Description
Name	The name of the managed object; this name must be unique.
Description	A description of the managed object.
Administrative State	One of three values, selected from a drop-down menu, defining how the object can be used. The options are:
Locked	Device is currently prohibited from use.
Shutting Down	Device use is permitted only to existing users.
Unlocked	Normal use of device is permitted.
Operational State	One of four possible values, selected from a drop-down menu, describing the availability of the managed object. The options are: ■ **Disabled:** Device is inoperable because of a fault, or resources are unavailable. ■ **Enabled:** Device is operable and available for use. ■ **Active:** Device is operable and currently in use with operating capacity available to support further services. ■ **Busy:** Device is operable and currently in use with no operating capacity to spare.
Location	Location of object, used for Geographic Topology.
Contact	Primary contact for object.
Installed Date	Date object was installed.
Created	Read-only field indicating the Date/Time the managed object was created.
Creator	Read-only field indicating the user who created the managed object.

Behavior

Field	Description
Override Event Template Behavior	Check this box to enable alarm notification features.
Log Events	Specifies that MIU events be written to a log file.
Generate Alarm	Generates an alarm when an MIU event is received.
Alarm Severity	Specifies severity of event (Information, Indeterminate, Warning, Minor, Major, or Critical).
Automatically Send Email	Sends email to recipients from the selection dialog.
Forward Event	Specifies that the event be forwarded to the specified host, using the default or specified community and port settings.
Forward Host	Specifies the IP address of the host to which the event is forwarded.
Icon	Represent an association.
Port	Specifies the port to which the event is forwarded.
Physical	Represents the physical location in the unit.
Availability	Displays a chart of the selected Managed Object's availability during a specified time period.
Service Details	Displays Groups, Subscribers, Services, and Links associated with the selected device. The information on this tab is read-only and cannot be modified.

Spectrum Manager

The Spectrum Manager tab displays information related to other detected services coexisting with EtherLoop™ in the same binder. Click on Rotate to redistribute information in columns. Select an interval time to reload new data.

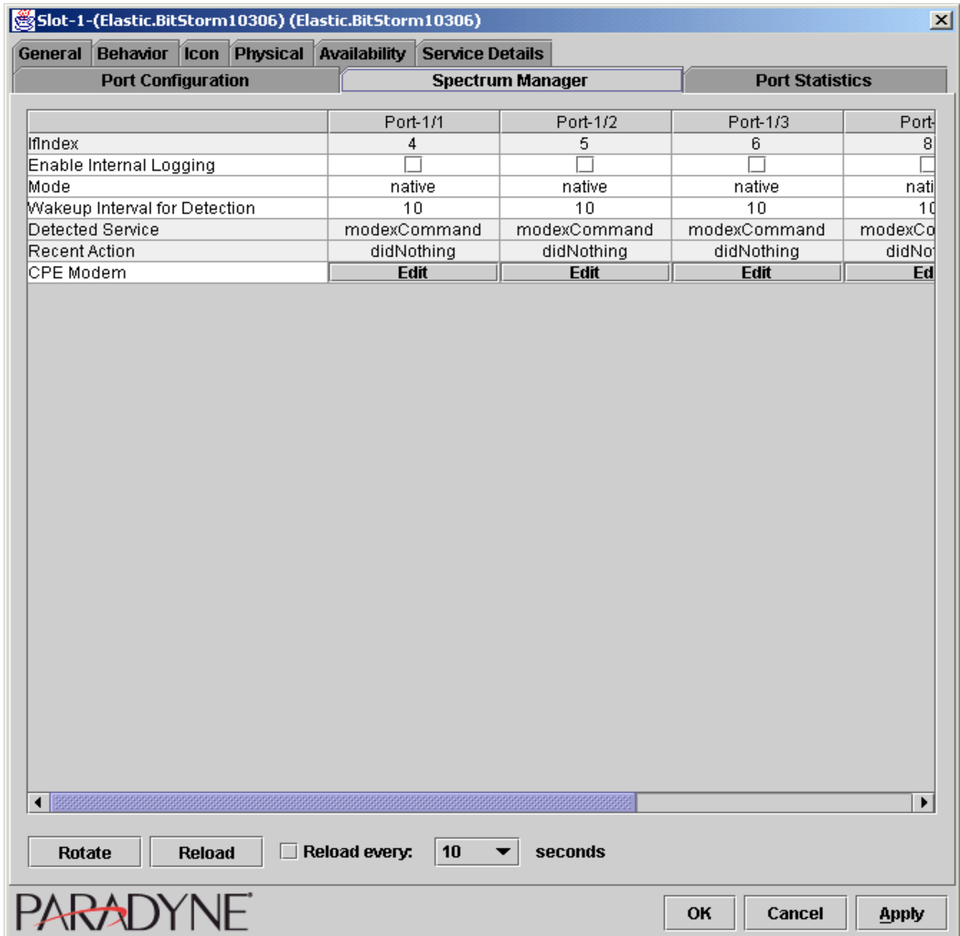


Figure 6-19. Slot – Spectrum Manager

The fields in the Spectrum Manager tab are as follows:

Field	Description
IfIndex	SNMP value defined by MIB.
Enable Internal Logging	Logs internal information directly to the modem.
Mode	Sets one of the selected protection modes: ■ **Monitor:** Monitors for interference, but does not protect against it ■ **Auto-Protect:** Protects EtherLoop when asymmetrical services are detected and reports these interferences ■ **Force-Protect:** Continuously protects EtherLoop from asymmetrical services (even when not detected) ■ **Native:** Minimum protection/monitoring provided
Wakeup Interval for Detection	Schedule (in seconds) for monitoring or detecting services in the binder.
Detected Service	Service detected that may cause potential interference.
Recent Action	Action taken based on what other services were detected.
CPE Modem	Redisplays all options listed above.

Port Statistics

The Port Statistics tab displays parameters for CO modems within the BitStorm 1900.

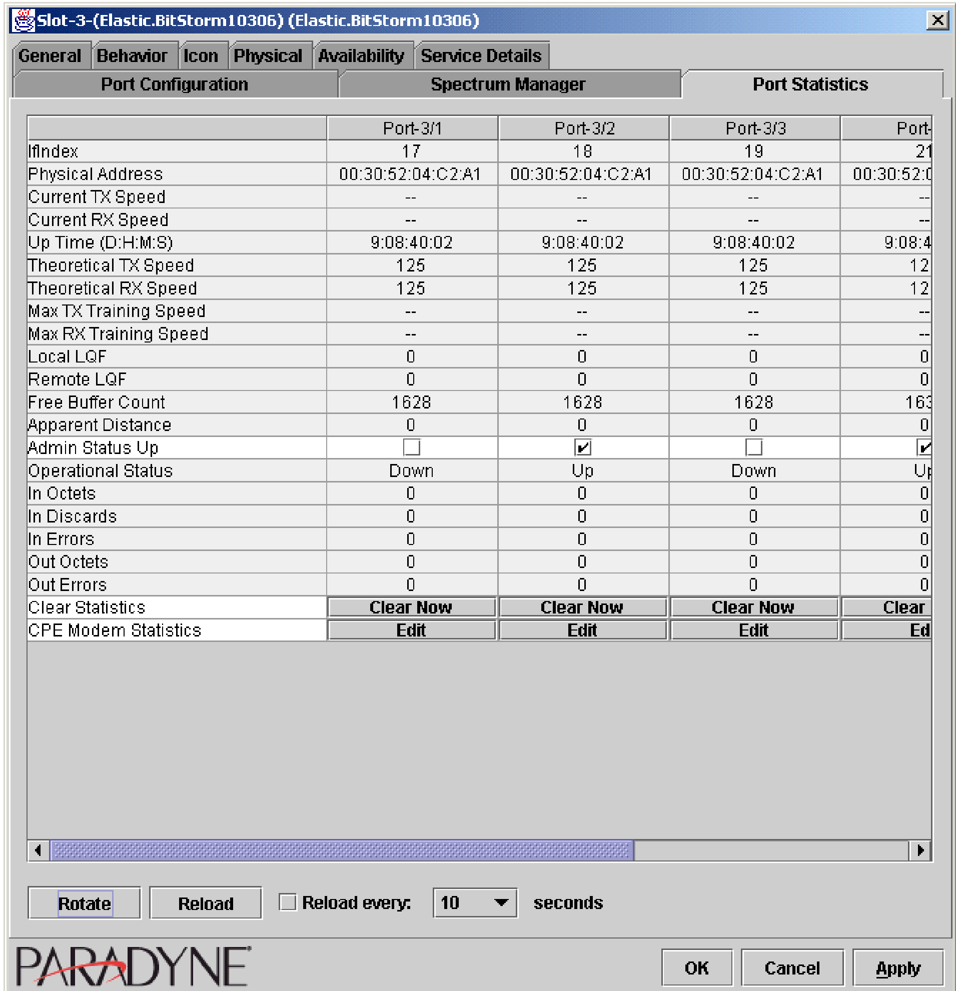


Figure 6-20. Slot – Port Statistics

The fields in the Port Statistics tab are as follows:

Field	Description
IfIndex	SNMP value defined by MIB.
Physical Address	Modem MAC Address.
Current TX Speed	Modem transmit speed.
Current RX Speed	Modem receive speed.
Up Time	Duration of modem connection.
Theoretical TX Speed	Theoretical maximum transmit speed.
Theoretical RX Speed	Theoretical maximum receive speed.
Max TX Training Speed	Actual transmit speed.
Max RX Training Speed	Actual receive speed.
Local LQF	Local line quality factor on a scale of 100.
Remote LQF	Remote line quality factor on a scale of 100.
Free Buffer Count	Available storage for data to compensate for differences in transmission speeds or timing.
Apparent Distance	Estimate of distance between CO and CPE modem to the nearest 1000 feet (displayed in Kft).
Admin Status Up	The only field that may be edited, allows you to set admin status.
Operational Status	Displays Up or Down status for corresponding port.
In Octets	Received octets.
In Discards	Received discards.
In Errors	Received errors.
Out Octets	Transmitted octets.
Out Errors	Transmitted errors.
Clear Statistics	Click on Clear Now to reset.
CPE Modem Statistics	Clear Edit to review same information as listed above for the corresponding CPE modems.

BitStorm 2400

The BitStorm 2400 tabs vary from the BitStorm 1900. The following sections describe functions managed within the BitStorm 2400.

Environment

The environment settings include temperature, voltage, signal status, and other physical states of the BitStorm device.

Environmental settings are displayed in this window. The white fields are enabled for editing.

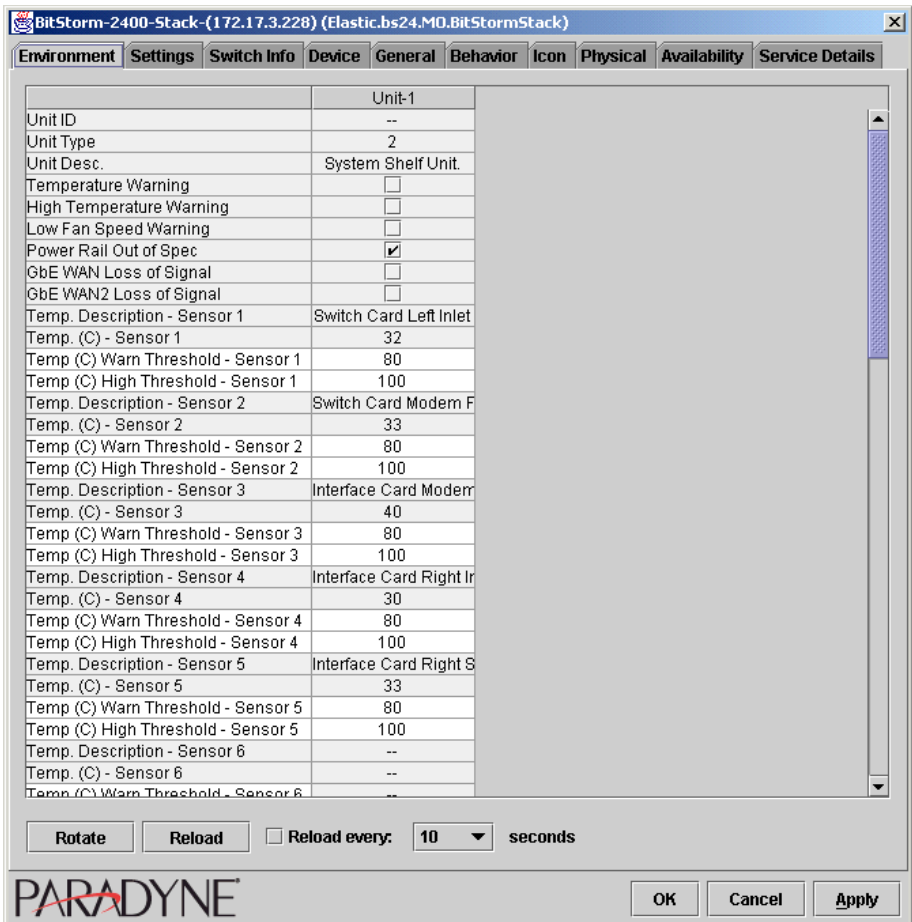


Figure 6-21. BitStorm 2400 – Environment

Settings

The Settings tab includes information related to traps.

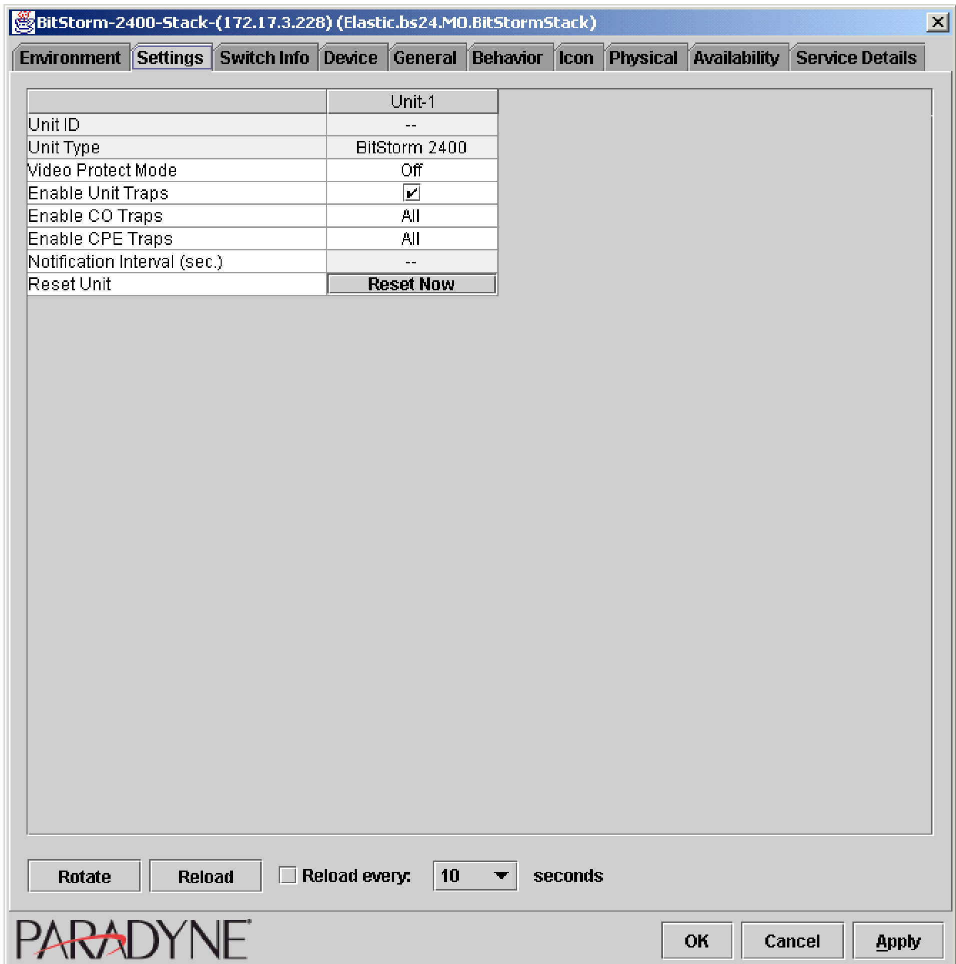


Figure 6-22. BitStorm 2400 – Settings

Switch Info

The Switch Info tab includes device IP addresses, SNMP information, and protocols.

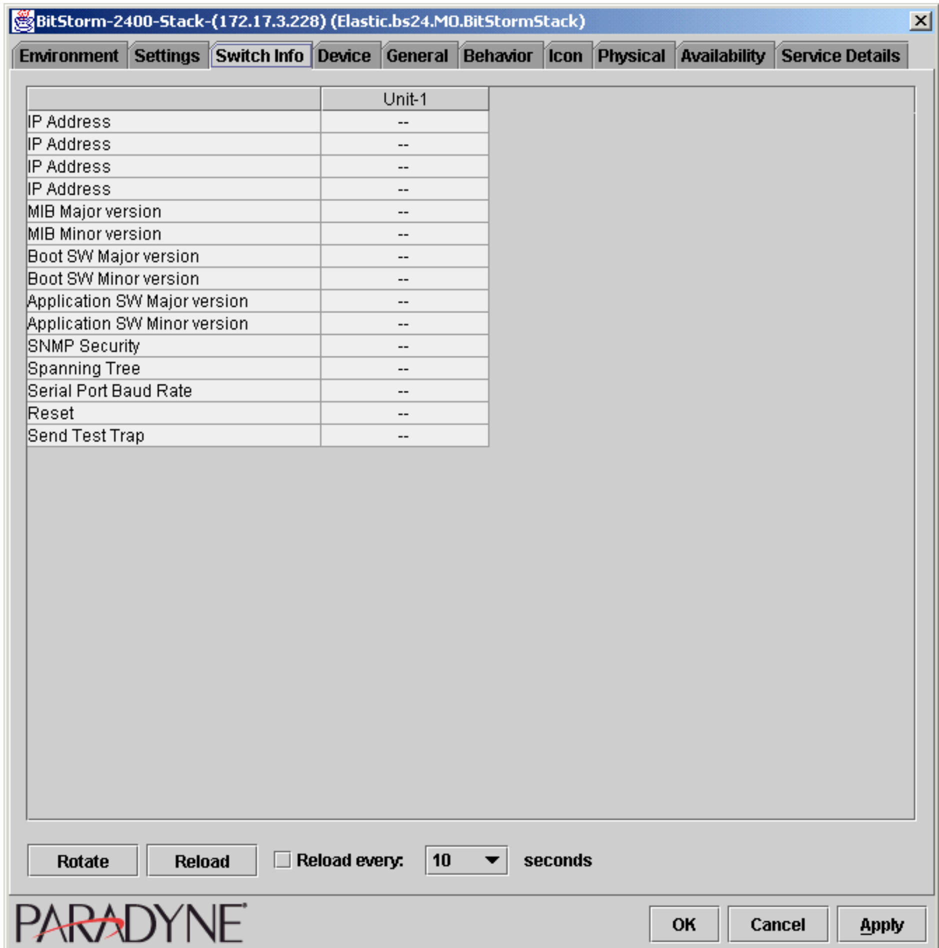


Figure 6-23. BitStorm 2400 – Switch Info

Device

The Device tab displays information unique to the device and its deployment within the network.

