Liebert Nform™

User Manual - Version 2.0

&Liebert.

EMERSON
Network Power

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Version 2.0 Release
User Manual

Liebert® Corporation

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1.0   WHAT IS NFORM?

Liebert developed Nform to use Simple Network Management Protocol (SNMP) to monitor and manage a wide variety of networked equipment, protecting it from costly damage resulting from power failures and mechanical breakdowns. The monitored equipment can include industrial air conditioning units, Uninterruptible Power Supply (UPS) units and other devices that accommodate an SNMP card to communicate over an Ethernet network. Nform will monitor and manage devices manufactured by Liebert or by other equipment makers.

Nform constantly monitors configured equipment, warns of problems ranging from power quality to environmental conditions.

This product also permits configurable responses to equipment alarms, including support for audible alarms, e-mail and on-screen notification.

1.1   How Does Nform Work?

Nform on a host computer communicates with up to 30 devices, by default, using SNMP to detect problems ranging from power quality to environmental conditions.

The user has the option of expanding Nform's network capabilities with additional licenses. Licenses are available in increments of 30, 100 or 500 additional monitored and managed devices.

One concurrent user license is provided by default. Additional concurrent user licenses are available for one, five or 10 additional users.

Nform employs the SNMP protocol and static IP addresses to issue notifications and warnings, launch scripts and send e-mail messages. It uses HTML to graphically display system information for devices with an SNMP card that is Web-enabled. Nform performs its monitoring and management processes using the network—instead of requiring separate, expensive hardware and cables that might run alongside network lines.

Typical sequence

- Nform constantly monitors multiple SNMP devices made by Liebert or other manufacturers.
- In the event any alarm occurs, Nform receives an SNMP trap.
- According to configuration, Nform issues a local notification to the monitoring computer, executes any associated actions—sending e-mails, writing alarm data in files and launching scripts—and logs alarm data.
- Users can later acknowledge and delete any alarms from Nform.

1.2   What's New in Version 2.0

Table 1 summarizes the new features available in Nform Version 2.0.

Table 1   New features in Nform Version 2.0

Feature	Improvement
Desktop Command Center View	The Desktop view provides a quick visual summary of the entire system of managed devices and easy access to key configuration features. • Large status icons display a total count of devices in each status category: Normal, Alarms Present and No Response (not communicating). • Clicking a status icon produces a list of all managed devices in the selected status category in the same window. The list may be sorted by device name, address or type. • Function buttons display various types of device data in the same window: alarm management, notification updates, device diagnostics, parametric data and network statistics for performance management. The data may be saved in a text file or printed. • Shortcut buttons allow quick access to key configuration features.
Alarm Management	The Desktop view offers the ability to view alarms for any device and perform alarm management in the same window: acknowledge, add comments and delete alarms, as well as save or print the list.
Notification Updates	This feature provides a summary of the status of notifications attempted as a result of alarms from a device: the time, name and type of each notification and its status (success/failure).
Device Diagnostic Report	This report gives an overall summary view of the selected device—including model, agent type, firmware version and number of alarms—and displays the results of the device interface report testing the communications interfaces: SNMP, Web, Telnet and ICMP Ping.
Parametric Data View	Users can view the parametric data and specific SNMP data from any managed device.
Network Statistics	Query network statistics—SNMP, UDP, TCP and ICMP—with performance data on any device and how it performs within the network.
Device Support Expanded	The following devices are now supported: • Alber Battery Monitoring BDS256 • Alber Battery Monitoring BDS40 • Liebert DS with iCom • Liebert MiniMate with Small System Controller • Liebert Nfinity (additional alarm support of LGP) • Liebert NX (additional alarm support of LGP) • Liebert RPMP • Liebert-Hiross HiNet • Liebert EM: vEM-14
E-Mail Action Enhancement	E-mail actions may be set up to require a user name and password (SMTP Authentication).
Trap Forward Request	Set up forwarding of specific device alarms to a configured network computer. This feature is now included with the Advanced Notification License.
Global Settings Device Defaults	Configure default settings for selected options for the entire system, including SNMP community names, Web port and trap port, reducing the need to enter the same information many times.
Auto Discovery	This feature speeds up configuration with automatic detection of devices on a network. The system can use the settings from the device as the default settings in Nform such as device name and community name.
Import / Export	Using a standard, comma-delimited file, users can quickly add multiple devices to the system. In addition, you may export a list of devices to a comma-delimited file that can be opened with a text editor and can be used in other systems.
Configure Device as Managed	When devices are added to the system, the system can be set up to automatically configure any device to send alarm events to the main Nform server, eliminating the need for each device to be manually configured.
Firewall Detection	Nform will determine whether the OS firewall is activated. If so, Nform will configure the correct settings to allow receiving SNMP Trap alarm events from managed devices.

2.0 HOW DO YOU CONTACT LIEBERT FOR TECHNICAL SUPPORT?

For help on deciding how to set up Nform or any other Liebert monitoring product, contact Liebert's Software Technical Applications Support Center at:

UNITED STATES	Phone: 1 800 222 5877
FRANCE	Phone: +33 (0) 1 46 87 51 52
GERMANY	Phone: +49 (0) 89 99 19 220
ITALY	Phone: +39 (0) 2 98250 324
NETHERLANDS	Phone: +31 (0) 475 503333
UNITED KINGDOM	Phone: +44 1628403200
WORLDWIDE	Phone: 1 614 841 6755
	FAX: 1 614 841 5471
	All Products: **http://www.liebert.com** Nform: **http://nform.liebert.com**
	E-mail: **monitoring@EmersonNetworkPower.com**

3.0   WHO CAN BENEFIT FROM NFORM?

Any industry operating devices utilizing the SNMP protocol can benefit from using Nform to protect valuable equipment, data and other assets in the event of power or mechanical failure.

Nform's protection can be extended beyond equipment manufactured by Liebert to encompass other makers' SNMP devices. Nform ships with templates—specifications and functionality—for Liebert-built SNMP devices. Liebert offers templates for other manufacturers' equipment; contact your local Liebert representative, value-added reseller, or distributor for information.

3.1   Connections

Nform works with a network connection and either of these types of SNMP cards:

1. SNMP card with Web capability such as the OpenComms™ NIC, OpenComms Web Card
2. SNMP card without Web capability, such as the Intellislot™ SNMP card

Nform can monitor a network that includes any combination of LANs, WANs and any other type of network.

4.0 WHAT IS REQUIRED TO USE NFORM?

Visit the Liebert Web site at **http://nform.liebert.com** for the latest product information. The Web site always has the most detailed and up-to-date information on system requirements and Nform's capabilities.

4.1 Connecting host computer and SNMP devices

SNMP communications allow you to take full advantage of Nform's features. The host computer connects to an SNMP-enabled device over a network. Information and management commands may be passed over the Internet, a Local Area Network (LAN) or a Wide Area Network (WAN) via SNMP protocol and static IP addresses.

4.2 Requirements for Installing Nform

Before beginning installation, review these requirements:

The prospective user must have:
- The Nform software (Visit the Liebert Web site at **http://nform.liebert.com** or contact your local Liebert representative, value-added reseller, or distributor for information.)
- This manual (downloadable from the Liebert Web site)
- A computer with Microsoft® Windows® NT, 2000, XP or 2003 Server
- A monitor capable of 1280x1024 or higher screen resolution
- A communications link between the SNMP device and the host computer: local network, Internet or Intranet, utilizing SNMP protocol and static IP addresses
- Availability of IP Port 162 for receiving traps
- TCP/IP connectivity throughout the network

NOTE
Check with your System Administrator about the need to disable certain network or virus protection software.

5.0   SAMPLE NFORM CONFIGURATION

Nform is installed on a single workstation and can be configured to monitor and manage up to 30 SNMP devices by default. The user has the option of expanding Nform's network capabilities with additional licenses. Licenses are available in increments of 30, 100 or 500 additional monitored and managed devices. The primary license key allows one local user; licenses are available to add one, five or 10 concurrent users. See **Table 20** for details on additional device/user licenses.

Nform is designed to monitor any part of a network. Its functionality permits it to monitor any SNMP-enabled device that can be contacted via local network or the Internet. These devices include those made by Liebert and, with templates available from Liebert, units built by other manufacturers.

Nform may be configured to turn devices on or off as needed—for example, turning on a fan—and to obtain a snapshot of the status of any or all devices when an alarm is received. These functions require an Advanced Notification License for SNMP get/set request actions (see **Table 20**).

Nform can also interface with computers that have MultiLink 1.5 installed, sending shutdown notices as needed when alarms are received. This capability requires a MultiLink Network Shutdown License (see **Table 20**).

Nform-Enterprise includes licenses for the Advanced Notification and MultiLink shutdown features.

Example of Nform on a Network

Figure 1 shows one possible configuration of an Nform server that is monitoring and managing various devices—UPS, environmental and monitoring units. The network also has Nform client software installed on another computer, several computers with MultiLink 1.5 installed and a network management system.

When an alarm is received, Nform can send e-mail notifications, append alarm data to a file and run scripts. With appropriate licenses, Nform can also send shutdown notifications to the computers with MultiLink 1.5 installed, obtain a snapshot of the status of connected devices and turn devices on or off when an alarm is received.

Figure 1   Sample Nform configuration
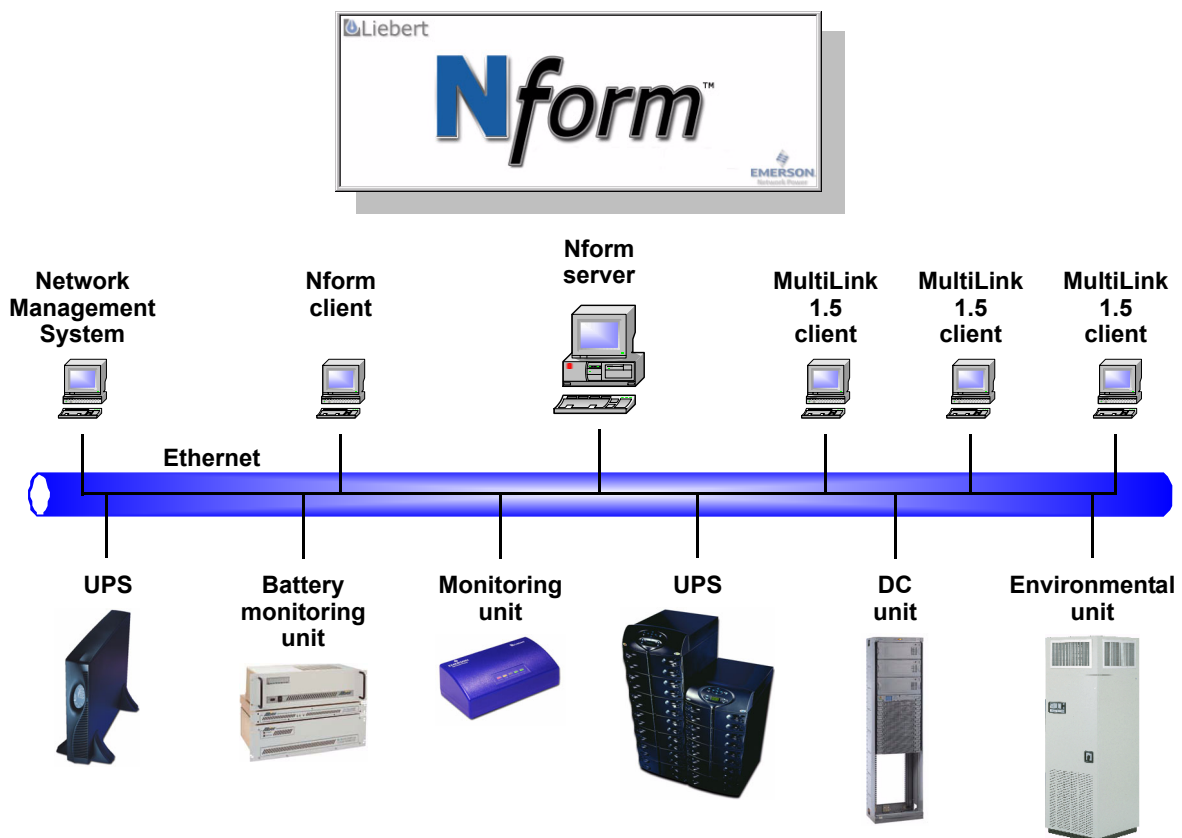
6.0   INSTALLING THE SOFTWARE

This section explains how to install Nform.

- For a first-time installation, follow the instructions in **6.1 - Initial Installation**.
- If you are upgrading to a newer version of Nform and want to keep configuration settings, proceed to **6.3 - Upgrading to a Newer Version of Nform**.

6.1   Initial Installation

- Insert the Nform CD in the CD drive. The Installation Wizard starts automatically.

  If the Installation Wizard does not open automatically, launch the file **Setup.exe** from the CD. One way to do this is: Click on the **Start** button, and then on **Run**. In the Run window, click on **Browse** to locate the file **Setup.exe** on the CD, highlight the file name and click **Open**. Click **OK** to begin installation.
- After viewing the Welcome screen and clicking **Next**, read the Nform License agreement.
  - If you accept the terms and conditions of the license agreement, click on the **I accept the license agreement** radio button and then click on the **Next** button.
  - If you do not accept the terms and conditions, click on the **I do not accept the license agreement** radio button and then click on **Cancel** to abort the installation.
- In the User Information window, enter your full user name and click on one of the following two buttons to choose whether other users of this computer will have access to the Nform application:
  - **Anyone who uses this computer**
  - **Only for me** *(user name)*
- The Destination Folder window, shown below left, displays the location where the software will be installed. Liebert recommends using the defa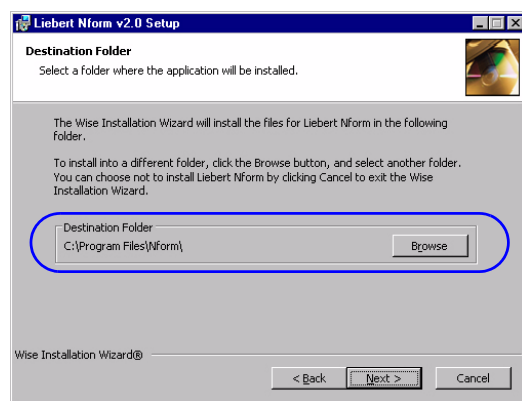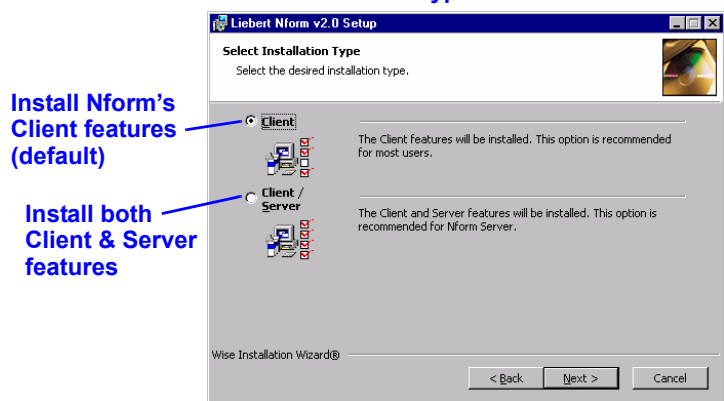ult location. (To select a different location, click on the **Browse** button and choose the location.) Click on the **Next** button.

Destination Folder window   **Select Installation Type window**

Install Nform's Client features (default)

Install both Client & Server features

- In the Select Installation Type window, shown above right, choose whether to install Nform's **Client** features (the default—recommended for most users) or **Client / Server** features, which is recommended for Nform Server. Click on the **Next** button.
- In the Ready to Install the Application window, click **Next** to begin installing the software. A dialog box displays the progress of the installation process, which may take a few minutes.
- A message indicates that installation was successful. Click **Finish** to exit the installation process.

6.2   Controlling Access to Configuration

To protect configuration settings from unauthorized users, Nform is set up for two classes of users:

- **Administrator**—full access, including configuration capability
- **Power User**—can view and respond to alarms; no access to configuration

Initially both types of user have a default password, **liebert** (all lowercase). Liebert recommends changing the Administrator password, as described in **8.4 - Change the Administrator Password**, to limit access to configuration settings.

You may set up a customized view of devices for each user (see **9.5 - Add Devices to Navigation Tree**).

6.3 Upgrading to a Newer Version of Nform

When upgrading to a newer version, the user does not need to remove the existing installation. During the upgrade, Nform preserves all configuration files—for example, configured devices, floor plans, actions.

To install the Nform software upgrade, follow the steps below (for complete details, see **6.1 - Initial Installation**):

- Launch the installation file **Setup.exe** from the CD.
- If you accept the terms and conditions of the Nform license agreement, click on the **I accept the license agreement** radio button and then click on the **Next** button.
- Choose whether other computer users will have access to the Nform application:
  - **Anyone who uses this computer**
  - **Only for me** *(user name)*
- The Destination Folder window, shown below, displays the location where the software will be installed. Click **Next**.

  For upgrades, you must use the same directory path as the previous installation of Nform to keep your configuration settings.

For upgrades, use the same directory path as previous installation to keep configuration settings
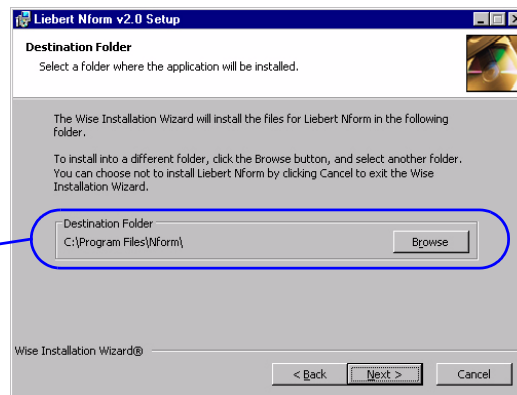
- In the Select Installation Type window, choose whether to install Nform's **Client** features (the default—recommended for most users) or **Client / Server** features (recommended for Nform Server. Click **Next**.
- Follow the prompts to complete the installation.

The next time you start Nform, all previous configuration settings should be in place.

7.0 OVERVIEW OF NFORM

This section provides a quick look at the features available with various SNMP devices and the functions accessible through Nform's desktop, tabs, menus and toolbar buttons.

7.1 The Nform Desktop

The Desktop view provides a quick visual summary of the entire system, showing the status of connected devices—how many devices are operating normally, how many are in alarm and how many are not communicating—and offering easy access to most Nform features.

7.1.1 Desktop View - Overview

The Desktop view is accessible by clicking on the **Desktop** button or using the keyboard shortcut **CTRL + D**. (Another way is to click on the **File** menu, then on **Desktop Command Center**.)

- **Status buttons** at the top of the window display the number of devices in each status category: Normal, Alarms Present and No Response (not communicating). The text for the selected Status button is black—in this example, Normal is selected—text for the other buttons is grayed-out.
- The **Device List** displays the name, IP address and type of all devices in the selected status category. This example shows a list of devices in Normal status.
- **Function buttons** offer quick access to various types of data that appear in the Detail viewing area. The selected function appears above the buttons—Alarms, in this example.
- The **Detail** viewing area displays data for the device selected in the Device List. The type of data is determined by the Function button selected. In this example, Alarm Management data for the selected device appears in the Detail viewing area.
- The **Save** and **Print** buttons provide access to the device data currently displayed in the Detail viewing area: save the data in a text file or print the data.
- The **Get Technical Support** button opens the default Web browser to Liebert's Nform Support Login page.
- **Configuration buttons** at the bottom of the window offer easy access to key Nform setup features.

7.1.2   Desktop Buttons

Table 2 shows the buttons available in the **Desktop Command Center** and where to learn more about each.

Table 2   Desktop buttons - summary

Button		Description	For more information, see:
STATUS BUTTONS - Click to view device names by status in the Device List.			
Normal		Button shows total count of devices in **Normal** status. Click to display names of these devices in Device List.	—
Alarms Present		Button shows total count of devices currently in **Alarm** status. Click to display names of these devices in Device List.	—
No Response		Button shows total count of devices currently in **No Response** status (not communicating). Click to display names of these devices in Device List.	—
FUNCTION BUTTONS - Click to view alarms and other device data in the Detail viewing area.			
Alarm Management		View alarm data in Detail area; manage alarms (e.g., acknowledge, delete).	**7.1.3 - Desktop - Alarm Management**
Notification Updates		View status of actions resulting from alarms in Detail area.	**7.1.4 - Desktop - Notification Update**
Device Diagnostic		View diagnostic data for selected device in Detail area.	**7.1.5 - Desktop - Device Diagnostic**
Parametric Data View		View parametric data for selected device in Detail area.	**7.1.6 - Desktop - Parametric Data View**
Network Statistics		View SNMP, UDP, TCP and ICMP network data in Detail area.	**7.1.7 - Desktop - Network Statistics**
CONFIGURATION BUTTONS - Click for shortcut to Configure tab features.			
License Administration		Shortcut to **License Key Administration** to add Nform licenses.	**8.5 - Enter the Nform License Key**
Manage Devices		Shortcut to **Device Manager** to manage devices (add, define, delete).	**9.0 - Configuring Nform Devices**
Configure Actions		Shortcut to **Server Notifications** (under **Local and Server Notifications**) to set up actions (e.g., send e-mail, write file).	**11.2 - Server Notifications**
System Administration		Shortcut to **Users** (under **Local Users and Groups**) to change passwords.	**8.4 - Change the Administrator Password**
OTHER BUTTONS - Save or Print Detail data, go to Nform technical support Web site.			
Save button		Save the information currently displayed in the Detail area as a text file.	**Sections 7.1.3 - 7.1.7**
Print button		Print the information currently displayed in the Detail area to a printer.	
Get Technical Support		Go to Liebert's Nform Support Login page via the default Web browser.	—

7.1.3 Desktop - Alarm Management

The Alarm Management function in the Desktop view offers quick access to alarm data for a selected device.

To view this data:

- Go to the Desktop view and select a device.

  (To do this, click on the **Desktop** button, then click on a status button to display devices in the selected status—Normal, Alarms Present or No Response. Click on a device in the Device List.)

- Click on the **Alarm Management** function button to display alarm data in the Detail viewing area. The selected function name—*Alarms*—appears above the function buttons.
- The Detail viewing area displays data for each alarm: the time of occurrence, the IP address and name of the device and the type of alarm, as in the following example.

Date and Time Received	Address	Name	Event Message
2006-12-17 11:52:21	192.168.0.125	GXT2U	On Battery Cleared

- Alarm totals—numbers of acknowledged and unacknowledged alarms—appear above the Detail area.
- When alarm data appears in the Detail area, you may:
  - Sort alarms by **Date and Time Received** or **Event Message**: click on the heading.
  - Save alarm data as a tab-delimited text file by clicking on the **Save** button.
  - Print alarm data by clicking on the **Print** button.
  - Manage alarms—for example, acknowledge alarms, add notes, delete or silence alarms—by right-clicking on an alarm. See **13.0 - Managing Alarms** for details.
  - View the definition of an alarm: right-click on the alarm and choose **View Data Definition** in the pop-up menu.

7.1.4 Desktop - Notification Update

The Notification Update function in the Desktop view provides access to the status of notifications resulting from an alarm for a selected device.

To view this data:

- Go to the Desktop view and select a device.

  (To do this, click on the **Desktop** button, then click on a status button to display devices in the selected status—Normal, Alarms Present or No Response. Click on a device in the Device List.)

- Click on the **Notification Update** function button to display notification data in the Detail viewing area. The selected function name—*Notifications*—appears above the function buttons.
- The Detail viewing area displays data for each notification: the time the notification was generated and its status, as well as the type, name, description and reason, as in the following example.

Date & Time	Notification Status	Notification Type	Notification Name	Event Description	Reason
2006-Dec-17 11:52:26	Success	File-Write	Critical Alarms	On Battery Cleared	

- When notification data appears in the Detail area, you may:
  - Sort notifications by clicking on the heading—for example, **Date & Time** or **Notification Status**.
  - Save notification data as a tab-delimited text file by clicking on the **Save** button.
  - Print notification data by clicking on the **Print** button.

7.1.5 Desktop - Device Diagnostic

The Device Diagnostic function in the Desktop view displays diagnostic data for the selected device.

To view this data:

- Go to the Desktop view and select a device.
  (To do this, click on the **Desktop** button, then click on a status button to display devices in the selected status—Normal, Alarms Present or No Response. Click on a device in the Device List.)

- Click on the **Device Diagnostic** function button to display diagnostic data in the Detail viewing area. The selected function name—*Diagnostics*—appears above the function buttons.
- The Detail viewing area displays identifying data for the device, such as manufacturer and model, as well as status of alarms and various network interfaces, as in the following example.

Description	Current Value
Manufacturer	LiebertCorporation
Device Model	GXT2-700RT120
Device Software Version	GXT2MR10
SNMP Agent Software Version	1.200.0
No. of Current Alarms	0
Active Alarms	No Alarms Present
SNMP Interface	OK
Web Interface	OK
Telnet Interface	OK
ICMP (Ping) Interface	OK

- When diagnostic data appears in the Detail area, you may:
  - Sort diagnostic data by clicking on a heading: **Description** or **Current Value**.
  - Save diagnostic data as a tab-delimited text file by clicking on the **Save** button.
  - Print diagnostic data by clicking on the **Print** button.

7.1.6 Desktop - Parametric Data View

The Parametric Data View function displays parametric data for the selected device in the Desktop Command Center view.

To view this data:

• Go to the Desktop view and select a device.

(To do this, click on the **Desktop** button, then click on a status button to display devices in the selected status—Normal, Alarms Present or No Response. Click on a device in the Device List.)

• Click on the **Parametric Data View** function button to display parametric data in the Detail viewing area. The selected function name—*Parametrics*—appears above the function buttons.

• The Detail viewing area displays identifying data for the device, such as manufacturer, model and software version, as well as the status of various parameters, as in the following example. The number of rows of data values displayed may be changed in the Global Settings options (see **9.1 - Global Settings**).

Description	Current Value
Manufacturer	LiebertCorporation
Model	GXT2-700RT120
UPS Software Version	GXT2MR10
SNMP Agent Software Version	1.200.0
Name	GXT2U
Battery Status	2
Seconds On Battery	0
Estimated Minutes Remaining	60

• When parametric data appears in the Detail area, you may:

   • Sort parametric data by clicking on a heading: **Description** or **Current Value**.
   • Save parametric data as a tab-delimited text file by clicking on the **Save** button.
   • Print parametric data by clicking on the **Print** button.

7.1.7   Desktop - Network Statistics

The Network Statistics function in the Desktop view displays network data for the selected device in four categories: SNMP, UDP, TCP and ICMP.

To view this data:

- Go to the Desktop view and select a device.

  (To do this, click on the **Desktop** button, then click on a status button to display devices in the selected status—Normal, Alarms Present or No Response. Click on a device in the Device List.)
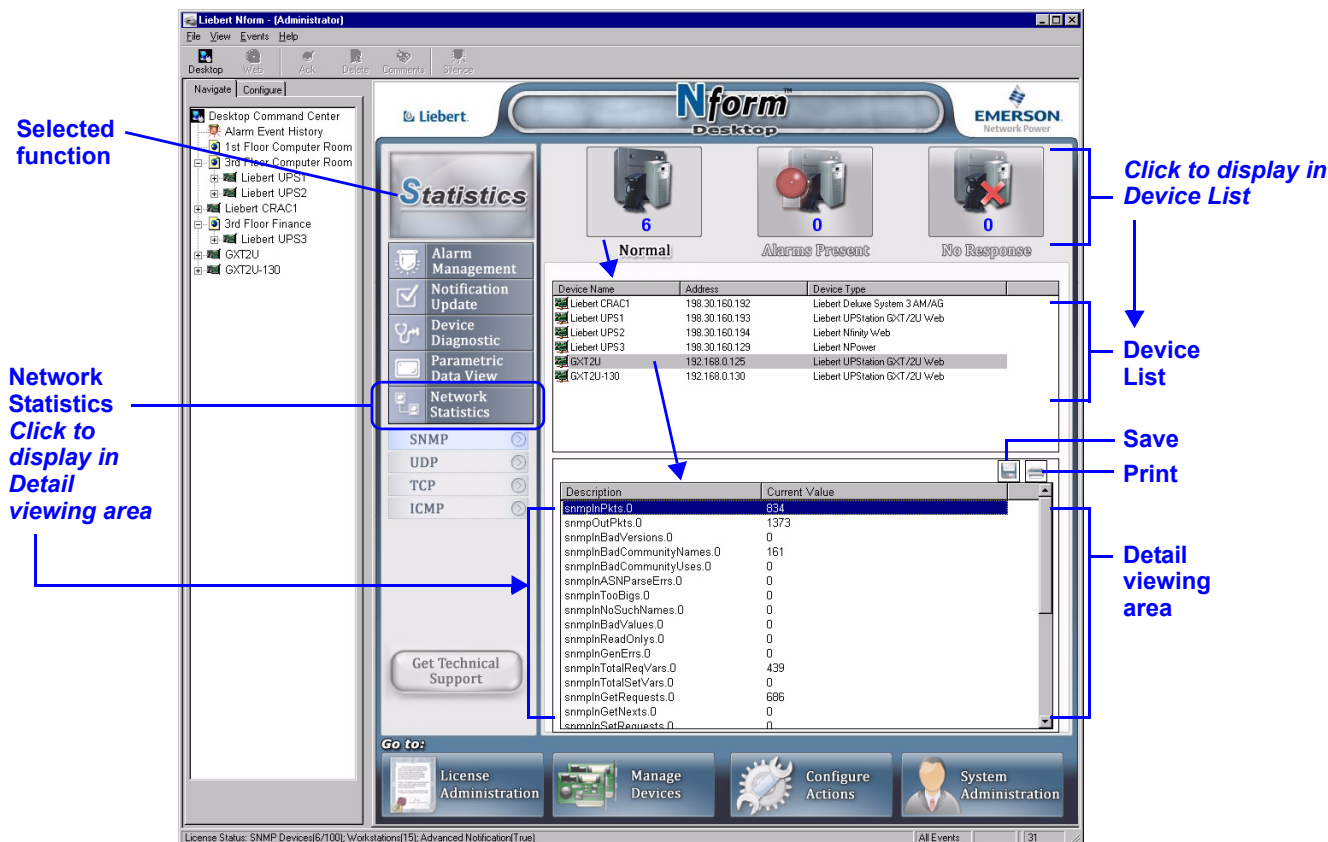
- Click on the **Network Statistics** function button to display network data in the Detail viewing area. The selected function name—*Statistics*—appears above the function buttons.
- Click on one of the four categories of network statistics: **SNMP**, **UDP**, **TCP** or **ICMP**.
- The Detail viewing area displays the selected type of network data, as in the following example for SNMP data.

