Liebert® Nform™ Infrastructure Monitoring Software

User Manual - Version 4

EMERSON
Network Power

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1.0 ABOUT LIEBERT® NFORM™

Liebert Nform is a software tool that monitors the condition of networked equipment, tracks alarms and other conditions, then sends notifications and performs other management actions based on those conditions.

The software may be configured to monitor and manage a wide variety of Liebert devices and other equipment. The devices may be organized into geographical or functional areas, mapped on customized floor plans and displayed graphically in a logical tree format.

Liebert Nform must be installed on a computer that acts as a server; client versions of the software may be installed on an unlimited number of workstations for remote monitoring and management.

1.1 How Do You Contact Emerson Network Power for Technical Support?

For help on setting up Liebert Nform or any other monitoring product, contact Emerson's Software Technical Applications Support Center at:

Table 1 Technical support contact information

UNITED STATES	1 800 222 5877	
FRANCE	+33 (0) 1 46 87 51 52	
GERMANY	+49 (0) 89 99 19 220	
ITALY	+39 (0) 2 98250 324	
NETHERLANDS	+31 (0) 475 503333	
UNITED KINGDOM	+44 1628403200	
EUROPE	+800 11554499	
ASIA	+800 11554499	
AUSTRALIA	1 800 147704	
NEW ZEALAND	0 800 447415	
WORLDWIDE	1 614 841 6755	
	FAX: 1 740 833 8631	
Product Information	All Liebert Products:	http://www.liebert.com
	Liebert Nform Product Information:	http://nform.liebert.com
Liebert Nform Technical Support	Liebert Nform Support Website Login:	http://applications.liebert.com/nformsa
	E-Mail for Technical Support:	liebert.monitoring@emerson.com

1.2 What is Liebert Nform?

Liebert Nform uses Simple Network Management Protocol (SNMP) and Emerson Network Power's Emerson Protocol 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. Liebert Nform will monitor and manage devices manufactured by Emerson or by other equipment makers.

Liebert 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.

1.2.1 How Does Liebert Nform Work?

Liebert Nform on a host computer communicates with managed devices using either SNMP or the Emerson Protocol to detect problems ranging from power quality to environmental conditions.

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

Liebert 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. Liebert 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

- Liebert Nform constantly monitors multiple SNMP devices made by Emerson or other manufacturers.
- In the event any alarm occurs, Liebert Nform receives an SNMP trap.
- According to configuration, Liebert 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 Liebert Nform.

1.2.2 Key Features

Table 2 summarizes important features available in Liebert Nform.

Table 2 Key features of Liebert Nform

Feature	Improvement
Dashboard View	• The system supports a user-customized Dashboard. This view allows users to quickly create a full spectrum of charts and graphs that can represent a total system view of all managed devices, a specific device and/or a group of managed devices. • Large icons display a total count of devices by each state, including a numeric value representing the total count of devices in alarm, devices with no communication and devices that are normal. • Status buttons and filters offer a quick way to select which devices to show in gadgets with customized views of devices in a particular state. Status buttons toggle between customized device status views and all devices. Filters are easy to apply in any gadget by simply entering text to search for in the device definitions, such as IP address or name.
Area/Floorplan Views	Customized views may be created to organize devices into groups or add graphic floor plans as visual reminders of where devices are located. Device icons with labels and status indicators offer a quick way to identify problem devices and their locations.
Detachable Windows	The Navigation Portal and Alarm Management Interface Window can be detached from the main software application, thus allowing the Liebert Nform Viewer to be run on multiple screens. This was specifically designed for deployment in IT Network Operation Centers (NOC).
Parametric Data Trending	All devices can be configured for trending parametric data. This trend data can be viewed within a trend graph and can be exported to a file that can be used to analyze parametric data from a system view.
Priority Status Polling	Users can define the polling priority for each managed device, allowing for quick response times on critical equipment.
Internationalization	The software supports the following languages: • English • German • Simplified Chinese • French • Spanish • Japanese • Italian Language settings are stored at each client, allowing users to specify their language of choice.
Users and Groups	By default the system comes with three (3) predefined user groups: Administrator, Power User and Operator. Users with Administrator privileges can administer users and groups for the complete enterprise. Users can also create new user groups and define the access level and rights of each group.
Audit Logging	All user actions and configuration changes are tracked and stored in a server audit log file. This gives the administrator the ability to monitor changes that are submitted to the Liebert Nform server.
Device Info Links	Devices can be configured for informational links that allow a user to create links directly in the software to display online help files and/or user manuals.
Alarm Management	Each device's alarm events have been predefined in three (3) default severity levels: Critical, Warning and Information. These are the Emerson-recommended severity levels defined in the software. The software can be configured to auto-acknowledge alarms by severity level, thus allowing intelligent processing of alarm-event data.
Additional Actions	• **Shutdown:** configuring graceful shutdown of MultiLink client computers • **Forward trap:** sending traps received to a specific computer (hostname or IP address) • **Read data:** collecting samples of data points from selected managed devices • **Write data:** changing values of selected data points based on specified alarms or events
Import Configuration Data From Earlier Versions	An import utility allows transferring previously configured data that has been exported from an earlier version of Liebert Nform (version 2.0 or later) on the same computer or a different computer. Data that can be transferred includes licenses as well as configured devices and e-mail notifications.
Liebert Rack PDU Outlet Grouping	Data from Liebert Rack PDU devices may be viewed at the PDU, branch and receptacle levels through the logical groups feature of Liebert Nform. Users may control receptacles individually or in groups—for example, turn receptacles on or off.

1.3 Who Can Benefit From Liebert Nform?

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

Liebert Nform's protection can be extended beyond equipment manufactured by Liebert to encompass other makers' SNMP devices. Liebert 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.

1.4 What is Required to Use Liebert 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 Liebert Nform's capabilities.

1.4.1 Connecting Host Computer and SNMP Devices

SNMP communication allows you to take full advantage of Liebert 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.

Liebert Nform works with a network connection and any of these types of cards:

1. SNMP card with Web capability such as the Liebert IntelliSlot® Web Card family
2. SNMP card without Web capability, such as the Liebert IntelliSlot SNMP card

1.4.2 Requirements for Installing Liebert Nform

Before beginning installation, review these requirements:

The prospective user must have:

- 2 GHz dual processor or better
- 2 GB RAM for server; 1GB RAM for Viewer only
- 3 GB free disk space for server; 1 GB free disk space or better for Viewer
- The Liebert 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® XP with SP2 (64-bit), Windows XP with SP3 (32-bit), Windows Server® 2003 with SP2, Windows Vista® with SP1 or later, Windows Server 2008 with SP1 or later, Windows 7 or Windows Server 2008 R2.
- A monitor capable of 1280x1024 or higher screen resolution with a 16 Bit (or better) color setting
- 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 UDP port 162 for receiving traps
- Availability of UDP port 47808 for read-write access to devices with Emerson Protocol
- Availability of TCP port 3442 for remote viewer connections
- Ability to access the following Web sites for Software Assurance support:

  http://applications.liebert.com/nformsa/

  https://publicservices.liebert.com/nformsa/

  To test access to each of these sites, click on a link above or paste the URL into your browser.
  - The first link will take you to the Liebert Nform Support Login page.
  - The second link will display a short message about the Software Assurance web service and then take you to the Liebert Nform Support Login page.
  - If either link fails, contact your network administrator for assistance to verify network connectivity and firewall settings.
- TCP/IP connectivity throughout the network

NOTE

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

If you need help registering for Software Assurance, contact Emerson (see **Table 1 - Technical support contact information**).

If upgrading from earlier versions (see 2.4 - Upgrading From Older Versions of Liebert Nform):

- Upgrading your configuration is possible for version 2.0 or later.
- For versions prior to 2.5, configuration files must be exported manually using an export utility from the Liebert Nform 4 CD or the export feature in version 2.5.002 or later.
- The upgrade from version 2.5 or later automatically imports all configuration files, including licenses.

1.4.3 Licensing

Liebert Nform may be installed as a full package or as a Liebert Nform remote client.

- The full package consists of the **Nform Service** and the **Nform Client**.
- The Liebert Nform remote client consists only of the **Nform Client**.

The license delivered with Liebert Nform allows users to configure the software to monitor and manage devices from the server and an unlimited number of remote clients. Users have the option of expanding Liebert Nform's network capabilities with additional licenses (see **Table 12**). The delivered license also allows users to configure Liebert Nform to perform data logging and forward traps to a network management site.

Liebert Nform can monitor any part of a network. Its functionality permits it to monitor any SNMP-enabled device or any device with Emerson® Protocol that can be contacted via the local network or the Internet. These devices include those made by Emerson and by other manufacturers (with Device Type Definitions available from Emerson—see **18.5.1 - Tools Menu - Install DTD**).

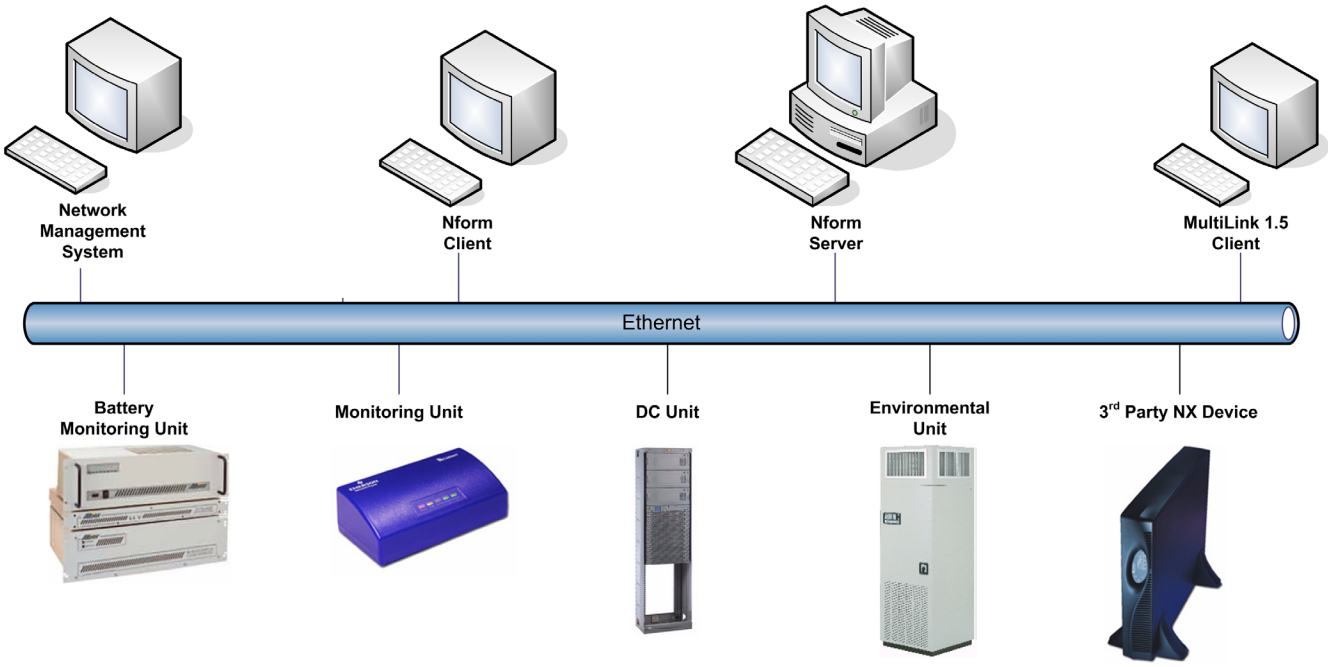
1.5 Sample Liebert Nform Configuration

Example of Liebert Nform on a Network

Figure 1 shows one possible configuration of a Liebert Nform server that is monitoring and managing various Liebert and non-Liebert devices. The network also has Liebert Nform client software installed on another computer and a network management system.

When an alarm is received, Liebert Nform can send e-mail notifications, append alarm data to a file and run scripts.

Figure 1 Sample Liebert Nform configuration



2.0 INSTALLING THE SOFTWARE

This section explains how to install Liebert Nform, from the Web from a distribution CD.

NOTE

*For details on **setting up** an SQL Server database for a new Nform installation, see the ReadMe file in the SQL folder on the CD (e.g., D:\sql\ReadMe.txt).*

*For details on **upgrading** an SQL Server database from an existing Nform installation, see the ReadMe file in the SQL upgrade folder on the CD (e.g., D:\sql\upgrade\ReadMe.txt).*

2.1 Installation

1. Insert the Liebert Nform CD in the CD drive. The Setup wizard starts automatically.

   Note: If the Setup wizard does not open automatically, launch **Setup.exe** from the CD. One way to do this is: Click on the **Start** button, then **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.

2. After viewing the Welcome and Readme information, read the Liebert Nform License agreement.
   - If you accept the terms and conditions of the license agreement, click **I accept the terms in the License Agreement** and then click **Next**.
   - If you do not accept the terms and conditions, click **I do not accept the terms in the License Agreement** and then click **Cancel** to abort the installation.

3. In the Select Setup Type window, shown below, choose the type of installation:
   - **Nform Full Package**

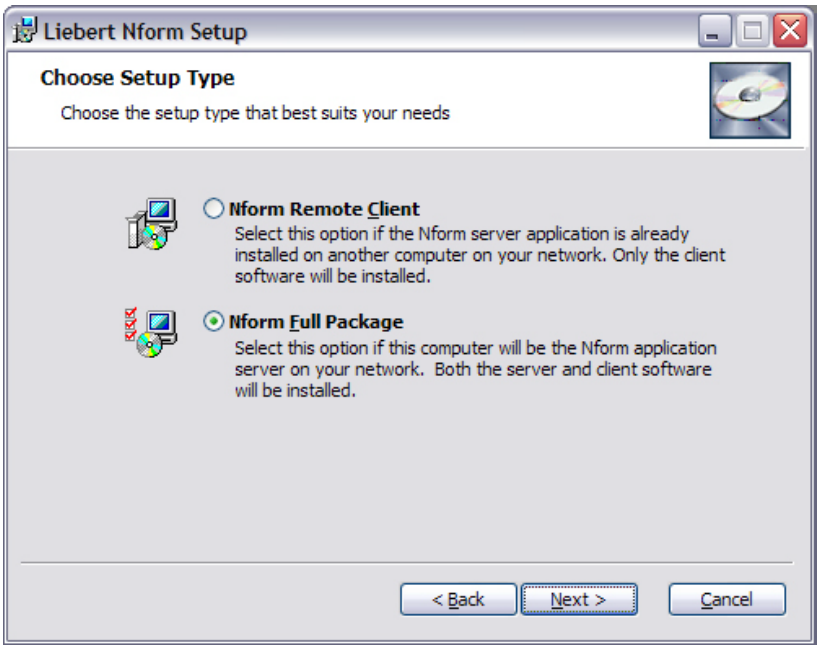
     For the application server—choose this for the computer that will be the Nform application server on the network or for an installation with a single computer.

     This option will install both server and client software.
   - **Nform Remote Client**

     For client workstations—choose this option if the full package is already installed on another computer on the network.

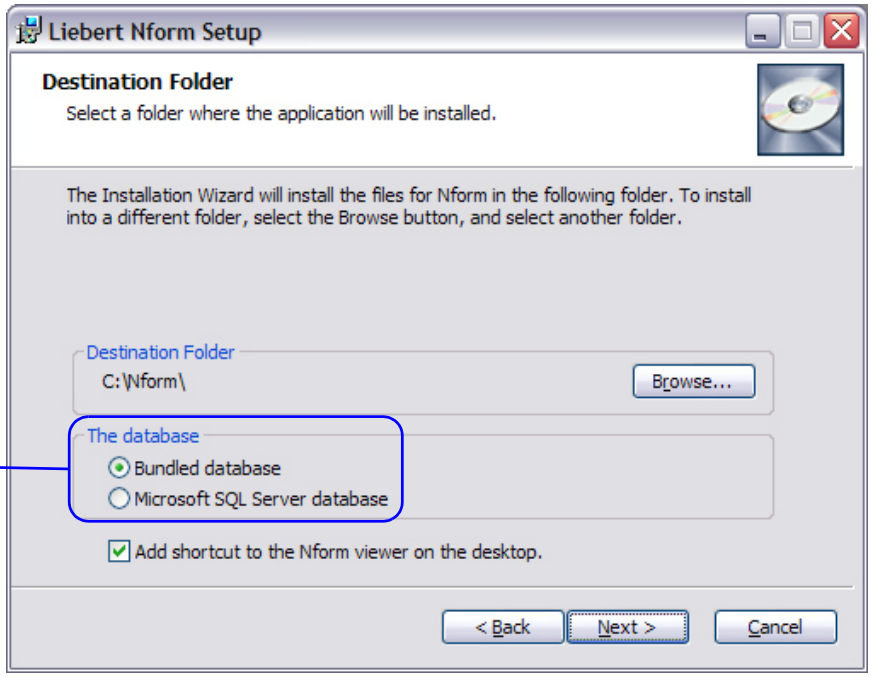
     This option will install client software only.

4. Click **Next**.



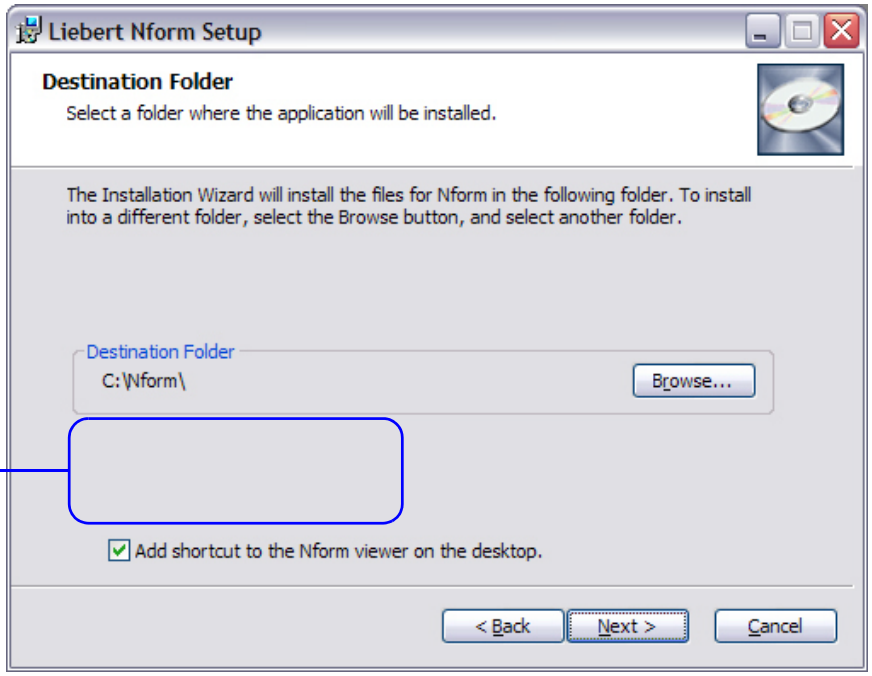
5. In the Destination Folder window, shown below:
   - Emerson recommends using the default location for software installation. (To select a different location, click on the **Browse** button and choose the location.)
   - (If **Nform Full Package** selected in **Step 3**) Choose the type of database to be used:
     - **Bundled Database** (default)
     - **Microsoft SQL Server Database**
   - To create a program shortcut on the computer desktop, place a check mark ☑ in the **Add shortcut to the Nform Viewer on the Desktop**.
6. Click **Next**.

INSTALLATION TYPE
Nform Full Package
selected in Step 3



Nform Full Package installation only:
Select type of database to be used

INSTALLATION TYPE
Nform Remote Client
selected in Step 3



Nform Remote Client installation only:
Note the database type does NOT appear for this type of installation

7. In the Ready to Install the Application window, review the details and click **Next** to begin installing the software. A dialog box displays a progress bar.
8. A message indicates that installation was successful. Click **Finish** to exit the Setup wizard.

Upon initial login, the Nform System Startup wizard will be activated to complete the setup process (see **2.2 - Registering for Software Assurance** and **2.3 - Nform System Startup**).

2.2 Registering for Software Assurance

Registering for Software Assurance offers added benefits such as around-the-clock technical support both on the Liebert Nform support Web site and by phone, as well as access to software updates, technical resources and new and updated device definitions for products to be monitored.

The startup process described in **2.3 - Nform System Startup** provides a quick way to register. You may skip registration during the startup process if you prefer to use the software for a temporary evaluation period and register later.

For systems that are not connected to the Internet or are otherwise quarantined, follow these steps and proceed to **2.3.4 - Registering Offline (Quarantined) Systems**.

2.2.1 Evaluation Installation

Liebert Nform may be installed in a 90-day evaluation installation mode by:

- not entering a product license key,
  or
- entering a product license key but without registering for Software Assurance

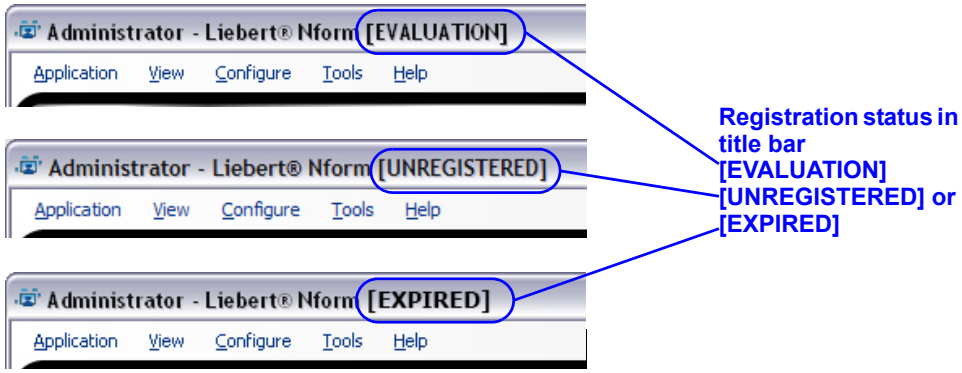
If **no product license key is entered**, the evaluation setup permits monitoring up to five devices until a base license key is entered or 90 days, whichever comes first. If no product license key is entered within 90 days, Liebert Nform's monitoring capability will reduce to one device. Liebert Nform screens will display the word *[EVALUATION]* in the title bar. If no license key is entered, the evaluation setup permits monitoring up to five devices; you will not have access to software updates and other resources.

If you entered a product license key but **did not register for Software Assurance**, you may configure as many devices as your license permits and monitor them for 90 days; you will not have access to software updates and other resources.

If the Nform system is not registered, you will be prompted about registration in the following ways:

Title Bar

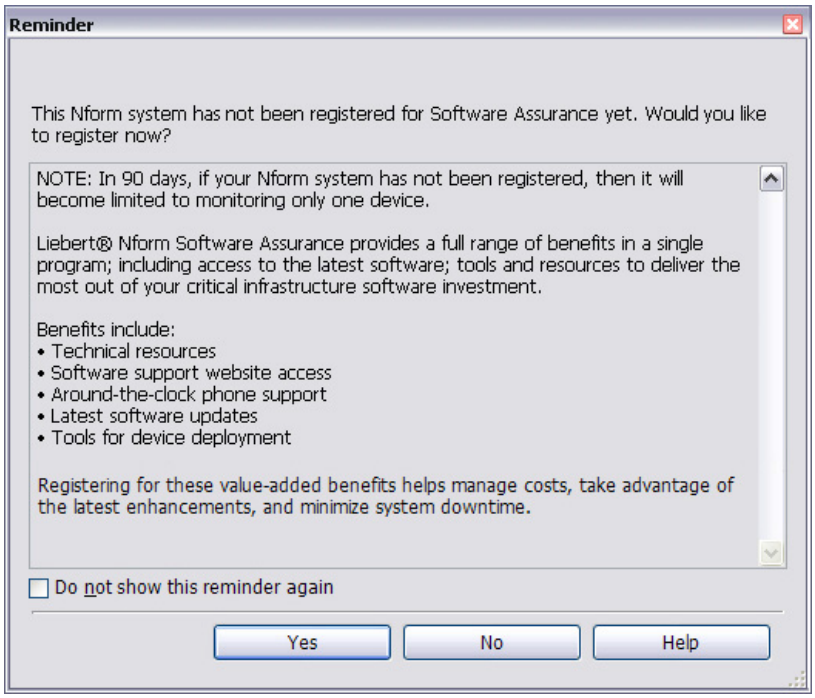
- The title bar displays a reminder in brackets:
  - **[EVALUATION]** if you have not yet entered your Nform license keys or have not registered for Software Assurance
  - **[UNREGISTERED]** if you have not yet registered your Nform system or
  - **[EXPIRED]** if you need to renew your subscription.



Reminder Window

- If the Nform system has never been registered, a Reminder window appears when a user with permission to manage licenses logs in to a server.

Reminder window if Nform system is not registered or about to expire
(appears after Viewer is opened by user with permission to manage licenses)



To register your Liebert Nform software after the startup process described in **2.3 - Nform System Startup**, perform one of the following (when logged in as a user with permission to manage licenses):

- Click **Yes** in the Reminder window shown above, then refer to **5.2.1 - Enter Customer Information for Nform and Software Assurance** for details on the window that opens.
- Click on the Application menu, then **Register Product** at any time to begin the registration process (see **5.2 - Register Product** for details).

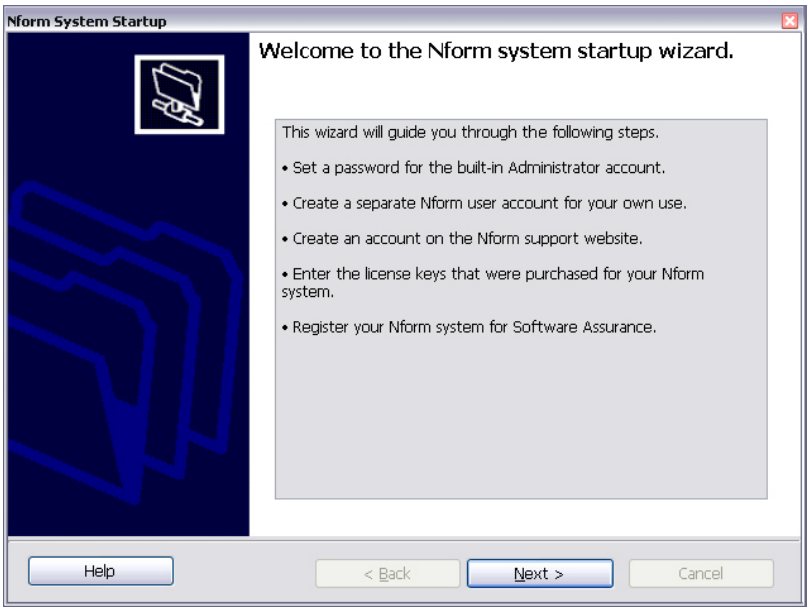
2.3 Nform System Startup

The Nform System Startup process described in this section allows you to set up administrator access to Liebert Nform, enter any license keys purchased with the software and register those license keys for Software Assurance. Software Assurance offers added benefits such as software updates and technical support. See **2.2 - Registering for Software Assurance** for more information.

FOR INITIAL STARTUP ONLY: User Name = “Administrator” (No Password)

A built-in **Administrator** account with no password is created during installation; this account has full access to all features and can add users with varying levels of access. To protect configuration settings, all users require a password.

The Nform System Startup wizard opens immediately after the first login to the Nform Viewer while the Administrator password is not yet assigned.



The startup wizard guides you through these steps:

Step	For details, see:
1. Set a password for the Administrator account (the built-in account created during installation).	**2.3.1 - Set Administrator Account Password**
2. Create a separate Nform user account with administrator privileges. 3. Create an account on the Liebert Nform Support Web site (with the user account information from **Step 2**).	**2.3.2 - Enter Customer Information for Liebert Nform and Software Assurance**
4. Enter license keys purchased with your system. 5. Register your system for Software Assurance using the license keys entered in **Step 4**.	**2.3.3 - Enter License Keys and Register**

Emerson recommends completing all these steps immediately after installation to simplify the setup process. The only step required at this time, however, is setting an Administrator password. The remaining steps may be completed later. To do these steps later, see **5.2 - Register Product**.

Start the Wizard

To launch the Nform System Startup wizard:

- Start the Nform Viewer.
- On initial startup, the user name is **Administrator** and no password is required. The user may need to enter the hostname or IP address of the Liebert Nform server on initial startup.
  - User name: **Administrator** *(box filled in for initial startup)*
  - Password: *(None required for initial startup)*
  - Server: **localhost** *(box filled in if the Viewer is started on the Nform server)* or the hostname or IP address of Nform server where **Nform Full Package** resides
- The Nform System Startup wizard opens. Proceed to the next section, **2.3.1 - Set Administrator Account Password**.

2.3.1 Set Administrator Account Password

After the Nform System Startup wizard opens:

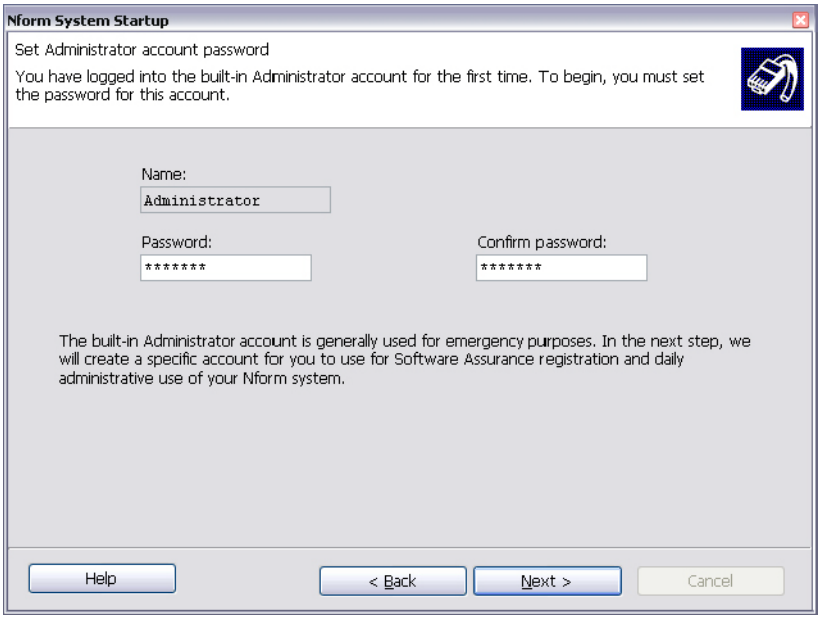
- At the welcome screen, click **Next**.
- The Set Administrator Account Password window opens, as shown below.

  The Administrator has full access to all features of the software and is generally reserved for use in emergencies.

NOTE

A password must be set for the built-in Administrator. For security, it cannot be skipped.

Emerson® recommends creating at least one separate user account for daily use and for Software Assurance registration, as described in the next section, **2.3.2 - Enter Customer Information for Liebert Nform and Software Assurance**.



- Enter a password in the Password box, then re-enter it in the Confirm Password box.

  The password is case-sensitive and must consist of two to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.
- Click **Next**.

2.3.2 Enter Customer Information for Liebert Nform and Software Assurance

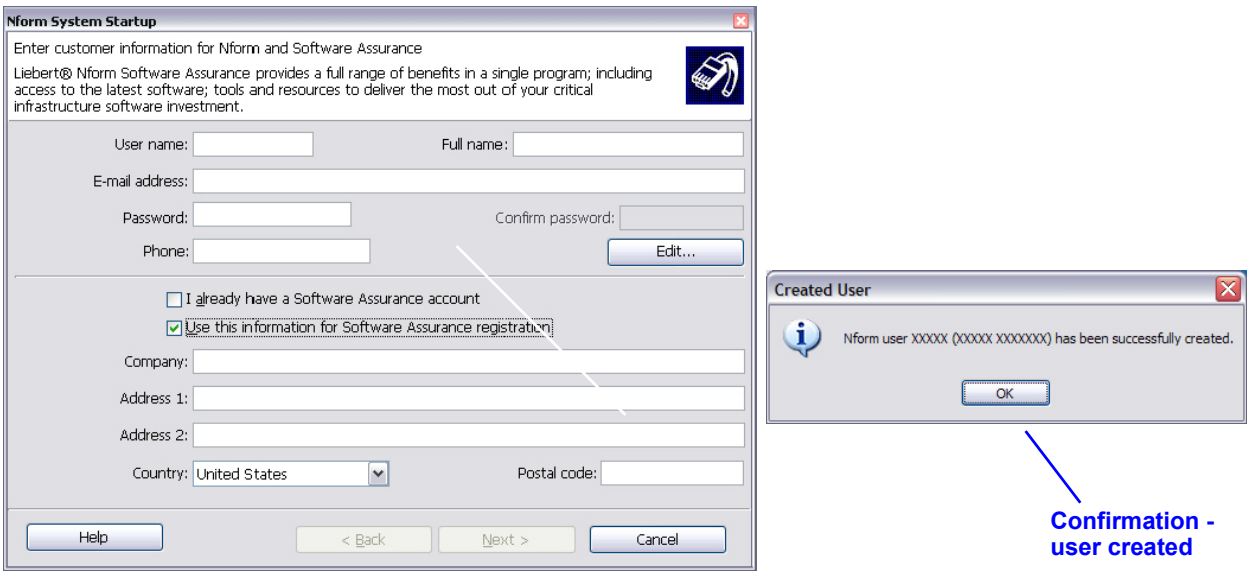
The Enter Customer Information window allows you to create a second administrative user account, in part to act as a backup to the built-in Administrator account in case one of the passwords is lost or forgotten. If you register for Software Assurance (SA), the second administrative user account will be used to generate a technical support account on the Nform Support Web site.

Create a Separate Administrative User Account

The top portion of the window allows you to create a user account for day-to-day administration of Liebert Nform. This step is highly recommended even if you are just evaluating the software and plan to register later. This account will be assigned to the Administrators group (see **13.1 - Add Individual Users**) with full access to all features (same as built-in Administrator).

To create a new administrative user account, complete these fields:

- **User Name**: Enter a user name for the new account. This will be used to log on to Liebert Nform.
- **Full Name**: Enter the person's name to identify the user.
- **E-mail Address**: Enter the person's e-mail address. This will be used to log onto the Nform Support Web site.
- **Password**: Enter a password, then re-enter it in the Confirm Password box. The password is case-sensitive and must consist of six to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.
- **Phone**: Enter the user's telephone number, including area code. This field is optional.
- To set up additional options for this user account, such as alternate contact information, click the **Edit** button to open the User Properties window (see **13.1 - Add Individual Users**).



Create a Related Account for Software Assurance

By default, **Use this information for Software Assurance registration** is checked to make it easy to register your product for Software Assurance. This option creates an account on the Nform Support Web site using the information at the top along with the company information at bottom. This Web site account will be used to register your product license keys so you may receive the full benefits of the Software Assurance program. You may skip this step if you prefer to register later.

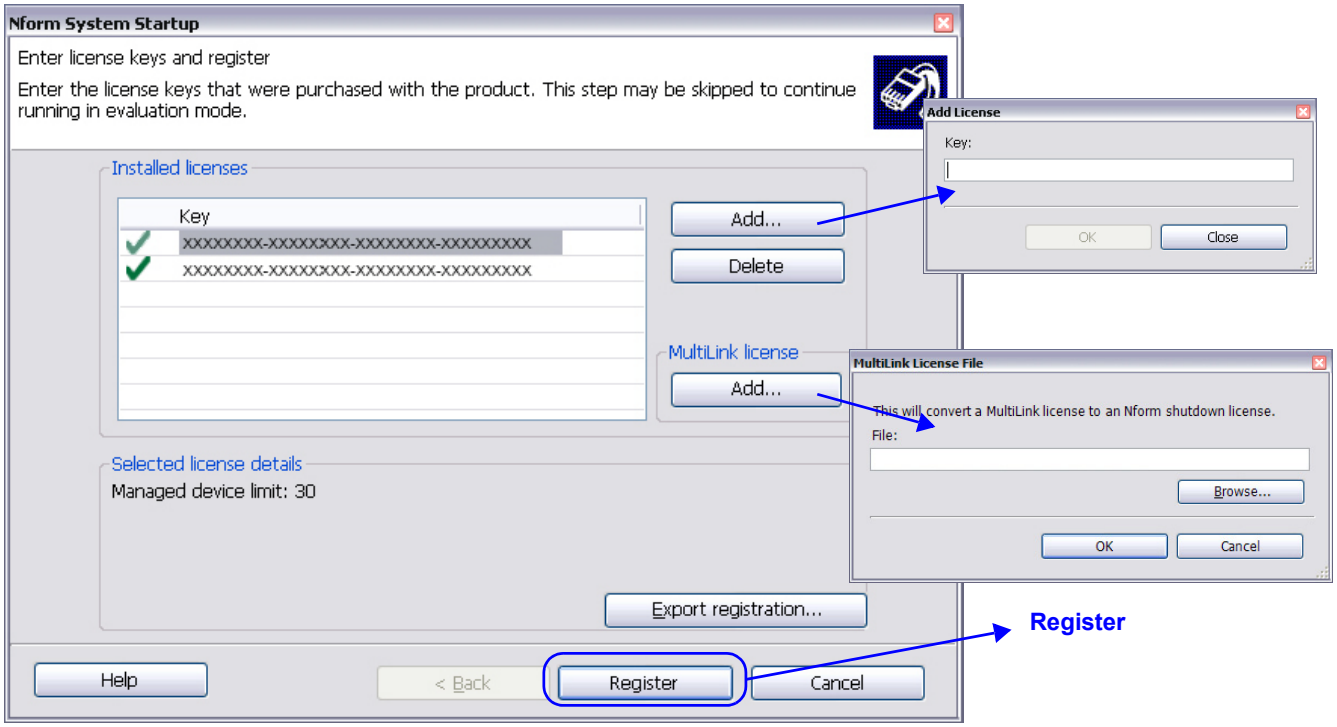
- To register, check **Use this information for Software Assurance registration** and enter the following information. **NOTE:** This information will not be distributed to any outside company.
  - **Company:** Enter your company name.
  - **Address 1 and Address 2:** Enter street address or P.O. box and city.
  - **Country:** Choose the country from the drop-down list.
  - **Postal code:** Enter a postal code as needed for your location.
- To use this or an existing account for another Nform installation, check **I already have a Software Assurance account**. The e-mail and password entered above will be used for the SA account.
- To register later, remove the check mark from the **Use this information for Software Assurance registration** box.
- Click **Next**. A confirmation window indicates whether a user was created (above right). Click **OK**.

2.3.3 Enter License Keys and Register

The final step in the startup wizard is to enter any license keys purchased with Liebert Nform.

Emerson recommends entering these keys now to simplify the setup process and proceed with registration.

This may be done at a later time; however, the system will operate in evaluation mode until a base license key is entered. See **4.4 - Enter the License Key**.



If no product license key is entered, Liebert Nform will monitor up to five devices until a base license key is entered or 90 days, whichever comes first. If no product license key is entered within 90 days, Liebert Nform's monitoring capability will reduce to one device. Liebert Nform screens will display the word *[EVALUATION]* in the title bar. If no license key is entered, the evaluation setup permits monitoring up to five devices; you will not have access to software updates and other resources.

If you entered a product license key but did not register for Software Assurance, you may configure as many devices as your license permits and monitor them for 90 days; you will not have access to software updates and other resources.

To install a Liebert Nform license key:

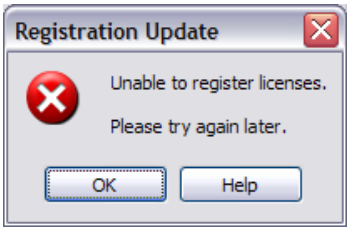
1. In the Licenses window, click the **Add** button at the top right. (For details on using the **Add** button under MultiLink License, see **4.4.2 - Add a Liebert MultiLink 1.5 Shutdown License**.)
2. Read the license agreement, and click **I accept** to continue.
3. In the Add License window, enter the license key from the sticker on the CD case or the certificate provided by Emerson, then click **OK**. There is no need to enter hyphens (-) in the license key.
4. If you purchased additional licenses, repeat **Steps 1** to **3** to install each license.

   After installation, the license key numbers appear in the Licenses window or may be viewed through the Help menu. See **4.4.3 - View License Key Information**.
5. Click the **Register** button to initiate registering the Nform system.

NOTE

*To register the product offline (manually), refer to **2.3.4 - Registering Offline (Quarantined) Systems** for details on using the **Export Registration** button to create an encrypted file for manual registration.*

6. A confirmation dialog box appears if registration was successful. The following error message appears if the licenses could not be registered.



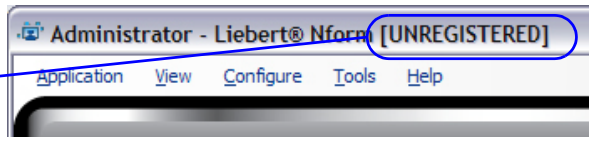
Registration Notifications

If a product license key is entered, but Liebert Nform is not registered, the software will monitor the number of devices on the license for 90 days. The software will display reminder prompts about registering the software similar to the window below. If not registered within 90 days, Liebert Nform will reduce monitoring to one device.

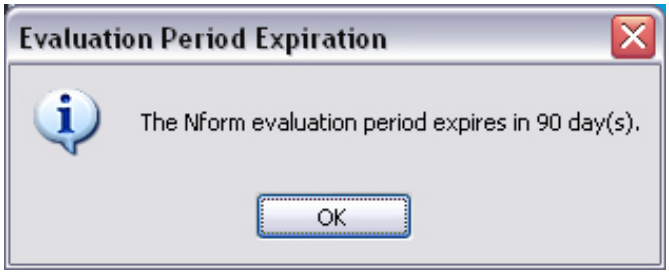
The title bar displays a reminder in brackets:

- **[UNREGISTERED]** if you have not yet registered your Nform system or
- **[EXPIRED]** if you need to renew your subscription.
- **[EVALUATION]**

Registration status in title bar [UNREGISTERED] or [EXPIRED]



This window is displayed if no product license has been installed

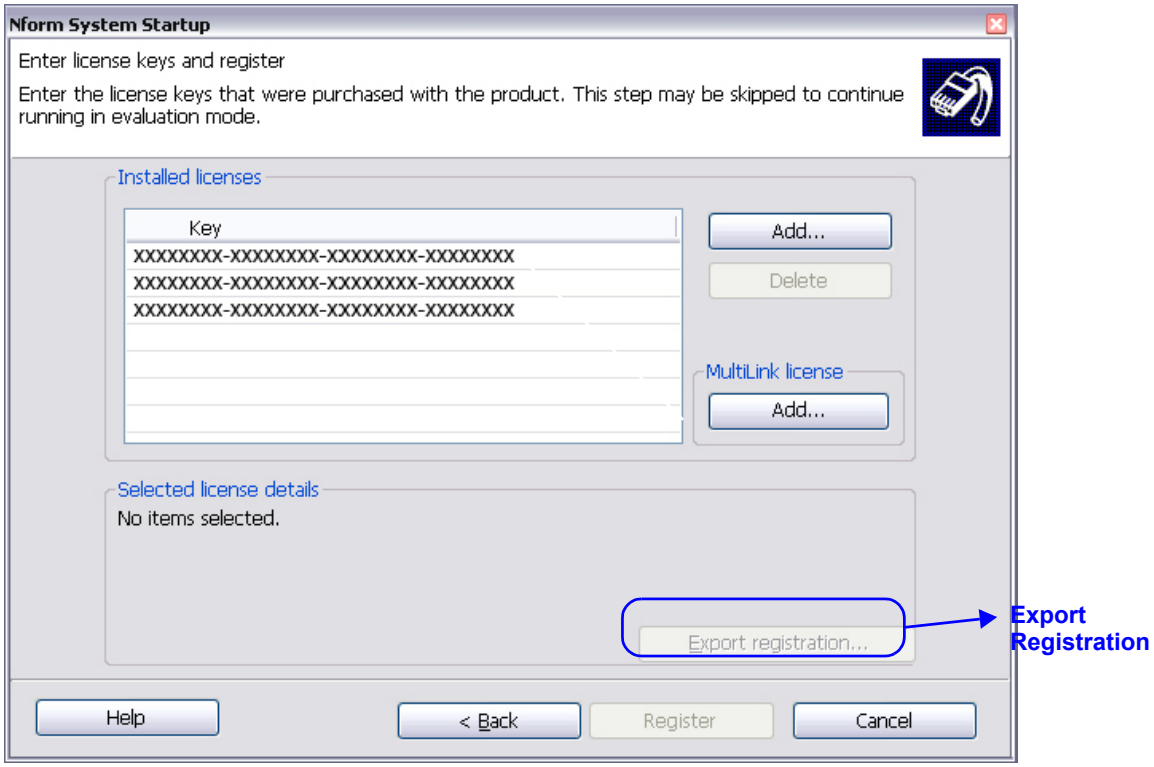


2.3.4 Registering Offline (Quarantined) Systems

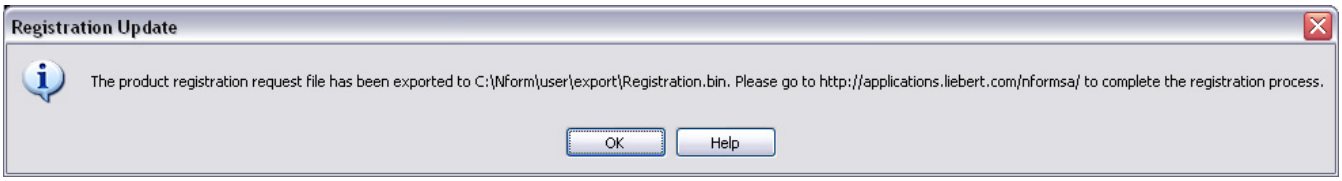
For systems that are not connected to the Internet or are otherwise quarantined, follow these steps to complete the registration process. This involves generating a registration file to take to another computer, one that is online, registering at the Liebert Nform site on that computer, then generating a file to enter in the Nform installation on the offline computer.

NOTE
Registration may be delayed for 90 days. During that time, Liebert Nform will display reminders to register the software installation.

1. **Export the registration file.**
   - After entering the appropriate license keys (**2.3.3 - Enter License Keys and Register**), click the **Export Registration** button as shown below.

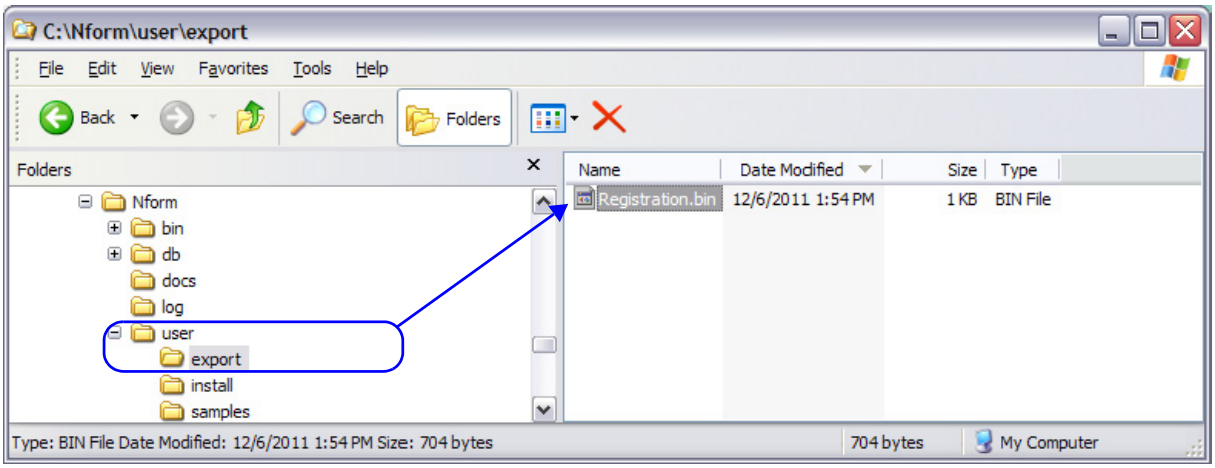


   - The following Registration Update window displays a message confirming the creation of a product registration request file and its location, along with the URL to complete the process:

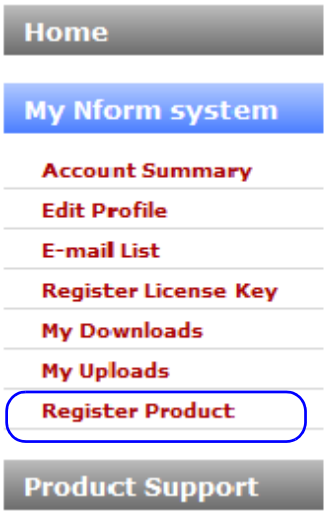


   - The product registration request file is called **Registration.bin** and may be found on the same machine where the Viewer is running in the **export** subfolder of the **user** folder. In this example, the full path is **C:\Nform\user\export**.
   - The URL to visit is **http://applications.liebert.com/nformsa/**.

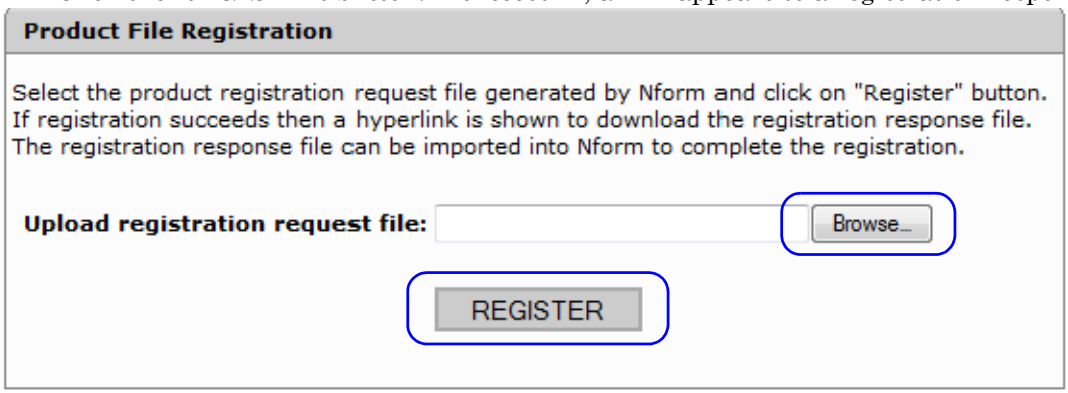
2. **Copy product registration request file to an Internet-enabled computer.**
   - Navigate to the product registration request file called **Registration.bin**, which may be found in the **export** subfolder in the **user** folder on the machine where the Viewer is running.



3. **Visit the specified Nform SA site (http://applications.liebert.com/nformsa/) on a different, Internet-enabled computer.**
   - Click on **Register Product** in the My Nform System menu, as shown below.

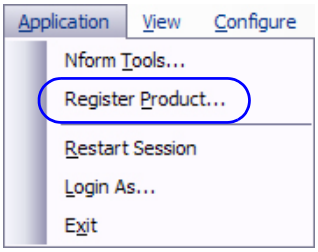


4. **Upload the exported product registration file.**
   - Click on the **Browse** button and locate the product registration file **Registration.bin**, which was exported in **Step 1**.
   - Click the **REGISTER** button. If successful, a link appears to a registration response file.

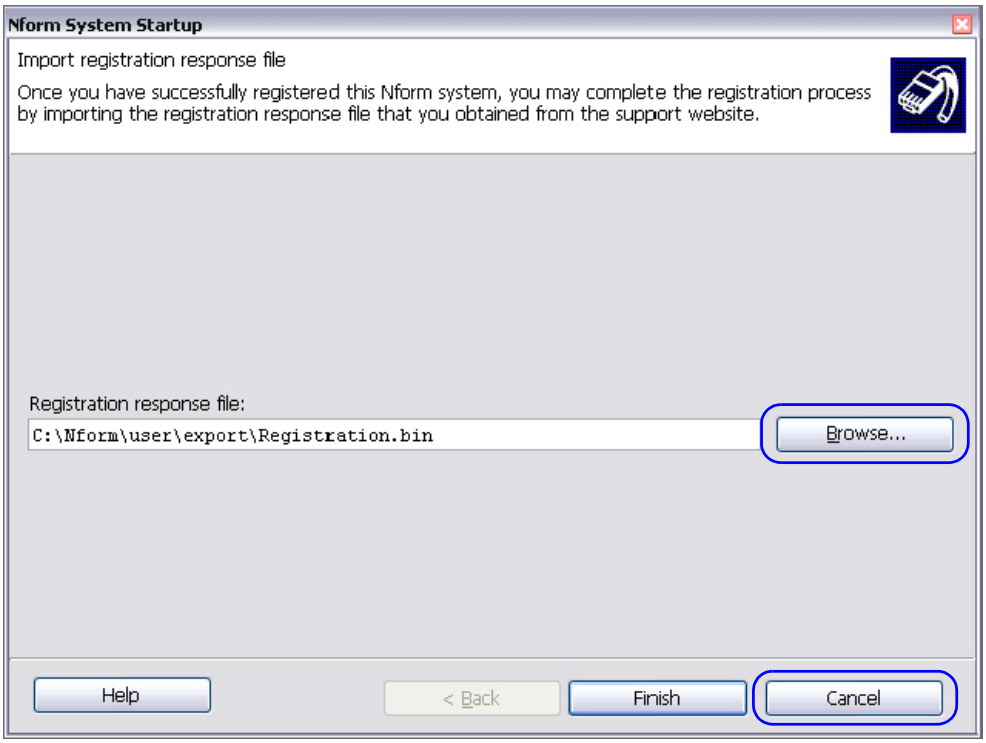


5. **Download the registration response file and copy it to the Nform system.**
   - Click on the link to download the response file for import into the Nform system.
   - Copy that file to the offline computer where Nform is installed.

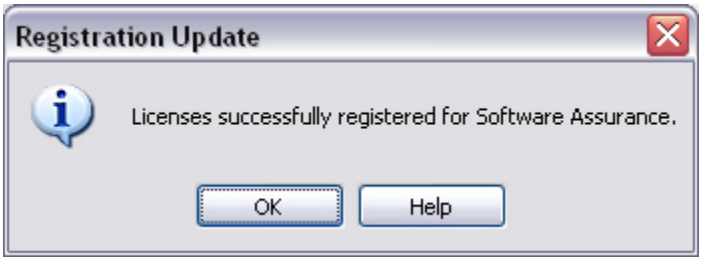
6. **Open Liebert Nform on the offline computer system to complete the registration.**
   - Click on the **Application** menu, then **Register Product.**



- Click the **Browse** button to locate the registration response file, which was downloaded from the Nform SA site in **Step 5**.



- Click **Finish.**
- The Registration Update window displays a message indicating whether the registration was successful.



2.3.5 Adding Subsequent Licenses

If another license for either Liebert Nform or Liebert MultiLink® is added to a system without an internet connection, the steps in **2.3.4 - Registering Offline (Quarantined) Systems** must be performed for the new license. Liebert Nform will display the reminder below.

Systems that are connected to the Internet will get the new license registered automatically as detailed in **2.3.3 - Enter License Keys and Register**.

2.4 Upgrading From Older Versions of Liebert Nform

The configuration from earlier versions of Liebert Nform (version 2.0 or later) can be transferred to new installations. The upgrade and transfer process requires exporting data from the Liebert Nform 2.X application.

The export can be done either of two ways:

- Use the export feature from the **File** menu in the Liebert Nform 2.5.002 or later version (see **2.4.1 - Use the Export Feature in Liebert Nform 2.X**), or
- Run the **export_utility.exe** program in the **Upgrade** folder on the Liebert Nform 4.X CD (see **2.4.2 - Use the Export Utility from the Liebert Nform 4 CD**).

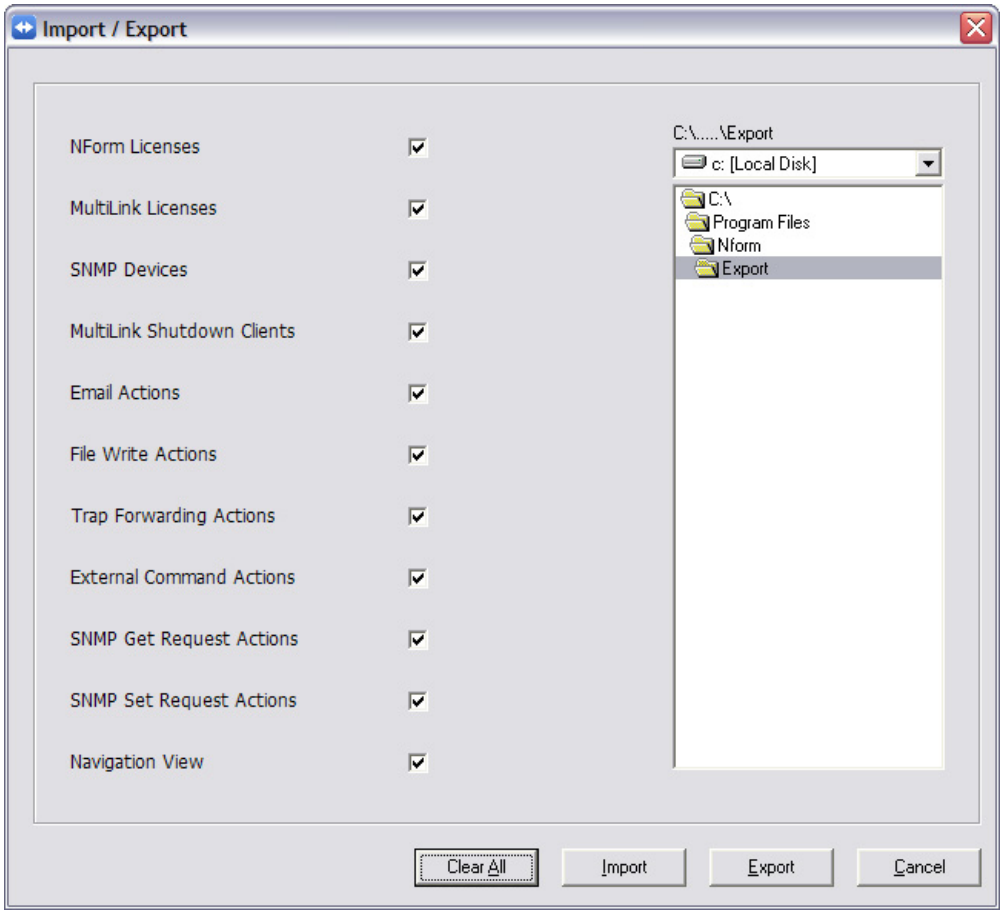
NOTE

*After upgrading from an earlier 4.x version of Liebert Nform, users with permission to manage licenses (see **13.2 - Assigning Users to Groups**) will see the Reminder window described in **2.2 - Registering for Software Assurance** on the first login.*

2.4.1 Use the Export Feature in Liebert Nform 2.X

To use the export feature in Liebert Nform version 2.X:

- Start the Viewer, making sure you have access to the import/export function.
- Click on the **Configure** tab.
- Click on the **File** menu, then choose **Import/Export**.