Icon

The Icon tab lets you associate each Managed Object with an icon. Select an icon from the list displayed in this tab and click on OK.

Physical

The Physical tab displays the physical location within a multiplexer (this tab does not apply to the multiplexer itself) such as a slot within a BitStorm unit.

Availability

The Availability tab displays a chart of the selected Managed Object's availability during a specified time period.

Service Details

The Service Details tab displays Groups, Subscribers, Services, and Links associated with the selected device. The information on this tab is read-only and cannot be modified.

Geographic Topology

The Geographic and Logical Topology functions provide a visual representation of the geographical and logical placement of managed objects, as well as their hierarchical relationships. Physical Topology provides you with a representation of the actual device and any components that may reside within. The Topology viewers let you view and monitor network devices, as well as respond to network alarms.

Select Geographic Topology from the Config menu to display the Geographical Topology Viewer. This viewer initially displays the Top Level geographic map of the organizational hub. The locations and associated devices within the hub are mapped based on all or part of the organization’s network configuration.

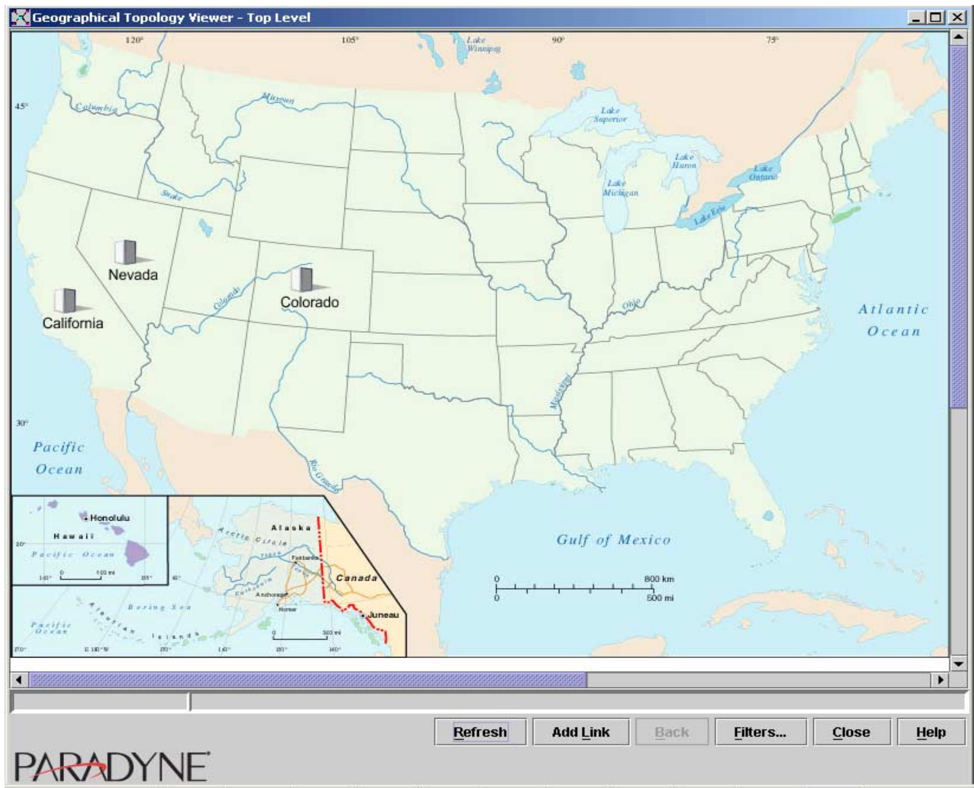


Figure 6-24. Geographic Topology Viewer

The Top Level of the Geographic Topology viewer provides access to specific geographic locations. To access any of these locations, double-click the associated icon or right-click within the icon and select Open from the resulting pop-up menu.

Geographic Topology Viewer Options

Right-click on any object displayed within the Geographic Topology Viewer to access the pop-up menu. The functions within this menu are as follows:

Option	Description
Drill	Opens the next lower level of the topology map in the same window.
Alarms	Opens the Alarm Window and displays the alarms (if any) associated with the current device.
Logical Topology	Opens the Logical Topology Viewer and displays the associated Managed Objects, Contacts, Vendors, Locations, and Physical Links between managed objects and network devices.
Open	Opens the next lower level of the topology map in a new window; the lowest level is the device level.
Edit	Displays the Location Editor for the selected object.
Zoom In	Increases the current viewing scale.
Zoom Out	Decreases the current viewing scale.

Network Topology Viewers

Both the Geographical and Logical Topology Viewer feature the following options, available through buttons at the bottom of the viewer:

Option	Description
Refresh	Reinitializes the view of the current window.
Reorder	Recalculates the layout of the entities within the window using available data.
Add	Allows the user to add additional Locations, Managed Objects, Vendors, and Contacts. To add an entity, click on this button and select an entity from the resulting pop-up menu.
Add Link	Activates Link mode. The cursor turns into a cross-hair to indicate that Link mode is active. Click and drag from one object to another to create a link between them.
Options	Displays the Spring Layout settings panel for adjusting the viewer linked objects visual expansion.
Filters	Allows user to modify what filtered network entities will be displayed.
Close	Closes the current window.

Editing a Managed Object

This function is used to display the Edit Device tab for managing a specific device or set of devices within the network configuration of a site. To access, right-click and select Edit on the local device you want to review or change.

Viewing Object Alarms

Right-click on any managed object icon to display the Alarm Window and any outstanding alarms associated with the device. From the Alarm window, you can acknowledge and/or clear the alarms as well as attend to any other alarm management tasks.

Logical Topology

The Logical Topology Viewer lets you display, organize, and manage devices and objects within the network configuration. Additionally it is used to maintain all Managed Objects, Contacts, Vendors, Locations, and Physical Links information between devices.

To display the Logical Topology Viewer, right-click on an object and select Logical Topology from the pop-up menu.

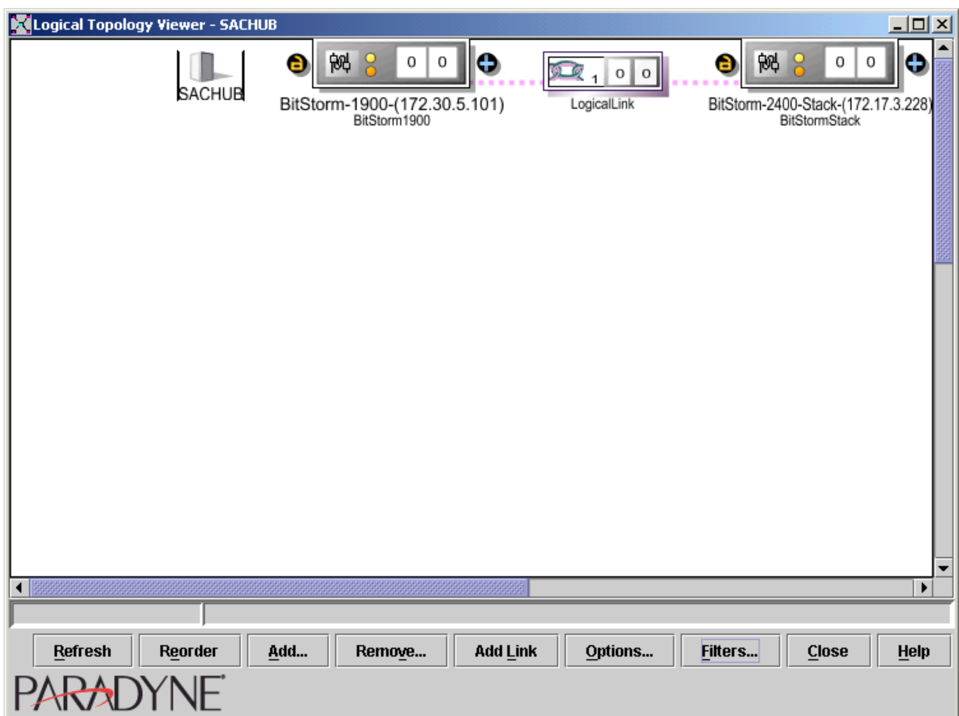


Figure 6-25. Logical Topology Viewer Window

Adding or Removing Filters

From the Logical Topology Viewer window, click on Filters to display the Filters dialog. Select or deselect filters as needed, then click on OK.

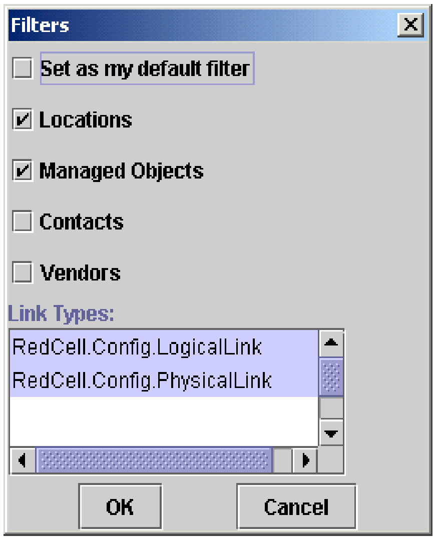


Figure 6-26. Filters Dialog

Layouts

Logical Topology can be viewed in either of two layouts – Spring or Tree. Select the type of view by right-clicking on a blank area within the Logical Topology viewer. The resulting pop-up menu lets you select Spring or Tree layout, and lets you expand (Zoom In) or contract (Zoom Out) the current scale.

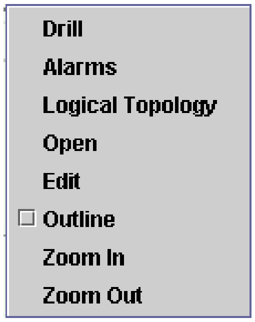


Figure 6-27. Logical Topology Viewer Layout Pop-up Menu

Spring Layout

Spring Layout connects entities by their centers, as if they were connected by springs. The arrangement of the entities is adjusted until equilibrium is reached.

To display the settings dialog for Spring Layout, click on Options at the bottom of the Logical Topology viewer.

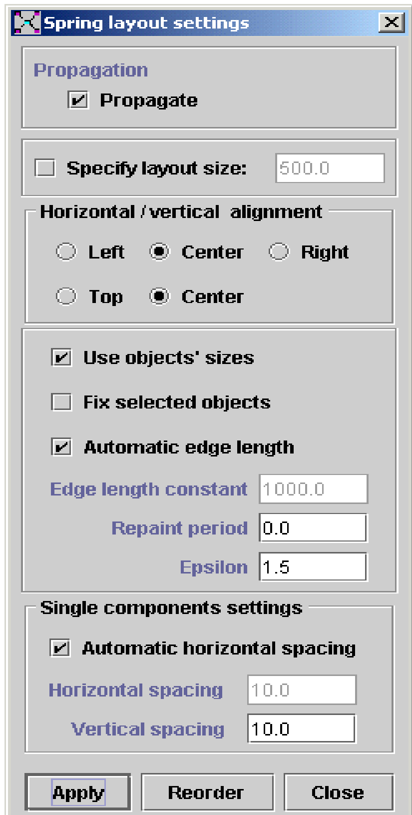


Figure 6-28. Spring Layout Settings

The fields in the Spring Layout Settings dialog are as follows:

Field	Description
Propagate	When selected, changes to any individual entity cause the positions of connected entities to be recalculated.
Use objects' sizes	Utilizes the relative size of each object to determine its weighting, and hence its relative placement.
Fix selected objects	Specifies that the selected objects remain in their current position.
Automatic edge length	Calculates the length of the links and the relative spacing of the entities with respect to the containing window.
Edge length constant	If Automatic edge length is not selected, specifies the length of links and the relative spacing of entities.

Field	Description
Repaint period	Determines the interval between repaints.
Epsilon	The epsilon constant determines when the iterative process for the spring embedder should stop. The greater this constant, the faster the layout, but the more distant the final position from the optimal layout.
Apply	Applies the current settings.
Reorder	Recalculates the positioning of entities without refreshing the data from the database.
Close	Closes the Settings dialog.

Tree Layout

Tree layout displays objects as a hierarchy, beginning with the root node. The tree can be oriented vertically or horizontally.

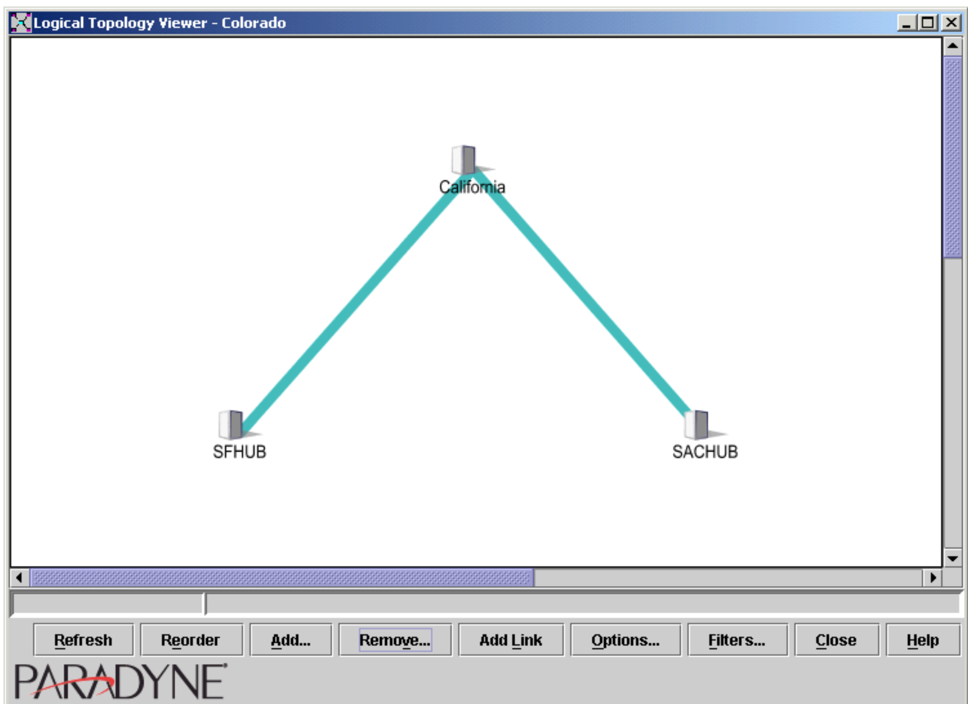


Figure 6-29. Logical Topology Viewer – Tree Layout

To display the Tree Layout settings dialog, click on Options at the bottom of the Logical Topology viewer.

The settings in the Tree Layout settings dialog are as follows:

Setting	Description
Propagate	When selected, changes to any individual entity cause the positions of connected entities to be recalculated.
Root	This read-only field displays the name of the root entity.
Grab root...	Click this button to display the Grab root dialog, which enables you to specify the root entity.
Tree orientation	Select the button corresponding to the desired direction of orientation. The label on each button (Left, Top, Right, Bottom) indicates where the tree will start. A tree orientation of Top, for example, will place the root node of the tree at the top, with each successive level proceeding toward the bottom of the graphic.
Layout order	Specifies whether the entities should be placed according to their order in the database listing (List Order) or according to their current position (Closest position).
Layout Method	Determines the methodology used to place the graphics. The options are: ■ **Compact:** Places the objects as close together as possible. ■ **Fixed Spacing:** Places the objects a specified distance from each other. ■ **Use objects' sizes:** Utilizes the size of the object to determine its placement with respect to the other objects. ■ **Horizontal Fixed Spacing:** Specifies the horizontal distance between objects, in pixels, when Fixed Spacing is turned on. ■ **Vertical Fixed Spacing:** Specifies the vertical distance between objects, in pixels, when Fixed Spacing is turned on.
Apply	Applies the current settings.
Reorder	Recalculates the layout of the entities within the window using available data.
Close	Closes the dialog.

Physical Topology

Physical Topology provides you with a graphical representation of the equipment being monitored. It provides for “nesting,” giving you the ability to monitor, for example, a card in a slot within a switch.

Data Collection Schedule

The Data Collection Scheduler is used to schedule and perform status queries on predefined Managed Objects. To access the Data Collection Scheduler, select Data Collection Schedule from the Config menu. Currently, the Data Collection Scheduler collects the SNMP SysUpTime of the queried device and populates the retrieved value into the Device tab of the Managed Object Manager. In addition, if the initial SysUpTime is greater than the newly received value, an alarm is generated.

One status query may contain several devices; in this case, the information is retrieved in the order in which the devices are specified. To change the order in which data is retrieved, simply rearrange the devices within a query.

By default, the query will be executed daily, at 2:00 AM local time. Both the time and frequency of execution can be changed through the Data Collection Scheduler.

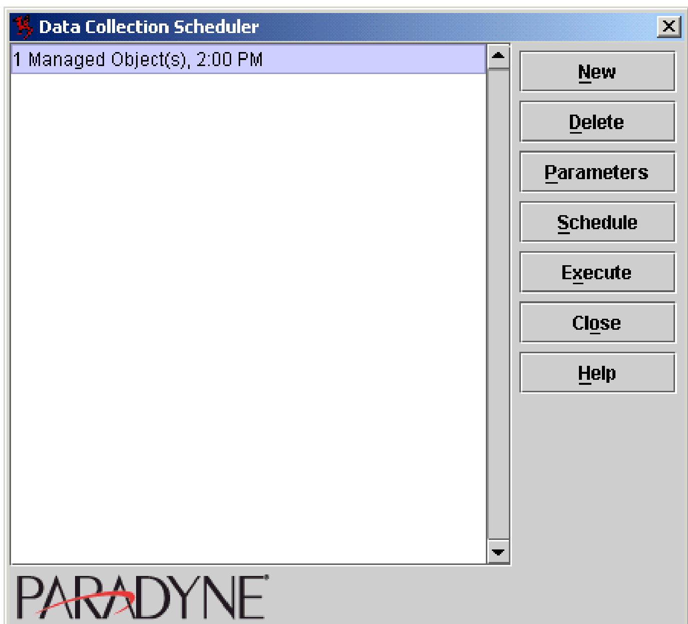


Figure 6-30. Data Collection Scheduler

Creating a Data Collection Query

A data collection query is created by specifying one or more Managed Objects to process, setting the parameters of the query, and setting up the schedule. Click on New to display the Scheduled Event dialog.