Description	Current Value
snmpInPkts.0	176
snmpOutPkts.0	186
snmpInBadVersions.0	0

- When network data appears in the Detail area, you may:
  - Sort network data by clicking on the heading: **Description** or **Current Value**.
  - Save network data as a tab-delimited text file by clicking on the **Save** button.
  - Print network data by clicking on the **Print** button.

7.2   Navigate and Configure Tabs

Nform's two tabs—Navigate and Configure—logically divide its functions.

- The **Navigate** tab displays the operational status and condition of monitored and managed devices. This tab becomes more important after Nform is fully set up.
- The **Configure** tab is the entry point for all setup functions required for Nform to begin monitoring and managing SNMP devices.

7.2.1   Configure Tab—Overview

Access to the **Configure** tab is limited to the Administrator. This prevents unauthorized users from altering Nform's settings. This tab allows you to:

- Enter the Nform license key(s) and install the MultiLink Network Shutdown License
- Set up devices to be monitored and managed by Nform, organized in virtually any fashion
- Add floor plans as visual reminders of device locations
- Specify actions for Nform to take in response to an alarm from any device: send e-mails, add alarm information to a file and launch scripts
- Set up security precautions, such as changing the Administrator's password

The **Configure** tab, with its various options, is shown below.
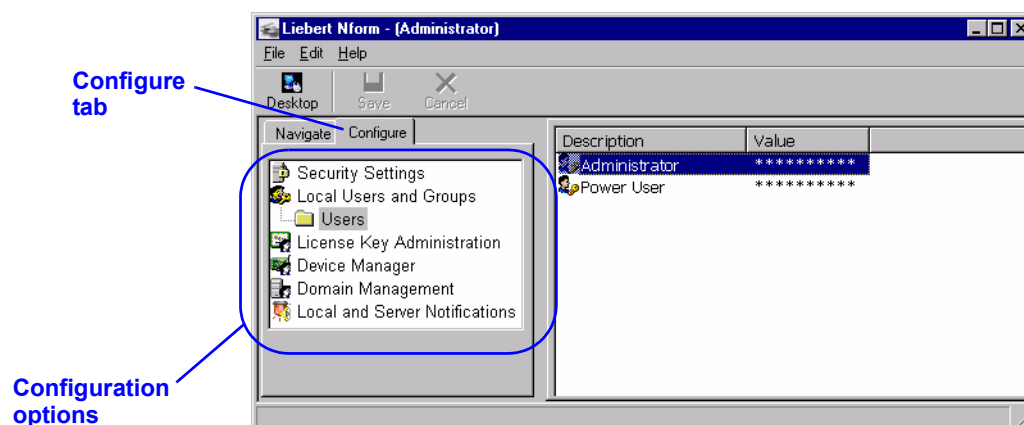
The following table shows where to find detailed information about key **Configure** tab functions.

Function	For a detailed description, see:
• Change passwords • Enter Nform licenses • Install MultiLink Network Shutdown License*	**8.0 - Getting Started With Nform**
• Add SNMP devices and floor plans to navigation tree	**9.0 - Configuring Nform Devices**
• Set up MultiLink 1.5 clients for shutdown notifications*	**10.0 - Configuring MultiLink Devices**
• Set up Nform's response to alarms (send e-mail, write to file, run script) • Link responses to alarms for specific devices • Configure SNMP get/set requests*	**11.0 - Local and Server Notification Configuration**

* Requires additional license (included with Nform-Enterprise version); see **Table 20**

7.2.2 Configure Menus and Toolbar Buttons

When the **Configure** tab is selected, Nform displays three menus at the top of the window: **File**, **Edit**, and **Help**. Each menu has a drop-down list of options, which appear only when applicable. For example, the **Save** option appears in the **File** menu only when a change needs to be saved.

The Toolbar buttons, which appear directly below the menu, offer alternatives for selected menu options, as shown below. Buttons appear on the Toolbar only when their function is applicable. To display helpful text describing a button's function, hold the mouse over the button. In the **Navigate** tab, click on the **View** menu and choose **Show Text Labels** to cause labels to appear under the buttons.

Configure Menus
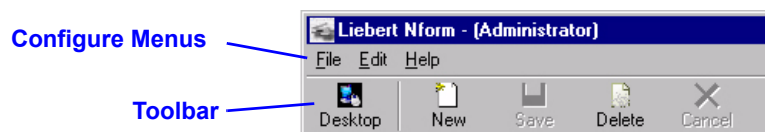
Toolbar

Table 3 shows the menu options available in the **Configure** tab and where to learn more about each.

Table 3   Configure tab menu options - summary

Menu	Option	Toolbar button	Function	For more information, see:
File	**New**	New	Create a new device, floor plan, action or other item	—
	Save	Save	Save changes to configured items	**8.0 - Getting Started With Nform**
	Desktop Command Center	Desktop	View the Desktop Command Center	**7.1 - The Nform Desktop**
	Exit	—	Quit the Nform application	—
Edit *(Configure tab only)*	**Cancel**	Cancel	Abort changes that have not been saved	—
	Delete	Delete	Delete a device, floor plan, action or other item	—
Help	**About**	—	Check Nform version	—

7.2.3 Navigate Tab—Overview

The main features of the **Navigate** tab are:

- Viewing summary status, alarm history, and parametric data for any device in the navigation tree
- Tracking alarms in an event log and in user-specified files
- Responding to alarms

Access to the **Navigate** tab is unlimited; it can be viewed by the Administrator or the Power User group. This permits any authorized user to view the status of monitored, managed devices and respond to alarms.

The **Navigate** tab view varies, depending on the type of SNMP card installed in a device. A device equipped with a Web-enabled SNMP card may be viewed with a Web browser. For devices with an SNMP card that does not support HTML, Nform displays the data in tabular format.

For devices equipped with Web-enabled SNMP cards, the **Navigate** tab may be used to change configuration settings, test a UPS battery and alter other settings.

These functions are performed through the **Control** and **Configure** tabs of the SNMP card's Web display. These HTML tabs may be accessed by any user who has the SNMP card's password. This means that an Nform Power User with the SNMP card password would be able to alter some device settings through the HTML interface.

The Navigate window has two parts. The left side displays all configured devices as a navigation tree, and the right side shows information about any selected item in the tree.

SAMPLE DATA: DEVICE WITH WEB INTERFACE

Navigate tab

Navigation tree

Information for selected device

SAMPLE DATA: DEVICE WITHOUT WEB INTERFACE
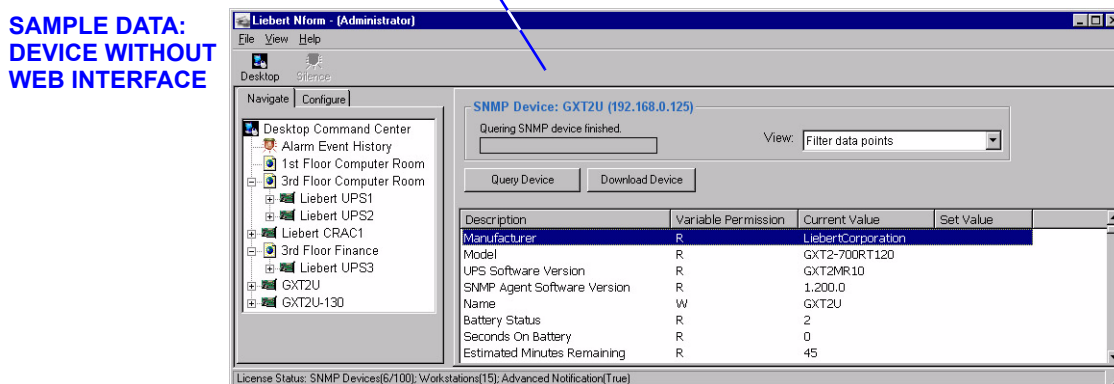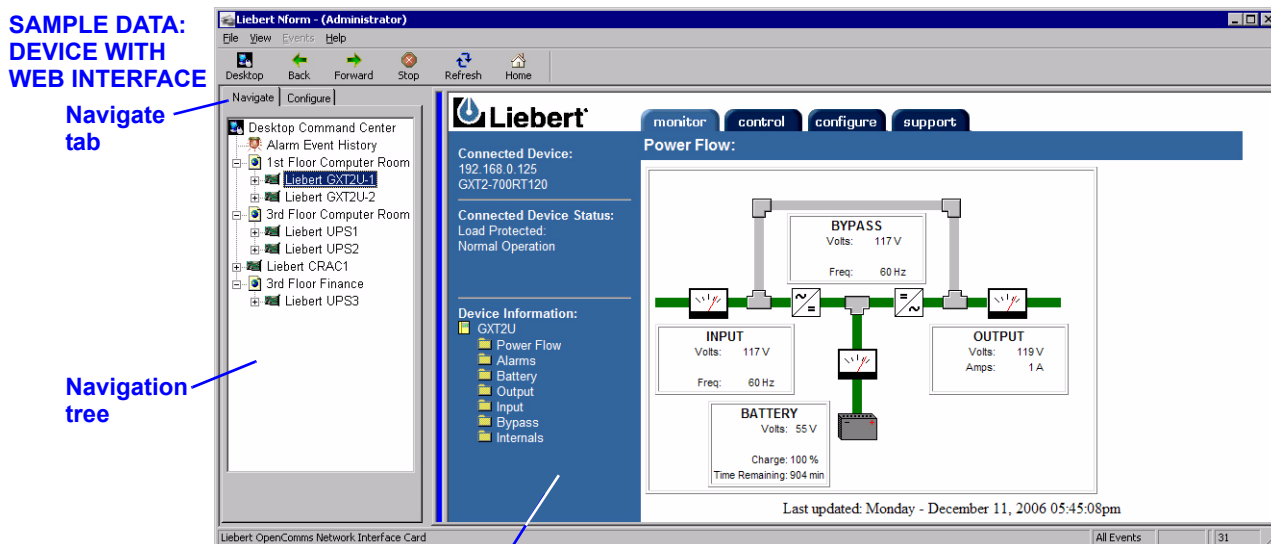
The table below shows where to find detailed information about the **Navigate** tab's functions.

Function	For a detailed description, see:
View the status of all devices	**12.0 - Nform Monitoring—Navigation Tree**
Manage Nform's alarm log: acknowledge and delete alarms	**13.0 - Managing Alarms**

Also visit these Liebert Web sites for more information on getting your equipment monitored:

- **OpenComms Web card:** http://www.liebert.com/dynamic/displayproduct.asp?id=1018&cycles=60Hz
- **OpenComms NIC card:** http://www.liebert.com/dynamic/displayproduct.asp?id=998&cycles=60Hz

7.2.4 Navigate Menus and Toolbar Buttons

When the **Navigate** tab is selected, Nform displays up to four menus at the top of the window: **File**, **View**, **Alarms**, and **Help**. Each menu has a drop-down list of options. Menus and options appear only when applicable. For example, the **Alarms** menu is available only when alarms are displayed.

The Toolbar buttons, which appear directly below the menu, offer alternatives for selected menu options, as shown below. Buttons appear on the Toolbar only when their function is applicable. To display helpful text describing a button's function, hold the mouse over the button. Clicking on the **View** menu and choosing **Show Text Labels** causes labels to appear under the buttons.
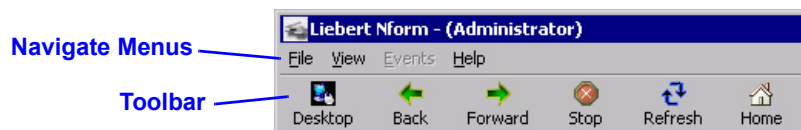
Table 4 shows the menu options available in the **Navigate** tab and where to learn more about each.

Table 4   Navigate tab menu options - summary

Menu	Option	Toolbar button	Function	For more information, see:
File	**Log On**	—	*(Before logging in)* Log on as Administrator / Power User	**8.3 - Log on as Administrator**
	Desktop Command Center		View the Desktop Command Center	**7.1 - The Nform Desktop**
	Lock Application	—	Secure Nform from unauthorized use	—
	Exit	—	Quit the Nform application	—
View *(Navigate tab only)*	**Show Text Labels**	—	Display text below Toolbar buttons	—
	Go To > Back		*For Web pages:* • Return to previous page	—
	Go To > Forward		*For Web pages:* • Move to next page	—
	Go To > Home		*For Web pages:* • Go to Home page **http://www.liebert.com**	—
	Stop		*For Web pages:* • Stop loading page	—
	Refresh		*For Web pages:* • Update device data	—
	Options	—	Change color for alarm status (active, acknowledged, closed)	**13.7 - Change Colors Indicating Alarm Status**
Events *(Navigate tab with alarms displayed)*	**Silence**		Silence an alarm	**13.3 - Silence the Default Beep**
	Acknowledge		Change active alarm status to acknowledged	**13.5.1 - Acknowledge an Alarm**
	Comments		Add comments to an alarm	**13.6 - Add or View Alarm Comments**
	Delete		Remove a closed alarm from alarms listing	**13.5.2 - Delete an Alarm**
Help	**About**	—	Check Nform version	—

7.2.5 Informational Icons in the Navigation Tree

The navigation tree's informational icons change to indicate normal operation, active alarms, communications loss and other conditions of SNMP devices.
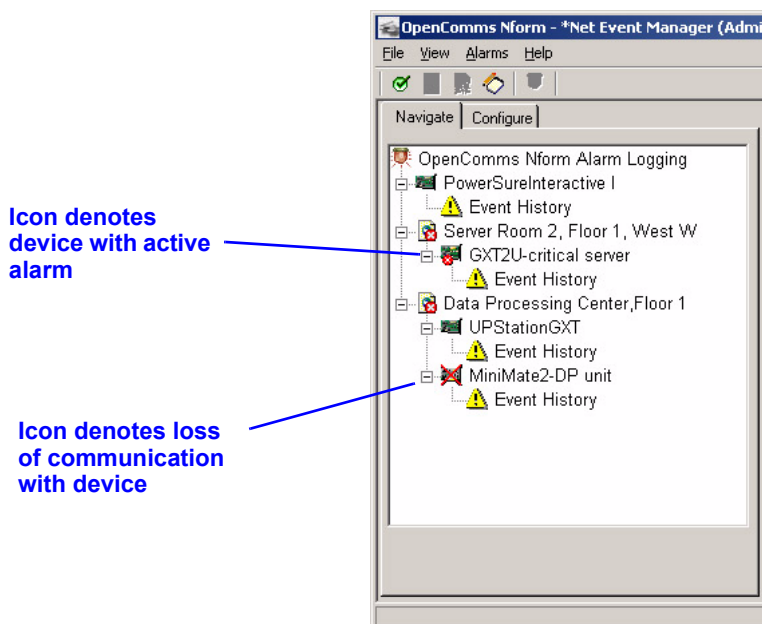
Table 5 summarizes the meaning of icons Nform employs to indicate the status of monitored and managed SNMP devices.

Table 5   Informational icons - summary

Status	Toolbar button	Meaning	For more information
Normal operation		Floor plan and all components in normal status	—
		SNMP device in normal status	—
		Event history - shows listing of active and acknowledged alarms	**13.0 - Managing Alarms**
Problem in a component device		Floor plan with at least one component device in alarm or communication loss status	**13.0 - Managing Alarms**
Active alarm		Device in active alarm status	**13.0 - Managing Alarms**
Communication loss		No communication with device	See **Note** below

NOTE
When Nform displays this icon *, verify that your network cables are connected.*
If further action is required, consult your SNMP card user manual.

7.3   Nform Features

Table 6 lists the features available in Nform.

Table 6   Features available in Nform

	Feature	Nform 2.0
System Features	Desktop Command Center	Yes
	Centralized Event Logging	Yes
	Multi-User	Yes
	Authenticated Access	Yes
	Auto Logoff (Enhanced Security)	Yes
	SiteScan Web Interface	Yes
	MultiLink Interface	Yes
	Supported Operating Systems	Windows NT 4.0 w/SP6 or higher, Windows 2000, Windows XP, Windows 2003 Server
	License Packages	Available in 30, 100 & 500 node increments
	Floorplans	Yes
	Customized System Topologies	Yes
Device Management	Broad Device Support	Yes
	Auto Discovery of Network Devices	Yes
	Automatic Configuration	Yes
	Web Card Integration	Yes
	Configurable SNMP Device Views	Yes
	SNMP Device Configuration	Yes
	UPS Equipment Support	All UPS, Environmental, Power Distribution and Monitoring products that support an SNMP interface
	Air Equipment Support	
	Power Equipment Support	
	DC Equipment Support	
	Open Architecture (Monitoring of non-proprietary SNMP devices)	Yes
	Device Status Polling	Yes
	Real Time Monitoring	Yes
Notifications	E-Mail Notification	Yes
	Run External Program Capability	Yes
	File Write	Yes
	Play Sound Wave	Yes
	Play Default Beep	Yes
	Flash Application When Minimized	Yes
	Propagate Application to Foreground	Yes
	Remote Monitoring	Yes
	Shutdown	Yes
	SNMP Set Request(s)	Yes
	SNMP Get Request(s) Report	Yes
	SNMP Trap Forward Request(s)	Yes
Alarm Management	Acknowledge Alarms	Yes
	Comments to Alarm	Yes
	Alarm Filtering by Device	Yes
	Time Zone Independent	Yes
	Alarm Helpful Text	Yes

8.0   GETTING STARTED WITH NFORM

After installing the software, you should change the default password for security purposes and enter the license key so you can begin configuring devices for monitoring.

> **NOTE**
> *The Nform software makes automatic adjustments to operate correctly with the computer's firewall if enabled. Previous versions did not have this feature.*

Saving Configuration Changes

Some changes to Nform's configuration are saved automatically; others will need to be saved before they take effect. If these buttons ⬛ ⬛ appear on the toolbar and are illuminated (not grayed-out), you must save changes in one of the following ways:

- Click on the **File** menu at the top of the window, and then click on **Save**.
  or
- Click the **Save** button ⬛ on the toolbar.
  or
- Right-click in the lower right side of the window, then click on **Save** in the pop-up menu.

8.1   Start Nform

To start the application:

- Click on the **Start** button, then on **Programs**, then on **Liebert Nform** (program folder), and finally on **Liebert Nform** (application icon).

8.2   Connect to Server

The Server Link Status window opens, as shown at right, allowing you to specify the server you wish to connect to.

- The Server IP box displays the IP address of a server where Nform was installed. To connect to a different server, enter the IP address or domain name in the Server IP box.
- To make the server connection automatic each time you start Nform, click to place a check mark (✔) in the **Automatically make connection to server** check box. The next time you start Nform, this window will not appear. This option is recommended if there is only one server you will want Nform to connect to. You may change this option later (see **9.8.1 - Alarm Service - Configuration**).
- Click on the **Connect** button to connect to the server listed in the Server IP box. (Or click **Exit** to cancel.)
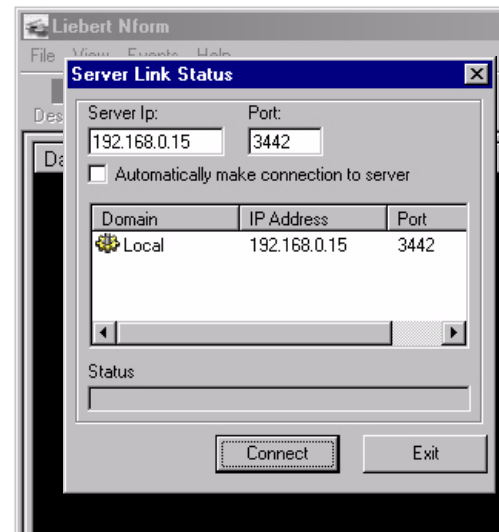
8.3   Log on as Administrator

After connecting to the server, Nform opens and displays a blank screen, as shown at right. This remains until the user logs on as either Administrator or Power User.

The Administrator user name permits full access for configuring the software.

To log on as Administrator:

- Click on the **File** menu at the top of the window, then click on **Log On**.
- In the Login window, choose **Administrator** (the default) in the User Name box.
- In the Password box, enter the default password, **liebert** (all lowercase letters).
- Click on the **OK** button.
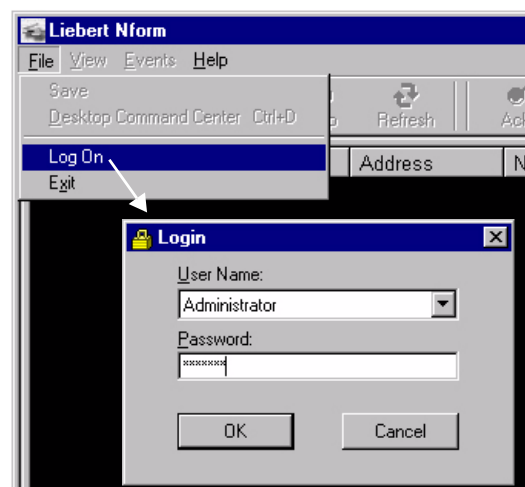
8.4   Change the Administrator Password

The software has two users, Administrator and Power User. The Administrator has full access to configuration and monitoring; the Power User has viewing privileges only. These user names cannot be changed.

The default password for both users is **liebert** (all lowercase letters). Liebert recommends changing the password for the Administrator for security purposes. The password is case-sensitive and may consist of up to eight characters—any combination of letters, numbers or symbols.

To change the Administrator password:

- Log on as Administrator.
- Click on the **Configure** tab.
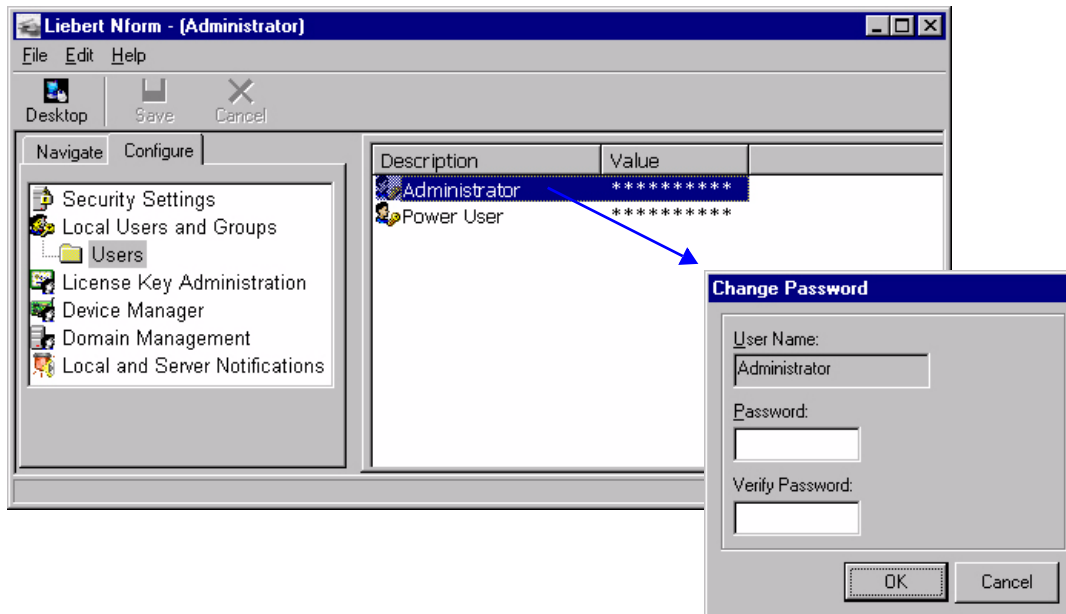
- In the left side of the window, click on **Local Users and Groups**, and then on **Users**.
- In the right side of the window, double-click on **Administrator** to open the Change Password box.
- Enter the new password in the Password box. The password is case-sensitive and may be up to eight characters long (any combination of letters, numbers and other characters).
- Confirm the new password by re-entering it in the Verify Password box.
- Click **OK**.

Follow the same procedure if you wish to change the Power User password. You must be logged on as Administrator to change this password.

You may set up different views in the Navigate tab for each user. See **9.5 - Add Devices to Navigation Tree** for details.

8.5   Enter the Nform License Key

You must install the Nform license key from the sticker on the CD case before configuring Nform to manage and monitor devices and inform users of conditions affecting SNMP devices.

- If you purchased the **Nform-Enterprise** pre-bundled package, the primary license key allows for five concurrent users and 100 devices to be monitored. The Enterprise package also includes an Advanced Notification License and a MultiLink Network Shutdown License.
- If you purchased the **Nform software** separately (the non-Enterprise version), the primary license key allows for one workstation (local user) and 30 devices to be monitored.

  Additional license keys are available from Liebert to add concurrent users (1, 5 or 10), devices (30, 100 or 500) or the Advanced Notification SNMP Get/Set Request features. Contact your local Liebert representative or see **Appendix C - Ordering Parts From Liebert** for information.

Each additional license must be installed separately, as described in this section.

To install an Nform license key:
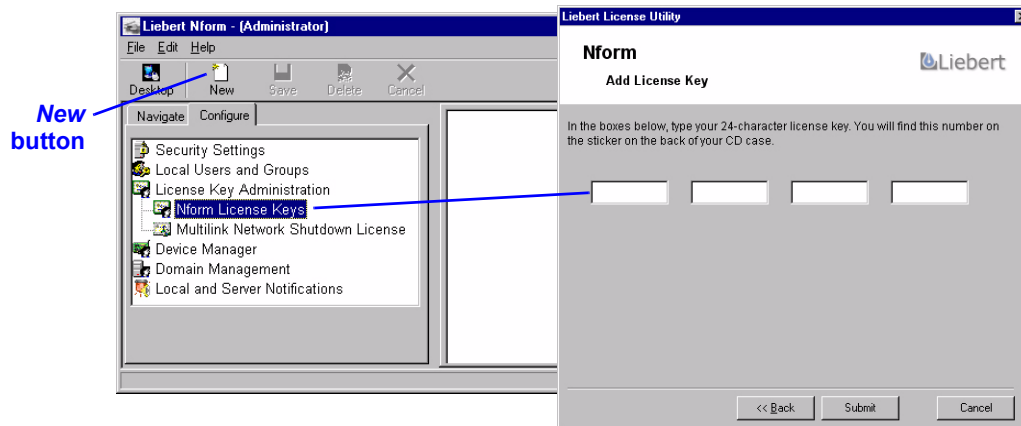
- Log on as Administrator.
- Click on the **Configure** tab.

- In the left side of the window, double-click on **License Key Administration**, then click on **Nform License Keys**.
- Click on the **File** menu at the top of the window, then click on **New**. (Or click the **New** button 🔲 on the toolbar.) This opens the Liebert License Utility window. Click **Next**.
- Read the license agreement, and place a check mark in the box to accept the terms. Click **Next**.
- Enter the 24-character license key from the sticker on the CD case or the certificate provided by Liebert, then click on **Submit**.

License Key Information

After installation, the license key number appears in the right side of the window. If you have installed more than one license key, the primary license key appears first in the list.

- Double-click on the license key number in the right side of the window to open an information window, as shown at right.
- This window displays important details about your license, including the license agreement, accessible by clicking on the **Issuer Statement** button.

Your primary license key cannot be deleted, but you may wish to remove a secondary license key—for example, to move it to another computer to monitor a different group of devices. See **15.2.1 - Deleting Secondary Nform License Keys** for details.
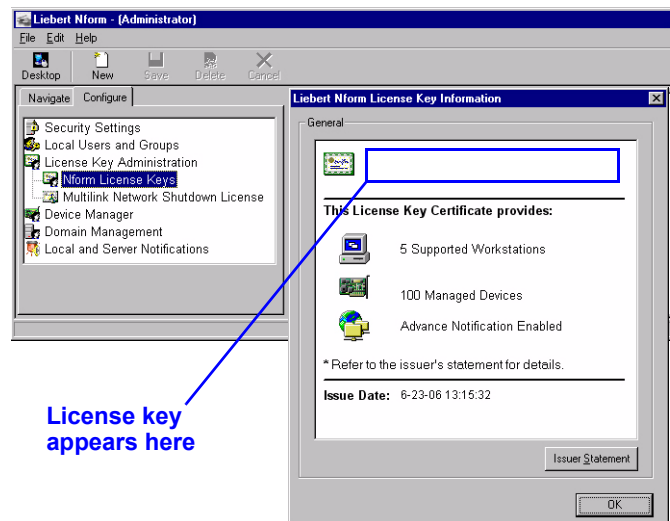
8.6   Install the MultiLink Network Shutdown License (Optional)

If you purchased the MultiLink Network Shutdown License—either separately or as part of the Nform-Enterprise pre-bundled package—two steps are needed to activate the MultiLink shutdown features:

- First, install the MultiLink Network Shutdown License as described in this section.
- Then configure MultiLink devices as described in **10.0 - Configuring MultiLink Devices**.