- Click to place a check mark ☑ next to each type of data you wish to export, or click **Select All** to check all boxes. (Click **Clear All** to remove all check marks.)

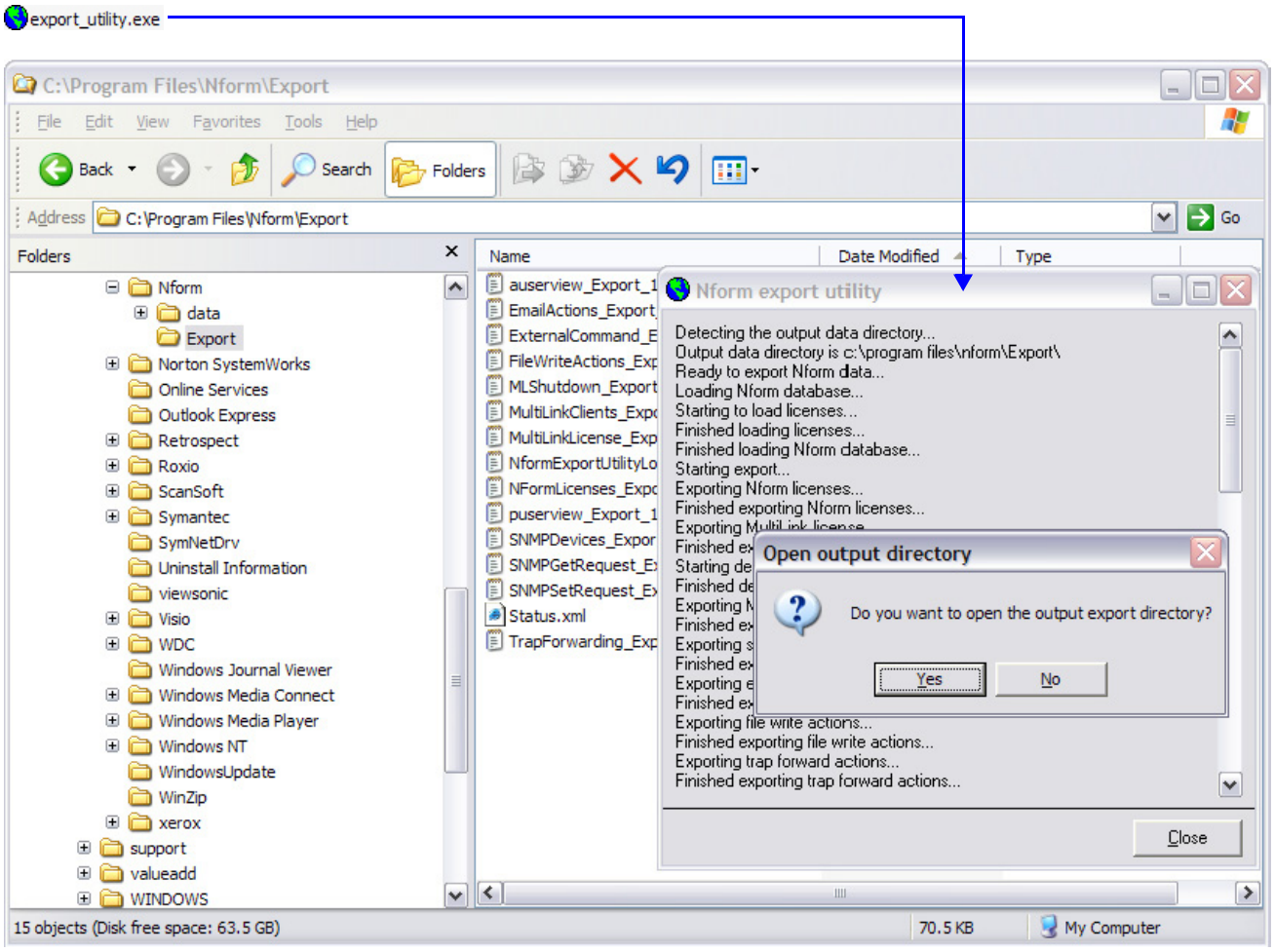
  The exported data that will be used for the upgrade includes:

  - Liebert Nform license keys
  - Liebert MultiLink shutdown licenses
  - Managed devices
  - Shutdown clients
  - E-mail actions
- The tree at right displays the location where the export files will be saved. If desired, select a different location.
- Click the **Export** button to create text files of all selected data.
- Check to make sure the files are successfully exported, then copy all export files to the **Export** folder in the **Program Files** folder on the Nform 4 server.

2.4.2 Use the Export Utility from the Liebert Nform 4 CD

To run the export_utility.exe program that may be found in the Upgrade folder on the Liebert Nform 4 CD:

- Run the program called **export_utility.exe**, which may be found in the **Upgrade** folder on the Liebert Nform 4 CD. (Double-click on the file or click the **Start** button, then click **Run,** enter the full path or **Browse** to locate the file, then click **OK**.)
- Click on the **File** menu, then choose **Import/Export**.



- The Nform Export Utility displays steps executed during the export process, then a confirmation window asks whether you wish to open the folder to view the exported files. Click **Yes** to do so.

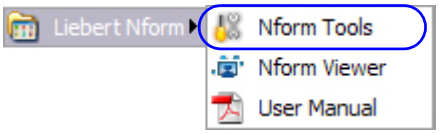
  The exported data that will be used for the upgrade includes:

  - Liebert Nform license keys
  - Liebert MultiLink shutdown licenses
  - Managed devices
  - Shutdown clients
  - E-mail actions
- Check to make sure the files are successfully exported, then copy all export files to the **Export** folder in the **Program Files** folder on the Nform 4 server.

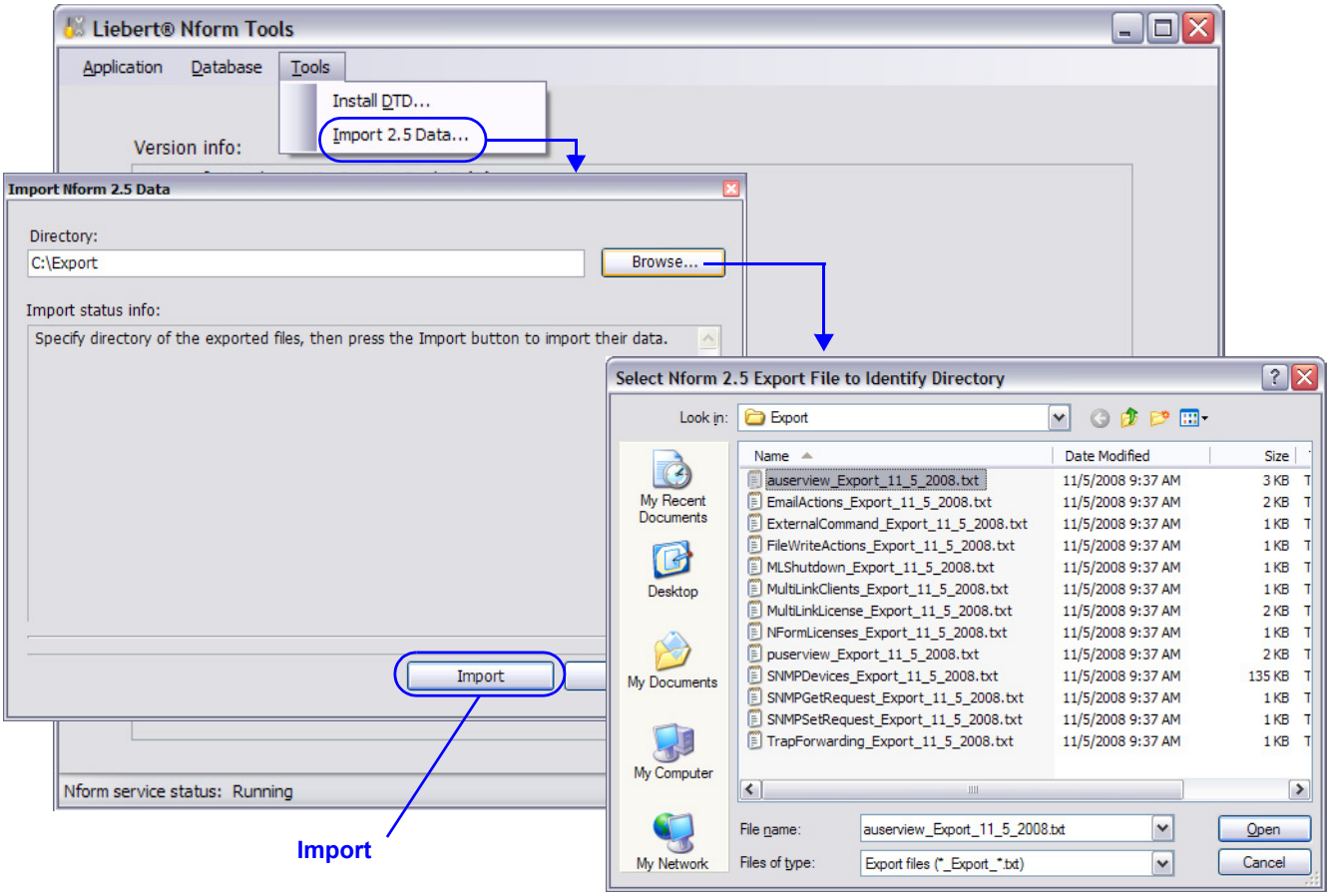
2.4.3 Import Exported Data from a Different Server

If Liebert Nform 4 will be installed on a different server, install it, create a temporary folder for the export files, then use the Nform Tools application (also see **18.0 - Using Nform Tools**):

- Install Liebert Nform 4 as described in **2.1 - Installation**.
- Create a temporary folder on the Nform 4 server and copy the export files from the Export folder from the program folder where Liebert Nform 2.X was installed.
- On the Liebert Nform 4 server, open the Nform Tools window. To do this, click on the **Start** button, then click on **Programs**, **Liebert Nform** and finally **Nform Tools**.



- In the Liebert Nform Tools window (below), click on the **Tools** menu, then on **Import 2.5 Data**.
- In the **Directory** box, enter the full path or click the **Browse** button to locate the folder containing the exported files, then click **Open**.



- Click **Import**. The import utility will temporarily stop the Nform service and import the appropriate files—the service will restart automatically when the Tools application is closed.
  A message confirms the process is complete.
- When finished, close the Tools application by clicking on the **Application** menu, then **Exit** (see **18.3.2 - Application Menu - Close Nform Tools**).
  The Nform service will be restarted automatically on exit.

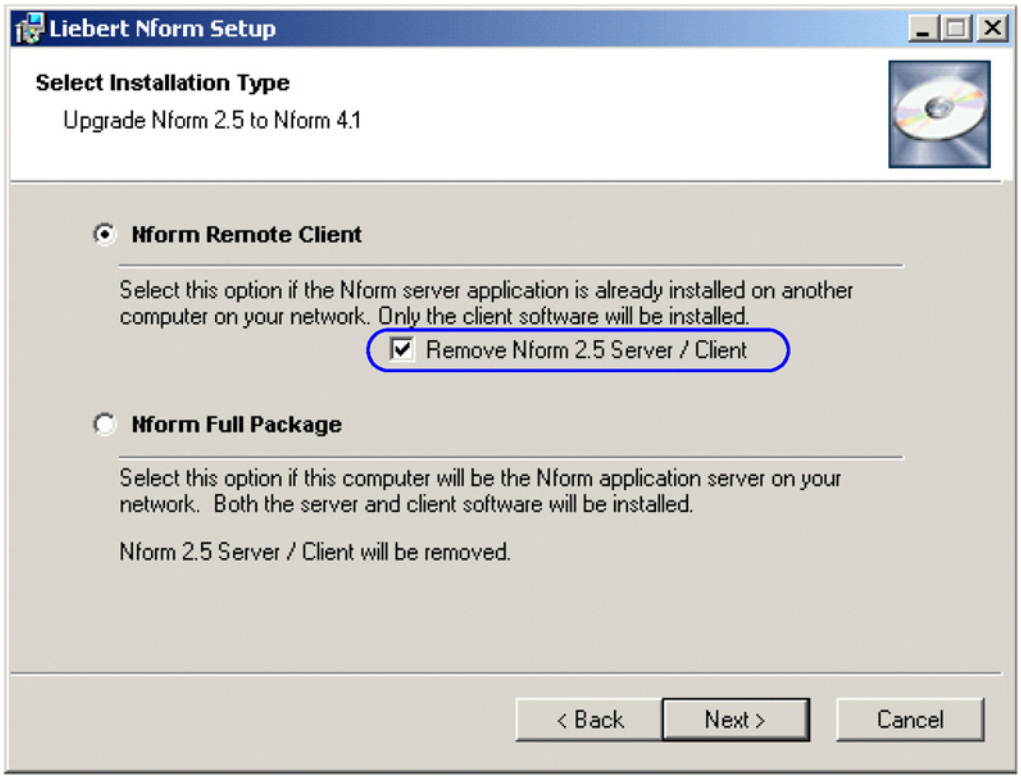
2.4.4 Import Exported Data From the Same Server

If Liebert Nform 4 will be installed on the same server, the installation will automatically detect the presence of the Liebert Nform 2.X application, import the data from the export folder (license keys, managed devices, shutdown clients and e-mail actions), then remove the Liebert Nform 2.X application.

NOTE
The export MUST be run manually for the upgrade to import data properly from the Liebert Nform 2.X application.

A copy of the Liebert Nform 2.X data files and exported files will be saved.

- Install Liebert Nform 4 as described in **2.1 - Installation**.
- If you select the Nform Remote Client Only option on a computer running a Liebert Nform 2.X client, server or both, you will have the option to uninstall the Nform 2.X client or server software automatically.

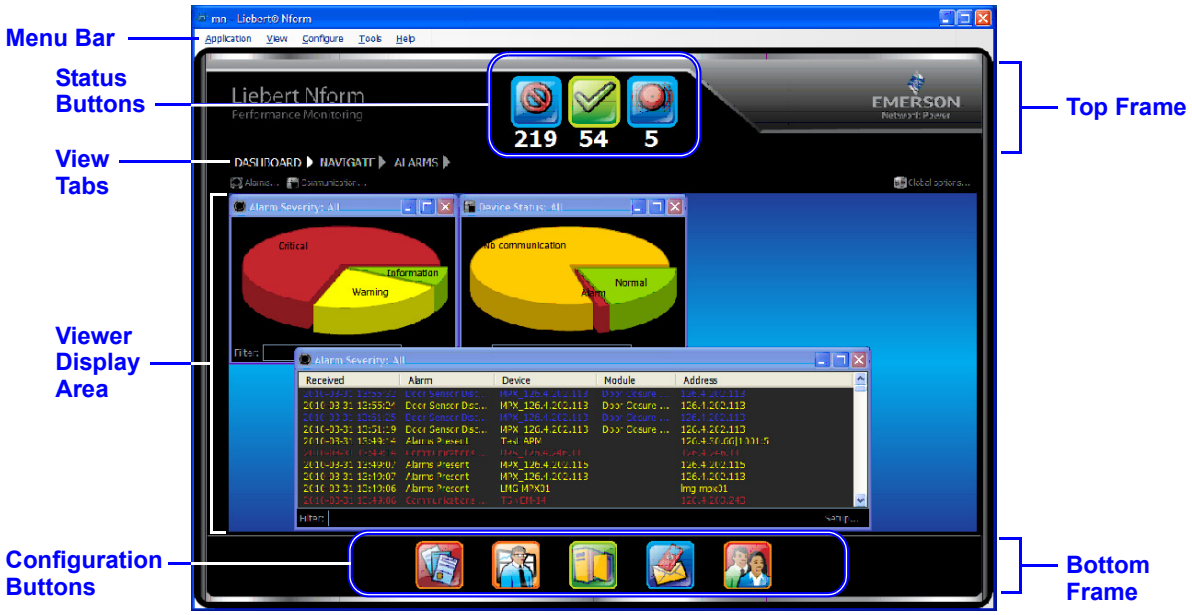


3.0 OVERVIEW

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

3.1 The Viewer Window - Overview

The Viewer window is shown below.



- The **Menu Bar** at top left offers access to all Liebert Nform features (see **3.1.2 - Menus**):
  - Application
  - View
  - Configure
  - Tools
  - Help
- **Status Buttons** in the top frame show the number of devices by condition (see **3.1.1 - Buttons**). This top frame may be minimized to expand the Viewer Display Area. The device conditions are:
  - No Communication
  - Normal
  - Alarm
- **View Tabs** determine which type of information—device status, navigation tree or alarm data—is shown in the Viewer Display Area (see **3.1.1 - Buttons**):
  - Dashboard *(the default view when the Viewer opens, shown above)*
  - Navigate
  - Alarms
- The **Viewer Display Area** shows status, configuration or alarms information, depending on which view tab is selected (see **16.0 - Operation - Using the Viewer**). The default Dashboard view above shows gadgets with three types of data for all devices:
  - Device Status
  - Alarm Status
  - Alarm Severity
- **Configuration Buttons** in the bottom frame are shortcuts to Liebert Nform setup features (see **3.1.1 - Buttons**). These functions are also available from the Configure menu. This bottom frame may be hidden to expand the Viewer Display Area.

3.1.1 Buttons

Table 3 shows the buttons available in the Viewer and where to learn more about each.

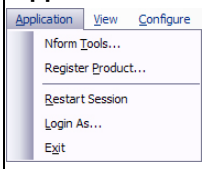
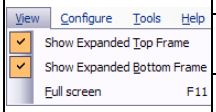
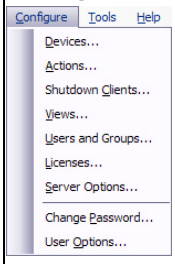
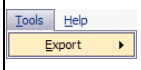
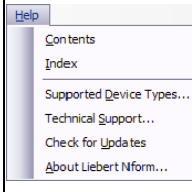
Table 3 Desktop buttons - summary

Button	Description		For more information, see:
STATUS BUTTONS - Each button has three modes.			**16.0 - Operation - Using the Viewer**
No Communication *Number of devices not communicating below button*	 Gray symbol - all devices are communicating with server  Flashing - requires attention 1 or more devices not communicating with a configured computer	Click on this button to filter the Dashboard view to show only devices not communicating with the server. (Click again to toggle to show all devices.)	**16.1.2 - Select Devices for Gadgets**
Normal *Number of devices operating normally below button*	 Green symbol - 1 or more devices operating normally  Flashing - requires attention no devices operating normally	Click on this button to filter the Dashboard view to show only devices operating normally. (Click again to toggle to show all devices.)	**16.1.2 - Select Devices for Gadgets**
Alarms Present *Number of devices in alarm below button*	 Gray symbol - no devices currently in alarm  Flashing - requires attention 1 or more devices in alarm	Click on this button to filter the Dashboard view to show only devices currently in alarm. (Click again to toggle to show all devices.)	**16.1.2 - Select Devices for Gadgets**
SELECTED VIEW TABS - Click to change the view in the Viewer Display Area.			
Dashboard	View status of configured devices in Detail area. 		**16.1 - Dashboard Tab**
Navigate	View navigation tree with configured devices and floor plans, Web browser interface, parametric data, alarms, trend data and Web links in Detail area.  The arrow tab ▸ indicates that double-clicking opens the Navigate view in a separate window, which can be dragged to another monitor.		**16.3 - Navigate Tab - Device**
Alarms	View alarm data for all configured devices in Detail area.  The arrow tab ▸ indicates that double-clicking opens the Alarms view in a separate window, which can be dragged to another monitor.		**16.4 - Alarms Tab**
CONFIGURATION BUTTONS - Click for shortcuts to Configuration options.			
Configure Licenses	 Shortcut to **Configure > Licenses** to add Liebert Nform licenses.		**4.4 - Enter the License Key**
Configure Server Options	 Shortcut to **Configure > Server Options** to view or change global settings.		**8.0 - Configuring Server Options**
Configure Devices	 Shortcut to **Configure > Devices** to add devices and floor plans.		**9.0 - Configuring Devices**
Configure Actions	 Shortcut to **Configure > Actions** to set up actions (e.g., send e-mail, write file).		**12.0 - Configuring Actions**
Configure Users & Groups	 Shortcut to **Configure > Users and Groups** to add user accounts and customize user options.		**13.0 - Configuring Users and Groups**

3.1.2 Menus

The menu bar at the top of the Viewer window provides access to all Liebert Nform's features: **Application**, **View, Configure**, **Tools** and **Help**. Each menu has a drop-down list of options, as shown in **Table 4**.

Table 4 Menu options - summary

Menu	Option	Function (Configuration button, if any)	For more details, see:
Application 	Nform Tools	Open the Nform Tools application	**5.1 - Nform Tools**
	Register Product	Register for Software Assurance	**5.2 - Register Product**
	Restart Session	Restart the Client session without logging out	**5.3 - Restart Session**
	Login As	Log in with a different user name and password without closing the Viewer	**5.4 - Login As**
	Exit	Close the Viewer window (requires login the next time the Viewer is opened)	**5.5 - Exit**
View 	Show Expanded Top Frame	Show large status buttons at top of window or display smaller status buttons	**6.1 - Show Expanded Top Frame**
	Show Expanded Bottom Frame	Show or hide the configuration buttons at the bottom of the window	**6.2 - Show Expanded Bottom Frame**
	Full screen	Expand to full-screen display (no title bar, menu bar or window frame) or restore to normal window	**6.3 - Full Screen (F11)**
Configure 	Devices	Add devices and their properties to the configuration 	**9.0 - Configuring Devices**
	Actions	Create actions—e.g., e-mail notifications—to be executed when an alarm is received 	**12.0 - Configuring Actions**
	Shutdown Clients	Configure MultiLink 1.5 client computers that may be selected for shutdown actions	**11.0 - Configuring Shutdown Clients**
	Views	Add devices, floor plans and logical groups to the configuration	**10.0 - Configuring Views for the Navigate Tab**
	Users and Groups	Create new users and define access privileges for groups of users 	**13.0 - Configuring Users and Groups**
	Licenses	Add licenses purchased from Emerson for Liebert Nform or Liebert MultiLink 	**4.4 - Enter the License Key**
	Server Options	Change global settings—e.g., for language, alarms, devices, e-mail servers, SNMP 	**8.0 - Configuring Server Options**
	Change Password	Create or change a password to use at login 	**4.3 - Change the User Password** **13.1 - Add Individual Users**
	User Options	Customize user preferences for language, time zone, alarm and other colors, visual and audible alerts	**7.0 - Configuring User Options**
Tools 	Export	Export a text file of records with: • Alarm History - recent alarms • Action History - recently executed actions • Data Log History - trend graphs of data points	*Submenu items:* **14.1 - Export Alarm History** **14.2 - Export Action History** **14.3 - Export Data Log History**
Help 	Contents	Open Liebert Nform help to the Contents tab	—
	Index	Open Liebert Nform help to the Index tab	—
	Supported Device Types	Show a list of device types supported by the Nform software	—
	Technical Support	Open Liebert Nform help to display contact information for Liebert Nform technical support	—
	Check for Updates	Get software updates *(w/ Manage Licenses permission)*	—
	About Liebert Nform	View details on Nform Viewer version, server, database, installed license keys, registration, how to contact technical support	**4.4.3 - View License Key Information**

4.0 GETTING STARTED WITH LIEBERT NFORM

This section provides details on starting the Nform Viewer, logging in and entering license keys to allowconfiguring devices for monitoring.

The software comes with a built-in Administrator account with full access to configuration and monitoring. Other users may be added with any combination of viewing and configuration privileges.

NOTE
The Liebert Nform software makes automatic adjustments to operate correctly with the Windows firewall if enabled.

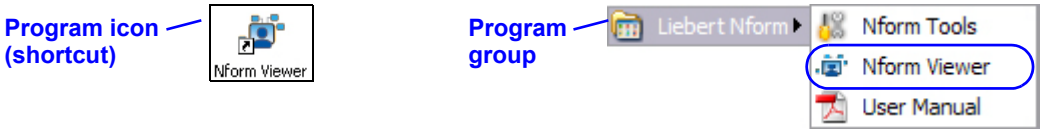
Saving Configuration Changes

Changes to Liebert Nform's configuration are made immediately and do not need to be saved before they take effect.

4.1 Start Liebert Nform

To start the application:

- Double-click on the program icon, below left (if added to the computer desktop during installation).

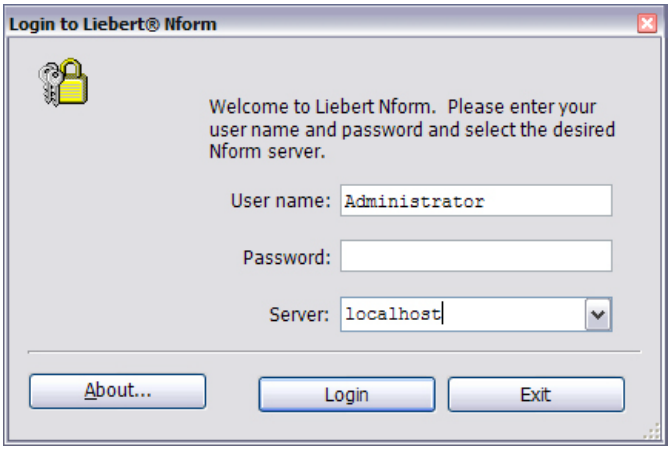


OR

- Click the **Start** button, then **Programs**, **Liebert Nform** and finally **Nform Viewer** (above right).

4.2 Log on as Administrator and Connect to Server

The Login to Liebert Nform window opens, asking for a user name, password and the server where Liebert Nform was installed.



- On initial startup, the user name is **Administrator** and no password is required. There is no need to specify a server if the Viewer is started on the Nform server.
  - User name: Enter your user name—if none assigned, enter **Administrator** *(box filled in for initial startup).*
  - Password: Enter the password that was assigned to you—if none assigned, leave blank *(none required for initial startup or when using the evaluation edition)*
  - Server: Enter **localhost** *(box filled in if the Viewer is started on the Nform server)*—if the Viewer is started on a client computer, enter the hostname or IP address of Nform server where **Nform Full Package** resides
- Click on the **Login** button.

NOTE
*If you have trouble logging in, click the **About** button for technical support information.*

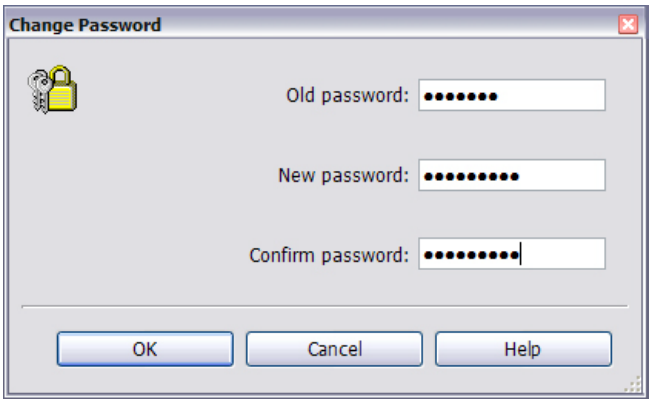
4.3 Change the User Password

The Change Password menu item allows users to change their own passwords at any time, as long as they have permission to do so.

This option also applies to users who have an account created for them with the **User must change password at next login** option (see **13.1 - Add Individual Users**) and for initial startup of an evaluation edition.

To change the password from the **Configure** menu:

- Start the Viewer with permission to change the password (see **13.1 - Add Individual Users**).
- Click on the **Configure** menu, then choose **Change Password**.



- Enter the existing password in the Old Password box.
  (During the first login, leave this box blank.)
- Enter a password in the New Password box.
  The password is case-sensitive and must consist of two to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.
- Re-enter that password in the Confirm Password box.

For information on other ways to set passwords:

- For setting passwords in the Nform Startup Wizard on initial startup, see **Section 2.3**, especially **2.3.1 - Set Administrator Account Password**.
- Passwords may also be assigned when creating or editing user accounts, as described in **13.1 - Add Individual Users**.

4.4 Enter the License Key

A Liebert Nform license key must be installed for full use of Liebert Nform's features, as described in the following steps. If you purchased additional licenses, repeat the following steps to install each license.

NOTE

The license key delivered with Liebert Nform permits a certain number of devices and unlimited users. To purchase a supplemental license key for additional devices (30, 100 or 500), contact your local Emerson representative or see ***Appendix C - Ordering Parts and Licenses From Emerson Network Power****.*

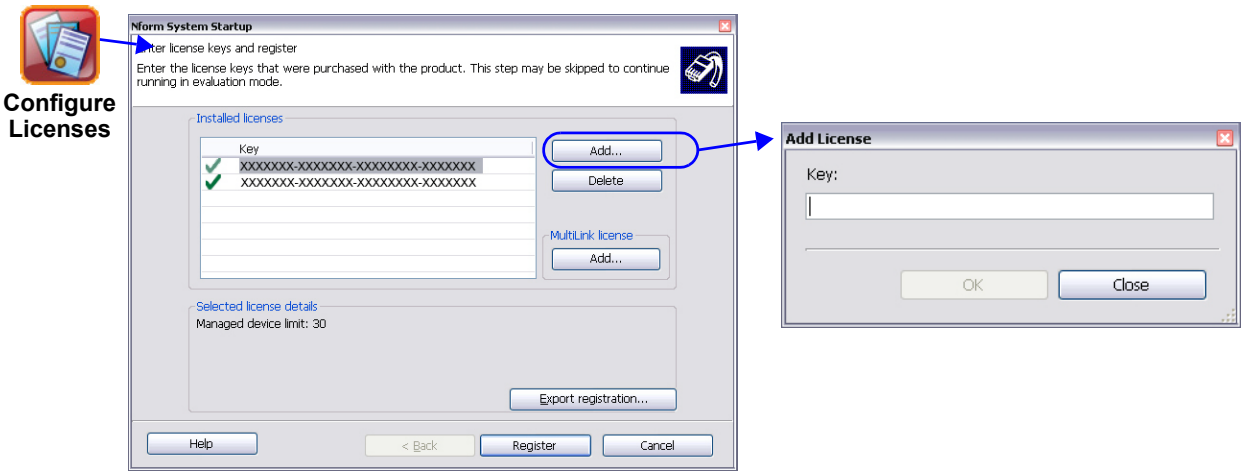
If another license for either Liebert Nform or Liebert MultiLink® is added to a system without an internet connection, the steps in **2.3.4 - Registering Offline (Quarantined) Systems** must be performed for the new license. Liebert Nform will display the reminder below.

Systems that are connected to the Internet will get the new license registered automatically as detailed in **2.3.3 - Enter License Keys and Register**.

4.4.1 Add a Liebert Nform License Key

To install a Liebert Nform license key:

1. Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Licenses** icon at the bottom of the window (or click on the **Configure** menu, then choose **Licenses**).



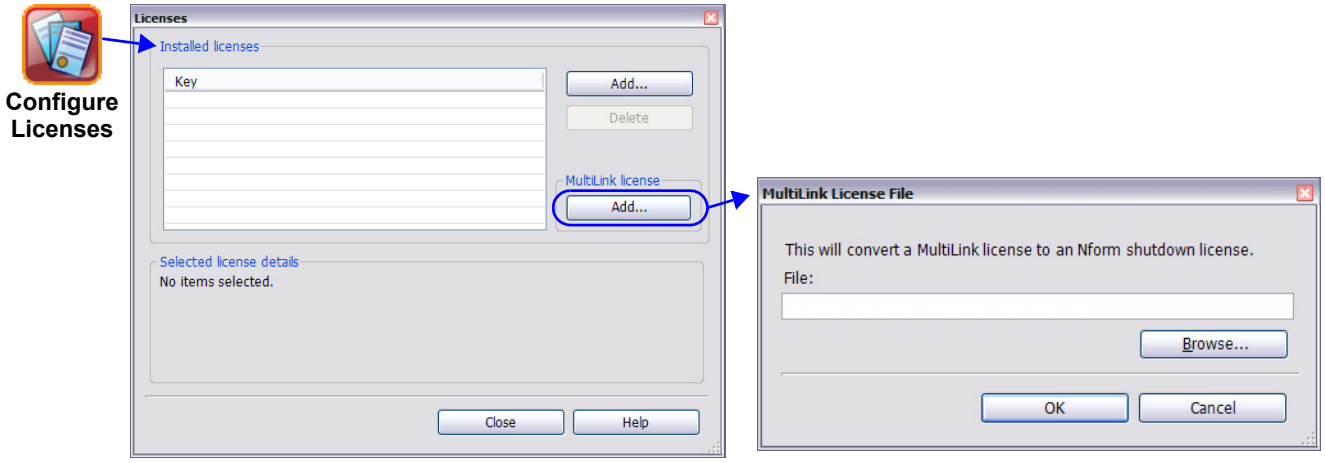
3. In the Licenses window, click the **Add** button at the top right.
4. Read the license agreement, and click **I accept** to continue.
5. In the Add License window, enter the license key from the sticker on the CD case or the certificate provided by Emerson, then click **OK**. There is no need to enter hyphens (-) in the license key.

After installation, the license key numbers appear in the Licenses window or may be viewed through the Help menu. See **4.4.3 - View License Key Information**.

4.4.2 Add a Liebert MultiLink 1.5 Shutdown License

To install a Liebert MultiLink 1.5 Shutdown license:

1. Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Licenses** icon at the bottom of the window (or click on the **Configure** menu, then choose **Licenses**).



3. In the Licenses window, click the **Add** button in the MultiLink License section.
4. Read the license agreement, then click **I accept** to continue.
5. In the MultiLink License File window, enter the full path of the license file (**MLLKU.license**) or click **Browse** to locate the Liebert MultiLink shutdown license obtained from Emerson Network Power.

   For Liebert Nform Enterprise installations, this file is in the **MultiLink\MLLKU** folder on the NFORM-EPRISE CD.

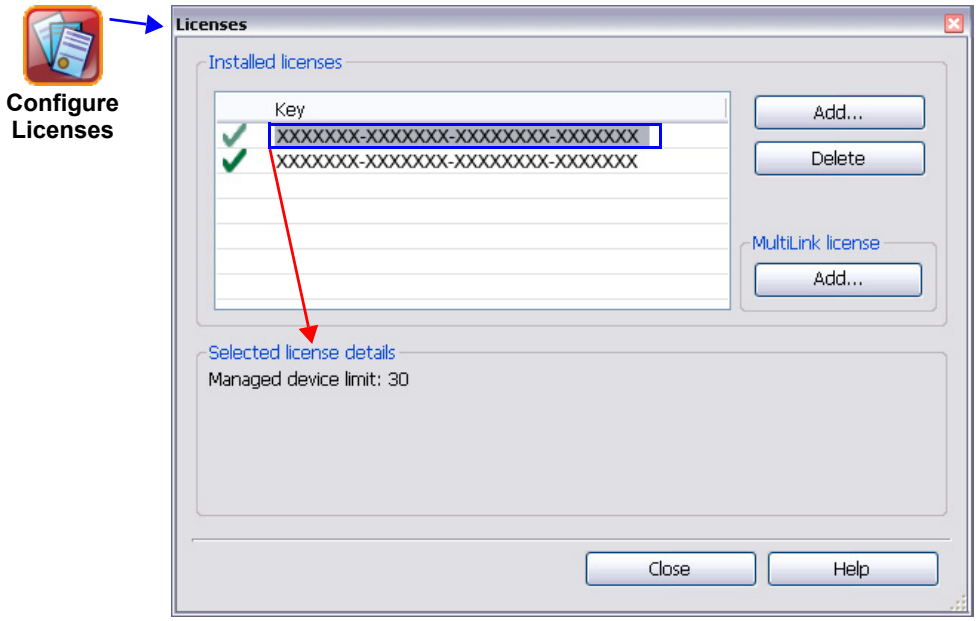
   For Liebert Nform 2.X customers, this can be exported and copied from the **Export** folder in the program folder where Liebert Nform 2.X was installed.
6. Click **OK**. The license file contents will be converted and displayed as a Liebert Nform shutdown license key in the Licenses window.

After installation, the license key numbers appear in the Licenses window or may be viewed through the Help menu. See **4.4.3 - View License Key Information**.

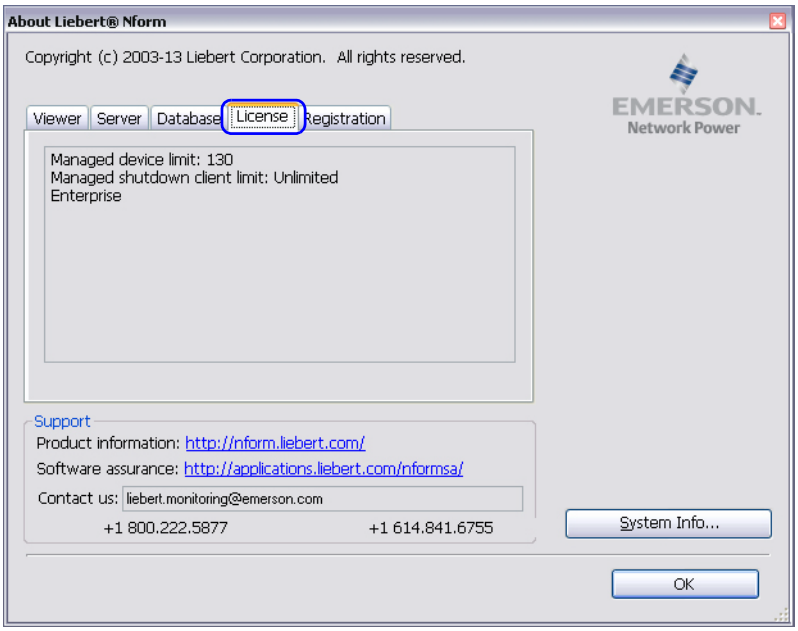
4.4.3 View License Key Information

Users with **Licenses** access (see **13.2 - Assigning Users to Groups**) may view information about installed license keys in either of two ways:

- **Licenses Window**
  - Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
  - Click on the **Configure Licenses** icon at the bottom of the window (or click on the **Configure** menu, then choose **Licenses**).
  - Click on a license key number to view a description in the Select License Details area. Choosing multiple license keys—with shift-click or control-click—will change the display to show details of all selected license keys.



- **Help - About Liebert Nform Window**
  - Click on the **Help** menu at the top of the window, then click on **About Liebert Nform**.
  - Click the **License** tab to view details of all license keys that are installed.



To remove a license key, see **19.2 - Deleting a License Key**.

5.0 USING THE APPLICATION MENU

The Application menu allows you to restart the Nform service without closing the Viewer, install definitions for new equipment purchased from Emerson, restart a session without logging out, log in as a different user and exit the application.

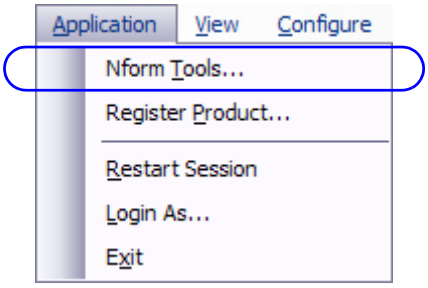
5.1 Nform Tools

This menu item provides quick access to the Nform Tools application.

The application may be opened from the Start menu (see **18.1 - Open the Nform Tools Application From the Start Button**) or directly from this menu item in the Viewer.

To open the Nform Tools application from the Viewer:

- *(Windows XP and Server 2003 only)* Log into Windows on the Nform server as a user with administrator privileges on that machine.
- Start the Viewer on the Nform server and log in as a user with **start/stop server** permission (see **13.2 - Assigning Users to Groups**).
- Click on **Application**, then **Nform Tools**.
- *(Windows Vista, Server 2008 and later)* A User Account Control (UAC) message appears, requesting your permission to start the application. Click **Allow** to continue.



See **18.0 - Using Nform Tools** for complete details on the Nform Tools application.

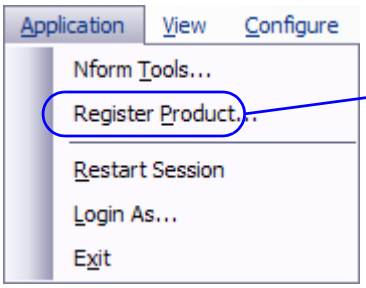
5.2 Register Product

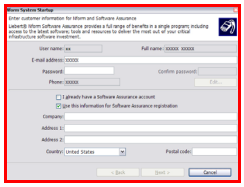
This menu item allows you to register if the Nform system has never been registered or the registration has expired or will expire within 60 days (see **2.2 - Registering for Software Assurance**).

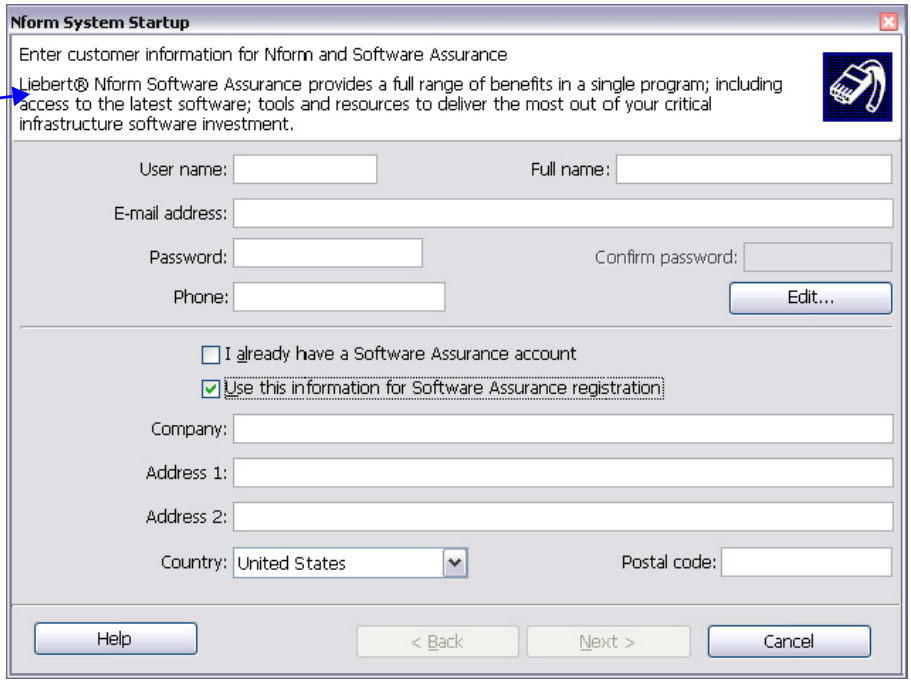
NOTE
This menu item is disabled after the product is successfully registered.

To register or renew registration:

- Start the Viewer and log in as a user with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
- Click on **Application**, then **Register Product**.







- Proceed to the next two sections:
  - **5.2.1 - Enter Customer Information for Nform and Software Assurance**
  - **5.2.2 - Enter License Keys and Register**

5.2.1 Enter Customer Information for Nform and Software Assurance

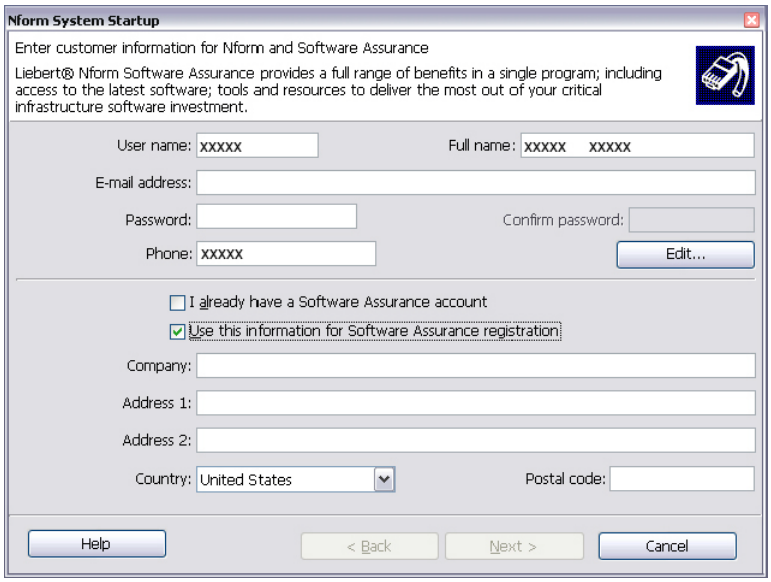
This window may have information filled in depending on the account used to log in:

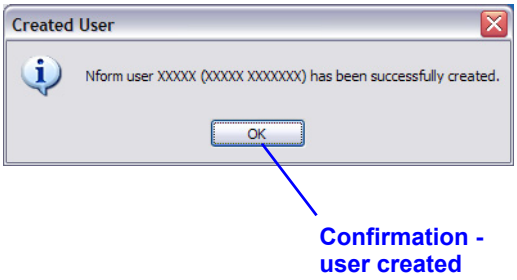
- If you log in as a user with administrative privileges—*other than* the built-in Administrator account—some account user information is filled in. No new account will be created.
- If you log in as **Administrator** (built-in account), a second administrator account will be created.

User Information

In the top portion of the window, complete the following user information as needed:

- **User Name**: Enter a user name for the new account. This will be used to log on to Liebert Nform.
- **Full Name**: Enter the person's name to identify the user.
- **E-mail Address**: Enter the person's e-mail address. This will be used to log onto the Nform Support Web site.
- **Password**: Enter a password, then re-enter it in the Confirm Password box. The password is case-sensitive and must consist of six to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.
- **Phone**: Enter the user's telephone number, including area code. This field is optional.
- To set up additional options for this user account, such as alternate contact information, click the **Edit** button to open the User Properties window (see **13.1 - Add Individual Users**).





Confirmation - user created

Software Assurance Check Boxes and Company Information

By default, the **Use this information for Software Assurance registration** option is checked to make it easy to register your product for Software Assurance. This option creates an account on the Nform Support Web site using the information at the top along with the company information at bottom. This Web site account will be used to register your product license keys so you may receive the full benefits of the Software Assurance program. You may skip this step if you prefer to register later.

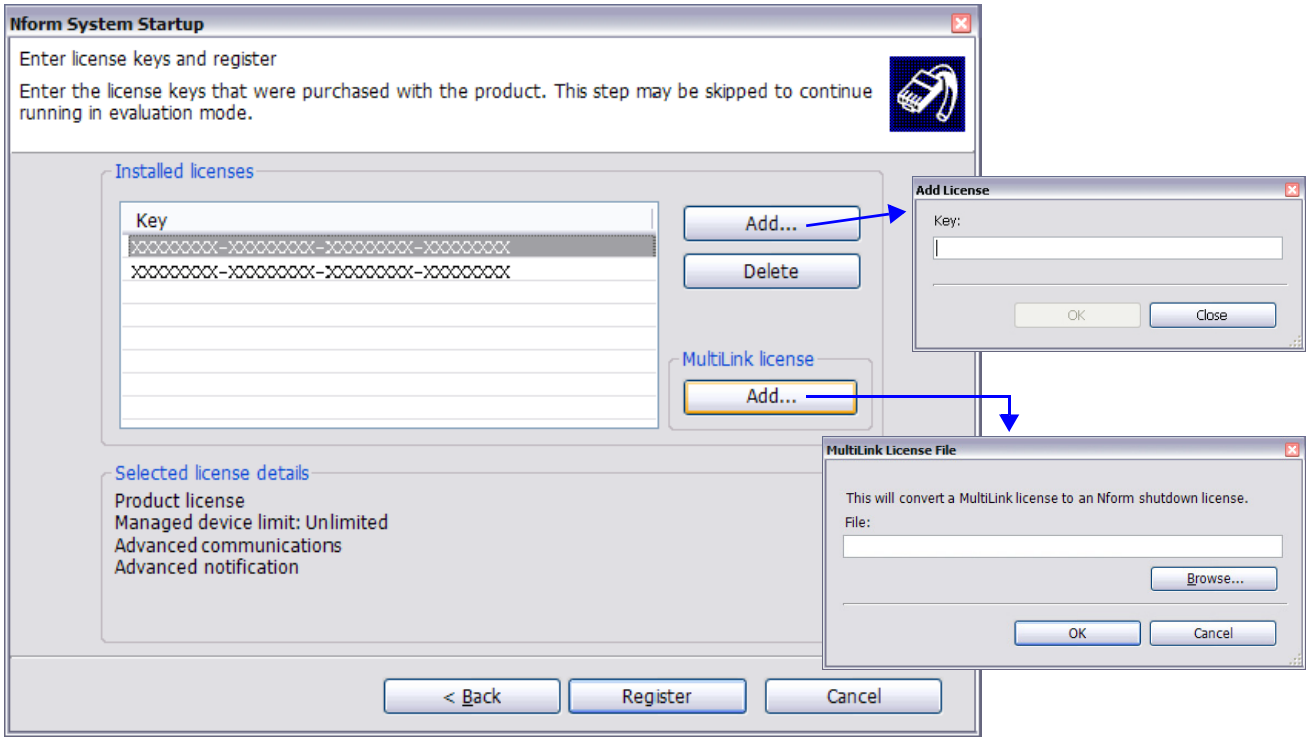
- To register, check **Use this information for Software Assurance registration** and enter the following information. **NOTE:** This information will not be distributed to any outside company.
  - **Company:** Enter your company name.
  - **Address 1 and Address 2:** Enter street address or P.O. box and city.
  - **Country:** Choose the country from the drop-down list.
  - **Postal code:** Enter a postal code as needed for your location.
- To use this or an existing account for another Nform installation, check **I already have a Software Assurance account**. The e-mail and password entered above will be used for the SA account.
- To register later, remove the check mark from the **Use this information for Software Assurance registration** box.
- Click **Next**. A confirmation window indicates whether a user was created (above right). Click **OK**.

5.2.2 Enter License Keys and Register

The final step in the startup wizard is to enter any license keys purchased with Liebert Nform.

Emerson recommends entering these keys now to simplify the setup process and proceed with registration.

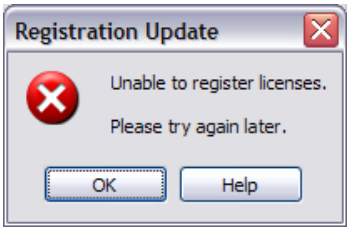
This may be done at a later time; however, the system will operate in evaluation mode until a base license key is entered. See **4.4 - Enter the License Key**.



To install a Liebert Nform license key:

1. In the Licenses window, click the **Add** button at the top right. (For details on using the **Add** button under MultiLink License, see **4.4.2 - Add a Liebert MultiLink 1.5 Shutdown License**.)
2. Read the license agreement, and click **I accept** to continue.
3. In the Add License window, enter the license key from the sticker on the CD case or the certificate provided by Emerson, then click **OK**. There is no need to enter hyphens (-) in the license key.
4. If you purchased additional licenses, repeat **Steps 1** to **3** to install each license.

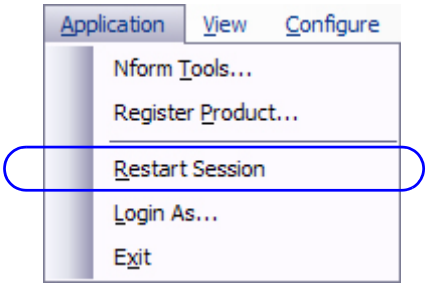
   After installation, the license key numbers appear in the Licenses window or may be viewed through the Help menu. See **4.4.3 - View License Key Information**.
5. Click the **Register** button to complete the process. A confirmation dialog box appears if registration was successful. The following error message appears if the licenses could not be registered.



5.3 Restart Session

When needed, you may restart the Client session without closing the Nform Viewer or having to log in again. To do this:

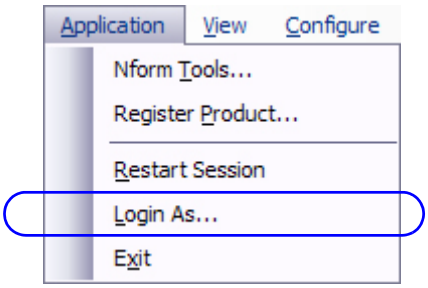
- Click on **Application**, then **Restart Session**.



5.4 Login As

When needed, you may log in with a different user name and password without closing the Nform Viewer. To do this:

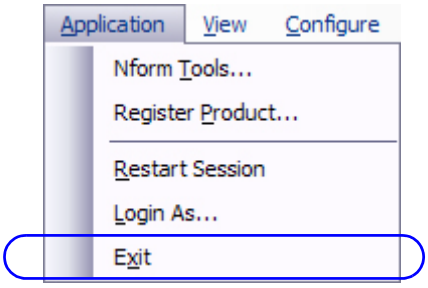
- Click on **Application**, then **Login As**.



5.5 Exit

To close the Viewer window:

- Click on **Application**, then **Exit**. This action requires login the next time the Viewer is opened.



The Liebert Nform service keeps running in the background even after the Viewer window is closed. For details on the service, see **17.1 - Starting or Stopping the Liebert Nform Service**.

6.0 USING THE VIEW MENU

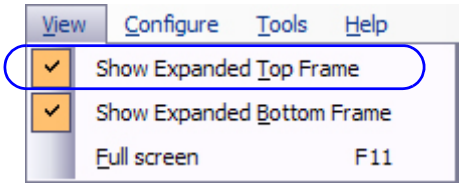
The View menu lets you quickly increase the size of the Viewer Display Area by minimizing the status buttons at the top, hiding the configuration buttons at the bottom or switching to full-screen display mode.

6.1 Show Expanded Top Frame

The default Viewer window has three large status buttons in the top frame. This top area may be minimized to enlarge the Viewer Display Area. The status buttons are functional whether the top frame is expanded or collapsed. (For details on the status buttons, see **3.0 - Overview**.)

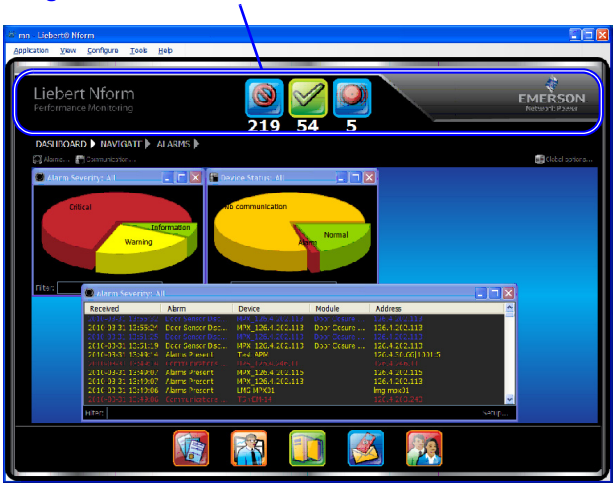
To expand or collapse the top frame:

- Start the Viewer.

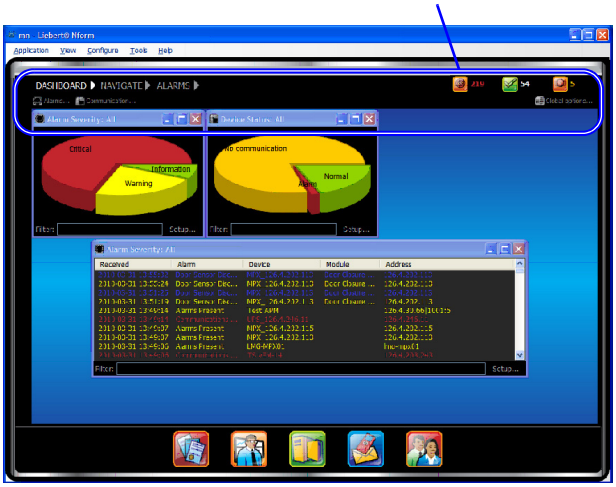


- Click on **View**, then click on **Show Expanded Top Frame** to place or remove a check mark:
  - Place a check mark ☑ to show large buttons, as in the example below left.
  - Remove the check mark from the box ☐ to minimize the status buttons, below right. The status buttons are still functional when minimized.

TOP FRAME EXPANDED
Large status buttons



TOP FRAME COLLAPSED
Minimized status buttons

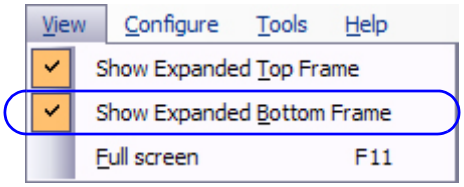


6.2 Show Expanded Bottom Frame

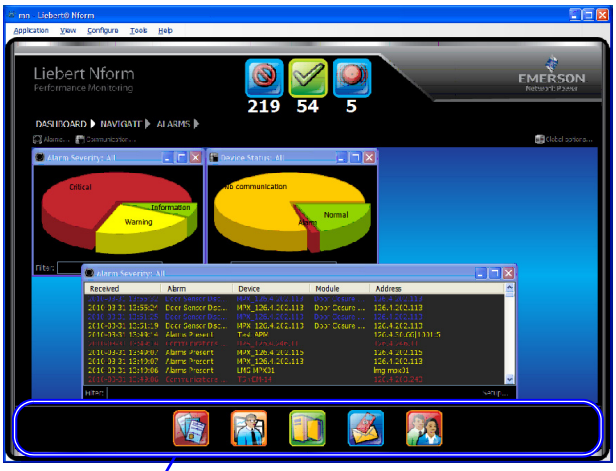
The default Viewer window has configuration buttons in the frame at the bottom of the window. These buttons may be hidden to enlarge the Viewer Display Area. All features available from the configuration buttons are still accessible from the Configure menu. (For details on the configuration buttons, see **3.0 - Overview**.)