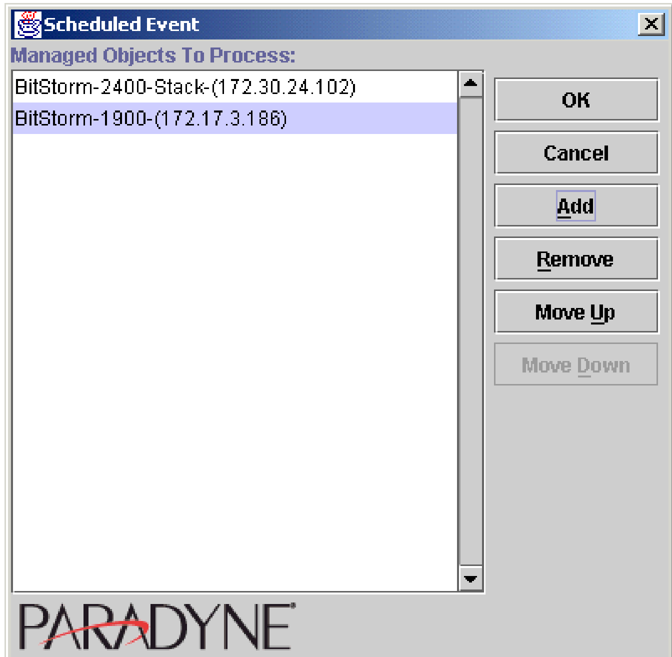


Figure 6-31. Scheduled Event Dialog

The managed objects listed in this dialog will be processed in the order in which they appear. To change their respective order, select one and click on Move Up or Move Down until it is in the desired position.

Click on Remove to remove the selected object from the list.

Adding Managed Objects

If you need to add objects to the list, click on Add (or press Alt-A). The Select Managed Object dialog appears.

Select a category of objects for display from the drop-down menu at the top of the dialog. Then, select one or more objects from the resulting list and click on OK.

If the object you need does not appear on the list, you can import it by clicking Import; once imported, it appears under the appropriate category.

Removing a Managed Object from a Query

Highlight the object in the list and click on Delete (or press Alt-R) to remove it from the query. The selected Managed Object will be removed from the query.

Editing the Parameters of a Data Collection Query

You can modify the parameters of an existing Data Collection query by double-clicking on query to be edited in the Data Collection Scheduler, or by highlighting the query and selecting Parameters (or entering Alt-P) to display the Scheduled Event dialog box.

Scheduling a Data Collection Query

Highlight the query to be edited, and click on Schedule (or press Alt-S). Modify the schedule information for Data Collection queries, including the time to start and the interval between queries.

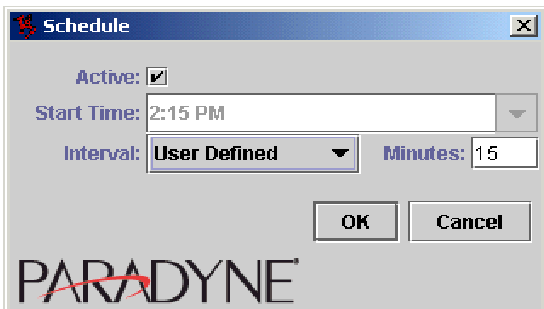


Figure 6-32. Scheduling Data Collection Query Dialog

The fields in the Scheduling Data Collection Query dialog are as follows:

Field	Description
Active	Select this option to activate this query.
Start Time	Specify a start time for this query by selecting one of the twenty-four hourly options from the drop-down menu.
Interval	Specifies the interval between executions of this process (the Minutes field is enabled if user-defined is selected).

Executing a Data Collection Query

Highlight the query and click on Execute (or press Alt-X) to run the scheduled query immediately.

Device Discovery Wizard

Discovery is the process by which StormTracker EMS identifies network elements. Once a network element has been identified, a Managed Object can be created, enabling StormTracker EMS to communicate with the element. Discovery can be performed interactively, through the Discovery Wizard, or can be set up in advance and scheduled for automatic execution, through the Discovery Scheduler. Both methods are detailed in this section.

Discovery Wizard – Options

The Discovery Wizard simplifies the process of network element discovery by providing a high degree of interactivity. When the Discovery Wizard is initially launched, the Network Discovery Options window appears.

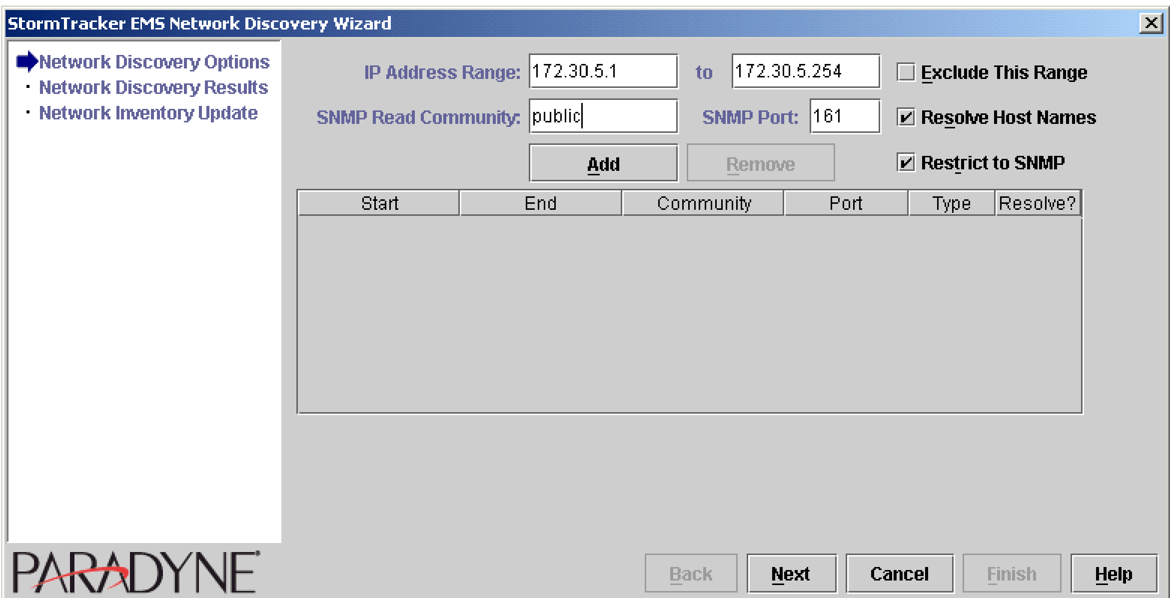


Figure 6-33. Network Discovery Wizard – Discovery Options

The Options window lets you specify IP address ranges to include or exclude.

▶ Procedure

To set network discovery options:

1. Specify a starting and ending IP address to establish a range. Each address in this range is sent an ICMP Echo command. If a response is received, the address is listed as valid.
2. Specify an SNMP Read Community (Public or Private) to enable SNMP checking. When SNMP checking is enabled, any address that responds to an ICMP Echo is sent an SNMP get command.

Discovery does not process the next address until either a valid SNMP response or an SNMP time-out is returned. Because the wait for a time-out adds considerably to the processing time, this option should be restricted to ranges of addresses likely to host SNMP devices.

3. To abbreviate discovery process, check any or all of the following:

   — Exclude This Range

   — Resolve Host Names

   — Restrict to SNMP

4. Click on Add to add the address range and specifications to the processing queue.

5. Enter any additional range specifications you may require. When you are finished, click on Next to initiate discovery.

Discovery Process – Results

The Discovery Wizard provides a status message to indicate which address is currently being checked, which addresses have been processed and what network elements have been discovered, and when discovery is complete.

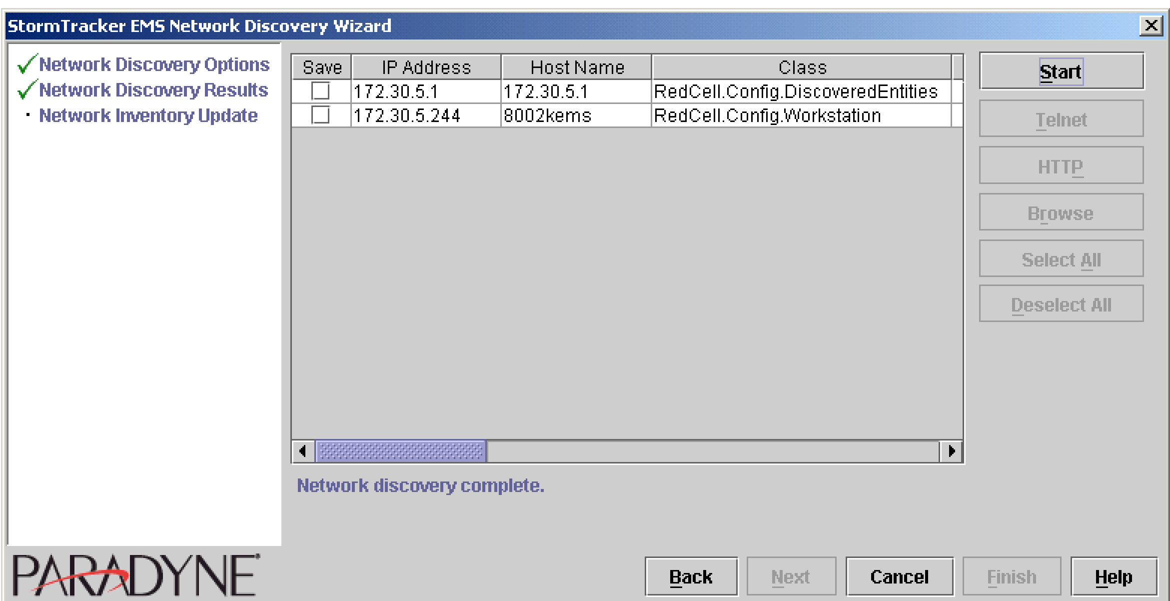


Figure 6-34. Network Discovery Wizard – Discovery Results

The discovered network elements are listed in a tabular display, and some columns feature check boxes that let you select certain options. Select any appropriate options and click on Next to move to the next dialog.

The options you have selected are put into effect, and those elements slated for a Save are converted into Managed Objects. Click on Finish to close this dialog.

Results Options

During the Results phase of discovery, various options are available.

Every column in the Discovery window is active; some are editable, some contain check boxes that activate options, and some contain drop-down menus. The columns in the Discovery window are as follows:

Column	Description
Save	Click the check box to create a managed object for this network element.
IP Address	Editable; the IP address for this network element.
Host Name	Editable; the Host Name for this network element.
Class	Menu; the class into which this network element has been placed. Select a class from the drop-down menu. If no Discovery specification is made, the element is placed in **`RedCell.Config.DiscoveredEntities`**.
Location	Editable; the location of the device. Click on the field to activate it. Type the name of a location or use the command button (...) to open a browser through which you can specify the location.
Schedule Heartbeat	Check box; select this option to automatically schedule a heartbeat for this network element.
Schedule Data Collection	Check box; select this option to automatically schedule this network element for data collection.
Schedule Resynchronization	Check box; select this option to automatically schedule this network element for resynchronization.
Protocol	The protocol (typically IP) associated with this network element.
Community	Editable; the SNMP read community for this network element. If no community is specified, only an ICMP ping is performed; the SNMP *get* operation is omitted.
SysName	Editable; the SysName of this network element.
SysObjectID	Editable; the SysObjectID for this network element.

Discovery Options

While the Results panel is displayed, the Options buttons on the right side of the dialog are active. These buttons are as follows:

Button	Description
Telnet	Opens a Telnet session with the selected network element, if it supports Telnet.
HTTP	Opens the default Web page of the HTTP server, if one exists, running on the specified network element.
Browse	Reserved for future expansion.
Check SNMP	Reserved for future expansion.
Select All	Selects all check boxes in the active column. (This option has no effect unless a check box column is active.)
Deselect All	Deselects all check boxes in the active column.

Discovery Wizard – Network Inventory Update

The Network Inventory Update screen shows the discovery results. Click on Finish to close the Discovery Wizard.

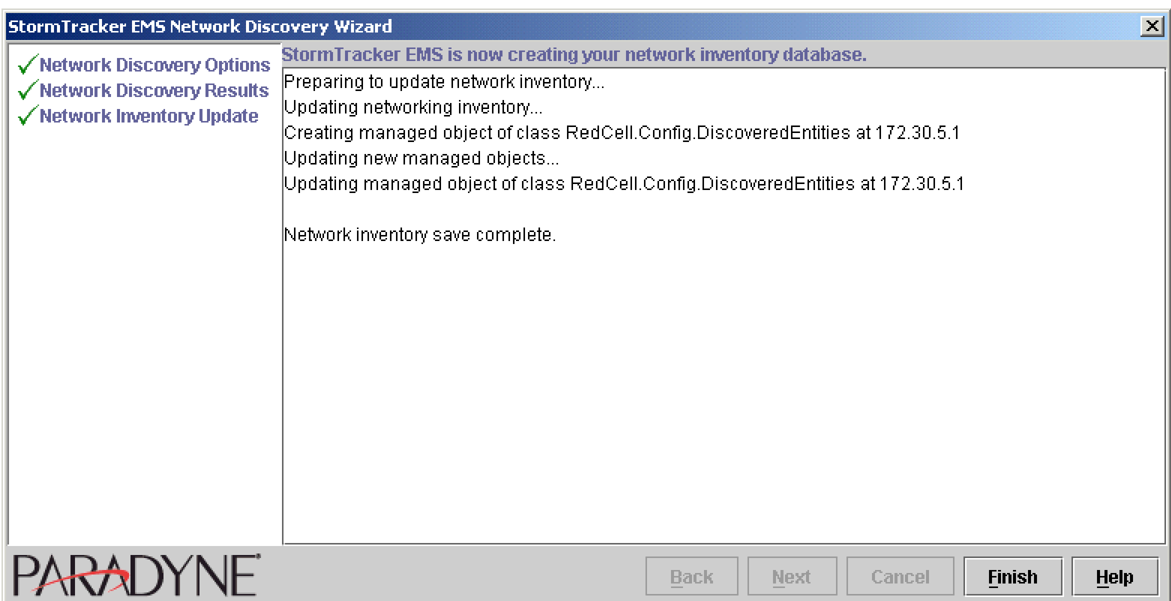


Figure 6-35. Network Discovery Wizard – Inventory Update

Device Discovery Schedule

The Device Discovery Scheduler is not supported in this release of StormTracker EMS. Please use the *Device Discovery Wizard* on page 6-48 for discovering entities in your network.

Device Resync Schedule

The Device Resynchronization Scheduler is used to automate the resynchronization of managed devices according to a preset schedule. During resynchronization, all managed objects are queried to determine whether their values matched the stored values. Any values that have changed since the last resynchronization (or, if this isn't applicable, since discovery) are updated.

By default, resynchronization is executed daily, at 1:00 AM local time. Both the time and frequency of execution can be changed through the Device Resynchronization Scheduler.

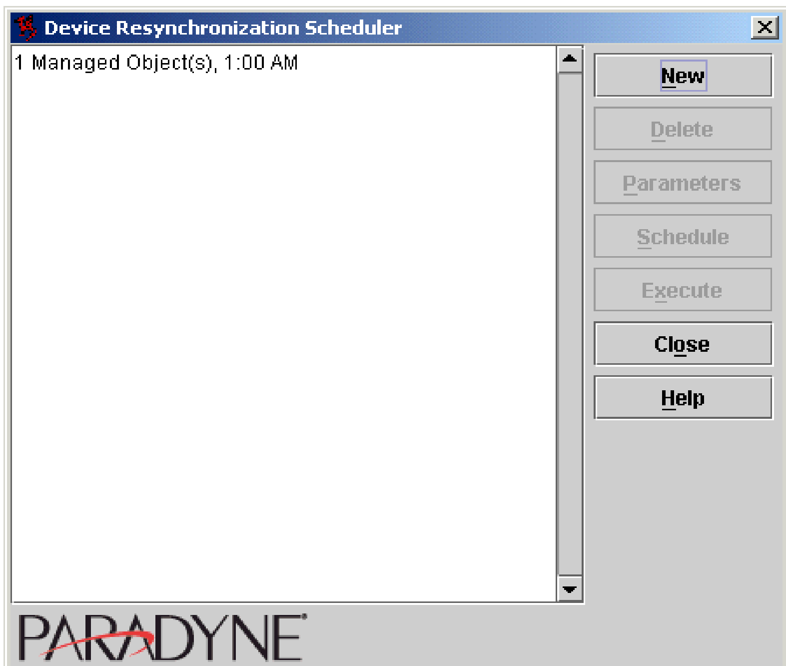


Figure 6-36. Device Resynchronization Scheduler

Creating a Scheduled Device Resynchronization

A device resynchronization schedule is created by specifying one or more Managed Objects to process, setting the parameters of the resynchronization, and setting up the schedule. First, click on New (or press Alt-N) to display the Scheduled Event dialog.

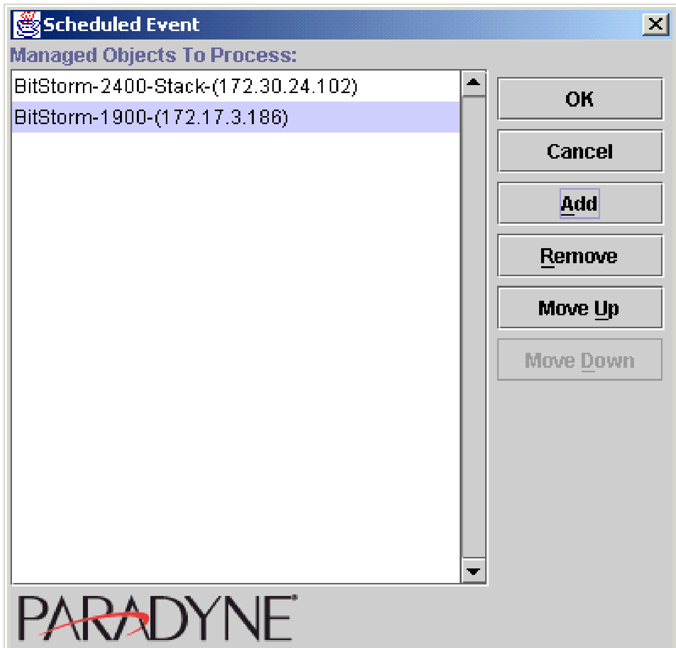


Figure 6-37. Scheduled Event Dialog

The managed objects (or groups of objects) listed in this dialog will be processed in the order in which they appear. To change their respective order, select one and click on Move Up or Move Down until it is in the desired position.

Click on Remove to remove the selected object from the list.

Adding Managed Objects

If you need to add objects to the list, click on Add (or press Alt-A). The Select Managed Object dialog appears.