> **NOTE**
> *The Nform Enterprise CD contains the MultiLink Unlimited License:*
> *cdDrive:\MultiLink\MLLKU\MLLKU.LICENSE*

The MultiLink Network Shutdown License is available from Liebert. For more information, contact your local Liebert representative or see **Appendix C - Ordering Parts From Liebert**.

To install the MultiLink Network Shutdown License:

- Log on as Administrator.
- Click on the **Configure** tab.
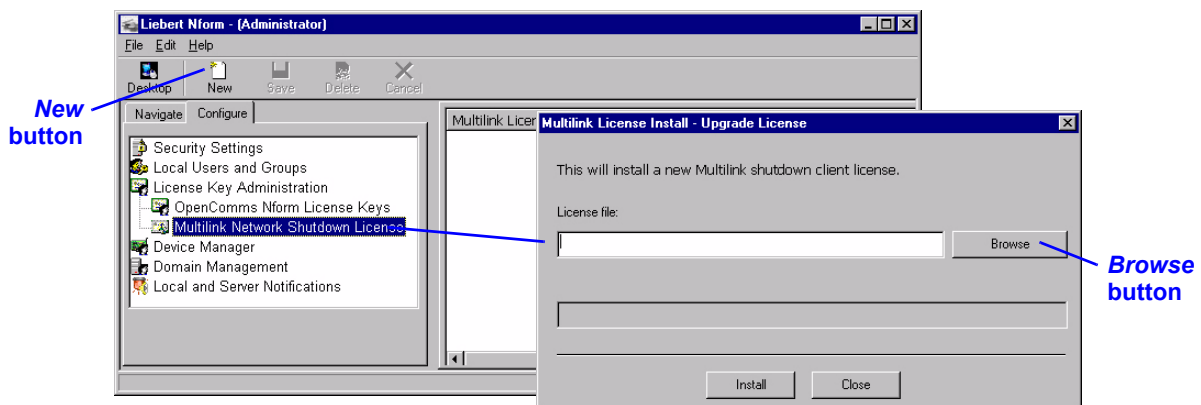
- In the left side of the window, double-click on **License Key Administration**, then click on **MultiLink Network Shutdown License**.
- Click on the **File** menu at the top of the window, then click on **New**. (Or click the **New** button on the toolbar.) This opens the MultiLink License Install window. Click **Next**.
- Enter the full path and file name of the MultiLink Network Shutdown License provided by Liebert, or click the **Browse** button to locate the file. Then click on **Install**.

> **NOTE**
> *Due to the design of the license, only one MultiLink Network Shutdown License can be added to a system.*

License Key Information

After installation, the MultiLink Network Shutdown License appears in the right side of the window.

- Double-click on the MultiLink Network Shutdown License in the right side of the window to open an information window, as shown at right.
- This window displays important details about your license, including the license agreement, accessible by clicking on the **Issuer Statement** button.

To remove this license, see **15.2.2 - Deleting the MultiLink Network Shutdown License**.
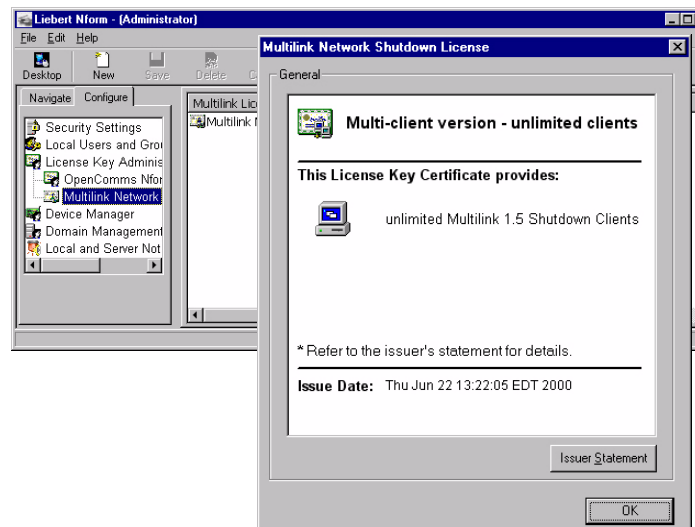
8.7   Set Up Security Settings

As a security precaution, you may enable a feature that locks the Nform application after a specified amount of idle time following the Administrator logon. When this occurs, the application remains locked until the user enters a password. This feature is intended to prevent unauthorized personnel from using the Administrator's workstation to alter Nform settings.

By default, this feature is disabled (False) with an idle time of 25 minutes.

Even when this feature is enabled, Nform will not log off the Administrator user when the **Configure** tab is active.

To enable this security option:

- Log on as Administrator.
- Click on the **Configure** tab.
- In the left side of the window, click on **Security Settings**, then on **Local Policies**, and finally on **Security Options**. The right side of the window displays two options.
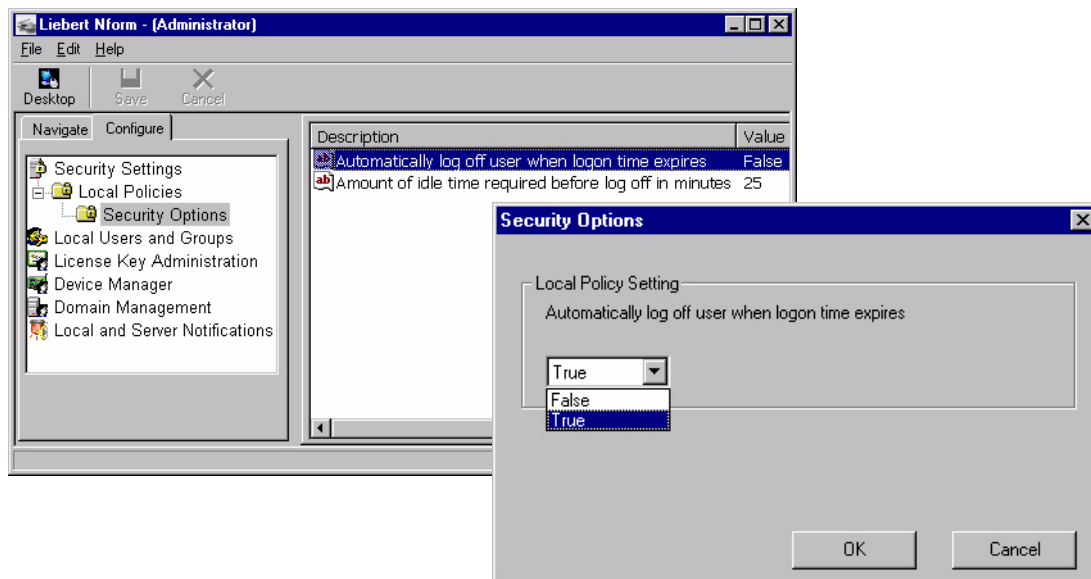
Enable (or Disable) Automatic Logoff

- Double-click on **Automatically log off user when logon time expires** to open the Security Options window, shown above right.
- To enable the automatic logoff feature, select **True** from the drop-down list and click **OK**. (To disable the feature, select **False**. With this option, no automatic logoff will occur.)
- Click on the **File** menu at the top of the window, then click on **Save**. (Or click the **Save** button on the toolbar.)

Change Amount of Idle Time Before Automatic Logoff

- To change the amount of idle time that must elapse before the Administrator is logged off, double-click on **Amount of idle time required before log off in minutes** to open the Security Options window, shown at right.
- Enter the desired idle time in minutes and click **OK**.
- Click on the **File** menu at the top of the window, and then click on **Save**. (Or click the **Save** button on the toolbar.)
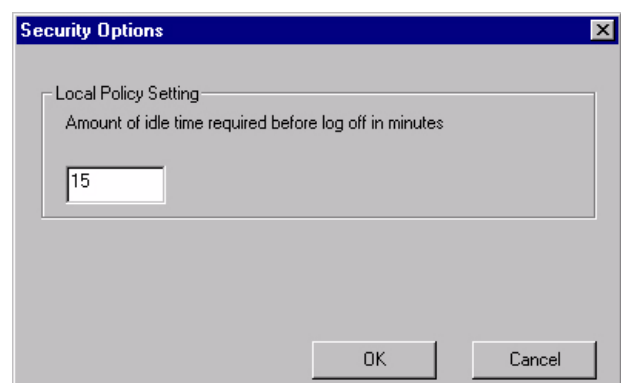
9.0   CONFIGURING NFORM DEVICES

This section describes how to configure devices that will be monitored, add floor plans as visual aids, set up the navigation tree and view or change settings for alarm, trap and SNMP services.

9.1   Global Settings

Nform allows you to configure default settings for selected options for the entire system—for example, SNMP community names, ports used for traps and for Web communication and some Auto Discovery features. These global settings prevent the need for entering the same information in multiple locations. **Table 7** provides a list of these options with their default settings and notes about each.

Table 7   Global settings options

Option	Default	Notes
Delay Response (Milliseconds)	900	Enter the delay response time in milliseconds. • Used in Timeout box (see **9.4.1 - Device Setup tab**).
Read Community	public	Must match the community string entered in the SNMP card (case-sensitive). • Used in Community box (see **9.4.1 - Device Setup tab** and **9.2.1 - Detect Devices on the Network**).
Write Community	private	May be used for a device that has a secondary IP address and community string configured for Read-Write or Set access. • Used in Community Set box (see **9.4.1 - Device Setup tab**).
HTTP Port	80	Port used to connect to the Web. By default, the HTTP port is 80. • Used in HTTP box (see **9.4.1 - Device Setup tab**).
Use Discovered Settings - True or False	True	If **True**, settings from discovered devices will override global settings. • See **9.2 - Auto Discover Devices**.
Configure Discovered Device As Managed Device	True	If **True**, discovered devices will be automatically configured as managed devices. • See **9.2 - Auto Discover Devices**.
MultiLink Trap Listen Port	162	Defines port for receiving traps. **Note:** Liebert recommends using port 162. • Used in SNMP Trap Service port (see **9.8.3 - Trap Service**).
Telnet User	Liebert	The Telnet user name needed for Liebert devices that support Telnet—used when the setting for the Configured Discovered Device as Managed Device option is **True**.
Telnet Password	Liebert	The Telnet password associated with the Telnet user name.
Maximum Data Rows In Desktop Parametric View	15	Enter the number of rows to be displayed in the desktop Parametric Data View—for example, if the value is set to 10, the first 10 values are displayed. • See **7.1.6 - Desktop - Parametric Data View**.

To view or change any setting:
- Log on as Administrator and click on the **Configure** tab.
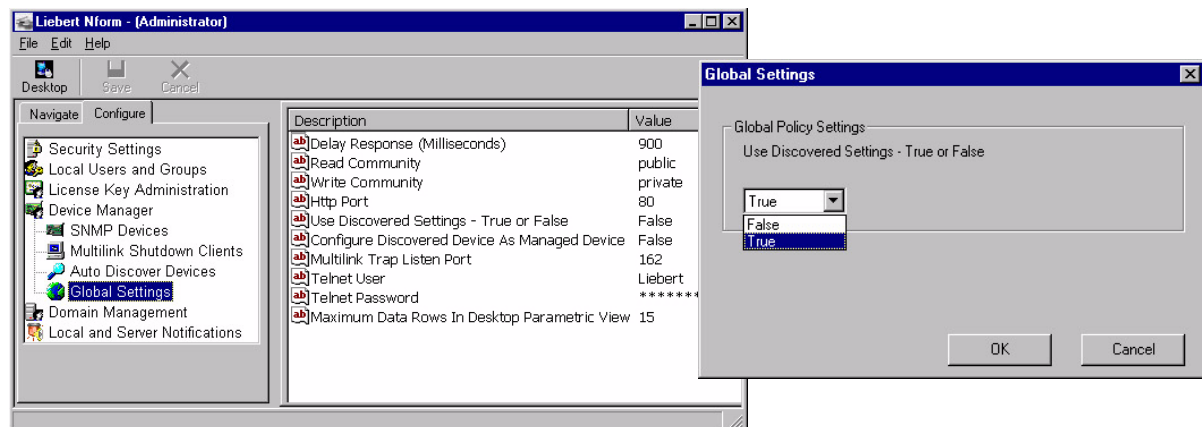
- In the left side of the window, click on **Device Manager**.
- In the right side of the window, double-click on **Global Settings** to display the options.
- To change the setting for an option:
    - Double-click on any option to open the Global Settings window for that option. The example above shows the **Use Discovered Settings - True or False** option.
    - Enter the appropriate change and click **OK**.
    - Click on the **File** menu at the top of the window, and then click on **Save**.
    (Instead, you may click the **Save** button on the toolbar.)

9.2 Auto Discover Devices

The Auto Discovery feature speeds up configuration with automatic detection of devices within a range of IP addresses on the network.

This section provides instructions on using the Auto Discovery feature:

- **9.2.1 - Detect Devices on the Network**
- **9.2.2 - Add Discovered Devices to the Configuration**
- **9.2.3 - Export a Text File of Discovered Devices**
- **9.2.4 - Import Devices Into Nform**

9.2.1 Detect Devices on the Network

To detect devices with Auto Discovery:

- Log on as Administrator and click on the **Configure** tab.
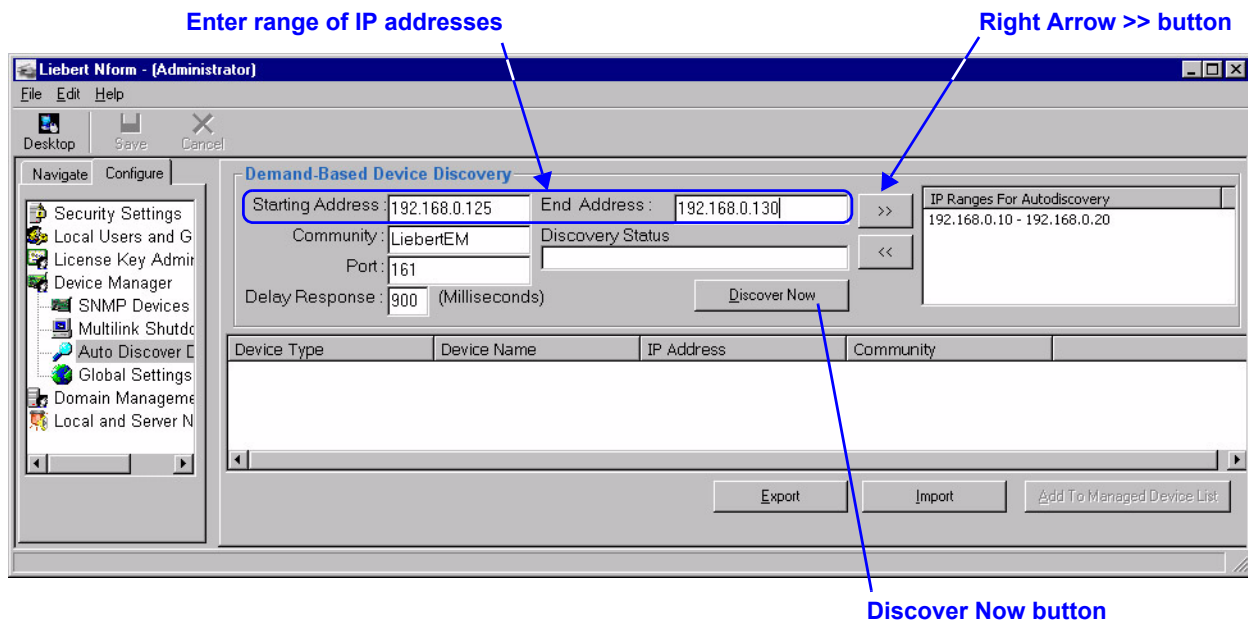
Enter range of IP addresses

Right Arrow >> button

Discover Now button

- In the left side of the window, click on **Device Manager**.
- In the right side of the window, double-click on **Auto Discover Devices** to display the Demand-Based Device Discovery window, shown above.
- Enter a range of IP addresses to be polled:
  - In the Starting Address box, enter the lower end of the range —198.162.0.125, for example.
  - Click in the End Address box to enter the upper end of the range—198.162.0.130, for example. This box is automatically filled with the first part of the IP address (e.g., 192.168.0).
  - Click the Right Arrow button >> to move the addresses to the IP Ranges For Autodiscovery box at right.
- If needed, enter additional ranges of IP addresses. For each range, enter the lower and upper ends of the IP address range, then click the Right Arrow button.
- Click the **Discover Now** button to start the Auto Discovery process. The Discovery Status box shows a progress bar during the process. Discovered devices appear in the lower portion of the window as they are detected.
- When polling is finished, the Discovery Status box displays the message **100% - Discovery complete**.
  - To add the newly discovered devices to the Nform configuration, proceed to the next section, **9.2.2 - Add Discovered Devices to the Configuration**.
  - To create a text file with the list of discovered devices, see **9.2.3 - Export a Text File of Discovered Devices**.
  - To import devices from a text file, see **9.2.4 - Import Devices Into Nform**.

9.2.2 Add Discovered Devices to the Configuration

After using Auto Discovery to detect devices (described in **9.2.1 - Detect Devices on the Network**) or importing devices from a text file (**9.2.4 - Import Devices Into Nform**), you must move the discovered devices to the Nform configuration.

To do this:

- If needed, open the Demand-Based Device Discovery window.

  (To do this, log on as Administrator and click on the **Configure** tab. In the left side of the window, click on **Device Manager**. In the right side of the window, double-click on **Auto Discover Devices**.)
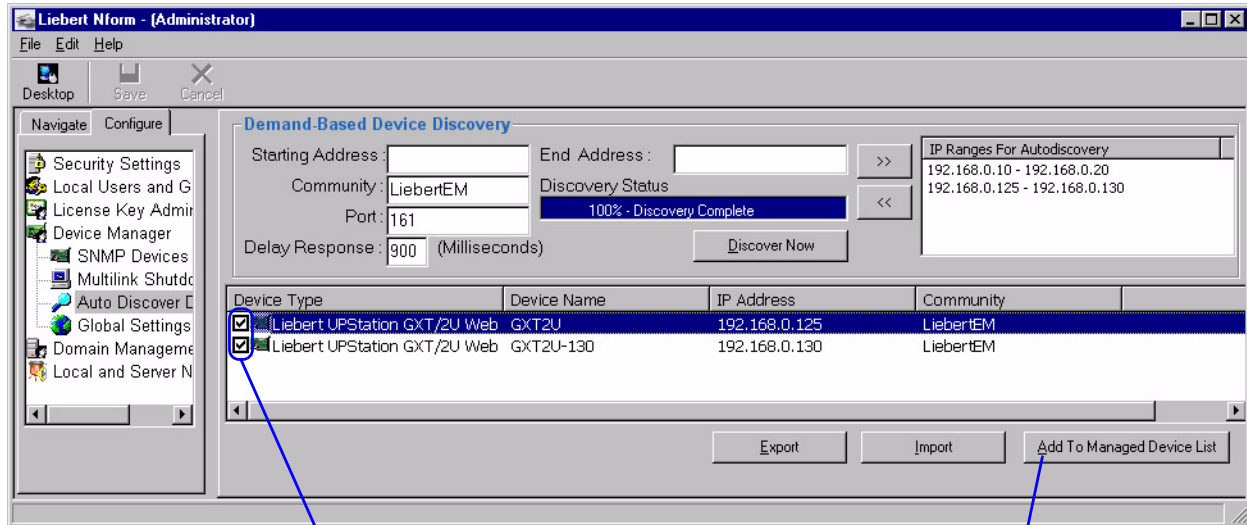
Use a check mark to select devices to add

Add To Managed Device List

- The list of discovered devices appears in the lower portion of the window. Click to place a check mark (✔) in the check box to the left of any devices to be added.
- Click the **Add To Managed Device List** button to add the selected devices to the Nform. A confirmation message appears, and the devices disappear from the list in this window.
- To view or modify any configuration settings for these devices, refer to the following sections:
  - **9.4.1 - Device Setup tab**
  - **9.4.2 - Views tab**
  - **9.4.3 - Alarms tab**

9.2.3 Export a Text File of Discovered Devices

After using Auto Discovery to detect devices on the network, you may save the list of discovered devices as a comma-delimited text file. That file may be viewed or edited with a text editor, and it may be imported into any Nform configuration.

- If needed, open the Demand-Based Device Discovery window.

  (To do this, log on as Administrator and click on the **Configure** tab. In the left side of the window, click on **Device Manager**. In the right side of the window, double-click on **Auto Discover Devices**.)
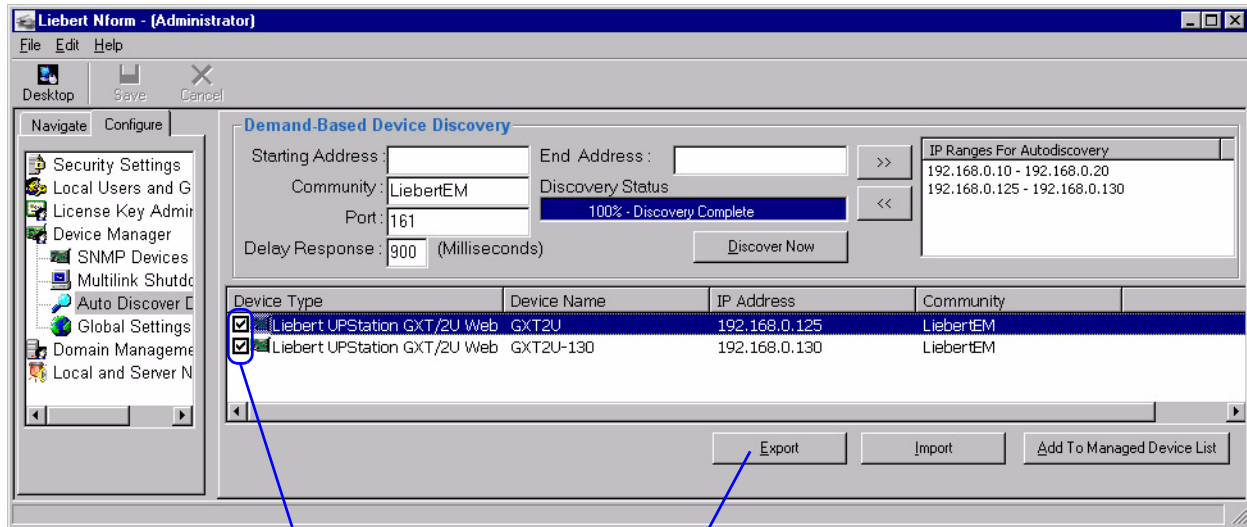
Use a check mark to select devices to export

Export

- The list of discovered devices appears in the lower portion of the window. Click to place a check mark (✔) in the check box to the left of any devices to be saved in the text file.
- Click the **Export** button to open the Save As window, shown at right.
- The default location for the file is the program folder where Nform was installed. Choose a different location if desired.
- Enter a name for the file in the File Name box. The file name will have the extension "**.csv**" to designate a comma-delimited text file.
- Click the **Save** button to export the file.
- This creates a comma-delimited text file that may be opened with any text editor or spreadsheet program. The file has the headings **Device Type**, **Device Name**, **IP Address** and **Community**, as shown in the example in **Table 8**.
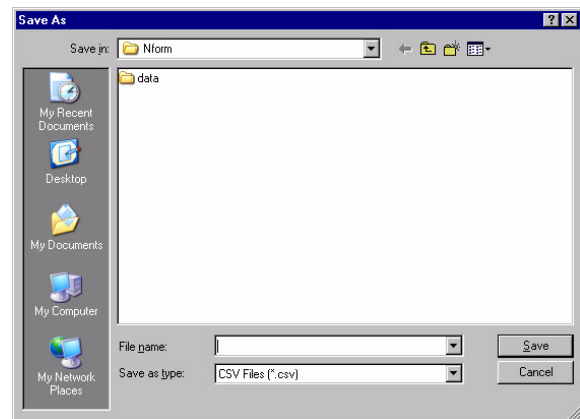
Table 8   Example of exported comma-delimited text file

Device Type,Device Name,IP Address,Community
Liebert UPStation GXT/2U Web,GXT2U,192.168.0.125,LiebertEM
Liebert UPStation GXT/2U Web,GXT2U-130,192.168.0.130,LiebertEM

9.2.4   Import Devices Into Nform

The Import feature provides a quick way to add devices to the Nform configuration from a text file. The file must have the correct format: a standard comma-delimited text file with the headings **Device Type**, **Device Name**, **IP Address** and **Community**, as shown in the example in **Table 9**.

Table 9   Example of comma-delimited text file

Device Type,Device Name,IP Address,Community
Liebert UPStation GXT/2U Web,GXT2U,192.168.0.125,LiebertEM
Liebert UPStation GXT/2U Web,GXT2U-130,192.168.0.130,LiebertEM

To import a device list from a text file:

- If needed, open the Demand-Based Device Discovery window.

  (To do this, log on as Administrator and click on the **Configure** tab. In the left side of the window, click on **Device Manager**. In the right side of the window, double-click on **Auto Discover Devices**.)
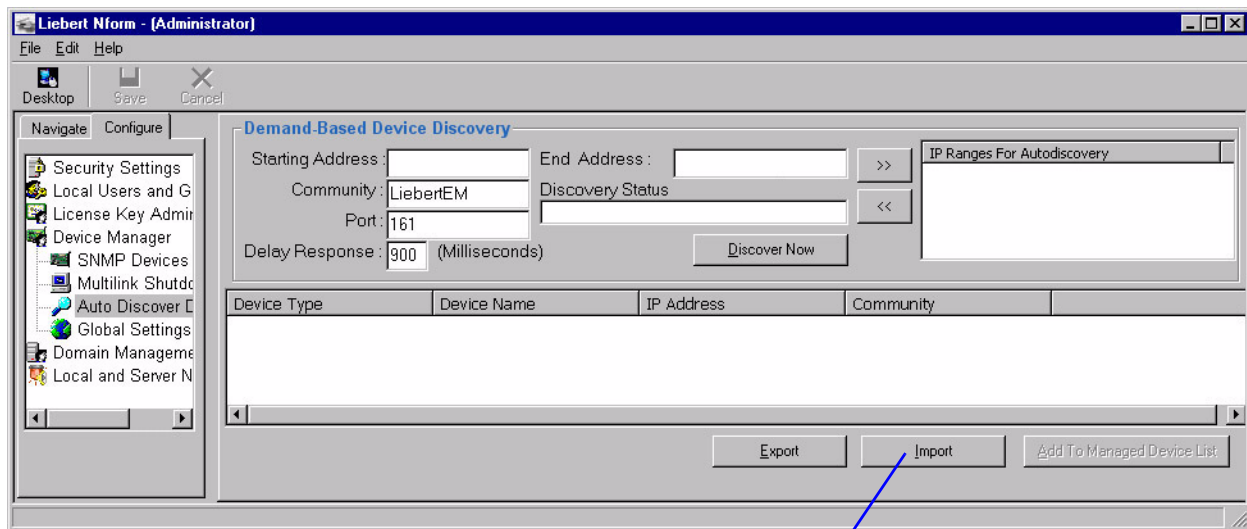
Import

- Click the **Import** button to display the Open window, shown at right.
- The default location is the program folder where Nform was installed. Choose a different location if needed.
- Select the file or enter the name in the File Name box. The window displays only comma-delimited text files (with the extension ".**csv**").
- Click the **Open** button to import the file. A message indicates whether the import was successful.

  Note: Devices already in the Nform configuration will not be imported.
- When the process is complete, discovered devices appear in the lower portion of the Demand-Based Device Discovery window.
- To add the imported devices to the Nform configuration, refer to **9.2.2 - Add Discovered Devices to the Configuration**.
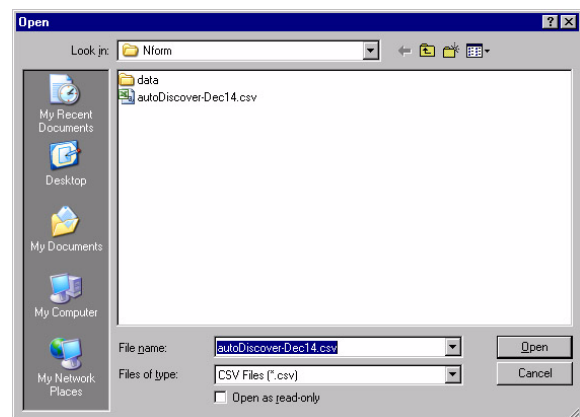
9.3   Add a Device

Devices may be added to the Nform configuration using the Auto Discovery feature (see **9.2 - Auto Discover Devices**), imported from a text file (see **9.2.4 - Import Devices Into Nform**) or manually, as described in this section.