To expand or collapse the bottom frame:

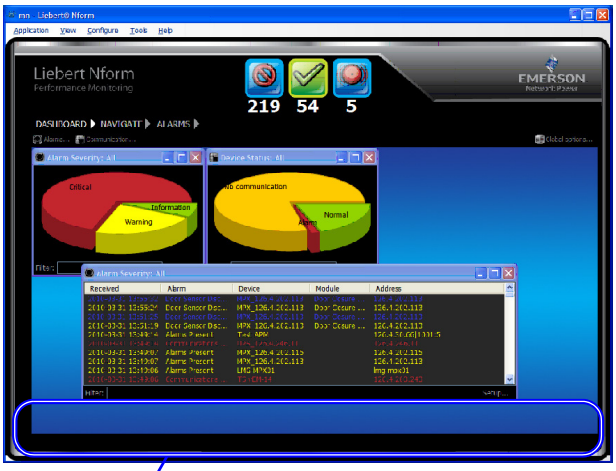
- Start the Viewer.



- Click on **View**, then click on **Show Expanded Bottom Frame** to place or remove a check mark:
  - Place a check mark ☑ to show the configuration buttons, as in the example below left.
  - Remove the check mark from the box ☐ to hide the status buttons, below right.



BOTTOM FRAME EXPANDED
Configuration buttons



BOTTOM FRAME COLLAPSED
No configuration buttons

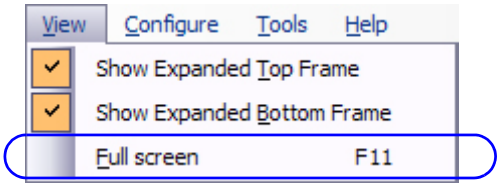
6.3 Full Screen (F11)

The Viewer window may be maximized to full-screen display mode with no menu bar, then restored to its previous size, using either the F11 key or the **View** menu to toggle between views.

Full-screen mode expands the Viewer window to fill the monitor. This is similar to the standard Windows Maximize-window mode, but also hides the window frame, title bar and menu bar. To reveal the menu bar while in full-screen mode, move the cursor to the top of the screen.

To do this:

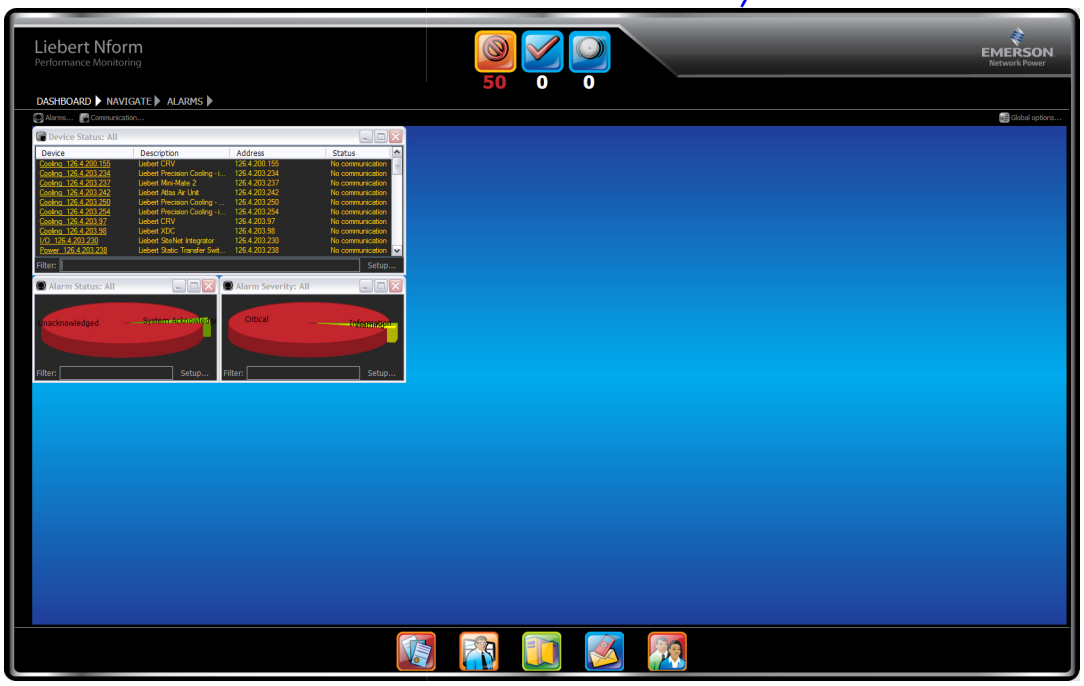
- Start the Viewer.



- To enter full-screen display mode:
  - *Function keys:* Press the F11 key.
  - *Menu options:* Click on **View**, then on **Full Screen**.
- To restore the Viewer window to its previous size:
  - *Function keys:* Press the F11 key.
  - *Menu options:* Make the menu bar visible by moving the mouse to the top of the window. Click on **View**, then on **Full Screen** to remove the check mark ☑.

FULL SCREEN DISPLAY MODE
No window frame, title bar or menu bar

Move cursor to top of window to reveal menu bar



7.0 CONFIGURING USER OPTIONS

Users may customize their preferences to select:

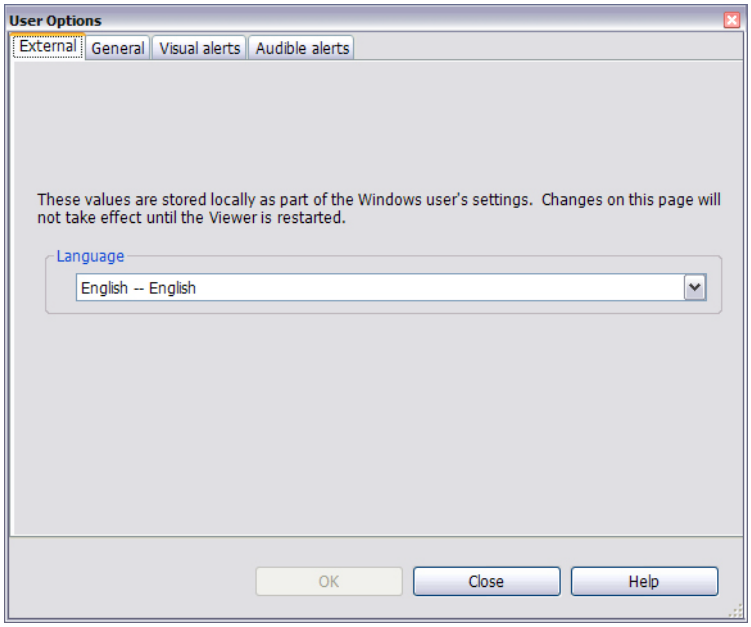
- Language
- Time zone
- Colors for alarms, backgrounds and graphs
- Preferences for visual alerts of alarms
- Preferences for audible alerts of alarms

The User Options window has four tabs that allow customizing a user's view and alerts.

7.1 User Options - External Tab

Click the **External** tab in the User Options window for these options:

- Choose a language for the display of text in all Viewer menus, windows and dialog boxes in the Liebert Nform application.
- When finished, click the **OK** button to accept all changes in the User Options window.
- Restart the Viewer for the language change to take effect.

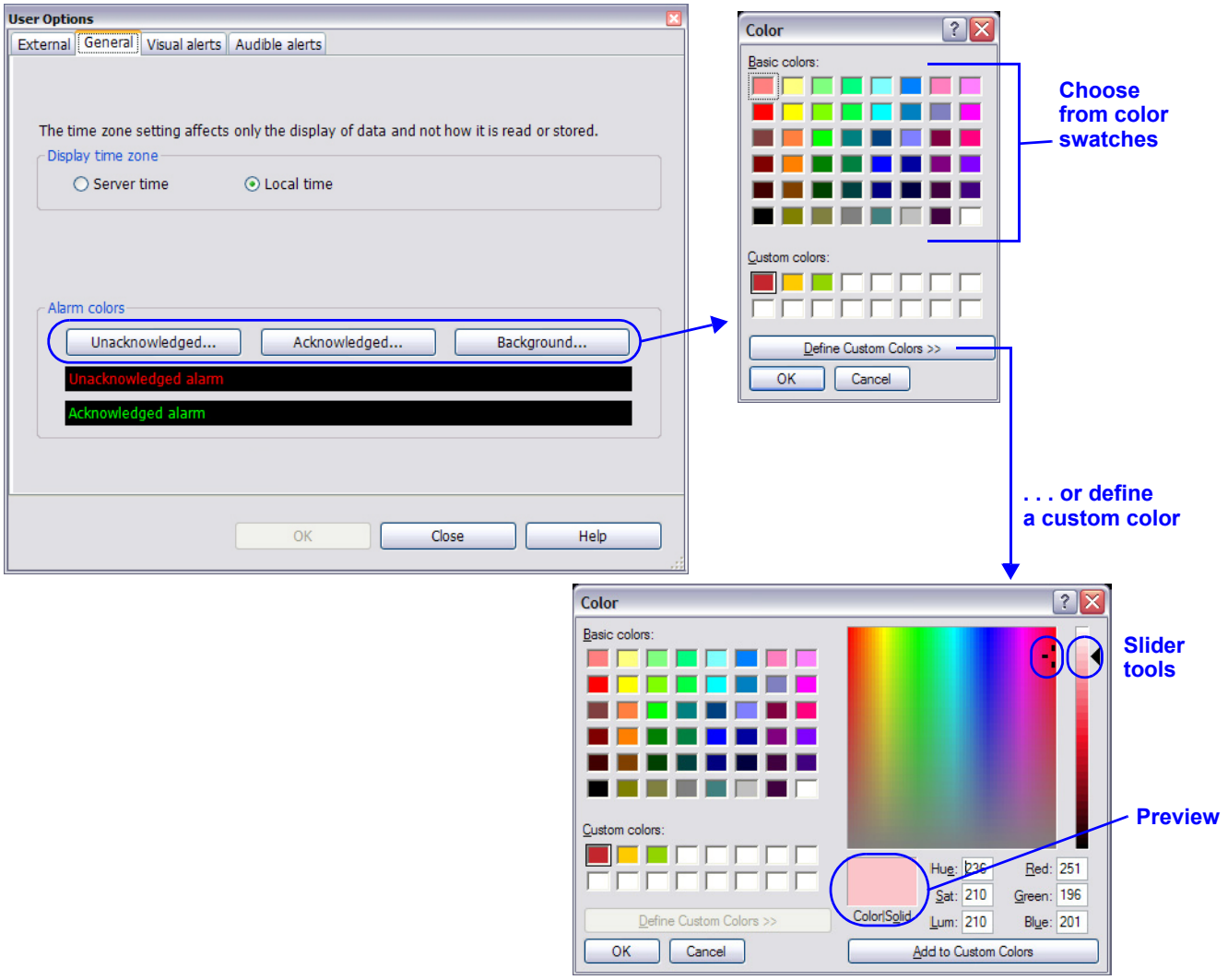


7.2 User Options - General Tab

Click the **General** tab in the User Options window for these options:

- Display time zone: Choose **Local time** (the default) of the user's workstation or **Server time**—the time of the server where Liebert Nform is installed.
- In the Alarm Colors section, click the **Unacknowledged**, **Acknowledged** and **Background** buttons to customize the color schemes for the user's alarms. These changes apply to display in the Alarms tab (see **16.4 - Alarms Tab**).
- In the Color window, choose a color from the swatches, then click **OK**.

  (To define a new color, click the **Define Custom Colors** button to expand the Color window, then select a color using the slider tools or enter RGB values in the Red, Green and Blue boxes. Click **OK** when finished.)
- The new colors are displayed in the Alarm Colors section. Use the buttons to make additional changes as needed.
- When finished, click the **OK** button to accept all changes in the User Options window.



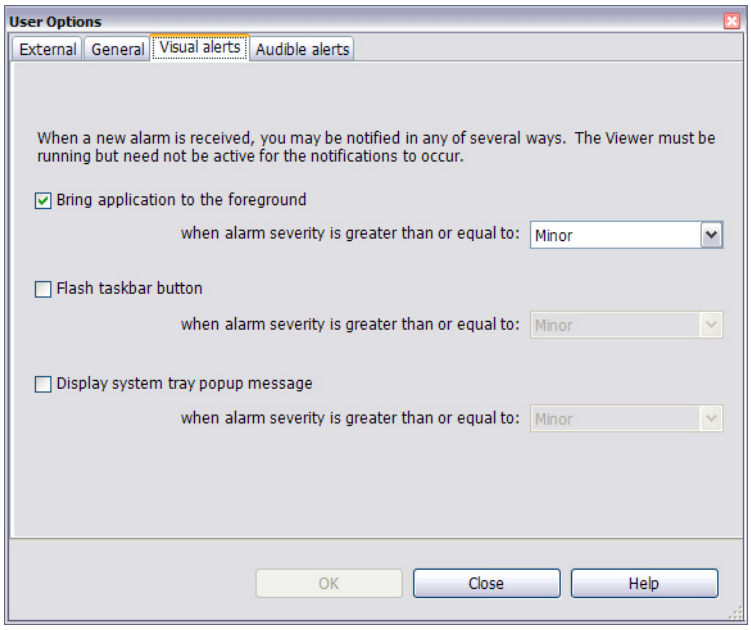
7.3 User Options - Visual Alerts Tab

Click the **Visual alerts** tab in the User Options window to specify how the user will be notified when a new alarm is received:

- **Bring application to the foreground** - the Viewer window comes to the foreground of the user's computer screen.
- **Flash taskbar button** - the Liebert Nform button flashes in the Windows taskbar of the user's computer screen.
- **Display system tray popup message**- a message appears above the Windows system tray.

For each option:

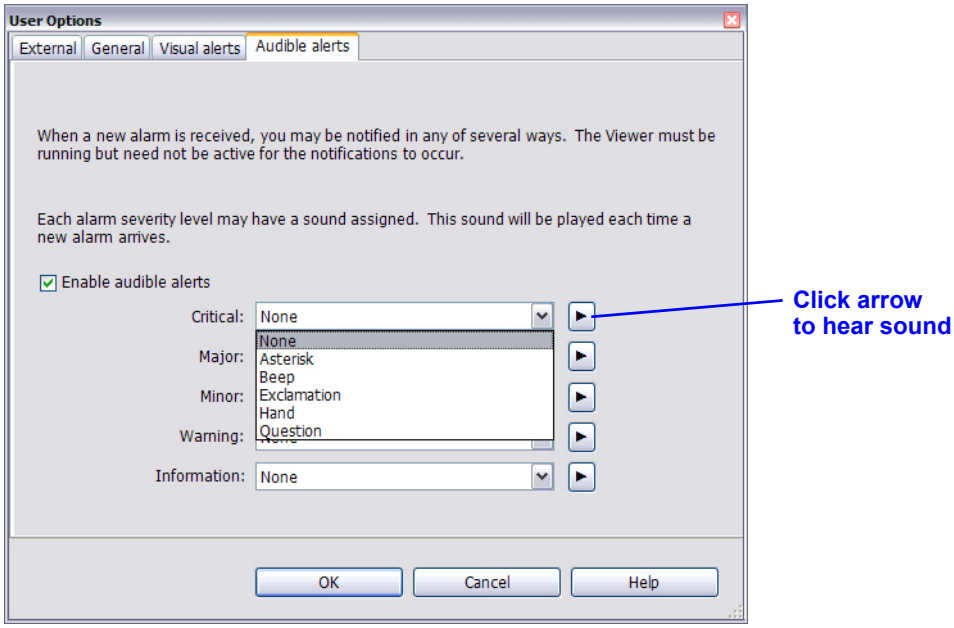
- Place a check mark ☑ to select it (or remove the check mark to deactivate it).
- Choose a minimum level of alarm severity from the drop-down list. For example, if **Warning** is chosen, the selected option occurs for any alarm with Warning or higher level of severity.
- When finished, click the **OK** button to accept all changes in the User Options window.



7.4 User Options - Audible Alerts Tab

Click the **Audible alerts** tab in the User Options window to specify whether sounds are assigned to alarm severity levels. Alarm sounds are disabled by default.

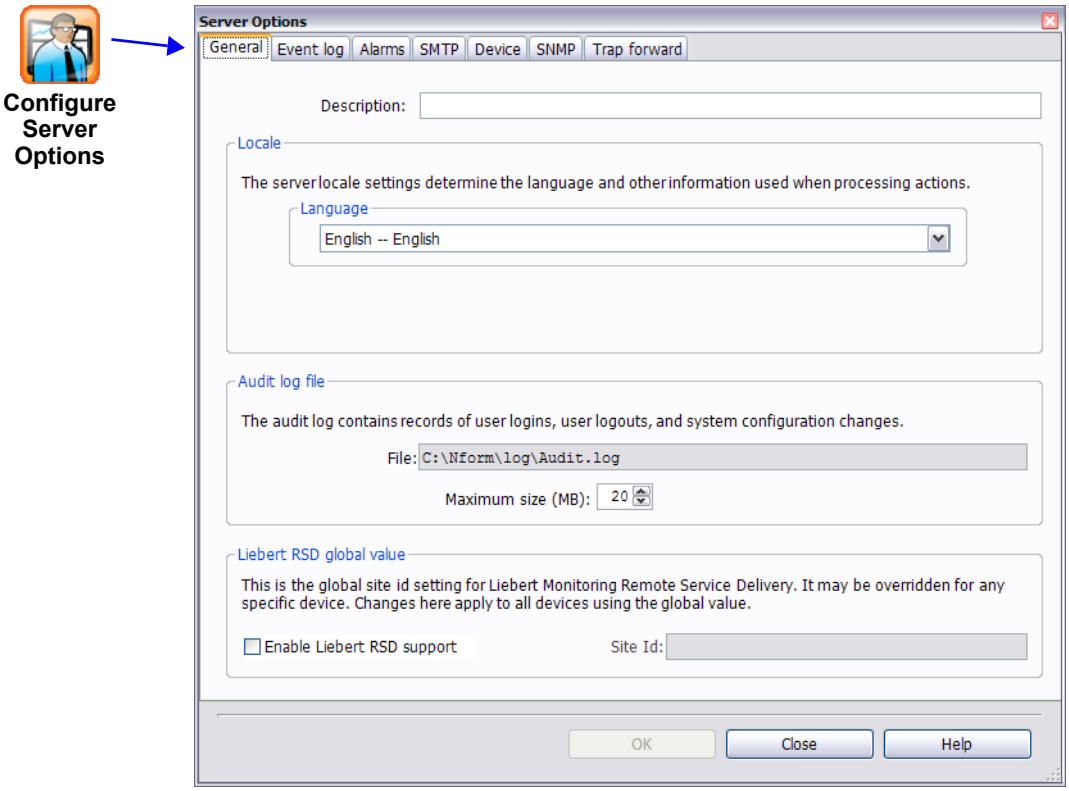
- To activate any alarm sounds, place a check mark ☑ in the Enable Audible Alerts box (or remove the check mark to disable all sounds).
- For each alarm severity level (for example, Critical, Warning, Information):
  - Choose a sound from the drop-down list—for example, **Beep**. The default is **None**.
  - To listen to a sound, select it from the drop-down list, then click the right arrow button to the right of the list.
- When finished, click the **OK** button to accept all changes in the User Options window.



8.0 CONFIGURING SERVER OPTIONS

This feature allows you to specify global settings for configuration options. These options are selected by default in various configuration windows, but any option may be locally customized for a particular device or action.

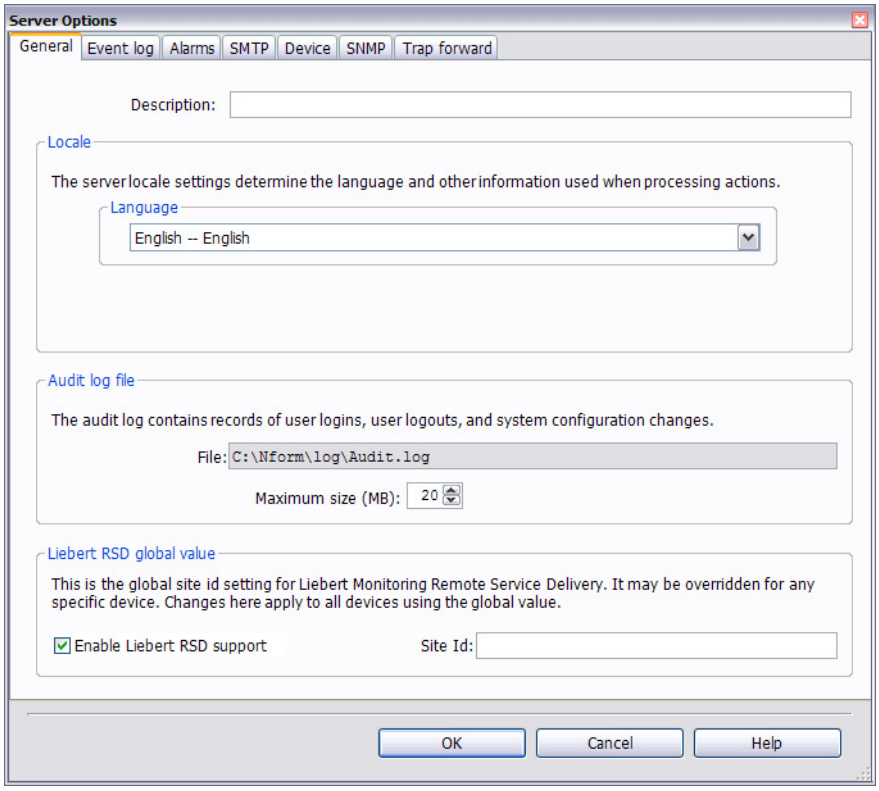
1. Start the Viewer (see **13.2 - Assigning Users to Groups** for permission required for various functions).
2. Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).



3. The Server Options window has tabs for various types of options. Refer to the following sections for details on each tab.

8.1 Server Options - General Tab

- Start the Viewer (see **13.2 - Assigning Users to Groups** for access privileges).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **General** tab.



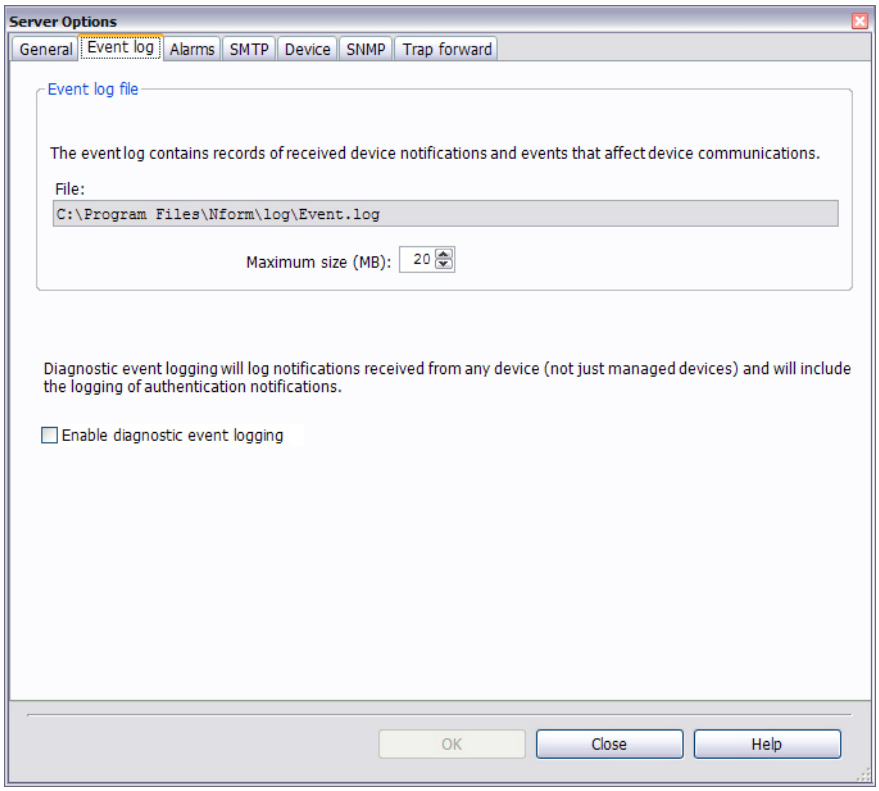
- In the Description box, enter the name of the server host computer where the software is installed.
- The Locale section requires permission to manage server parameters (see **13.2 - Assigning Users to Groups**).
  To make changes:
  - In the Language box, click on the drop-down list and choose a language to be used by the server when localized text is needed—primarily for actions and some alarm information.
  - The service must be restarted before this change will take effect (see **NOTE** below).
- The Audit log file area requires permission to manage logging parameters (see **13.2 - Assigning Users to Groups**).
  This section displays the name and size of the audit log, a record of logins and logouts and changes to the system configuration. Emerson recommends keeping the default settings.
  - The default File name and full path is: **C:\Nform\log\Audit.log**.
  - The default Maximum size of the audit log file is **10** MB.
- Click **OK** to save any changes.

NOTE
*If the language was changed, the service must be restarted for the change to take effect (see **18.3.1 - Application Menu - Service**).*

- The Liebert RSD global value area requires permission to manage server parameters (see **13.2 - Assigning Users to Groups**)
- This feature allows you to set a global site ID for remote monitoring, which may be overridden for any device (see **9.2.4 - Liebert RSD Tab**). To activate remote monitoring:
  - Check the **Enable Liebert RSD Support** box to activate the function.
  - Enter the appropriate ID in the **Site ID** box. (**Note:** The string is supplied by Liebert Services for users with Liebert Nform and a service contract.)

8.2 Server Options - Event Log Tab

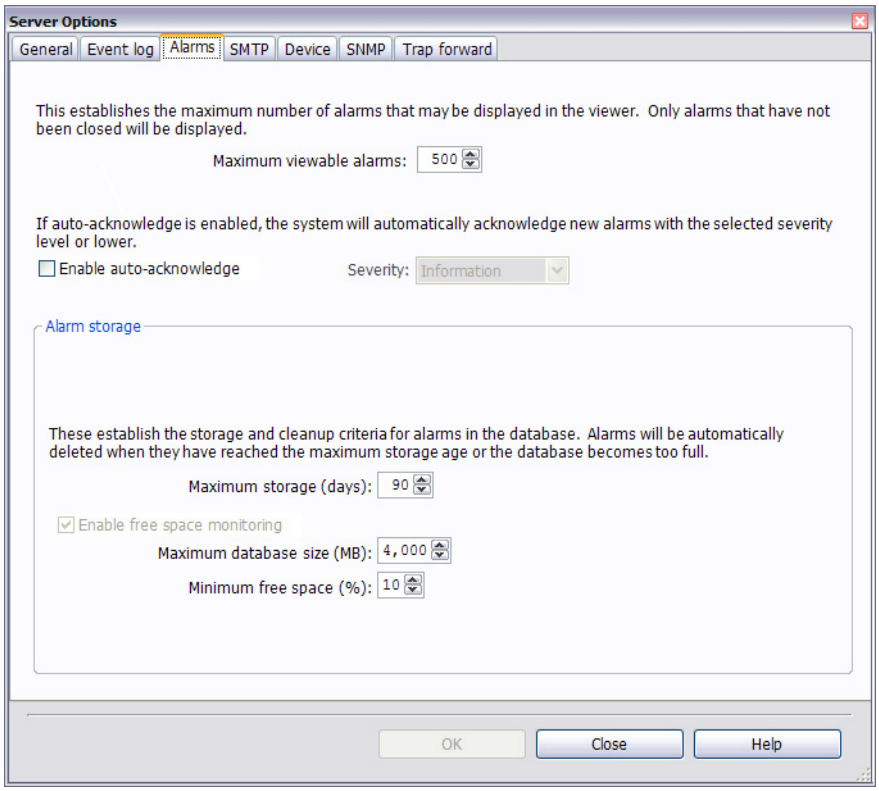
- Start the Viewer with permission to manage logging parameters (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **Event Log** tab.



- The Event log file area displays the name and size of the event log, a record of notifications and events affecting device communications. Emerson recommends keeping the default settings.
  - The default File name and full path is: **C:\Nform\log\Event.log**.
  - The default Maximum size of the audit log file is **20** MB.
- Place a check mark ☑ in the **Enable diagnostic event logging** box to log notifications from any device—not just managed devices—as well as authentication notifications.
- Click **OK** to save any changes.

8.3 Server Options - Alarms Tab

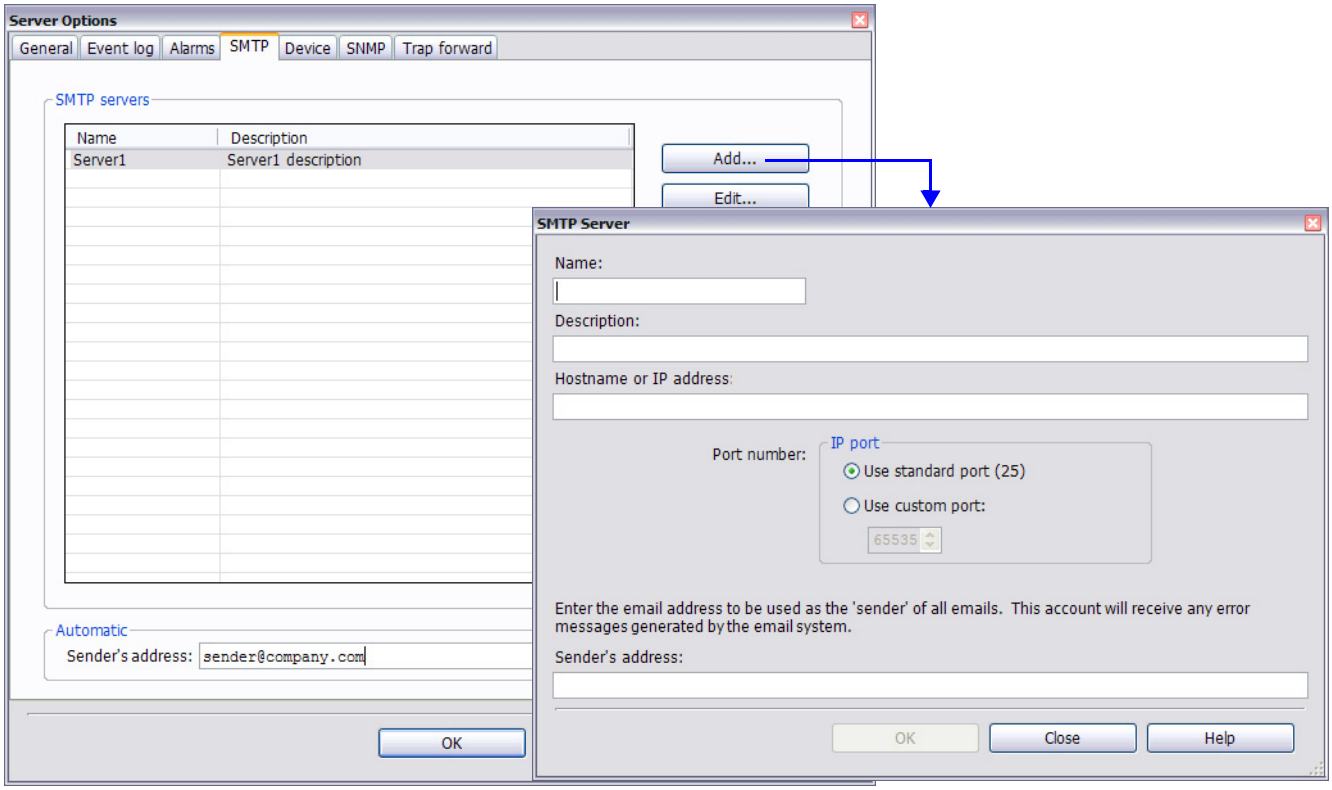
- Start the Viewer with permission to manage server parameters (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **Alarms** tab.



- The **Maximum viewable alarms** box specifies the highest number of alarms—those not yet closed—that may be displayed in the viewer. The default is 500.
- Place a check mark ☑ in the **Enable auto-acknowledge** box to automatically acknowledge new alarms with the specified level of severity. If this feature is enabled, choose the level of severity—Information, Warning, Critical or user-defined levels—in the Severity box.
- The Alarm Storage features specify criteria for storing and cleaning up alarms in the database.
  - Alarms will be deleted from the database automatically after the number of days specified in the **Maximum storage (days)** box. The default is 90 days.
  - Alarms will be deleted from the database automatically according to the amount of free space in the database if **Enable free space monitoring** is checked.
    - The feature is always enabled (the **Enable free space monitoring** box is checked but disabled) when the embedded database is used. For an SQL Server database, place a check mark ☑ to enable the feature (or remove the check mark to disable it).
    - Specify the **Maximum database size** (default is 2,000 MB for the embedded database, 10,000 MB for an SQL Server database).
    - Specify the **Minimum free space** (default is 10%) to use as criteria for deleting records.
- Click **OK** to save any changes.

8.4 Server Options - SMTP Tab

- Start the Viewer with permission to manage e-mail parameters (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **SMTP** tab to specify SMTP mail servers for e-mail notifications.



SMTP Servers

- To configure a specific SMTP server, click the **Add** button. The SMTP Server window opens.
- In the Name box, enter the name of the server host computer where the software was installed.
- If desired, enter text to identify the server in the Description box.
- In the Hostname or IP address box, specify the outgoing mail server that this computer uses for outgoing e-mail—for example, *mail.company.com* or *192.168.0.18*.
- The Port number box displays the IP port to be used as the SMTP port.
  - The default is **Use standard port (25)**, the most commonly used port.
  - If a different port is used, click **Use custom port**, then choose a number from the list.
- In the Sender's address box, enter the e-mail address to use for all outgoing e-mail notifications—for example, *Support@company.com*.

  Any error messages from the e-mail system will be sent to this address.
- Click **OK** to return to the Server Options window.

Automatic

- If desired, enter an e-mail address in the Sender's Address text box.

  This is required if you wish to choose the automatic server option for an e-mail action (see **12.2.1 - Configure E-Mail Actions**), determining the recipient's SMTP server based on the domain name. An Nform server with Internet access will send notifications directly to the recipient's mail server, requiring no additional configuration and allowing for faster delivery.

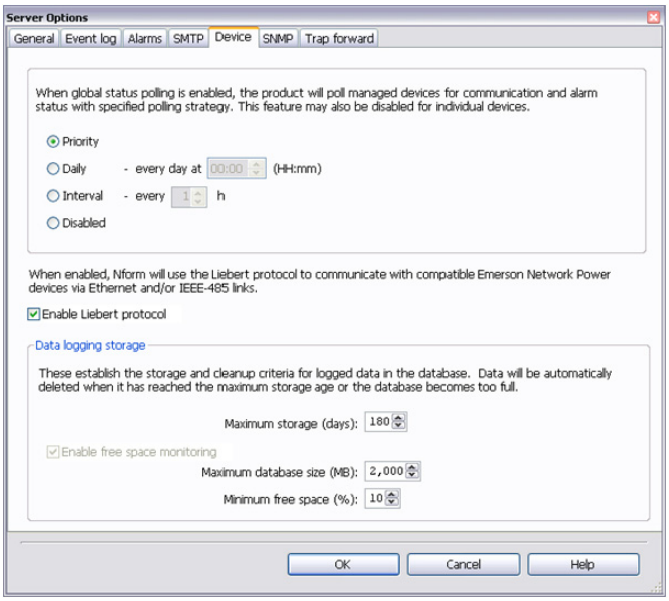
  NOTE: This address **must** be entered before the automatic server option may be used.

Save Changes

- Click **OK** in the Server Options window to save any changes.

8.5 Server Options - Device Tab

- Start the Viewer (see **13.2 - Assigning Users to Groups** for access privileges).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **Device** tab.



- **Global status polling** options require permission to manage global device parameters (see **13.2 - Assigning Users to Groups**).

  Choose an option to enable or disable global status polling. The option chosen to poll managed devices for communication and alarm status will apply to all devices. If polling is enabled globally, it may be disabled for individual devices (see **9.2.1 - Communications Tab**).

  - **Priority:** All devices will be polled according to a specified priority, either High or Low (default). The high or low priority may be changed for individual devices.
  - **Daily:** All devices will be polled at a specified time every day. Specify the time of day using a 24-hour clock in the format *hh:mm*—for example, *09:30* for 9:30 a.m. or *13:15* for 1:15 p.m.
  - **Interval:** All devices will be polled at a specified interval. Specify the time interval in hours—for example, approximately *every 2 hours* or *every 8 hours*.
  - **Disabled:** No devices will be polled. This option may not be changed for individual devices.
- The **Enable Emerson Protocol** option requires permission to manage server parameters (see **13.2 - Assigning Users to Groups**).

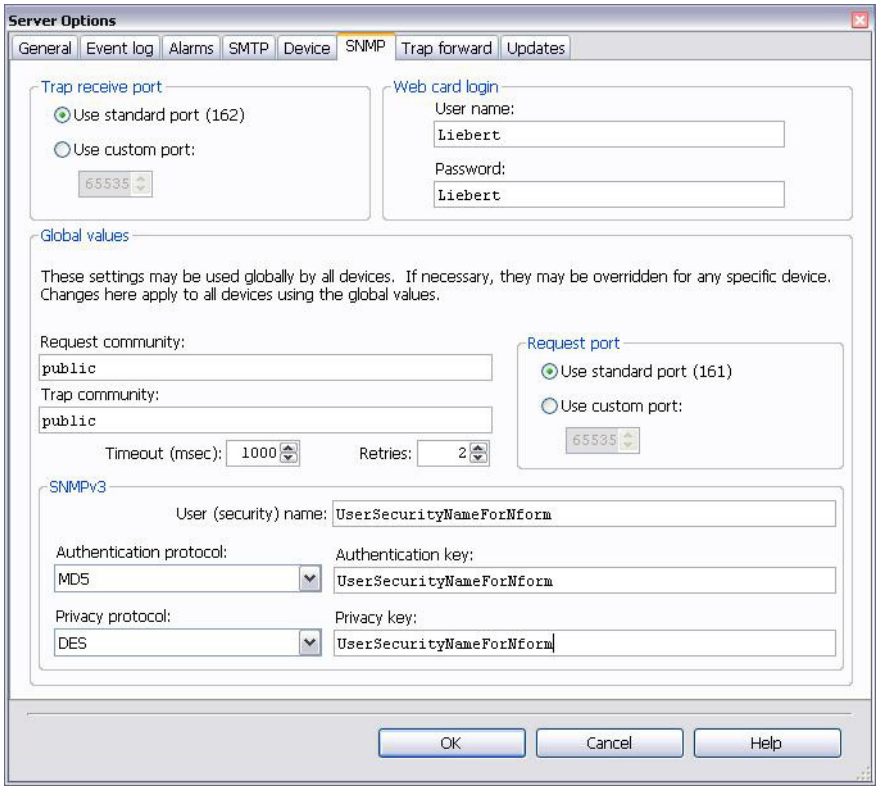
  Place a check mark ☑ in this box to use Emerson Network Power's Emerson Protocol for communication with compatible Emerson devices via Ethernet or IEEE-485 links.
- The **Data Logging Storage** features require permission to manage logging parameters (see **13.2 - Assigning Users to Groups**).
  Data logging *requires a license with Advanced Communications (see* ***Table 12****).*

  Two types of criteria may be specified for storing and cleaning up logged data:
  - Data will be deleted from the database automatically after the number of days specified in the **Maximum storage (days)** box. The default is 180 days.
  - Data will be deleted from the database automatically according to the amount of free space in the database if **Enable free space monitoring** is checked.
    - The feature is always enabled (the **Enable free space monitoring** box is checked but disabled) when the embedded database is used. For an SQL Server database, place a check mark ☑ to enable the feature (or remove the check mark to disable it).
    - Specify the **Maximum database size** (default is 2,000 MB for the embedded database, 10,000 MB for an SQL Server database).
    - Specify the **Minimum free space** (default is 10%) to use as criteria for deleting records.
- Click **OK** to save any changes.

8.6 Server Options - SNMP Tab

The SNMP tab specifies global settings for trap ports, community strings and the login user name and password for Web cards. All but the trap receive port may be overridden for individual devices.

- Start the Viewer with permission to manage global device parameters (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **SNMP** tab.
- The Trap receive port box displays the trap port to be used by the server to receive traps.
  - The default is **Use standard port (162)**, the most commonly used port.
  - To specify another port, click **Use custom port** and choose a number from the drop-down list.
- In the Web card login section, enter the User name and Password to be used globally for all devices. The default is **Liebert** for both user name and password.
- In the Global values section, enter request and trap community strings to be used by all devices. In most cases, these will be the same. The defaults are:
  - Request community: **public** (The request community string is case-sensitive and must match the community string entered in the SNMP card.)
  - Trap community: **public** (The trap community string is case-sensitive and must match the community string entered in the SNMP card.)
- The Timeout box designates the number of seconds for a device to respond to an SNMP query. The default is 1000 milliseconds; Emerson suggests this value is appropriate in most cases. (If you receive an excessive number of timeout error messages, consider increasing the time.)
- The Retries box specifies the number of times to attempt polling a device for an SNMP query after no response. The default is 2.
- The Request port box displays the port to be used by the server to request traps.
  - The default is **Use standard port (161)**, the most commonly used port.
  - To specify another port, click **Use custom port** and choose a number from the drop-down list.
- Click **OK** to save any changes.



8.6.1 Server Options - SNMP Tab - SNMPv3

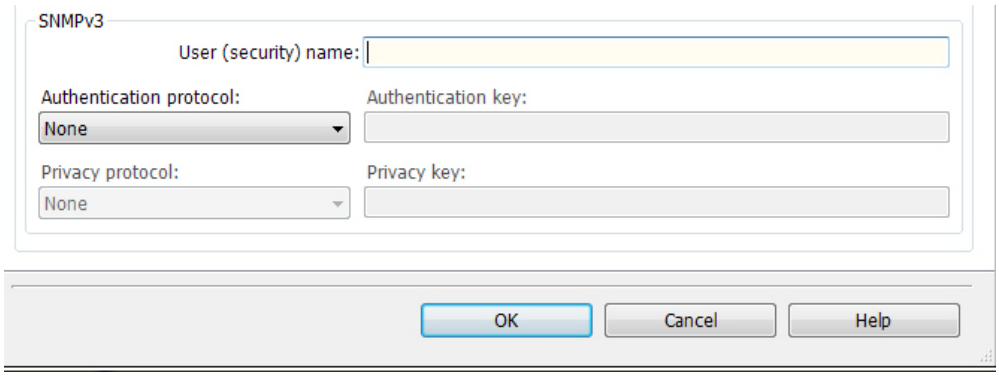
Liebert Nform supports SNMPv3 for devices that utilize the SHA1 or MD5 authentication protocols and the DES privacy protocol. Settings in the SNMPv3 portion of the SNMP tab will apply to all managed devices configured to use SNMPv3 (refer to **9.2.2 - Protocol Tab - SNMP**).

NOTE

Liebert Nform pemits only one set of credentials for accessing SNMPv3 devices. The system administrator should store the user name and keys in a place accessible by all personnel authorized to access the SNMPv3 devices.

In the SNMPv3 parameters box, enter the settings for accessing SNMPv3 devices. The user name, as well as the passphrase(s), must match one of the accounts in each of the devices on which SNMPv3 will be employed. The user name and passphrase(s) must first be configured in each device that is to use SNMPv3. For information on configuring the account, refer to the user manual of the card in the device.

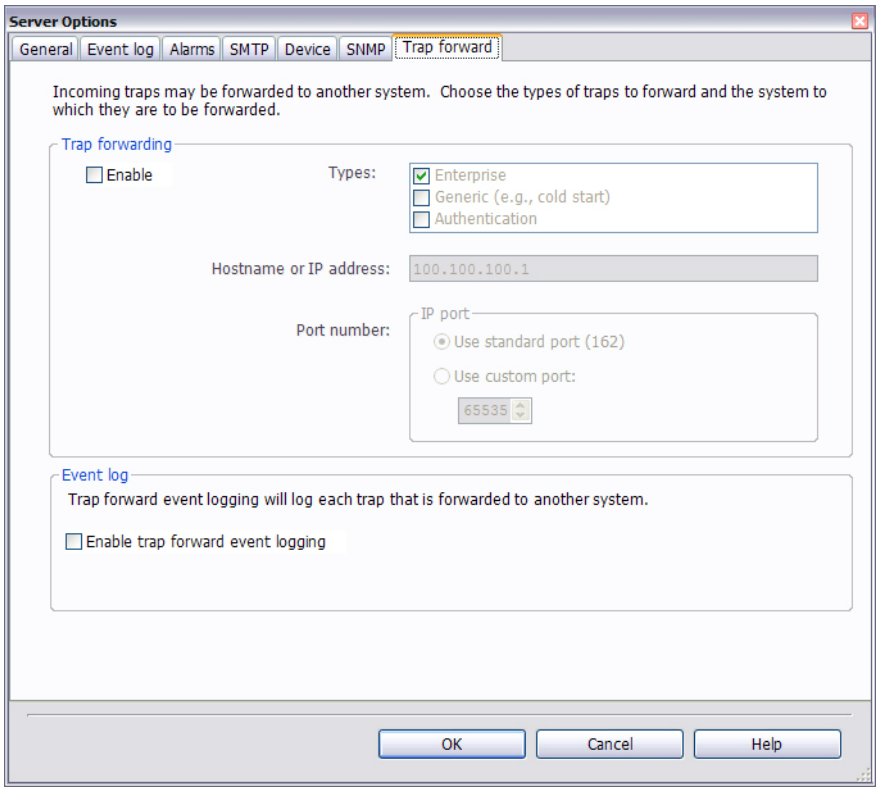
- In the User (security) name box, enter a name to use when accessing SNMPv3 devices.
  The user name can be as short as one character. Leave this blank if SNMPv3 will not be enabled.
- Choose an Authentication protocol to be used. The default is **None**; options are **SHA-1** and **MD5**.
  If Authentication protocol is set to **None**, the Privacy protocol will not be available. Using the Authentication protocol does not require that the Privacy protocol be used.
- Enter an Authentication key. The key must have at least eight characters and no more than 64.
  Record this key and store it in a secure area where it can be retrieved.
- Choose a Privacy protocol to be used. The default is None; the only option is **DES**.
  The Privacy protocol will not be available if Authentication protocol is set to **None**.
- Enter a Privacy key. The key must have at least eight characters and no more than 64.
  Record this key and store it in a secure area where it can be retrieved.
- Click **OK** to save your changes.



8.7 Server Options - Trap Forwarding Tab

Enabling the Trap Forwarding global setting sends all selected types of traps collected by Liebert Nform to a specified computer. This may be overridden for any particular device with the Enable Trap Forwarding For This Device check box (see **9.2 - Edit the Device Properties**).

The Trap Forwarding feature differs from the Forward Trap action, which may be configured to forward individual traps to multiple destinations (see **12.2.5 - Configure Forward Trap Actions** for details).



- Start the Viewer with permission to manage SNMP trap forwarding (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **Trap Forward** tab, which specifies global settings for two features:
- **Trap Forwarding** - forward incoming traps to another system:
  - This feature is disabled by default.

    To activate, place a check mark ☑ in the **Enable** box. Even if enabled globally, this feature may be disabled for individual devices.
  - Place a check mark ☑ in each Types box as needed to select the kinds of traps to forward:
    - **Enterprise**
    - **Generic (e.g., cold start)**
    - **Authentication**
  - In the Hostname or IP address box, specify the computer where traps should be forwarded.
  - In the IP Port box, specify whether to use the standard port 162 (recommended) or a custom port for this global setting.
- **Event Log** - log each trap that is forwarded to another system:
  - This feature is disabled by default.

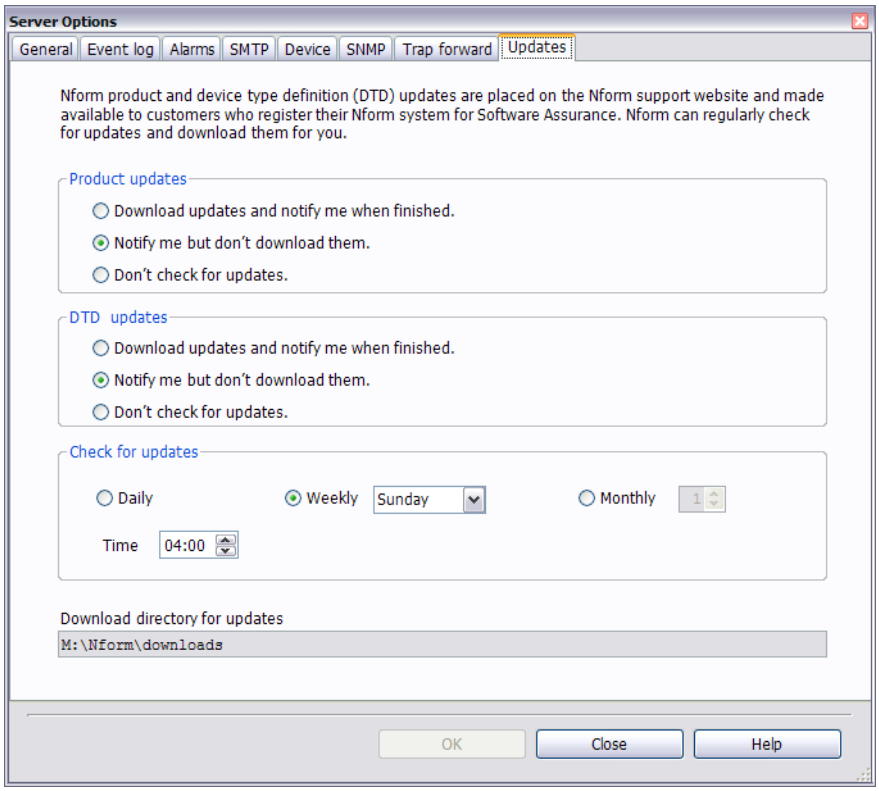
    To activate, place a check mark ☑ in the **Enable trap forward event logging** box. Even if enabled globally, this feature may be disabled for individual devices.
- When finished, click **OK** to save any changes (or **Cancel** without saving).

8.8 Server Options - Updates Tab

Updates to the Liebert Nform software and updated device support (DTD) files are available to users who have registered their Nform system for Software Assurance (see **5.2 - Register Product**).

Use the Updates tab to specify whether and when to have Nform automatically check for updates.

Regardless of the settings specified in this window, you may check for updates at any time using the Help menu to (see **15.5 - Check for Updates**).



- Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Server Options** icon at the bottom of the window (or click on the **Configure** menu, then choose **Server Options**).
- Click on the **Updates** tab.
- Choose an option of checking for updates in the Product Updates and DTD Updates sections:
  1. Download updates and notify me when finished.
  2. Notify me but don't download them *(the default)*.
  3. Don't check for updates (see **15.5 - Check for Updates** to check manually).
- Specify a schedule in the Check for Updates area for Option **1** (download) or **2** (notify):
  - Decide how often Nform should check for updates by clicking on:
    - Click on **Daily** to check for updates every day.
    - Click on **Weekly** to check for updates once a week, then choose the day of the week *(Sunday* through *Saturday)*.
    - Click on **Monthly** to check for updates once a month, then choose the day of the month *(1* through *28—1* for the first day of the month, *2* for the second, and so on*)*.
  - Enter the time of day to check for updates in the Time box (*hh:mm* using a 24-hour clock).
- When finished, click **OK** to save any changes (or **Cancel** without saving).

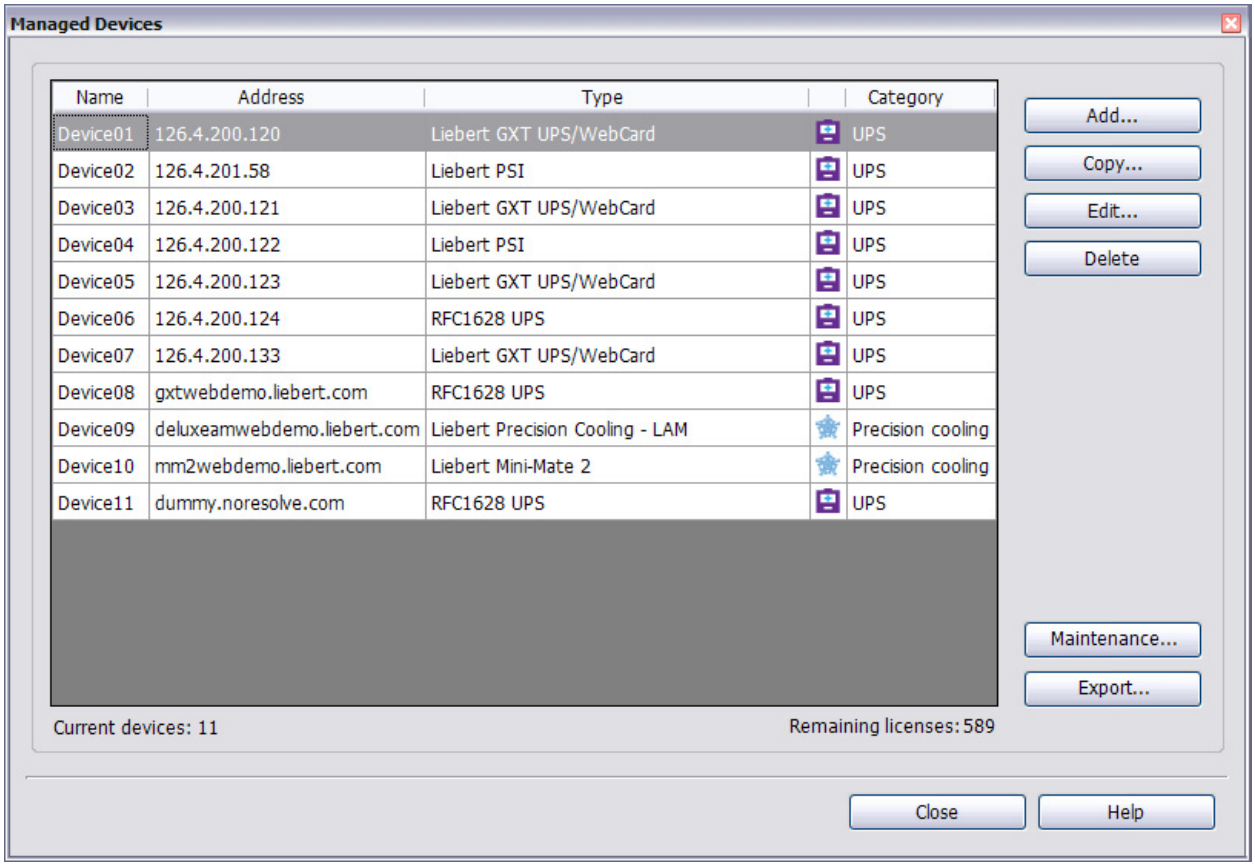
The **Updates Available** button shown below appears in the Viewer when updates are available. Clicking on this button opens the Updates Available window (see **15.5 - Check for Updates**).

9.0 CONFIGURING 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.

Liebert Nform can monitor and manage any device with a Device Type Definition (DTD); many DTDs are installed with the application.

If you have purchased a Device Type Definition (DTD) for new equipment from Emerson, you must first install the DTD before the device may be added to the configuration (see **18.5.1 - Tools Menu - Install DTD**).



9.1 Add Devices to the Configuration

Three methods are available for adding devices to the Nform configuration. The software can detect device properties with any of these methods.

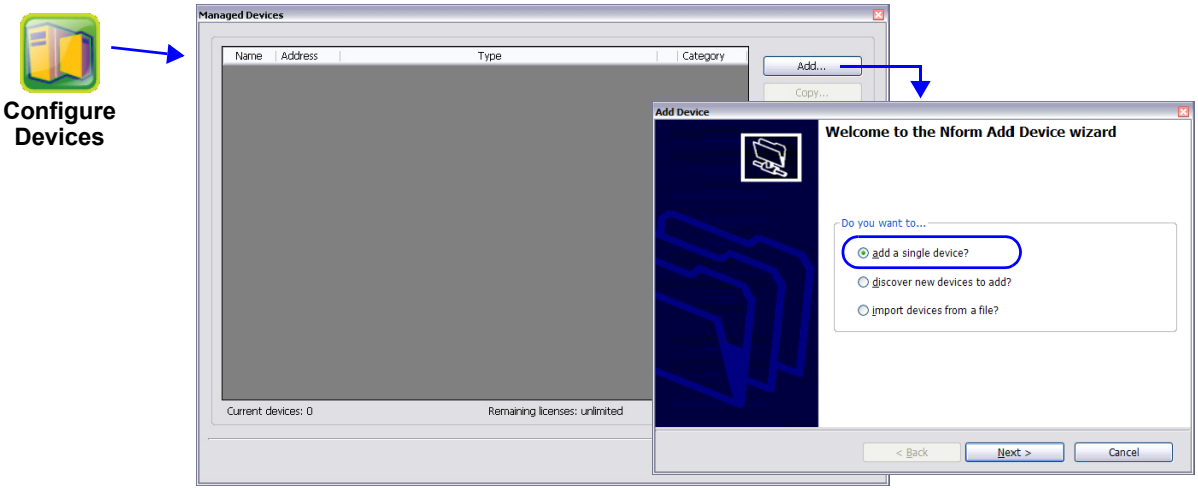
Devices may be added:

- by entering the hostname or IP address of an individual device (see **9.1.1 - Add a Single Device**)
- by entering a range of IP addresses for automatic detection of supported devices on a network (see **9.1.2 - Detect Devices on a Network**)
- by importing devices from a file of device properties (see **9.1.3 - Import Devices From a File**)

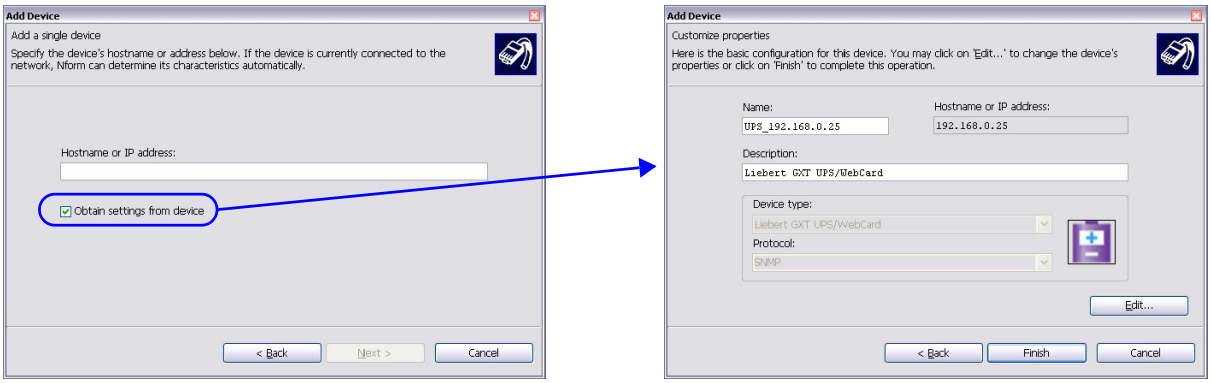
9.1.1 Add a Single Device

Devices may be added one at a time through this feature.