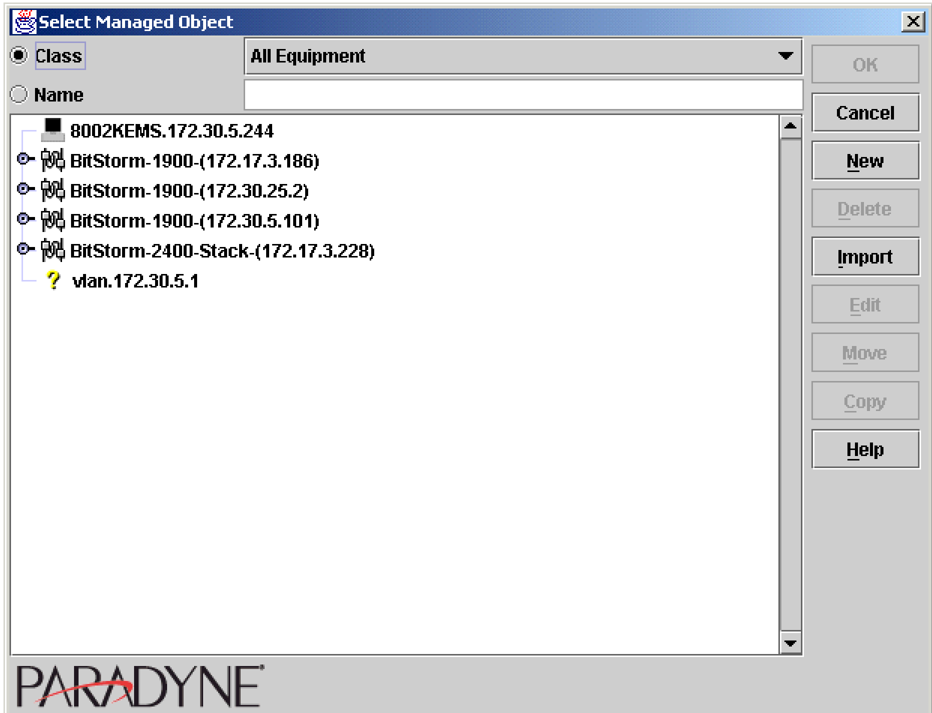


Figure 6-38. Select Managed Object Dialog

Select a category of objects for display from the drop-down menu at the top of the dialog. Then, select one or more objects from the resulting list and click on OK.

If the object you need does not appear on the list, you can import it by clicking Import; once imported, it appears under the appropriate category.

Removing a Managed Object from the Schedule

Highlight the object in the list and click on Remove (or press Alt-R) to remove it from the resynchronization schedule.

Device Resynchronization Schedule Parameters

You can modify the parameters of an existing Device Resynchronization schedule by double-clicking on the schedule to be edited, or by highlighting the schedule and selecting Parameters (or pressing Alt-P) to display the Scheduled Event dialog box.

Scheduling Resynchronization

Highlight the resynchronization schedule to be edited and click on Schedule (or press Alt-S). Modify the schedule information, including the time to start and the interval between resynchronizations.

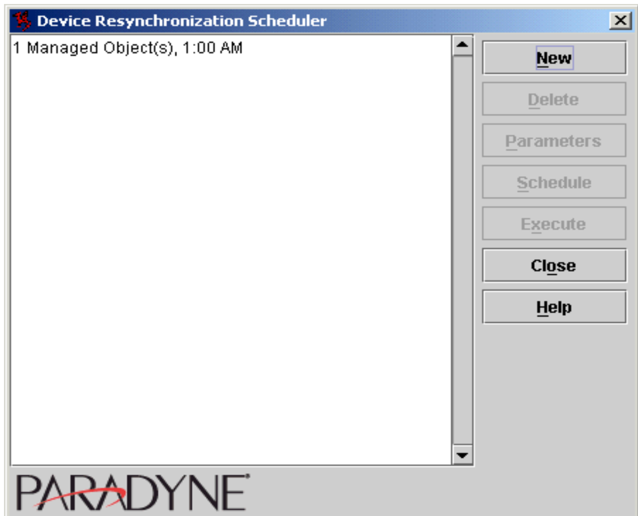


Figure 6-39. Device Resynchronization Scheduler Dialog

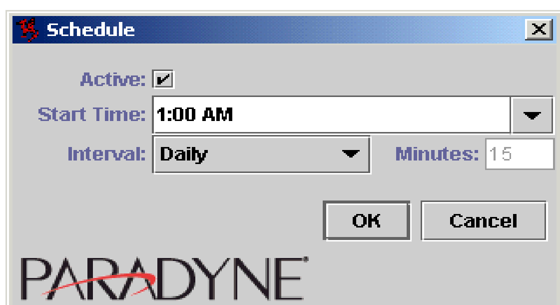


Figure 6-40. Device Resynchronization Schedule

The fields in the Device Resynchronization Schedule dialog are as follows:

Field	Description
Active	Select this option to activate this resynchronization schedule.
Start Time	Specify a start time for this resynchronization schedule by selecting one of the twenty-four hourly options from the drop-down menu.
Interval	Specifies the interval between executions of this process.

Executing Device Resynchronization

Highlight the resynchronization schedule and click on Execute (or press Alt-X) to run the scheduled resynchronization immediately.

Class Manager

The Device Class stores object identifiers, or sysObjectIDs, for convenient retrieval. Both the Discovery Scheduler and the MIB Loader use this mechanism to let you browse through defined sysObjectIDs. The Device Class Manager provides the interface through which sysObjectIDs are managed.

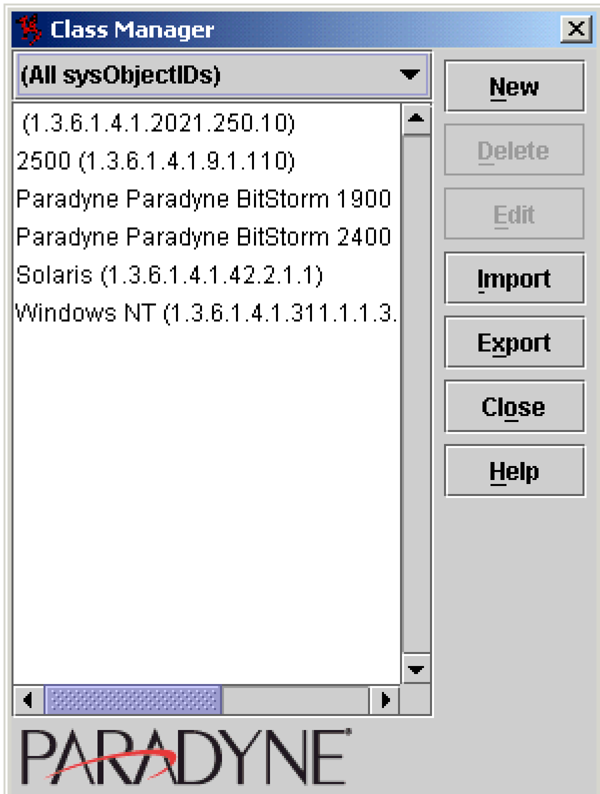


Figure 6-41. Device Class Manager Window

sysObjectID Operations

StormTracker EMS ships with a small number of sample sysObjectIDs; these are provided as examples of the format. As part of your ongoing operations, you will need to edit and/or delete these sysObjectIDs, as well as add the new ones that your installation requires. The Device Class manager lets you add, delete, import, and export sysObjectIDs.

Adding or Editing a sysObjectID

Adding a sysObjectID and editing an existing sysObjectID are similar operations.

▶ Procedure

To add or edit a sysObjectID:

1. To add a sysObjectID, click on New (or press Alt-N). To edit an existing sysObjectID, select it and click on Edit (or press Alt-E). In either case, an Edit dialog appears. The title bar provides either the name of the operation or the sysObjectID.
2. If you are adding an object, type the sysObjectID in the sysObjectID field. If you do not know this value but do know the IP address of the device in question, you can use the command button (...) to open a Query dialog. Simply type the IP address or the Host name in the Host field and click on Query.
3. Once you have obtained or edited the sysObjectID, edit the Vendor field as appropriate or use the command button (...) to display a browser, through which you can locate the appropriate vendor.
4. Type or edit the Model name, as appropriate.
5. Associate the device with an equipment class by selecting a class from the drop-down menu.
6. Click on OK to store the results.

▶ Procedure

To delete a sysObjectID:

1. Select it and click on Delete (or press Alt-D).

Locations

The locations of Managed Objects, used when designing Services, are specified within the Location Manager. Note that StormTracker EMS utilizes the concept of "Parent" Locations, where one location can be defined as a subset of another. For example, if network objects are located on the third floor of a facility, both the building and the specific floor can be designated as locations; the building would be defined as the parent of the floor.

Using the Location Manager

To access the Location Manager, select Locations from the Config menu. The Location Manager window appears.

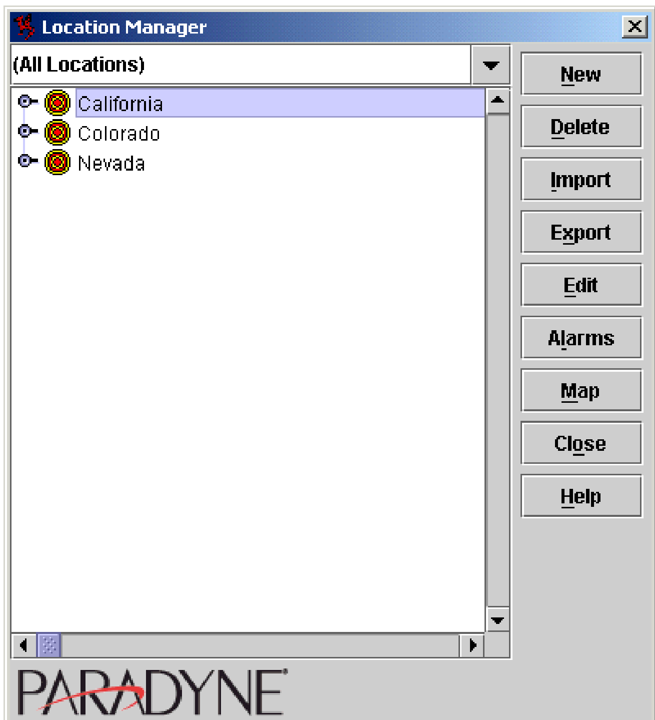


Figure 6-42.   Location Manager

The drop-down menu at the top of the window lets you apply a top-level location filter to restrict the display. By default, all locations are displayed when the Location Manager first opens. You can select a predefined filter, or you can type in your own specification. The filter lets you specify the full name of a location (California, for example) or part of a name (Ca). Only locations matching that specification are displayed. Note that the filter is case-sensitive.

The Location Manager window contains the following buttons:

Button	Description
New	Opens the Location Editor, through which you can define a new location.
Delete	Deletes the selected location.
Import	Opens the Import utility.
Export	Opens the Export utility.
Edit	Opens a Location Editor for the selected location.
Alarms	Displays alarms for all objects at the selected location.
Map	Opens the Topology Viewer, displaying the selected location.
Close	Closes the Location Editor.
Help	Displays Online Help for the Location Editor.

Adding a Location

Select New (or press Alt-N) to display the Location Editor. Enter information regarding the new Location; you can specify name, parent name, address, description, coordinates, and coordinate type. Location names must be unique.

Defining or Modifying a Parent Location

From the appropriate location dialog box, click on the command button (...) to open a Browser dialog from which you can specify the Parent Location. The Parent Location dialog box functions exactly as the primary Location dialog box and lets you add, delete, and edit locations.

Editing a Location

Highlight the Location and select Edit (or press Alt-E); the Location Editor appears. All Location information can be modified, including the name, parent name, address, and description, as well as coordinate type and specific coordinates.

The Location Editor has the following fields:

Field	Description
Location Name	A unique name for the Location.
Parent Location	The “parent” (the location to which this location is subordinate) of this location. Click on the command button (...) to open a Browser through which you can select a Parent Location. Click on the Eraser icon to clear the Parent Location field.
Location Type	Type of location, as selected from the drop-down menu. Available types are: Customer, Provider, Other, Area Hub, Regional Hub, National Hub.

Field	Description
Coordinate Type	Specifies the way coordinates are designated; see Location Coordinate Types for more information. Valid types are: v-h coordinates, lat-long, NPA-NXX, country-city, ST-Country, CITY-ST.
Coordinates	Coordinates of location, using the Coordinate Type specified above.
Address	Three-line address of location.
Location Details	Detailed description of location.

Location Coordinate Types

StormTracker EMS lets you define locations using a variety of coordinate types, enabling accurate definition of locations. The default coordinate types are as follows:

Coordinate Types	Description
v-h coordinates	Vertical / horizontal coordinates, developed by Bell Systems.
lat-long	Latitude and longitude. Example: 38.57N, 121.47W
NPA-NXX	Area code and prefix. Example: 916-939
country-city	Country and city access codes. Example: 049-071
CITY-ST	City and state. Example: Sacramento, CA

Deleting a Location

Highlight the location to be deleted, and select Delete (or press Alt-D) to remove a Location from the system. StormTracker EMS will prompt you before deletion.

Importing and Exporting Locations

Locations can be imported and exported through StormTracker EMS's Import and Export utilities. Exported files can serve as backups or as seed files, and can be imported by clients running on other servers.

Vendors

Contact information for vendors who supply Managed Objects is created and modified through the Vendor Manager. To access the Vendor Manager, select Vendors from the Config menu.

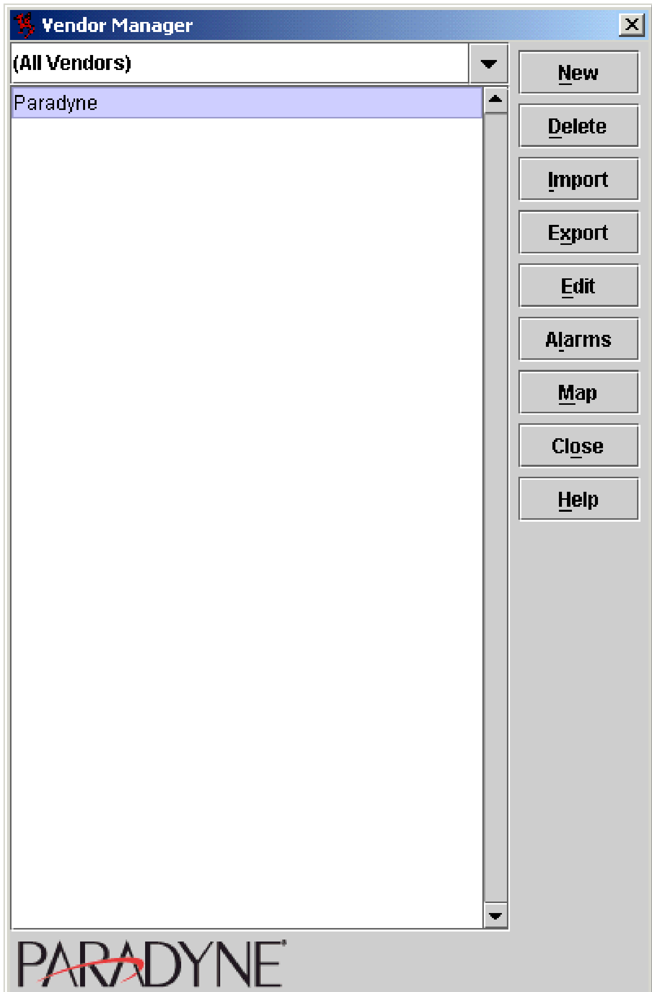


Figure 6-43. Vendor Manager Window

Filtering Vendors

The Vendor Manager provides predefined filters to let you restrict the display, and also incorporates a search feature. To use this feature, select a filter from the drop-down menu or type a search value in the filter field. Searches are performed based on the Vendor Name, and are case-sensitive; if “one” is entered into the search field, for example, “Vendor One” will not be returned.

Adding and Editing Vendors

Select New (or press Alt-N) to display the Vendor Editor dialog. (The title bar of this dialog reflects the current operation.)

Fill out the dialog as appropriate, and click on OK to save the data or Cancel to cancel the operation. The fields in this dialog are as follows:

Field	Description
Vendor Name	Short description of vendor.
First Name	First name of contact.
Last Name	Last name of contact.
Address	Three-line address.
Phone Number	Can contain up to three phone numbers: Work, Home, Other.
Pager Number	Can contain up to three pager numbers: Work, Home, Other.
Mobile Number	Can contain up to three mobile phone numbers: Work, Home, Other.
Fax Number	Can contain up to three fax numbers: Work, Home, Other.
Email	Can contain up to four e-mail addresses: Work, Home, Pager, Other.

Deleting a Vendor

To remove a vendor from the system, highlight the required vendor to be deleted, and select Delete (or press Alt-D). StormTracker EMS will display a prompt before deleting.

Importing and Exporting Vendors

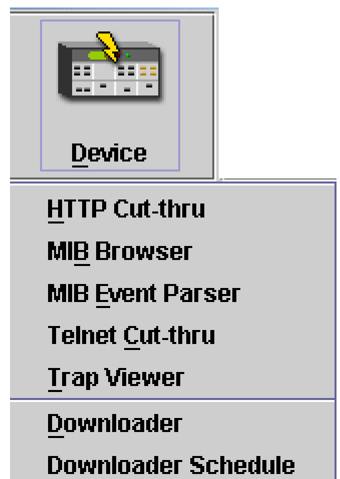
The Vendor file can be exported and imported through StormTracker EMS's Import and Export utilities. Exported files can be used as backup files and seed files or they can be imported by clients running on other servers.

Device Menu

7

Overview

StormTracker EMS's Device menu options give you the following tools to define and create several configuration managers:



- **HTTP Cut-thru**
  (See *HTML Cut-thru* on page 7-2)
- **MIB Browser**
  (See *MIB Browser* on page 7-4)
- **MIB Event Parser**
  (See *MIB Event Parser* on page 7-6)
- **Telnet Cut-thru**
  (See *Telnet Cut-thru* on page 7-3)
- **Trap Viewer**
  (See *Trap Viewer* on page 7-7)
- **Downloader**
  (See *Downloader* on page 7-9)
- **Downloader Scheduler**
  (See *Downloader Schedule* on page 7-12)

Device Components

StormTracker EMS's "Cut-thrus" provide a convenient way to open a Telnet session with a managed object or view a Web page hosted by a managed object. In both cases, StormTracker EMS automatically supplies the IP address of the current managed object. In addition, the SNMP Trap View MIB features provide further diagnostic capabilities. The downloader utility makes it convenient to downloader device firmware.

The Device menu lets you interact directly with system devices either by HTTP or Telnet cut-thru to a device, by loading or browsing MIBs, or by viewing incoming traps. In addition, you may download the latest firmware available for system hardware.