To add a device:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Device Manager**, then on **SNMP Devices**.
- Click on the **File** menu at the top of the window, then click on **New**. (Or click the **New** button on the toolbar.) This opens the Add SNMP Device window, as shown below.
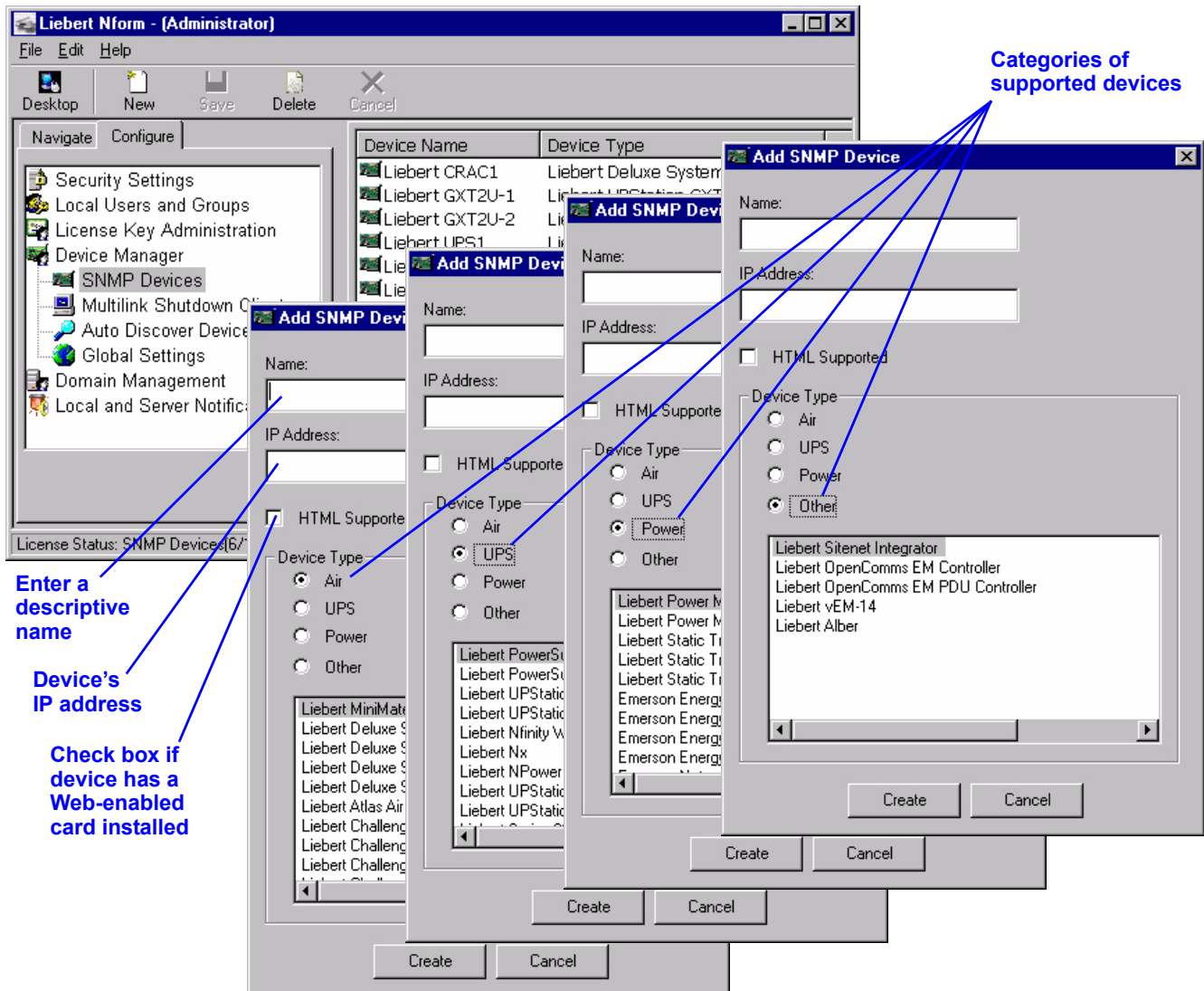
- **Name:** Choose a descriptive name for the device—for example, *Liebert GXT2U-1*. This name will appear in the navigation tree that displays monitored devices.
- **IP Address:** Enter the device's IP address, available from the System Administrator.
- **HTML Supported:** If the device has an SNMP card that supports a Web interface, place a check mark in this box. This feature allows you to view SNMP queries via a Web browser.
- **Device Type:** Click on the appropriate button—**Air**, **UPS, Power** or **Other**—to display a list of supported devices, and then click on the name of the device from the displayed list.
- Click **Create**. This opens the SNMP Devices window, as shown in **9.4 - Set Up the Device**.

9.4   Set Up the Device

The SNMP Devices window has three tabs:

- The Device Setup tab allow you to enter a community string and timeout value.
- The Views tab lets you determine which informational items appear in the **Navigate** tab.
- The Alarms tab allows you to set up alarms and corresponding actions.

9.4.1   Device Setup tab

The window opens with the Device Setup tab selected, as shown below.

Device Setup tab

Allow Nform To Manage

Shaded boxes do not require entry; they simply display information—name, IP address, HTML support—entered when the device was added, as described in the previous section, **9.3 - Add a Device**.

- By default, the HTTP port is 80. If desired, enter a different number in the HTTP box.
- Enter a community string in the Community box. The community string entered in this box must match the community string entered in the SNMP card. The community string is case-sensitive.
- The Community Set box can be used to configure the community string for a device that has a secondary IP address and community string configured for Read-Write or Set access. In most cases, the value configured in the Community Set box will be the same as the value in the Community box, which is the Read-Only setting.
- The Timeout box designates the number of seconds for a device to respond to an SNMP query. The default value is 1 second; Liebert suggests this value is appropriate in most cases. (If you receive an excessive number of timeout error messages, you might consider increasing the time.)
- Click **Allow Nform To Manage** to have Nform configure the device to be managed. The Nform server will open a communications session and add itself as an SNMP manager for the device. This button is available in all three tabs of the SNMP Devices window.
- Click **OK**.
- A message window asks if you want to add this device to the navigation tree.
    - Click **Yes** if you wish to add the device to the navigation tree now. Then proceed to **9.5 - Add Devices to Navigation Tree**.
    - To continue configuring this device, click the Views tab and proceed to **9.4.2 - Views tab**, or click **No** to add another device.

    NOTE

    *If you are configuring several SNMP devices, it may be more convenient to wait until you are finished before adding them to the navigation tree. Click **No** for all devices except the last one.*

9.4.2 Views tab

The Views tab displays the types of data that can be retrieved from an SNMP device and displayed in the **Navigate** tab as the Filtered View—for example, the type of device, model number and device status.

Liebert supplies a template for each SNMP device, containing data points applicable to that device. (See **Appendix B - Data Monitored by Nform** for examples.)

For non-HTML devices, you may select items to be displayed in the Navigate tab. You may also change the name of any item in the list to better suit your operation. Doing so will not change the function of the item, but merely the descriptive text.

> **NOTE**
> *The Views tab permits the user to select data to be displayed for non-HTML devices in the Navigate tab. All HTML devices will present the Web page to the user. Changes made in this window will not affect the data displayed by the Web page.*

To select an item or change its name:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Device Manager**, then on **SNMP Devices**.
- In the right side of the window, double-click on the name of a device.
- In the SNMP Devices window, click on the Views tab, as shown below.
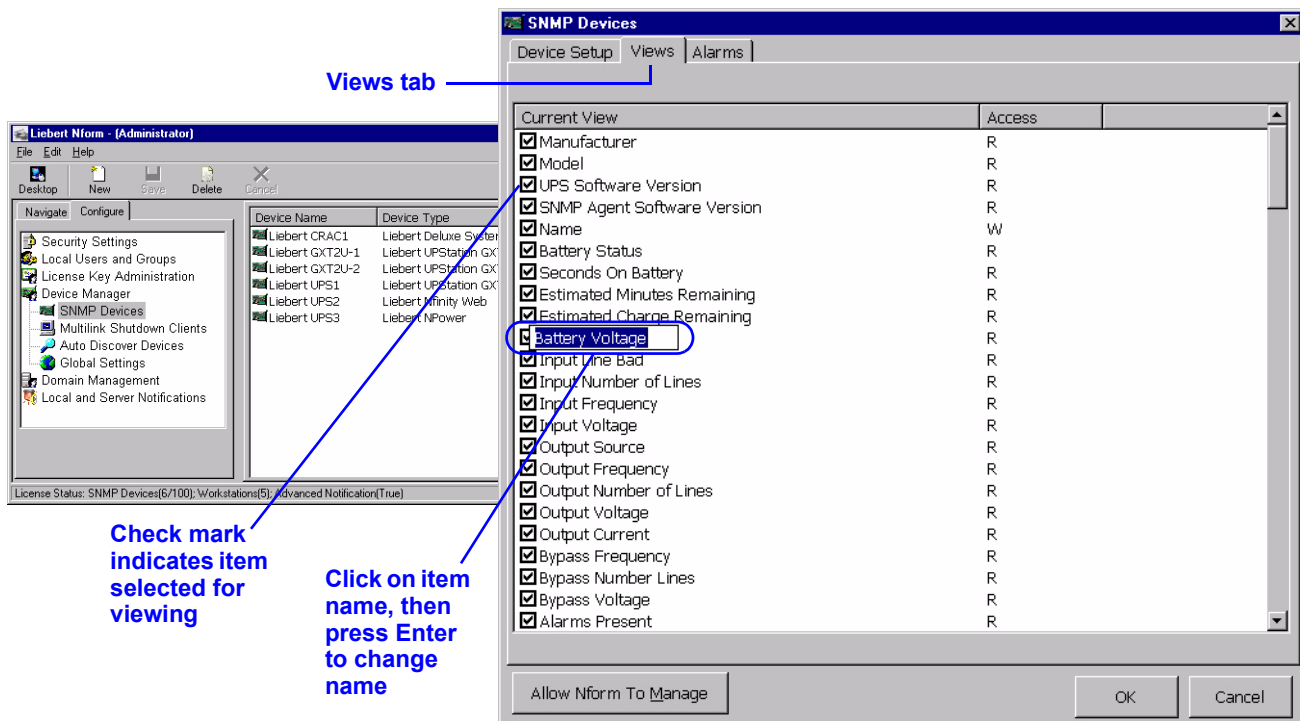
- A check mark (✔) appears to the left of each item selected for viewing. Click in the check box to remove a check mark; click again to place a check mark in the box.
- To change the name of an item, click on the name—for example, *Battery Voltage*—and then press the Enter key. The selected text will be highlighted and editable. (As an alternative, you may make the text editable with a standard Windows renaming method: click on an item, wait a short time and click on the item again.)
- Type the new name—for example, *Voltage*—and press the Enter key.
- Click **Allow Nform To Manage** to have Nform configure the device to be managed. The Nform server will open a communications session and add itself as an SNMP manager for the device.
- To continue configuring this device, click the Alarms tab and proceed to **9.4.3 - Alarms tab**, or click **OK** to return to the **Configure** tab. If this device has not been added to the navigation tree, a message window asks whether you want to do so.

> **NOTE**
> *If you are configuring several SNMP devices, it may be more convenient to wait until the last device is configured before adding them to the navigation tree.*

9.4.3 Alarms tab

The Alarms tab allows you to link actions, such as sending an e-mail, to specific alarms—this is described later in **11.2.4 - Assign Actions to Alarms**.

Liebert supplies a template for each SNMP device, containing the types of alarms applicable to that device. (See **Appendix B - Data Monitored by Nform** for examples.)

You may also change the name of an alarm to better mesh with your system or procedures. This does not change the function of the item, but merely the descriptive text. To do this:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Device Manager**, then on **SNMP Devices**.
- In the right side of the window, double-click on the name of a device.
- In the SNMP Devices window, click on the Alarms tab, as shown below.
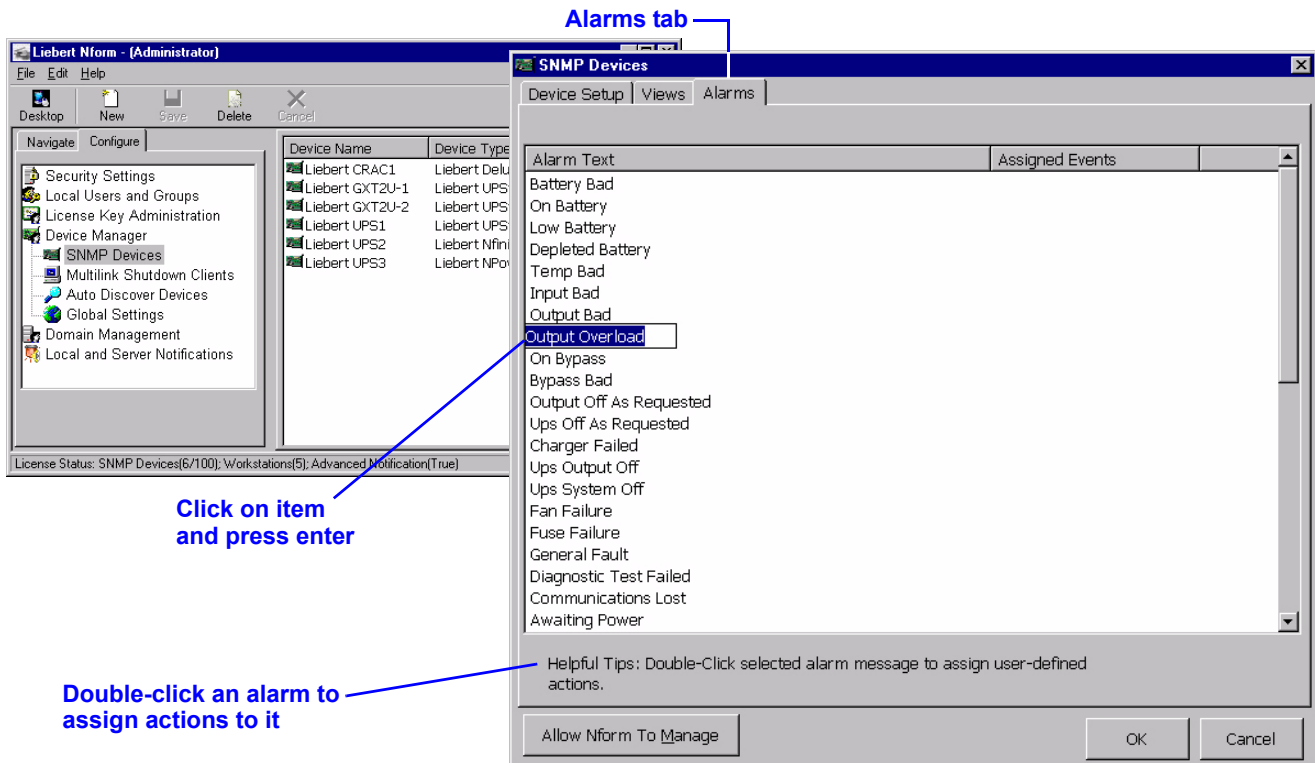
- Click on an item—for example, *Output Overload*—and then press the Enter key. The selected text will be highlighted and editable.

  (An alternative way to make the text editable is with a standard Windows renaming method: click on an item, wait a short time and click on the item again.)
- Type the new name—for example, *Output Overload Alarm*—and press the Enter key.
- If desired, double-click on any alarm to assign actions to it. See **11.2 - Server Notifications** for details.
- Click **Allow Nform To Manage** to have Nform configure the device to be managed. The Nform server will open a communications session and add itself as an SNMP manager for the device.
- Click **OK** to return to the **Configure** tab.
- If this device has not been added to the navigation tree, a message window asks whether you want to do so.
    - Click **Yes** if you wish to add the device to the navigation tree now. Then proceed to **9.5 - Add Devices to Navigation Tree**.
    - Click **No** if you want to add another device.

NOTE
*If you are configuring several SNMP devices, it may be more convenient to wait until you are finished before adding them to the navigation tree. Click **No** for all devices except the last one.*

9.5   Add Devices to Navigation Tree

The Navigation tree window allows you to designate which managed devices will be monitored and appear on the Navigate tab. You may set up different views for the Administrator and Power User.

This window opens if you clicked **Yes** in the final step described in **9.4.1 - Device Setup tab**.

Another way to open this window is:

·   Log on as Administrator and click on the **Configure** tab.
·   In the left side of the window, click on **Domain Management**
·   In the right side of the window, double-click on **Local Domain**, then on **Site Navigation Builder**.
·   Click on **Administrator View** to set up the view for the Administrator (or click on **Power User View** to set up devices for a Power User).

All new devices appear in the Unmonitored Managed Devices portion in the lower right corner.
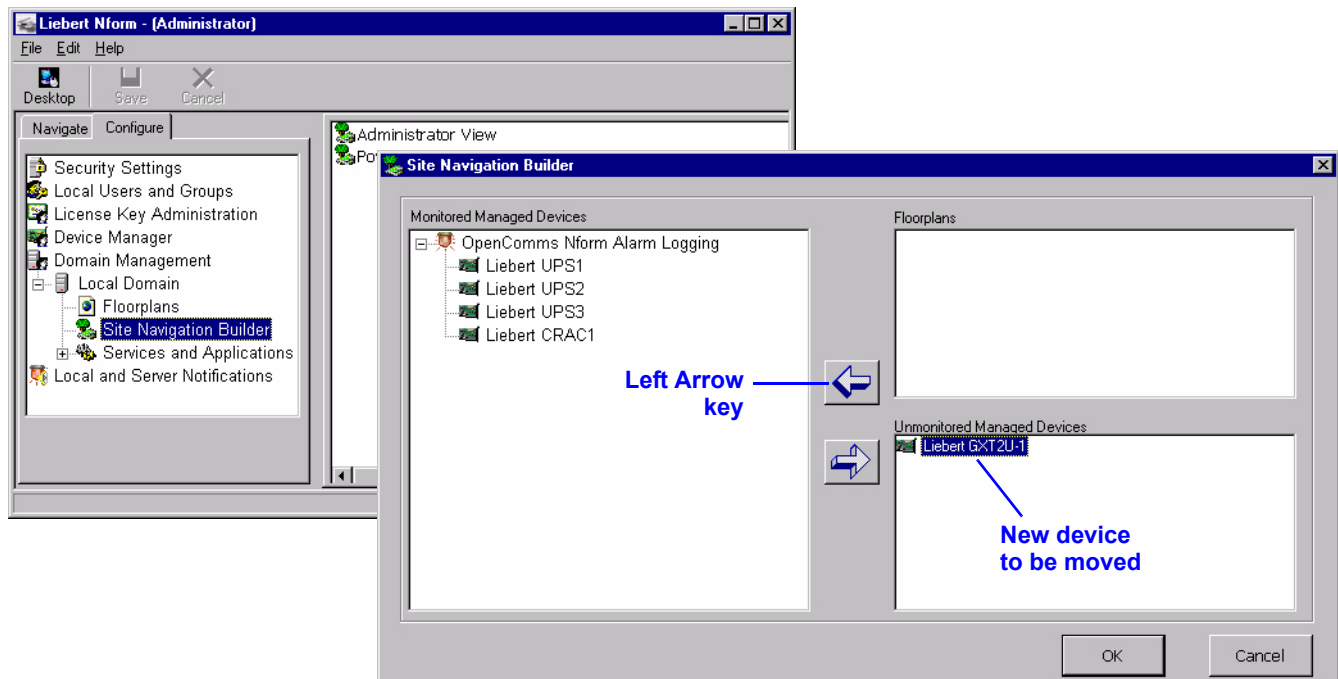
To add a device to the tree:

·   Use drag-and-drop:
    ·   Click on a device and drag it to the Monitored Managed Devices pane.
    ·   Release the mouse button when the location where the device belongs is highlighted. If no location is highlighted, the device will be placed under the highest level in the tree—Desktop Command Center in the example above.

   or

·   Use the arrow keys in the center of the window:
    ·   In the Monitored Managed Devices pane at left, choose a location in the tree where the device belongs—for example, Desktop Command Center.
    ·   Then select the device in the Unmonitored Managed Devices pane at right.
    ·   Click on the Left Arrow key in the center of the window.

Only one device may be moved at a time.

Devices may be moved back to the Unmonitored Managed Devices pane by using drag-and-drop or highlighting a device and then clicking on the Right Arrow key in the center of the window.

·   Click **OK** to save changes and return to the **Configure** tab. (To close the window without saving any changes, click on **Cancel**.)

9.6   Add Floor Plans to Show Device Location

Floor plans may be added to Nform's navigation tree as visual reminders of where devices are located, as in the example shown at right.

1st Floor Computer Room

Users may design these floor plans or contact Liebert for custom-built plans. Floor plans must be in HTML format and placed in the Floorplans folder as described in this section.

To make floor plans accessible to Nform client workstations, install the floor plans either on a shared network drive or on each client workstation.
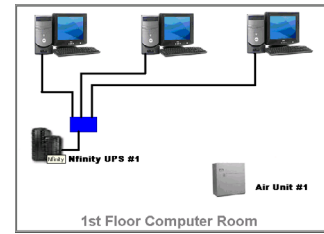
> **NOTE**
> *Floor plans cannot display device status. These graphics are intended merely to display HTML pages that may contain hyperlinks to Web devices or other Web pages.*

To add a floor plan:

- Create a floor plan in HTML format.
- Copy the floor plan—the HTML file and any associated graphic files—into the Floorplans folder, which is in the Data folder within the Nform application folder.

  For example, if the Nform application is located on the **C** drive, the full path would be **C:\Program Files\Nform\Data\Floorplans**.

> **NOTE**
> *For multi-user systems, the floorplans directory should be manually copied to every client. For security purposes, the system will not automatically update the clients.*

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Domain Management**
- In the right side of the window, double-click on **Local Domain** and then on **Floorplans**.
- Click on the **File** menu at the top of the window, then click on **New**. (Instead, you may click on the **New** button ⬜ on the toolbar.)
- This opens the Floorplans window, as shown below.
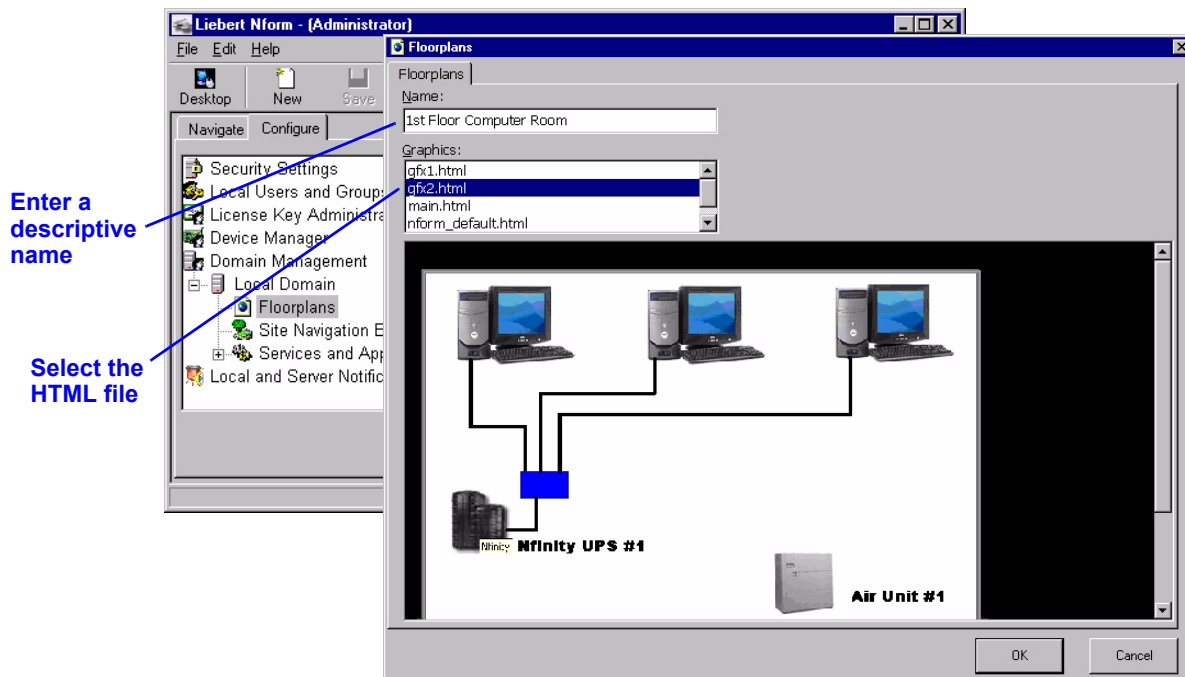
- In the Name box, enter a descriptive name for the floor plan—for example, *1st Floor Computer Room*.
- Select the HTML file from the Graphics drop-down list. A preview appears in the window.
- Click **OK**. The descriptive name appears in the right pane.

9.7 Add Floor Plans to Navigation Tree

After adding floor plans to Nform, you must also place them in the navigation tree. Managed devices can be placed under the appropriate floor plan to help the System Administrator pinpoint SNMP devices for troubleshooting.

- In the left side of the window, click on **Domain Management**
- In the right side of the window, double-click on **Local Domain**, then on **Site Navigation Builder**, and finally on **Administrator View** to set up the view for the Administrator (or click on **Power User View** to set up devices for a Power User).
- This opens the Site Navigation Builder window, as shown below right. All floor plans that have not been moved to the navigation tree appear in the Floorplans portion in the upper right corner.
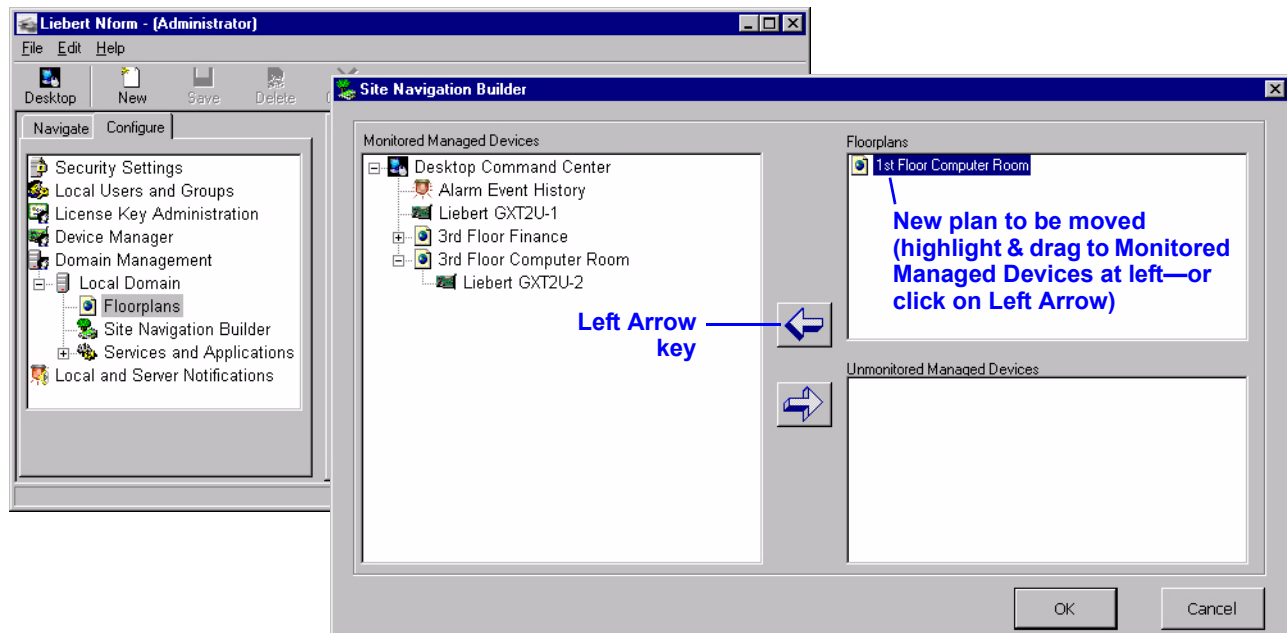
To move a floor plan to the navigation tree:

- Use drag-and-drop:
  - Drag the floor plan to the Monitored Managed Devices pane.
  - Release the mouse button when the location where the device belongs is highlighted. If no location is highlighted, the floor plan will be placed under the highest level in the tree—Desktop Command Center in the example above.

  or

- Use the arrow keys in the center of the window:
  - In the Monitored Managed Devices pane at left, choose a location in the tree where the floor plan belongs—for example, Desktop Command Center.
  - Then select the floor plan in the Unmonitored Managed Devices pane at right.
  - Click on the Left Arrow key in the center of the window.

Only one floor plan may be moved at a time.

Plans may be moved back to the Floorplans pane by using drag-and-drop or by highlighting a floor plan and then clicking on the Right Arrow key in the center of the window.

- To associate a device with a floor plan, click on the device and drag it to the floor plan.
  In the example above, the Liebert GXT2U-2 is in the 3rd Floor Computer Room. Another device in the example—Liebert GXT2U-1—is not associated with any floor plan.
- Click **OK** to save changes and return to the **Configure** tab. (To close the window without saving any changes, click on **Cancel**.)

9.8   Services and Applications

9.8.1   Alarm Service - Configuration

Nform has seven alarm service options that may be configured, as shown in **Table 10**. Liebert recommends keeping the default values for Options **1**, **2** and **3**.