1. Start the Viewer with permission to configure devices (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard, shown below right.



4. Click on **Add a single device**.
5. In the Add a Single Device window, below left, enter the hostname or IP address of the device you wish to add.
6. To automatically detect the description, device type, protocol and other details about the device, place a check mark ☑ in the **Obtain settings from device** box.
7. Click **Next**.



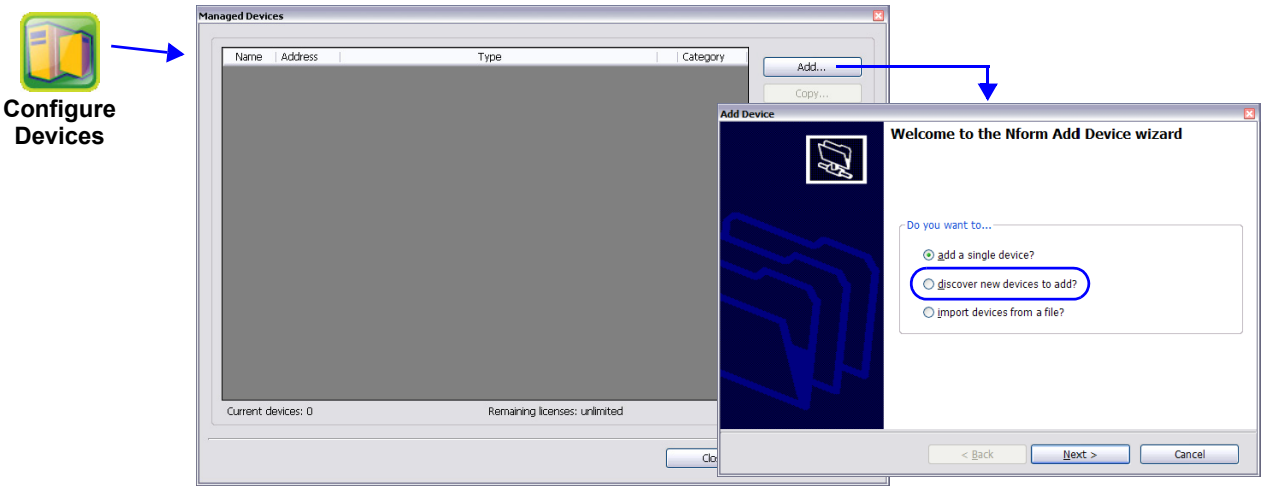
8. The Customize Properties window, above right, displays key details for the device.
   If you wish to view or make changes to the properties at this time, click the **Edit** button, then refer to **9.2 - Edit the Device Properties**. Changes may be made at any time.
9. Click **Finish**.
10. A message confirms the device was added properly. Click **OK**, and the Managed Devices window displays the newly added device.
11. Click **Close** to return to the viewer.

9.1.2 Detect Devices on a Network

The auto discovery feature speeds up configuration with automatic detection of multiple devices within a range of IP addresses on a network.

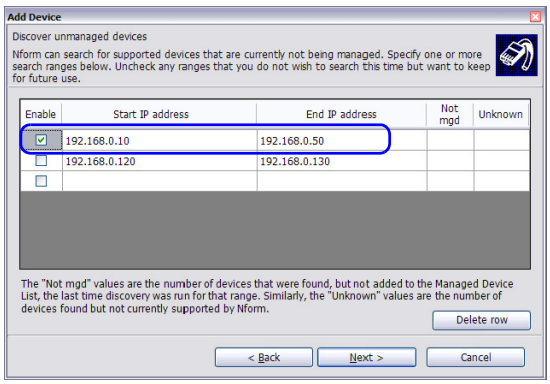
To use Auto Discovery to detect devices on the network:

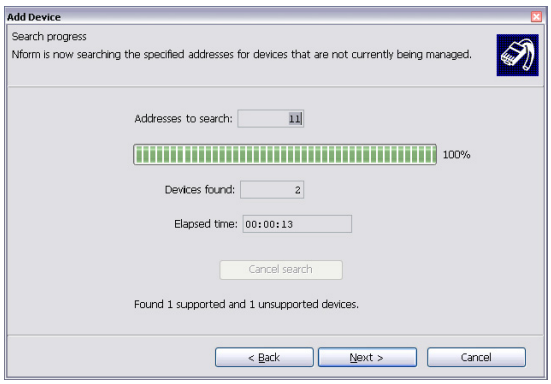
1. Start the Viewer with permission to discover new devices (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard, shown below right.



4. Click on **Discover new devices to add**.
5. In the Discover Unmanaged Devices window, below left, enter ranges of IP addresses to search:
   - **Enable** - Place a check mark ☑ for each range you wish to search now. Each range remains available for future searches until removed by clicking the **Delete row** button.
   - **Start IP address** - Click in the box and enter the lower end of the range—e.g., *198.162.0.20*.
   - **End IP address** - Click in the box and enter the upper end—*198.162.0.30*.

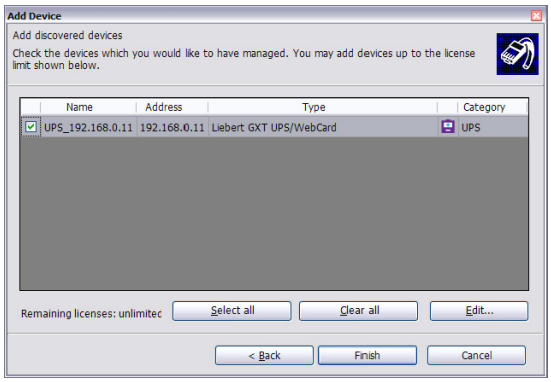
   Two columns display results from previous searches:
   - **Not mgd** is the number of devices found but not yet added to the Managed Devices list.
   - **Unknown** is the number of devices found but not currently supported by the software.
6. Click **Next** to start the Auto Discovery process. The Search Progress window opens, below right.





7. When the search is complete, the progress bar shows 100%. Click **Next**.

8. The Add Discovered Devices window shows all supported devices detected during the search. You may add as many devices as allowed by your license. Review the list and:
   - Place a check mark ☑ next to each device you want to add to the list of managed devices.



   Click **Select all** to add check marks to all devices.
   - Remove check marks from devices you do not want to have managed.

     Click **Clear all** to remove all check marks.
   - Click the **Edit** button to view all properties or make changes, then refer to **9.2 - Edit the Device Properties**. Changes may be made at any time.
9. Click **Finish**.
10. A message confirms the device was added properly. Click **OK**, and the Managed Devices window displays all devices that have been added to the configuration.
11. Click **Close** to return to the viewer.

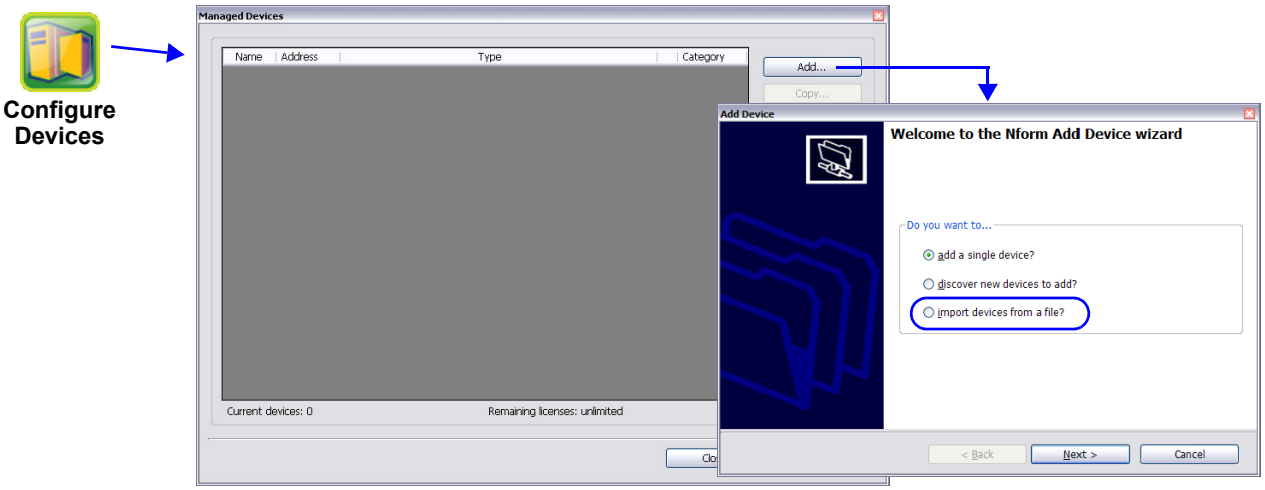
9.1.3 Import Devices From a File

This section describes how to use the import option in the Add Devices wizard to import devices from a file containing device properties.

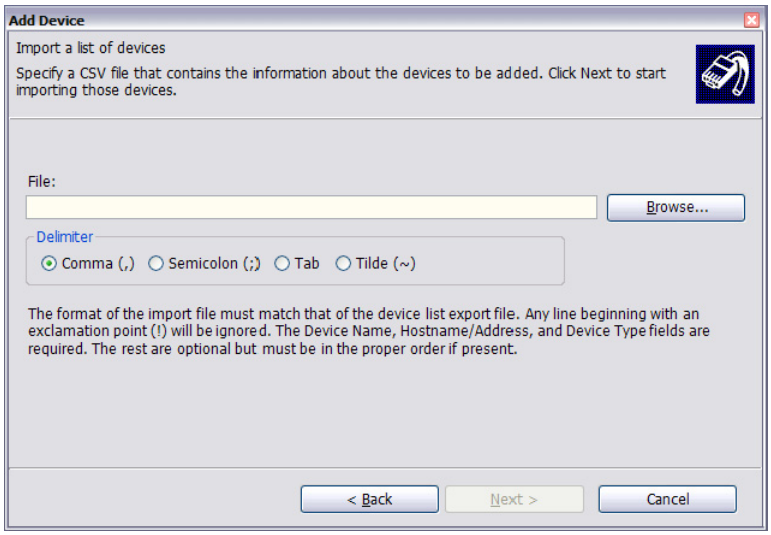
The file may be generated from the Export Devices feature (see **9.4 - Export Managed Device Configurations to a File**) or created from a template based on the generated file. An exported file will have a header line inserted as a comment with an exclamation point (!) at the beginning of the line. It is a good practice to use header lines in the import files as well. Lines containing device definitions must have values for the first three fields for each device. Other fields are optional.

To import devices from a file:

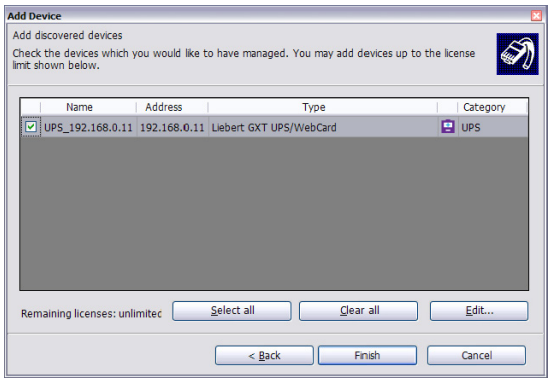
1. Start the Viewer with permission to discover new devices (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard, shown below right.



4. Click on **Import devices from a file** to open the Add Device window shown below.
5. Specify the file to be imported: enter the full path in the **File** box or click the **Browse** button to locate the file, then click **Open**.
6. Select the appropriate **Delimiter** option for the type of delimiter used in the file. The default is **Comma (,)**; other options are **Semicolon (;)**,.**Tab** and **Tilde (~)**.
7. Click **Next** to begin the import process. If at least one device is imported, proceed to **Step 8**. If there are errors in an import operation, the same Add Devices window remains open (as shown above). For more information, open the text file named **DeviceImportErrors.txt** in the **user** subdirectory of the Nform installation.



8. The Add Discovered Devices window shows all supported devices detected during the import operation. You may add as many devices as allowed by your license. Review the list and:
   - Place a check mark ☑ next to each device you want to add to the list of managed devices.



   Click **Select all** to add check marks to all devices.
   - Remove check marks from devices you do not want to have managed.

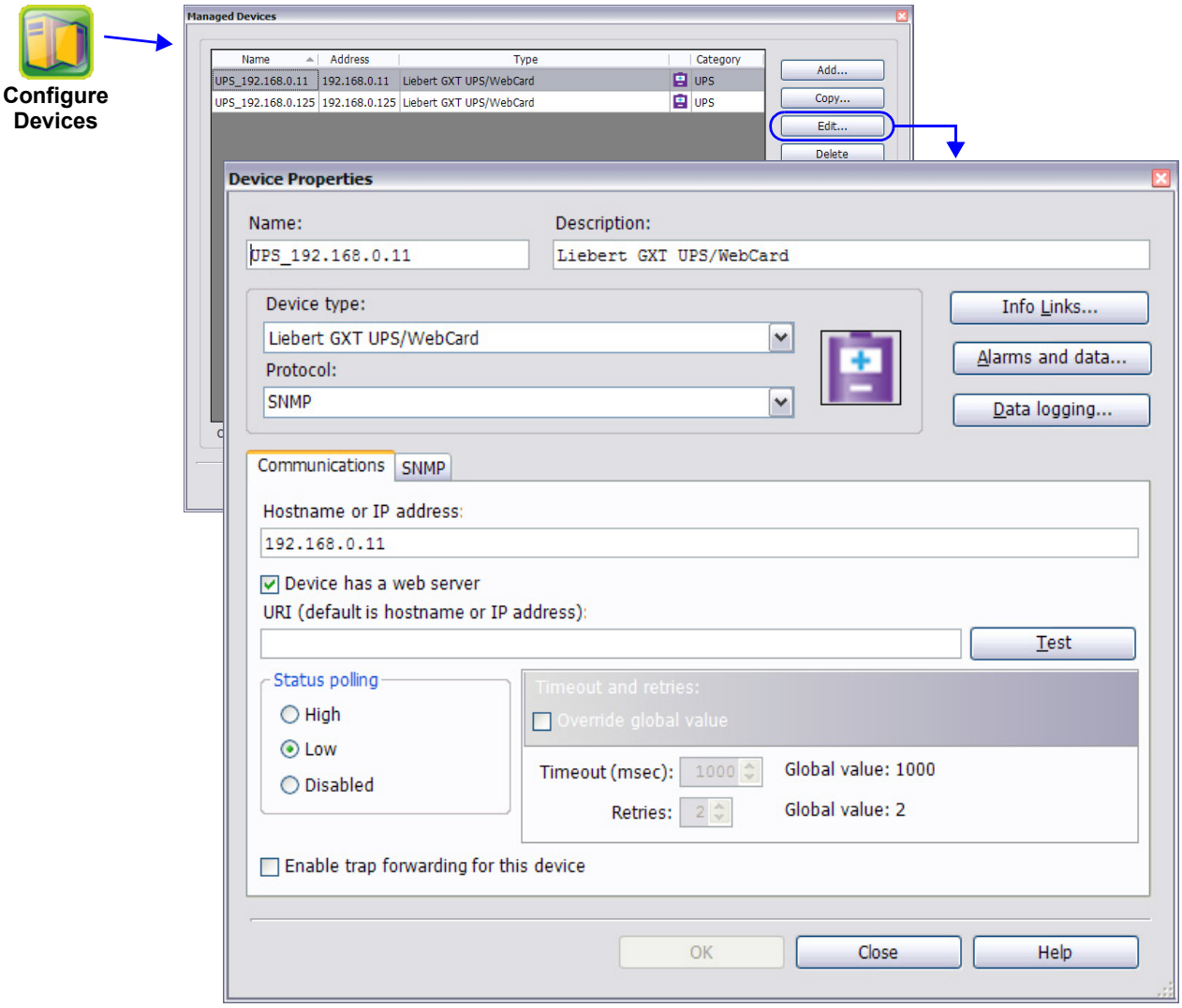
   Click **Clear all** to remove all check marks.
   - Click the **Edit** button to view all properties or make changes, then refer to **9.2 - Edit the Device Properties**. Changes may be made at any time.
9. Click **Finish**.
10. A message confirms the device was added properly. Click **OK**, and the Managed Devices window displays all devices that have been added to the configuration.
11. Click **Close** to return to the viewer.

9.2 Edit the Device Properties

Many settings are automatically entered—some from global settings (see **8.0 - Configuring Server Options**) and some from automatic detection of device settings (see **9.1 - Add Devices to the Configuration**). Most of these settings may be changed.

To edit the properties of a device:

- Start the Viewer with permission to configure devices (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window. This window is also accessible from the **Edit** button from any device window.
- Click the **Edit** button to open the Device Properties window, shown below right.

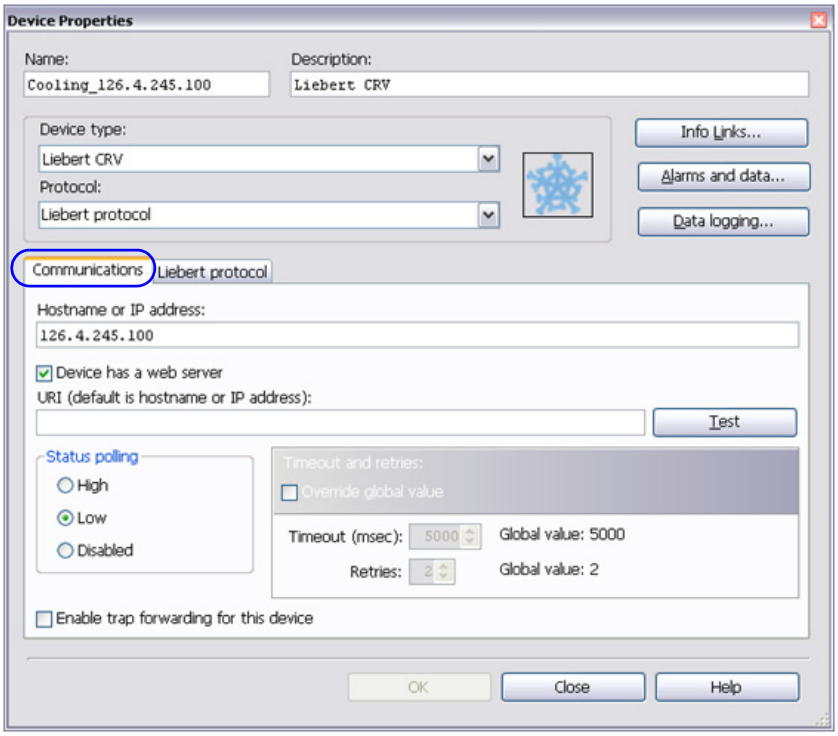


Device Name and Characteristics

- Edit the name and description at the top of the window as needed:
  - **Name** - An identifying name for the device that is displayed in the viewer and may appear in notifications and logs—for example, *UPS_192.168.0.25*.
  - **Description** - Additional text to describe the device—e.g., *Liebert GXT UPS/Web Card*.
- To change the type of device, click in the Device Type list and choose from the supported devices.
- The Protocol box entry—for example, *SNMP*—varies according to the type of device selected. To change this for a custom device, click in the Protocol list and choose from the supported protocols.

9.2.1 Communications Tab

The Device Properties window has two tabs. The **Communications** tab is shown below.



- **Hostname or IP Address**
  - For an SNMP device, enter the device's domain name or IP address; if needed, check with the System Administrator for that information.
  - For a device using the Emerson Protocol—for example, the Liebert MPX—via BACnet router through MSTP (RS-485), enter the address of the BACnet router for this device (see **9.2.3 - Protocol Tab - Emerson Protocol**).
- **Device has a web server** - This box should be checked to allow viewing device information through a Web browser. The device must have an SNMP card that supports a Web interface.
- **URI** - Leave this box blank (default) to use the device's hostname or IP address to access the Web interface. To override this, enter an alternate address in this box.
- **Test** - Click this button to connect to the device via the Web interface.
- **Status polling** - Options vary depending on the choice made in **8.5 - Server Options - Device Tab**, as shown below. The options for individual devices may be customized as follows:

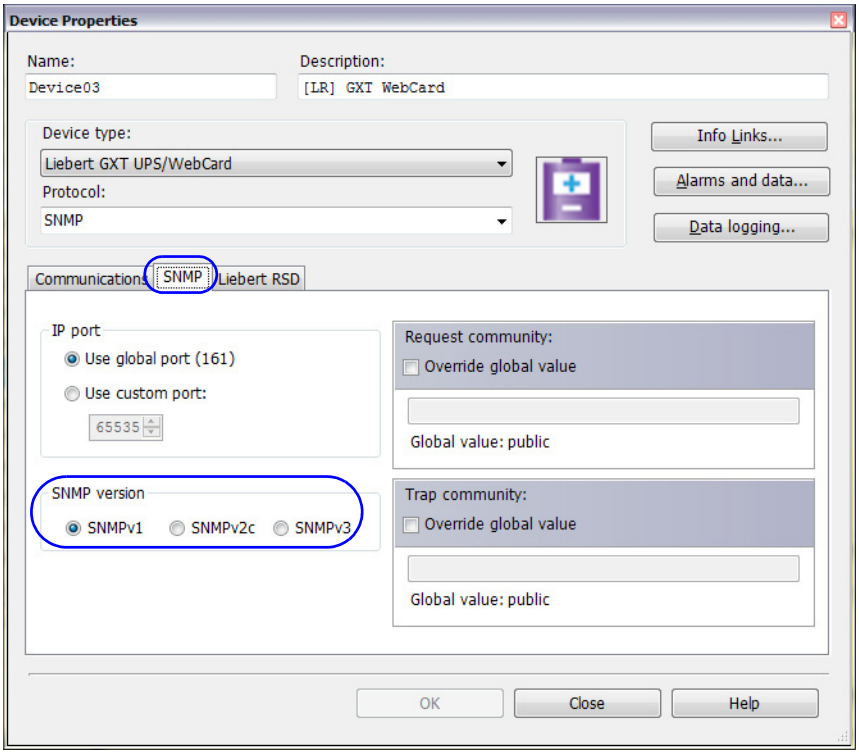
Global option	Status polling	Options for customizing individual devices
Priority	Status polling High Low Disabled	• **High** - device will be polled approximately every 2 to 5 seconds * • **Low** (default) - device will be polled approximately every 20 seconds * • **Disabled** - no polling will occur for this device
Daily	Status polling Daily at 15:35 Disabled	• **Disabled** - no polling will occur for this device • If enabled, all devices will be polled at the same specified time each day
Interval	Status polling Interval - every 1 h Disabled	• **Disabled** - no polling will occur for this device • If enabled, all devices will be polled at the same specified interval
Disabled	Status polling Globally disabled	• None—this option disables the polling option for all devices (to change polling for an individual device, the global option must be changed)

* Polling interval for high or low priority varies by total number of devices

- **Enable trap forwarding for this device** - Place a check mark ☑ to activate this feature.
- **Timeout and Retries**: The global values will be used by default. To change this, place a check mark ☑ in the Override Global Value check box, then enter values for this device in the Timeout and Retries boxes (see **8.6 - Server Options - SNMP Tab**).

9.2.2 Protocol Tab - SNMP

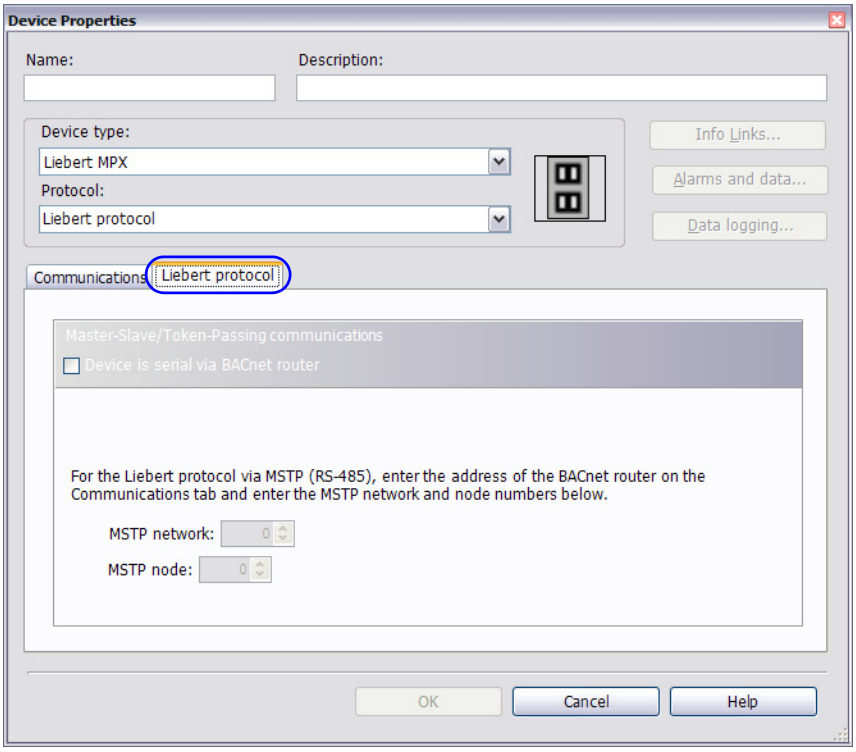
The Device Properties window has three tabs; the second tab varies according to the protocol used by the selected device. The **SNMP** tab is shown below.



Option	Notes
IP port	The default is **Use global port (161)**, the most commonly used port. The IP port corresponds to the Request port in the Server Options global settings (see **8.6 - Server Options - SNMP Tab**). • To specify a different port, click **Use custom port** and choose a number from the drop-down list.
SNMP version	For devices that support newer versions of SNMP, this option provides a way to select the SNMP version for a specific device—for example, from *SNMPV2c* to *SNMPv1*—to help troubleshoot communication problems with the device. SNMPv1—unencrypted protocol SNMPv2c—unencrypted protocol SNMPv3—protocol that can use authentication and be encrypted Only devices that are capable of SNMPv3 communication will have the SNMPv3 choice shown. If SNMPv3 parameters have been configured, then that choice may be selected here to use v3 communication with the device (refer to **8.6.1 - Server Options - SNMP Tab - SNMPv3**).
Request community	The global value displayed below the text box (see **8.6 - Server Options - SNMP Tab**) will be used by default. • To change this value, place a check mark ☑ in the Override Global Value check box and enter a new value in the text box.
Trap community	

9.2.3 Protocol Tab - Emerson Protocol

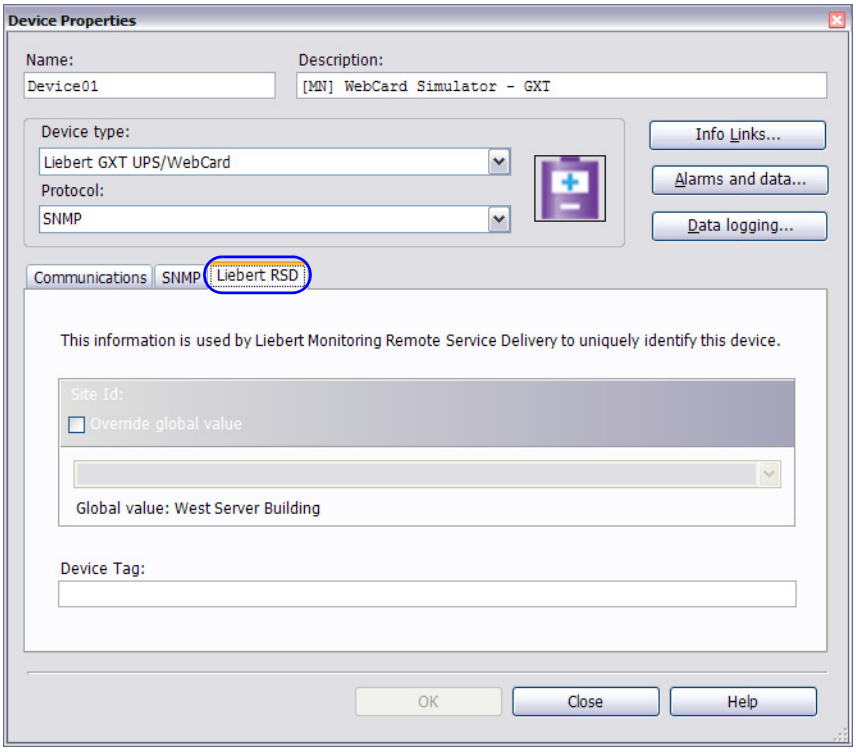
The Device Properties window has two tabs; the second tab varies according to the Protocol for the selected device. The **Emerson Protocol** tab is shown below.



- If using the Emerson Protocol via BACnet router through MSTP (RS-485):
  - Click to place a check mark ☑ in the **Device is serial via BACnet router** box. By default, this setting is disabled.
  - Enter a number in the MSTP Network box to indicate the network number.
  - Enter a number in the MSTP Node box to specify the node where the device is connected.
  - Click on the **Communications** tab, then enter the address of the BACnet router for this device in the **Hostname or IP Address** box (see **9.2.1 - Communications Tab**).

9.2.4 Liebert RSD Tab

The Device Properties window has a third tab, **Liebert RSD**, that appears only when the Global Setting for Liebert RSD is activated (see **8.1 - Server Options - General Tab**), as shown below.



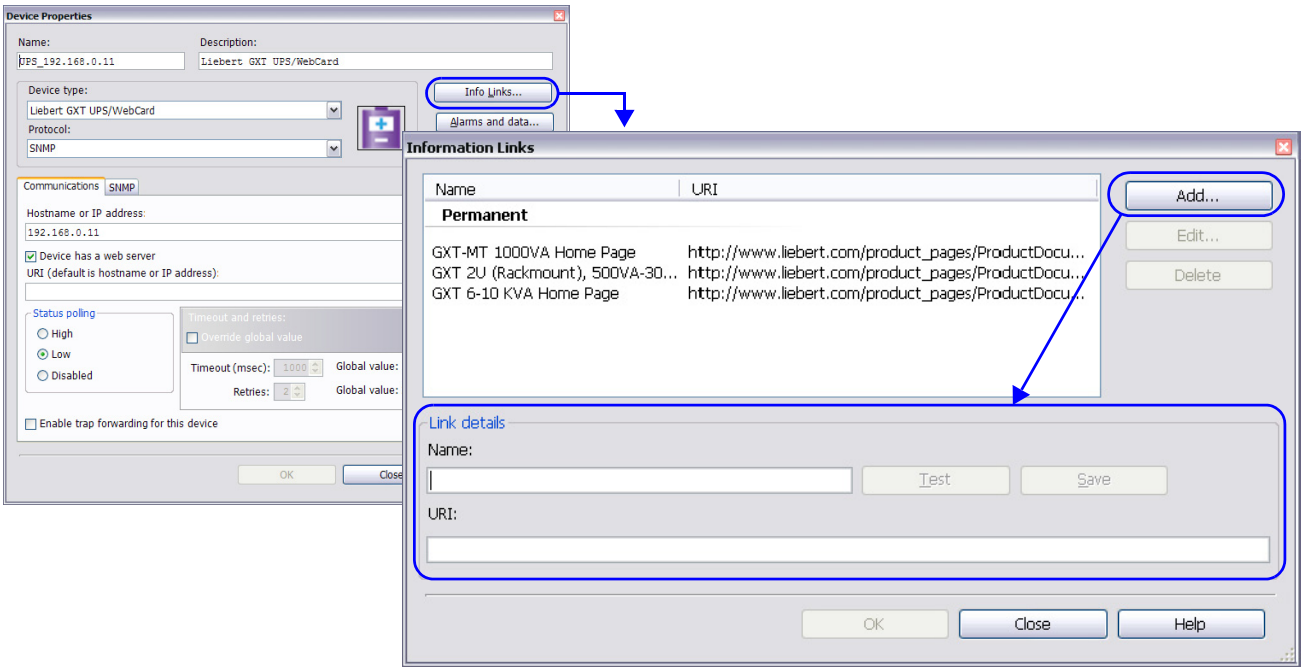
- To override the global setting for this device:
  - Click to place a check mark ☑ in the **Override Global Value** box.
  - Enter a different string in the text box below the **Override Global Value** box.
- Enter a string in the Device Tag box. This value is assigned by Liebert Services for devices that are covered by a Liebert Services contract.

9.2.5 Info Links

You may define a link to a Web page or a file for a device, an area or a logical group. These links are accessible in the Navigate tab (see **16.3.5 - Navigate - Info Links View**).

- To open the Information Links window for:
  - Devices: Click **Info Links** in the Device Properties window (shown below).
  - Areas: Click **Info Links** in the Area Properties window (see **10.2 - Add or Edit an Area**).
  - Logical Groups: Click **Info Links** in the Group Properties window (see **10.4.1 - Group Properties - Logical Groups**).

  Permanent links—gathered during Auto Discovery of devices—may not be edited or deleted.
- To add a user-defined link, click the **Add** button to access the Link details area.
  - Enter a descriptive name for the link in the Name box.
  - Enter the full link in the URI box (e.g., *www.liebert.com* or *c:\text.txt*).
  - Click on the **Test** button to verify the designated Web page or file opens.
  - Click the **Save** button. The link appears under the heading **User-defined**.
- To change a user-defined link:
  - Click on the link to select it.
  - Click the **Edit** button, then make changes as needed.
  - Click the **Save** button.
- To remove a user-defined link, click on the link, then click the **Delete** button.
- Click **OK** to save any changes and close the window (or **Cancel** to close without saving).

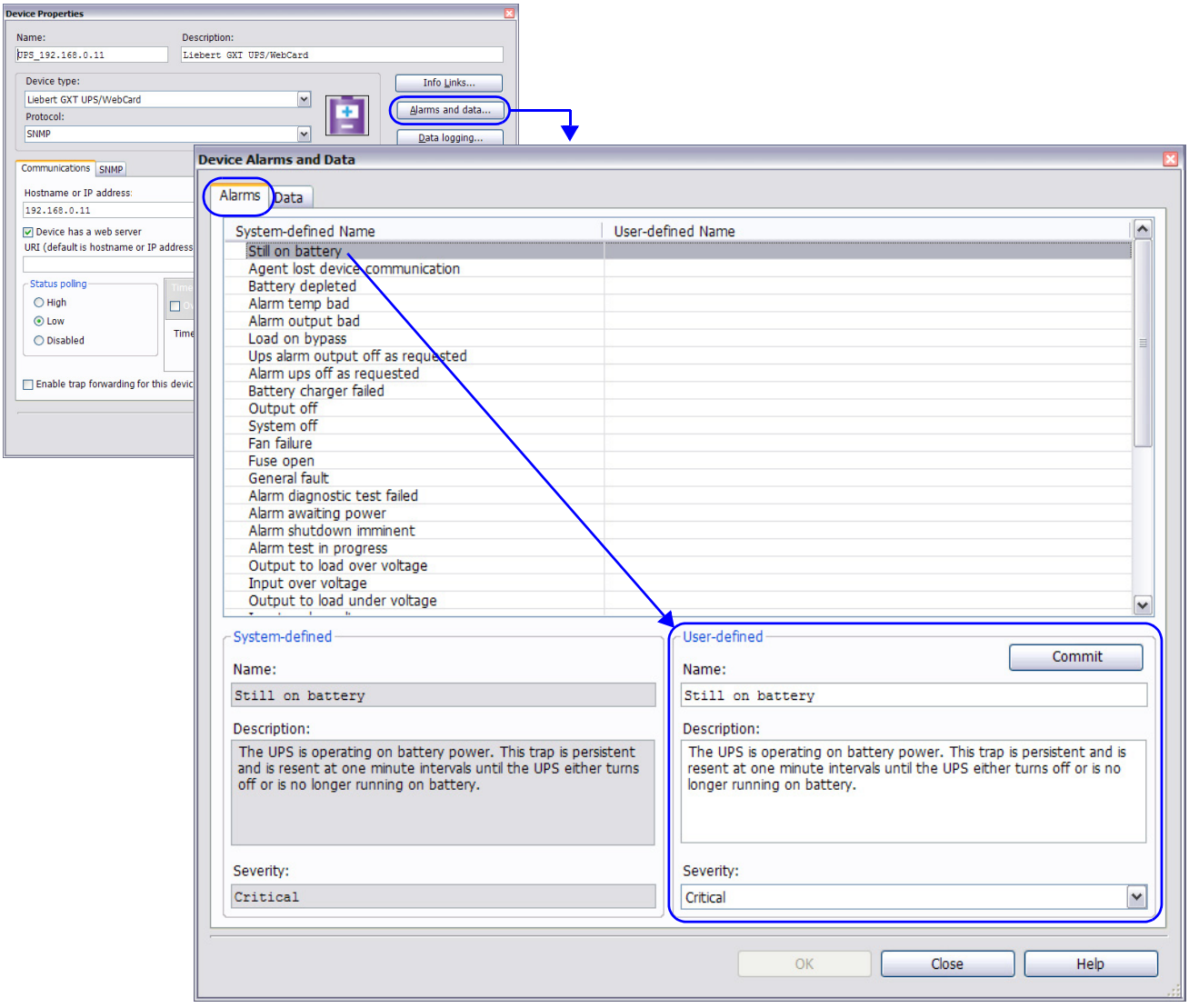


9.2.6 Alarms and Data

Alarms and Data - Alarms Tab

To view or change the name or severity level of alarms for this device:

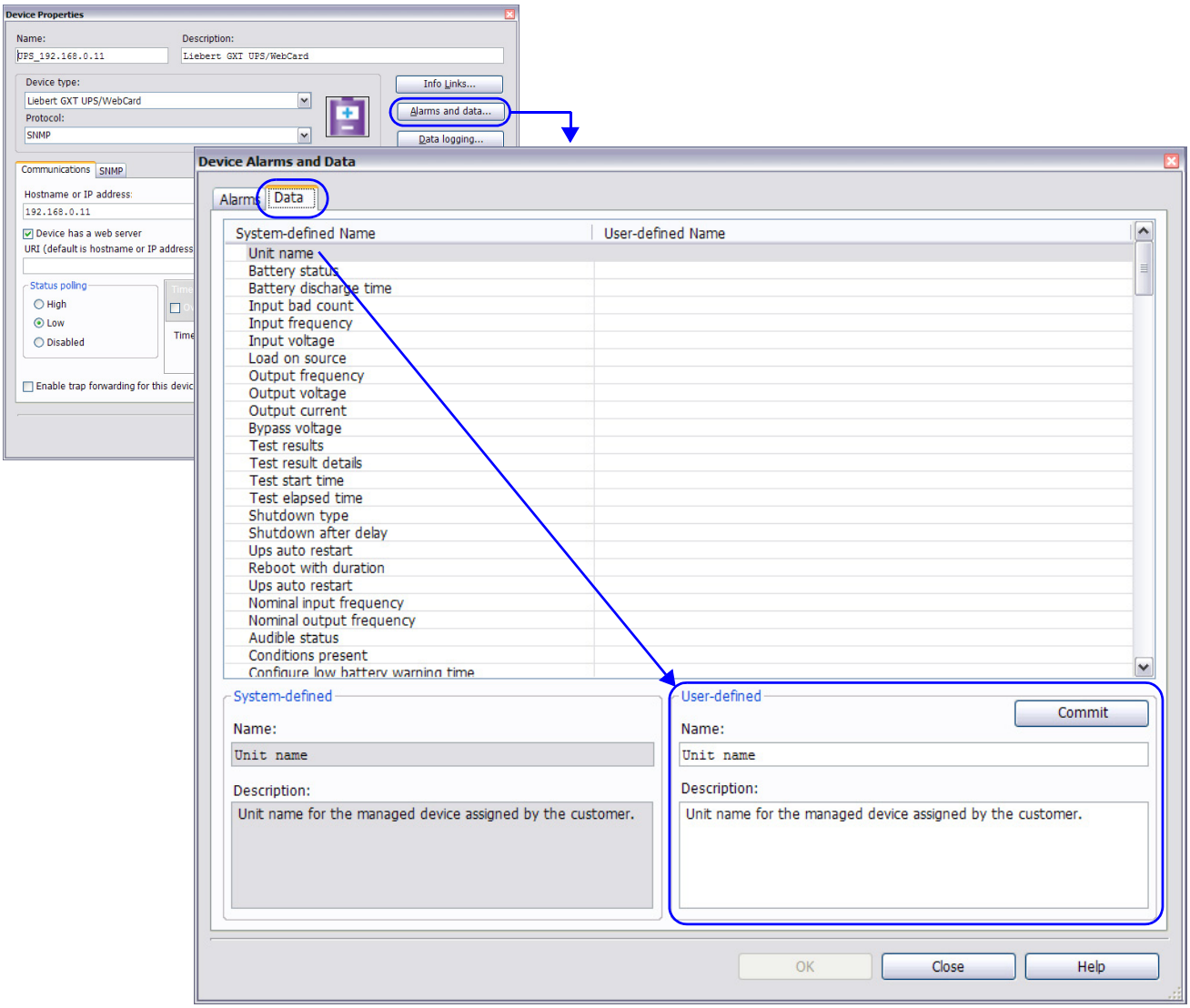
- Start the Viewer with permission to edit device definitions (see **13.2 - Assigning Users to Groups**).
- Click on the **Alarms and Data** button in the Device Properties window to open the Device Alarms and Data window, then click the **Alarms** tab to view all system-defined alarms for this device (below right).
- To change a name, click on an alarm at the top of the window, then enter text in the Name box in the User-Defined area (lower right corner).
- To change the severity, click on an alarm, then choose from the Severity list—e.g., *Warning*.
- Click **Commit** to save these changes and keep the window open.
- When finished, click **OK** to save all changes and close the window. (Or click **Cancel** to close without saving changes.)
- The next time the window is opened, a check mark appears to the left of a System-Defined Name that has been redefined; the User-Defined Name column displays the new name.



Alarms and Data - Data Tab

To view or change the name of data items for this device:

- Start the Viewer with permission to edit device definitions (see **13.2 - Assigning Users to Groups**).
- Click on the **Alarms and Data** button in the Device Properties window to open the Device Alarms and Data window, then click the **Data** tab to view all system-defined data points for this device (below right).
- To change a name, click on a data point at the top of the window, then enter text in the Name box in the User-Defined area (lower right corner).
- Click **Commit** to save these changes and keep the window open.
- When finished, click **OK** to save all changes and close the window. (Or click **Cancel** to close without saving changes.)
- The next time the window is opened, a check mark appears to the left of a System-Defined Name that has been redefined; the User-Defined Name column displays the new name.



9.2.7 Data Logging

*This feature requires a license with Advanced Communications (see **Table 12**).*

Data logging may be used to collect real-time data continuously at fixed intervals to track the condition of a device.

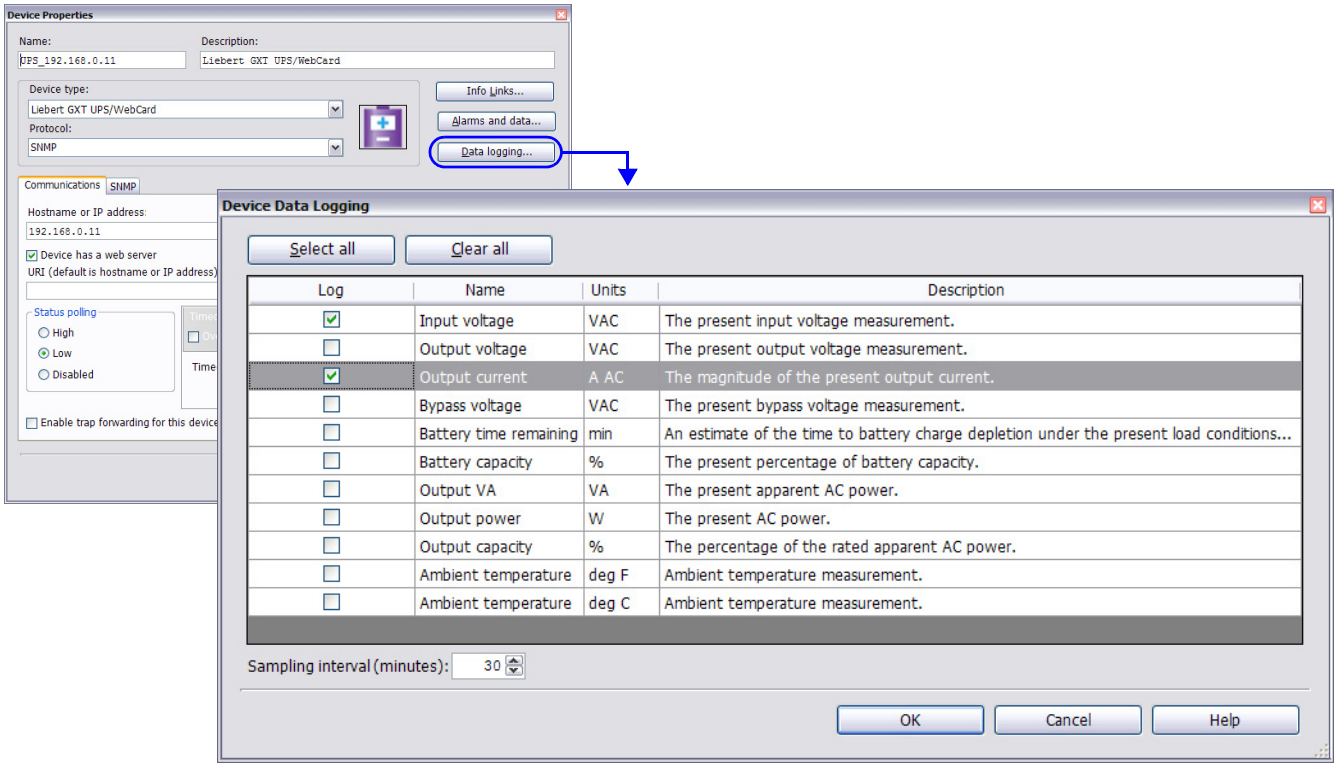
This time-based feature differs from the event-based Read Data action, which may be used to collect real-time data after being triggered by an event (see **12.2.6 - Configure Read Data Actions**).

Both features collect the same type of data, which may be viewed in a trend graph (see **16.3.4 - Navigate - Trends View**) or exported to a text file (see **14.3 - Export Data Log History**).

Items selected for data logging will have a check mark in the Log column in the Device Data Logging window, shown below, and the Trend Data Selection window (see **16.3.4 - Navigate - Trends View**).

To view or change the items selected for data logging for this device:

- Start the Viewer with permission to configure data logging (see **13.2 - Assigning Users to Groups**).
- Click on the **Data Logging** button in the Device Properties window to open the Device Data Logging window.
- Each data item appears with its name, units of measurement and a brief description. Use the Log check boxes to choose which data items to log:
  - Click to place a check mark ☑ to the left of any data item. (Click again to remove a check mark.)
  - Click the **Select all** button to check all items.
  - Click **Clear all** to remove all check marks.



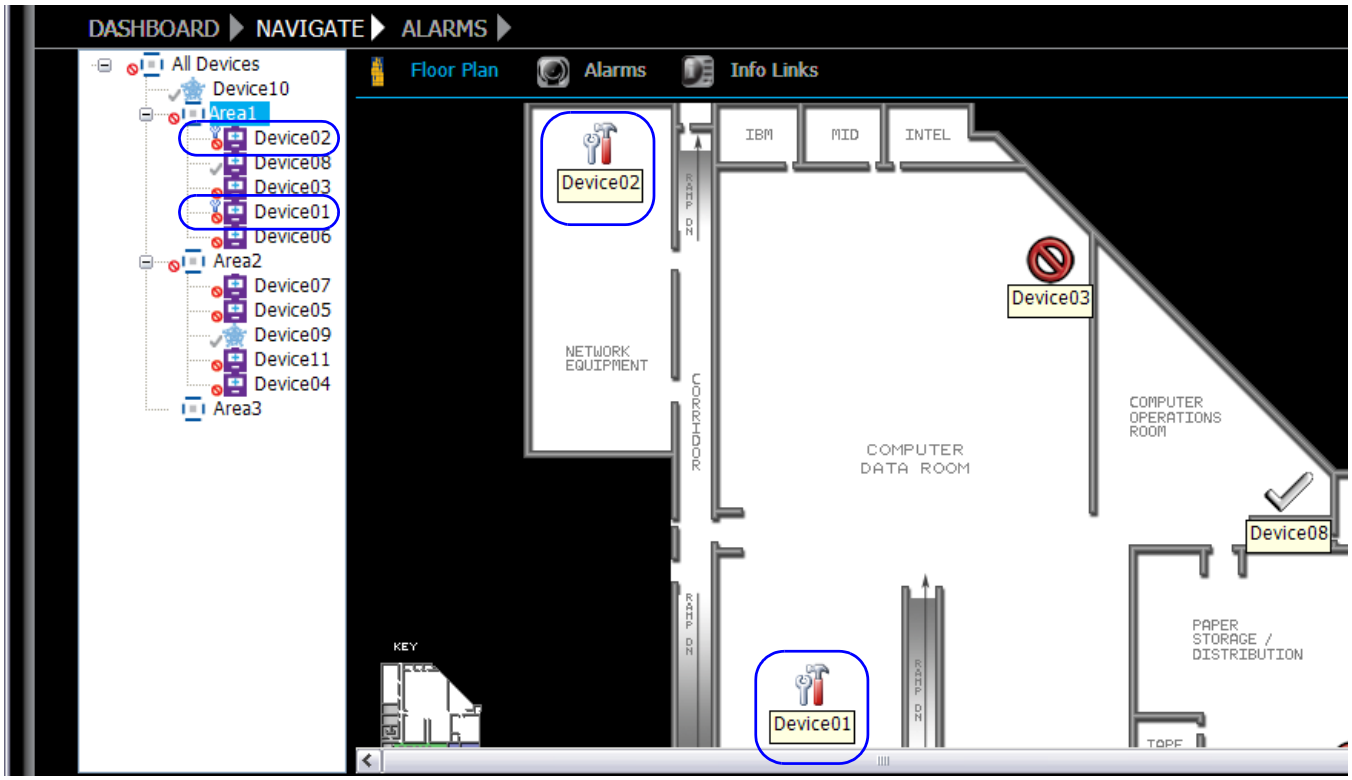
- In the **Sampling Interval (minutes)** box, specify how often to collect readings of the selected data items from the device.
- When finished, click **OK**.

9.3 Configure Maintenance Mode

Devices may be placed in maintenance mode, which prevents device-related alarms from triggering configured actions, including user notifications. Alarms are logged (see **16.4.3 - Informational Icons in the Navigation Tree**), but will not generate actions or notify users. Devices may be placed in maintenance mode—manually or at a scheduled time—or returned to normal.

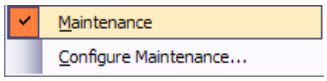
When a device is in maintenance mode, the images in the navigation view will change from status icons to maintenance icons, as shown below.

- The floor plan in the right side of the window shows Device01 and Device02 with maintenance icons, indicating both devices are in maintenance mode.
- In the tree at left, the same two devices appear with a smaller version of the maintenance icon, above a status icon such as No Communication.
- For details about status icons, see **16.4.3 - Informational Icons in the Navigation Tree**.

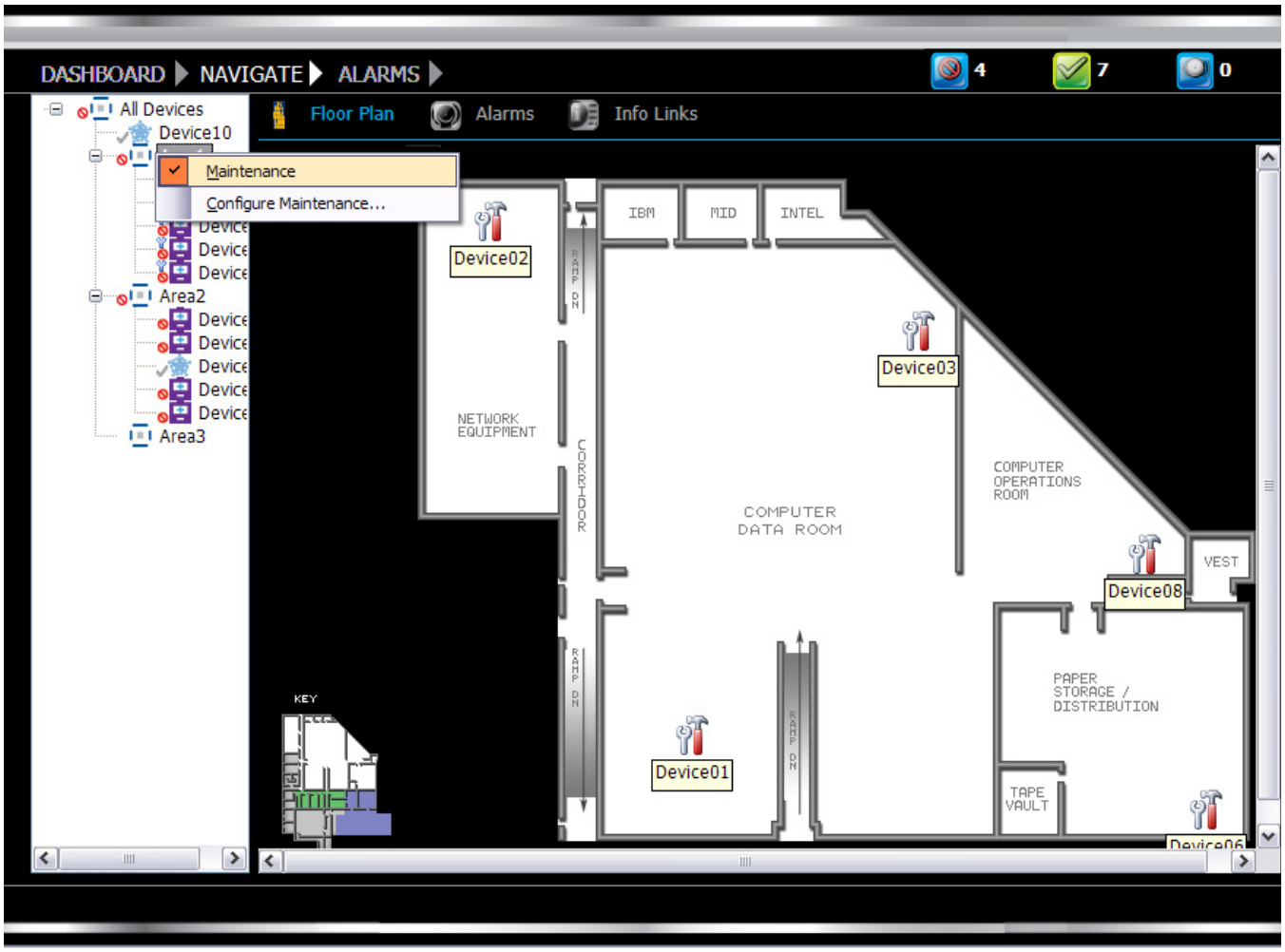


9.3.1 Shortcuts to Place Devices Into or Out of Maintenance Mode

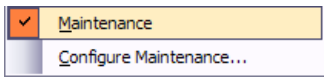
- In the Navigate view, right-click on an area to open to set the Maintenance Mode for all devices in that area. The following context-sensitive menu appears:



- In the following example, choosing **Maintenance** from the menu for an area places all devices in that area in Maintenance Mode (note Maintenance icon). Toggle the mode by clicking again to take all devices out of Maintenance Mode (the icon will change).



- In the Navigate view, right-click on a single device that is not part of an area to reveal the same menu options.