HTML Cut-thru

The StormTracker EMS HTTP Cut-thru is used to establish an HTML session with a managed object without requiring its IP address. Launch the HTTP cut-thru by selecting HTTP Cut-thru from the Device menu.

Loading an HTML Document

Type the IP address of a device hosting an HTTP server or type its URL. You can also select from the list of Managed Objects by clicking on the command button (...). This action displays a dialog listing the managed objects; select one from the list and click on OK to populate the IP address field with the IP address of that device.

If a functioning HTTP Server exists at the specified address, and if a default HTML document can be found, it is displayed in the workstation’s default browser.

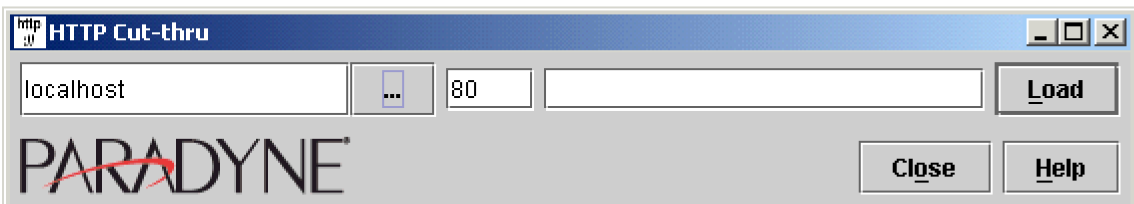


Figure 7-1. HTTP Cut-thru

The HTTP Cut-thru is typically used to interact with Web-based utilities, such as a Router Management utility.

Telnet Cut-thru

The StormTracker EMS Telnet Cut-thru lets you establish a Telnet session with a specified device, typically a Managed Object. To launch the Telnet Cut-thru, select Telnet Cut-thru from the Device menu.

Opening a Telnet Session

Type the IP address of the device with which you want to establish the Telnet session or click on the command button (...) to display a list of managed objects. Select a device from the list and click on OK to populate the IP address field with that of the specified device. Select Connect to begin the session. Click on Local Echo if you want the text you are typing to be displayed in the Telnet window.

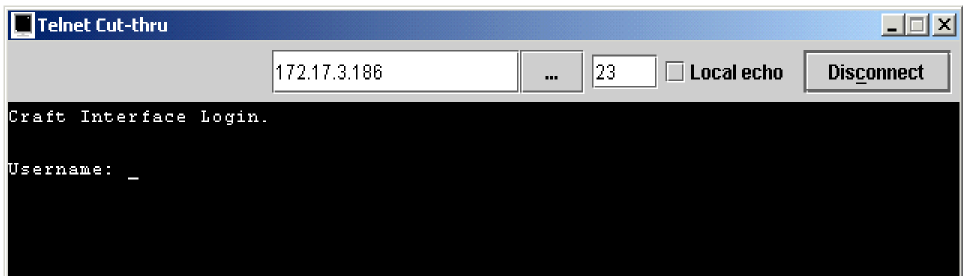


Figure 7-2. Telnet Cut-thru

MIB Browser

The SNMP MIB Browser allows you to quickly browse through a device's MIB, get and set values for given OIDs, or walk a node. To access the MIB Browser, select MIB Browser from the Device menu.

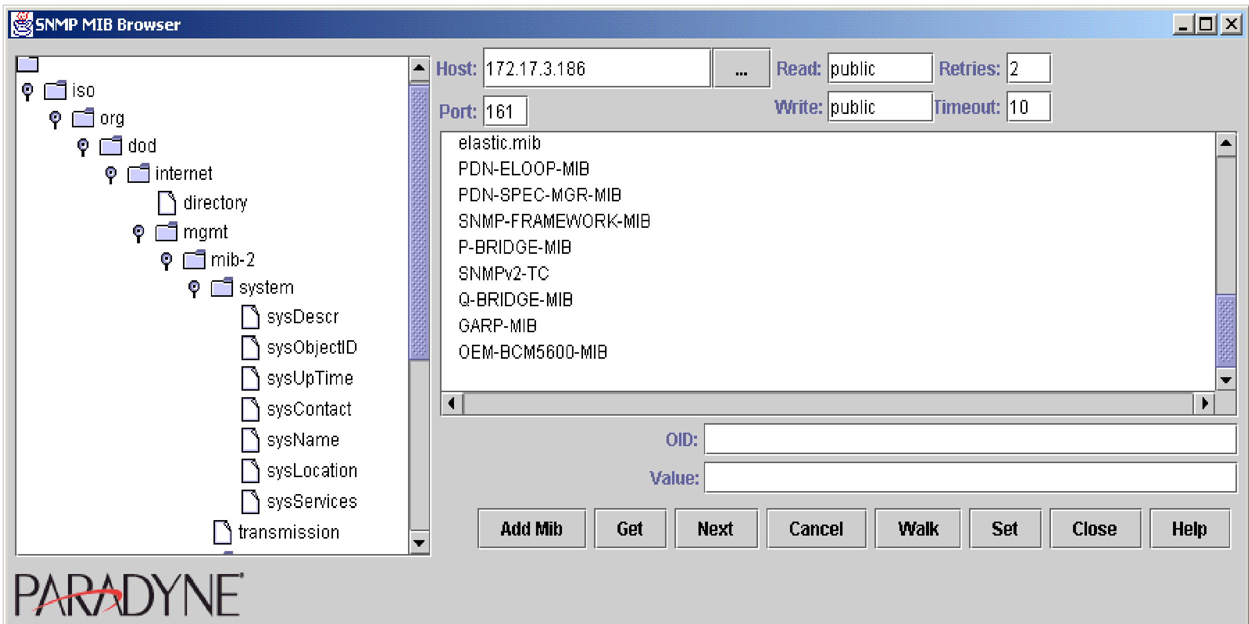


Figure 7-3. SNMP MIB Browser

Using the MIB Browser

The MIB is displayed on the left side of the browser window; the highlighted OID and Value are displayed on the right. If desired, additional MIBs can be added from a text file and browsed through the console as well. Note that the MIB Browser uses mediation; therefore, the Mediation Agent must be running to access MIBs.

The fields in the MIB Browser are as follows:

Field	Description
Host	The IP address of host to browse.
Port	The port to access; the default for SNMP traffic is 161.
Read	The SNMP Read Community; allowable values are Public or Private.
Write	The SNMP Write Community; allowable values are Public or Private.
Retries	The number of times to attempt a retry; default is 2.
Timeout	The number of seconds to wait before timeout; default is 10.
OID	Displays the selected OID.
Value	Displays the value of the selected OID.
Add MIB	Imports a MIB for viewing. To add a MIB, browse to the file location, select the file, and click on Open. The MIB is then added into the browser and may be opened. Note that the MIB is added only for the duration of the session.
Get	Performs a get on the selected OID. To get an OID, type a host IP address in the Host field, browse to the desired OID, and click on Get.
Next	Performs a get on the next OID.
Cancel	Cancels the current operation.
Walk	Walks the node; performs a multiple get on all OIDs. To walk a node, type a host IP address in the Host field, browse to the desired node, and click on Walk.
Set	Perform a set on the selected OID. To set an OID, type a host IP address in the Host field, browse to the desired OID, type the new value in the Value box, and select Set.

MIB Event Parser

The SNMP MIB Event Parser is designed to parse SNMP v1 and v2 MIBs. All traps and notifications listed within the loaded Elastic MIB are automatically converted into Event Templates. To launch the SNMP MIB Event Parser, select MIB Event Parser from the Device menu.

Selecting a MIB File

Navigate to the location of the MIB file you want to parse and select it (or type the path and filename directly in the File name field) and click on Import. After the MIB Loader has successfully parsed the trap data from the text, the system displays a message confirming the transfer.

NOTE:

MIB names may not contain spaces.

Elastic MIB File

The Elastic MIB supports the following traps:

- _enEloopCOModemIfClearStatsEvent
- _enEloopCOModemIfDownEvent
- _enEloopCOModemIfUpEvent
- _enEloopCPEModemClearStatsEvent
- _enEloopCPEModemEnetDownEvent
- _enEloopCPEModemEnetUpEvent
- _enEloopCPEModemResetEvent
- _enEloopShelfStatusChange

Trap Viewer

Select Trap Viewer from the Device menu to launch the Trap Viewer. The SNMP Trap Viewer is a simplified version of the Alarm Window and can be useful as a diagnostic tool. It displays information regarding incoming SNMP traps, including the sending agent, the trap type, time received, system uptime, OID, and trap value. In addition, the Examined column lets you double-click on a trap to indicate that it has been investigated. The Trap Viewer does not total similar incoming traps; every trap receives an entry.

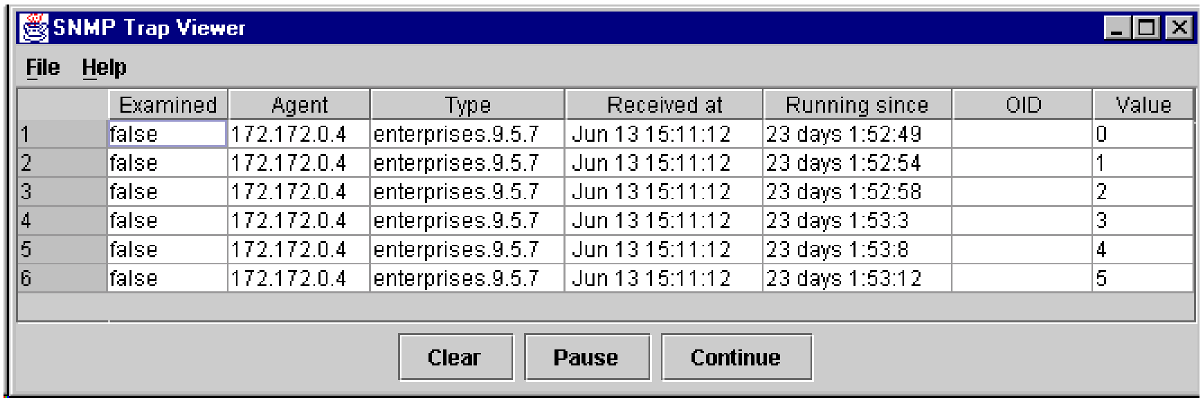


Figure 7-4. SNMP Trap Viewer

To clear all events in the viewer, use the Clear button at the bottom of the display. If necessary, the display can be paused and resumed, using the Pause and Continue buttons.

SNMP Trap Viewer Columns

The SNMP Trap Viewer has the following columns:

Column	Description
Examined	This column is used to mark investigated traps; defaults to False.
Agent	This column displays the IP address of the agent sending the trap.
Type	This column displays the SysObjectID of the sending agent; the trap viewer will resolve to system (1.3.6.1.2.1.1) or enterprise (1.3.6.1.4.1).
Received at	This column displays the date and time that the trap was received.
Running since	This column displays the system uptime of the trap emitter; displayed in hh:mm:ss format.
OID	This column displays the ObjectID of trap.
Value	This column displays the trap value.

Trap Viewer Controls

The buttons at the bottom of the SNMP Trap Viewer are as follows:

Button	Description
Clear	Clears all traps within the viewer.
Pause	Pauses the display of incoming traps without affecting the flow of incoming traps.
Continue	Resumes the display of incoming traps, and displays any traps received while viewing was paused.

Downloader

The Downloader feature is used to download device firmware for network hardware upgrades. This feature is accessible from the BitStorm panel of the Managed Object Manager or the Device menu.

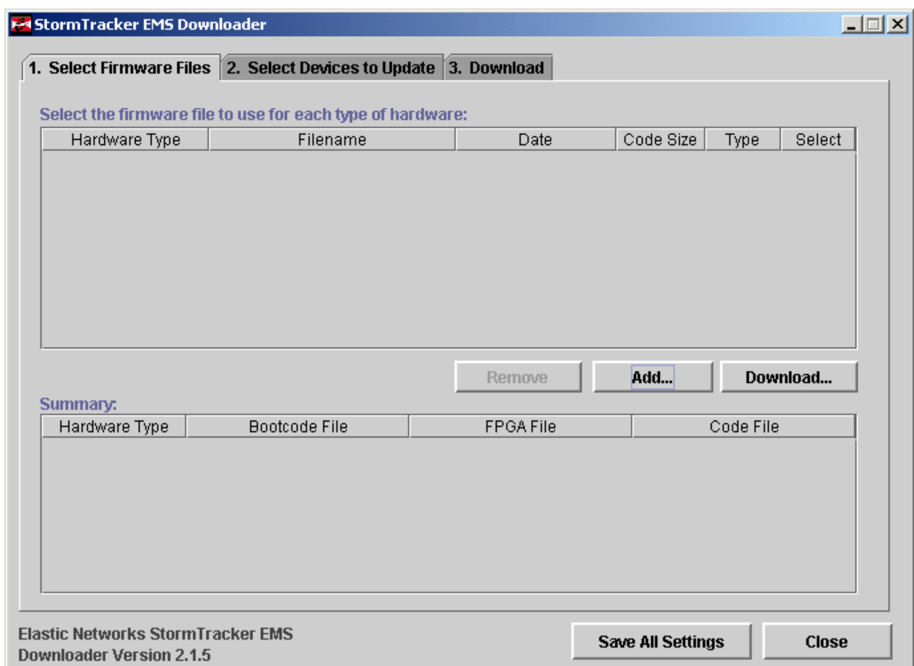
Using Downloader

Upgrading device firmware is a three-part process: selecting firmware files, selecting devices to update with respective firmware files, and downloading firmware files.

▶ Procedure

To select firmware files:

1. Select Downloader from the Device menu. The following screen appears:



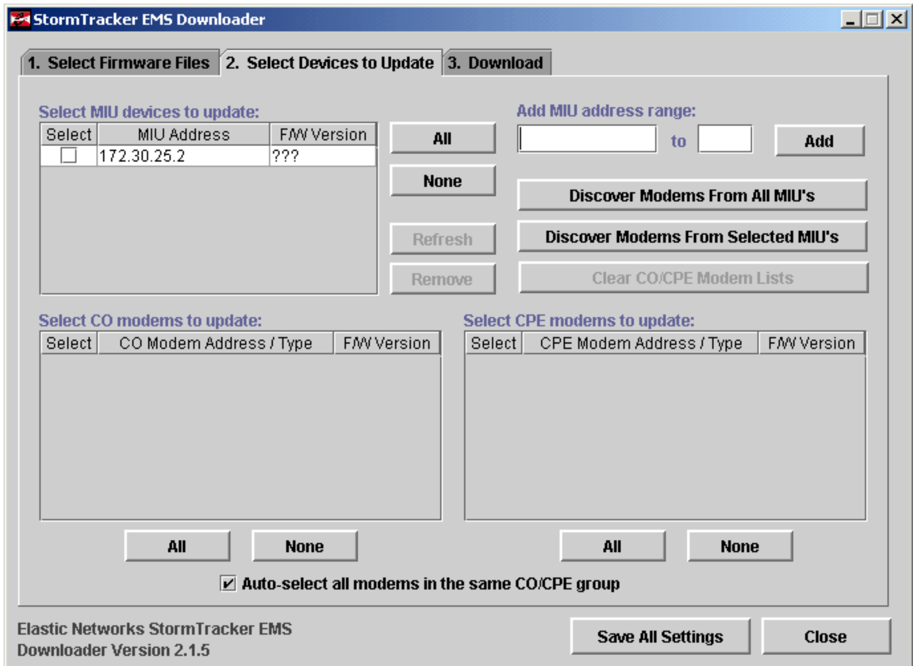
2. Within the Select Firmware Files tab, select equipment to download, then click on Add to add a new file local to the machine running Downloader.

Select Devices to Update

▶ Procedure

To select devices:

1. Select the Select Devices to Update tab. The following screen displays:



2. Select the corresponding checkboxes for the devices you wish to update.

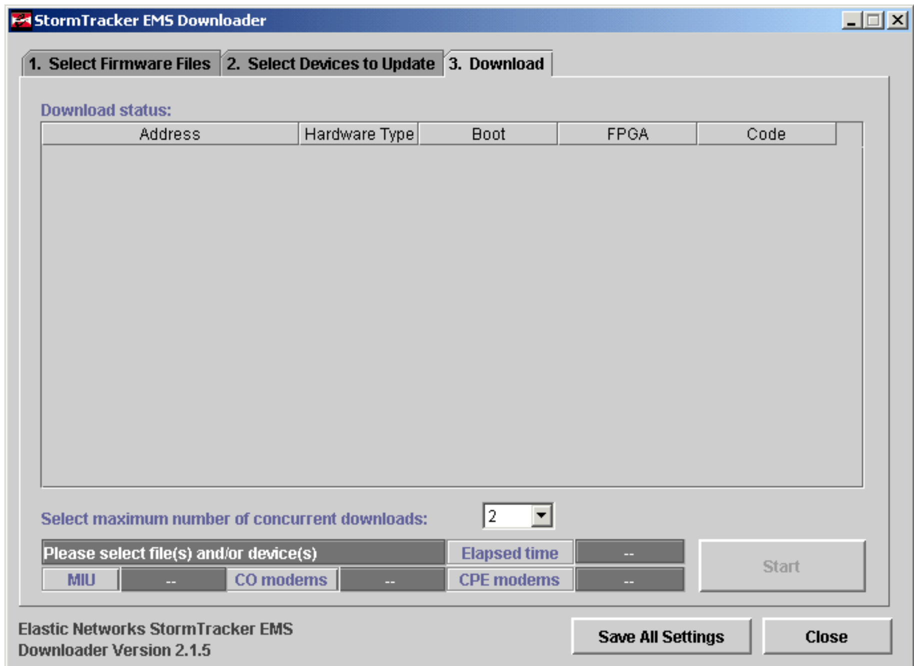
   OPTIONAL: Click on All to select all modems or MIU devices. Click on Discover Modems from All MIU's to display network modems in the modem lists, or click on Discover Modems From Selected MIU's to display network modems associated with selected MIU devices.

Download

▶ Procedure

To download firmware files previously selected:

1. Select the Download tab. The following screen displays:



2. Select a maximum number of concurrent downloads from the drop-down menu. This number should be set based on processor speed, free memory, connection speed, etc.