Table 10   Alarm service options

Option	Default	Notes
1. Alarm service IP address	Server where Nform was installed	Enter the IP address of the workstation where alarms are reported.
2. TCP port used for client connection	Port where Nform was installed	Enter the number of the port used to connect the SNMP device and the workstation specified in Option **1**.
3. Location of data	Nform\Data where Nform was installed	Specifies where to store Nform data—for example, floor plans, device definitions and logs.
4. Maximum number of records for alarm service	500 (up to 5,000 allowed)	When the maximum is reached, a new record is added at the beginning of the log; the oldest record is deleted from the end.
5. Automatically connect to server when client loads	False	Change to **True** (automatically connect) if you want to connect to the same server each time you start Nform.
6. Load the Nform client when a new alarm is received	False	Change to **True** (load on alarm) for the Nform application to start automatically whenever an alarm is received.
7. Automatically Archive Deleted Alarms	False	Change to **True** (auto-archive) to save deleted alarm records in a file called **Events.naf**—records will be archived as they are deleted from the log when the maximum is reached (see Option **4** above).

To view or change any option:
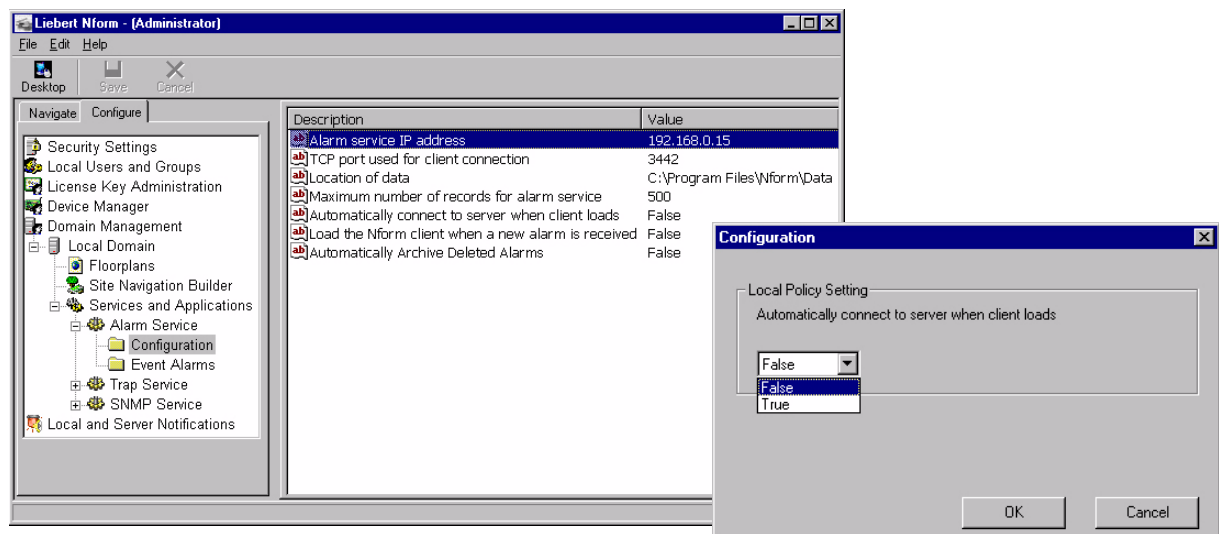
- Log on as Administrator and click on the **Configure** tab.

- In the left side of the window, click on **Domain Management**.
- In the right side of the window, double-click on **Local Domain**, **Services and Applications**, **Alarm Service** and finally **Configuration** to display the options.
- To change the setting for an option:
    - Double-click on any option to open the Alarm Service window for that option. The example above shows the **Automatically connect to server when client loads** option.
    - Enter the appropriate change and click **OK**.
    - Click on the **File** menu at the top of the window, and then click on **Save**. (Instead, you may click the **Save** button 🖫 on the toolbar.)
    - A message window advises that the change may not take effect until after the computer is restarted. Click **OK**.

9.8.2   Alarm Service - Event Alarms

The Alarm Service has event alarms, listed in **Table 11**, that you may map to any configured action—for example, an e-mail action or a file write action.

Table 11   Event alarms

Event alarm	Description
Comm Check Successful	For use by Liebert Global Services to check Nform's alarm processing
Managed Device Not Responding	These event alarms are recorded only when SNMP Agent Polling is enabled (see **9.8.4 - SNMP Service**). Each represents a result when a managed device is polled.
Managed Device Return to Normal	
Managed Device Alarms Present	

To view or change the event assignments for any event alarm:

- Log on as Administrator and click on the **Configure** tab.
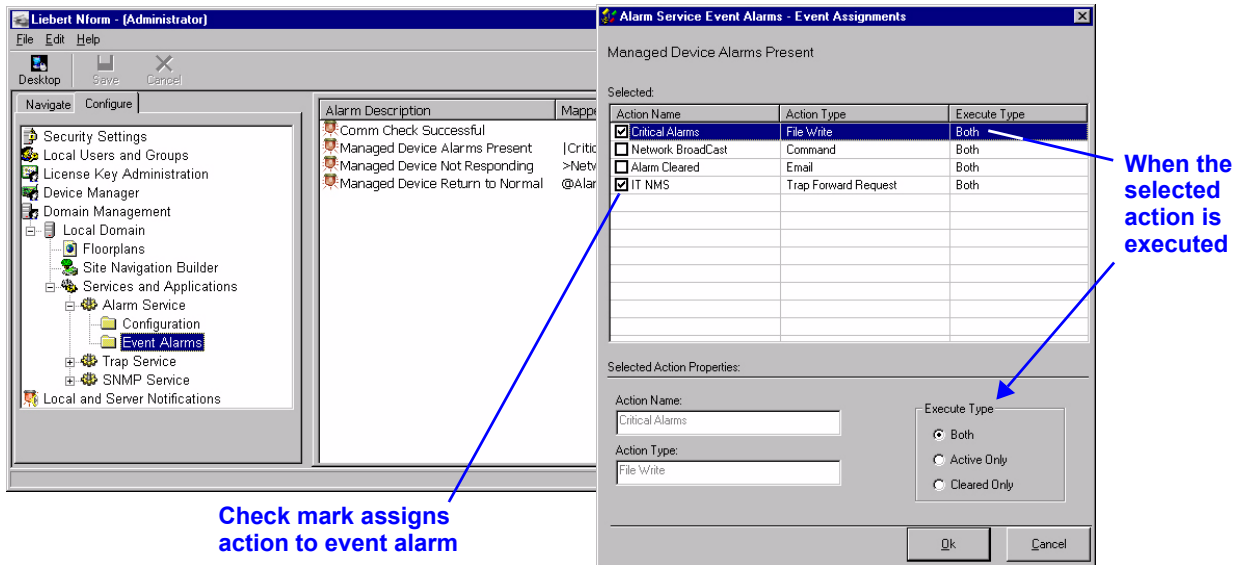
Check mark assigns action to event alarm

When the selected action is executed

- In the left side of the window, click on **Domain Management**.
- In the right side of the window, double-click on **Local Domain**, **Services and Applications**, **Alarm Service** and finally **Event Alarms** to display the alarm descriptions.
- Double-click on any event alarm to open the Event Assignments window, which displays all actions that have been created.
- To link an action to the selected alarm, click to place a check mark to the left of the Action Name.
- By default, selected actions are executed **both** when an alarm is received and when it is cleared. To change this setting, highlight an action and choose a setting in the Execute Type box:
  - **Both** (default) - Action is executed both when an alarm condition occurs and when it is cleared.
  - **Active Only** - Action is executed only when an alarm condition occurs.
  - **Cleared Only** - Action is executed only when an alarm condition is cleared.
- When all actions are configured, click **OK** in the Event Assignments window.
- Configured actions appear in the Mapped Actions column in the Event Alarms window, shown at right, with the first character signifying the type of action:

Mapped Actions

Symbol	Designates:
@	an E-Mail action
|	a File Write action
>	a Run External Program action
%	a Trap Forward Request action
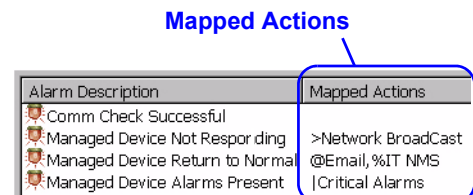
(Some actions may be hidden from view because of space restrictions. They can be revealed by double-clicking on an alarm to open the Event Assignments window.)

- Click on the **File** menu at the top of the window, and then click on **Save**. (Instead, you may click the **Save** button ⊞ on the toolbar.) Click **OK**.

9.8.3 Trap Service

The Trap Service is responsible for receiving and processing alarm notifications, or traps, from managed devices. Diagnostic features in this service can be used to troubleshoot network communication problems between Nform and SNMP devices.

The trap service has two options:

- The trap port—by default, this is 162.
- A diagnostic testing mode—by default, this feature is disabled.

  Note: Use the diagnostic mode with caution. Diagnostic testing mode should be enabled only at the request of a Liebert application support or field engineer. When enabled, this feature records all received traps in a file called *snmp.txt*. This file is not managed and therefore can become very large and cause the computer to crash.

Liebert recommends keeping the default values for these options.

To view or change either option:

- Log on as Administrator.
- Click on the **Configure** tab.
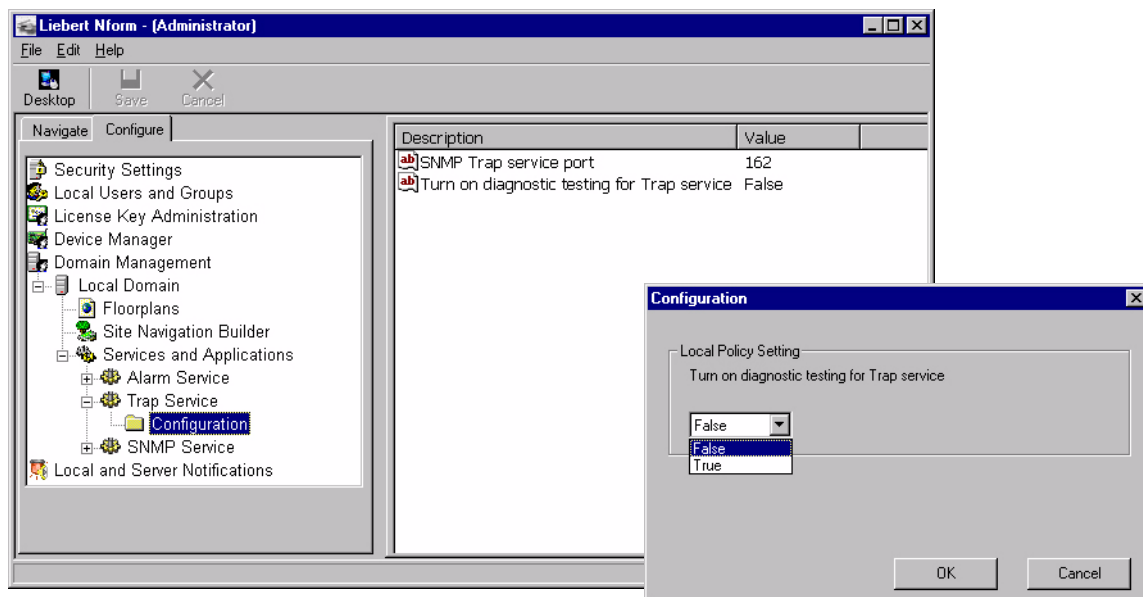
- In the left side of the window, click on **Domain Management**.
- In the right side of the window, double-click on **Local Domain**, **Services and Applications**, **Trap Service** and finally **Configuration** to display the options.
- To change the setting for an option:
  - Double-click on any option to open the Trap Service window for that option. The example above shows the **Turn on diagnostic testing for Trap service** option.
  - Enter the appropriate change and click **OK**.
  - Click on the **File** menu at the top of the window, and then click on **Save**.
    (Instead, you may click the **Save** button on the toolbar.)
  - A message window advises that the change may not take effect until after the computer is restarted. Click **OK**.

9.8.4 SNMP Service

Nform has SNMP Service features for polling devices and testing Nform's handling of traps, as listed in **Table 12**.

- **SNMP Agent Polling** allows you to set up Nform to poll devices for their status at a specified interval. By default, this feature is disabled (False) with a time interval of 1 minute.

  When this feature is enabled, the icons in the Navigate tab indicate the status of each device (see **7.2.5 - Informational Icons in the Navigation Tree**): if any alarms are present, the status is normal or the polled agent is not responding. (If there is no communication with a device, its icon in the Navigate tab bears a large red X ▓—when Nform displays this icon, verify that your network cables are connected. If further action is required, consult the SNMP card user manual.)

- **SNMP Comm Check** allows you to verify that Nform is correctly receiving and processing traps. By default, this feature is disabled (False), starting each day at 2200 (10 p.m., military time).

  When this is enabled, Nform sends an SNMP Comm Check Trap to the SNMP Trap Service.

Table 12   SNMP service options

Option	Default	Notes	
SNMP Agent Polling	True	**True** activates polling of device status at regular intervals. **Note:** If this is set to **False**, the device count will not appear in the Desktop view.	
SNMP Agent Polling Interval*	1 minute	Enter a time interval (number of minutes) between pollings.	
* RECOMMENDED SETTINGS for SNMP Agent Polling Interval (based on number of devices)		First 30 devices:	5 minutes (increase by 1 minute for each additional 30 devices)
		First 500 devices:	15 minutes (increase by 15 minutes for each additional 500 devices)
SNMP Comm Check	False	Change to **True** to send a test trap to the SNMP Trap Service.	
SNMP Comm Check Execute Time	2200 (10 p.m.)	In military time (24-hour clock format), enter the time to send test traps each day—e.g., 800 for 8 a.m., 1400 for 2 p.m., 2200 for 10 p.m.	

To view or change any option:
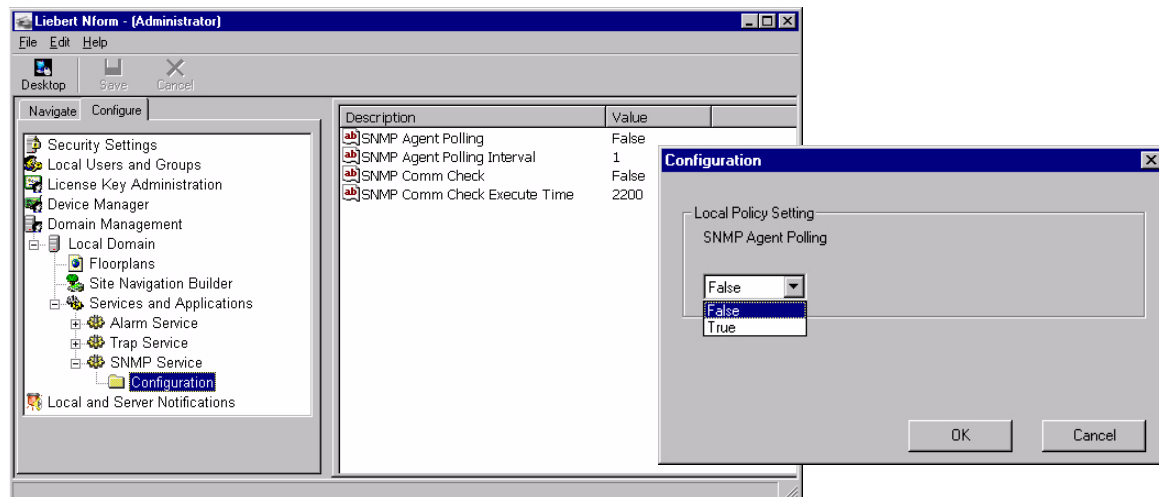
- Log on as Administrator and click on the **Configure** tab.

- In the left side of the window, click on **Domain Management**.
- In the right side of the window, double-click on **Local Domain**, **Services and Applications**, **SNMP Service** and finally **Configuration** to display the options.
- To change the setting for an option:
  - Double-click on any option to open the Configuration window for that option. The example above shows the **SNMP Agent Polling** option.
  - Enter the appropriate change and click **OK**.
  - Click on the **File** menu at the top of the window, and then click on **Save**.
    (Or click the **Save** button ▓ on the toolbar.)
  - A message window advises that the change will not take effect until after the service is restarted. Click **OK**.

10.0 CONFIGURING MULTILINK DEVICES

This section describes how to configure MultiLink 1.5 clients to receive shutdown notifications from Nform.

10.1 Requirements to Use MultiLink Features

There are three requirements to use this feature:

1. **A MultiLink Network Shutdown License**

   The MultiLink Network Shutdown License must be installed before configuration. For detailed instructions, see **8.6 - Install the MultiLink Network Shutdown License (Optional)**.

   For information on obtaining a MultiLink Network Shutdown License, see **Table 20**.

2. **Liebert MultiLink 1.5 Software**

   You must install MultiLink 1.5 on each client computer you wish to use with Nform. The MultiLink 1.5 software is provided on the Nform CD.

   You may also download it free from the Liebert Web site (**http://multilink.liebert.com**). Visit the Web site or contact your local Liebert representative, value-added reseller or distributor for information.

3. **The MultiLink 1.5 User Manual**

   You will need to refer to the MultiLink 1.5 user manual for important details on connecting and configuring MultiLink devices.

   The user manual is downloadable from the Liebert Web site (**http://multilink.liebert.com**).

Setting up MultiLink clients in Nform entails two steps:

- Adding each MultiLink 1.5 client to Nform   (see **10.2 - Add a MultiLink Client**)
- Configuring Nform to send notification traps (see **10.3 - Set Up a MultiLink Notify Action**) to selected clients when an alarm is received

10.2   Add a MultiLink Client

Before adding and setting up MultiLink clients for notifications, the MultiLink Network Shutdown License must be installed in the Nform system and MultiLink 1.5 Client software must be installed on all workstations and servers that require orderly shutdown, as described in **10.1 - Requirements to Use MultiLink Features**.

The next step is to add each workstation running MultiLink 1.5 Client software to the Nform system.

To add a device:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Device Manager**.
- In the right side of the window, double-click on **MultiLink Shutdown Clients**.
- Click on the **File** menu at the top of the window, then click on **New**. (Or click the **New** button on the toolbar.) This opens the MultiLink Shutdown Client window, shown below right.
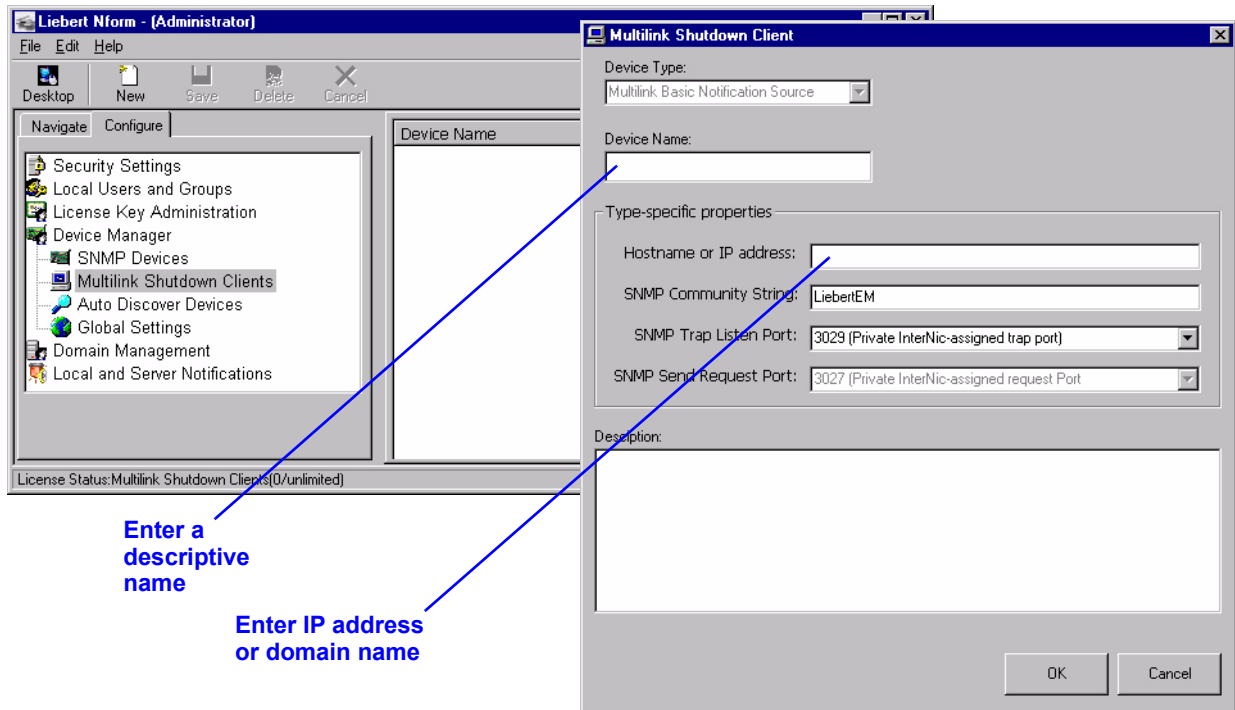
Enter a descriptive name

Enter IP address or domain name

- The Device Type box displays **MultiLink Basic Notification Source**. This cannot be changed.
- In the Device Name box, enter a descriptive name for the client computer.
- In the Hostname or IP Address, enter the client computer's IP address or hostname, available from the System Administrator.
- The default SNMP Community String is **LiebertEM** (case-sensitive).
- The SNMP Trap Listen Port designates the port used for communicating events (traps). The two options available in the drop-down list are:
  - **3029 (Private InterNic-assigned trap port)**—the default setting
  - **162 (Standard SNMP Trap port)**
- The SNMP Send Request Port displays the port corresponding to the listen port selected:

	SNMP Trap Listen Port	SNMP Send Request Port
MultiLink	3029	3027
Standard SNMP Protocol	162	161

- If desired, enter text in the Description box to help identify the device.
- Click **OK**. This saves the MultiLink Client device information.
- Continue adding MultiLink 1.5 Client workstations, then proceed to **10.3 - Set Up a MultiLink Notify Action**.

10.3 Set Up a MultiLink Notify Action

After adding MultiLink 1.5 client computers to Nform, you may configure Nform to send notification traps to selected clients when an alarm is received. Three types of traps may be sent:

- Warning Shutdown (On Battery)
- Critical Shutdown (Low Battery)
- Cancel Shutdown (Return to Normal)

To set up a MultiLink Notify action:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Local and Server Notifications**.
- In the right side of the window, double-click on **Server Notifications**, then on **Shutdown MultiLink Clients**.
- In the **File** menu, click on **New**. (Or click the **New** button 🔳 on the toolbar.) This opens the MultiLink Notify Action Setup window, shown below right.
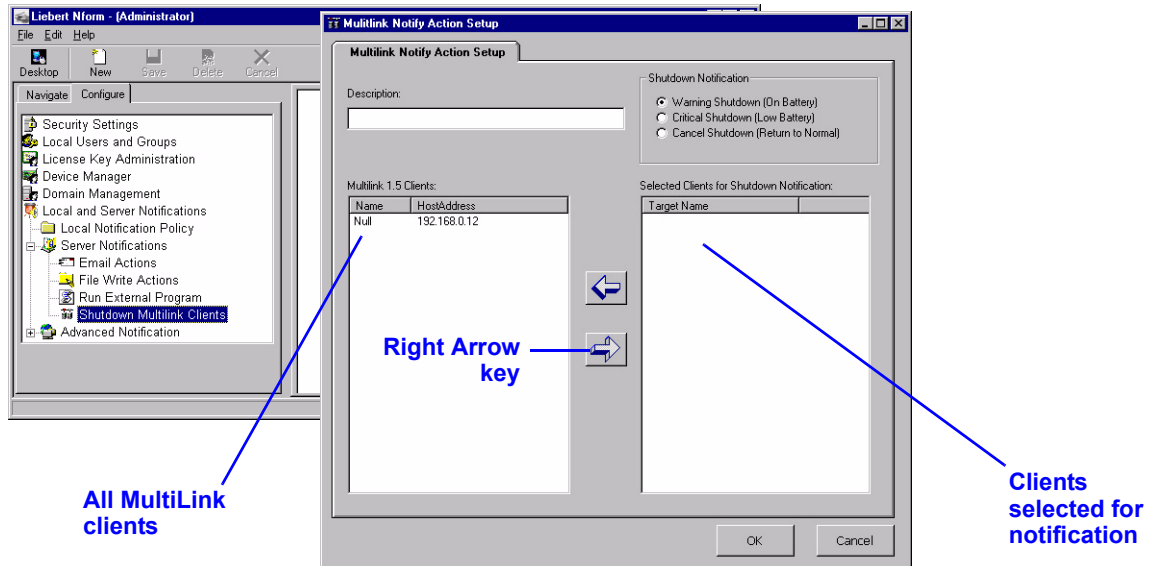
- In the Description box, enter a descriptive name for the action—for example, *Rack Sensor - High Temperature*.
- Click on one of the three Shutdown Notification radio buttons to choose the type of notification:
  - **Warning Shutdown (On Battery)** - when an alarm is received, Nform sends a Warning Shutdown message to selected target client computers. The MultiLink client then starts a shutdown timer as configured by the user—typically several minutes.
  - **Critical Shutdown (Low Battery)** - when an alarm is received, Nform sends a Critical Shutdown message to selected target client computers. The MultiLink client then starts a shutdown timer as configured by the user—typically 30 seconds.
  - **Cancel Shutdown (Return to Normal)** - when an alarm is received, Nform sends a Cancel Shutdown message to selected target client computers. The MultiLink client then cancels the shutdown timer.

  🔍 **NOTE**
  Nform simulates the three SNMP UPS traps supported by MultiLink 1.5: On Battery, Low Battery and Return to Normal. The simulated SNMP trap sent by Nform triggers the client computer to initiate a shutdown or cancel a shutdown of the computer itself.

- All available MultiLink client computers appear in the MultiLink 1.5 Clients box in the left side of the window. These devices were added as described in **10.2 - Add a MultiLink Client**.

  To designate a client to receive notifications, you must move it to the Selected Clients for Shutdown Notification box in the right side of the window. To do this:
  - Click on a client name in the MultiLink 1.5 Clients box at left.
  - Click on the Right Arrow key in the center of the window.

  Only one device may be moved at a time. To remove a client from the selection, simply click on the name and click on the Left Arrow key in the center of the window.

- Click **OK**. This saves changes to the MultiLink Notify Action.

11.0 LOCAL AND SERVER NOTIFICATION CONFIGURATION

This section describes how to configure Nform to alert administrators and users when alarms are received. It also details how to set up Nform to respond to alarms with certain actions, such as sending e-mails, recording event history and running an external program to protect data or equipment.

11.1 Local Notification Policy

The Local Notification Policy options allow you to determine the type of visual and audio notifications Nform employs when an alarm is received.

When an alarm is received, you may choose:

- To bring the Nform application to the foreground
- To flash the minimized Nform icon in the taskbar
- To play a sound from a WAV file once
- To play a continuous beep

By default, these options are disabled (false).

To make changes:

- Log on as Administrator and click on the **Configure** tab.
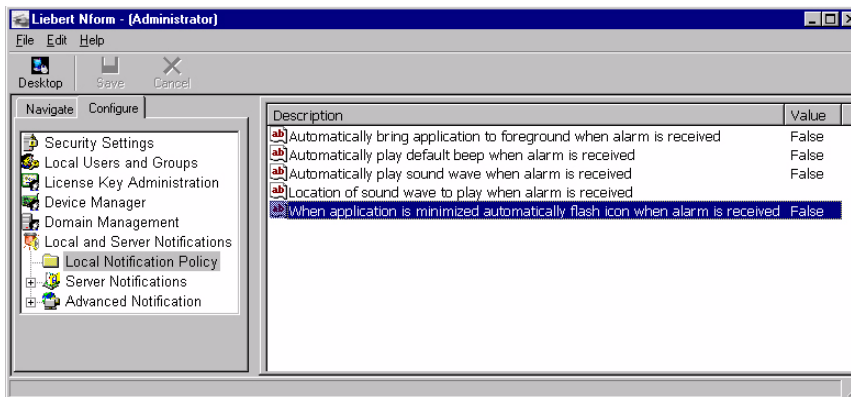
- In the left side of the window, click on **Local and Server Notifications**.
- In the right side of the window, double-click on **Local Notification Policy**. The right side of the window displays options for notification when an alarm is received.
- To change an option, double-click on the option in the right side of the window.

Select True to activate an option

Browse to locate sound wave file
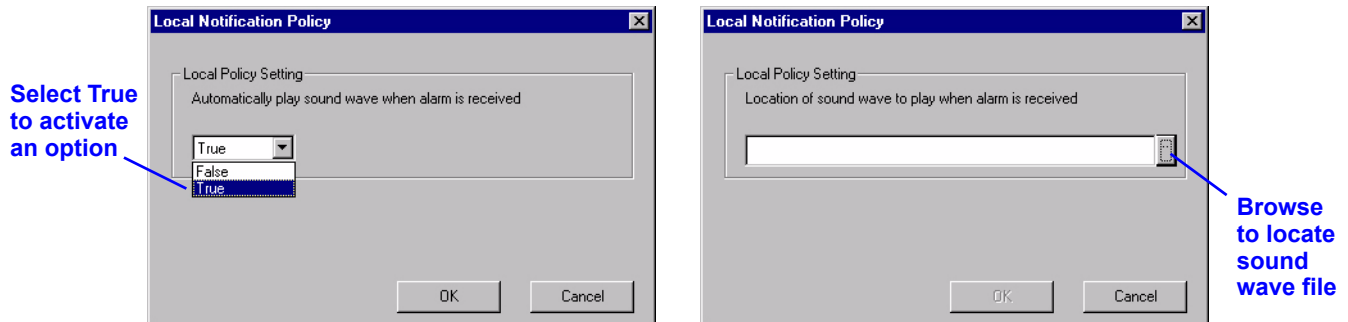
- To enable an option, as shown in the example above left, select **True** from the drop-down list and click **OK**.
- If you enable a sound wave notification, you must also specify the location of the file in the window shown above right. To do this, enter the full path or click on the browse button to locate the file, then click **OK**.
- Click on the **File** menu at the top of the window, and then click on **Save**.
  (Instead, you may click the **Save** button ⊞ on the toolbar.)