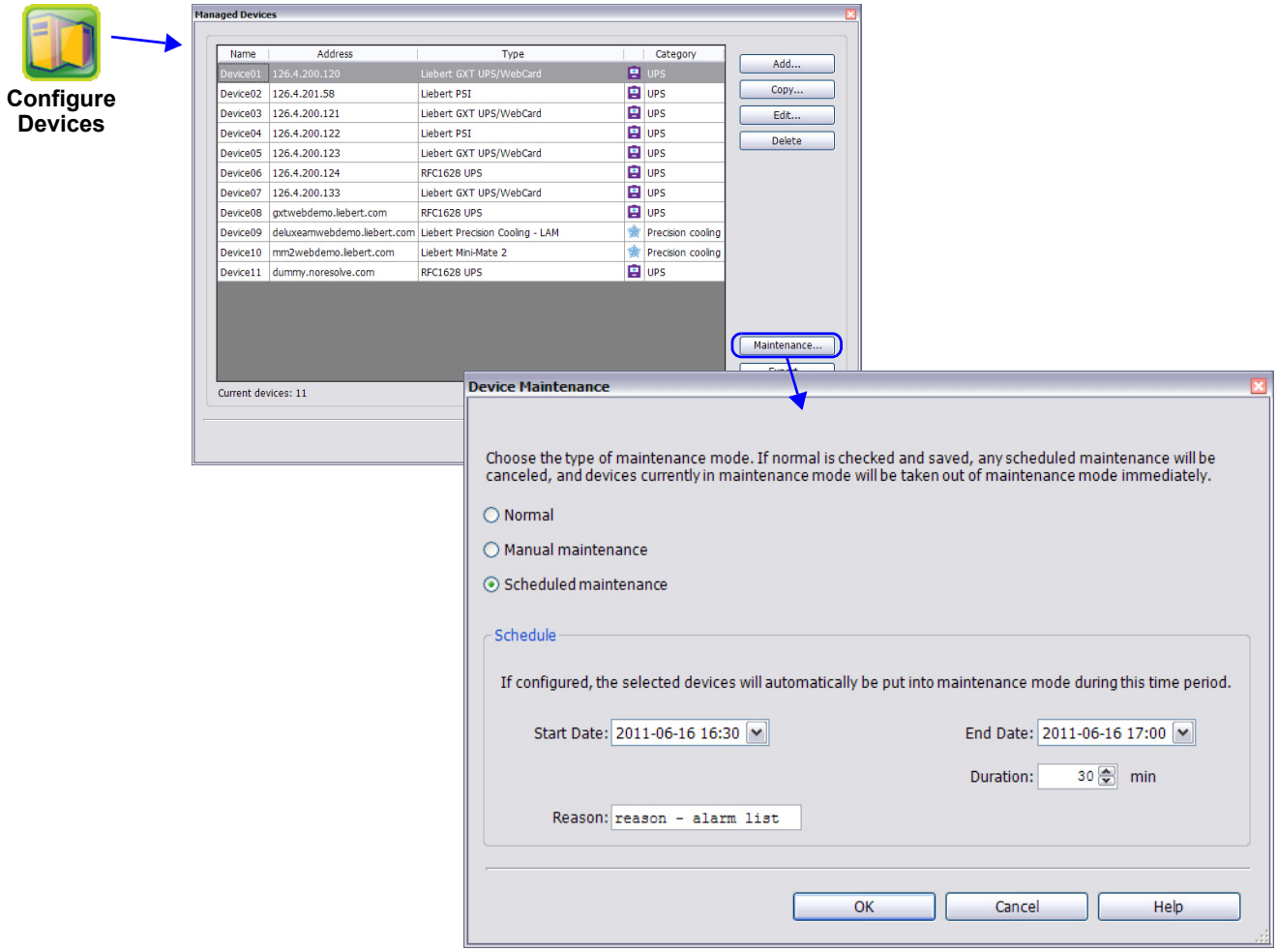


- For an area or a single device, click on **Configure Maintenance** to set the options as described in the next section, **9.3.2 - Configure Maintenance Mode**.

9.3.2 Configure Maintenance Mode

To configure maintenance mode:

- Start the Viewer with permission to configure devices (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window. This window is also accessible from the **Edit** button from any device window.
- Highlight any devices you wish to configure for a particular Maintenance Mode, using standard shift-click and control-click methods to select multiple devices.
- Click the **Maintenance** button, and the Device Maintenance window opens, shown below right.



- Choose the type of maintenance mode to apply to selected devices:
  - **Normal** - cancel scheduled maintenance, take devices out of maintenance mode
  - **Manual maintenance** - immediately place devices in maintenance mode
  - **Scheduled maintenance** - specify a time period to place devices in maintenance mode
- For the **Scheduled maintenance** option, specify the time period (required) and a reason (optional):
  - **Start Date** - choose the date (*yyyy-mm-dd*) and time (*hh-mm* using a 24-hour clock)
  - Specify the ending time by choosing either of the following options. If you enter an End Date, the Duration is automatically adjusted; if you enter the Duration, the End Date is adjusted.
    - **End Date**—choose the date (*yyyy-mm-dd*) and time (*hh-mm* using a 24-hour clock) or
    - **Duration**—specify the length of the time period in minutes.
  - **Reason**—enter descriptive text to help identify the purpose of the scheduled maintenance. This text will be copied to the Incident field in the alarm log for any alarm that occurs while the device is in maintenance mode. This applies only to scheduled maintenance.
- When finished, click **OK**.

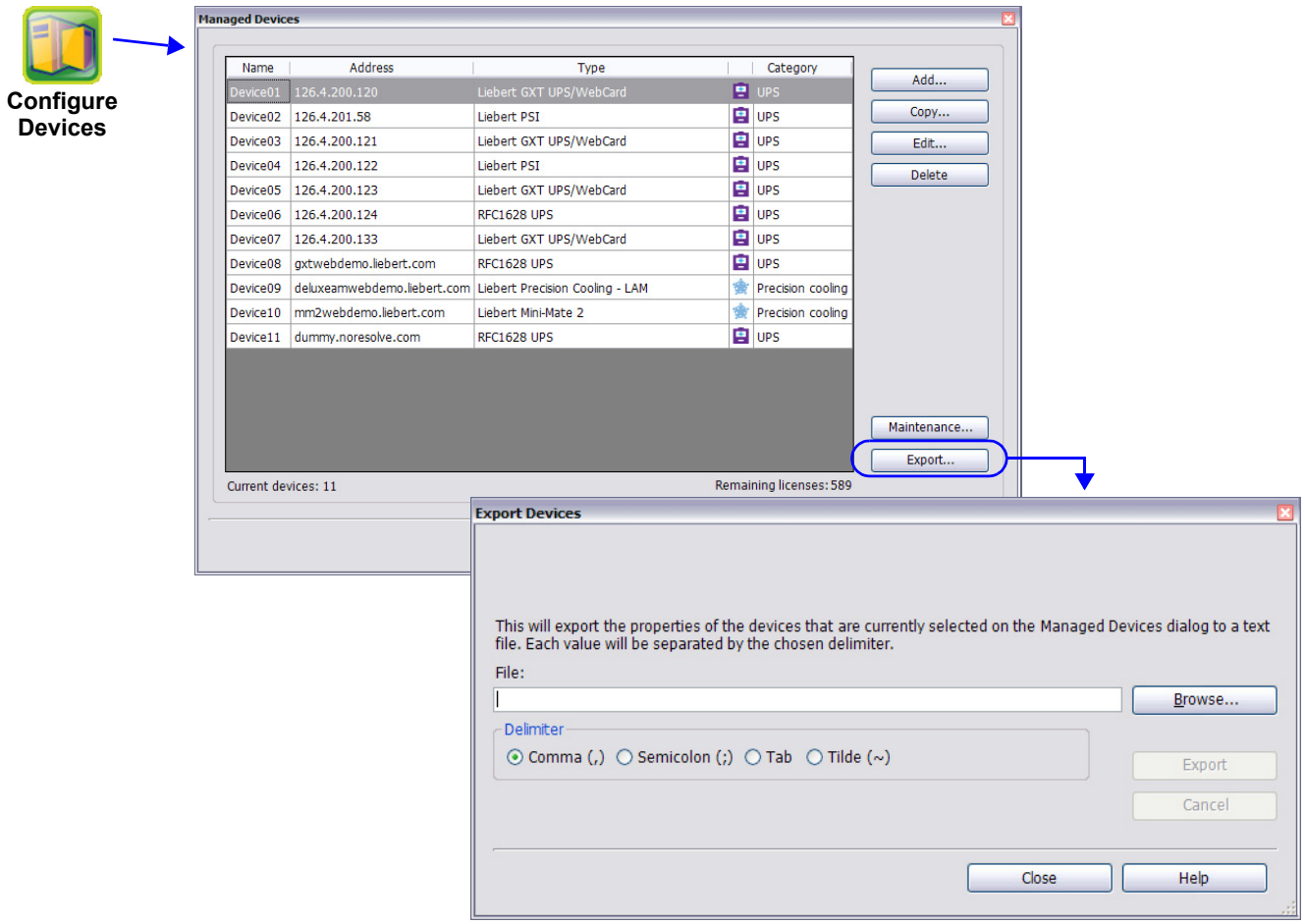
9.4 Export Managed Device Configurations to a File

This feature allows you to export the basic configuration information for selected managed devices to a field-delimited text file that may be imported back into the same or another Nform configuration or into a spreadsheet. The delimiter may be a comma, semicolon, tab or tilde.

The generated file may be used as a template to create devices, as long as the same format is used. The first line contains field names in a comment line beginning with an exclamation point (!). The first three fields must contain data for each device. Other fields are optional.

To export managed device configurations to a file:

- Start the Viewer with permission to configure devices (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure Devices** icon at the bottom of the window (or click on the **Configure** menu, then choose **Devices**) to open the Managed Devices window. This window is also accessible from the **Edit** button from any device window.
- Highlight any devices to be exported, using standard shift-click and control-click methods to select multiple devices.
- Click the **Export** button, and the Export Devices window opens, shown below right.



- Specify the file to be created: enter the full path and file name in the **File** box or click the **Browse** button to locate the folder, then enter a file name and click **Open**.
- Select the preferred **Delimiter** option to be used in the file. The default is **Comma (,)**; other options are **Semicolon (;)**,.**Tab** and **Tilde (~)**.
- Click **Export** to begin the export process. When the process is complete, a window displays a message that the export operation was successful (shown below) or had errors.

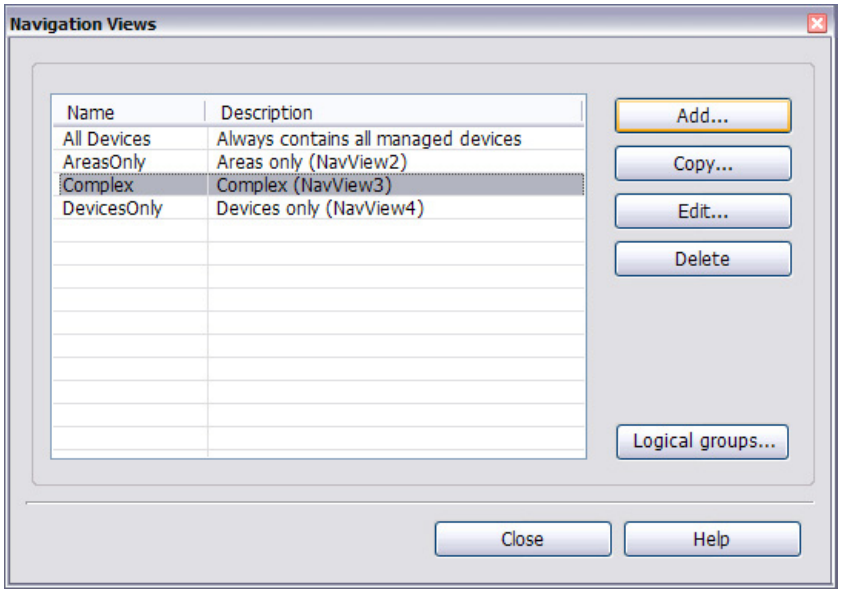
10.0 CONFIGURING VIEWS FOR THE NAVIGATE TAB

The view in the Navigate tab may be customized to create views for different users, organize devices into groups or add graphic floor plans as visual reminders of where devices are located. See **16.3 - Navigate Tab - Device** for details.

A default view called **All Devices** is created automatically, then altered as devices are added to or deleted from the Managed Devices list. Areas may be added and devices rearranged in the All Devices view as in any other view, but the All Devices view may not be deleted.

To configure views:

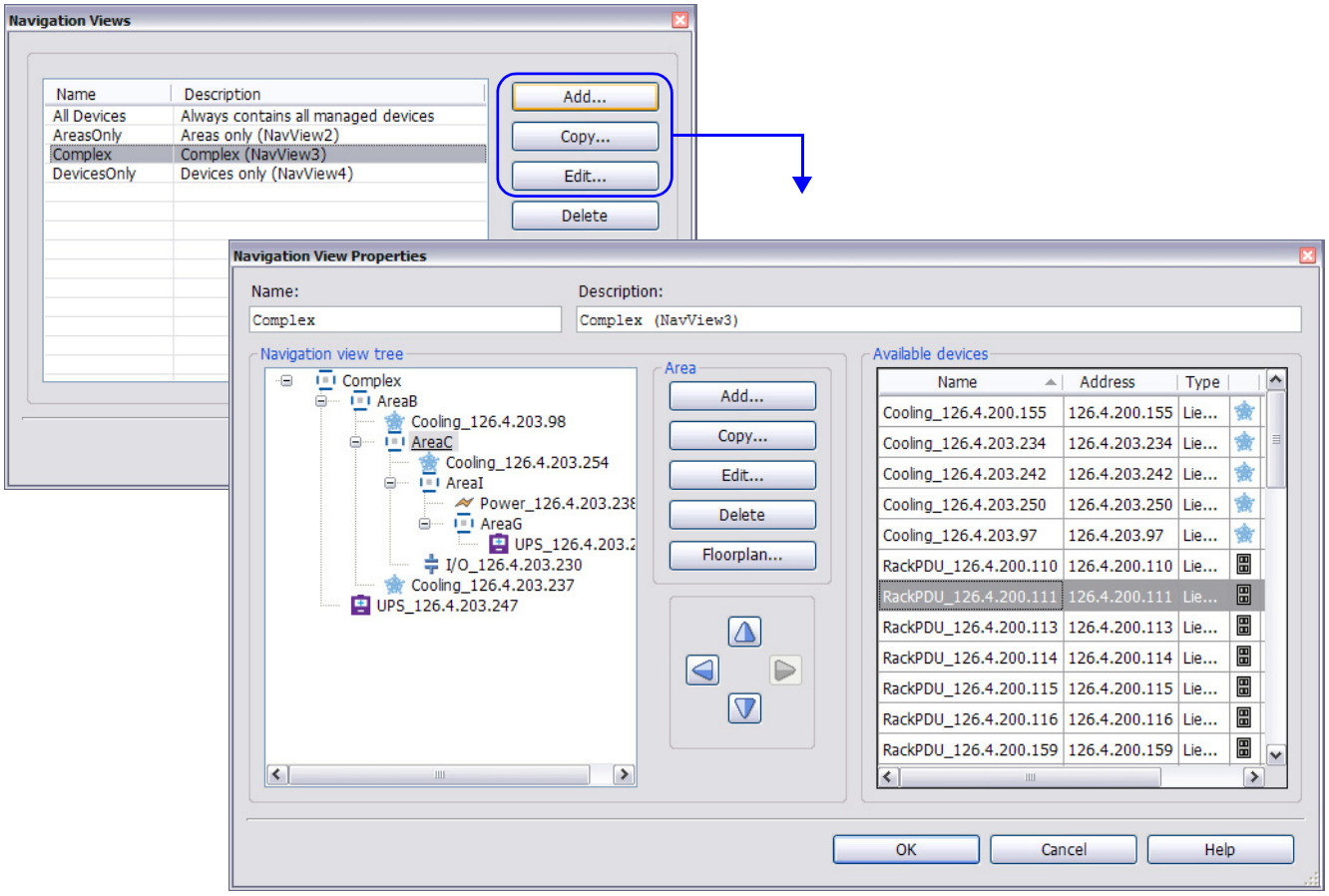
- Start the Viewer with permission to configure navigation views (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure** menu, then choose **Views**.
- The Navigation Views window displays the default **All Devices** view and any other configured views.
- Options in this window include:
  - **Add** to create a view - see **10.1 - Add or Edit Views**.
  - **Copy** to create a new view based on a selected view - see **10.1 - Add or Edit Views**.
  - **Edit** to make changes to an existing view - see **10.1 - Add or Edit Views**.
  - **Delete** to remove a view from the list - see **10.1 - Add or Edit Views**.
  - **Logical groups**: for details, refer to **10.4 - Create Logical Groups**.



10.1 Add or Edit Views

To create or edit a customized view:

1. Start the Viewer with permission to configure navigation views (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure** menu, then choose **Views** to open the Navigation Views window.
3. Choose one of these options (**All Devices** is automatically generated from devices added to the Managed Devices list—it may be edited with a new name or copied, but not deleted):
   - Click **Add** to create a new view.
   - Click on an existing view, then click **Edit** to make changes to the selected view.
   - Click on an existing view, then click **Copy** to create a new view based on the selected view.
   - Click **Delete** to remove a view. This button is disabled when the **All Devices** view is selected.

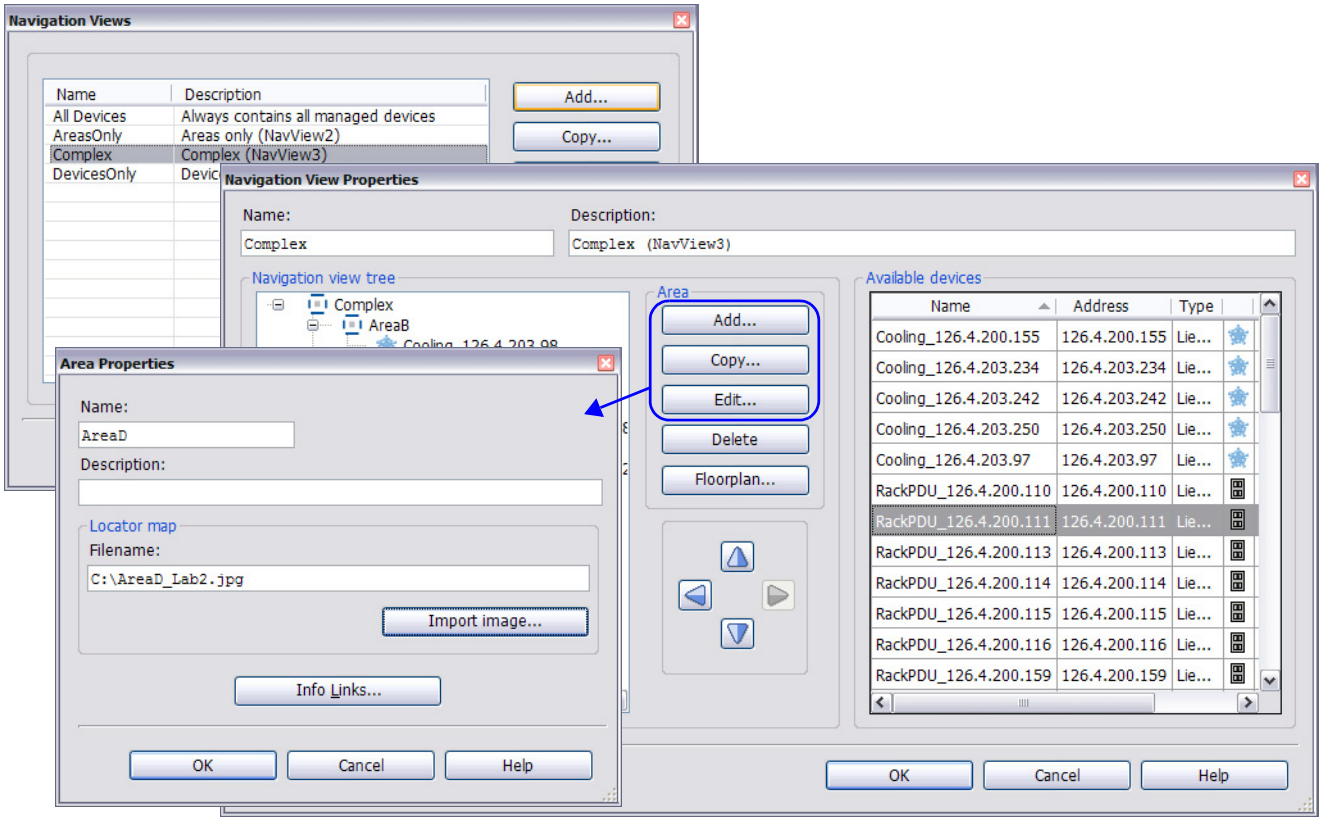


4. In the Navigation View Properties window, shown above right:
   - Enter a short name in the Name box that will appear in the Navigation Views window.
   - In the Description box, enter additional text to identify the view, if desired.
   - The Navigation View Tree shows how devices will appear in the Navigation view.
   - The Available Devices list at right shows all devices that have not been assigned to the tree.
   - Use standard shift-click and control-click methods to select multiple items.
   - To move devices between the Navigation View Tree and the Available Devices list:
     - Select one or more items, then drag-and-drop to the desired location.
     - Another method is to select items, then use the left and right arrows on the screen.
   - To move items up or down in the tree at left:
     - Select one or more items, then drag-and-drop to the desired location.
     - Another method is to select items, then use the up or down arrows on the screen.
   - To add an area to the tree, proceed to **10.3 - Place Devices in Floor Plans**.
5. Be sure to click **OK** to save any changes (or click **Cancel** to close the window without saving).

10.2 Add or Edit an Area

To add or edit an area in the navigation view:

1. Start the Viewer with permission to configure navigation views (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure** menu, then choose **Views** to open the Navigation Views window.
3. Open the Navigation View Properties window (see **10.1 - Add or Edit Views**).
4. Choose one of these options to open the Area Properties window:
   - Click **Add** to create a new area.
   - Click on an existing area, then click **Edit** to make changes to the selected area.
   - Click on an existing area, then click **Copy** to create a new view based on the selected area.

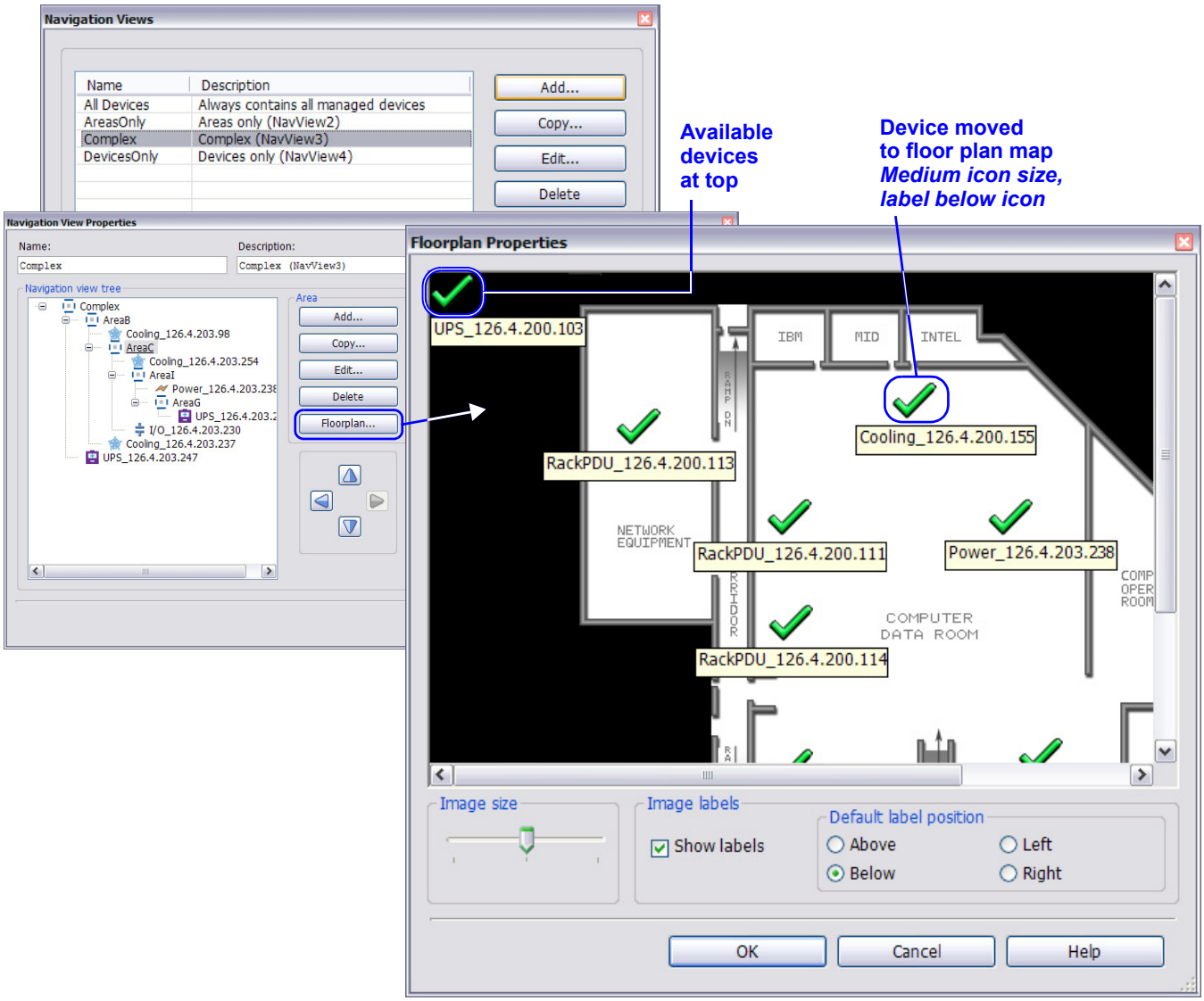


5. In the Area Properties window:
   - Enter a short name in the Name box that will appear in the Navigation view—e.g., *AreaD*.
   - In the Description box, enter additional text to help identify the area.
   - **Add an Image to an Area *(Optional)***
     - To add an image such as a floor plan to the area, enter the full path and file name of the graphic file or click the **Import image** button in the Locator Map section to locate the file. Refer also to **10.3 - Place Devices in Floor Plans**.
     - A copy of the imported graphic file will be placed in the **locatormap** folder, a subfolder of the **user** folder in the **Nform** application folder.
     - Contact Emerson Network Power for custom-built floor plans—or create a floor plan.
     - Floor plans may be standard bitmap (JPG, GIF, BMP, PNG, TIFF, EXIF) or metafile (EMF, WMF) format.
   - **Add a Link to a Web Page or File *(Optional)***
     - To add a link to a Web page or file, click the **Info Links** button (see **9.2.5 - Info Links**).
   - Click **OK** to close the Area Properties window.
   - Be sure to click **OK** in the Navigation View Properties window to save the changes.
6. Move devices to areas as needed (see **10.1 - Add or Edit Views**).
7. To remove an area from the tree, click on the area, then click **Delete**.
8. Click **OK** in the Navigation View Properties window to save the changes.

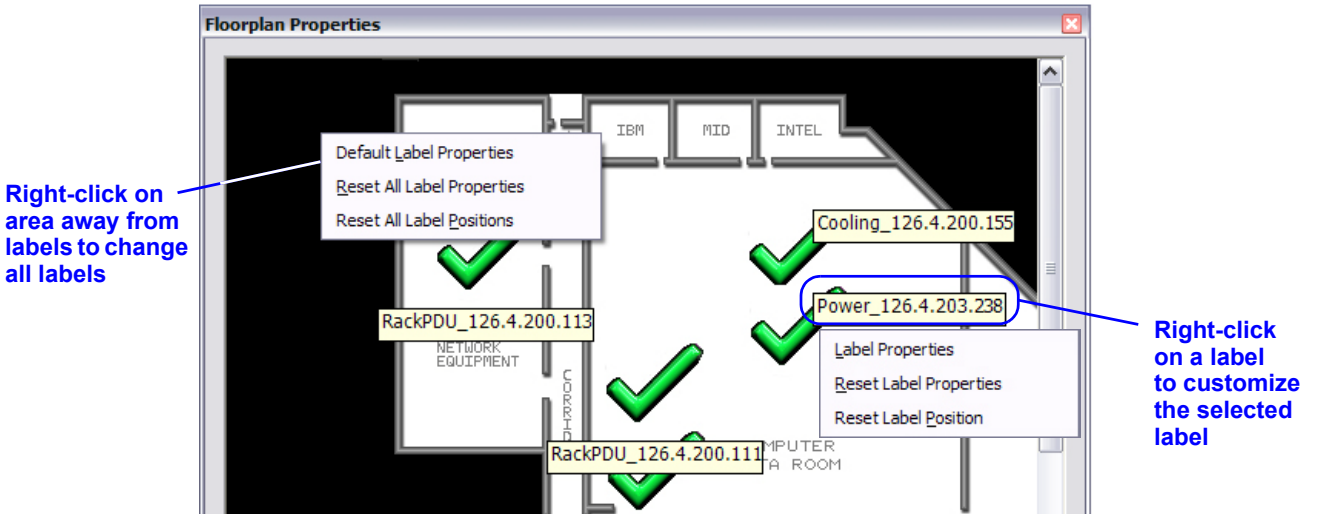
10.3 Place Devices in Floor Plans

After adding a floor plan image to an area window (see **10.2 - Add or Edit an Area**), to place a device in a floor plan map:

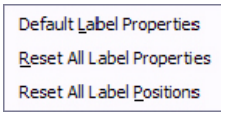
1. Start the Viewer with permission to configure navigation views (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure** menu, then choose **Views** to open the Navigation Views window.
3. Open the Navigation View Properties window (see **10.1 - Add or Edit Views**).
4. In the Navigation View Tree, click on an area with a floor plan image, then click on the **Floorplan** button.
5. In the Floorplan Properties window (below right):
   - All devices that have been added to this area appear at the top of the window as status icons.
   - Click-and-drag icons to any location on the floor plan.
   - Use the **Image Size** slider bar to make all icons larger or smaller.
   - Place a check mark ☑ in the **Show Labels** box to reveal all device names.
   - Labels may be moved all at once using the Default Label Position buttons: **Above**, **Below**, **Left** or **Right**. To move an individual label, click-and-drag the label to any position on the floor plan. When manually repositioned, labels keep the same position relative to their icons even if the icon is moved or the Default Label Position is changed for all labels.



6. Right-click on an area in the floor plan that does not have a label for a pop-up menu with additional options that affect all labels for icons in this floor plan.



The options are:

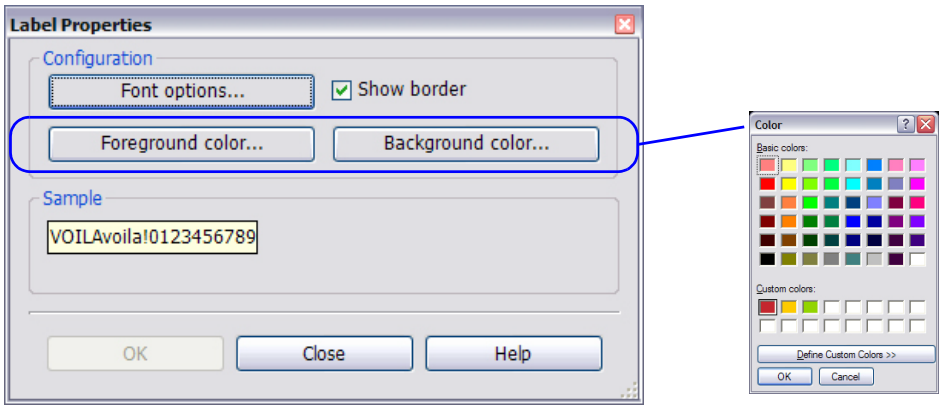


- **Default Label Properties** - click to open the Label Properties window (see **Step 8**) to specify properties for all labels that have not been customized, as described in **Step 7**.
- **Reset All Label Properties** - revert to the default properties for all labels that have been customized.
- **Reset All Label Positions** - revert to the default position for all customized labels.

7. Right-click on an individual label for a pop-up menu with additional options that affect only the selected label. The options are:

- **Label Properties** - click to open the Label Properties window (see **Step 8**) to customize properties for this label only.
- **Reset Label Properties** - revert to the default properties for this label.
- **Reset Label Position** - revert to the default position for this label.

8. The Label Properties window shown below is accessible by right-clicking on the floor plan outside labels (**Step 6**) or on an individual label (**Step 7**).



- Click the **Font Options** button to change the font, style and size in a standard Font window.
- Place a check mark ☑ in the **Show Border** box to draw a border around label text.
- Click **Foreground Color** to open a Color window and change the label text color.
- Click **Background Color** to open a Color window and change the label background color.

9. Click **OK** to save changes (or Cancel to close the window without saving).
10. Click **OK** in the Navigation View Properties window. A window displays a message that the configuration has changed and the session will be restarted.

10.4 Create Logical Groups

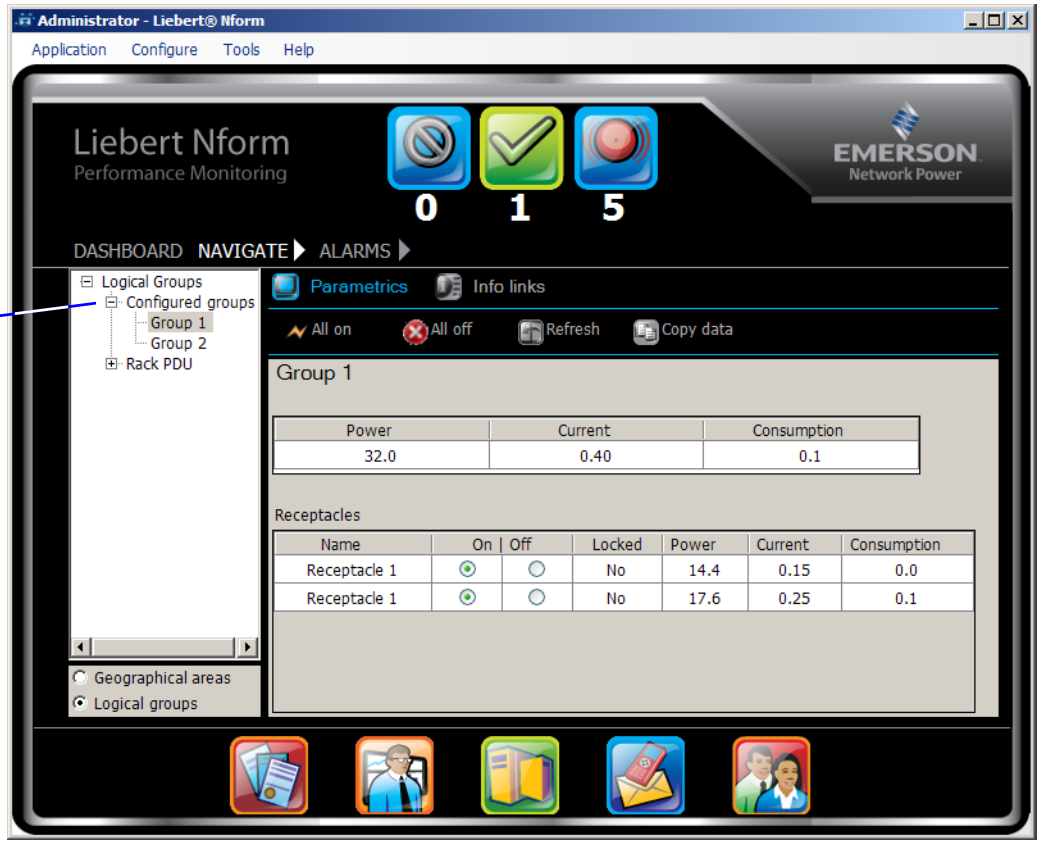
NOTE

In this release of the Liebert Nform software, logical groups apply only to Liebert MPX and Liebert MPH devices.

Logical group features will be hidden or disabled if the list of managed devices has no Liebert MPX or Liebert MPH devices.

Logical groups may be used to configure Liebert Rack PDUs—Liebert MPX and Liebert MPH devices—using a hierarchical structure starting at the PDU level, down to the branch and receptacle levels.

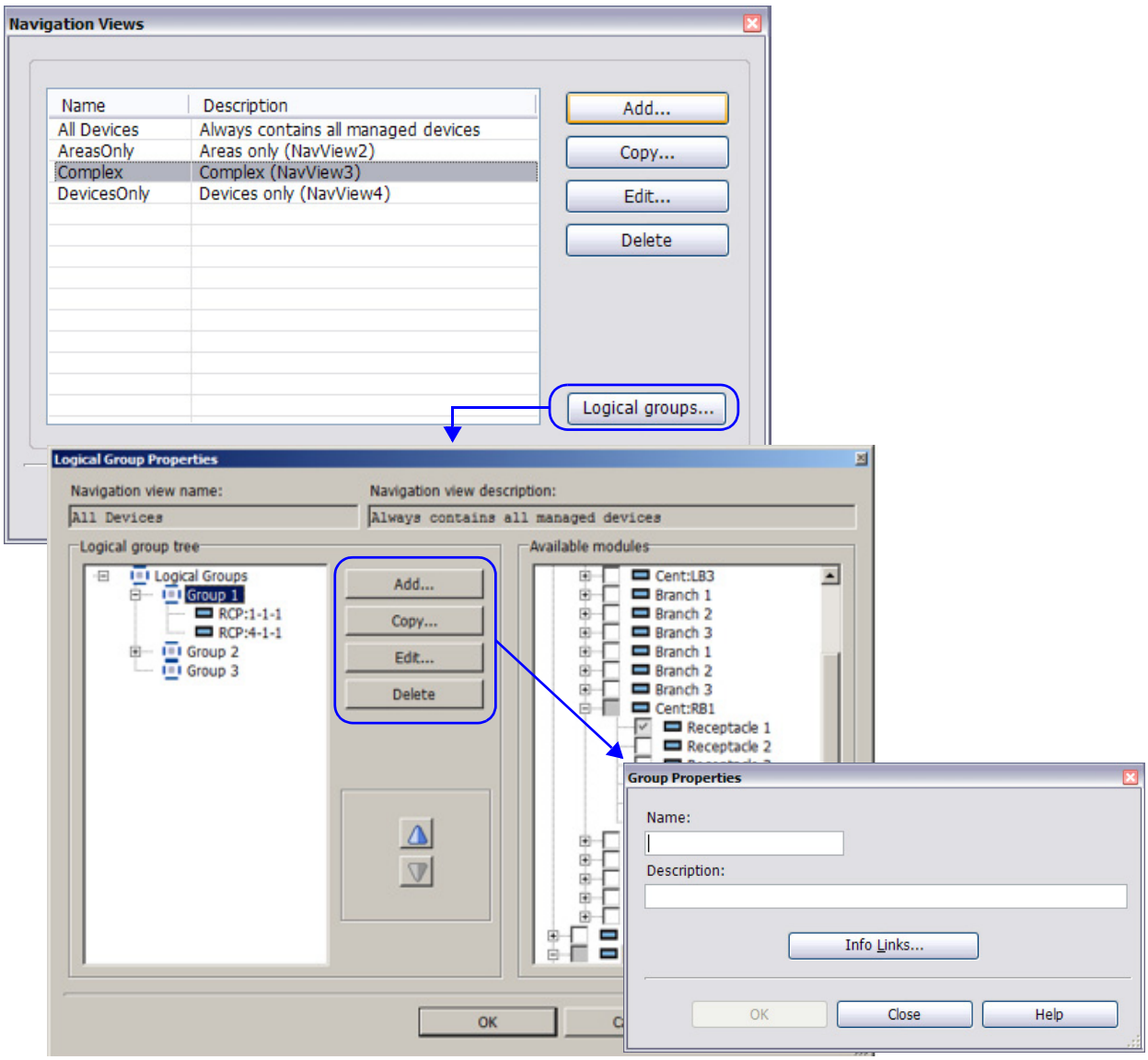
- The status of various components may be viewed—for example, power and current, as shown below.
- Control functions are also available, as shown in the example below: receptacles may be turned on and off individually and in groups through the Liebert Nform software.



To create a logical group:

1. Start the Viewer with permission to configure navigation views (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure** menu, then choose **Views**.
3. Click on the **Logical groups** button.

4. The Logical Group Properties window displays a tree at left and available modules at right. Choose one of these options to open the Group Properties window:
   - Click **Add** to create a new logical group.
   - Click on an existing group, then click **Edit** to make changes to the selected group.
   - Click on an existing group, then click **Copy** to create a new group based on the selected group.

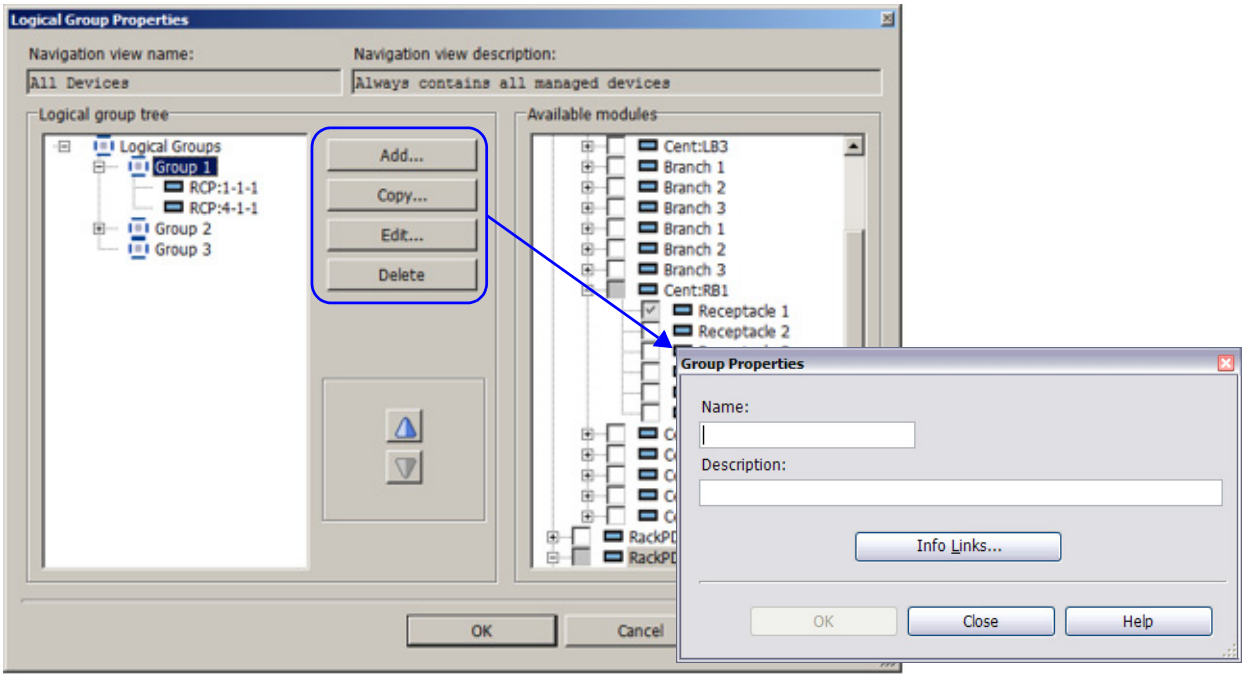


5. To add or edit a logical group, see **10.4.1 - Group Properties - Logical Groups**.
6. To remove a group from the tree, click on the group, then click **Delete**.
7. To move a group in the tree, click on the group, then use the up and down arrows in the center.
8. Click **OK** to save any changes.

10.4.1 Group Properties - Logical Groups

To open the Group Properties window, see **10.4 - Create Logical Groups**.

- Enter a short name in the Name box that will appear in the Navigation view—e.g., *Group1*.
- In the Description box, enter additional text to help identify the logical group, if desired.
- To add a link to a Web page or file, click the **Info Links** button (see **9.2.5 - Info Links**).
- Click **OK** to close the window.
- Be sure to click **OK** in the Logical Group Properties window to save the changes.



11.0 CONFIGURING SHUTDOWN CLIENTS

*This feature requires a license with Liebert MultiLink 1.5 Shutdown Client Software (see **Table 12**).*

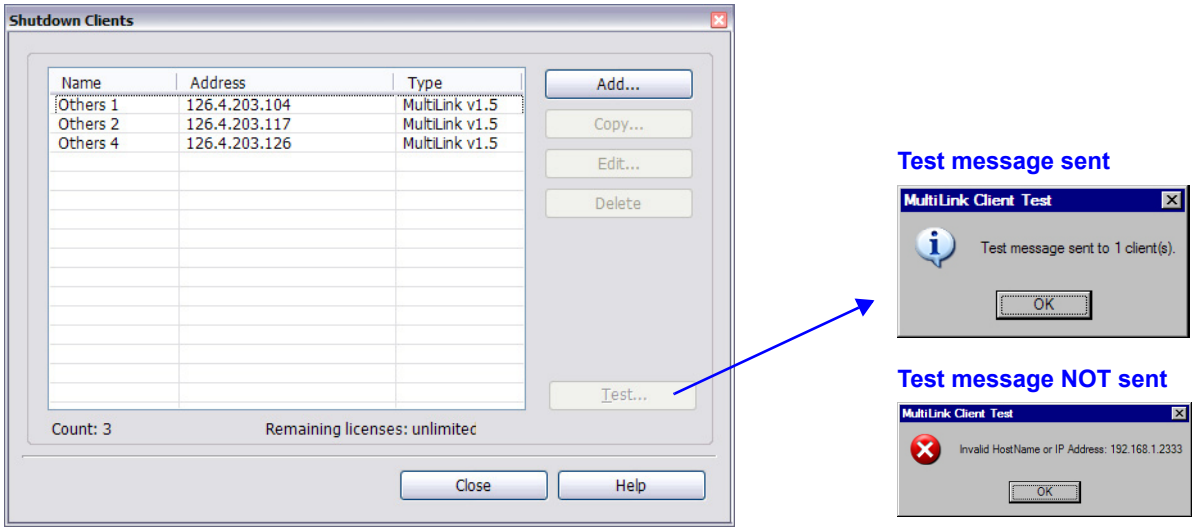
This section describes how to configure shutdown client computers so they may be selected for shutdown actions (see **12.2.4 - Configure Shutdown Actions**).

Before adding shutdown clients:

- MultiLink 1.5 Client software must be installed on all workstations and servers that require orderly shutdown.
- Make sure the MultiLink Shutdown license is installed on the Nform server (see **4.4.2 - Add a Liebert MultiLink 1.5 Shutdown License**).

To configure shutdown clients:

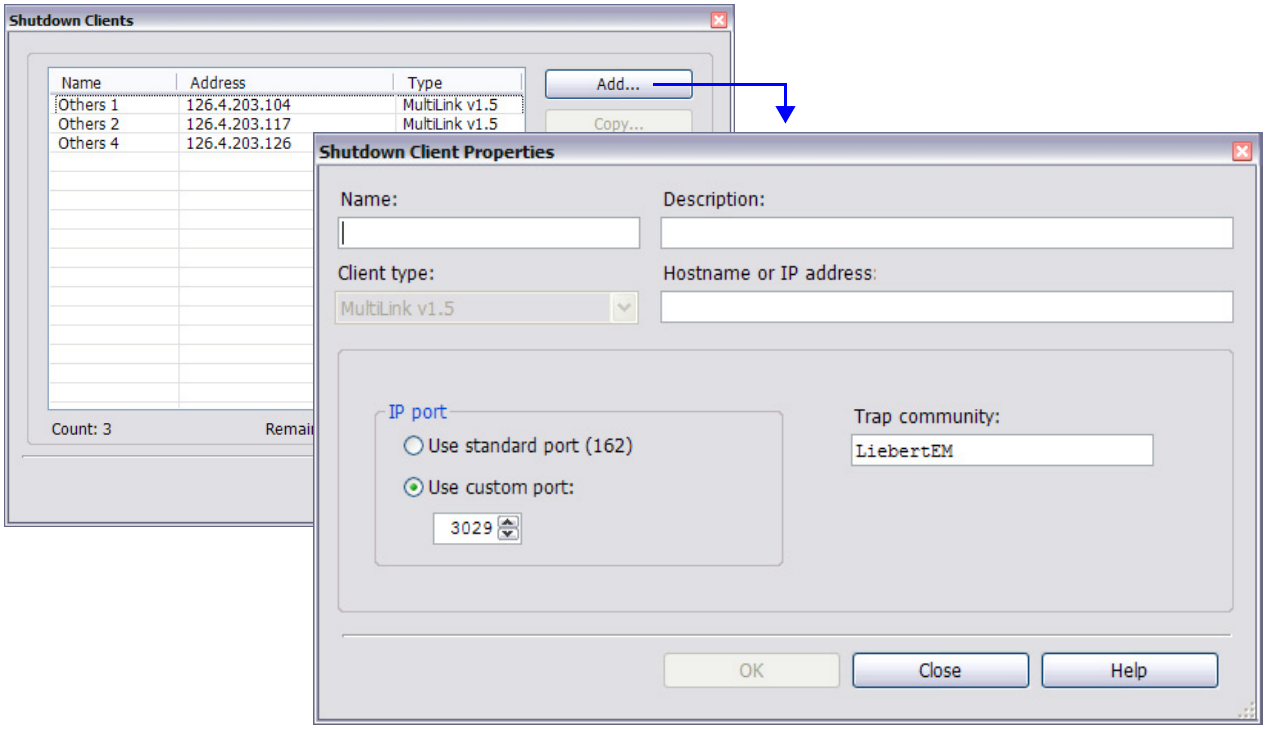
- Start the Viewer with permission to manage shutdown clients (see **13.2 - Assigning Users to Groups**).
- Click on the **Configure** menu, then choose **Shutdown Clients**.
- The Shutdown Clients window displays all configured clients. Options in this window include:
  - **Add** to create a shutdown client: for details, refer to **11.1 - Add a Shutdown Client**.
  - **Copy** to create a new client based on the selected client.
  - **Edit** to make changes to an existing client.
  - **Delete** to remove a client from the list.
- Once any clients are configured, use the **Test** to send a test message to an existing client.
  - Click to select a client from the list. Multiple selections are allowed using the standard shift-click and control-click methods.
  - Click the **Test** button to send a test message to each selected client's IP address or hostname.
  - A dialog box confirms whether the test message was sent. Also verify that each client computer received the message.



11.1 Add a Shutdown Client

To add a shutdown client:

1. Start the Viewer with permission to manage shutdown clients (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure** menu, then choose **Shutdown Clients**.
3. In the Shutdown Clients window, click the **Add** button. This opens the Shutdown Client Properties window.



4. In the Name box, enter an identifying name for the client computer. This name will appear in lists of configured clients that can be selected for shutdown actions.
5. In the Description box, enter text to describe the client computer, if desired.
6. The Client Type box displays **MultiLink v1.5**. This cannot be changed.
7. In the Hostname or IP Address box, enter the client computer's IP address or hostname, available from the System Administrator.
8. The IP Port designates the port used for communicating events (traps) with two options:
   - **Use standard port (162)**
   - **Use custom port (3029)**

   The following table shows typical port combinations.

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

9. The default Trap Community is **LiebertEM** (case-sensitive). To change this, enter a new string.
10. Click **OK**. This saves the MultiLink Client device information.
11. Continue adding MultiLink 1.5 Client workstations, then proceed to **12.2.4 - Configure Shutdown Actions**.

12.0 CONFIGURING ACTIONS

This section describes how to configure Liebert Nform to respond to events and alarms, such as:

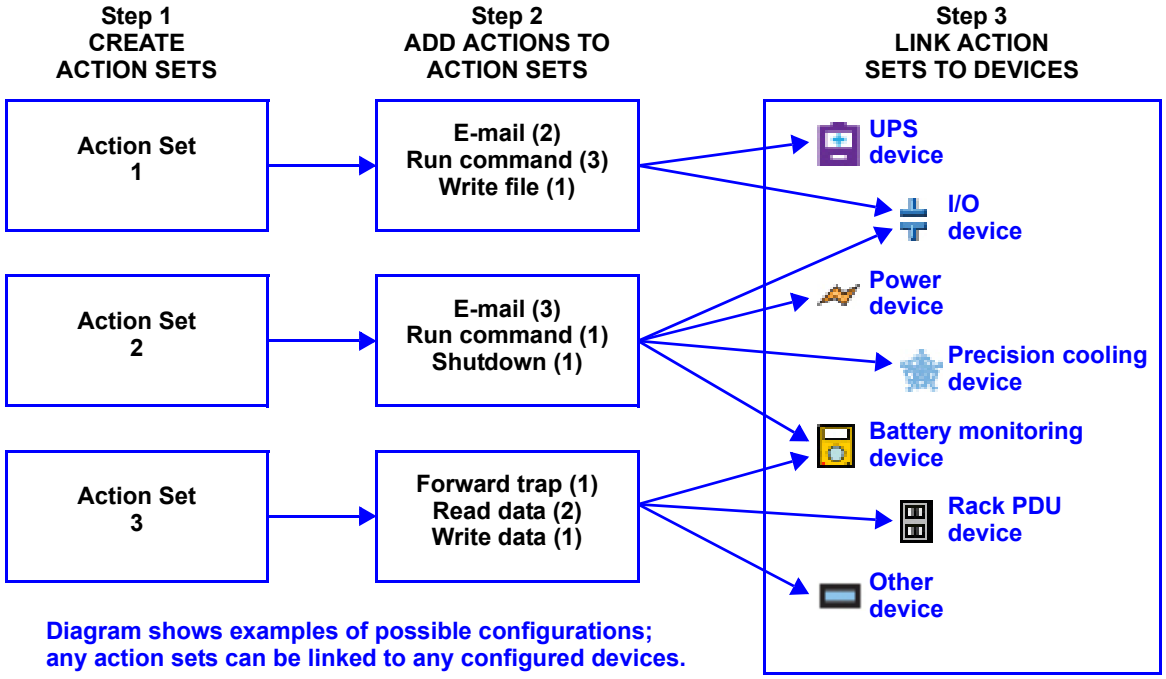
- **E-mail:** sending e-mails to selected recipients when an alarm is received
- **Run command:** running an external program to protect data or equipment
- **Write file:** launching a command or batch file that can execute user-customized scripts
- **Shutdown:** configuring graceful shutdown of MultiLink client computers
- **Forward trap:** sending traps received to a specific computer (hostname or IP address)
- **Read data:** collecting samples of data points from selected managed devices
- **Write data:** changing values of selected data points based on specified alarms or events

Configuring actions enables Liebert Nform to protect valuable equipment, data and other assets from such events as power failures, overheating and mechanical failures.

12.1 Configuring Actions - Overview

Setting up actions involves three steps, as shown in the example below:

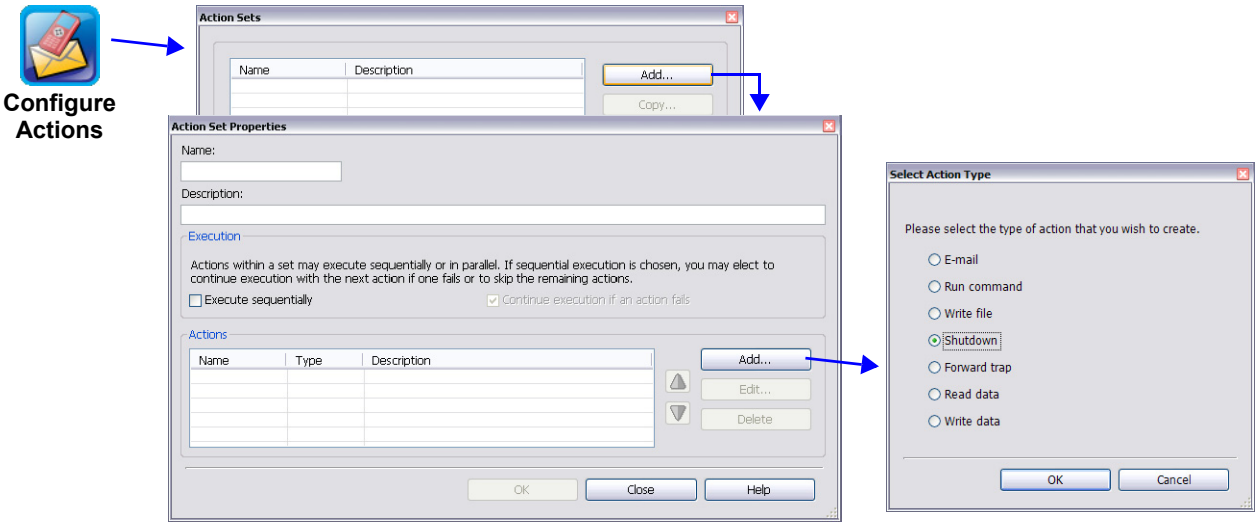
1. Create an action set—a named group of individual actions (see **12.2 - Configure an Action Set**).
2. Add individual actions to the action set from a list: E-mail, Run command, Write file, Shutdown, Forward trap, Read data or Write data (see **12.2 - Configure an Action Set**).
3. Link action sets to managed devices (see **12.3 - Map Action Sets to Devices and Alarms**).



12.2 Configure an Action Set

To create an action set:

1. Start the Viewer with permission to configure at least one type of action (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Actions** icon at the bottom of the window (or click on the **Configure** menu, then choose **Actions**).
3. In the Action Sets window, click the **Add** button.



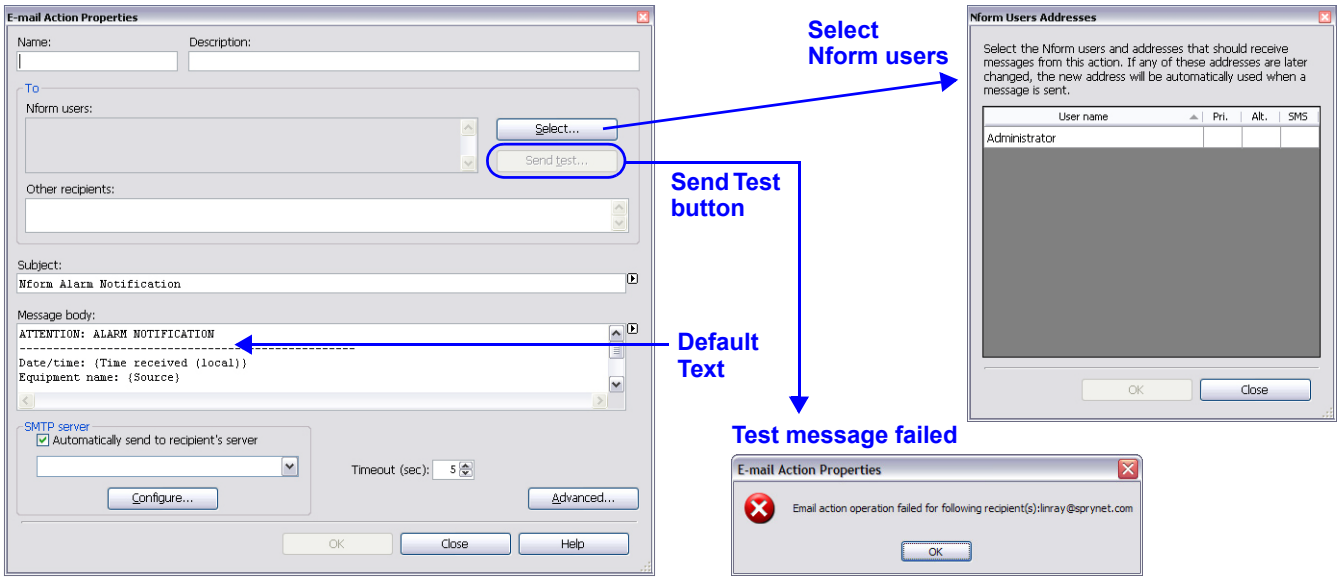
4. In the Name box, enter an identifying name for the action set. This name will appear in lists of action sets that can be assigned to events.
5. In the Description box, enter text to describe the action, if desired.
6. Click the **Add** button to create an action to include in this action set.
7. In the Select Action Type window, above right, click the type of action you wish to create: **E-mail**, **Run command**, **Write file**, **Shutdown**, **Forward trap**, **Read data** or **Write data**.
8. Create individual actions to include in this action set, referring to the following sections:
   - **12.2.1 - Configure E-Mail Actions** for customized e-mail messages to selected recipients
   - **12.2.2 - Configure Run Command Actions** to launch scripts when alarms are received
   - **12.2.3 - Configure Write File Actions** to record alarm information in a file
   - **12.2.4 - Configure Shutdown Actions** for graceful shutdown of MultiLink client computers
   - **12.2.5 - Configure Forward Trap Actions** to send traps to a specific computer
   - **12.2.6 - Configure Read Data Actions** to collect samples of data points from a device
   - **12.2.7 - Configure Write Data Actions** to change values of selected data points based on specified alarms or events
9. Each time an action is added, the Action Set Properties window reappears and displays the new action. Items in the Actions list may be moved, changed or removed:
   - To move an action up or down in the list, click on the name, then click the Up or Down arrow.
   - To change an action's properties, click on the name, then click the **Edit** button and make changes.
   - To remove an action from the list, click on the name, then click the **Delete** button.
10. The **Execute sequentially** box in the Execution section specifies whether actions in this set will run **in parallel** (default, not checked) or **sequentially** in the order displayed in the Actions list.
    To choose the **sequential** method:
    - Place a check mark ☑ in the **Execute sequentially** box.
    - Specify what to do if an action fails during execution:
      - To proceed executing all remaining actions after an action fails, place a check mark ☑ in the **Continue execution if an action fails** box.
      - To interrupt the execution and skip remaining actions, remove the check mark.
11. When finished, click the **OK** button.