3. Click on Start to begin downloading firmware.

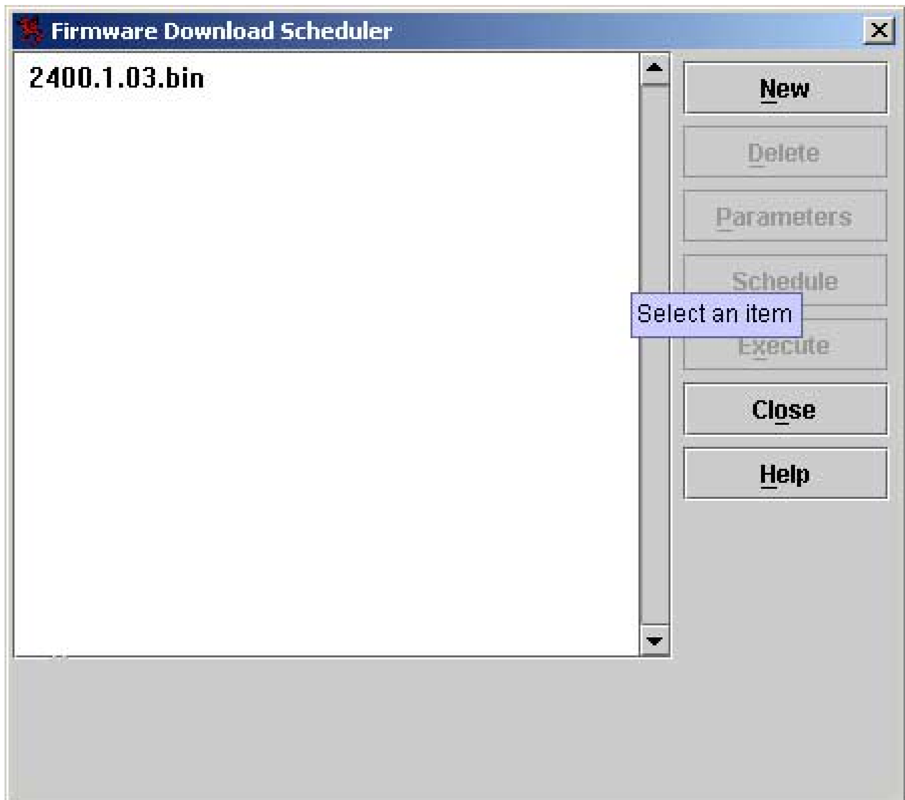
Downloader Schedule

The downloader scheduler allows for firmware downloads to be scheduled at select intervals as needed. Downloader Scheduler is used *after* firmware.bin files have been downloaded.

▶ Procedure

To schedule downloads for specified devices:

1. Select Downloader Schedule from the Device menu. The following screen appears:



2. Select a file, then click on Schedule. Do the following:
   — Select Active to enable firmware download scheduler.
   — Select a time.
   — Select interval (typically once is recommended).
3. Click on OK when finished.

▶ Procedure

To Execute:

1. Highlight **`.bin`** file, then click on Execute.
2. When a message appears that the scheduled item has been sent to the application server, click on OK.

To set Parameters of the scheduling, following the same steps listed in *Downloader* on page 7-9.

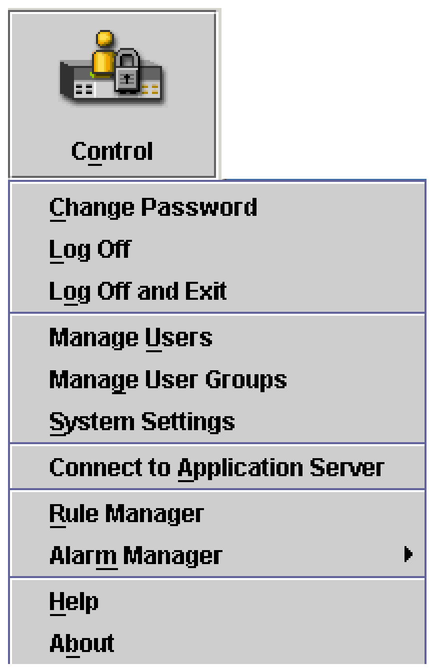
Control Menu

8

Overview

StormTracker EMS's Control menu options give you the following tools to manage user and system settings:

- **Change Password**
  (See *Change Password* on page 8-2)
- **Log Off**
  (See *Log Off* on page 8-2)
- **Log Off and Exit**
  (See *Log Off* on page 8-2)
- **Manage Users**
  (See *Manage Users* on page 8-3)
- **Manage User Groups**
  (See *Manage User Groups* on page 8-5)
- **System Settings**
  (See *System Settings* on page 8-9)
- **Connect to Application Server**
- **Rule Manager**
  (See *Rule Manager* on page 8-18)
- **Alarm Manager**
  (See *Alarm Manager* on page 8-27)



Control Components

Control features consist of a number of user and system management capabilities to oversee network operations.

The Control menu contains functions that let you change passwords, log off the system, manage Users and User Groups, modify system settings, and connect to the Application Server.

Change Password

Users can change their passwords through the Change Password dialog. In addition, administrators may reset passwords.

Passwords must not be empty (have no value) and cannot contain a portion of the user’s login name. For example, the user “afly” may not specify a password with that string embedded in it (19tenafly70, for example).

To access the Change Password function, select Change Password from the Control menu. The Change Password dialog appears.

Figure 8-1. Change Password Dialog

Type original password, then the new password.

Log Off

Occasionally, it is necessary for a user to log off without closing the application. By doing so, the current user can log off and another user can log on using a separate account. To log off, select Log Off. This option displays the Logon dialog. To log off and exit the application, select Log Off and Exit.

Administrators can create, edit, and delete user accounts through the User Manager. To access the User Manager, select Manage Users from the Control menu. When activated, all users within the system are displayed. Once a user has been created, the User Group can be set and detailed information can be entered, including phone numbers and e-mail addresses. In addition, user passwords may be reset, if necessary.

Manage Users

The User Manager dialog initially displays all defined users. You can filter the display by selecting one of the predefined filters from the drop-down menu at the top of the dialog, or you can search for a user by typing text directly into the filter field. Searches are performed on the User Name and Description, and are case-sensitive. If “Admin” is entered into the filter field, for example, the user “admin” will not be returned.

User Information

The User Manager contains the following fields:

Field	Description
Login Name	Name used to log in to the system.
Description	Short description of user.
User Enabled	Check box; must be selected in order for user to access system. Automatically deselected if the user logs in incorrectly three times.
First Name	First name of user.
Last Name	Last name of user.
Address	Three-line address.
Phone Number	Can contain up to three phone numbers: Work, Home, Other.
Pager Number	Can contain up to three pager numbers: Work, Home, Other.
Mobile Number	Can contain up to three mobile phone numbers: Work, Home, Other.
Fax Number	Can contain up to three fax numbers: Work, Home, Other.
Email	Can contain up to four e-mail addresses: Work, Home, Pager, Other.
Group	User group to which the user belongs; displayed as a drop-down box.

Adding a New User Account

To add a new user, select New (or press Alt-N) to open the Add New User dialog. Type the user's login name and password, retype the password, and select a Group for the user. User names must be unique.

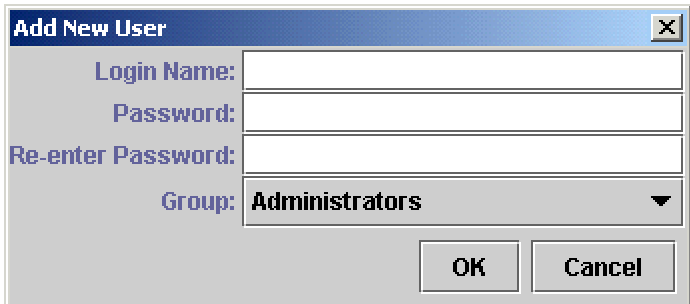


Figure 8-2. Add New User Dialog

Editing an Existing User Account

To modify a current user's data, highlight the user's name and click on Edit (or press Alt-E). All information for a user can be altered, and additional detailed information – including name, address, e-mail, and phone numbers – can be added by editing a user. In addition, the user account can be activated or deactivated by checking the User Enabled box.

Resetting a User's Password

To reset a user's password, select the user in question and click on Reset Password (or press Alt-R) to display the Enter Password dialog box. Type the new password, re-type it to confirm, and click on OK.

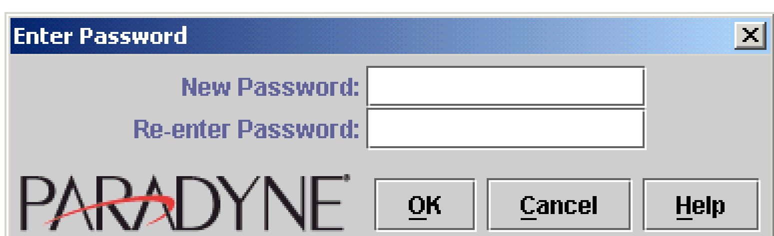


Figure 8-3. Enter Password Dialog

Deleting a User

To remove a user record, highlight the user's name, and click on Delete (or press Alt-D). This will remove the record of a user from the system; StormTracker EMS will prompt before deleting. Note that it is possible to deactivate a user instead of deleting the record.

Enabling or Disabling a User's Account

To enable or disable a user's account, double-click the user's account, or highlight the account and select Edit (or press Alt-E), then select or deselect the User Enabled check box.

Once an account has been disabled, an administrator must enable the account again before the user can logon. Normally, StormTracker EMS disables accounts automatically if the user logs in incorrectly three times; however, accounts may be disabled manually by an administrator.

Manage User Groups

The User Group Manager provides the system administrator with the means for creating, deleting, modifying, and managing user groups. Run the User Group Manager by selecting Manage User Groups from the Control menu.

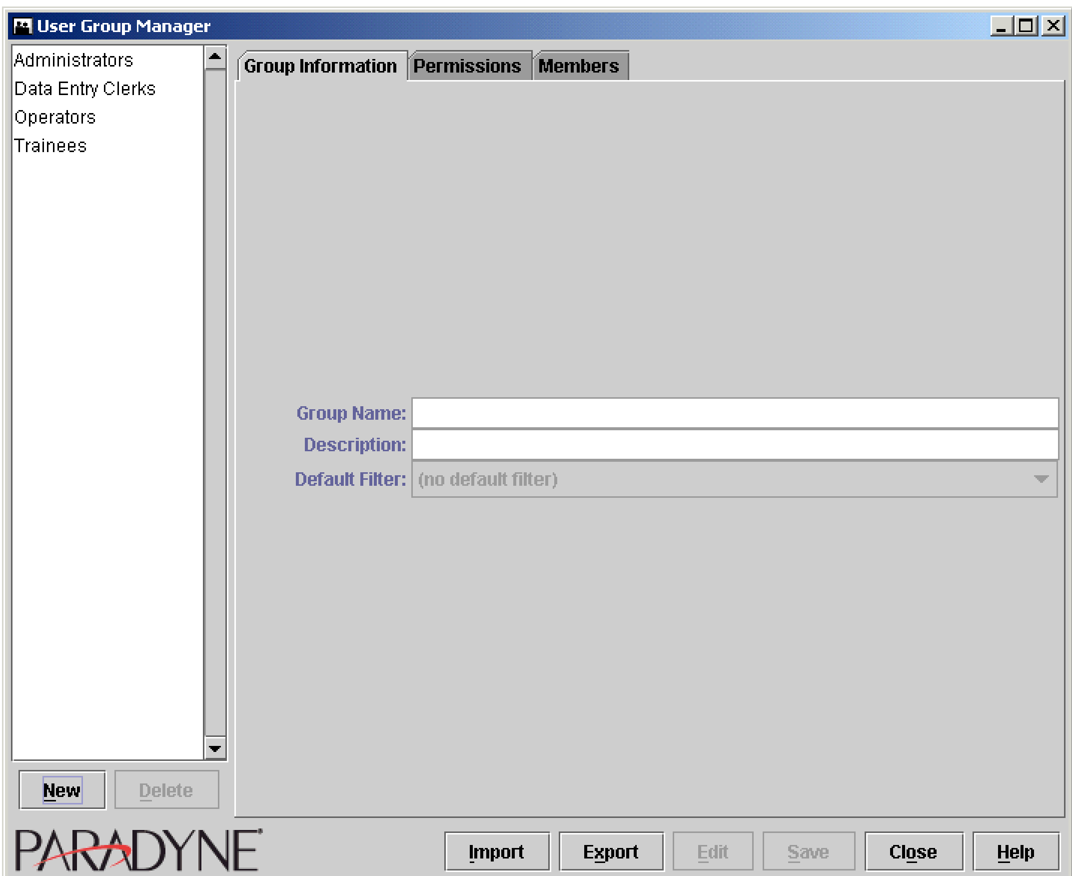


Figure 8-4. User Group Manager

Adding a New User Group

Whenever you need to add a user group on the network, select New (or press Alt-N) to display the Add New Group dialog. Type the group name and description. Group names must be unique. Additional user group information – such as group members and permission levels – may be added later, by editing the existing group.

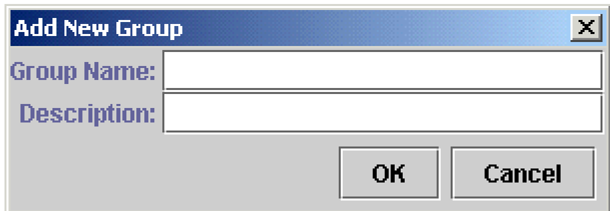


Figure 8-5. Add New Group Dialog

Editing an Existing User Group

All information for the specified group can be altered, and additional information – such as group members and permission levels – can be added by editing a user group. Double-click on the user group to be edited, or highlight the group and click on Edit (or press Alt-E).

Deleting a User Group

This function is used to remove a group from the system; StormTracker EMS will prompt before final deletion. Highlight the User Group to be deleted and click on Delete (or press Alt-D).

Predefined User Groups

StormTracker EMS provides the following default User Groups and preset permissions:

- **Administrators –** All functions of the system are available.
- **Data Entry Clerks –** Access is restricted to functions relating to customers and services.
- **Operators –** Access is restricted to Alarm management and report functions.
- **Trainees –** Allows Alarm Window viewing access only.

Group Information

The Group Information tab of the User Group Manager provides a basic description of each group and associates a default filter, if desired, with each group.

The settings in the Group Information tab are as follows:

Setting	Description
Group Name	The name of the user group. Group names must be unique.
Description	Description of the group.
Default Filter	The default filter used within the StormTracker EMS Alarm Window. Displayed as a drop-down box.

Permissions

The Permission Tab gives the administrator the ability to define and modify the permission levels for each group. In StormTracker EMS, a Permission is a function that has been enabled for a particular group or member. Each available function is listed, along with an Enabled box. Functions that are enabled are indicated by a check mark within the Enabled box. To enable or disable a specific function, click on the Edit button at the bottom of the User Group Manager dialog, and double-click the associated Enabled box. Click on Save to accept the changes.

New Function

An administrator (or any one with Add New Function permission) can add a new function to the system. Select New Function (or press Alt-W) to display the Add New Function dialog. Type the name of the new function and click on OK to save it.

Export Functions

This function is used to export all existing StormTracker EMS Functions to a text file. Click on Export Functions, browse to select the required file location, type the filename, and click on Open.

Members

The Members tab lets you define the members of each User Group.

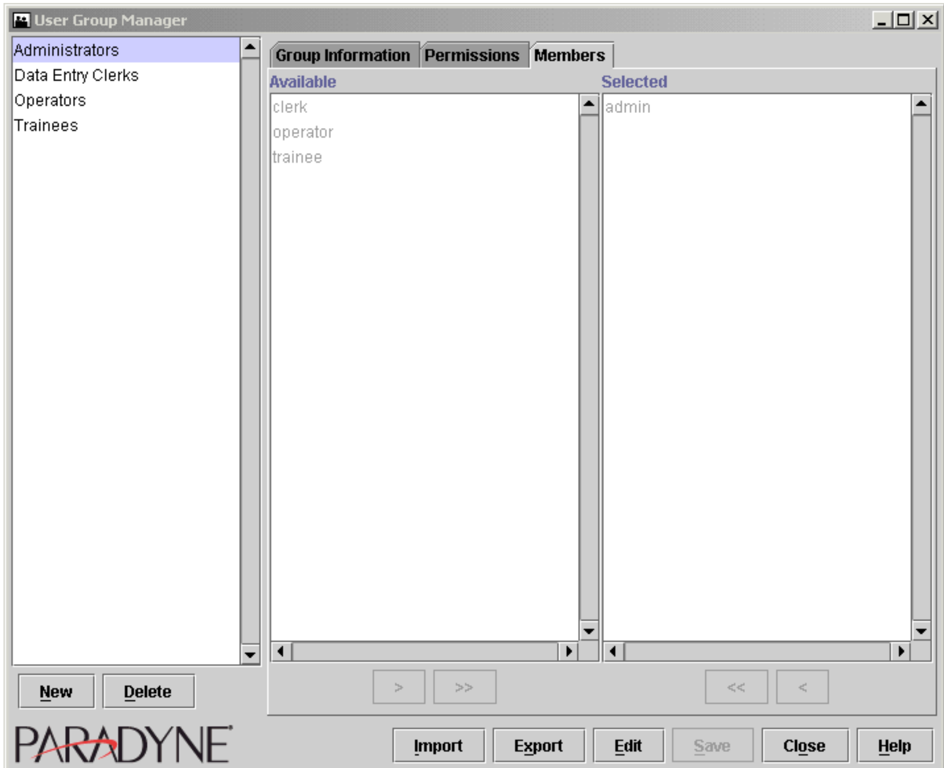


Figure 8-6. User Group Manager – Members

Selecting User Group Members

This function is used to define and alter members of the group. To access, select the required members of the group from the provided list of defined users and add them to the specified group.

System Settings

The System Settings dialog lets you modify certain global settings for StormTracker EMS. This dialog is available from the System Settings option in the Control menu. System Settings includes log file options, user login options, alarm severity colors and associated sounds, and topology options. The System Settings dialog is divided into the following tabs: General, User Options, MIBs, Alarm Severities, Topology, and Client Email Settings.

General

The General tab specifies settings for the log file, alarms, and system sounds.