11.2 Server Notifications

Certain Nform features may be set up to protect valuable equipment, data and other assets by responding automatically to alarms in SNMP devices affected by such events as power failures, over-heating and mechanical failures.

For example, if a cooling unit's performance becomes impaired, Nform may be set up to send e-mail alerts to various personnel, record data pertaining to the event and append it to a particular file and launch a command or batch file that can execute user-customized scripts.

Set Up Actions

The first step in the process entails setting up the standard actions (e-mail, file write and command), described in the next three sections:

- **11.2.1 - Set Up an E-Mail Action** - send customized e-mail messages to selected recipients
- **11.2.2 - Set Up a File Write Action** - record alarm information in a file
- **11.2.3 - Set Up an External Program to Run** - launch a script when an alarm is received

Tie Actions to Alarms

The next step is to link each action to a particular event for a managed device. Actions must be created individually, but multiple actions may be attached to an event in one operation. Further, one action may be attached to multiple events.

For instructions on linking actions to alarms, see:

- **11.2.4 - Assign Actions to Alarms**

Advanced Notification

If you purchased the Advanced Notification License to enable SNMP Get Request and Set Request functions, you will need to configure actions to collect data and control devices, as described in:

- **11.3 - Advanced Notification**

11.2.1 Set Up an E-Mail Action

To set up an e-mail:
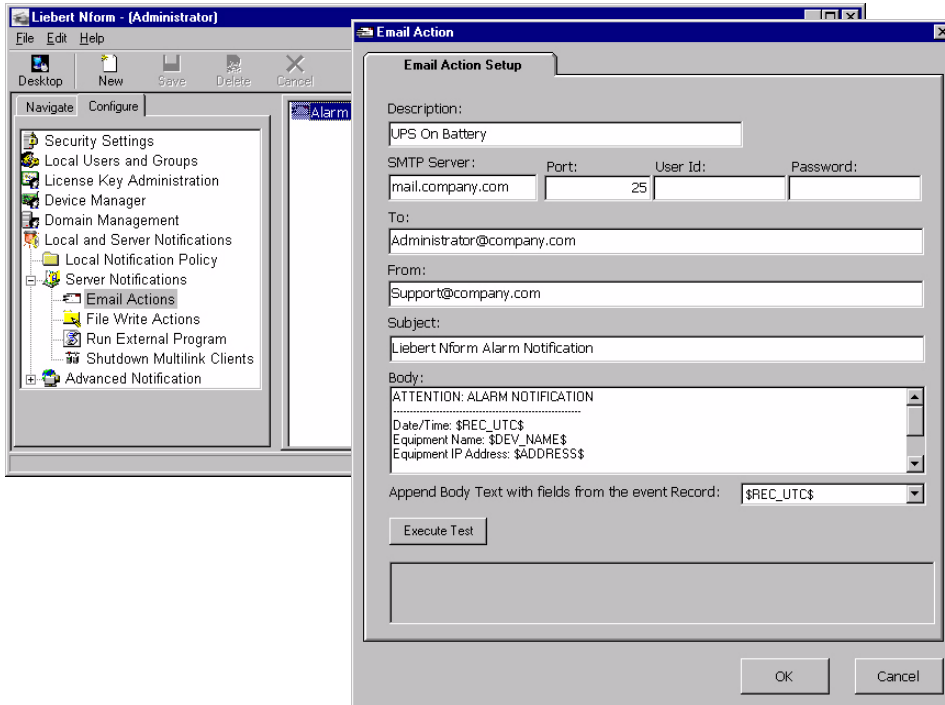
- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Local and Server Notifications**.
- In the right side of the window, double-click on **Server Notifications**, then on **Email Actions**.
- In the **File** menu, click on **New**. (Or click the **New** button 🔲 on the toolbar.) This opens the Email Actions window, shown below right.

- In the Description box, enter a descriptive name for the action—for example, *UPS On Battery*. This name will appear later in a list of actions that can be assigned to events.
- In the SMTP Server box, enter the name of the outgoing mail server that this computer uses for outgoing e-mail—*mail.company.com*.
- The Port box displays the standard SMTP port of 25. Enter a different port number if needed.
- If required by the SMTP server, enter a User ID and Password for this action.
- In the To box, enter the e-mail address of the intended recipient—*Administrator@company.com*.
- In the From box, enter the e-mail address where replies should be sent—*Support@company.com*.
- In the Subject box, enter a subject for the e-mail—*Liebert Nform Alarm Notification*.
- In the Body box, you may create a customized message for recipients. The message may consist of text as well as fields from the drop-down list below the Body box, which are listed in **Table 13**.

Table 13   Fields for e-mail messages

Field	Description
REC_UTC	The time when the alarm was received
$ADDRESS$	The IP address of the device that sent the alarm
DEV_NAME	The user-defined name of the device that sent the alarm
$EVENT_MESSAGE$	The alarm message—for example, High Temperature, Low Temperature or On-Battery
$EVENT_OID$	The SNMP object-Identifier number

For example, if you enter:

*An alarm in DEV_NAME has been detected.*

the e-mail message might read:

An alarm in Liebert GXT2U-1 has been detected.

- Click the **Execute Test** button to send a test e-mail message. Verify that the message was received correctly.
- Click **OK**. This saves changes to the Email Action.

11.2.2 Set Up a File Write Action

To set up a File Write Action:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Local and Server Notifications**.
- In the right side of the window, double-click on **Server Notifications**, then on **File Write Actions**.
- In the **File** menu, click on **New**. (Or click the **New** button [icon] on the toolbar.) This opens the File Write Actions window, as shown below right.

Browse to locate file
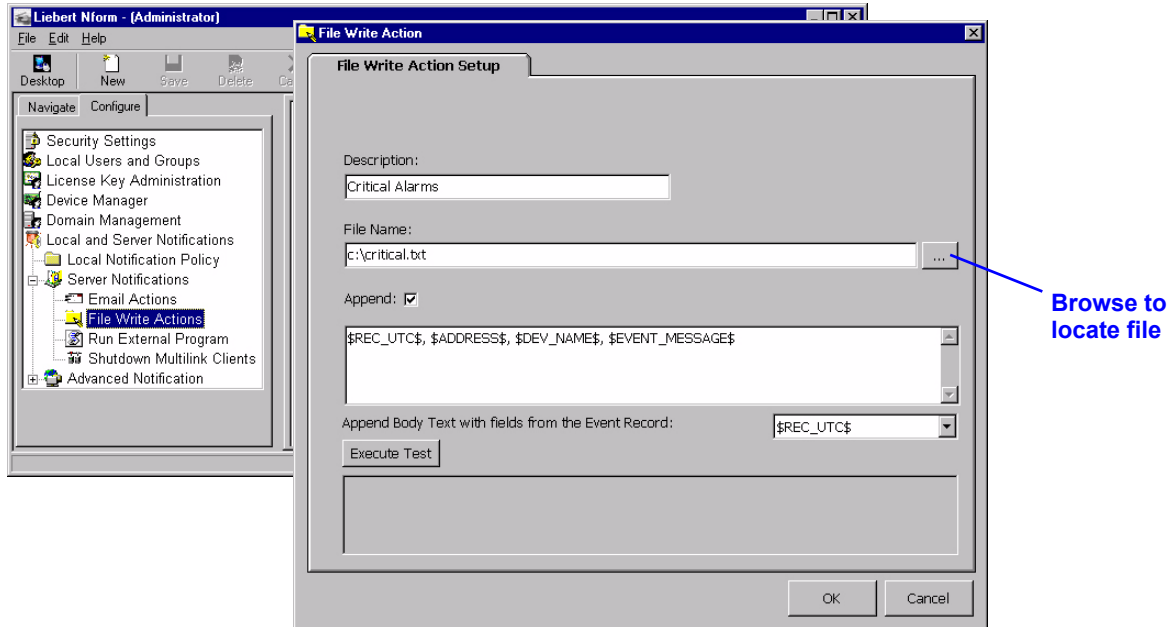
- In the Description box, enter a name for the action—in the example above, *Critical Alarms*. This name will appear later in a list of actions that can be assigned to events.
- In the File Name box, enter the full path of the file where Nform will record details of events or use the **Browse** button to locate the file. (To open a browse window, you may double-click in the File Name box.) If the file does not exist, Nform will create it.
- Placing a check mark in the Append box will add data at the end of the file, preventing existing data from being overwritten by new information.

  If the Append box is not checked, the file will be replaced with each new alarm.
- In the text box below the Append check box, you may enter text to be written in the file when an alarm is received. In addition to text, you may choose fields from the drop-down list below the text box, which are listed in **Table 14**.

Table 14   Fields for file entry

Field	Description
REC_UTC	The time when the alarm was received
$ADDRESS$	The IP address of the device that sent the alarm
DEV_NAME	The user-defined name of the device that sent the alarm
$EVENT_MESSAGE$	The alarm message—for example, High Temperature, Low Temperature or On-Battery
$EVENT_OID$	The SNMP object-Identifier number

For example, if you enter:

*Alarm detected in DEV_NAME*

the file entry might read:

Alarm detected in Liebert GXT2U-1

- Click the **Execute Test** button to test the File Write action. Verify that the file was created and the text entered correctly.
- Click **OK**. This saves changes to the File Write Action.

11.2.3 Set Up an External Program to Run

To set up an external program to run:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, click on **Local and Server Notifications**.
- In the right side of the window, double-click on **Server Notifications**, then on **Run External Program**.
- In the **File** menu, click on **New**. (Or click the **New** button 🔲 on the toolbar.) This opens the Run External Program Action window, as shown below right.

Browse to locate program to run
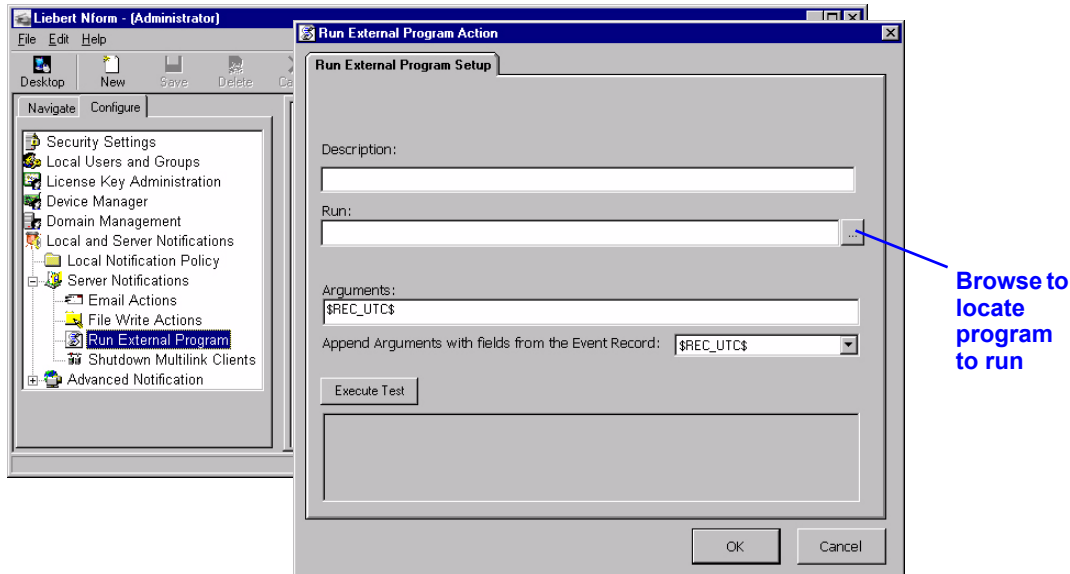
- In the Description box, enter a descriptive name for the program to be run. This name will appear later in a list of actions that can be assigned to events.
- In the Run box, enter the full path of the program Nform will initiate—either type the full path or use the **Browse** button to locate the file. (To open a browse window, either click on the **Browse** button or double-click in the Run box.)
- In the Arguments box, you may choose fields from the drop-down list below the Arguments box, which are listed in **Table 15**. Selected fields will be appended to the Run command line.

Table 15   Fields for arguments

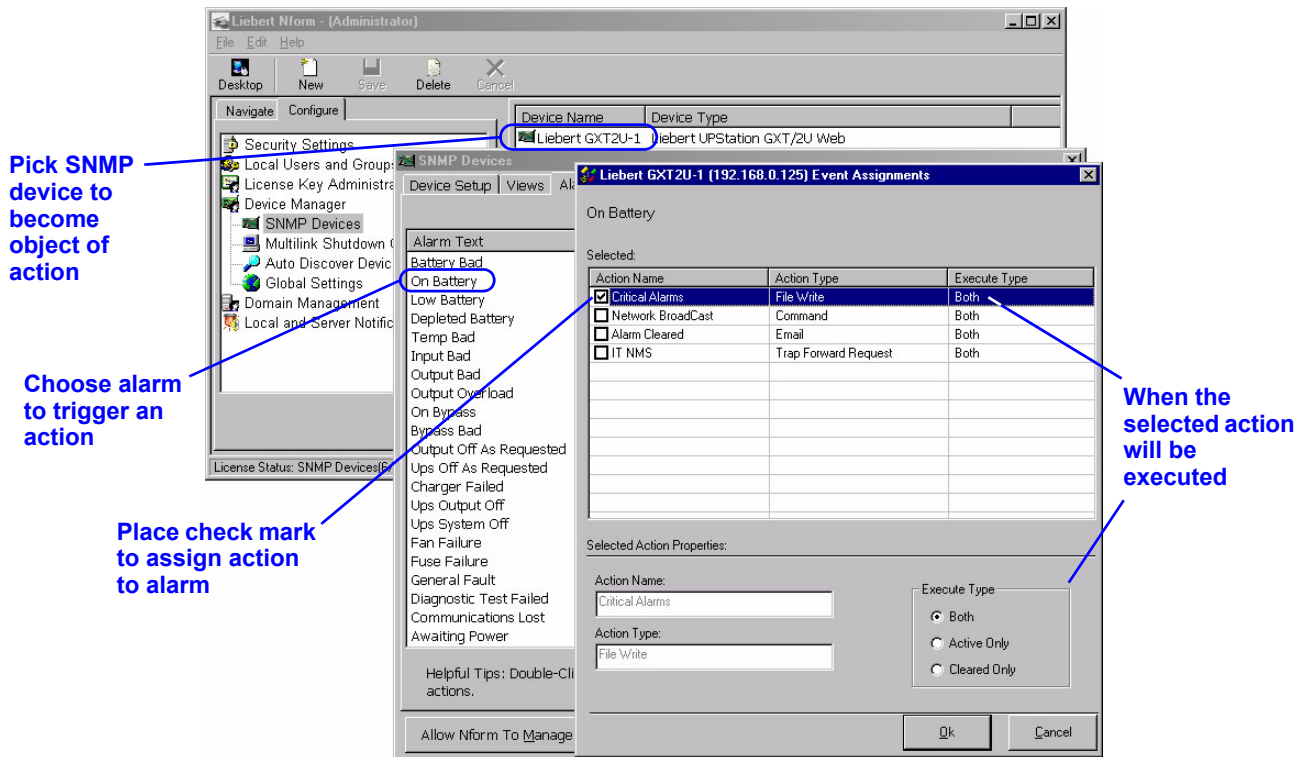| Field	Description
REC_UTC	The time when the alarm was received
$ADDRESS$	The IP address of the device that sent the alarm
DEV_NAME	The user-defined name of the device that sent the alarm
$EVENT_MESSAGE$	The alarm message—for example, High Temperature, Low Temperature or On-Battery
$EVENT_OID$	The SNMP object-Identifier number

- Click the **Execute Test** button to test the Run action. Verify that the action was performed correctly.
- Click **OK**. This saves changes to the Run External Program action.

11.2.4 Assign Actions to Alarms

After an action is created, it must be assigned to an alarm for a managed device before it becomes operative. An action—for example, sending e-mail notifications—may be assigned to more than one alarm. Nform permits configuring actions separately for each alarm on each managed device. Each action may be set up to be performed at particular stages of an alarm condition: when it occurs, when it is cleared or both (default).

To assign an action to an alarm:

- Log on as Administrator and click on the **Configure** tab, then on **Device Manager**.
- In the right side of the window, double-click on **SNMP Devices**, then double-click on the SNMP device that will be the object of the action.
- Click on the Alarms tab in the SNMP Devices window.
- Double-click on the alarm being set up to prompt a particular action. This opens the Event Assignments window, shown below right, which displays all actions that have been created.

Pick SNMP device to become object of action

Choose alarm to trigger an action

Place check mark to assign action to alarm

When the selected action will be executed

- To link an action to the selected alarm, click to place a check mark to the left of the Action Name.
- By default, selected actions are executed **both** when an alarm is received and when it is cleared. To change this setting, highlight an action and choose a setting in the Execute Type box:
  - **Both** (default) - Action is executed both when an alarm condition occurs and when it is cleared.
  - **Active Only** - Action is executed only when an alarm condition occurs.
  - **Cleared Only** - Action is executed only when an alarm condition is cleared.
- When all actions are configured, click **OK** in the Event Assignments window.
- Configured actions appear in the Assigned Events column of the SNMP Devices window, shown at right, with the first character signifying the type of action:

Assigned Events

Symbol	Designates:
@	an E-Mail action
|	a File Write action
>	a Run External Program action
%	a Trap Forward Request action
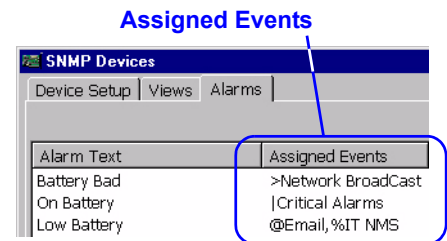
(Some actions may be hidden from view because of space restrictions. They can be revealed by double-clicking on an alarm to open the Event Assignments window.)

- Click **OK** in the SNMP Devices window to return to the **Configure** tab.

11.3   Advanced Notification

The Get Request feature allows Nform to collect data on the status of connected devices at the time of an event, such as an alarm, and store the data in a file for later review. With Set Request, Nform can control devices based on an event—for example, turn on a fan when a high temperature is detected.

This section describes how to use these features, which require an additional Nform license key (see **Table 20** for details). The license key must be installed (see **8.5 - Enter the Nform License Key**).

11.3.1 SNMP Get Request

To set up an SNMP request to get status information:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, double-click on **Local and Server Notifications**, then on **Advanced Notification** and finally on **SNMP Get Request**.
- In the **File** menu, click on **New**. (Or click the **New** button ⬚ on the toolbar.) This opens the SNMP Request Setup window, shown below right.

Click on an item in the Data Points box . . .

. . . and drag to the Selected Data Points box
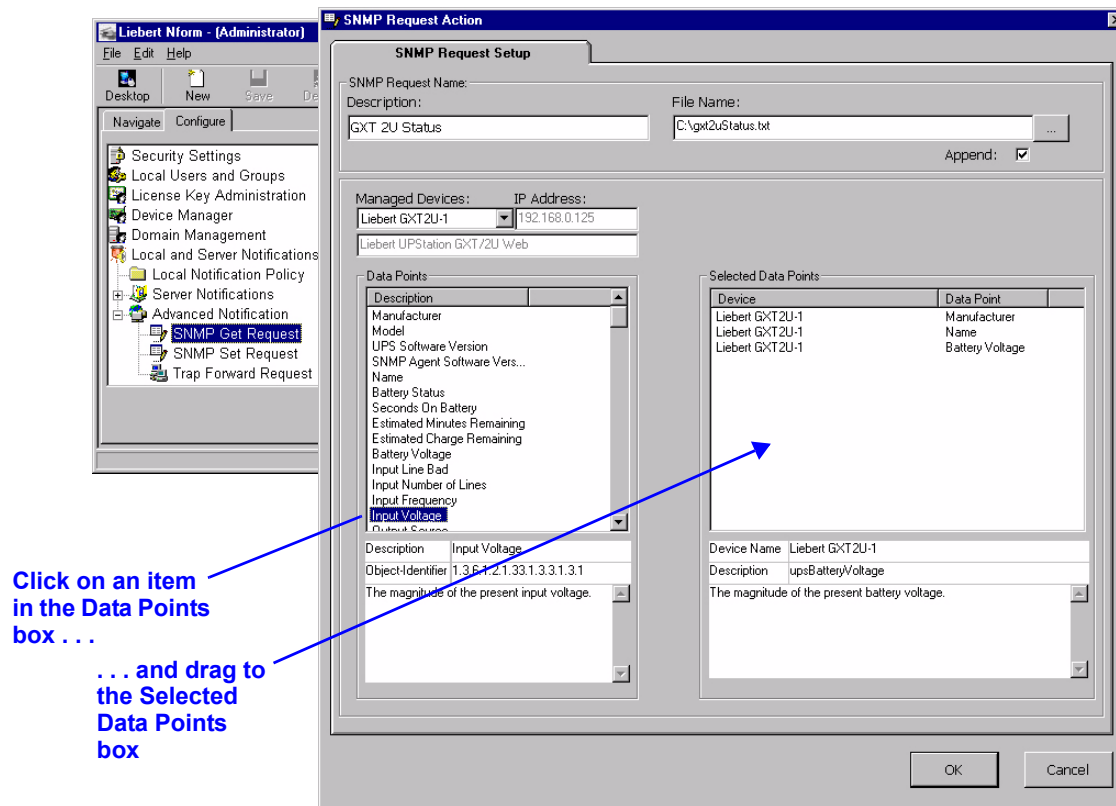
- In the Description box, enter a descriptive name for the action—for example, *GXT 2U Status*.
- In the File Name box, enter the full path and name of the file where the status data should be stored—for example, *C:\gxt2uStatus.txt*.
- The Append box is checked by default, so that new data will be added at the end of the file rather than overwrite the contents. To change this, click to remove the check mark.
- Choose a device from the Managed Devices drop-down list. All available data for the selected device appears in the Data Points box.
- Choose items you want the Data Points box using click-and-drag:
    - Click on an item in the Data Points box at left. Details are displayed below the box.
    - Drag the highlighted item to the Selected Data Points box at right.
- Continue adding data points for this or other devices as desired.
- Click **OK** to save the request. The next step is to link the request to an alarm for a specific device (see **11.2.4 - Assign Actions to Alarms**).

11.3.2 SNMP Set Request

To set up an SNMP set request to control a device:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, double-click on **Local and Server Notifications**, then on **Advanced Notification** and finally on **SNMP Set Request**.
- In the **File** menu, click on **New**. (Or click the **New** button 🔲 on the toolbar.) This opens the SNMP Request Setup window, shown below right.
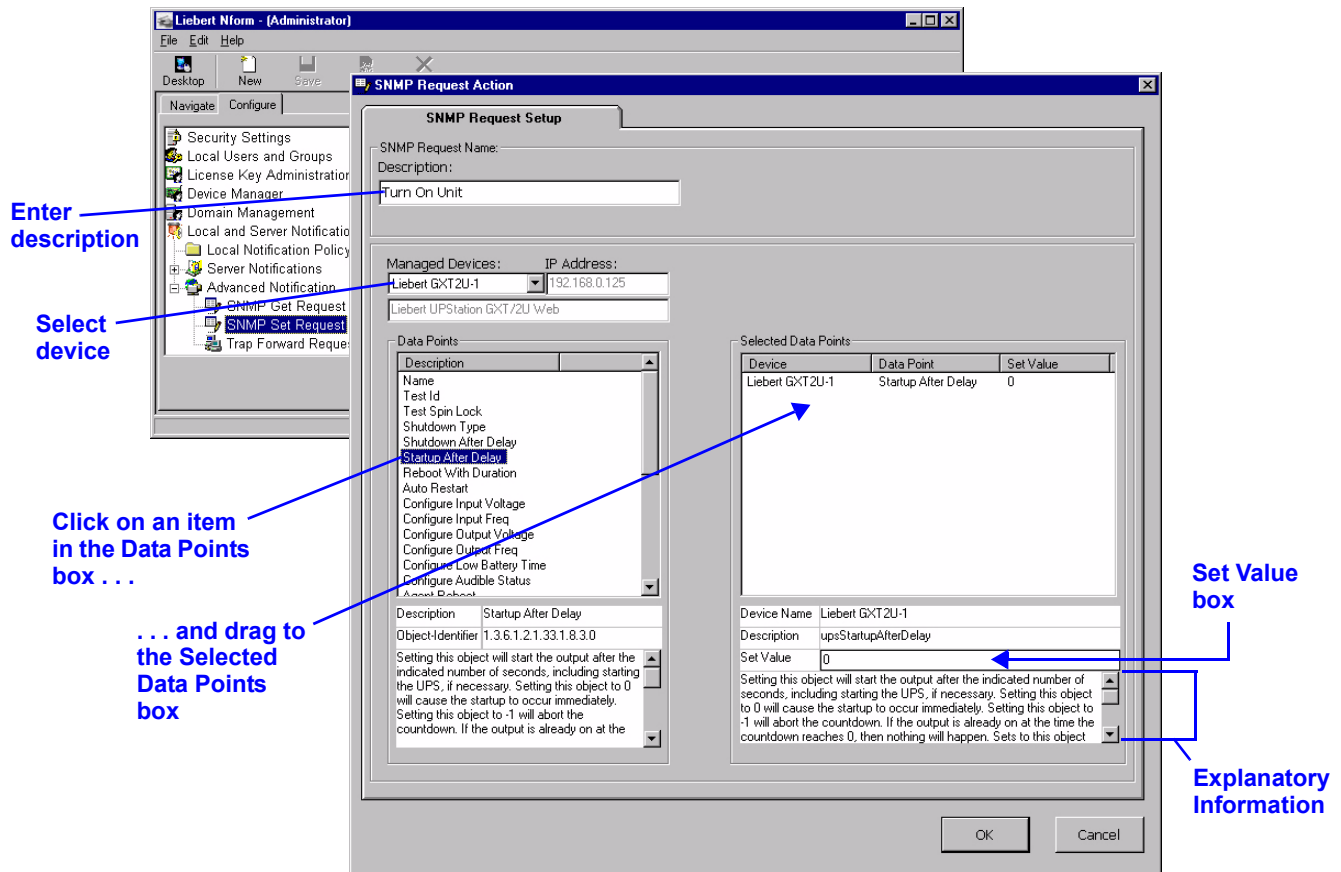

- In the Description box, enter a descriptive name for the action—for example, *Turn On Unit*.
- Choose a device from the Managed Devices drop-down list. All available data for the selected device appears in the Data Points box.
- Choose items you want the Data Points box using click-and-drag:
  - Click on an item in the Data Points box at left. Details are displayed below the box.
  - Drag the highlighted item to the Selected Data Points box at right.
- For each item in the Selected Data Points box, click in the Set Value box at bottom right and enter the value. For an explanation of acceptable values and their effects, refer to the Explanatory Information directly below the Set Value box—for example, "Setting this object to 0 will cause the startup to occur immediately."
- Continue adding data points for this or other devices as desired.
- Click **OK** to save the request. The next step is to link the request to an alarm for a specific device (see **11.2.4 - Assign Actions to Alarms**).