12.2.1 Configure E-Mail Actions

To configure an E-Mail action to send an e-mail to selected recipients when an alarm is received:

1. Start the Viewer with permission to configure e-mail actions (see **13.2 - Assigning Users to Groups**).
2. Open the E-Mail Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *UPS On Battery*. This name will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired—for example, *UPS On Battery*.
5. In the To section, enter e-mail addresses of users to receive notifications:
   a. Choose from a list of users by clicking the **Select** button to open the Nform Users Addresses window, below right. Select e-mail addresses from the list by placing check marks below the addresses you want to use—**Pri.** (Primary), **Alt.** (Alternate), **SMS**. Click **OK**.

      Addresses are automatically updated for this action when changes are made to any user's e-mail address (see **13.0 - Configuring Users and Groups**).
   b. Enter e-mail addresses in the **Other recipients' addresses** box, separating each address with a semicolon (;) or press the Return key to make a new line.
   c. Click the **Send Test** button to send a generic e-mail to verify that recipients are configured correctly to receive alarm notifications. The generic message is sent to all intended recipients with the word *test* in the subject and body. A separate error message appears for each attempt that is unsuccessful. Be sure to check that all e-mails are received.



6. In the Subject box, enter a subject for the e-mail by entering text or choosing fields from the drop-down list to the right of the Subject box.
7. In the Message Body box, create a customized message for recipients by entering text or choosing fields from the drop-down list to the right of the Message Body box (see **Table 5**).

Table 5 Fields for e-mail messages

Field	Description
Time received (UTC)	The time when the alarm was received (universal time)
Time received (local)	The time when the alarm was received (local time)
Occurred	The elapsed time since the device was last initialized
Source	Where the alarm occurred—e.g., device name or *Nform*
Device address	The IP address or domain name of the device that sent the alarm
Alarm name	The alarm name—for example, *High Temperature* or *On-Battery*
Alarm description	The alarm description
Alarm severity	The severity level of the alarm—for example, *Critical*
Alarm state	The state of the alarm—*Active* or *Cleared*
Site Id	A string supplied by Liebert Services to identify a group of devices
Device tag	A string supplied by Liebert Services to identify a particular device

SMTP Server

8. The SMTP Server is the outgoing mail server that will be used to send e-mail notifications. There are three ways to specify SMTP servers:
   a. ***Specify automatic selection of SMTP servers based on a recipient's e-mail address.*** For this option, put a check mark ☑ in the **Automatically send to recipient's server** box.

      This option takes very little configuration and can be faster because e-mails are sent directly to each recipient's SMTP server based on the domain name.

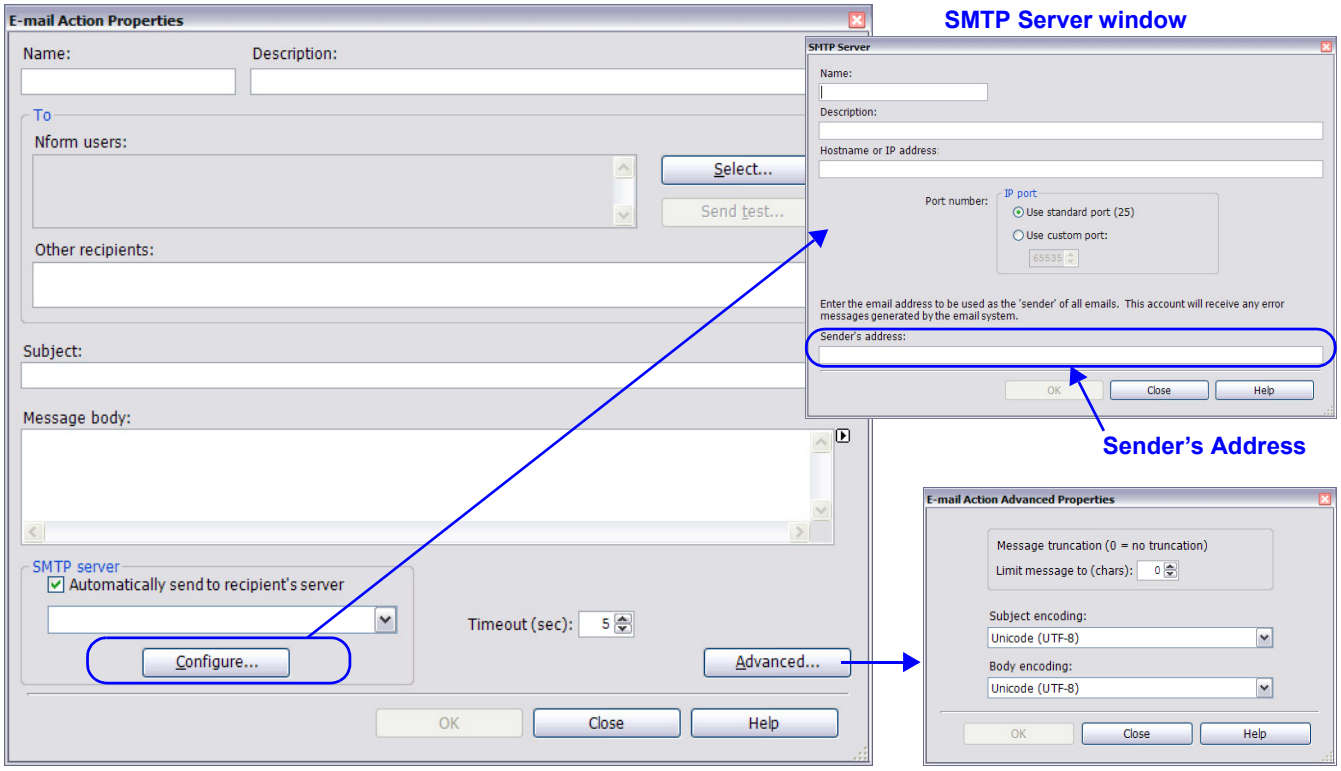
      The automatic option works properly only if an e-mail address is entered in the **Sender's Address** in the SMTP Server window (see below and **8.4 - Server Options - SMTP Tab**). This window is available from the **Configure** button in the E-Mail Action Properties window (below left) or the Configure menu as described in **Section 8.4**.

      Use the **Send Test** button to verify the e-mail address is reachable (see **Step 5a**).

      NOTE: If your network security software blocks e-mail sent using the automatic selection option, contact your network security administrator about whether the policy may be relaxed for your Nform server machine.

   b. ***Specify a manually configured SMTP server***.
      - To specify a manually configured server, choose that server from the drop-down list.
      - To specify a server that has not yet been configured, click the **Configure** button to open the SMTP Server window (see below and **8.4 - Server Options - SMTP Tab**). Configure the server and click **OK**, then choose that server from the drop-down list.

   c. ***Specify BOTH automatic selection and a manually configured server***. If you specify both and the automatic option fails, the manually configured server will be used as a backup.
9. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.

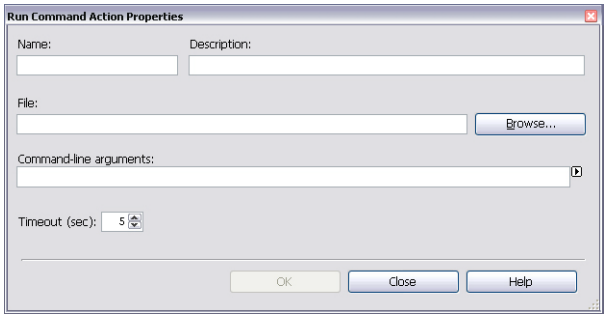


10. Click the **Advanced** button to open the E-Mail Action Advanced Properties window, above right.
    - You may restrict the length of the message to a maximum number of characters in the **Limit message to** box; the default is 0, meaning no truncation.
    - Message encoding methods may be specified in the **Subject encoding** and **Body encoding** boxes. The default for both is *Unicode (UTF-8)*.
    - Click **OK** to save any changes in the E-Mail Action Advanced Properties window.
11. Click **OK** to save any changes in the E-Mail Action Properties window.

12.2.2 Configure Run Command Actions

To configure a Run Command action to launch a script when an alarm is received:

1. Start the Viewer with permission to configure run command actions (see **13.2 - Assigning Users to Groups**).
2. Open the Run Command Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action. This will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.



5. In the File box, enter the full path of the program to be initiated—either type the full path or use the **Browse** button to locate the file. (The **Browse** button appears only when using the Viewer on the application server where the full Nform package is installed; see **2.1 - Installation**.)
6. In the Command-Line Arguments box, specify arguments—parameters to include in running the command—by entering text or choosing fields from the drop-down list to the right of the Command-Line Arguments box (see **Table 6**). These fields will be appended to the Run command line.

Table 6 Fields for command-line arguments

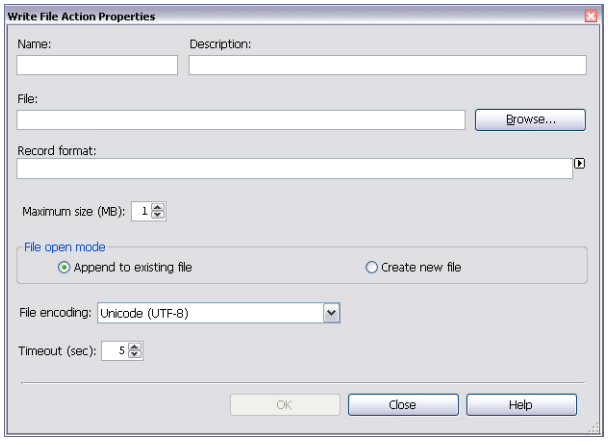
Field	Description
Time received (UTC)	The time when the alarm was received (universal time)
Time received (local)	The time when the alarm was received (local time)
Occurred	The elapsed time since the device was last initialized
Source	Where the alarm occurred—e.g., device name or *Nform*
Device address	The IP address or domain name of the device that sent the alarm
Alarm name	The alarm name—for example, *High Temperature* or *On-Battery*
Alarm description	The alarm description
Alarm severity	The severity level of the alarm—for example, *Critical*
Alarm state	The state of the alarm—*Active* or *Cleared*
Site Id	A string supplied by Liebert Services to identify a group of devices
Device tag	A string supplied by Liebert Services to identify a particular device

7. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
8. Click **OK to** save any changes.

12.2.3 Configure Write File Actions

To configure a Write File action to record alarm information in a file:

1. Start the Viewer with permission to configure write file actions (see **13.2 - Assigning Users to Groups**).
2. Open the Write File Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *Critical Alarms*. This will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.



5. In the File box, enter the full path of the file that will record details of events or use the **Browse** button to locate the file. (The **Browse** button appears only when using the Viewer on the application server where the full Nform package is installed; see **2.1 - Installation**.) If the file does not exist, Liebert Nform will create it.
6. In the **Record format** box, choose fields to include in the file from the drop-down list to the right of the Record format box (see **Table 7**).

Table 7 Fields for record format

Field	Description
Time received (UTC)	The time when the alarm was received (universal time)
Time received (local)	The time when the alarm was received (local time)
Occurred	The elapsed time since the device was last initialized
Source	Where the alarm occurred—e.g., device name or *Nform*
Device address	The IP address or domain name of the device that sent the alarm
Alarm name	The alarm name—for example, *High Temperature* or *On-Battery*
Alarm description	The alarm description
Alarm severity	The severity level of the alarm—for example, *Critical*
Alarm state	The state of the alarm—*Active* or *Cleared*
Site Id	A string supplied by Liebert Services to identify a group of devices
Device tag	A string supplied by Liebert Services to identify a particular device

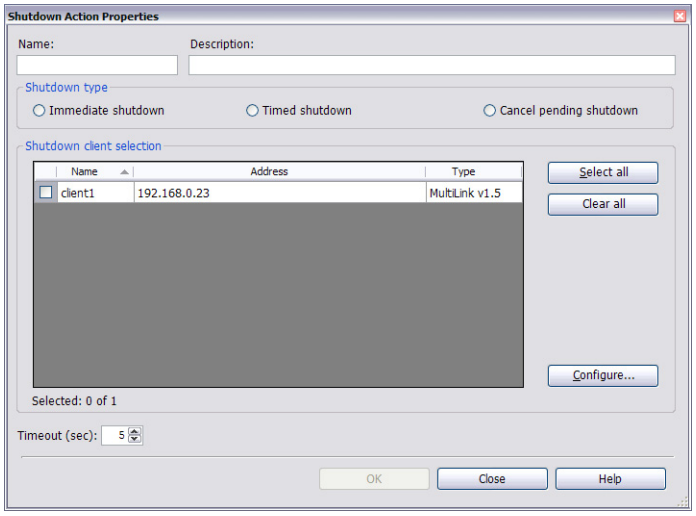
7. Enter the upper limit of the file size in MB in the **Maximum size** box. The default is 1 MB.
8. In the File Open Mode section:
   - Click **Append to existing file** to add data at the end of the file, preventing existing data from being overwritten by new information.
   - Click **Create new file** to replace the file with each new alarm.
9. An encoding method may be specified in the **File encoding** box. The default is *Unicode (UTF-8).*
10. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
11. Click **OK to** save any changes.

12.2.4 Configure Shutdown Actions

*This feature requires a license with Liebert MultiLink 1.5 Shutdown Client Software (see **Table 12**).*

To configure a Shutdown action for client computers with MultiLink 1.5 installed:

1. Start the Viewer with permission to configure shutdown actions (see **13.2 - Assigning Users to Groups**).
2. Open the Shutdown Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *Shutdown EDI application server*. This will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.



5. In the Shutdown Type box, click on the appropriate choice:
   - **Immediate shutdown** - the shutdown will occur as soon as a specified condition occurs.
   - **Timed shutdown** - a timer will begin as soon as a specified condition occurs.
   - **Cancel pending shutdown** - when a specified condition occurs, stop a shutdown that is in progress.
6. In the Shutdown Client Selection area:
   - Enter any client computers with MultiLink 1.5 installed that may be specified for shutdown. If needed, click the **Configure** button to set up or choose client computers.
   - Place a check mark ☑ to the left of any items you wish to select. If desired, click **Select All** to choose all items in the list or click **Clear All** to remove all check marks.
7. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
8. Click **OK to** save any changes.

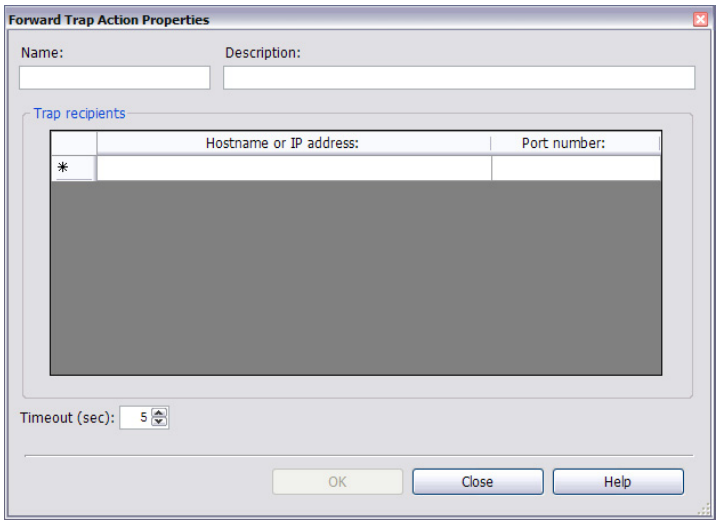
12.2.5 Configure Forward Trap Actions

The Forward Trap action may be used to forward individual traps to multiple destinations.

This differs from the global Trap Forwarding setting, which may be used to send all selected types of traps collected by Liebert Nform to a specified computer (see **8.7 - Server Options - Trap Forwarding Tab**).

To configure a Forward Trap action to send traps to one or more computers:

1. Start the Viewer with permission to configure forward trap actions (see **13.2 - Assigning Users to Groups**).
2. Open the Forward Trap Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *Forward Traps to IT Manager*. This will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.



5. In the Trap Recipients area:
   - Specify the computer where traps should be forwarded in the Hostname or IP address column.
   - The Port Number displays the default global setting—typically, 162. To change this, enter a different number.
6. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
7. Click **OK to** save any changes.

12.2.6 Configure Read Data Actions

*This feature requires a license with Advanced Communications (see **Table 12**).*

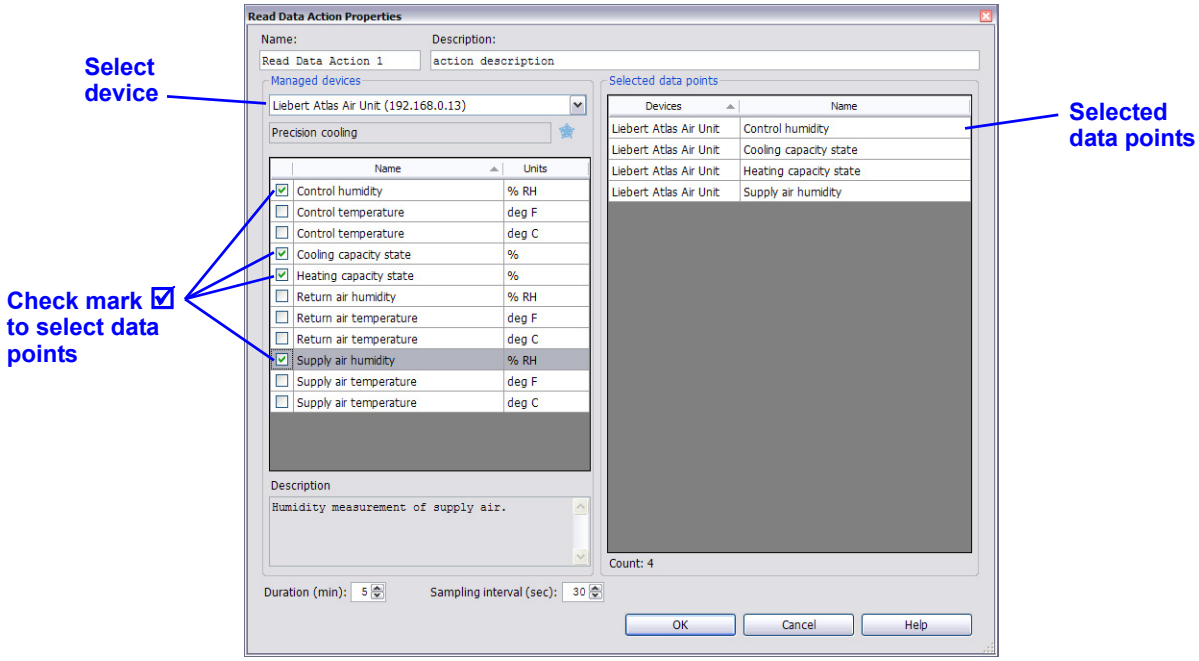
The Read Data action may be used to collect real-time data after being triggered by an event.

This event-based feature differs from the time-based Data Logging feature, which may be used to collect real-time data continuously at fixed intervals to track the condition of a device (see **9.2.7 - Data Logging**).

Both features collect the same type of data, which may be viewed in a trend graph (see **16.3.4 - Navigate - Trends View**) or exported to a text file (see **14.3 - Export Data Log History**).

To configure a Read Data action to collect samples of data points from a device:

1. Start the Viewer with permission to configure read data actions (see **13.2 - Assigning Users to Groups**).
2. Open the Read Data Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *Read Data Action 1*. This name will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.

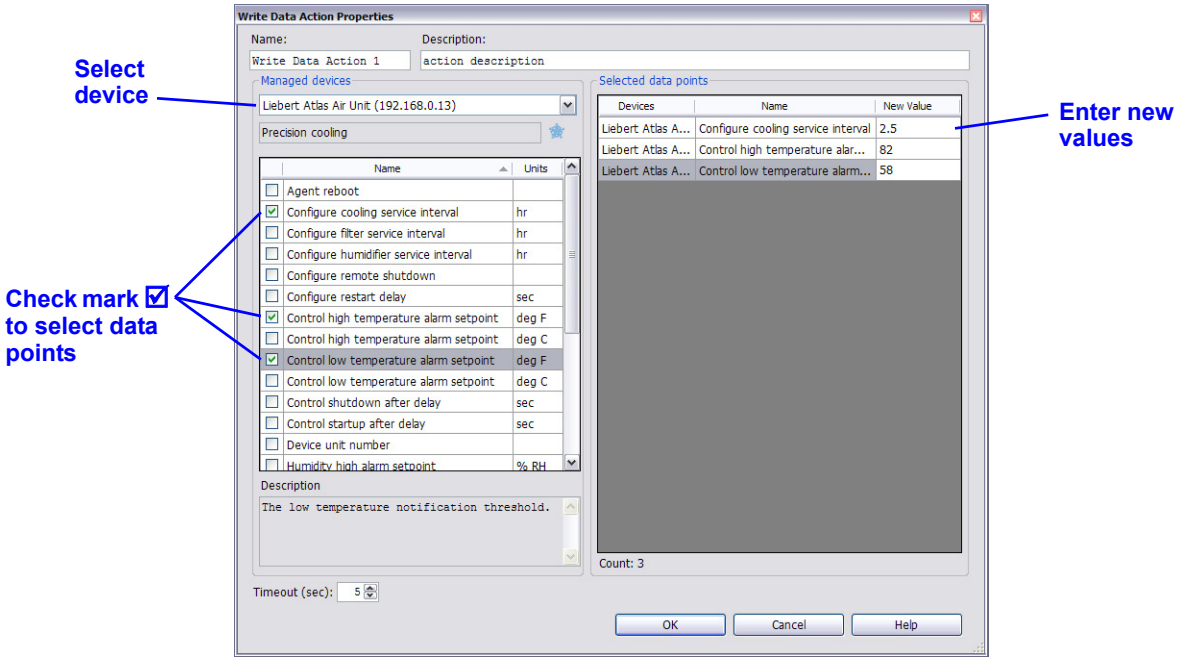


5. Choose a device from the Managed Devices list.
6. The available data points for the selected device appear in the window below the device name, along with units where appropriate. Click on a data point to display an explanation in the Description box below the list.
7. Click to place a check mark ☑ to the left of each data point you wish to select. Each checked point appears in the Selected Data Points in the right side of the window.
8. The default Duration of reading data points is 5 minutes. If desired, choose a different number of minutes.
9. The default Sampling Interval is 30 seconds. If desired, choose a different number of seconds.
10. Click **OK to** save any changes.

12.2.7 Configure Write Data Actions

To configure a Write Data action to change values of selected data points based on specified alarms or events:

1. Start the Viewer with permission to configure write data actions (see **13.2 - Assigning Users to Groups**).
2. Open the Write Data Action Properties window (see **12.2 - Configure an Action Set**).
3. In the Name box, enter an identifying name for the action—for example, *Write Data Action 1*. This name will appear in lists of actions that can be assigned to events.
4. In the Description box, enter text to describe the action, if desired.



5. Choose a device from the Managed Devices list.
6. The available data points for the selected device appear in the window below the device name, along with units where appropriate. Click on a data point to display an explanation in the Description box below the list.
7. Click to place a check mark ☑ to the left of each data point you wish to select. Each checked point appears in the Selected Data Points in the right side of the window.
8. If desired, repeat Steps **5** through **7** to choose another device from the Managed Devices list and select data points for that device.

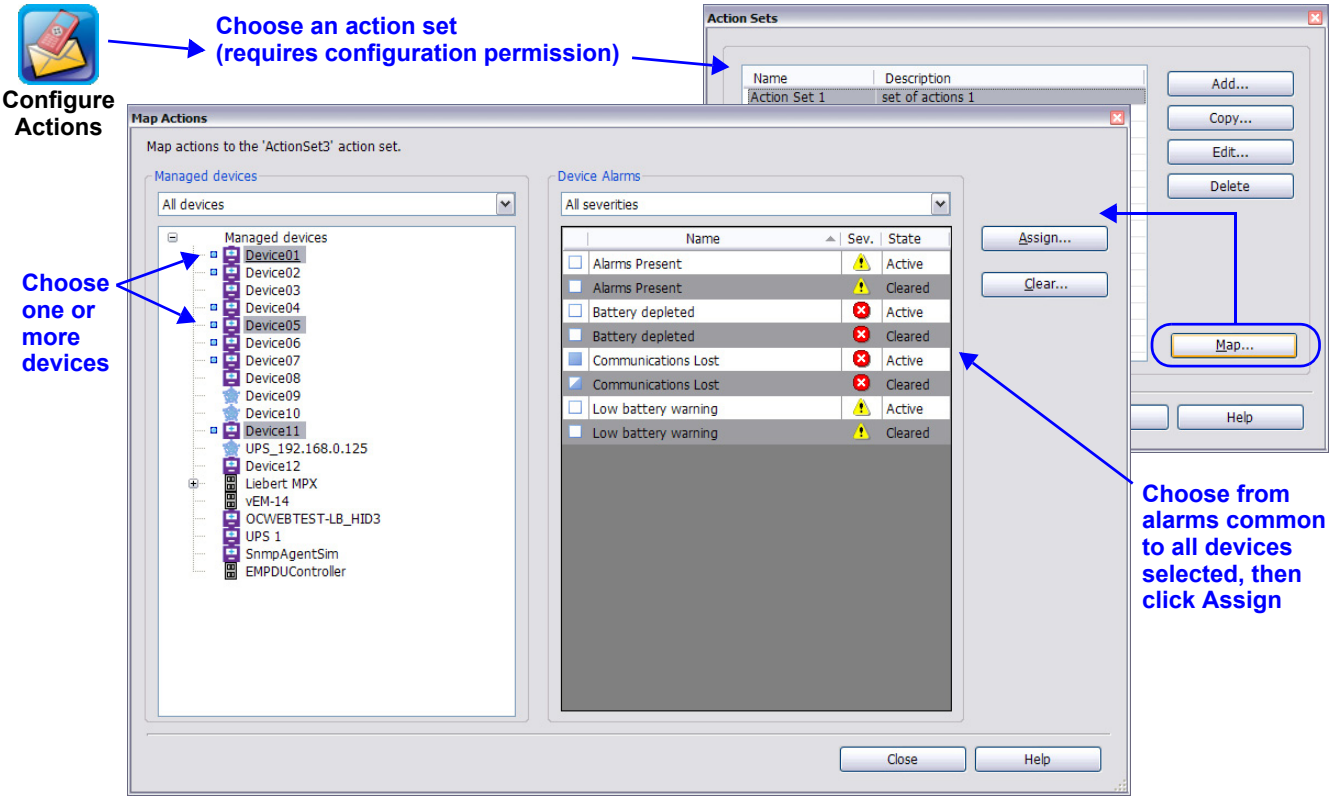
   The Selected Data Points list at right displays the device name for each data point.
9. For each point in the Selected Data Points at right, enter a figure in the New Value column to specify the value you wish to write based on a specified condition.
10. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
11. Click **OK to** save any changes.

12.3 Map Action Sets to Devices and Alarms

The final step in configuring actions is to define which alarms will trigger an action set to be executed for which devices. Mapping an action set requires permission to configure all actions in that set. Actions will not be executed for alarms from a device that is currently in maintenance mode.

To map an action set:

1. Start the Viewer with permission to assign actions (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Actions** icon at the bottom of the window (or click on the **Configure** menu, then choose **Actions**).
3. In the Action Sets window, click on an action set, then click the **Map** button.



4. In the Map Actions window:
   - All devices are displayed in the left side of the window. If desired, choose a device category—e.g., *UPS*—from the drop-down list to display only those devices.
   - Click on a device at left to display all applicable alarms in the right side of the window. Click a second time to deselect a device. (To select multiple devices, use the standard shift-click or control-click methods.)
   - In the right side of the window, click to select an alarm that will trigger the selected action set for the selected devices. Click a second time to deselect an alarm. (To select multiple alarms, use the standard shift-click or control-click methods.)
   - Click the **Assign** button to assign all selected alarms to the selected devices. (To remove alarms from the mapping, click to select the alarms, then click the **Clear** button.)
5. Mapping status is indicated by:
   - A **bullet** next to a device in the Managed Devices tree at left indicates **at least one alarm** has been mapped to that device for the selected action set.
   - In the Device Alarms grid at right (with one or more devices highlighted for a selected action set):

Box is:	Alarm is mapped to:
Filled	**All** selected devices for the action set.
Half-filled	**At least one** selected device for the action set.
Empty	**None** of selected devices for the action set.

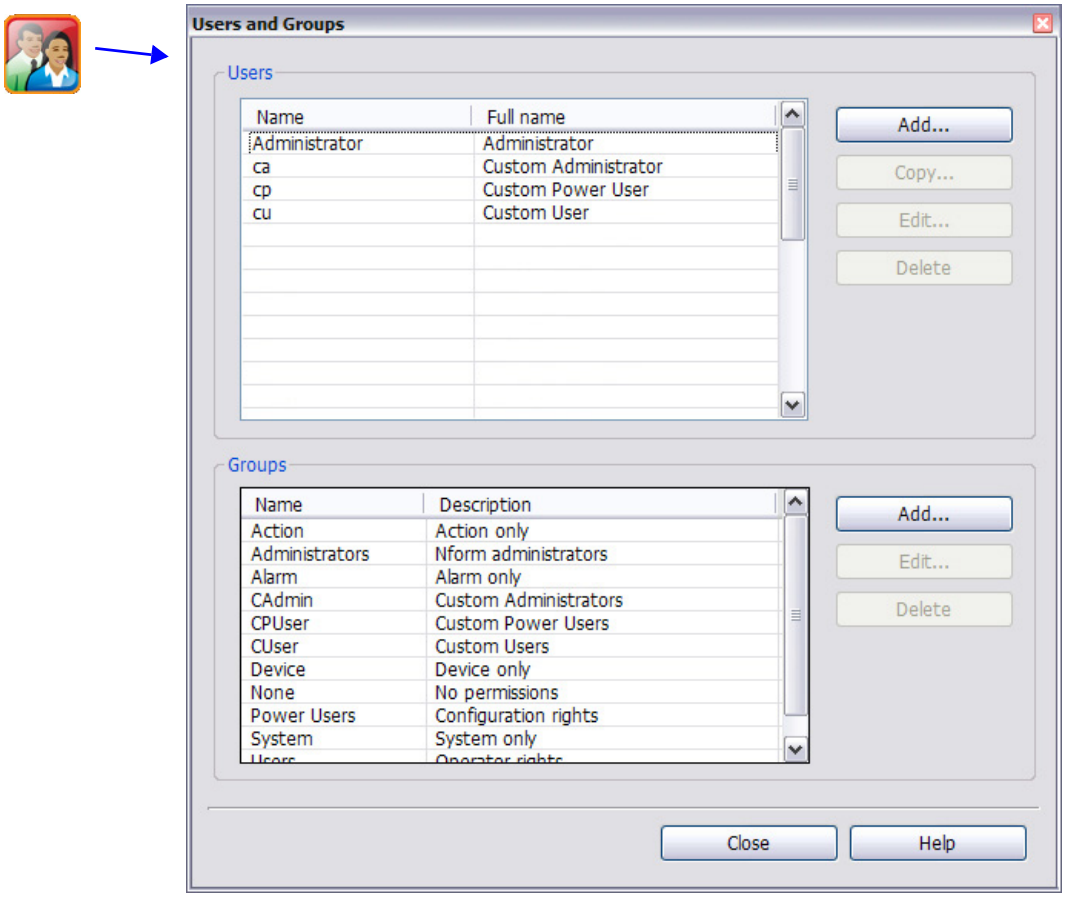
13.0 CONFIGURING USERS AND GROUPS

The software automatically creates an Administrator account with full access to configuration and monitoring.

Other individual users may be configured with any combination of viewing and configuration privileges (see **13.1 - Add Individual Users**). A user may be created with the **Add** button or based on an existing user with the **Copy** button.

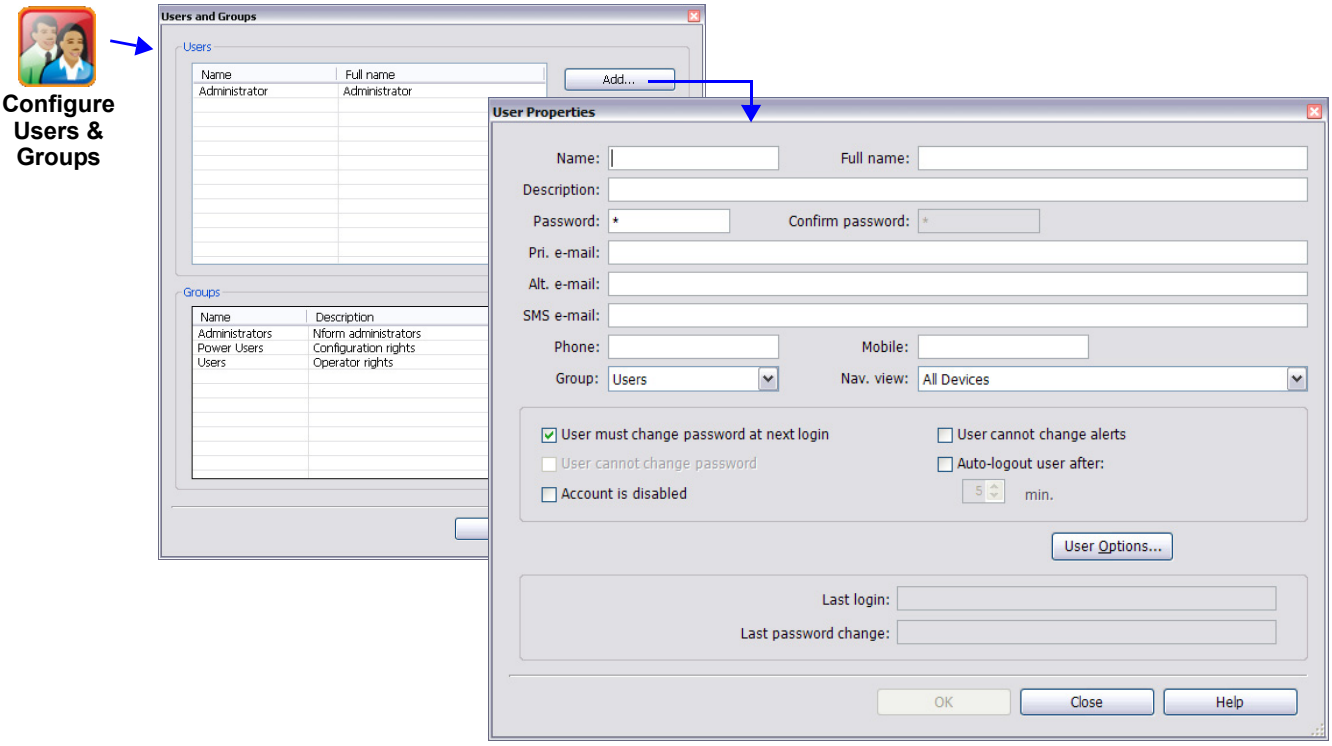
Additionally, individual users may be combined into groups with similar privileges (see **13.2 - Assigning Users to Groups**).

This feature speeds up the process of assigning privileges to many users and allows for easily selecting many users for actions, such as receiving e-mail alerts.



13.1 Add Individual Users

1. Start the Viewer with permission to configure users (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Users & Groups** icon at the bottom of the window (or click on the **Configure** menu, then choose **Actions**).
3. The Users list displays all configured users. Click the **Add** button to the right of the Users list.



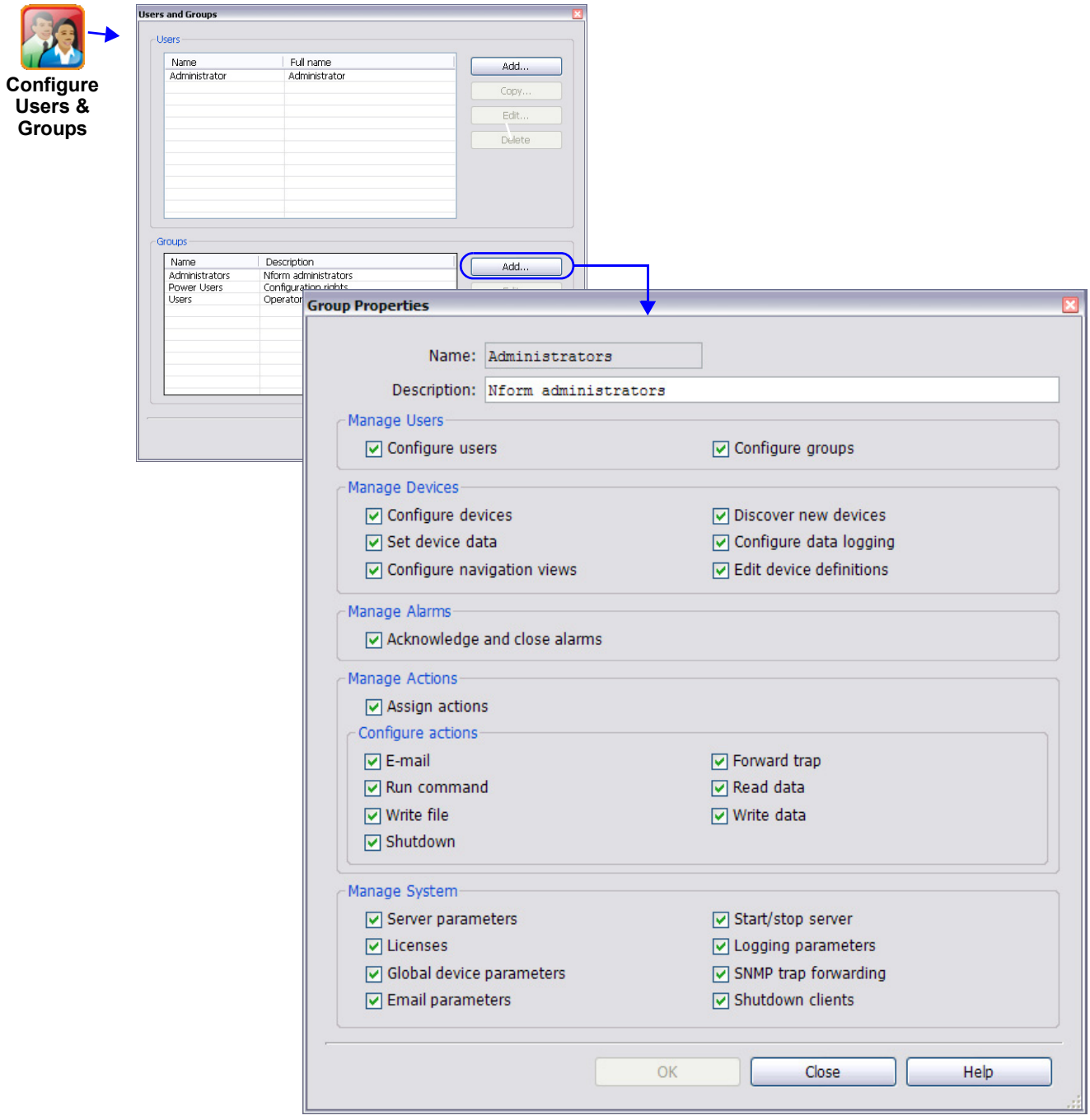
4. In the User Properties window, enter a user name—the name used for login—in the Name box.
5. In the Full Name box, enter the person's name or title to help identify the user, if desired.
6. In the Description box, enter text to describe the user, if desired.
7. Enter a password in the Password box, then re-enter it in the Confirm Password box.
   The password is case-sensitive and must consist of two to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.
8. Enter this information about the user for Liebert Nform alerts and notifications:
   - **Pri. e-mail** - primary e-mail address
   - **Alt. e-mail** - alternate e-mail address
   - **SMS e-mail** - text message e-mail address
   - **Phone** - telephone number, including area code
   - **Mobile** - cell phone number, including area code
9. If user groups have been created, choose from the Group list to assign the user to a group.
10. Specify the opening view in the Navigate tab for this user by selecting from the Nav. view drop-down list. The default is **All Devices**. See **10.0 - Configuring Views for the Navigate Tab**.
11. Specify whether to activate these features with a check mark ☑:
    - **User must change password at next login** - allow users to select their own passwords
    - **User cannot change password** - prevent users from changing passwords
    - **Account is disabled** - deactivate a user account without deleting it
    - **User cannot change alerts** - prevent users from access to the Visual alerts and Audible alerts tabs in the User Options window
    - **Auto-logout user after: ___ min** - automatically log the user off after no activity; if checked, specify the number of minutes in the Min. drop-down list
12. Click the **User Options** button for additional features (see **7.0 - Configuring User Options**).
13. When finished, click the **OK** button to save any changes.

13.2 Assigning Users to Groups

Groups are used to assign permissions to users. Individual users must be assigned to groups that have specific permissions. This function may also be used to map users to actions such as e-mail alerts. Changes in this section apply to all users in the group.

To create a group of users:

1. Start the Viewer with permission to configure groups (see **Step 3** below).
2. Click on the **Configure Users & Groups** icon at the bottom of the window (or click on the **Configure** menu, then choose **Actions**).
3. The Groups list in the lower portion of the window displays all user groups. Click the **Add** button to the right of the Groups list.



4. In the Group Properties window, enter a name for the group in the Name box.
5. In the Description box, enter text to describe the group, if desired.

6. Select privileges by placing a check mark ☑ in the box, referring to the table below. Privileges are logically grouped according to function, but each privilege may be assigned separately.

Table 8 Summary of group privileges

Category	Privilege	For details, see:
Manage Users	Configure users	**13.1 - Add Individual Users**
	Configure groups	**13.2 - Assigning Users to Groups** (this section)
Manage Devices	Configure devices	**9.1 - Add Devices to the Configuration**
	Set device data	**16.3.2 - Navigate - Parametrics View** (Edit option)
	Configure navigation views	**10.0 - Configuring Views for the Navigate Tab**, including: • **10.1 - Add or Edit Views** • **10.2 - Add or Edit an Area** • **10.3 - Place Devices in Floor Plans** • **10.4 - Create Logical Groups**
	Discover new devices[1]	**9.1.2 - Detect Devices on a Network**
	Configure data logging[1,2]	**9.2.7 - Data Logging**
	Edit device definitions[1]	**9.2.6 - Alarms and Data** (both tabs): • **Alarms and Data - Alarms Tab** • **Alarms and Data - Data Tab**
Manage Alarms	Acknowledge and close alarms	**16.3.3 - Navigate - Alarms View** **16.4.2 - Managing Alarms**
Manage Actions	Assign actions	**12.3 - Map Action Sets to Devices and Alarms**
Configure Actions	E-mail	**12.2.1 - Configure E-Mail Actions**
	Run command	**12.2.2 - Configure Run Command Actions**
	Write file	**12.2.3 - Configure Write File Actions**
	Shutdown[4]	**12.2.4 - Configure Shutdown Actions**
	Forward trap[3]	**12.2.5 - Configure Forward Trap Actions**
	Read data	**12.2.6 - Configure Read Data Actions**
	Write data	**12.2.7 - Configure Write Data Actions**
Manage System	Server parameters	**8.1 - Server Options - General Tab** (Locale) **8.3 - Server Options - Alarms Tab** **8.5 - Server Options - Device Tab** (Emerson Protocol)
	Licenses	**4.4.1 - Add a Liebert Nform License Key** **4.4.2 - Add a Liebert MultiLink 1.5 Shutdown License**
	Global device parameters	**8.5 - Server Options - Device Tab** (Global status polling) **8.6 - Server Options - SNMP Tab**
	Email parameters	**8.4 - Server Options - SMTP Tab**
	Start/stop server	**18.3.1 - Application Menu - Service** **18.5.1 - Tools Menu - Install DTD**
	Logging parameters	**8.1 - Server Options - General Tab** (Audit log file) **8.2 - Server Options - Event Log Tab** **8.5 - Server Options - Device Tab** (Data logging storage[2])
	SNMP trap forwarding[3]	**8.7 - Server Options - Trap Forwarding Tab**
	Shutdown clients[4]	**11.0 - Configuring Shutdown Clients**

NOTES:
1. Selecting this option automatically gives permission to configure devices (**Configure devices** box is checked & disabled).
2. Requires a license with Advanced Communications (see **Table 12**).
3. Requires a license with Advanced Notifications (see **Table 12**).
4. Requires a shutdown client license (see **Table 12**).

7. When finished, click **OK** to save any changes.

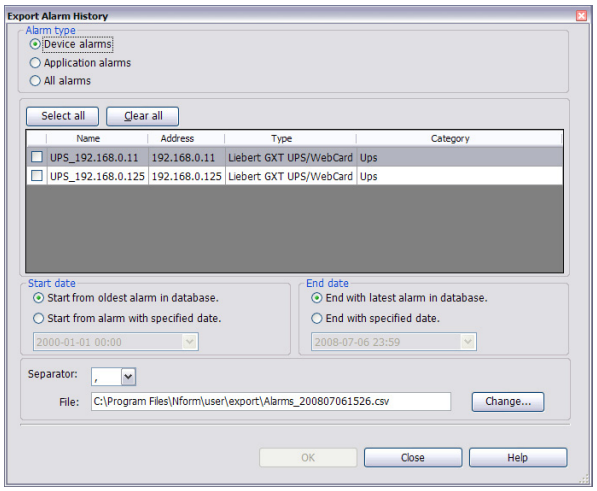
14.0 USING THE TOOLS MENU

The Tools menu offers options to export data to text files that may be opened with any text editor or spreadsheet program.

14.1 Export Alarm History

The Alarm History log may be exported as a text file that can be viewed or edited with a text editor or spreadsheet program. You may specify the type of alarm, the time period and the type of text file.

1. Start the Viewer.
2. Click on the **Tools** menu, choose **Export** and then choose **Alarm History** to open the Export Alarm History window.



3. Specify which category of alarms to export in the Alarm Type area:
   - **Device alarms** - export alarms for selected devices only—for example, *UPS on battery*
   - **Application alarms** - export program-related alarms only—for example, *Service started*
   - **All alarms** - export both types of alarms (device and application) for all devices
4. *(Only if **Device alarms** is selected:)* Place a check mark ☑ to the left of each device to include or:
   - Click **Select all** to choose all devices.
   - Click **Clear all** to remove all check marks.
5. The default Start Date and End Date for the exported file include all records, ranging from the oldest alarm in the database to the latest, or most recent.

   To change a date, click **Start from alarm with specified date** or **End with specified date** and choose a date from the calendar below the button.
6. In the Separator box, choose the type of character to use between fields in the exported file: **comma (,)** (the default), **semicolon (;)** or **tilde (~)**.
7. The File box displays the default location—**Nform\user\export**—for the exported file. The file name includes the date and time with the extension **.csv**.

   To change this, enter the full path in the File box or click **Change** to browse for the location.
8. Click **OK** to export the file. A message window appears after the process is complete.

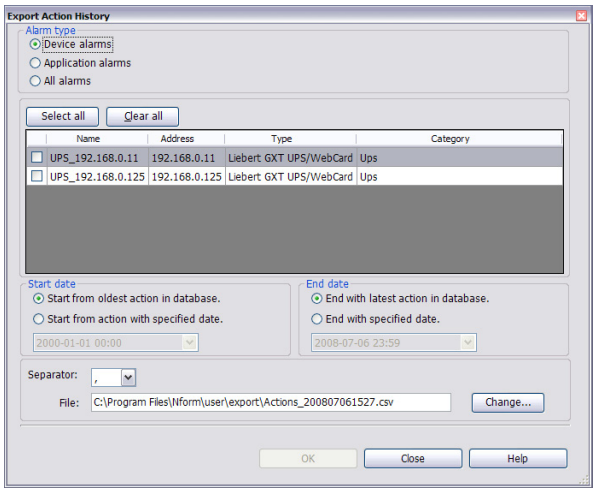
   The exported text file has headings in the first row, as in the following example.

```
AlarmRecvDttm, MgdDeviceName, MgdDeviceAddress, AlarmId, AlarmName, AlarmSev, AlarmStatus, AckDttm, AckUsrName, ClosedDttm, ClosedUsrName, Incident
2008-07-07 08:44:14, Nform, , 12, Service started,Info,Unacknowledged,, ,, , ,
2008-07-07 08:44:36, Nform, , 13, Device monitoring started,Info,Unacknowledged,, ,, , ,
2008-07-07 08:44:40, UPS_192.168.0.11, 192.168.0.11, 15, No Alarms Present,Info,Unacknowledged,, ,, , ,
2008-07-07 08:44:53, UPS_192.168.0.125, 192.168.0.125, 16, Communications Lost,Critical,Unacknowledged,, ,, , ,
```

14.2 Export Action History

The Action History log may be exported as a text file that can be viewed or edited with a text editor or spreadsheet program. You may specify the type of alarm that triggered any action, the time period and the type of text file.

1. Start the Viewer.
2. Click on the **Tools** menu, choose **Export** and then choose **Action History** to open the Export Action History window.



3. Specify which category of alarms that triggered any action to export in the Alarm Type area:
   - **Device alarms** - export alarms for selected devices only—for example, *UPS on battery*
   - **Application alarms** - export program-related alarms only—for example, *Service started*
   - **All alarms** - export both types of alarms (device and application) for all devices
4. *(Only if **Device alarms** is selected:)* Place a check mark ☑ to the left of each device to include or:
   - Click **Select all** to choose all devices.
   - Click **Clear all** to remove all check marks.
5. The default Start Date and End Date for the exported file include all records, ranging from the oldest action in the database to the latest, or most recent.

   To change a date, click **Start from action with specified date** or **End with specified date** and choose a date from the calendar below the button.
6. In the Separator box, choose the type of character to use between fields in the exported file: **comma (,)** (the default), **semicolon (;)** or **tilde (~)**.
7. The File box displays the default location—**Nform\user\export**—for the exported file. The file name includes the date and time with the extension **.csv**.

   To change this, enter the full path in the File box or click **Change** to browse for the location.
8. Click **OK** to export the file. A message window appears after the process is complete.

   The exported text file has headings in the first row, as in the following example.

```
AlarmRecvDttm, MgdDeviceName, MgdDeviceAddress, AlarmId, AlarmName, AlarmSev, AlarmStatus, AckDttm, AckUsrName, ClosedDttm, ClosedUsrName, Incident
2008-07-11 12:34:13, Nform, , 1, Service started,Info,Closed,2008-07-14 00:30:18, System,2008-07-14 00:30:18, System, ,
2008-07-11 12:43:39, Precision Cooling_192.168.203.234, 192.168.203.234, 6, Communications Restored,Info,Closed,2008-07-14 00:37:31, System,2008-07-14 00:37:31, System, ,
2008-07-15 13:21:13, UPS_192.168.202.191, 192.168.202.191, 2024, Communications Lost,Critical,Closed,2008-07-15 15:50:38, System,2008-07-15 15:50:38, System, ,
2008-07-15 13:22:02, UPS_192.168.200.127, 192.168.200.127, 2025, upsTrapOnBattery,Warning,Closed,2008-07-15 15:51:03, System,2008-07-15 15:51:03, System, ,
```

14.3 Export Data Log History

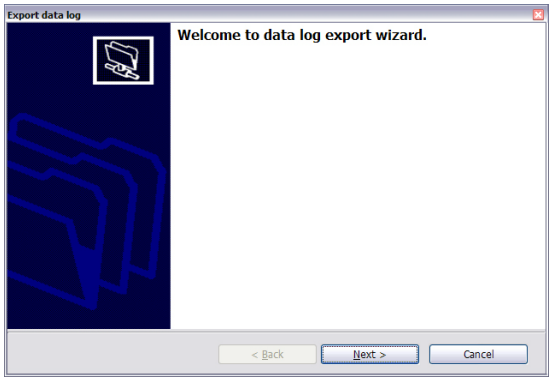
The Data Log History may be exported as a text file that can be viewed or edited with a text editor or spreadsheet program. You may export all records (the default) or select a time period and particular logged data points. You may also choose a comma-delimited (default) or other type of text file.

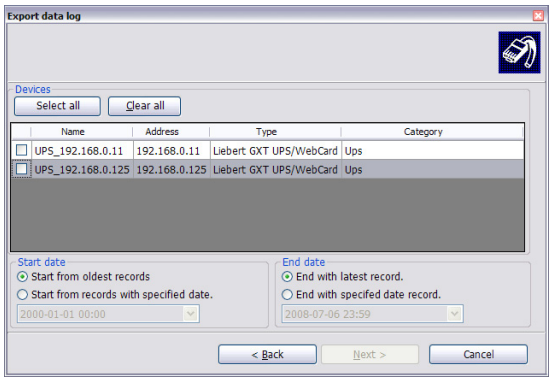
1. Start the Viewer. This feature requires logged data via Data Logging or the Read Data action (see **9.2.7 - Data Logging** and **12.2.6 - Configure Read Data Actions**). *Data logging requires a license with Advanced Communications (see **Table 12**).*
2. Click on the **Tools** menu, choose **Export** and then choose **Data Log History** to open the Export Data Log window.
3. Click **Next**.
4. Place a check mark ☑ to the left of each device to include or:
   - Click **Select all** to choose all devices.
   - Click **Clear all** to remove all check marks.
5. The default Start Date and End Date for the exported file include all records, ranging from the oldest to the latest.

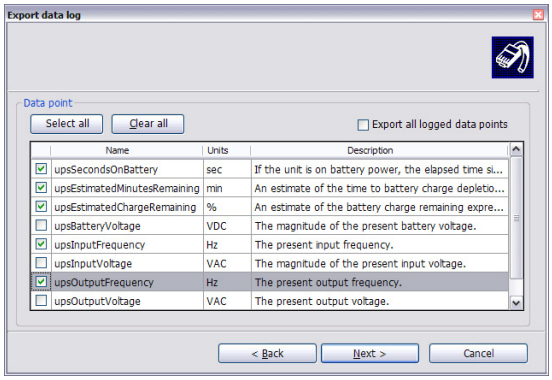
   To change a date, click **Start from records with specified date** or **End with specified date record** and choose a date from the calendar below the button.
6. Click **Next**.
7. The list will contain data points that are currently being logged. Place a check mark ☑ to the left of each data point to include or:
   - Click **Select all** to choose all data points.
   - Click **Clear all** to remove all check marks.
   - Place a check mark ☑ in **Export all logged data points** to include those that were previously logged but are not currently being logged.
8. Click **Next**.
9. In the Separator box, choose the type of character to use between fields in the exported file: **comma (,)** (the default), **semicolon (;)** or **tilde (~)**.
10. The File box displays the default location—**Nform\user\export**—for the exported file. The file name includes the date and time with the extension **.csv**.

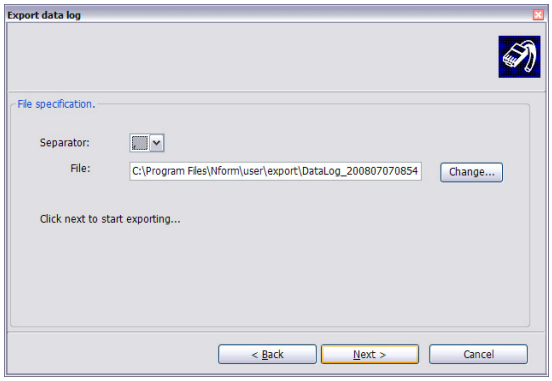
    To change this, enter the full path in the File box or click **Change** to browse for the location.
11. Click **Next** to export the file.
12. A message in the next window reports whether the exporting was successful. Click **Finish** to return to the Viewer.

    The exported text file has headings in the first row, as in the following example.










```
RecvDttm, LoggingResult, LoggingStatus, MgdDeviceName, ModuleName, DataPointName, DataValue, DataUnits
2008-07-07 08:46:19, Success, 0, UPS_192.168.0.11, , upsSecondsOnBattery, 0, sec,
2008-07-07 08:46:19, Success, 0, UPS_192.168.0.11, , upsEstimatedMinutesRemaining, 126, min,
```

15.0 USING THE HELP MENU

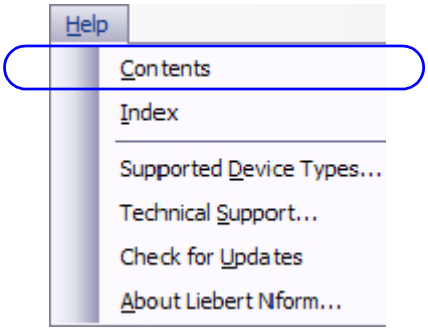
The Help menu lets you open Liebert Nform help to the Contents or Index tab, view a list of device types supported by Liebert Nform, open Liebert Nform help to access technical support contact information, check for updates to the Nform application or supported devices (DTD) and view details about Liebert Nform.