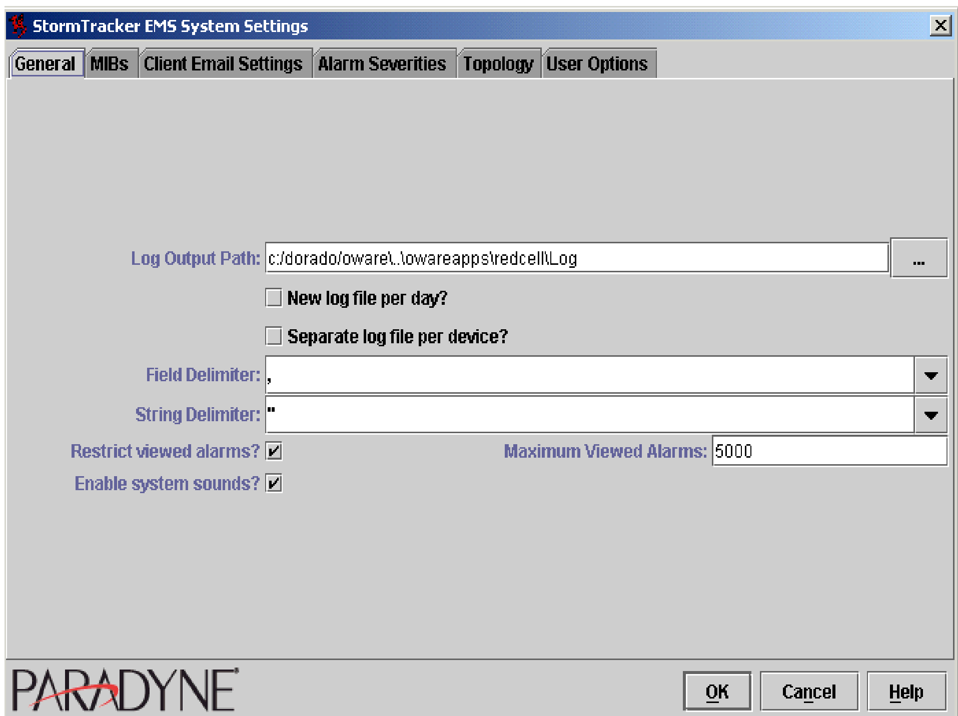


Figure 8-7. System Settings – General

The fields in the General tab are as follows:

Field	Description
Log Output Path	This entry specifies the full path to the log file.
New log file per day?	This option specifies that a new log file be generated every day. The date of generation is embedded within the filename. The default is for StormTracker EMS to maintain the same log file.
Separate log file per device?	This option creates a separate log file for each device. The name of the device is embedded within the file name.
Field Delimiter	The entry in this field is used to specify the character that is used to separate fields in the log file. The available delimiters are displayed in a drop-down menu.
String Delimiter	The entry in this field is used to specify the character that is used to separate strings in the log file. The available delimiters are displayed in a drop-down menu.
Restrict viewed alarms?	When this option is selected, the number of alarms that can be displayed is limited to the number specified in Maximum Viewed Alarms.
Maximum Viewed Alarms	This field specifies the maximum number of viewed alarms that can be displayed when the Restrict viewed alarms? option is selected.
Enable system sounds?	Select this option to enable the sounds associated with each alarm. If this option is not selected, sounds are not played when an alarm goes off.

User Options

The User Options tab allows you to configure password settings.

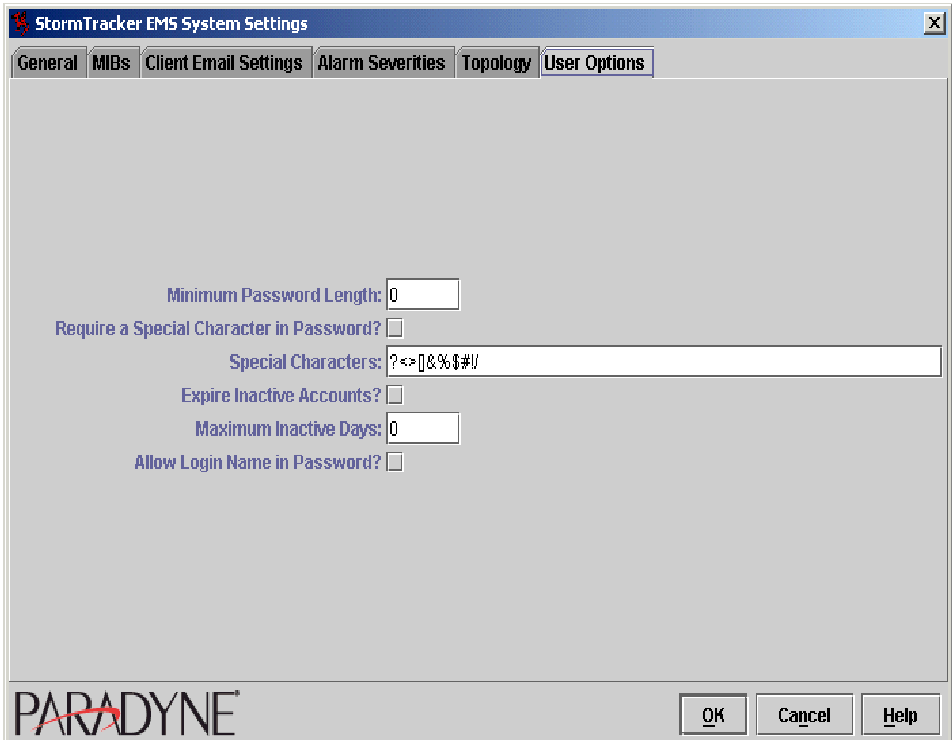


Figure 8-8. System Settings – User Options

The fields in the User Options tab are as follows:

Field	Description
Minimum Password Length	Specifies the fewest number of characters allowed for a password.
Require a Special Character in Password?	Check box; when selected, specifies that a password must contain a special character, as defined by the next entry.
Special Characters	Specifies the characters that can be used when the Require a Special Character in Password option has been set.
Expire Inactive Accounts?	Specifies, when selected, that accounts that have been active for the period of time specified by Maximum Inactive Days are to be expired.
Maximum Inactive Days	Specifies the maximum number of days an account may remain inactive before becoming eligible for expiration.
Allow Login Name in Password?	Enable or disable user’s access to use all or part of login name in password.

MIBs

The MIBs tab lets you specify which MIBs, if any, are preloaded when StormTracker EMS is launched, and it provides other related options.

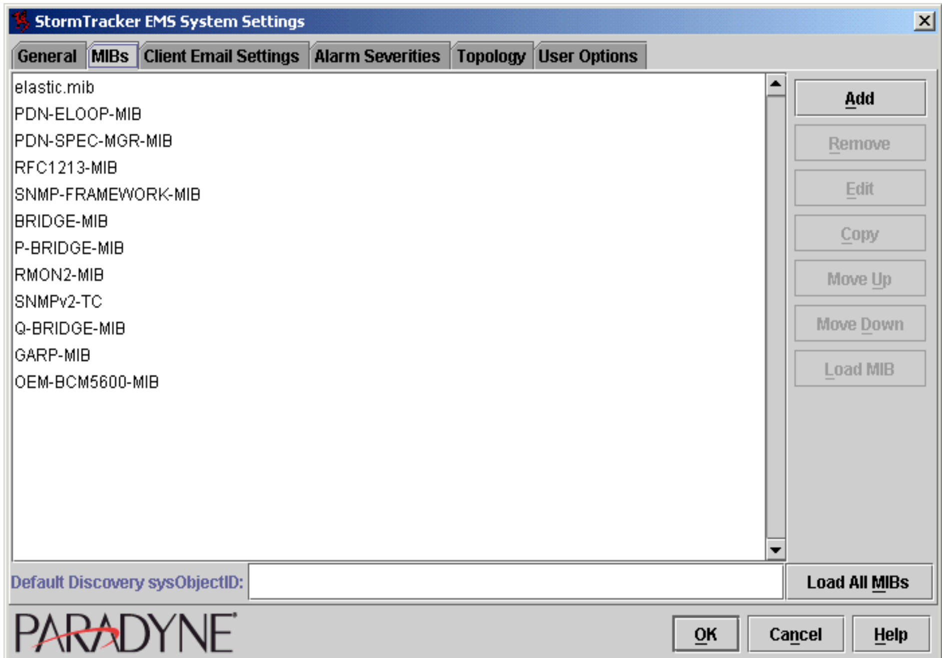


Figure 8-9. System Settings – MIBs

The buttons in the MIBs tab are as follows:

Button	Description
Add	Click (or press Alt-A) to display the Add MIB dialog box. Type the new MIB name and click on OK to add it to the list of MIBs to be preloaded.
Remove	Click (or press Alt-R) to remove the selected MIB from the list.
Edit	Click on this button to edit the name of the selected MIB.
Copy	Click to copy the selected MIB filename; you will be prompted for a new name.
Move Up	Click to move the selected MIB up one position in the list.
Move Down	Click to move the selected MIB one position down in the list.
Load MIB	Click to load the selected MIB.
Load All MIBs	Click to load all the MIBs in the list.
Default Discovery sysObjectID	The sysObjectID entered in this field, if any, becomes the default for Device Discovery.

Alarm Severities

The Alarm Severities customizes the alarm colors and associates a sound file (.wav or .au format) with a specific alarm severity level.

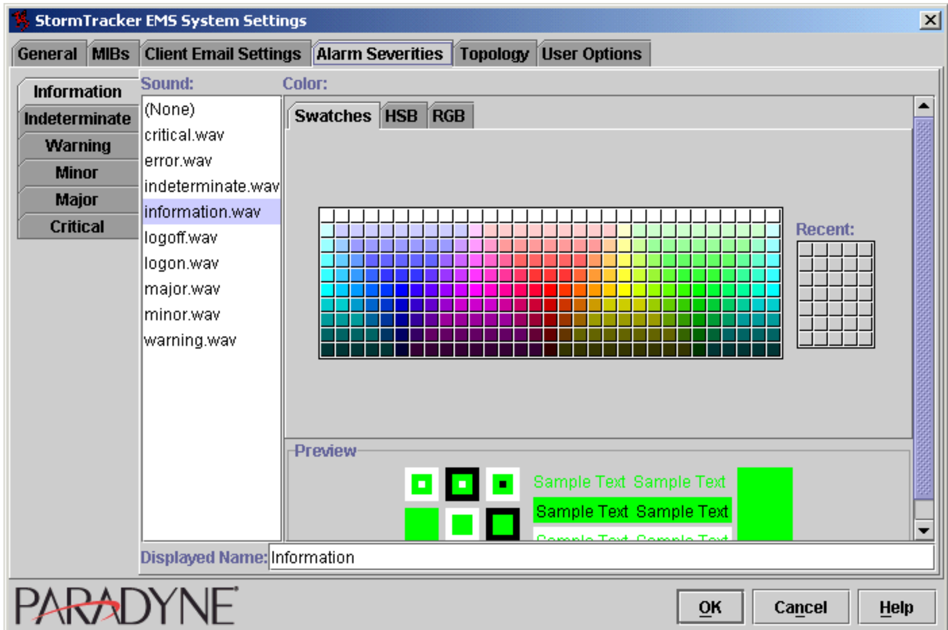


Figure 8-10. System Settings – Alarm Severities

The available severity levels are displayed in tabs on the left side of the dialog. The display name associated with a severity level is shown in the Displayed Name field at the bottom of the dialog. Change this value as appropriate for your installation. Selecting a tab also highlights the associated sound, if any, and displays the associated color. Select a severity level by clicking on the associated tab, and then associate it with a sound (audible alarm) and a color by clicking on each in turn.

Setting	Description
Sound:	The Sound panel lists the sound files that can be associated with a severity level. Select a sound file from this list by clicking on it, or click on (none) to associate no sound with the selected severity level.
Color:	The Color panel lets you select the color to associate with a severity level. The colors can be viewed as swatches, or can be specified through a Hue, Saturation, and Brightness (HSB) model or a Red, Green Blue (RGB) model.
■ **Swatches**	This color model presents the available colors as a grid of 310 boxes. Click on any box to select that color. The Recent portion of this panel displays the 35 most recently selected swatch colors; you can select any of these colors by clicking on the appropriate box.
■ **HSB**	This color model lets you specify a color by its Hue, Saturation, and Brightness values. One component (H, S, or B) is selected and adjusted at a time. The large square in this panel displays a range for the selected component with respect to the other two components. For example, if a Hue value of 200 is selected, the square displays that hue with the saturation ranging from 100 (right) to 0 (left), and the brightness ranging from 0 (bottom) to 100 (top). The slider in the middle displays the range of values for the selected component. The H, S, and B radio buttons to the right of the panel let you select the color component to adjust, and let you directly specify the value for each component. Acceptable values are as follows: ■ **H:** Hue is measured on a color wheel, and is specified in degrees. Acceptable values range from 0 to 360. ■ **S:** Saturation (the amount of the specified hue present) is specified as a percentage. Acceptable values range from 0 to 100. ■ **B:** Brightness is specified as a percentage. Acceptable values range from 0 to 100. The R, G, and B values on the lower right side of this panel indicate the equivalent Red, Green, and Blue values for the selected color.
■ **RGB**	This color model lets you specify a color by its Red, Green, and Blue components. Each color component (Red, Green, and Blue) has an associated slider. Move the slider to the right or left to change the value, or type a component value ranging from 0 to 255 in the text box to the right of the appropriate slider.

For all three color models, the Preview portion of this dialog shows you what your current color looks like as the text color against a grey background, as the background for white text, and as the text color against a white background.

When you are satisfied with the color, click on OK to implement it. Click on Cancel to cancel the operation.

Topology

The Topology tab in System Settings allows you to add, remove, and edit object names, or copy a graphic image associated with the selected type of topology object. The objects and images are used in the Geographic Topology Viewer to provide the StormTracker EMS user with a GUI environment for managing network devices.

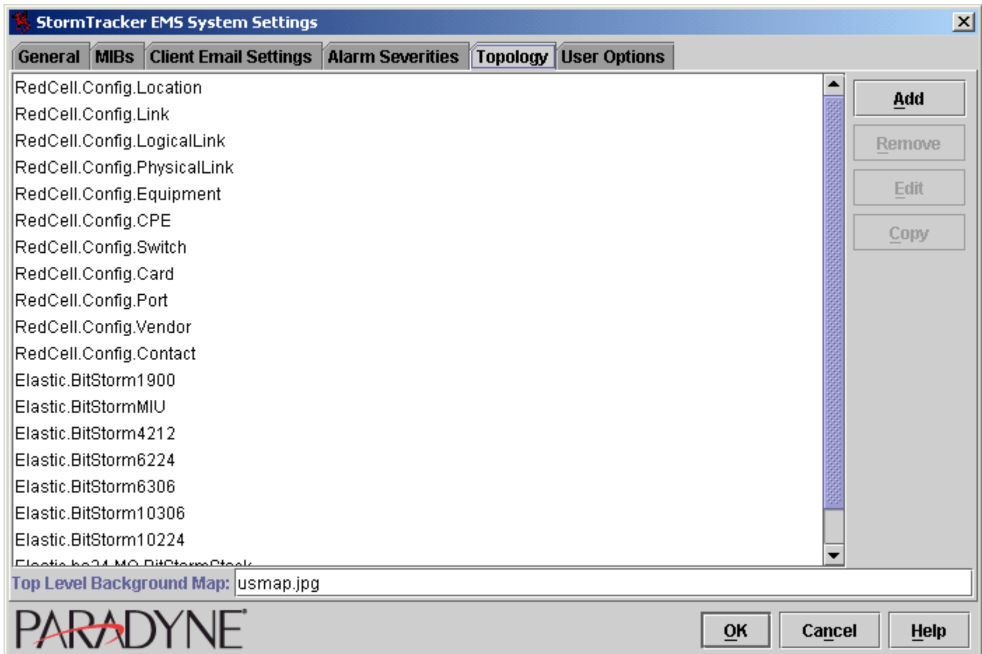


Figure 8-11. System Settings – Topology

- **Top Level Background Map:** The entry in this field specifies a graphic to be used as a background map for the top level topology view.

The buttons to the right of the Topology tab let you add, edit, or remove topology items.

- Edit an existing item by selecting it and clicking the Edit button.
- Remove an existing item by selecting it and clicking on the Remove button.
- Copy an existing item (enabling you to save it under a different name) by selecting it and clicking on the Copy button.
- Add a new item by clicking on the Add button. The resulting dialog is the same as the Edit Topology Item dialog, but all the fields are blank.

The New Topology Item and Edit Topology Item dialogs are divided into the General Tab and the Physical Tab. The options on those tabs are as follows

General Tab

The General Tab lets you specify a class and associate an image with a Topology item.

Option	Description
Class Name	Select from the available classes by picking one from the drop-down menu.
Graphic File	Specify a graphic file, including the full path, to be associated with this item if a graphic is needed. (The graphic forms the frame for the icon, and allows certain state information to be presented.)
Icon File	The name, including the full path, of the StormTracker EMS icon graphic.
Icon Attribute	Specifies the attribute to be used to obtain the graphic name from the appropriate class.
Icon X Coordinate	Specifies the horizontal location of the icon, in pixels, with respect to the left side of the graphic.
Icon Y Coordinate	Specifies the vertical location of the icon, in pixels, with respect to the top of the graphic.

Physical Tab

The Physical tab lets you specify a background for the image, an Image Graphic, and lets you define subcomponents (slots, ports) of the device.

The entries in the Physical tab are as follows:

Field	Description
Image Background	Specifies the image, if any, to be used as a background for the image representing this entity.
Image Graphic	Drop-down list containing the names of the available graphics. The large text panel in this dialog contains “registry entries,” entries that identify subcomponents of this entity by name and by location. Click on Add to display this dialog, and type the appropriate information. The fields in this dialog are as follows: ■ **Location Name**: An attribute of the class `RedCell.Config.PhysicalLocation` that identifies this subcomponent. ■ **Icon X Coordinate**: Specifies the horizontal location of the icon, in pixels, with respect to the left side of the parent graphic. ■ **Icon Y Coordinate:** Specifies the vertical location of the icon, in pixels, with respect to the top of the parent graphic.

Client Email Settings

The Client Email Settings tab lets you specify a SMTP host to which e-mail is sent, as well as a return address for outgoing mail.

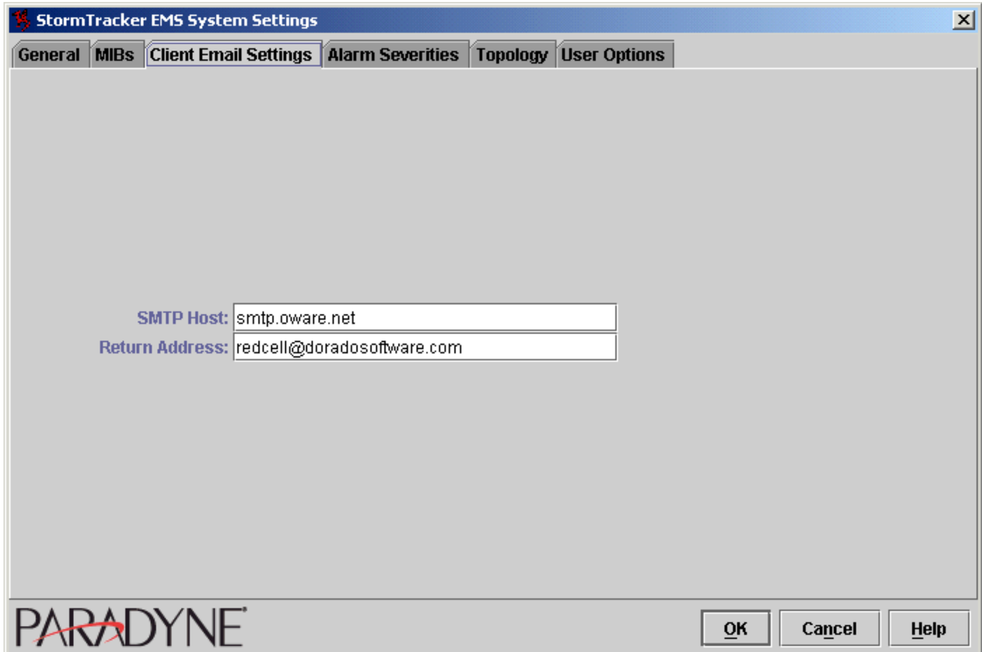


Figure 8-12. System Settings – Client Email Settings

The fields in the Client Email Settings tab are as follows:

Field	Description
SMTP Host	Specifies the SMTP host to use when StormTracker EMS sends e-mail.
Return Address	Specifies an e-mail return address for alarms e-mailed from the Alarm window.