11.3.3 SNMP Trap Forward Request

To set up an SNMP trap forward request to forward notifications to a specific individual's computer:

- Log on as Administrator and click on the **Configure** tab.
- In the left side of the window, double-click on **Local and Server Notifications**, then on **Advanced Notification** and finally on **SNMP Trap Forward Request**.
- In the **File** menu, click on **New**. (Or click the **New** button ⬚ on the toolbar.) This opens the Trap Forward Request Action window, shown below.
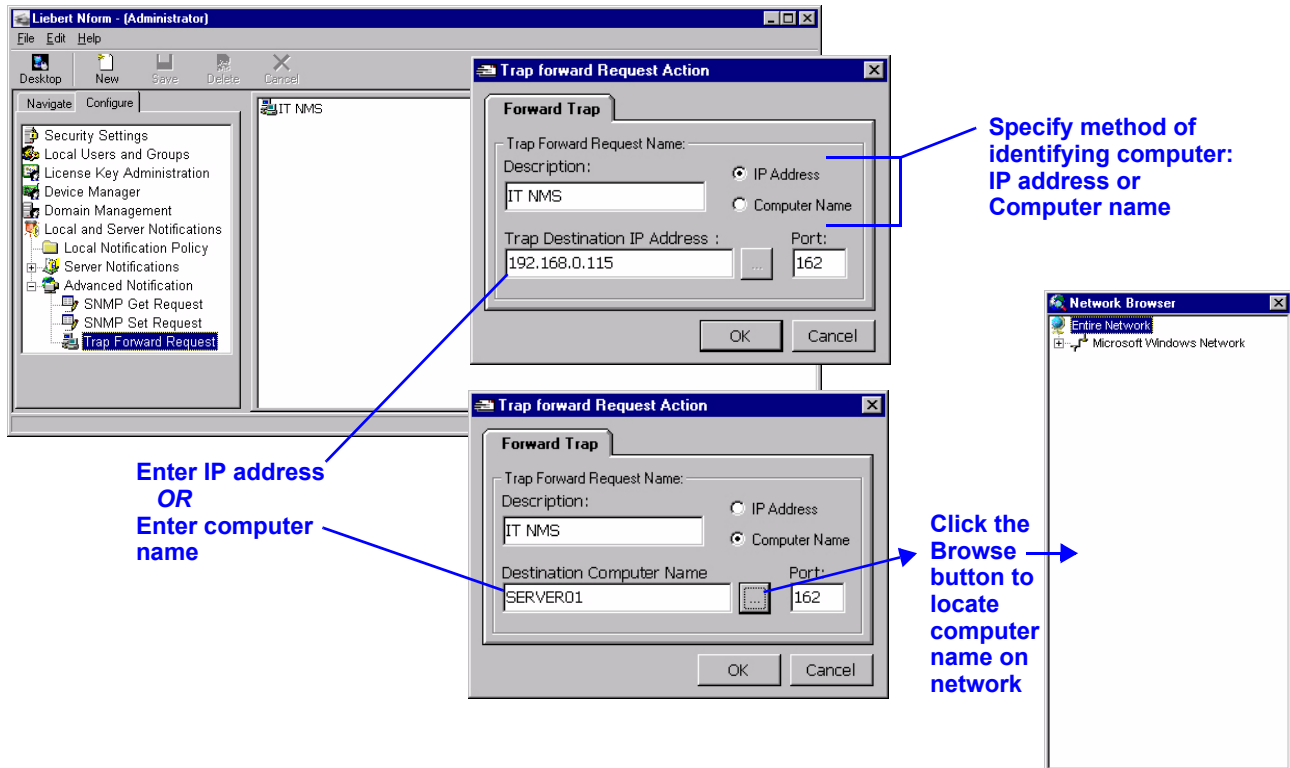
Specify method of identifying computer: IP address or Computer name

Enter IP address OR Enter computer name

Click the Browse button to locate computer name on network

- In the Description box, enter a descriptive name for the action—for example, *IT NMS*.
- Choose **IP Address** or **Computer Name** for the method of identifying the destination computer.
- Depending on the choice, specify the computer where traps should be forwarded in the Trap Destination IP Address box:
    - Enter the IP address of the computer.
        - *OR*
    - Enter the computer name—for example, *SERVER01*. Either type the name or click the **Browse** button to locate the computer name on the network.
      In the Browser window, double-click to select the computer name and close the window. (Or click to select the computer name, then click the Close button "X" at the top right corner to close the Browser window.)
- The Port box displays **162** (Standard SNMP Trap port) as the port for receiving traps. This port number should match the port selected in the Trap Service window, as described in **9.8.3 - Trap Service**.
  Note: Liebert recommends keeping the default value—port 162.
- Click **OK** to save the request. The next step is to link the request to an alarm for a specific device (see **11.2.4 - Assign Actions to Alarms**).

12.0 NFORM MONITORING—NAVIGATION TREE

Nform constantly monitors the devices set up using the **Configure** tab and performs actions as specified in the configuration settings for each device. This section describes how to use Nform to check the status of any SNMP device configured for monitoring.

12.1 Viewing the Navigation Tree

The navigation tree allows you to view the status of all configured devices. To view the tree:

- Log on as either Administrator or Power User.
- Click on the **Navigate** tab.
- In the left side of the window, click on the device you wish to view. The device information displayed in the right side of the window has either of two formats, depending on whether the device is HTML-supported or not.

12.1.1 Navigate View—HTML-Supported Devices

For HTML-supported devices, the right side of the window shows tabs and device information to view and configure. This example shows the **monitor** tab for a device with a Web-enabled card installed.

Monitoring information for an HTML-supported device (see 12.2 - Information Available for HTML-Supported Devices)

12.1.2 Navigate View—Non-HTML Devices

For devices without HTML support, Nform displays device information in a format similar to the window shown below. You may select which data points are displayed or change the description of any item in the device setup (see **9.4.2 - Views tab**).

Monitoring information for a device without HTML support (see 12.3 - Information Available for Non-HTML Devices)

12.2 Information Available for HTML-Supported Devices

Nform's Navigate window for devices with Web-enabled SNMP cards shows tabs that permit viewing parametric data, altering some device settings and viewing the event log. The number of tabs shown depends on the type of device. For more information about device settings, review the documentation related to the SNMP card.

12.2.1 HTML monitor tab

The HTML **monitor** tab for devices with Web-enabled SNMP cards reveals an overview of a selected device: its status, any alarms, and other data applicable to that type of device.

To view the various types of data:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right pane, click on the HTML **monitor** tab.
- In the center of the window, click on the type of device information—for example, **Alarms**. The example below shows Alarm data for an HTML-supported UPS during a power failure.

- The information varies by type of SNMP device. The example below shows summary information for a cooling unit with an SNMP card.

12.2.2 HTML control tab *(selected devices only)*

The HTML **control** tab allows you to take actions such as testing a UPS battery or turning an SNMP device on or off. This tab appears only for certain devices with Web-enabled SNMP cards.

> **NOTE**
> *The Control feature may not be available on every HTML-supported device.*

To use the HTML **control** tab:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right pane, click on the HTML **control** tab.
- In the center of the window, click on a control operation—for example, **Alarm Silence**.
- A window asks for the SNMP card user name and password. Enter the user name and password and click **OK**.
- The example below shows the Alarm Silence control function for an HTML-supported UPS.

Highlight device name, then click on control operation— for example, "Alarm Silence"

Nform displays information for selected control operation and device

12.2.3 HTML configure tab *(selected devices only)*

The HTML **configure** tab allows you to change some configuration settings in the device's SNMP card. This tab appears only for certain devices with Web-enabled SNMP cards.
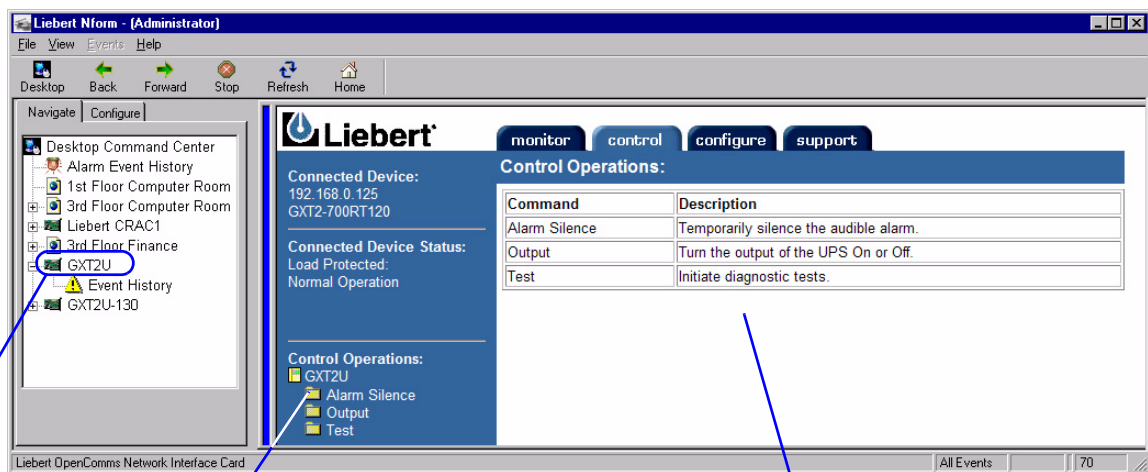
NOTE
The Configure feature may not be available on every HTML-supported device.

To use the HTML **configure** tab:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right pane, click on the HTML **configure** tab.
- A window asks for the user name and password. Enter the user name and password for the SNMP card and click **OK**.
- In the center of the window, click on a configuration function—for example, **Web**. The example below shows the Refresh Interval for an HTML-supported device.

Highlight device name, then click on configuration category—for example, "Web"

Click on Edit to make changes

Save and Reset buttons appear when needed

- For each configuration function, a window at right displays information that can be changed on the SNMP card. Click on the **Edit** button to make changes.
- Enter the information you wish to change and click the **Save** button 💾 to save the changes (or click on the **Reset** button ▢ to exit without saving).
- All changes require re-initializing the SNMP card before the changes will take effect. To do this, click on the **Reinitialize** button ▢ .

12.2.4 HTML event log tab *(selected devices only)*

The HTML **event log** tab allows you to view data from the event log in the device's SNMP card. This tab appears only for certain devices with Web-enabled SNMP cards.

NOTE
The Event Log feature may not be available on every HTML-supported device.

To use the HTML **event log** tab:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right pane, click on the HTML **event log** tab. Click on **Device** in the left pane to view the event log. The example below shows device information for an HTML-supported UPS.

- The event log data may be viewed in any of three formats: an HTML table, as shown above, plain text or comma-delimited text, as shown in **Table 16**. To change the view, click on the **Device Event Log** option **(.txt)** for text or **(.csv)** for comma-delimited text.
- When viewing plain or comma-delimited text, you may copy and paste the text into another application, such as a spreadsheet or word-processing program. To return to the original view, click on the **Device Event Log** option **(Html)**.

Table 16   Options for viewing device event log

Option	Format	Example
Html	HTML table	Formatted table, as in the screen shown above
.txt	Text	```Time Id Event``` `------------------ ----  -------------------------------------------` `2005-5-1 13:41:19  20  NL05 UPS switched from battery to utility` `2005-5-1 13:41:07  18  NL04 UPS On Battery`
.csv	Comma-delimited	`Time,Id,Event` `2005-5-1 13:41:19,20,NL05 UPS switched from battery to utility` `2005-5-1 13:41:07,18,NL04 UPS On Battery`

- To scroll through the pages of data in the event log, use the arrow keys directly above the event log listing.
- To update the log data at any time, click on the **Refresh** button to the right of the scroll buttons.

12.2.5 HTML support tab

The HTML **support** tab displays vital information about the SNMP card and the device, along with technical support contact information.

To use the HTML **support** tab:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right pane, click on the HTML **support** tab. The example below shows device information for an HTML-supported UPS.

12.3   Information Available for Non-HTML Devices

For devices without HTML support (non-HTML devices), Nform's Navigate window displays data points—you may select or rename these data points in the device setup (see **9.4.2 - Views tab**).

This section describes how to query the device to display current values. Additionally, you can enter set values for any data point, download those set values to Nform and view the definition of a data point on certain devices.

12.3.1 Query Device

Nform allows you to get an immediate update on all data points or for a single data point.

NOTE
To query a device from a remote Nform client, the device must be configured for SNMP access from that client—the client's IP address must be included in the device's SNMP access list.

Update All Data Points

To display the device's current values for all data points:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right side of the window, click on the **Query Device** button to display the current values; Nform displays a progress bar as it requests SNMP data from the device, as shown below.

Query Device button

Bar shows progress of query request
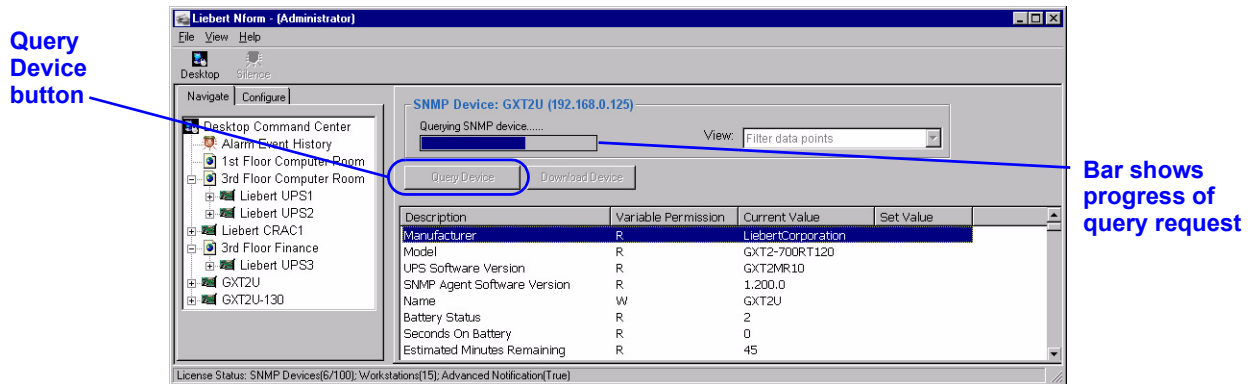
Update a Single Data Point

To display the device's current value for a single data point:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right side of the window, right-click on a data point and choose **Query Selected Point** from the pop-up menu.

Right-click on data point, then click on Query Selected Point to get its current value
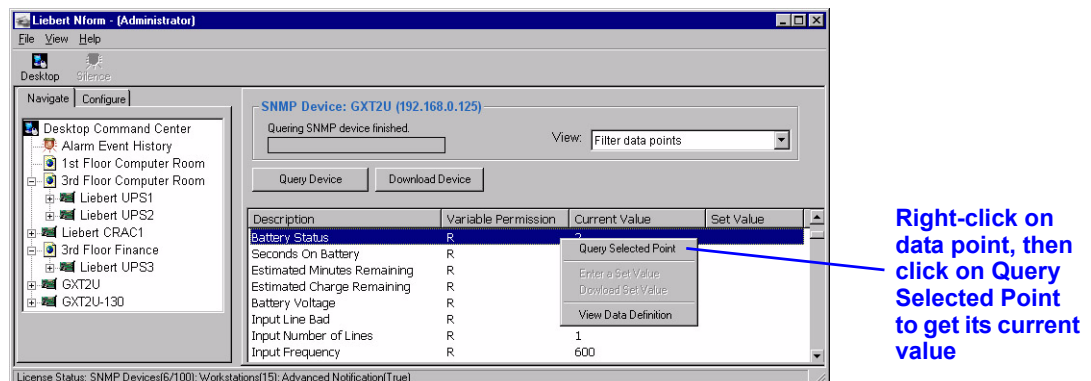
12.3.2 Set Values

Nform allows you to enter a set value for certain data points—only those with Write permission, noted by "W" in the Variable Permission column, as shown below. A set value determines when Nform performs a particular action, such as displaying an alarm for a device. As an example, you might want to enter a high-temperature value of 85°F as an alarm setpoint for a MiniMate2 unit. Actual values for any device will depend on your application. Set value variables can also be used for control and configuration functions, such as audible alarm control or temperature sensor state.

For help on the definition of a data point or its allowable values, see **12.3.4 - View Data Definition**.

NOTE
*To enter set values for a device from a remote Nform client, the device must be configured for SNMP access from that client—the client's IP address must be included in the device's SNMP access list.*

To enter a set value:

- Log on as Administrator.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to change.
- In the right side of the window, right-click on a data point with Write access and choose **Enter a Set Value** from the pop-up menu.
- In the Enter Set Value box, enter the value and click **OK**.
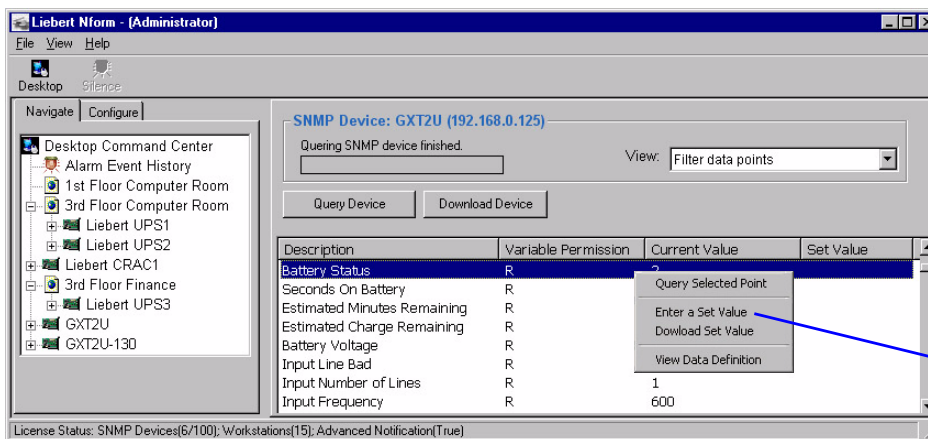
Right-click on data point, then click on Enter a Set Value

Enter a value for this data point
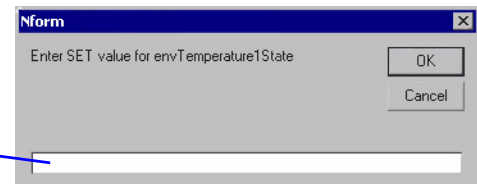
- Repeat this for each data point for which you wish to enter a set value.
- Proceed to the next section, **12.3.3 - Download Device** to complete this process. Nform does not recognize a set value until the value has been downloaded to the device.

12.3.3 Download Device

After entering set values, as described in **12.3.2 - Set Values**, you must download them to the device before Nform can recognize them. You may download all set values at once or download an individual set value.

Download All Set Values at Once

To download all set values that have been entered for a device:

- Log on as Administrator.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to change.
- In the right side of the window, click on the **Download Device** button, as shown below. Once downloaded, the values appear in the Set Value column.
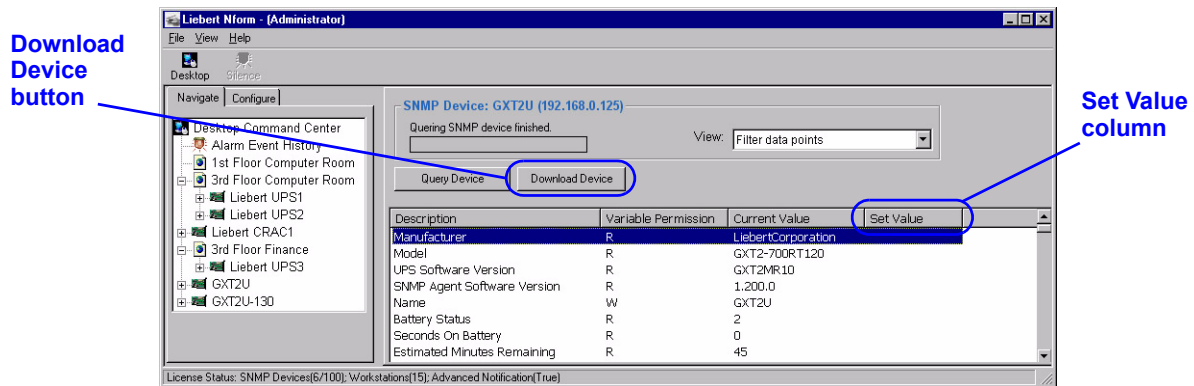
Download a Single Set Value

To download a set value for a single data point:

- Log on as Administrator.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to change.
- In the right side of the window, right-click on a data point and choose **Download Set Value** from the pop-up menu. Once downloaded, the value appears in the Set Value column.
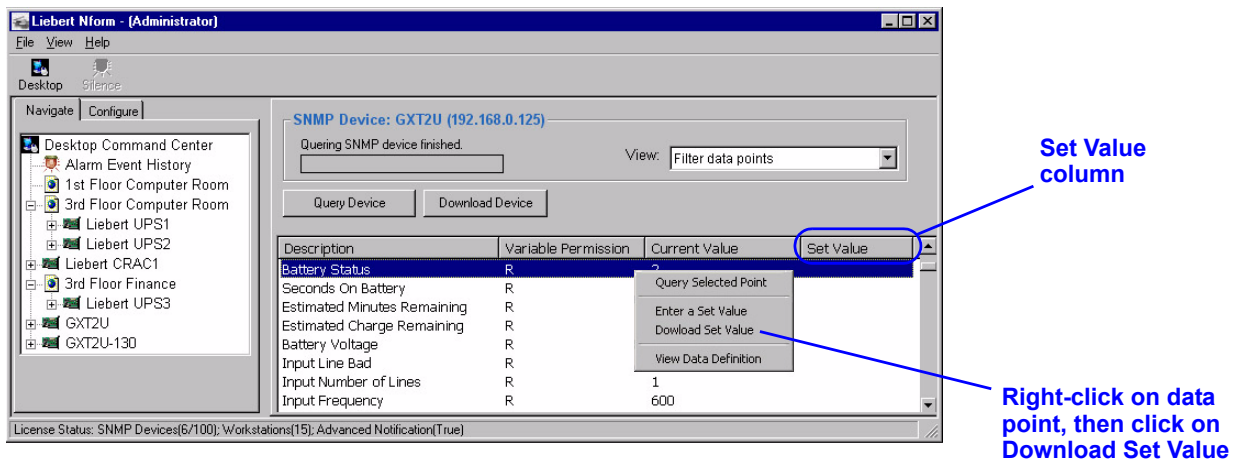
12.3.4 View Data Definition

To assist users in entering set values, Nform provides data definitions for some devices. Each definition provides a description of the data point and its valid values.

To view a data definition and allowable values:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- In the left side of the window, click on the device you wish to view.
- In the right side of the window, right-click on a data point and choose **View Data Definition** from the pop-up menu. Scroll through the information and click **OK** when finished.
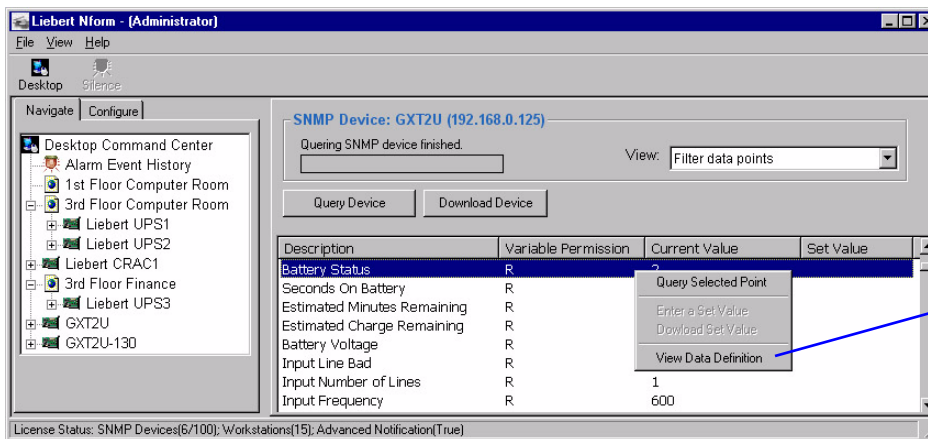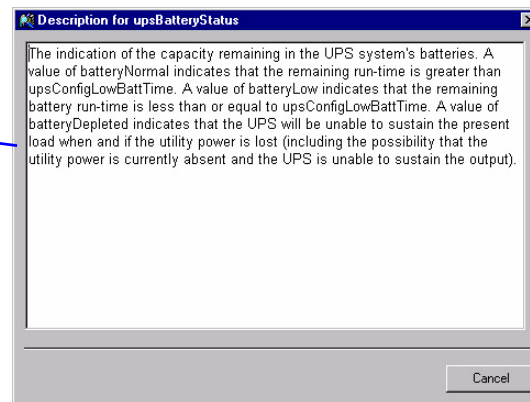
13.0 MANAGING ALARMS

This section describes how to view a listing of alarms, silence the default beep, change the status of alarms, add notes about an alarm, and change the colors that denote alarm status in the listing.

Nform assists in managing alarms by displaying their status, denoting each type with a different color of text. This enables the user, either the Administrator or Power User, to see at a glance whether a new alarm has been received and if action is required.

The example below shows a device with an active alarm 🔴 and its event history on the right.

Icon denotes device with active alarm

Silence default beep button

Active alarms (red)

Acknowledged alarms (green)

Icon denotes loss of communication—not an alarm
(see 7.2.5 - Informational Icons in the Navigation Tree)

Alarms can proceed through the following states: Active, Acknowledged and Deleted.

- When an alarm is received, it is **Active** (default text color: red).
- During or after instituting measures to resolve the alarm's underlying cause, the user may change the alarm's status to **Acknowledged** (default text color: green).
- The final alarm management step is to **Delete** the alarm, removing it from the list of alarms. An alarm must be acknowledged before it can be deleted.

  In addition, deleting an alarm from the viewer permanently removes it from the alarm log file. The alarm log file (alarmlog.fil) is stored in the Nform directory in comma-delimited format for viewing in third-party applications.

Nform displays an alarm history, including current, active alarms and acknowledged alarms that have not been deleted, for each monitored, managed device. New alarms are added at the top of the list. This history is displayed:
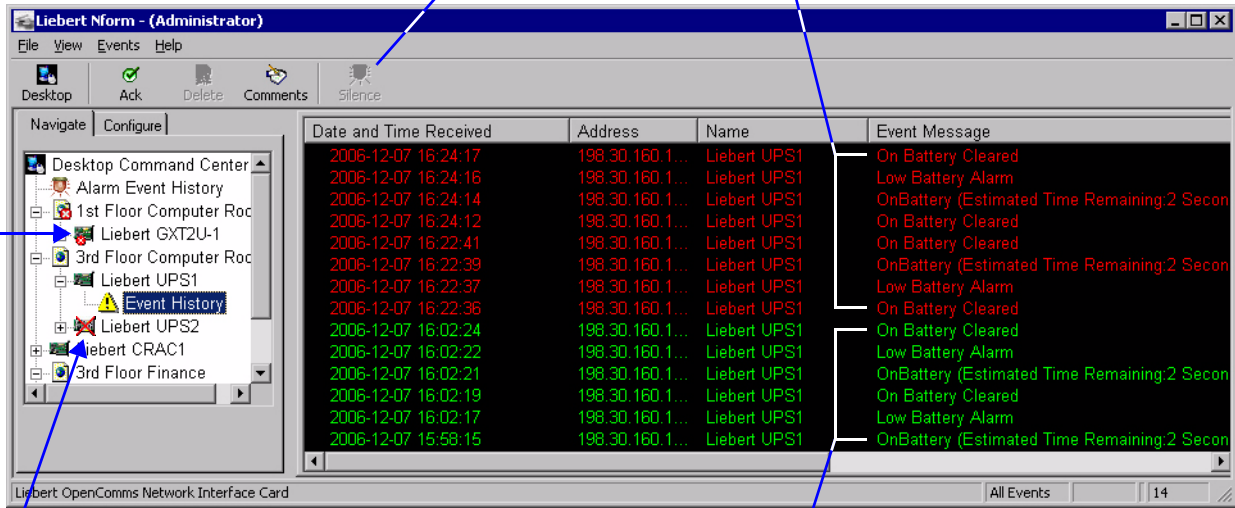
- When Nform is opened (before logging in)
- When Alarm Event History is selected in the **Navigate** tab
- When Event History is selected for any device in the **Navigate** tab
- When Alarm Management is selected for any device in the **Desktop** view

Alarms remain in this display until they are deleted, the final step in responding to alarms.

The user may add notes about any alarm in the list. These notes remain only as long as the alarm is displayed.

In addition to the alarm listing, Nform records pertinent alarm data in an alarm log that Nform creates in its Data folder. This log is limited to 5,000 records by default. The number of records retained may be changed by the user (see **9.8.1 - Alarm Service - Configuration**).

13.1   View Alarms

There are several ways to view alarms.

- Alarms are displayed when Nform is started before you log on.
- Once you are logged on as either Administrator or Power User:
  - Click on the **Navigate** tab, then select **Alarm Event History** at the top of the navigation tree (this reveals all alarms from all devices in the navigation tree).
    or
  - Click on the **Navigate** tab, then select **Event History** for any device in the navigation tree (this reveals only the alarms received from the associated device).
    or
  - Click on the **Desktop** button, then on a device in the Device List, then **Alarm Management**.

Alarms appear in the right side of the window, as shown in this example.

13.2   View Alarm Data Definition—SiteNet Integrator Only

To assist users in managing alarms, Nform provides data definitions for alarms on SiteNet Integrator. Each definition provides additional information about the alarm.

To view the data definition of an alarm:

- Log on as either Administrator or Power User.
- Click on Nform's **Navigate** tab.
- Select **Alarm Event History** at the top of the navigation tree (this reveals all alarms from all devices in the navigation tree).
- In the right side of the window, right-click on an alarm and choose **View Data Definition** from the pop-up menu. Scroll through the information and click **OK** when finished.
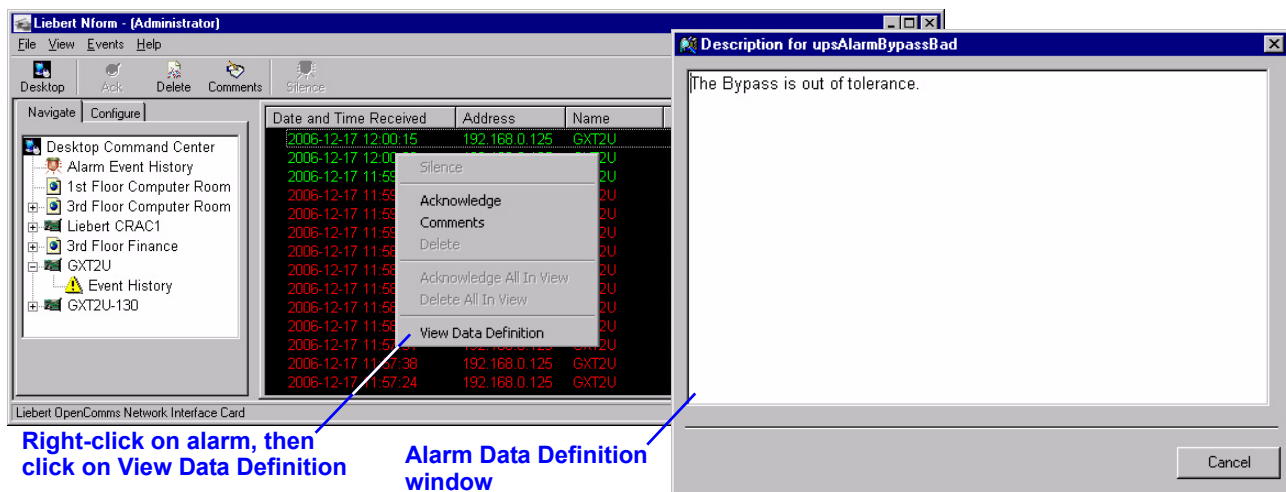
13.3 Silence the Default Beep

Nform can be configured to play a beeping sound—the default beep—in the monitoring computer when Nform receives an alarm from an SNMP device. This beep can be silenced through Nform.