15.1 Contents

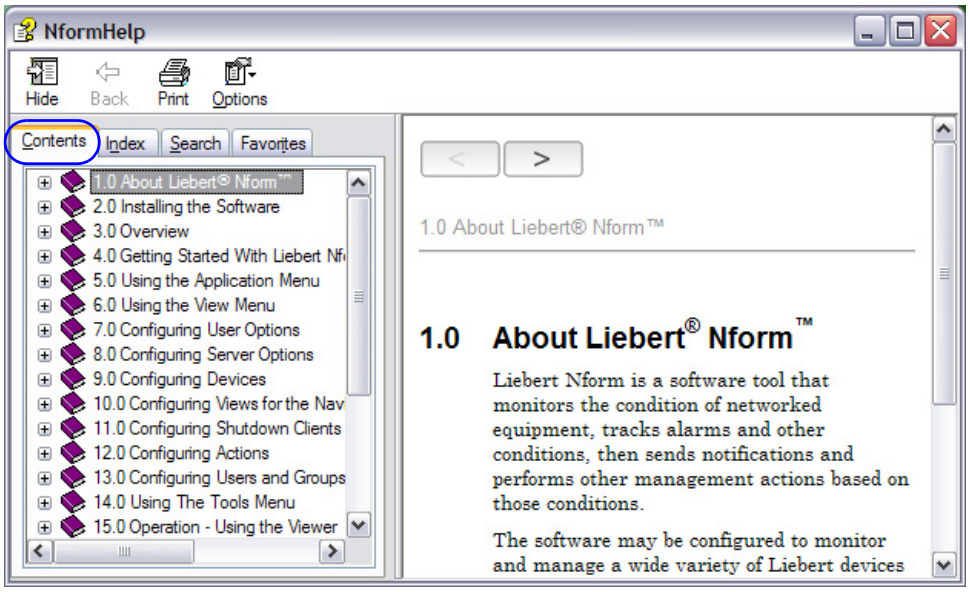
Use this option to open Liebert Nform help to the Contents tab.

To do this:

- Start the Viewer.



- Click on the **Help** menu at the top of the window, then click on **Contents**. The NformHelp window opens with the Contents tab selected

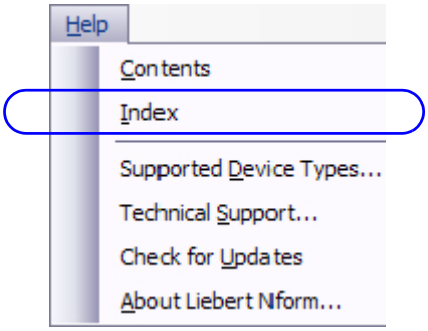


15.2 Index

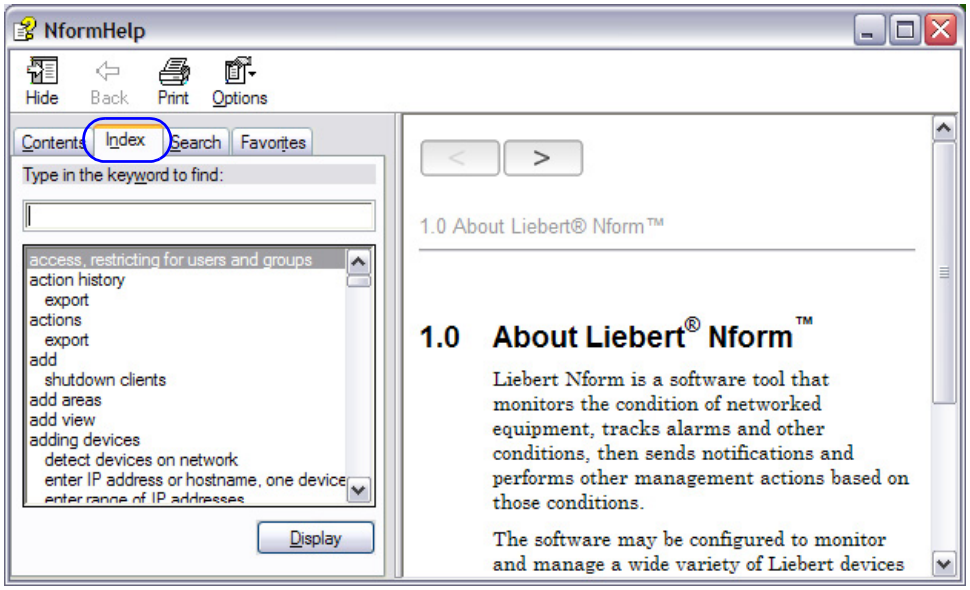
Use this option to open Liebert Nform help to the Index tab.

To do this:

- Start the Viewer.



- Click on the **Help** menu at the top of the window, then click on **Index**. The NformHelp window opens with the Index tab selected.

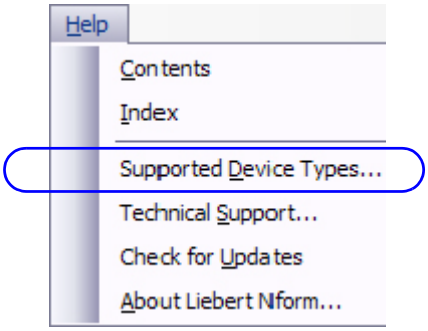


15.3 Supported Device Types

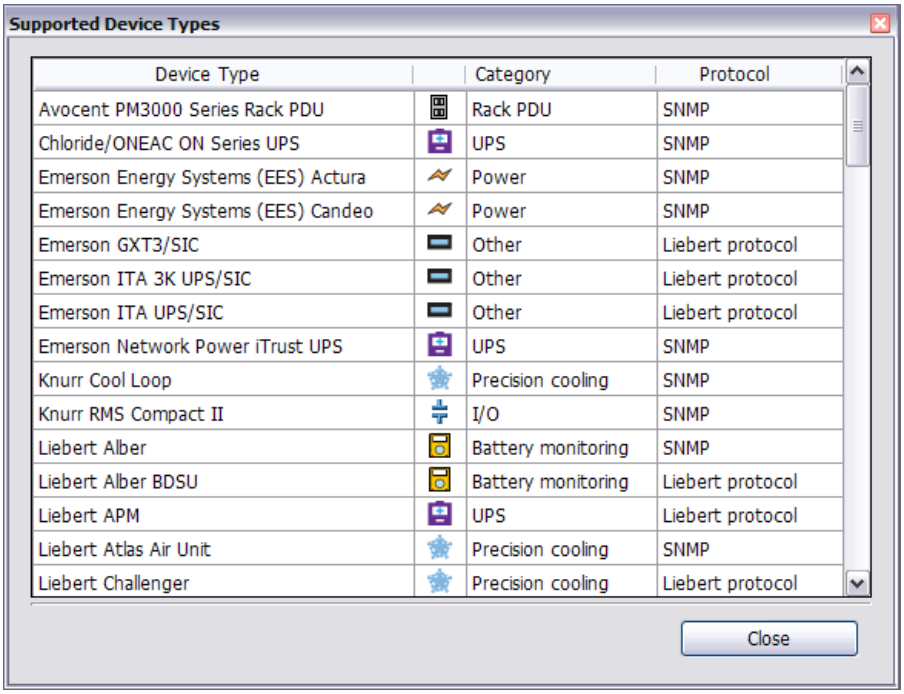
Use this option to view a list of device types supported by the Nform software.

To do this:

- Start the Viewer.



- Click on the **Help** menu at the top of the window, then click on **Supported Device Types**. The Supported Device Types window displays a list of devices along with the Category icon and name and the Protocol, as shown below.

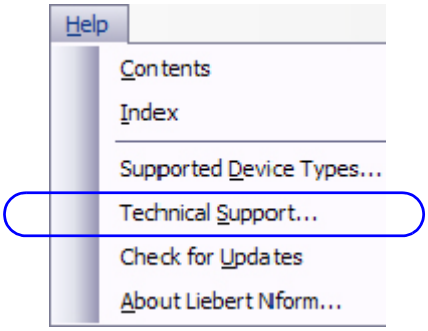


15.4 Technical Support

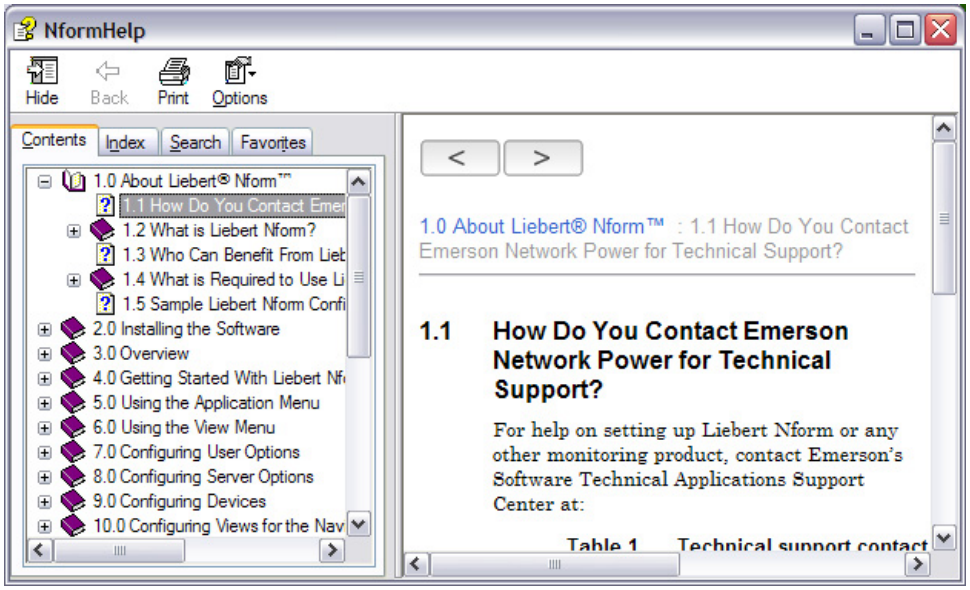
Use this option to open Liebert Nform help to display contact information for technical support.

To do this:

- Start the Viewer.



- Click on the **Help** menu at the top of the window, then click on **Technical Support**. The NformHelp window opens to the section with contact information for tech support.

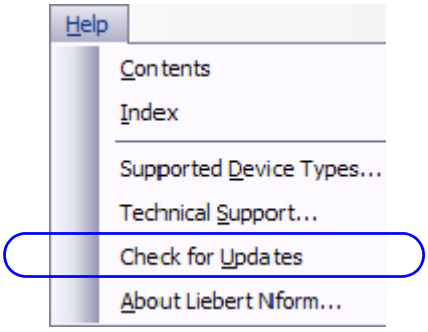


15.5 Check for Updates

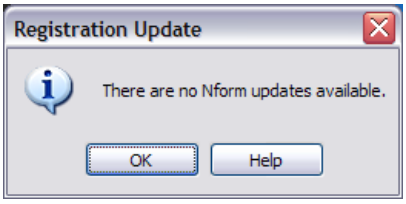
You may check manually for updates to the Liebert Nform software and device support (DTD) files at any time. See **8.8 - Server Options - Updates Tab** to have this done automatically.

To check for updates manually:

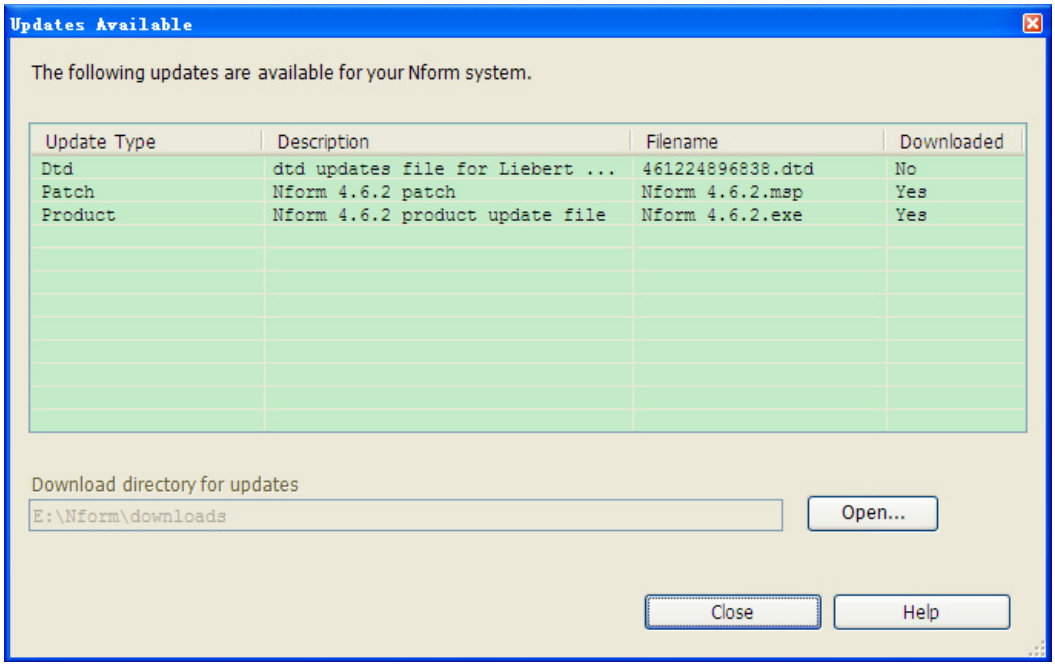
- Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).



- Click on the **Help** menu at the top of the window, then click on **Check for Updates**. (If no updates are available, a notification window appears, as shown below.)



- The Updates Available window displays all updates that may be installed. The example below shows the three types—*DTD* (an updated device support file), *Patch* (a software patch) and *Product* (a software update)—along with a description, the filename and whether the file has been downloaded. (The Download Directory appears only if the Viewer is running on the Nform server.)



The **Updates Available** button shown below appears in the Viewer when updates are available. Clicking on this button opens the Updates Available window above.

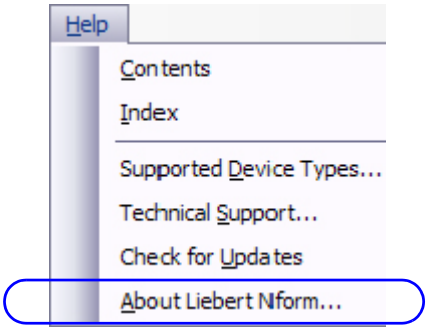
To download updates manually, go to the Software Assurance Web site (see **Table 1**).

15.6 About Liebert Nform

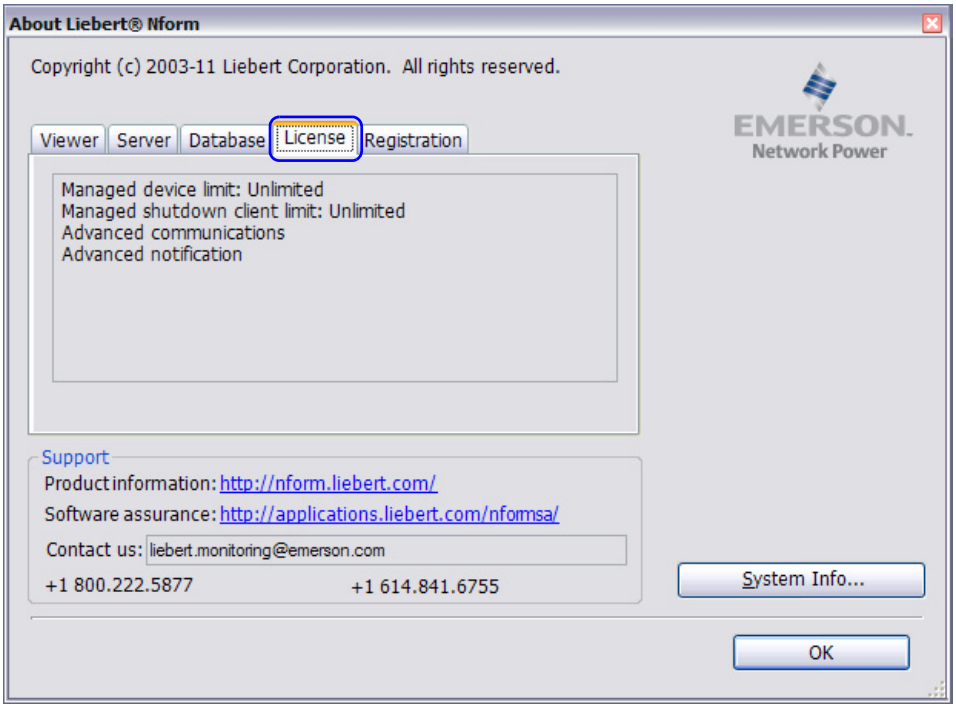
View details on Nform Viewer version, server, database, installed license keys, registration and how to contact technical support.

To do this:

- Start the Viewer.



- Click on the **Help** menu at the top of the window, then click on **About Liebert Nform**.
- Click on any tab—Viewer, Server, Database, License or Registration—to view the appropriate information. The example below shows the **License** tab with details about all license keys that are installed. All tabs display the same contact information in the Support section in the bottom half of the window.



- Click **OK** to close the window.

16.0 OPERATION - USING THE VIEWER

The Viewer has three tabs that offer different views of managed devices and monitored device data, described in the following sections:

- **16.1 - Dashboard Tab** - quick graphical look at the current status of managed devices
- **16.2 - Navigate Tab - Area** - hierarchical view of configured areas, with detailed data
- **16.3 - Navigate Tab - Device** - hierarchical view of managed devices, with detailed data
- **16.4 - Alarms Tab** - view and management of alarm data

16.1 Dashboard Tab

The Dashboard tab is active when the Viewer is launched, providing a quick summary of the status of monitored and managed devices. For features available in the Dashboard view, refer to:

- **16.1.1 - Dashboard View** - overview of the Dashboard window
- **16.1.2 - Select Devices for Gadgets** - use status buttons and filters to select devices
- **16.1.3 - Customize Gadgets** - limit devices shown, change graph type and colors
- **16.1.4 - Add Gadgets** - create a new gadget
- **16.1.5 - Global Gadget Options** - additional options to change the appearance of any pie chart

16.1.1 Dashboard View

The Dashboard tab is the default view when the Viewer is opened.

- Click on the Dashboard tab to display **gadgets** in the **Viewer Display Area**. The gadgets show device status data in graph or list form.
- Default gadgets appear after installation (see **16.1.4 - Add Gadgets** to add gadgets):
  - **Device Status** - list of managed devices by status: *No communication*, *Normal* or *Alarm*
  - **Alarm Status** - 3D graph of managed devices currently in alarm
  - **Alarm Severity** - 3D graph of managed devices by level of alarm severity

Resize and Rearrange Gadgets

Gadgets may be resized and rearranged:

- Resize a gadget using the standard Windows buttons in the upper right corner—**Minimize**, **Maximize** and **Restore**—or move it by clicking on the title bar and dragging it.
- If the **Close** button is clicked, the gadget disappears permanently. To create a new gadget, see **16.1.4 - Add Gadgets**.
- Right-click on any gadget, then choose **Tile** or **Cascade** to rearrange all gadgets.

16.1.2 Select Devices for Gadgets

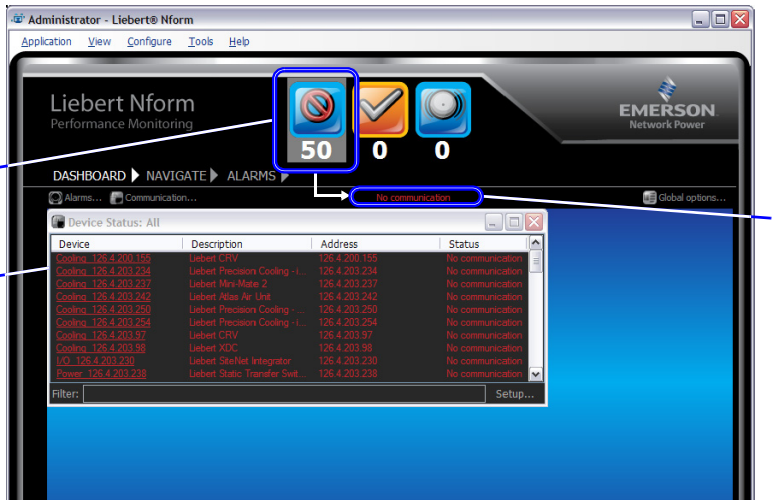
Status buttons and filters offer a quick way to select which devices to show in gadgets.

Use Status Buttons to Show Device Status View

A status button may be used to toggle between a list of devices with that status and the default view:

- Click on a status button—the example below shows *No communication*. The button has a gray outline, the name of the selected state appears above the Viewer Display Area and gadgets in the display area show only devices in that state.
- Each device status view—*No communication*, *Normal* and *Alarm*—has a Device Status list gadget by default. Customized gadgets may be added to any view and will be pre-filtered with devices in the selected state. Device status views operate independently.
- When the status button has a gray outline, click again to restore the default view showing all devices and all gadgets. Toggle between views with any of the three status buttons.

DEVICE STATUS VIEW
Status button selected to show only devices in that state



Status button selected (gray outline)

Device Status gadget shows only devices in selected status category *(No communication)*

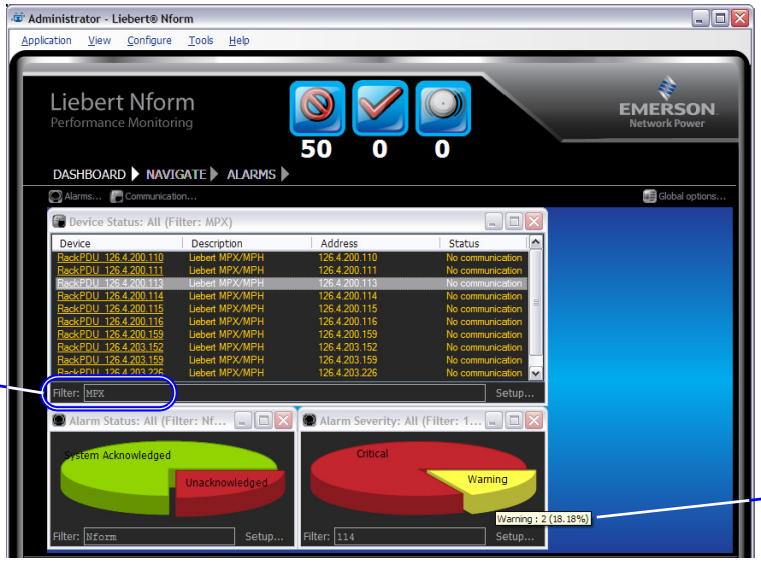
Name of selected state *No communication*

Apply Filters

A filter may be applied in any gadget to show only devices that meet the specified criteria:

- Enter criteria in the Filter box at the bottom of the window—the example below shows a different filter for each window: *MPX*, *Nform* and *114*. The text must appear in the device name, description, IP address or status.
- Press the Enter key. The gadget shows all devices that meet the criteria.
- Hover the mouse over a pie segment to reveal the number and percentage of devices in the chart.
- To remove the filter and show all devices, simply delete the text in the Filter box and press Enter.

FILTERED VIEW
Filters applied in gadget windows



Filter for this gadget

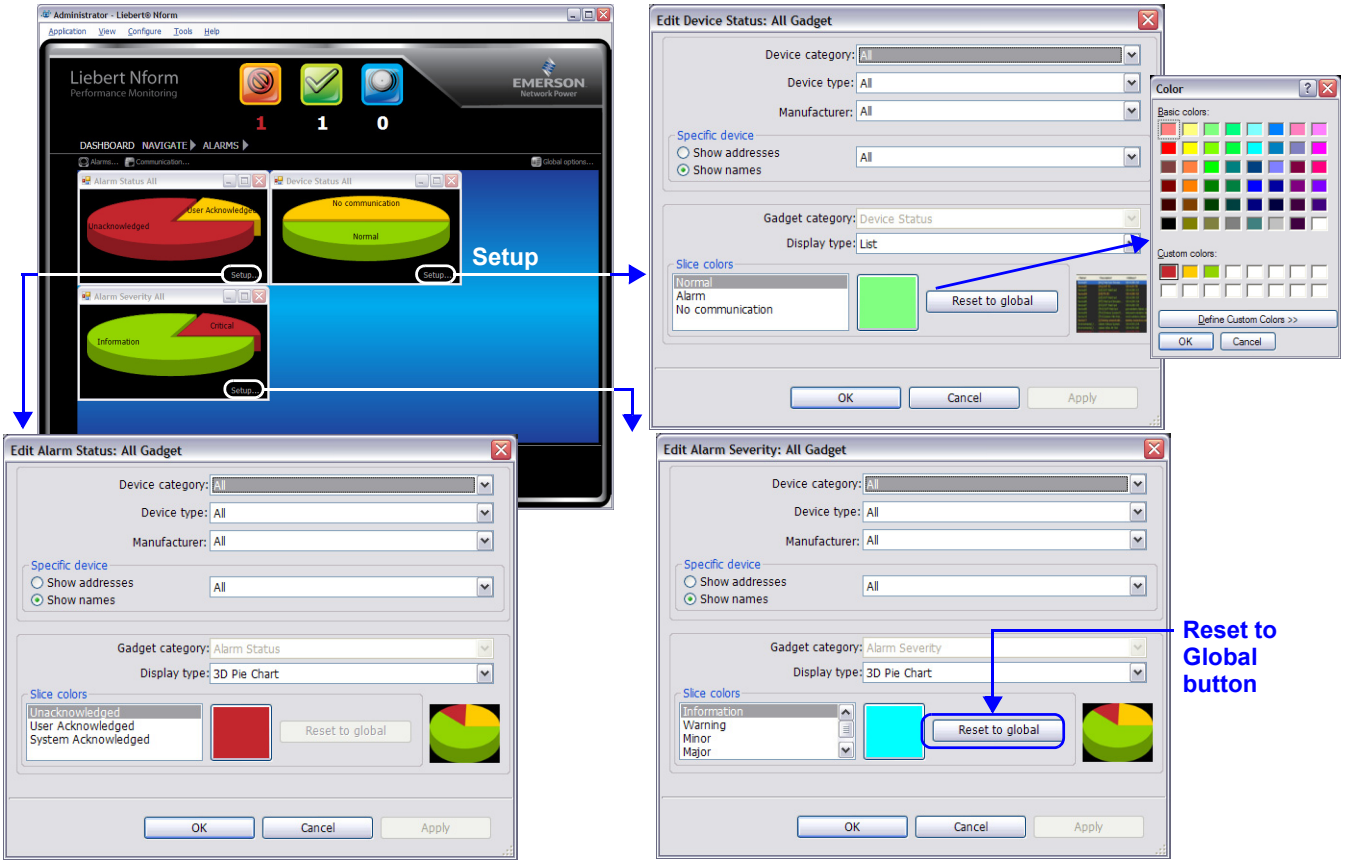
Show data for segment on mouseover

16.1.3 Customize Gadgets

Each gadget may be customized to limit the number of devices shown, change the type of graph and choose different colors for the graph categories. Also see **16.1.5 - Global Gadget Options** for additional sizing and label options for pie charts.

To customize a gadget:

- Click on **Setup** in the bottom right corner of any gadget to open an Edit window.



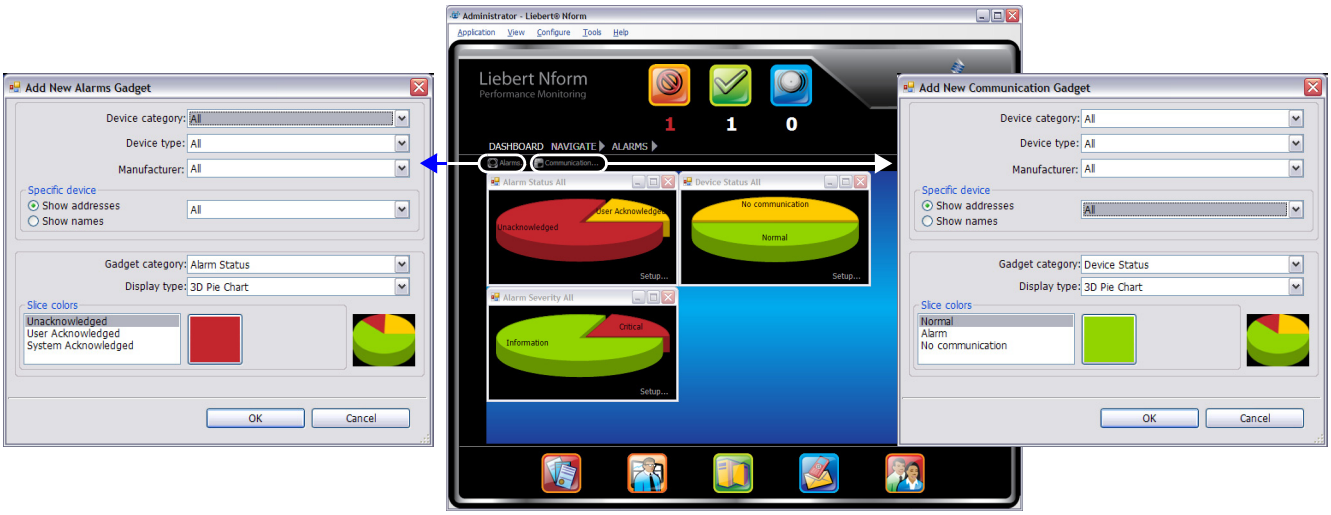
- At the top of the Edit window, choose groups of devices to display in this type of graph (the default is **All** devices):
  - **Device category**—for example, *UPS*
  - **Device type**—for example, *Liebert GXT UPS/Web Card*
  - **Manufacturer**—for example, *Liebert*
- In the Specific Device section, choose a single device to display in the graph (the default is **All**):
  - To choose a device by IP address, click **Show addresses**, then select from the drop-down list.
  - To choose a device by name, click **Show names**, then select from the list.
- In the Display Type list, choose the type of graph for this gadget:
  - **3D Pie Chart** - three-dimensional circle graph (default)
  - **2D Pie Chart** - two-dimensional circle graph
  - **List** - color-coded text listing of alarms or devices in each category
- In the Slice Colors list, click on a category—for example, *Normal* or *Unacknowledged*—then click on the color box to change the color representing that category.
- In the Color window, choose a color from the Basic colors list at the top (or click on the **Define Custom Colors** button to select a different color—see **7.2 - User Options - General Tab**). The selected color is outlined. Click **OK** to close the Color window.
- Click the **Reset to Global** button to apply global options to this gadget (see **16.1.5 - Global Gadget Options**). This button is disabled if no gadget properties have been customized.
- Click **Apply** at any time to view the changes without closing the Edit window.
- When finished, click **OK** to save changes (or **Cancel** to close without saving).

16.1.4 Add Gadgets

Besides the three default gadgets, additional gadgets may be created. This feature permits separate gadgets showing the status of UPSs and cooling units, for example.

To create a gadget:

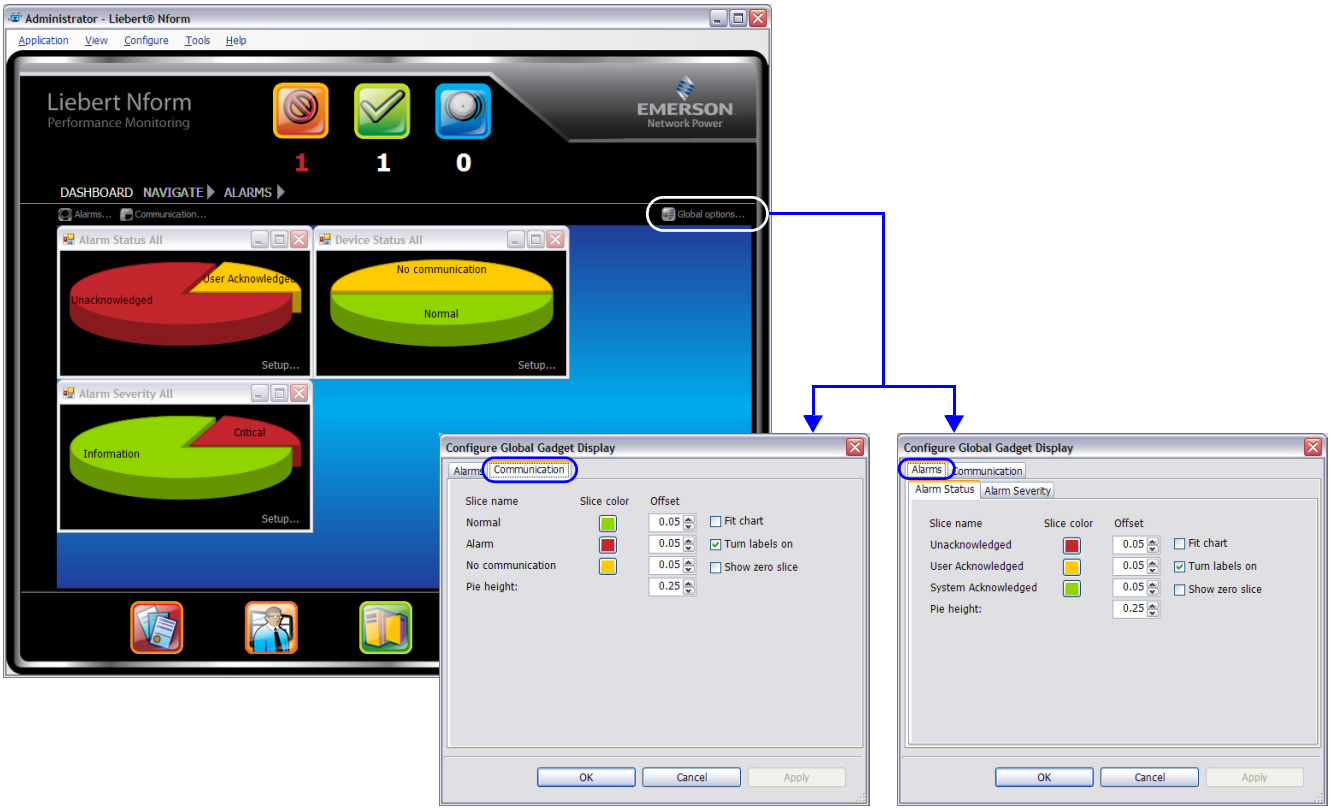
- Click on the **Alarms** or **Communication** button directly below the Dashboard tab to open an Add window.
- In the Add window, select the options for the new gadget (see **16.1.3 - Customize Gadgets**).
- When finished, click **OK**.



16.1.5 Global Gadget Options

The pie chart size and labels may be customized in any gadget. To do this:

- Click on **Global Options** in the right side of the window—with the Dashboard tab selected—to open the Configure Global Gadget Display window.
- Click on the tab for the gadget to be changed:
  - To change the Device Status pie chart, click the **Communication** tab.
  - To change the Alarm Status pie chart, click the **Alarms** tab, then the **Alarm Status** tab.
  - To change the Alarm Severity pie chart, click the **Alarms** tab, then the **Alarm Severity** tab.
- For each category:
  - Click the Slice color box to change the color (see **16.1.3 - Customize Gadgets**).
  - Valid Offset values range from 0 to 1 (default offset is 0.05 for each slice, 0.25 for pie height).
- Place a check mark ☑ for each additional option to be activated:
  - **Fit chart** - cause the graph to fill the gadget regardless of window size.
  - **Turn labels on** (checked by default) - show the Slice Name for each category on the graph
  - **Show zero slice** - show a label for any slice representing a category with no devices or alarms *(if **Turn labels on** is also checked)*
- Click **Apply** at any time to view the changes without closing the Edit window.
- When finished, click **OK** to save changes (or **Cancel** to close without saving).



16.2 Navigate Tab - Area

The Navigate tab displays managed devices and floor plans in a navigation tree in the left side of the window. Tabs in the right side of the window offer options to display various types of data for a selected area or device.

The tabs vary, depending on whether an area or a device is selected in the left side of the window. The options for a selected area are:

- **16.2.1 - Navigate - Floor Plan View** - display of placement of devices in the selected area
- **16.2.2 - Navigate - Alarms View** - listing of alarms for the selected area
- **16.2.3 - Navigate - Info Links View** - clickable links to relevant Web pages or computer files

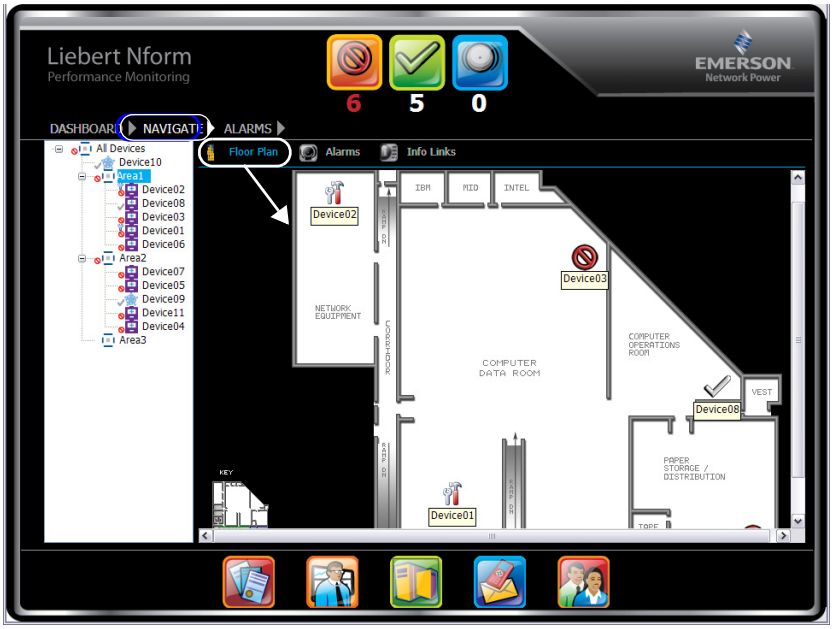
The default navigation view—**All Devices**—shows every device that has been added to the Managed Devices list (see **9.1 - Add Devices to the Configuration**).

Customized views may be created for any reason and may be specified as the opening view for any user (see **10.0 - Configuring Views for the Navigate Tab**).

The arrow tab ▶ indicates that double-clicking opens the Navigate view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Navigate tab disappears from the original window as long as the separate window remains open.

16.2.1 Navigate - Floor Plan View

- Click on the **Navigate** tab, then click on an area in the tree at left.
- In the right side of the window, click on the **Floor Plan** tab to display the area's floor plan showing configured placement of devices in the selected area. Icons indicate the status of any devices that have been configured in the floor plan (see **Table 9**).



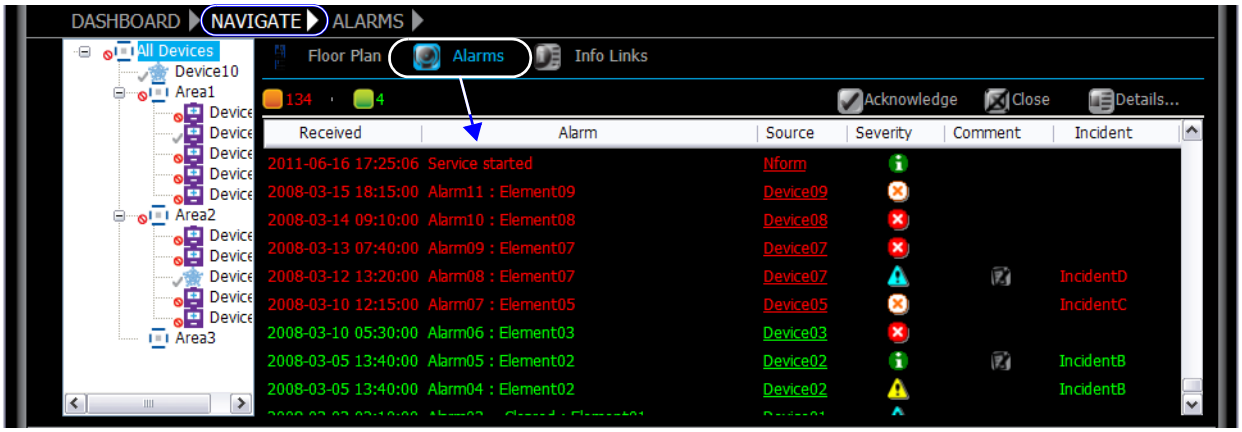
16.2.2 Navigate - Alarms View

The Alarms view in the Navigate tab displays alarm history data for a selected area. Authorized users may acknowledge and close alarms and add comments and incident reports to any alarm from this window.

This window offers the same alarm features as the Alarms tab (see **16.4 - Alarms Tab**). The Alarms view described in this section shows alarms for all devices that are part of the selected area.

To view this data:

- Click on the **Navigate** tab, then click on an area in the tree at left—the example below shows the **All Devices** area selected..
- In the right side of the window, click on the **Alarms** tab to display alarm history data for the selected area in the Viewer Display Area. The alarm list shows details about the time of occurrence, type of alarm, source of the alarm, its severity and any comments or incidents. (If an alarm was received during a scheduled maintenance and a Reason was specified, that text appears in the Incident column.)



- Click on an alarm in the list, then click on any of the following buttons above the alarm list for additional options, which are available to users with permission to manage alarms (see **13.2 - Assigning Users to Groups**):
  - **Acknowledge** - to acknowledge the selected alarm.
  - **Close** - to remove the selected alarm from the display.
  - **Details** - to view or add comments, incident reports and other alarm information in the Alarm Details window (see **16.4 - Alarms Tab** for more information).

16.2.3 Navigate - Info Links View

The Info Links tab displays information links for a selected area. These are user-defined links to Web page or files that pertain to this area.

To view this data:

- Click on the **Navigate** tab, then click on an area in the tree at left.
- In the right side of the window, click on the **Info Links** tab to display configured links for the selected area in the Viewer Display Area.

- **User-defined** info links are configured by users. For details on adding, editing or deleting these links, refer to:
  - **9.2.5 - Info Links** for details on adding or changing an info link
  - **10.2 - Add or Edit an Area** to add an info link for an area
  - **10.4.1 - Group Properties - Logical Groups** to add an info link for a logical group

16.3 Navigate Tab - Device

The Navigate tab displays managed devices and floor plans in a navigation tree in the left side of the window. Tabs in the right side of the window offer options to display various types of data for a selected area or device.

The tabs vary, depending on whether an area or a device is selected in the left side of the window. The options for a device are:

- **16.3.1 - Navigate - Web View** - access to the device using a Web browser interface
- **16.3.2 - Navigate - Parametrics View** - tabular display of parametric data for the device
- **16.3.3 - Navigate - Alarms View** - listing of alarms for the selected device
- **16.3.4 - Navigate - Trends View** - graph of data points collected through data logging
- **16.3.5 - Navigate - Info Links View** - clickable links to relevant Web pages or computer files

The default navigation view—**All Devices**—shows every device that has been added to the Managed Devices list (see **9.1 - Add Devices to the Configuration**).

Customized views may be created for any reason and may be specified as the opening view for any user (see **10.0 - Configuring Views for the Navigate Tab**).

The arrow tab ▶ indicates that double-clicking opens the Navigate view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Navigate tab disappears from the original window as long as the separate window remains open.

16.3.1 Navigate - Web View

- Click on the **Navigate** tab, then click on a device in the tree at left.
- In the right side of the window, click on the **Web** tab to display the device's data in a Web browser view. A message appears if the device does not have a Web card or if communication has been lost.

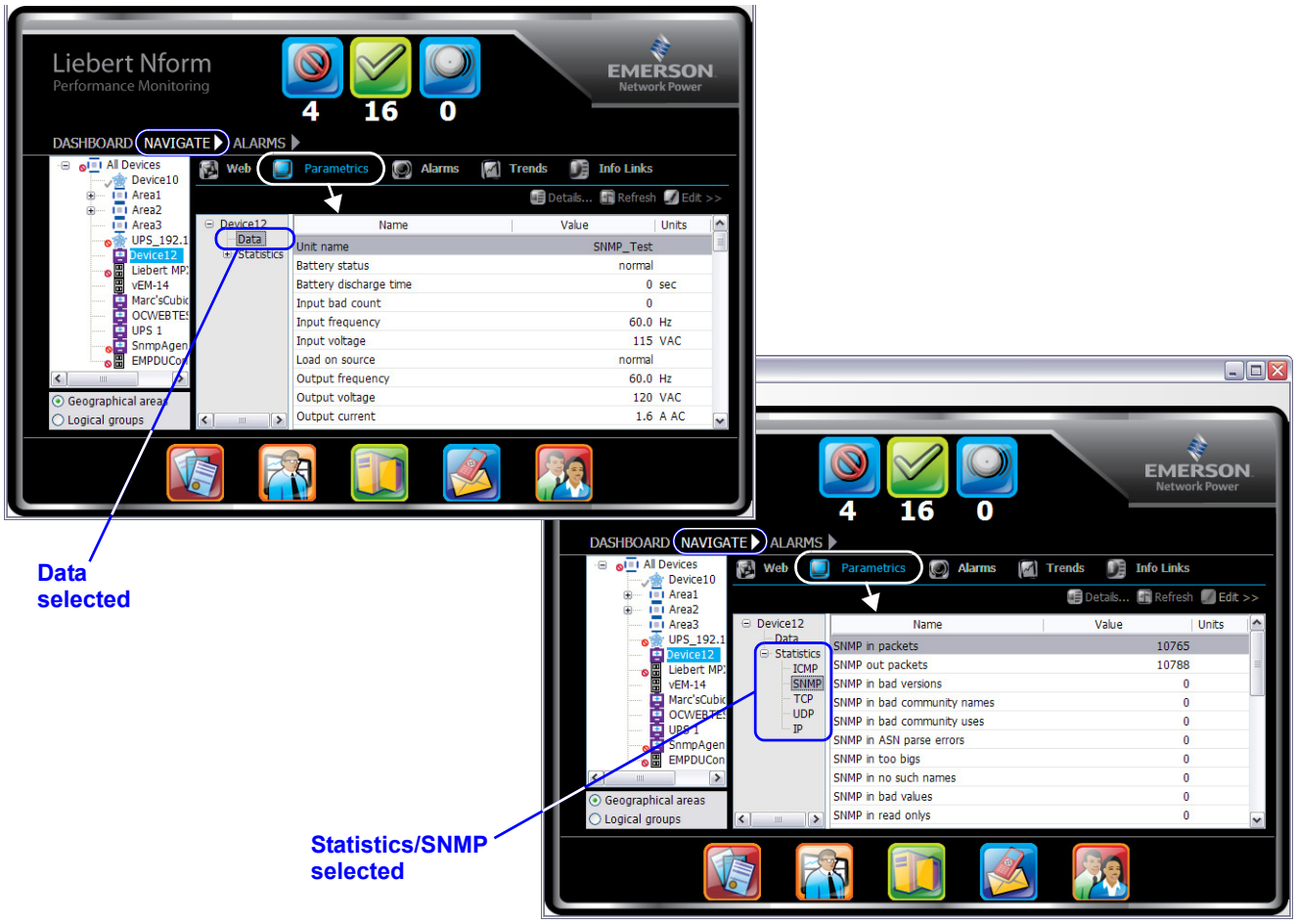
- To view the same device data in the computer's default Web browser, click **View in browser**. The Web browser opens and connects to the device's IP address.

16.3.2 Navigate - Parametrics View

The Parametrics tab displays parametric data for the selected device.

To view this data:

- Click on the **Navigate** tab, then click on a device in the tree at left.
- In the right side of the window, click on the **Parametrics** tab to display parametric data for the selected device in the Viewer Display Area.



- Two types of parametric data are available. Click on one of these options to display device data or statistics for the device.
  - **Data** - the default, shown above left
  - **Statistics** - options depend on the device selected—**SNMP** in the example above right
- To sort the list, click on a column heading—for example, **Name**.
- Click these tabs above the list for additional options:
  - **Details** - open a window that displays a definition of the selected item. Click on **Close** to return to the Parametrics view.
  - **Refresh** - update the display with the most current device information.
  - **Edit** - make changes to the device itself—available only to users with permission to set device data (see **13.2 - Assigning Users to Groups**).

    When Edit mode is active, this tab toggles to **Read only** - leave Edit mode and return to display-only mode (see **9.2.6 - Alarms and Data** for more information).

16.3.3 Navigate - Alarms View

The Alarms view in the Navigate tab displays alarm history data for a selected device. Authorized users may acknowledge and close alarms and add comments and incident reports to any alarm from this window.

This window offers the same alarm features as the Alarms tab (see **16.4 - Alarms Tab**). The Alarms view described in this section shows alarms for a **single device**, rather than for all devices.

To view this data:

- Click on the **Navigate** tab, then click on a device in the tree at left.
- In the right side of the window, click on the **Alarms** tab to display alarm history data for the selected device in the Viewer Display Area. The alarm list shows details about the time of occurrence, type of alarm, source of the alarm, its severity and any comments or incidents. (If an alarm was received during a scheduled maintenance and a Reason was specified, that text appears in the Incident column.)

- Click on an alarm in the list, then click on these tabs above the list for additional options, which are available to users with permission to manage alarms (see **13.2 - Assigning Users to Groups**):
  - **Acknowledge** - to acknowledge the selected alarm.
  - **Close** - to remove the selected alarm from the display.
  - **Details** - to view or add comments, incident reports and other alarm information in the Alarm Details window (see **16.4 - Alarms Tab** for more information).

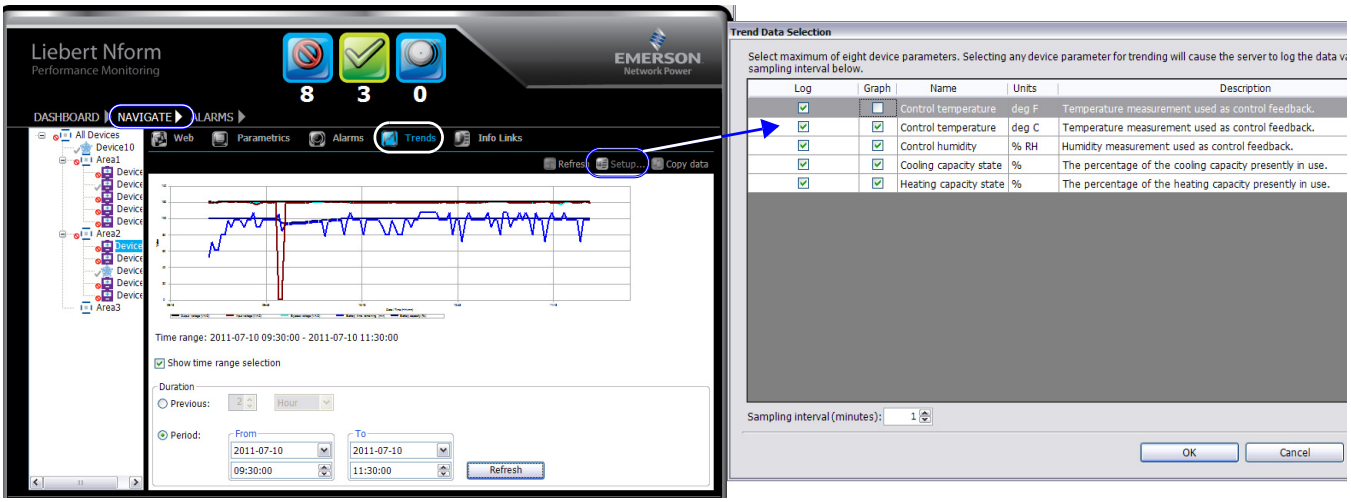
16.3.4 Navigate - Trends View

*Data logging requires a license with Advanced Communications (see **Table 12**).* This feature requires logged data via Data Logging or the Read Data action (see **9.2.7 - Data Logging** and **12.2.6 - Configure Read Data Actions**).

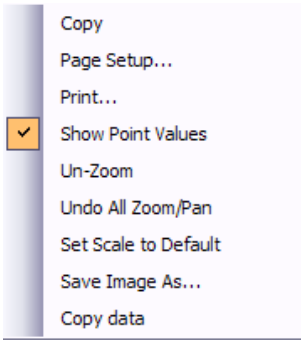
The Trends function in the Navigate tab displays a graph of data points for a selected device. The data points must be selected for logging and graphing before the graph may be viewed.

To select and view this data:

- Click on the **Navigate** tab (below left), then click on a device in the tree (left side of the window).
- In the right side of the window, click on the **Trends** tab.



- Click the **Refresh** button—either above the graph or at the bottom of the window—to update the graph. The graph is not updated with new data until the **Refresh** button is clicked.
- Click the **Setup** button above the graph to open the Trend Data Selection window, shown above right. See **9.2.7 - Data Logging** for details on the Device Data Logging window, a similar window—minus the Graph column—where points may be selected for logging.
  - Place a check mark ☑ in the Graph column to select a data point (up to eight) to be graphed. This also places a check mark in the Log column, indicating the parameter will be logged.
  - In the Sampling Interval (minutes) box, choose the time interval for sampling all selected data points. The default is 30 minutes; valid entries are from 1 to 10080 minutes (7 days).
  - Click **OK** when finished. Click **Refresh** to update the graph in the Navigate window.
- Click the **Copy data** button above the graph to create a comma-delimited copy of the data labels and values on the clipboard, which can be pasted into a text or spreadsheet file.
- To change the time axis, place a check mark ☑ in the **Show time range selection** box below the graph. Specify the Duration using either of these options, then click **Refresh**:
  - **Previous**: Choose the amount of data history to display—e.g., the past 2 hours or 30 days.
  - **Period**: Specify a range of start and end times in the From and To boxes.
- Click-and-drag to draw a rectangular area to zoom in on any portion of the graph.
- Use the mouse wheel to pan the graph.
- Right-click anywhere on the graph area for a pop-up menu with these additional options:



Menu option		Description
Copy or print the graph image	**Copy**	Copy the graph to the clipboard
	Page Setup...	Change settings for printing the graph
	Print...	Send the graph to a printer
Display data	**Show Point Values**	Display the point values on mouseover
Restore original view	**Un-Zoom**	Restore original view after zooming
	Undo All Zoom/Pan	Restore original view after zooming or panning
	Set Scale to Default	Undo any changes to the graph scale
Save graph image	**Save Image As...**	Save the graph as a graphic file
Copy values	**Copy data**	Copy data labels and values to the clipboard

16.3.5 Navigate - Info Links View

The Info Links tab displays information links for a selected device. These include both clickable links to Web pages gathered during Auto Discovery of devices and user-defined links to Web page or files that pertain to this device.

To view this data:

- Click on the **Navigate** tab, then click on a device in the tree at left.
- In the right side of the window, click on the **Info Links** tab to display configured links for the selected device in the Viewer Display Area.

- **Permanent** info links are gathered automatically during device configuration; they may not be edited or deleted.
- **User-defined** info links are configured by users. For details on adding, editing or deleting these links, refer to:
  - **9.2.5 - Info Links** for details on adding or changing an info link
  - **10.2 - Add or Edit an Area** to add an info link for an area
  - **10.4.1 - Group Properties - Logical Groups** to add an info link for a logical group

16.4 Alarms Tab

The Alarms tab displays alarm history data for all managed devices in the current view. Authorized users may acknowledge and close alarms and add comments and incident reports to any alarm.

This window offers the same alarm features as the Alarms view in the Navigate tab (see **16.3.3 - Navigate - Alarms View**). The Alarms tab described in this section shows alarms for **all** devices, rather than for a single device.

The arrow tab ▶ indicates that double-clicking opens the Alarms view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Alarms tab disappears from the original window as long as the separate window remains open.

16.4.1 Viewing Alarms

To view this data:

- Click on the **Alarms** tab to display alarm history data for all devices in the Viewer Display Area.