Rule Manager

The Rule Manager provides a graphic interface to simplify the creation of complex rules. Select Rule Manager from the Control menu to display the initial dialog.

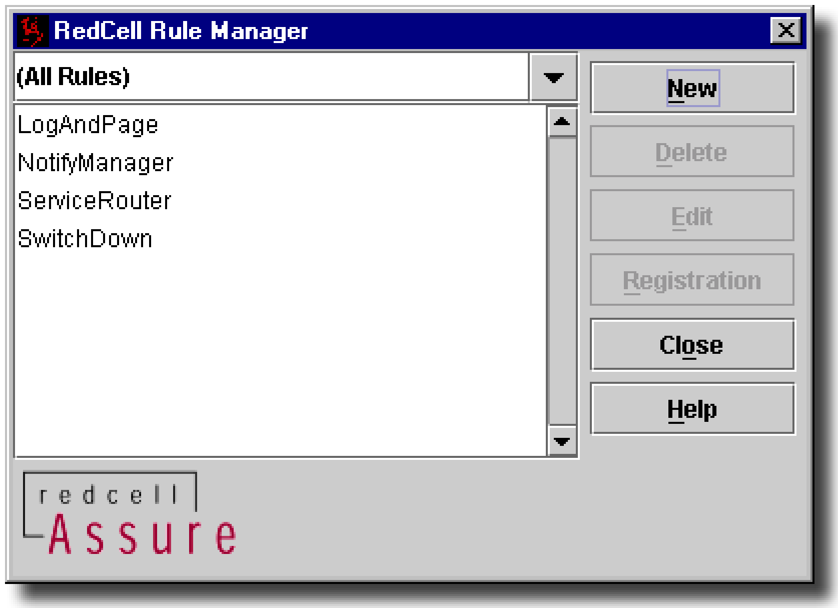


Figure 8-13. Rule Manager

The initial Rule Manager dialog lists all the rules the current user has created. The list can be filtered by the selections in the drop-down menu above the display. The buttons on the right allow you to create, edit, delete, and register graphical rules as well as schedule their execution.

Creating or Editing a Rule

The New or Edit button invokes the graphical rule editor. All rules that are created with the StormTracker EMS graphical rule editor reside in the `RedCell.UserRules` package, and receive a parameter of `RedCell.Assurance.Generic-FaultRuleParamSet`. All XRLs are taken from the `RedCell.XRL` package.

Rule Editor Controls

The Rule Information area, at the top of the Rule Editor, displays the name of your rule. If you are creating a new rule, type a unique name for it in this field. Three buttons and a check box appear at the top right side of the Rule Editor; these action buttons and check box let you perform actions in the work area.

Button	Description
Selection	Lets you select rule objects in the work area.
Delete	Lets you delete a rule object or connection. When you delete a rule object or connection, an alert box appears asking you to confirm deletion.
Delete Rule	Deletes all rule objects and connections in the work panel except for the begin and end rule objects.
Compile	Compiles the rule when you render it. If you deselect this check box, Oware will save the rule but not compile the code.

Rule Objects

Rule objects reside in two tabbed panels: Logical and XRL. You can place objects in the work area by selecting them from the appropriate objects panel. Once objects have been placed in the work area, they can be dragged to any location within the work area.

The Begin and End Objects

When you open the Rule Editor, two rule objects appear by default in the work area: The *begin* object (a green traffic light) and the *end* object (a red traffic light). These rule objects signify the beginning and end of the rule.

The *begin rule* object contains an output connector at the bottom that signifies that rule object’s ability to plug into another rule object.

The end rule object contains an input connector (with a down arrow on it) at the top of the rule object that signifies that object’s ability to receive a connecting rule object.

Logical Objects

The Logical panel, which appears by default, contains the different rule objects you can add.

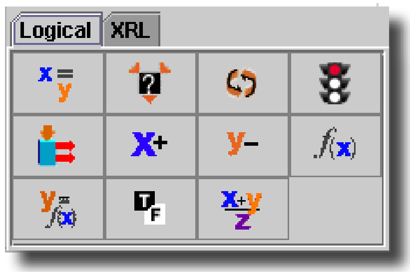


Figure 8-14. Logical Panel

Select a rule object by clicking on the corresponding button. A blue selection box representing the object appears in the work area. Place the rule object by clicking the mouse button.

Object	Description
Assignment Object	Assigns the value of one variable to another.
Decision Object	Creates an if/then statement for selecting one of two branch destinations depending on the value of an expression.
Loop Object	Creates a loop that repeats.
End Object	Signifies the end of the rule.
Switch Object	Creates a case statement for selecting a branch destination depending on the value of an expression.
Variable Increment Object	Increments the value of a variable by a specified number.
Variable Decrement Object	Decrements the value of a variable by a specified number.
Method Call Object	Calls a method.
Method Call Assignment Object	Assigns the value returned by a method call to a variable.
Boolean Expression Object	Assigns a true or false value to a variable.
Mathematical Expression Object	Assigns value returned by a mathematical expression to a variable.

XRL Panel

The XRL panel lets you add Extensible Rule Language (XRL) code.

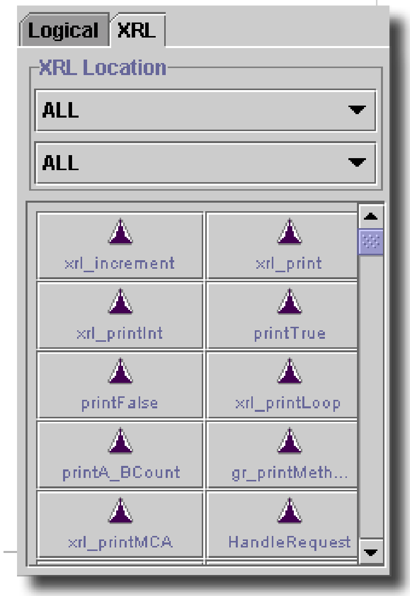


Figure 8-15. XRL Panel

Select the package in which the XRL resides from the drop-down list and a category from the bottom. All XRLs in the specified package and category are displayed.

Deleting a Rule Object

You can delete one or more rule objects by selecting them and using one of three delete methods:

- Press the Delete key.
- Click the Delete button.
- Right-click on the rule object and select Delete selected item(s) from the popup menu.

When you delete a rule object an alert box appears confirming that you want to delete the rule object. Delete the rule object by clicking on Yes, or click the No or Cancel buttons to abandon the deletion. If you click Yes, Oware deletes the rule object and all connections to and from it.

CAUTION:

You cannot undo the delete action once you click Yes.

Connecting Rule Objects

Once you place your rule objects you can connect them using the object connectors.

NOTE:

In most cases, you can only have one object connected to each output connector. If you try to connect a second object to a connector that does not allow it, an alert box will appear stating that the Graphics Composer could not complete the connection. In some cases, an input connector can have more than one connection, for example, different branches from an if/or switch.

You can connect objects by moving the mouse pointer to an object's output connector, holding the mouse button, and dragging the mouse across the work area. A blue line appears that connects to the output connector. When you move the line to an input connector, the line turns red when the line connects. Complete the connection by releasing the mouse button; the connected components have thick gray lines between their connectors.

NOTE:

If the line does not turn red and you release the mouse button, the line closes and the connection is not created.

If you move one of the objects, the connectors move with the object. You can select the connector by clicking on it.

Deleting Rule Object Connections

You can delete a selected connector line with any of the followingdelete methods:

- Press the Delete key.
- Click the Delete button.

Right-click the connector line and select Delete selected item(s) from the popup menu.

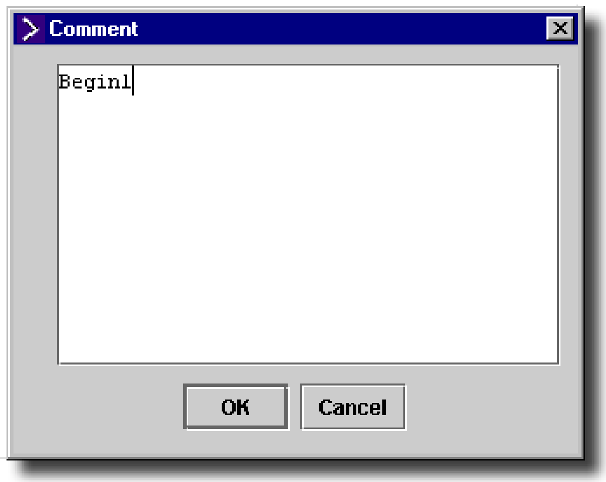
After you select the deletion method the connector line disappears. This action cannot be reversed.

Object Properties Panel

You can view rule object properties in the Properties panel, which appears by default.

Figure 8-16. Object Properties Panel

You can view a specific rule object's properties by selecting the rule object in the work panel or selecting it from the Object Properties drop-down list.

Field	Description
Name	The rule object name.
Comment	Text that describes what the rule object does. Oware writes this text into the text version of the rule. When you click on the command button (...) to the right of the Comment text field, the Comment window opens. Type any comments and click on OK to save the text and close the window. Click on Cancel to close without saving. 

The buttons on the Object Properties panel are as follows:

Button	Description
Apply	Applies the properties to the selected rule object. For example, if you add the name End to a rule object, the rule refers to that object as End. **NOTE:** If you render your graphical rule before applying property changes, an alert box appears that asks if you want to apply the property changes before rendering.
Cancel	Returns the edited property to its previous state without saving the edits.

Object Variables Panel

The Variables panel contains a table of object attributes.

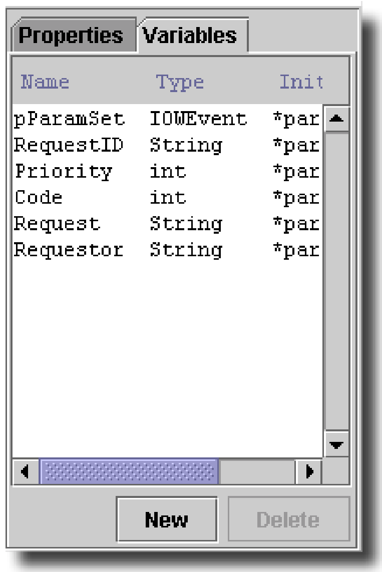
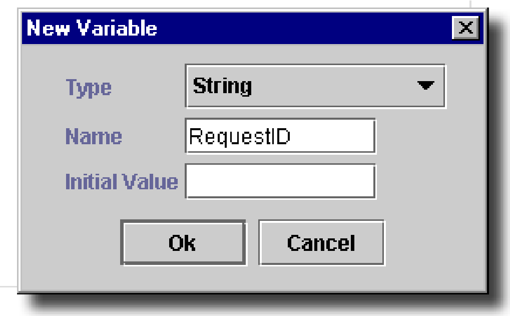


Figure 8-17. Object Variables Panel

The Variables table contains the object attribute name, type, and value. The most recently entered attribute appears at the top of the table. You cannot make any changes to this table.

Two buttons appear at the bottom of the Variables panel.

Button	Description
New	Adds a new variable. When you click this button the New Variable dialog box appears.  Create a new variable by entering a variable name in the Name text box and selecting the variable type in the Type drop-down list. Save the variable in the attributes table by clicking OK. If you decide against creating a new variable, click on Cancel.
Delete	Deletes the selected variable from the table. **NOTE:** When you delete a variable, Oware does not confirm the deletion.

Rendering Your Alarm Rule

Render your rule by clicking on Render. After a few seconds, the Rule Saved alert box appears.

Registration

Rules **must** be registered before they can be attached to events. Click on Registration to display the Rule Registration dialog. The rule can be run for all events or one or more specific events, and can be run either before or after the event is processed.

The registration process is as follows:

1. Specify the scope of processing by selecting either of two options: For All Events or For Specific Events.

   If you specify For All Events, the rule will be run whenever an Event occurs. You must then select one of two options:

   — **Prior to processing:** Runs the rule before the event is processed.

   — **After processing:** Runs the rule after the event is processed.

2. If you specify For Specific Events, you must specify the events for which this rule will be run as well as the processing options. To add an event, click on the Add button. The following dialog – labeled Editing Event Rule or New Event Rule appears.

Specify the event to be associated with this rule by clicking on the command button (...) and selecting an event from the resulting list.

Select an event from the list and click on OK to implement your choice. Each event associated with a rule can have its own processing criteria with respect to that rule. Select one of the following Run Rule options:

— **Prior to processing:** The rule is run before the event is processed.

— **After processing:** The rule is run after the event is processed.

When you have made all of your specifications, click on OK to implement your choices and return to the Registration dialog. Repeat this sequence for each event you want to associate with this rule. When you are finished, click on OK.

Alarm Manager

The alarm manager is used to import or export files related to alarm operations and procedures set forth in the Assurance menu features.

The Resync MOs function resynchronizes all alarm count for managed objects within the system.

Importing and Exporting

9

Overview

StormTracker EMS gives you the ability to export certain kinds of data as text files, and to import them. The Export facility gives you the means to create new “seed” files for downstream installations, to back up your data, or to create data files for use by StormTracker EMS clients running on other servers. (All clients running on the same server share seed files.)

The process of importing is the same, regardless of the entity being imported, and the process of exporting is the same, regardless of the entity being exported. Therefore, this section discusses importing and exporting in a generic sense.

NOTE:

Importing and Exporting is primarily used as an advanced development function and is not recommended for operations beyond network management.

Importing Files

The Import utility is available from all StormTracker EMS Manager utilities, and the procedure for importing text files is the same throughout. From the appropriate manager, select Import (or press Alt-I), browse to the location of the file, select the file, and click on Import.

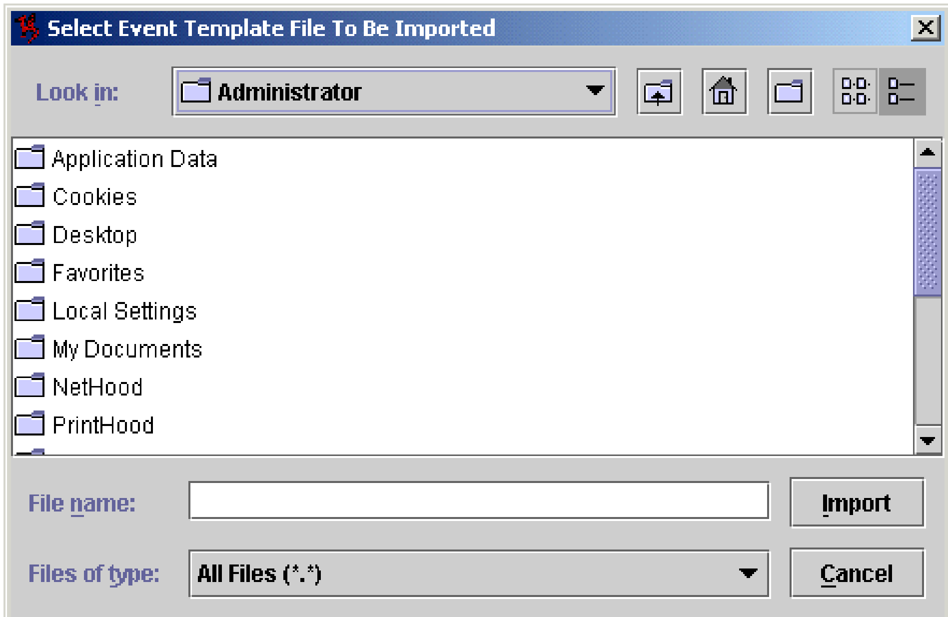


Figure 9-1. Import File Dialog

Exporting Files

The Export utility is available from all StormTracker EMS Manager utilities. To export a file, select that file (from within the appropriate manager) and click on the Export button (or press Alt-X). An Export File dialog, similar to the one below, appears. Browse to the desired destination directory and click on the Open button. A new export file is created.

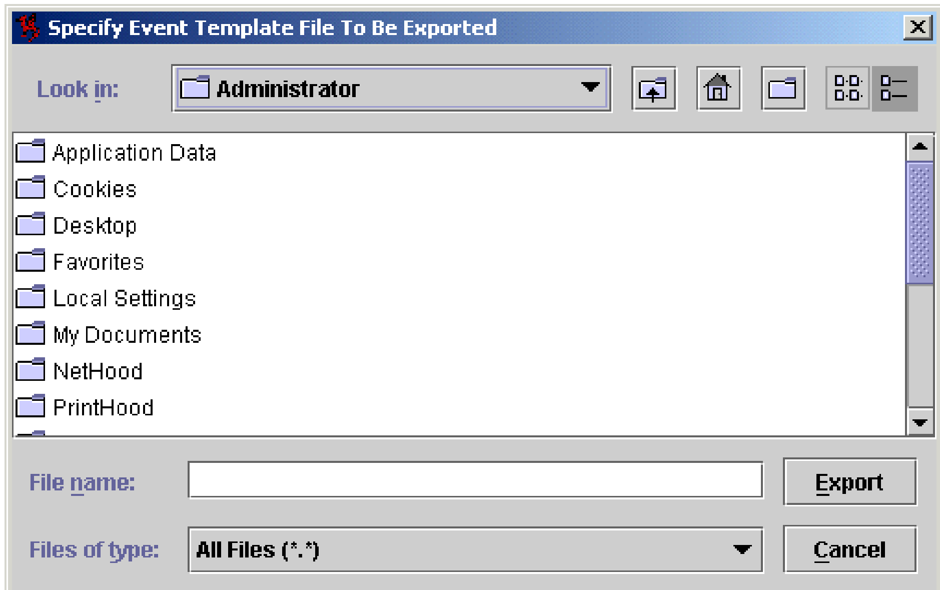


Figure 9-2. Export File Dialog

Exported files can be used as seed files, letting you modify StormTracker EMS for further downstream installations, and can also be imported by client applications running on other servers. The export function also provides you with a convenient backup mechanism.

Index