To silence the default beep:

- Log on as Administrator or as Power User.
- Click on the Events menu at the top of the window, and then click on **Silence**.
  or
- Click on the Silence button 🔔 Silence on the toolbar.

13.4 Filtering Alarms by Type

The Alarm Log in the Navigate tab displays all alarms by default but allows the user to filter alarms for management purposes.

To filter alarms:

- Click on the View menu at the top of the window, then click on **Events**, and choose how to filter the alarms: All Events, Acknowledged or Unacknowledged.
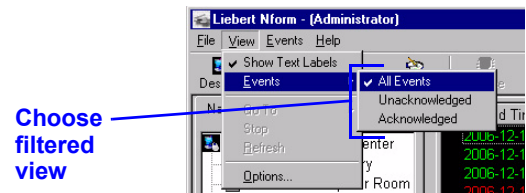
After filtering the alarms, the user can perform batch functions as follows:

- Acknowledge all alarms in the filtered view by clicking on the Events menu at the top of the window, then on **Acknowledge All In View**.
- Delete all acknowledged alarms in the filtered view by clicking on the Events menu at the top of the window, then on **Delete All In View**. (Alarms must be acknowledged before they can be deleted.)
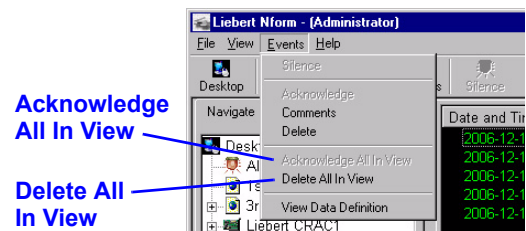
13.5 Change Alarm Status

Nform helps the user recognize new, active alarms through the alarm status feature, which displays alarm text in differing colors.

To change an alarm's status, log on as Administrator or as Power User. Then click on the **Navigate** tab and display the alarm listing as described in **13.1 - View Alarms**.

13.5.1 Acknowledge an Alarm

To acknowledge an alarm:

- Right-click on an alarm and click on **Acknowledge** on the pop-up menu, as shown at right. Two other ways to do this are:
  - Click on an alarm, then select **Acknowledge** from the Events menu.
    or
  - Click on an alarm, then click on the Acknowledge button 🔲 Ack on the toolbar.
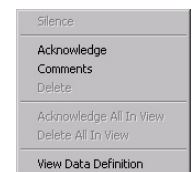
13.5.2 Delete an Alarm

An alarm must be acknowledged before it can be deleted. To delete an alarm:

- Right-click on an alarm and click on **Delete** on the pop-up menu, as shown at right. Two other ways to do this are:
  - Click on an alarm, then select **Delete** from the Events menu.
    or
  - Click on an alarm, then click on the **Delete** button 🗑 Delete on the toolbar.
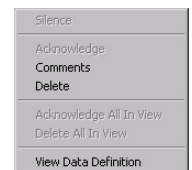
13.6   Add or View Alarm Comments

Nform allows you to add notes to any alarm in the alarm listing. The notes can be viewed and edited at a later time. The notes can perform several functions, including helping you keep track of actions taken to resolve an alarm condition and document the underlying cause of an alarm.

> **NOTE**
> *Comments are not saved in the alarm log.*

13.6.1 Add Comments to an Alarm

To add notes to an alarm:

- Right-click on an alarm and select **Comments** from the pop-up menu, as shown below. (Or click on the alarm, then select **Comments** from the Alarms menu or click the Comments button on the toolbar.)
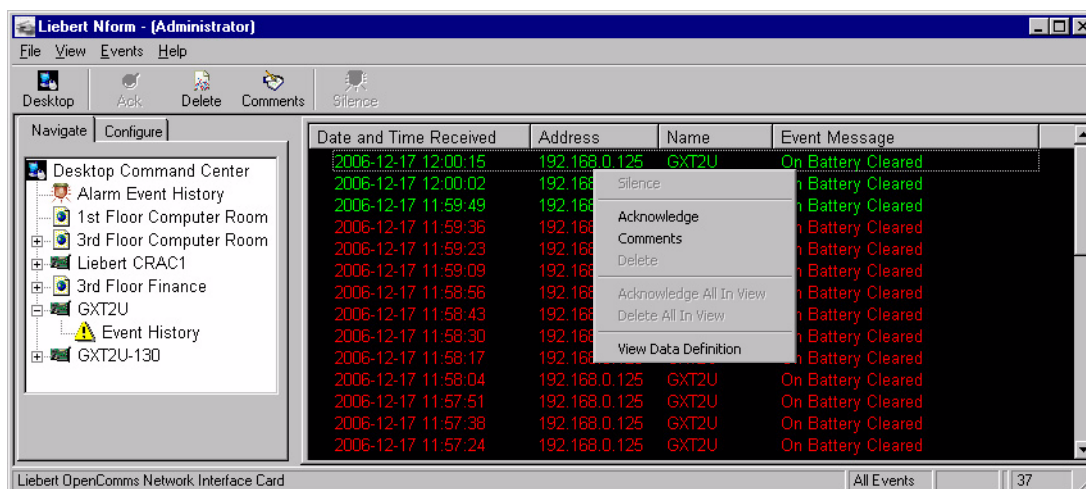
- Enter notes in the Comments window, and click **Save**. Once a comment is added and saved, the Comments button icon will appear in the Event Message column for that alarm, as shown below.
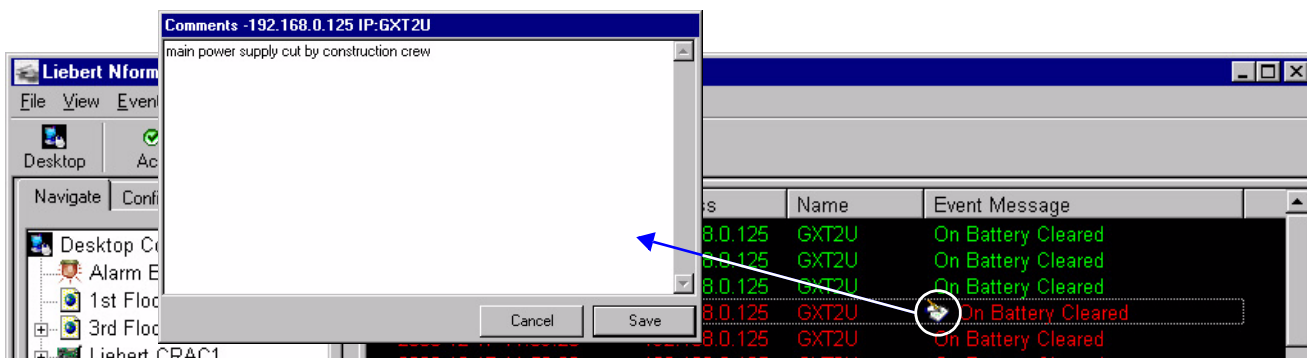
13.6.2 View or Edit Comments

To view comments that have been added to an alarm:

- Right-click on an alarm and select **Comments** from the pop-up menu. (Or click on the alarm, then select **Comments** from the Alarms menu or click the Comments button on the toolbar.)
- In the Comments window, view or edit the notes and click **Save** or **Cancel** when finished.

13.6.3 Delete Comments

To delete comments without deleting the alarm:

- Right-click on an alarm and select **Comments** from the pop-up menu. (Or click on the alarm, then select **Comments** from the Alarms menu or click the Comments button on the toolbar.)
- Delete all the text and then click **Save**. This removes the comments from the alarm without deleting the alarm from the list.

13.7   Change Colors Indicating Alarm Status

You may change the default alarm status colors to suit your preferences. To do so:

- Log on as either Administrator or Power User.
- Click on the **Navigate** tab and select **Options** from the **View** menu. This opens the Liebert Nform Settings window.
- Click the **Browse** button beside the alarm color to be changed.
- Choose a color from the swatches—or define a new color by expanding the **Color** window with the **Define Custom Colors** button and selecting a color using the slider tools or entering values in the boxes.
- Click **OK** in the Color window and the Settings window to save your changes or click **Cancel** to close the windows without saving.
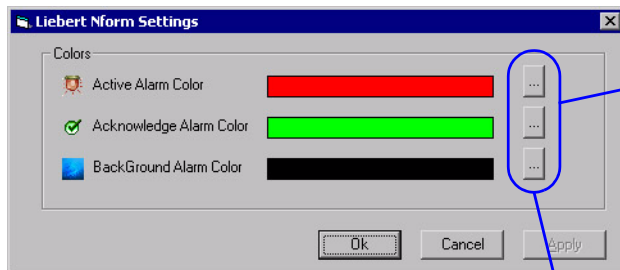
Browse buttons open Color window to change the associated alarm

Choose a new color from the swatches . . .

Use these tools to select a new color
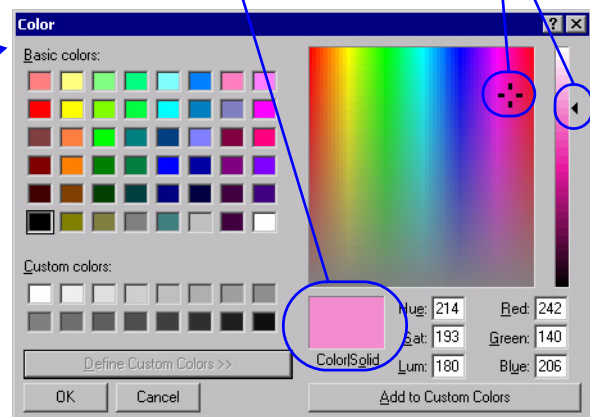
New color is previewed in the Color Solid box

. . . or define a custom color by expanding the window.

14.0 RUNNING NFORM

After installation, the Nform services begin running in the background, monitoring and managing all configured devices. Nform continues running constantly unless stopped through the Windows Services feature. The same option allows you to resume Nform services without having to restart the computer.

14.1 Starting or Stopping Nform Services

Under normal circumstances, you will not need to start or stop Nform services. Performing either operation requires opening the Services window, as described below. Stopping Nform means that the software is unable to monitor and manage your devices.

Opening the Services window
- Windows XP or Windows 2000: Click on the **Start** button, **Settings** and then **Control Panel**. In the Control Panel window, double-click on **Administrative Tools**, then on **Services** to open the Services window.
- Windows NT 4.0: Click on **Start**, **Settings**, **Control Panel** and finally **Services**.
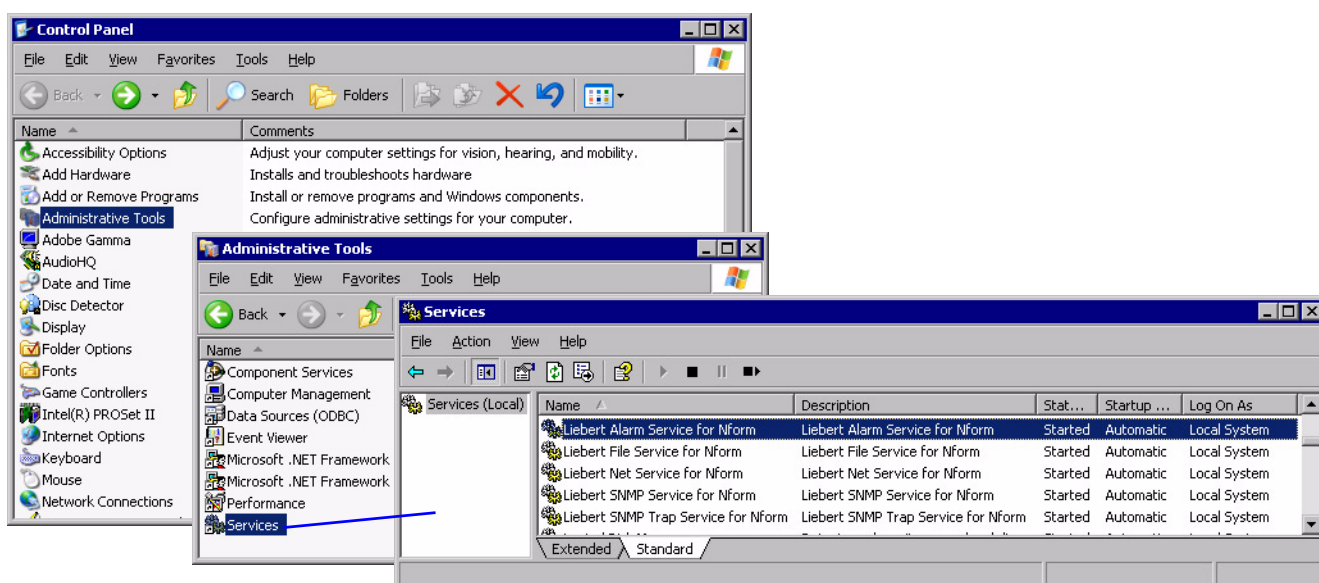
To verify that Nform is running:
The Services window shows whether the following Nform services are running:
- Liebert Alarm Service for Nform
- Liebert File Service for Nform
- Liebert Net Service for Nform
- Liebert SNMP Service for Nform
- Liebert SNMP Trap Service for Nform

To stop Nform—or any Nform service:
To stop Nform completely, you must stop all five services listed above by performing the following steps for each service.
- Select any service—for example, Liebert Alarm Service for Nform—in the Services window.
- Click on the **Action** menu at the top of the window, and then click on **Stop** to shut down the Nform service. Again, stopping Nform prevents the software from monitoring and managing your devices.

   Any service that has been stopped will resume functioning the next time the monitoring workstation is restarted.

To restart an Nform service immediately:
- Select the service—for example, Liebert Alarm Service for Nform—in the Services window.
- Click on the **Action** menu at the top of the window, then click on **Start** to restart the service.

15.0 UNINSTALLING NFORM / REMOVING LICENSE KEYS

This section describes how to remove the Nform application and how to delete a secondary Nform license key or the MultiLink Network Shutdown License.

15.1 Uninstalling Nform

To remove Nform from your computer, run the Windows Add/Remove Programs control panel.

- Click on the **Start** button, then on **Settings**, and then on **Control Panel**.
- In the Control Panel window, double-click on **Add/Remove Programs**.
- In the list of Currently Installed Programs, highlight Nform and then click on **Remove**.
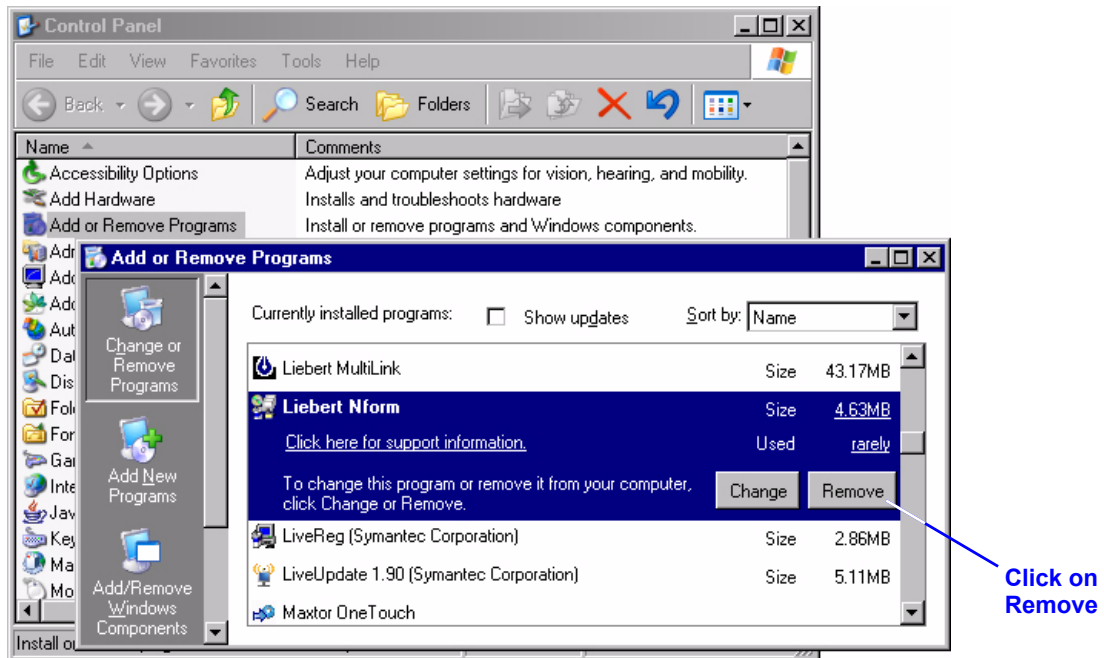
- A confirmation window asks whether you wish to proceed with the removal. Click **OK** to continue. This process removes the application files, but leaves the Nform folder inside the Program Files folder, containing user-created files in the Data folder.
- Click **Close**.

See **6.3 - Upgrading to a Newer Version of Nform** for instructions on upgrades.

15.2   Deleting License Keys

15.2.1 Deleting Secondary Nform License Keys

Your primary Nform license key cannot be deleted, but you may wish to remove a secondary license key—for example, to move it to another computer to monitor a different group of devices. The primary license key appears first in the list in the right side of the window when **License Key Administration** is selected in the **Configure** tab.

To remove a secondary Nform license key:
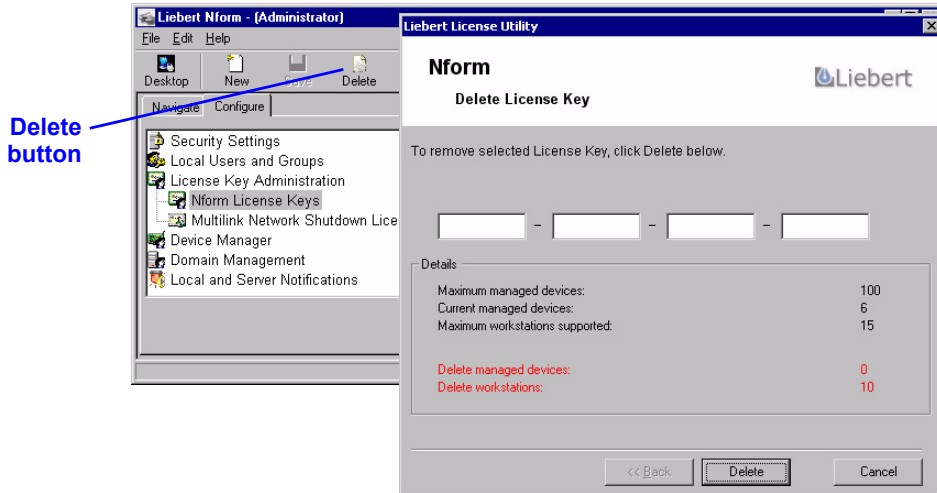
- Log on as Administrator and click on the **Configure** tab.

- In the left side of the window, double-click on **License Key Administration**, then click on **Nform License Keys**.
- In the right side of the window, highlight the secondary Nform license key you wish to delete.
- Click on the **Edit** menu at the top of the window, then click on **Delete**.
  (Instead, you may click on the **Delete** button on the toolbar.)
- This opens the Liebert License Utility window, showing the license key and the authorized number of managed devices to be deleted. To proceed, click on the **Delete** button.
- A confirmation window asks whether to continue with the deletion. Click **Yes** to delete the license key (or click **No** to cancel without deleting it).

15.2.2 Deleting the MultiLink Network Shutdown License

To remove the MultiLink Network Shutdown License:

- Log on as Administrator and click on the **Configure** tab.
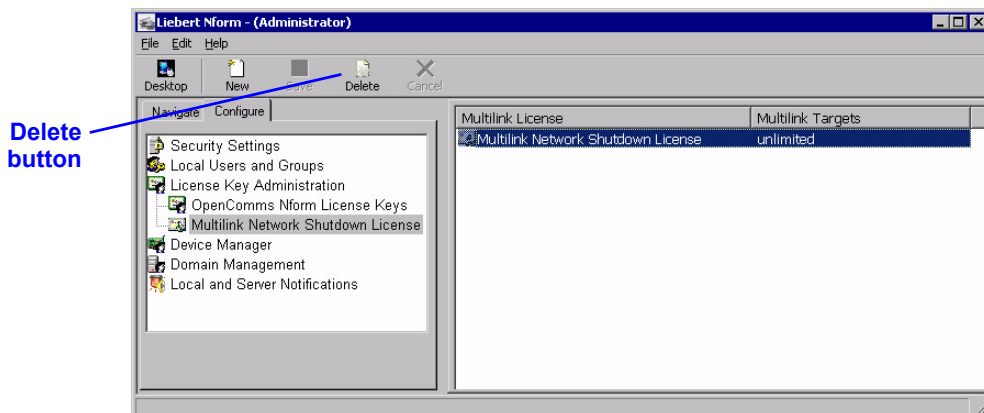
- In the left side of the window, double-click on **License Key Administration**, then click on **MultiLink Network Shutdown License**.
- In the right side of the window, highlight **MultiLink Network Shutdown License**.
- Click on the **Edit** menu at the top of the window, then click on **Delete**.
  (Instead, you may click on the **Delete** button on the toolbar.)

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This section contains the license agreement for Liebert Nform.

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 Nform Software License revision June 24, 2003

APPENDIX A - TECHNICAL INFORMATION & FREQUENTLY ASKED QUESTIONS

1. **What is a DHCP server?**

   DHCP is the acronym for Dynamic Host Configuration Protocol. This protocol allows hostnames to be allocated dynamically when computers are connected to a network. This protocol is often used to remotely grant a hostname to a computer for a limited time, as when a student uses a computer for a quarter or longer. See RFC-1541 for more detailed information. (RFCs are *Request For Comment* documents that set forth regulations on how communication occurs on the Internet. These documents are controlled by the Internet Engineering Task Force (IETF) and are available for viewing at the IETF Web site.)

2. **How do I identify possible TCP/IP port conflicts when using a UPS equipped with an SNMP card? How do I resolve the conflict?**

   TCP/IP port conflicts with port 162 can be resolved by stopping the SNMP trap service from running. This product does not support running on the same machine as a Network Management System (NMS).

   For the proper procedure to stop the SNMP services, see **14.0 - Running Nform**.

3. **What is a service?**

   A service is a process initiated at boot time that requires no user intervention to start and run. A service continues to run after the user logs off the computer.

APPENDIX B - DATA MONITORED BY NFORM

Liebert supplies a template for each SNMP device, containing data points and alarms applicable to that device. The names of data points and alarms can be changed (see **9.4.2 - Views tab**).

- **Data points** are the information Nform compiles from polling a managed SNMP device.
- **Alarms** are out-of-tolerance conditions that Nform reports to users.

Tables 17 and **18** below show sample data points and alarms for environmental and UPS units with SNMP cards. **Table 19** shows data points with sample values obtained from a UPS.

B.1 SAMPLE DATA POINTS AND ALARMS

The following tables show examples of data points and alarms for an environmental unit and a UPS.

Table 17   Sample data points and alarms - Environmental unit

Data points	Alarms	
lgpEnvTemperatureSettingDegF	High Temperature	Manual Override
lgpEnvTemperatureToleranceDegF	Low Temperature	StandbyGlycoolPumpOn
lgpEnvTemperatureSettingDegC	High Humidity	Water Under Floor
lgpEnvTemperatureToleranceDegC	Low Humidity	Humidifier Problem
lgpEnvHumiditySettingRel	Loss of AirFlow	Low Water in Humidifier
lgpEnvHumidityToleranceRel	Change Filter	Smoke Detected
lgpEnvStateSystem	High Head Pressure 1	Low Water Flow
lgpEnvStateCooling	High Head Pressure 2	Loss of Power Alarm
lgpEnvStateHeating	Compressor OverLoad 1	General Fault
lgpEnvStateHumidifying	Compressor OverLoad 2	Local Alarm1
lgpEnvStateDehumidifying	Compressor Short Cycle	Local Alarm2
lgpEnvStateEconoCycle	Compressor Low Suction Pressure	Local Alarm3
Alarms Present	Main Fan OverLoad	Local Alarm4
		StandbyUnitOn

Table 18   Sample data points and alarms - UPS unit

Data points		Alarms
lcUpsIdentManufacturer	lcUpsOutputLoad	lcUpsOverloadWarningTrap
lcUpsIdentModel	lcUpsInverterStatus	lcUpsOverloadShutdownTrap
lcUpsIdentSoftwareVersion	lcUpsAlarms	lcUpsOnBatteryTrap
lcUpsIdentSpecific	lcUpsTestBatteryStatus	lcUpsLowBatteryWarningTrap
lcUpsIdentFirmwareVersion	lcUpsOnBypass	lcUpsLowBatteryShutdownTrap
lcUpsIdentSerialNumber	lcUpsBypassFrequency	lcUpsUtilPowerFailedTrap
lcUpsIdentManufacturerDate	lcUpsBypassNumLines	lcUpsUtilPowerRestoredTrap
lcUpsBatTimeRemaining	lcUpsConfigType	lcUpsInputOverVoltageTrap
lcUpsBatVoltage	lcUpsConfigBypassInstalled	lcUpsOverTempWarningTrap
lcUpsBatCapacity	lcUpsConfigModuleCount	lcUpsOverTempShutdownTrap
lcUpsInputFrequency	lcUpsConfigAudibleStatus	lcUpsAlarmTrap
lcUpsInputNumLines	lcUpsConfigLowBattTime	lcUpsOutputOffTrap
lcUpsOutputFrequency	lcUpsConfigAutoRestart	lcUpsOutputOffWarningTrap
		lcUpsOutputOnTrap
		lcUpsOutputOnWarningTrap
		lcUpsUnixShutdownTrap
		lcUpsUnixShutdownWarningTrap
		lcUpsInputFreqErrorTrap
		lcUpsOutputOverVoltageTrap

B.2 SAMPLE VALUES FROM A UPS

The information available for monitoring varies by type of unit being monitored—the type of UPS, cooling unit or other SNMP device. **Table 19** shows an example of monitoring data points with sample values obtained from a UPS with an SNMP card.

Table 19   Sample device information available for monitoring - Example for a UPS

Data point	Sample value
lcUpsIdentManufacturer	Liebert
lcUpsIdentModel	GXT700MT-120
lcUpsIdentSoftwareVersion	2.7.3
lcUpsIdentSpecific	1.3.6.1.4.1.476.1.1.1.14
lcUpsIdentFirmwareVersion	G_X.10.02
lcUpsIdentSerialNumber	0034200295AF1T1
lcUpsIdentManufacturerDate	07DEC00
lcUpsBatTimeRemaining	0129
lcUpsBatVoltage	27
lcUpsBatCapacity	100
lcUpsInputFrequency	60
lcUpsInputNumLines	1
lcUpsOutputFrequency	60
lcUpsOutputLoad	7
lcUpsInverterStatus	2
lcUpsAlarms	0
lcUpsTestBatteryStatus	2
lcUpsOnBypass (1-unknown, 2-yes, 3-no, 4-maint)	2-yes, 3-no, 4-(maint)_1.3.6.1.4.1.476.1.1.1.1.13.1.0,3
lcUpsBypassFrequency	60
lcUpsBypassNumLines	1
lcUpsConfigType	2
lcUpsConfigBypassInstalled	2
lcUpsConfigModuleCount	0
lcUpsConfigAudibleStatus	2
lcUpsConfigLowBattTime	2

APPENDIX C - ORDERING PARTS FROM LIEBERT

The table below lists part numbers for items available from Liebert.

To obtain any item, visit the Liebert Web site at **http://nform.liebert.com** or contact your local Liebert representative, value-added reseller, or distributor.

Table 20   Nform part numbers

Item	Part Number	Description
Nform-Enterprise Software on CD-ROM (Primary license key for 5 users, 100 devices)	NFORM-EPRISE	Nform with primary license key for: • 5 concurrent users • 100 devices • Advanced Notification License • MultiLink Network Shutdown License
Nform-Business Software on CD-ROM (Primary license key for 2 users, 60 devices)	NFORM-BSNESS	Nform with primary license key for: • 2 concurrent users • 60 devices • Advanced Notification License
Nform Software on CD-ROM (Primary license key for 1 user, 30 devices)	NFORM	Nform with primary license key for: • 1 local user • 30 devices
Nform Software Version Upgrade	NFORM-UP	Upgrades Version 1.2 software to Version 2.x
30 Node License	NFORM-30N	Adds support of 30 additional devices
100 Node License	NFORM-100N	Adds support of 100 additional devices
500 Node License	NFORM-500N	Adds support of 500 additional devices
1 Concurrent User License	NFORM-1CU	Adds support of 1 additional concurrent user
5 Concurrent User License	NFORM-5CU	Adds support of 5 additional concurrent users
10 Concurrent User License	NFORM-10CU	Adds support of 10 additional concurrent users
Advanced Notification License	NFORM-ANOTIFY	Enables SNMP notifications: • SNMP Get Request • SNMP Set Request • SNMP Trap Forward Request
MultiLink Network Shutdown License	MLLKU	Allows access to MultiLink devices via Nform software

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