- The Viewer Display Area displays history data for each alarm (see **16.4.2 - Managing Alarms**):
  - **Received:** the time the alarm was detected by the Nform server
  - **Alarm:** the type of alarm—e.g., *Utility failure -- Cleared*
  - **Source:** the source of the alarm—e.g., the Nform application *(Nform)* or a device *(Device12)*
  - **Severity:** the alarm's level of severity (see **Table 9**)
  - **Comment:** an icon indicating comments added in the Alarm Details window
  - **Incident:** a name indicating a related incident added in the Alarm Details window:

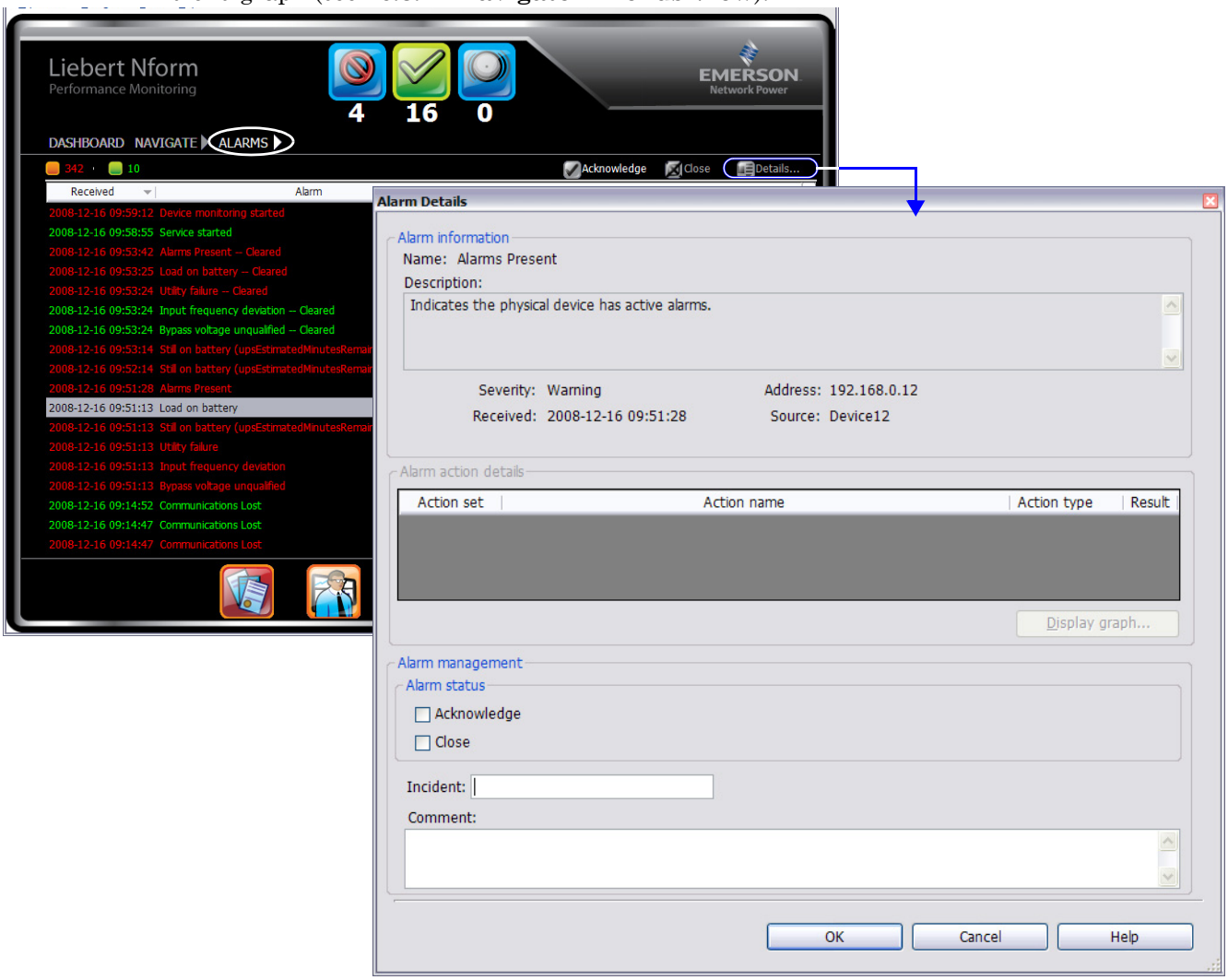
Received	Alarm	Source	Severity	Comment	Incident
2008-12-16 09:53:24	Utility failure -- Cleared	Device12	Critical		
2008-12-16 09:58:55	Service started	Nform	Informational		IncidentA

- Double-clicking on a device name—e.g., *Device12*—opens the Navigate tab view of that device. Double-clicking on any other part of an alarm listing opens the Alarm Details window (see **16.4.2 - Managing Alarms**).
- To sort the list, click on any heading—for example, *Alarm* or *Source*.
- Color-coded numbers of acknowledged and unacknowledged alarms appear above the Detail area.
- *For a device in Maintenance mode (see **9.3 - Configure Maintenance Mode**):*
  Any alarm received while a device is in Maintenance mode has a Maintenance icon in the Severity column. If a Reason was entered for a scheduled maintenance, the reason appears in the Incident column. Informational alarms indicate when the device enters and returns from Maintenance mode, as shown in the following example.

16.4.2 Managing Alarms

To manage alarms:

- Start the Viewer with permission to manage alarms (see **13.2 - Assigning Users to Groups**)
- Click on the **Alarms** tab to display alarm history data for all devices in the Viewer Display Area.
- Use standard shift-click and control-click methods to select multiple alarms.
- Select one or more alarms in the list, then click on these buttons to manage alarms:
  - **Acknowledge** - to acknowledge the selected alarm
  - **Close** - to remove the selected alarm from the display
- To view or add details for alarms, select one or more alarms in the list, then click on the **Details** button to open the Alarm Details window, shown below right.
  - The Alarm Information at the top is for display only: the alarm name, description and other details such as severity level and time received.
  - The Alarm Action Details shows a list of actions executed as a result of this alarm.
  - The **Display Graph** button is enabled only if a Read Data action—mapped to this alarm for this device—is selected in the Alarm Action Details list. When enabled, this button displays a trend graph (see **16.3.4 - Navigate - Trends View**).



- In the Alarm Status area, place a check mark ☑ in the Acknowledge or Close box as needed.
- In the Incident box, enter a description (up to 20 characters)—for example, an event that may have caused the alarm. This description is displayed in the Alarms view.
- Enter any additional notes in the Comments box. An icon appears in the Alarms view after a comment is added to an alarm.
- When finished, click **OK** to save changes (or **Cancel** to close the dialog without saving).

16.4.3 Informational Icons in the Navigation Tree

The Navigation tree displays icons to indicate normal operation, active alarms, communication loss and other conditions of managed devices and floor plans. The Alarms view displays icons to indicate the severity level.

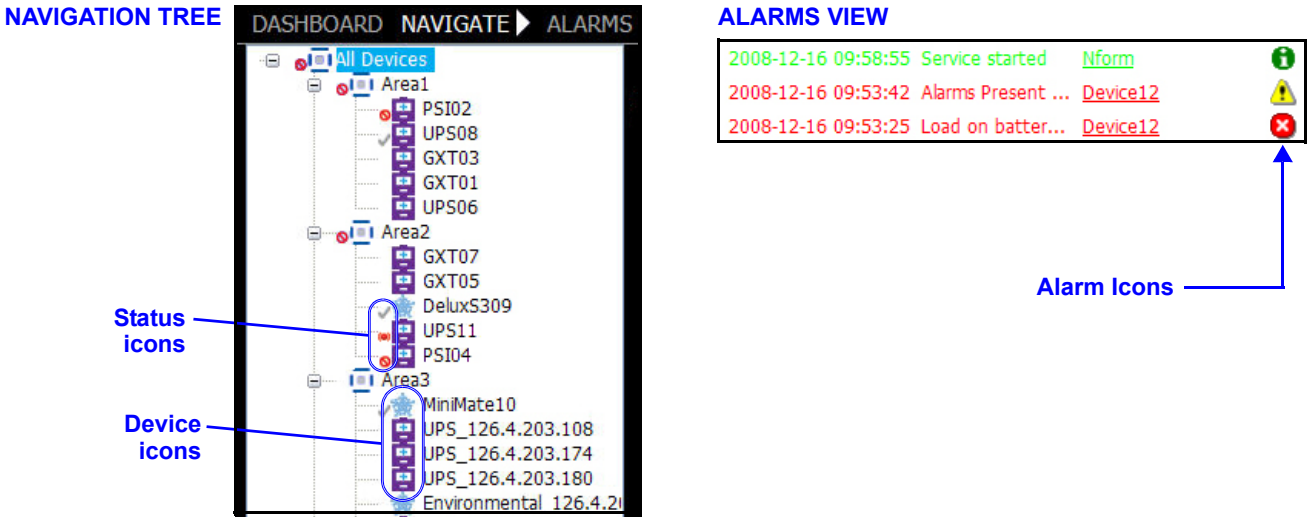


Table 9 summarizes the meaning of icons that indicate the status of monitored and managed devices.

Table 9 Informational icons - summary

Icon	Description	Additional information
DEVICE ICONS		
	Battery monitoring device	—
	I/O device	—
	Power device	—
	Precision cooling device	—
	Rack PDU device	—
	UPS device	—
	Other device	—
STATUS ICONS (examples with UPS device)		
	Device in normal status	—
	Device not being monitored for status	—
	Active alarm received from this device	—
	Device in maintenance mode	Appears for a device in maintenance mode above any status icon—e.g., *Active alarm* or *No communication*.
	No communication with this device	When this “no communication” symbol appears, verify that your network cables are connected. If further action is required, consult your SNMP card user manual.
	No communication with at least one device in this area	
ALARM ICONS		
	Critical alarm	—
	Warning alarm	—
	Informational alarm	—
	Maintenance mode	See **9.3 - Configure Maintenance Mode**.

17.0 RUNNING LIEBERT NFORM

After installation, the Liebert Nform service begins running in the background, monitoring and managing all configured devices.

The Liebert Nform service continues running constantly, but it may be stopped and restarted through the following methods:

Method	For details, see:
• The Windows Services application allows you to stop the Liebert Nform service manually.	**17.1.3 - Stop the Liebert Nform Service**
• The same Services application allows you to resume the Liebert Nform service without having to restart the computer.	**17.1.4 - Restart the Liebert Nform Service**
• The service is stopped automatically during operations performed in the Tools application.	**18.0 - Using Nform Tools**
• After being stopped automatically, the service restarts automatically when exiting the Tools application.	**18.3.2 - Application Menu - Close Nform Tools**

NOTE
Stopping the service prevents Liebert Nform from monitoring and managing your devices.

17.1 Starting or Stopping the Liebert Nform Service

Under normal circumstances, you will not need to start or stop the Liebert Nform service manually. This may be done in the Nform Tools application (see **18.3.1 - Application Menu - Service**) or from the Windows Services application, as described below.

17.1.1 Open the Services Application

1. Click on the **Start** button, then **Control Panel**.
2. In the Control Panel window:
   - *(Windows 7 and Server 2008 R2)* Click on **System and Security**.
   - *(Windows Vista and Server 2008)* Click on **System and Maintenance**.
   - *(Windows XP and Server 2003)* Click on **Performance and Maintenance**.
3. Click on **Administrative Tools**.
4. Double-click on **Services**.
   - *(Windows Vista & Server 2008)* Click on **Continue** in the User Account Control window.
5. Perform the following functions as needed.

17.1.2 Verify Whether the Liebert Nform Service is Running (Status column)

- Check the Status column in the Services window to see whether the Liebert Nform service is running (**Started**) or not running (blank).

17.1.3 Stop the Liebert Nform Service

This action prevents Liebert Nform from monitoring and managing your devices. To stop the service:

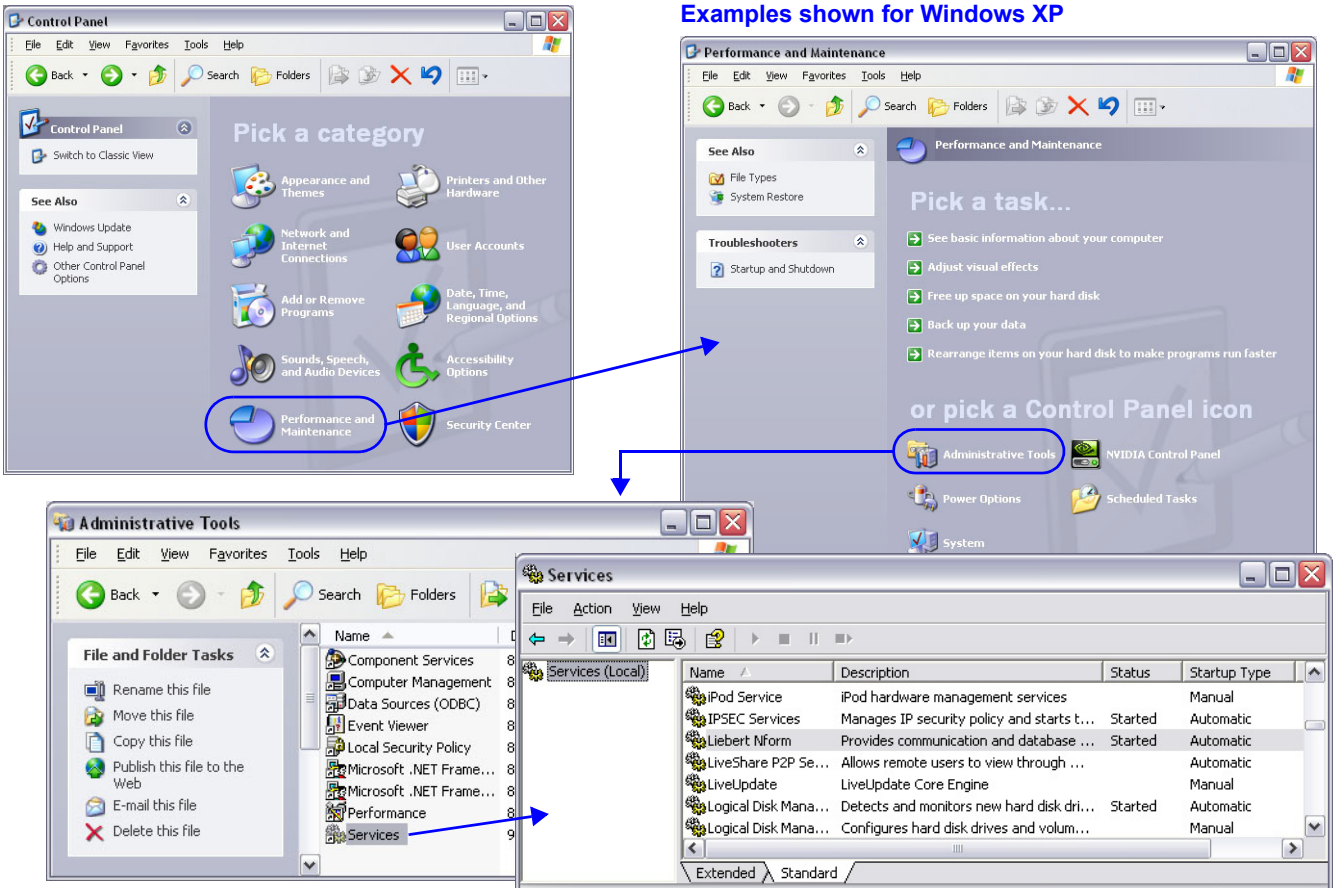
- Right-click on **Liebert Nform**, then click on **Stop** in the pop-up menu.
  (Or click on **Liebert Nform**, then on the **Action** menu at the top of the window, then **Stop**.)

17.1.4 Restart the Liebert Nform Service

The service starts automatically when the monitoring workstation is restarted. To start it manually:

- Right-click on **Liebert Nform**, then click on **Restart** in the pop-up menu.
  (Or click on **Liebert Nform**, then on the **Action** menu at the top of the window, then **Restart**.)

Examples shown for Windows XP



18.0 USING NFORM TOOLS

This section describes the following options available in the Nform Tools application:

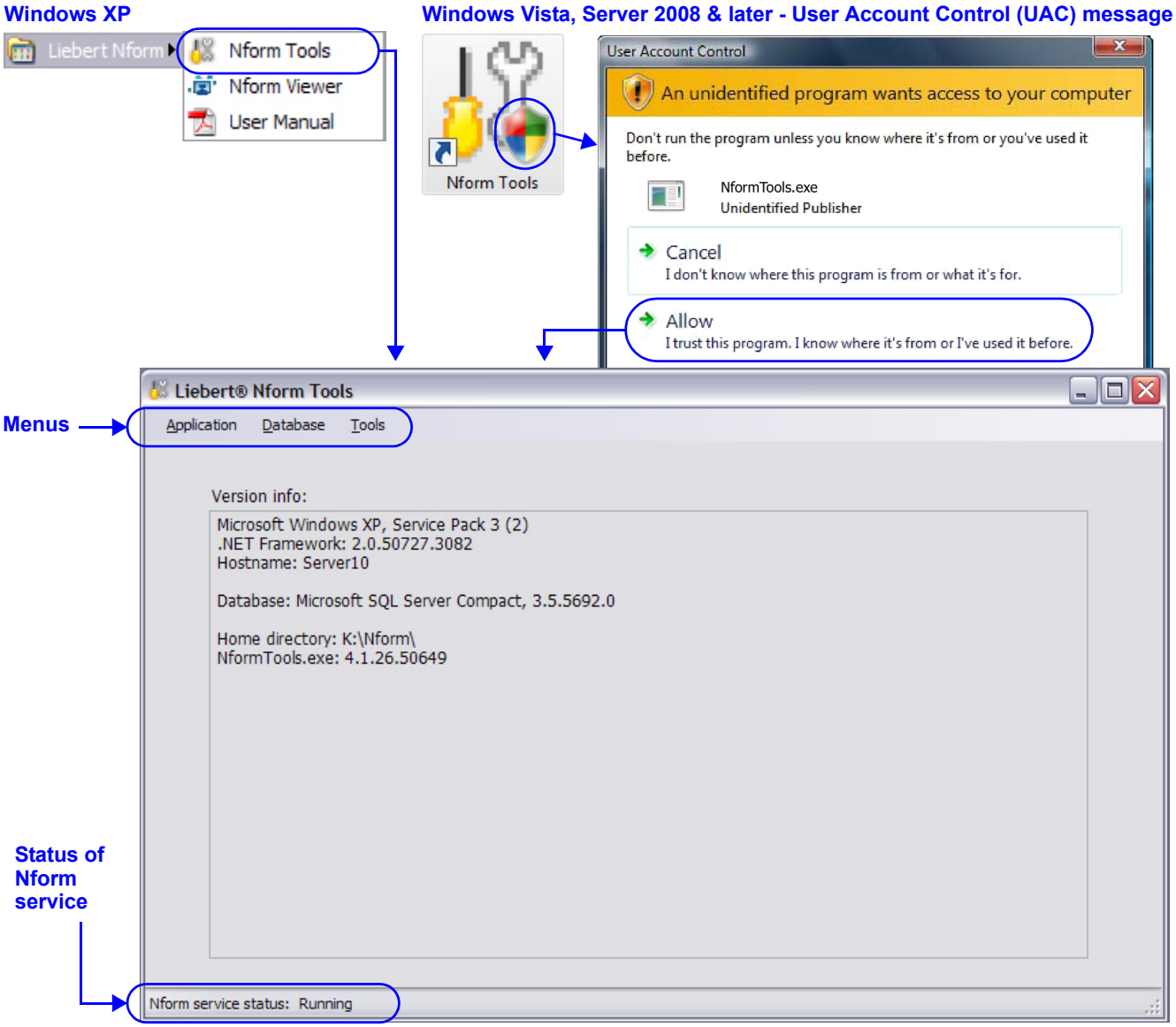
- Stop, start or restart the Nform service
- Change database connection options for an SQL Server database
- Switch from one type of database—bundled or SQL Server—to another
- Perform database maintenance operations on a bundled database: verify and repair, shrink and compact, upgrade from an older version (rarely needed)
- Install device definitions (DTDs) to expand Nform support for additional devices
- Import Liebert Nform version 2.X data from one server into version 4.X on a different server

18.1 Open the Nform Tools Application From the Start Button

Nform Tools may be opened from the Start button as described in this section or from the Nform Viewer (see **5.1 - Nform Tools**).

To open the application from the Start button:

- Click on the **Start** button, then on **Programs**, **Liebert Nform** and finally **Nform Tools**.
- *(Windows Vista, Server 2008 and later)* A User Account Control (UAC) message appears, requesting your permission to start the application. Click **Allow** to continue.
- The Liebert Nform Tools window opens, shown below.



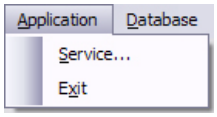
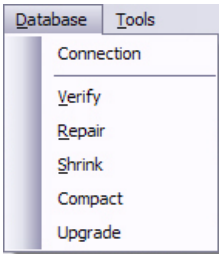
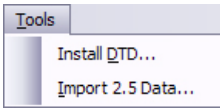
- Menus at the top of the window—**Application**, **Database** and **Tools**—are described in the following sections:
  - **18.2 - Menus in Nform Tools**
  - **18.3 - Application Menu**
  - **18.4 - Database Menu**
  - **18.5 - Tools Menu**
- The status of the Nform service appears at bottom left: **Running** or **Stopped**.

  Some operations in the Nform Tools application require stopping the Liebert Nform service, so it is stopped automatically when needed. If the service is stopped for this or any reason, it restarts automatically when the Nform Tools application is closed.

18.2 Menus in Nform Tools

Menus at the top of the Liebert Nform Tools window include: **Application**, **Database** and **Tools**. Each menu has a drop-down list of options, as shown in **Table 10**.

Table 10 Nform Tools menu options - summary

Menu	Option	Function	For more details, see:
Application 	Service	Start, stop or restart the Liebert Nform service.	**18.3.1 - Application Menu - Service**
	Exit	Close the Tools application. (If the Liebert Nform service is stopped, it restarts automatically when the application is closed.)	**18.3.2 - Application Menu - Close Nform Tools**
Database 	Connection	Make changes to database connection options or specify a different type of database after installation (**Step 5** in **2.1 - Installation**).	**18.4.1 - Database - Connection**
	Verify*	Check the integrity of an Nform database. If a database fails the test, use the **Repair** option to try to fix it.	**18.4.2 - Database - Verify**
	Repair*	Attempt to fix a corrupted Nform database—for example, if a database fails the **Verify** test.	**18.4.3 - Database - Repair**
	Shrink*	Reduce database size by moving free space, then truncating the file (less thorough but quicker than the **Compact** option).	**18.4.4 - Database - Shrink**
	Compact*	Reduce database size by creating a new file from the existing database file (more thorough but takes longer than the **Shrink** option).	**18.4.5 - Database - Compact**
	Upgrade*	*(Not needed in most cases)* Use this option for manually upgrading Nform 4.0 embedded databases (SQL CE** 3.1) to the current Nform 4.1 (SQL CE 3.5) format.	**18.4.6 - Database - Upgrade**
Tools 	Install DTD	Install Device Type Definitions for new equipment from a package file available from Emerson.	**18.5.1 - Tools Menu - Install DTD**
	Tools	Import Liebert Nform version 2.X data from one server into version 4.1 on a different server.	**18.5.2 - Tools Menu - Import 2.5 Data**

* These Database menu options apply only to bundled databases (see **Step 5** of **2.1 - Installation**), not SQL Server databases.

** SQL CE = Microsoft SQL Server Compact Edition

18.3 Application Menu

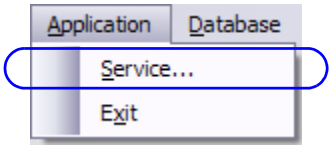
This menu has options for:

- Start, stop or restart the Liebert Nform service (**18.3.1 - Application Menu - Service**)
- Exiting the Tools application (**18.3.2 - Application Menu - Close Nform Tools**)

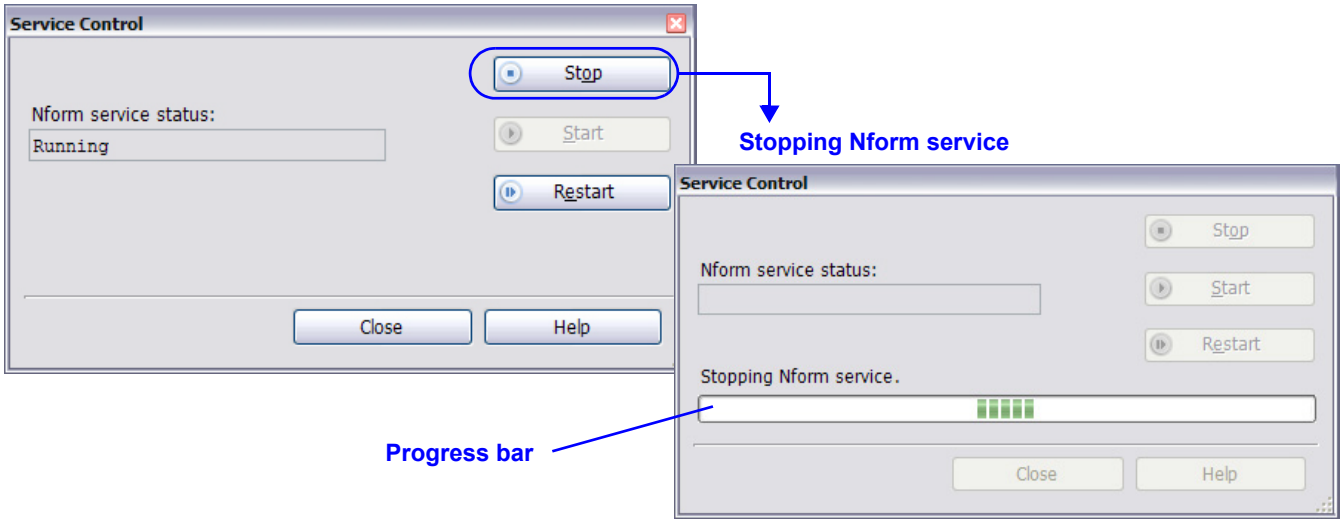
18.3.1 Application Menu - Service

This menu item allows you to stop, start or restart the Liebert Nform service. To do this:

- Log into Windows on the Nform server as a user with administrator privileges on that machine.
- Click on the **Application** menu in the Liebert Nform Tools window, then on **Service**.

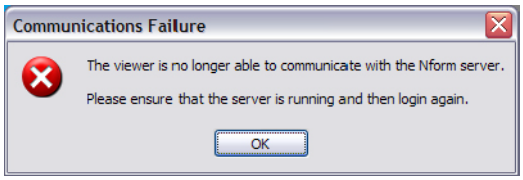


- The Service Control window displays the status of the Nform service—*Running* or *Stopped*—and has buttons to **Stop**, **Start** or **Restart** the Nform service.



- A progress bar appears after you click a button to stop, start or restart the Nform service. When the process is complete, the new status appears in the Nform Service Status box.
- If the Nform Viewer is open when the service is stopped, a message alert indicates the loss of communication, along with a reminder to restart the service and log in again.

Loss of communication notice if Nform Viewer is open



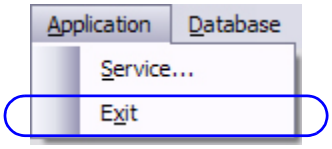
18.3.2 Application Menu - Close Nform Tools

Some Nform Tools operations cannot be performed with the Liebert Nform service running, so the service is stopped automatically. If the service is stopped, it restarts automatically when the Tools application is closed as described in this section.

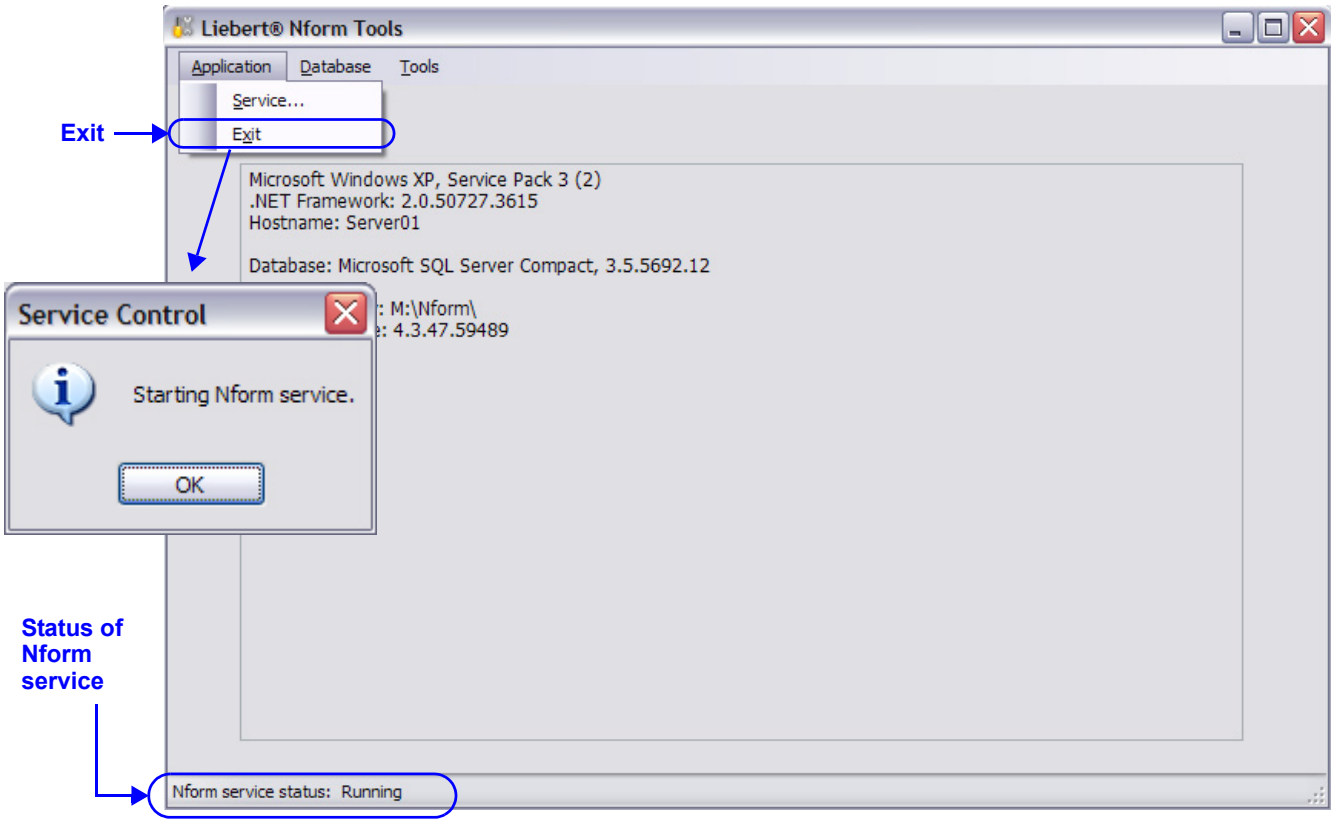
For more details on the Liebert Nform service and other ways to start or stop the service, see **17.0 - Running Liebert Nform** and **18.3.1 - Application Menu - Service**.

To close the Nform Tools application:

- Click on the **Application** menu in the Liebert Nform Tools window, then on **Exit**.



- If the Liebert Nform service is stopped, a Service Control window displays a message that the service is restarting. If this message appears, click **OK** to close the window.



18.4 Database Menu

This menu has options for:

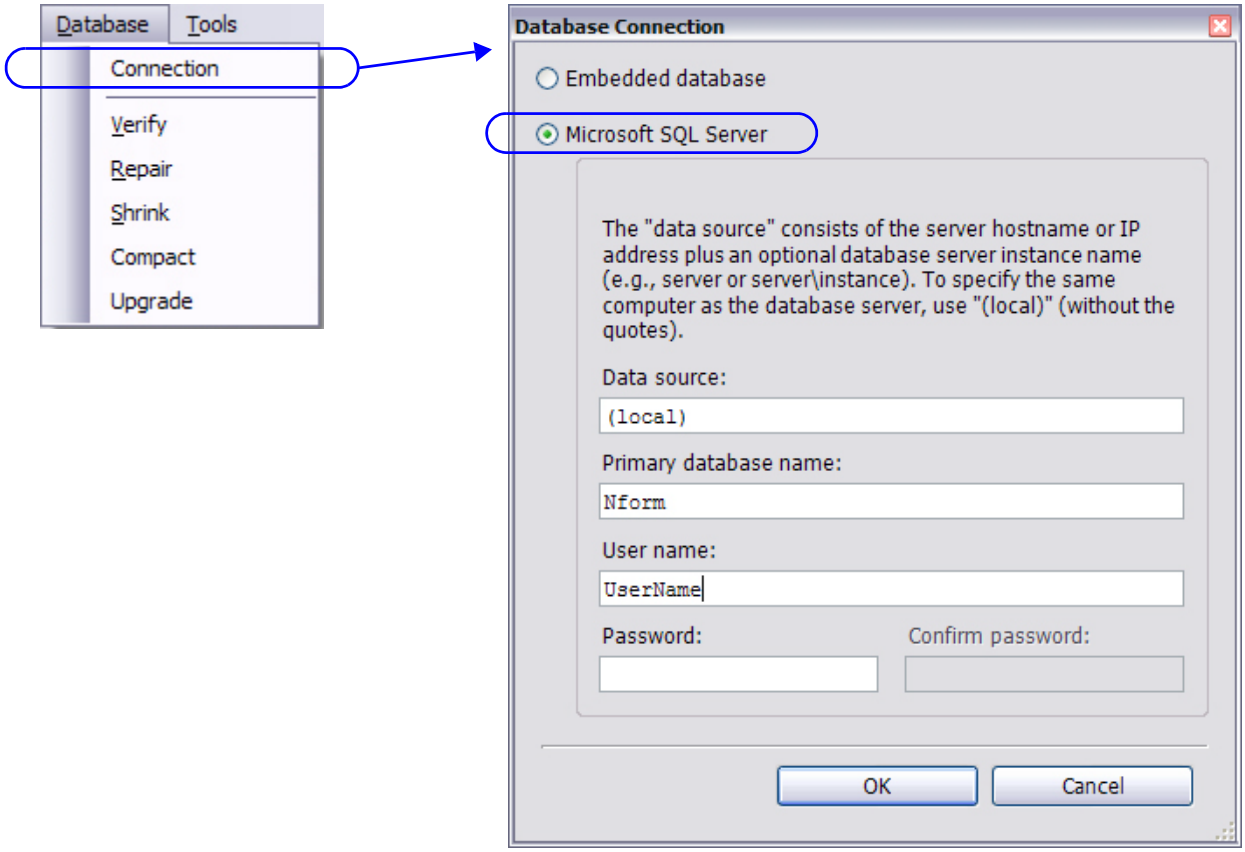
- Making changes to database connection options (**18.4.1 - Database - Connection**)
- Database maintenance tasks for a bundled database (**Sections 18.4.2 - 18.4.6**)

18.4.1 Database - Connection

The Connection option is designed to allow changes to database connection options after installation.

To make changes to database connection options:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Connection**.



- To switch to a different type of database, click on the type of database at the top of the window, then click **OK**.
- To make changes to connection options, click on the type of database at the top of the window, make the following changes as needed, then click **OK** when finished.
  - The Data Source box displays the connection source using the format **Server\Instance**:

Server	The hostname or IP address of the connection server. To specify the same computer as the database server, enter **(local)**—for example: **Server01** *OR* **192.168.1.32** *OR* **(local)**
Instance ***(Optional)***	A named instance of the SQL Server database engine if multiple instances are running concurrently on the same computer—for example: **Server01\Instance05** *OR* **192.168.1.32\Instance05** *OR* **(local)\Instance05**

  - The Primary Database Name box displays the name of the database—for example, *Nform*. This name is used for the database, alarm file *(Nform.alm)* and data log file *(Nform.log)*.
  - If needed, enter a login user name in the User Name box.
  - If needed, enter a login password in the Password box, then enter the same password in the Confirm Password box.

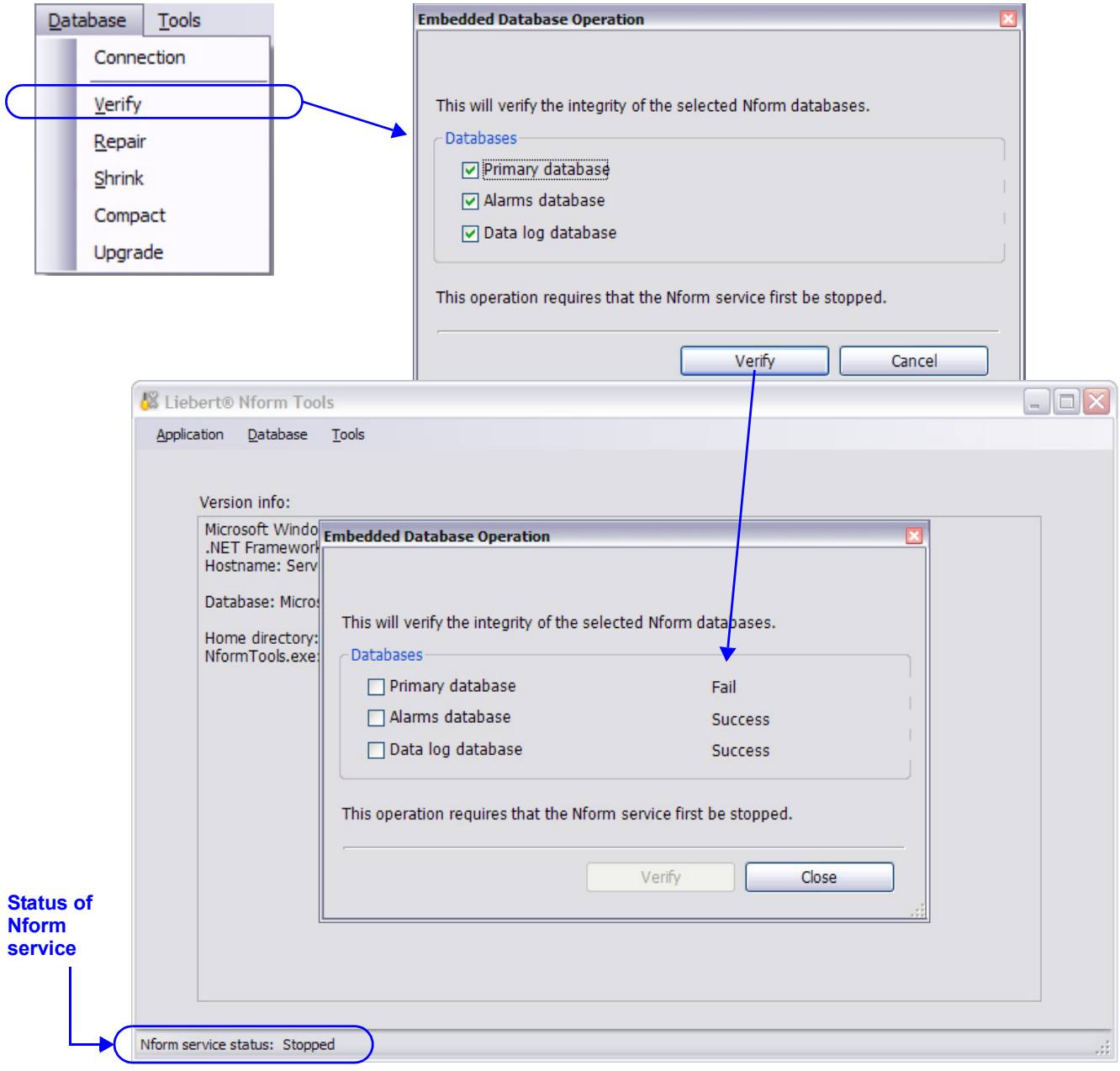
18.4.2 Database - Verify

Use this option to check the integrity of an Nform database. If a database fails the test, use the **Repair** option to try to fix it (see **18.4.3 - Database - Repair**). This applies to bundled databases only (**2.1 - Installation**). The option is disabled if there is no connection to the Nform database.

Initiating this process automatically stops the Liebert Nform service if it is running.

To verify databases:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Verify**.
- In the Embedded Database Operation window, click to place a mark ☑ to the left of each type of database to verify: **Primary database**, **Alarms database**, **Data log database**.
- When ready to proceed, click the **Verify** button. The Nform service will be stopped, indicated by the status in the bottom left corner of the Tools window.
- When the operation is complete, the result—**Success** or **Fail**—appears to the right of each selected database. If a **Fail** message appears, proceed to **18.4.3 - Database - Repair**. If the condition cannot be corrected with a repair operation, contact Emerson Technical Support.
- Click **Close** to return to the Liebert Nform Tools window.



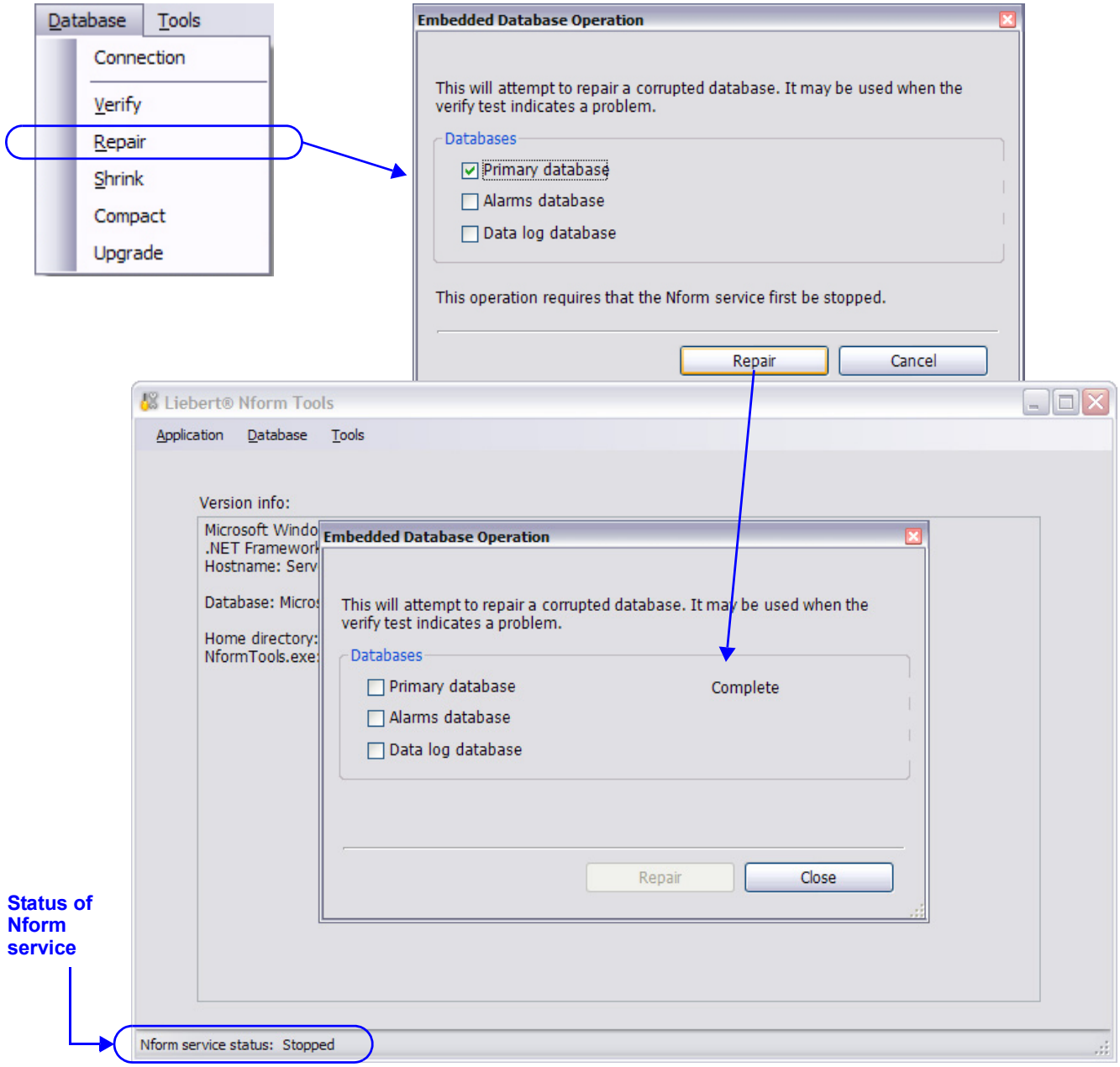
18.4.3 Database - Repair

Use this option to attempt to fix a corrupted Nform database—for example, if a database fails the **Verify** test (see **18.4.2 - Database - Verify**). This applies to bundled databases only (**2.1 - Installation**). The option is disabled if there is no connection to the Nform database.

Initiating this process automatically stops the Liebert Nform service if it is running.

To repair databases:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Repair**.
- In the Embedded Database Operation window, click to place a mark ☑ to the left of each type of database to repair: **Primary database**, **Alarms database**, **Data log database**.
- When ready to proceed, click the **Repair** button. The Nform service will be stopped, indicated by the status in the bottom left corner of the Tools window.
- When the operation is complete, the result—**Complete** or **Fail**—appears to the right of each selected database. If a **Fail** message appears, contact Emerson Technical Support.
- Click **Close** to return to the Liebert Nform Tools window.



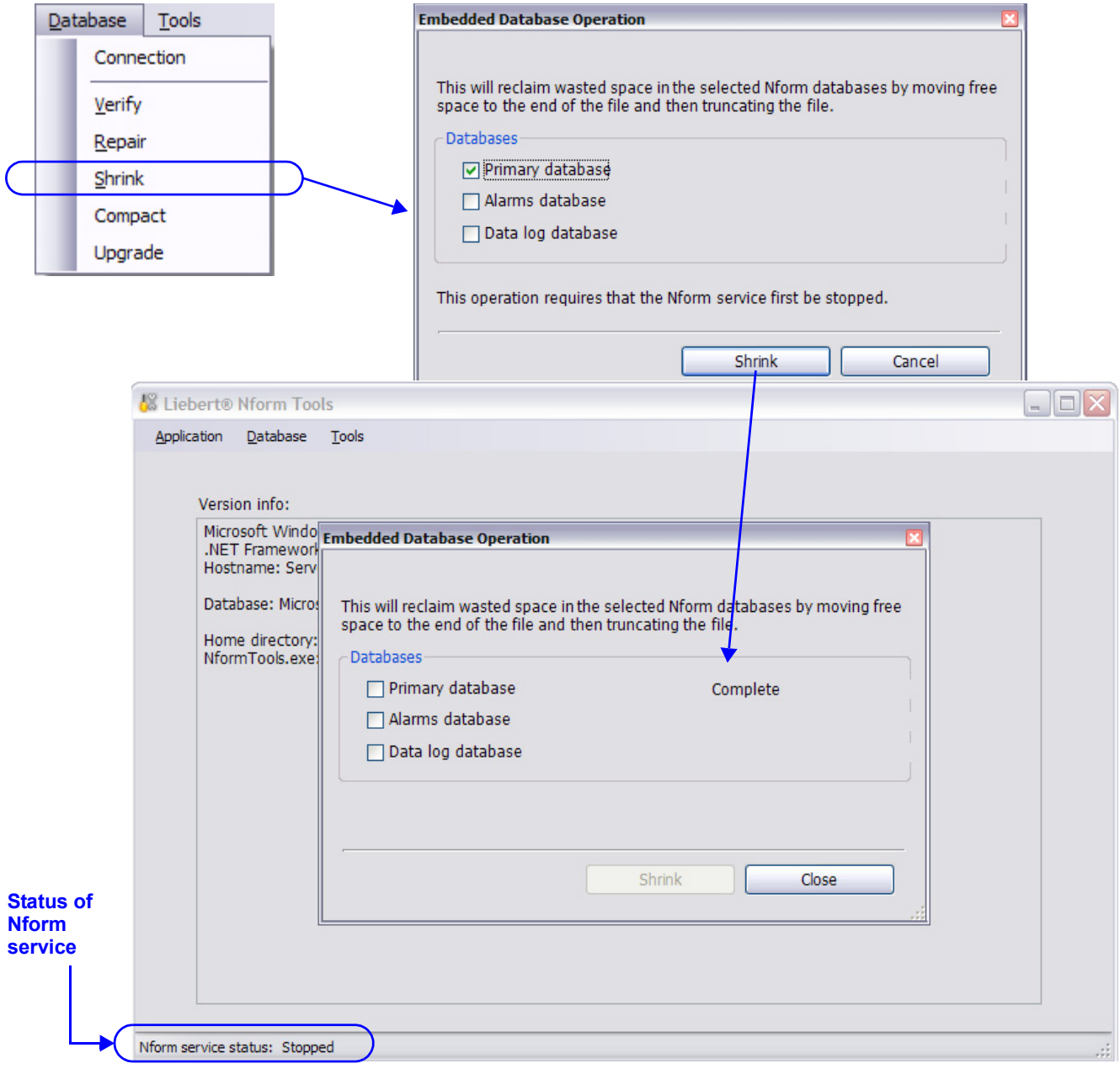
18.4.4 Database - Shrink

Use this option to reduce database size by moving free space, then truncating the file. This is less thorough but quicker than the **Compact** option (**18.4.5 - Database - Compact**). This applies to bundled databases only (**2.1 - Installation**). The option is disabled if there is no connection to the Nform database.

Initiating this process automatically stops the Liebert Nform service if it is running.

To shrink databases:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Shrink**.
- In the Embedded Database Operation window, click to place a mark ☑ to the left of each type of database to shrink: **Primary database**, **Alarms database**, **Data log database**.
- When ready to proceed, click the **Shrink** button. The Nform service will be stopped, indicated by the status in the bottom left corner of the Tools window.
- When the operation is complete, the result—**Complete** or **Fail**—appears to the right of each selected database. If a **Fail** message appears, contact Emerson Technical Support.
- Click **Close** to return to the Liebert Nform Tools window.



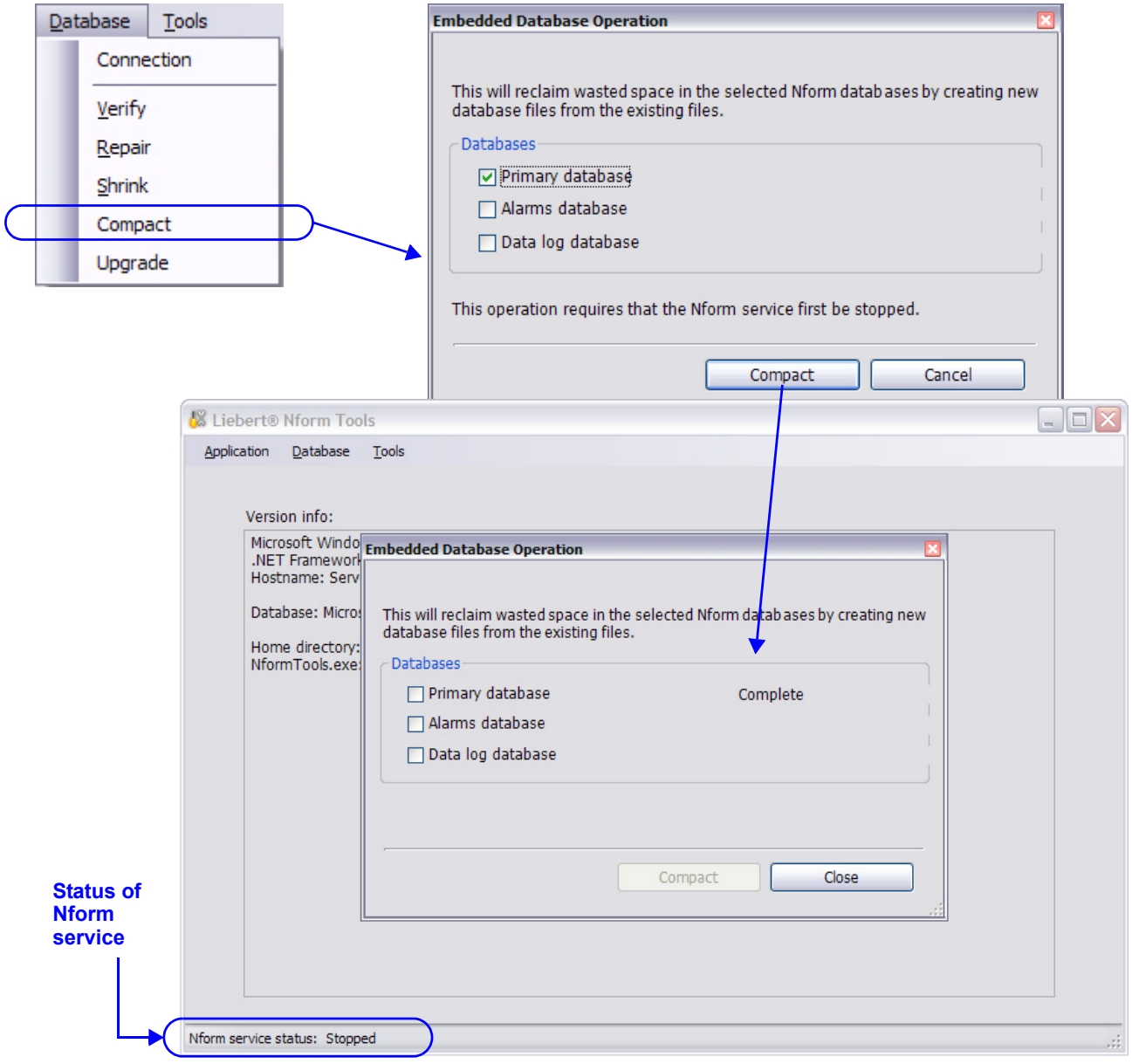
18.4.5 Database - Compact

Use this option to reduce database size by creating a new file from the existing database file. This is more thorough but takes longer than the **Shrink** option (**18.4.4 - Database - Shrink**). This applies to bundled databases only (**2.1 - Installation**). The option is disabled if there is no connection to the Nform database.

Initiating this process automatically stops the Liebert Nform service if it is running.

To compact databases:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Compact**.
- In the Embedded Database Operation window, click to place a mark ☑ to the left of each type of database to compact: **Primary database**, **Alarms database**, **Data log database**.
- When ready to proceed, click the **Compact** button. The Nform service will be stopped, indicated by the status in the bottom left corner of the Tools window.
- When the operation is complete, the result—**Complete** or **Fail**—appears to the right of each selected database. If a **Fail** message appears, the original database will have been renamed as *.bak (e.g., NformLog.sdf.bak) and will be unchanged. Rename the database with its original name (e.g., NformLog.sdf), then restart the service to resume operation as before.
- Click **Close** to return to the Liebert Nform Tools window.



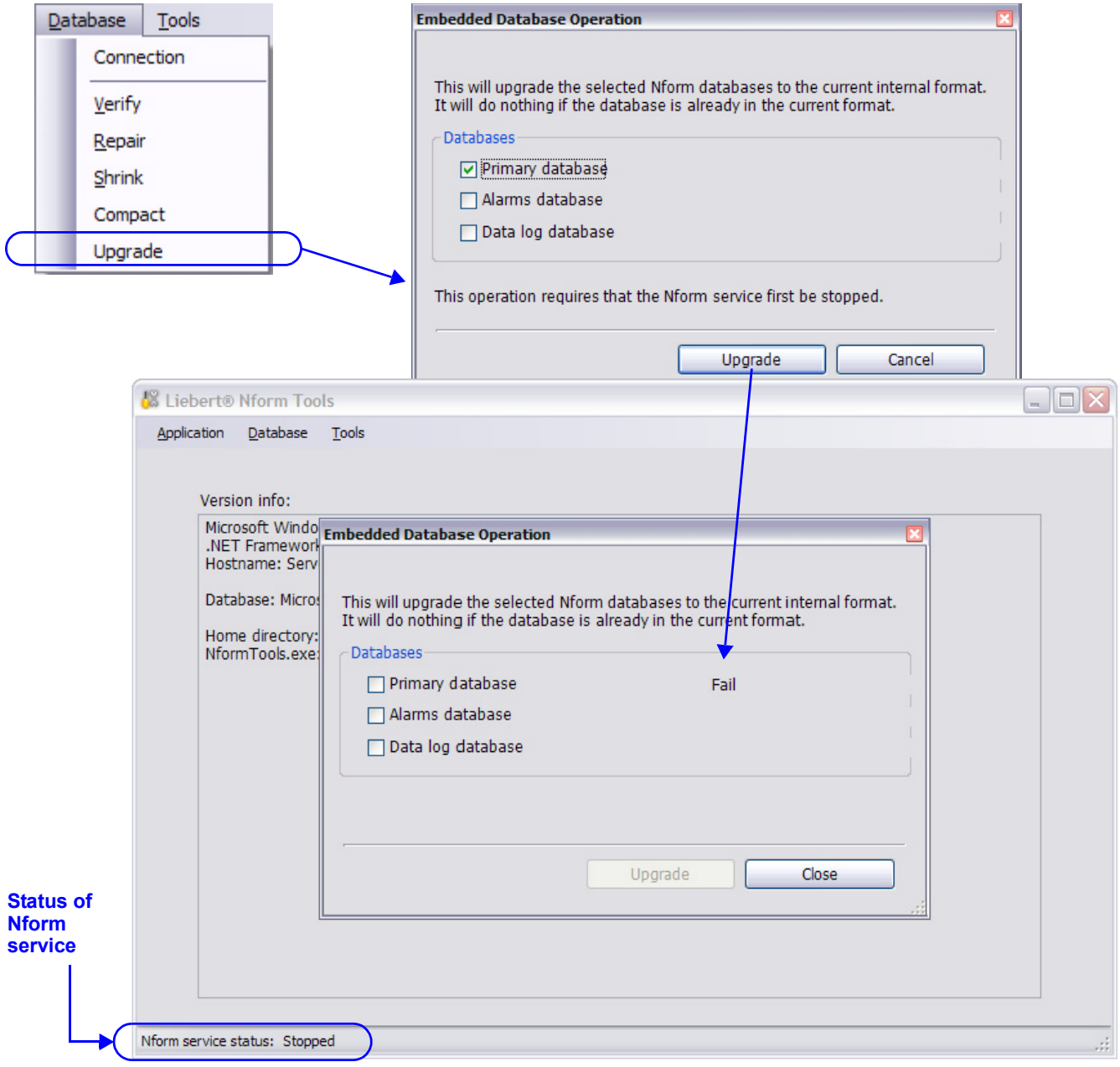
18.4.6 Database - Upgrade

This option is not needed in most cases. Use this option for manually upgrading Nform 4.0 embedded databases (SQL CE 3.1) to the current Nform 4.1 (SQL CE 3.5) format (SQL CE = Microsoft SQL Server Compact Edition). This applies to bundled databases only (**2.1 - Installation**). The option is disabled if there is no connection to the Nform database.

Initiating this process automatically stops the Liebert Nform service if it is running.

To upgrade databases:

- Click on the **Database** menu in the Liebert Nform Tools window, then on **Upgrade**.
- In the Embedded Database Operation window, click to place a mark ☑ to the left of each type of database to upgrade: **Primary database**, **Alarms database**, **Data log database**.
- When ready to proceed, click the **Upgrade** button. The Nform service will be stopped, indicated by the status in the bottom left corner of the Tools window.
- When the operation is complete, the result—**Success** or **Fail**—appears to the right of each selected database. If a **Fail** message appears, contact Emerson Technical Support.
- Click **Close** to return to the Liebert Nform Tools window.



18.5 Tools Menu

This menu has options for:

- Downloading and installing Device Type Definition (DTD) files to expand Liebert Nform support for additional devices (**18.5.1 - Tools Menu - Install DTD**)
- Importing Liebert Nform version 2.X data from one server into version 4.X on a different server (**18.5.2 - Tools Menu - Import 2.5 Data**)

18.5.1 Tools Menu - Install DTD

A Device Type Definition (DTD) package is a set of files that identify additional devices for Liebert Nform to monitor and manage, besides the many device definitions installed with Liebert Nform.

DTD packages for new equipment may be obtained from Emerson Network Power and may include devices made by Emerson as well as other manufacturers.

A DTD package is provided as a set of files that must be installed on the Liebert Nform server before this type of device may be added to the managed device list.

To download and install a DTD on the Liebert Nform server:

- On the Nform server, click on the **Tools** menu in the Liebert Nform Tools window, then on **Install DTD**. This opens the Install Device Type Definitions (DTD) window.
- The Install Device Type Definitions (DTD) window has two sections, one for downloading a DTD package and the other for installing the package on the Nform server:

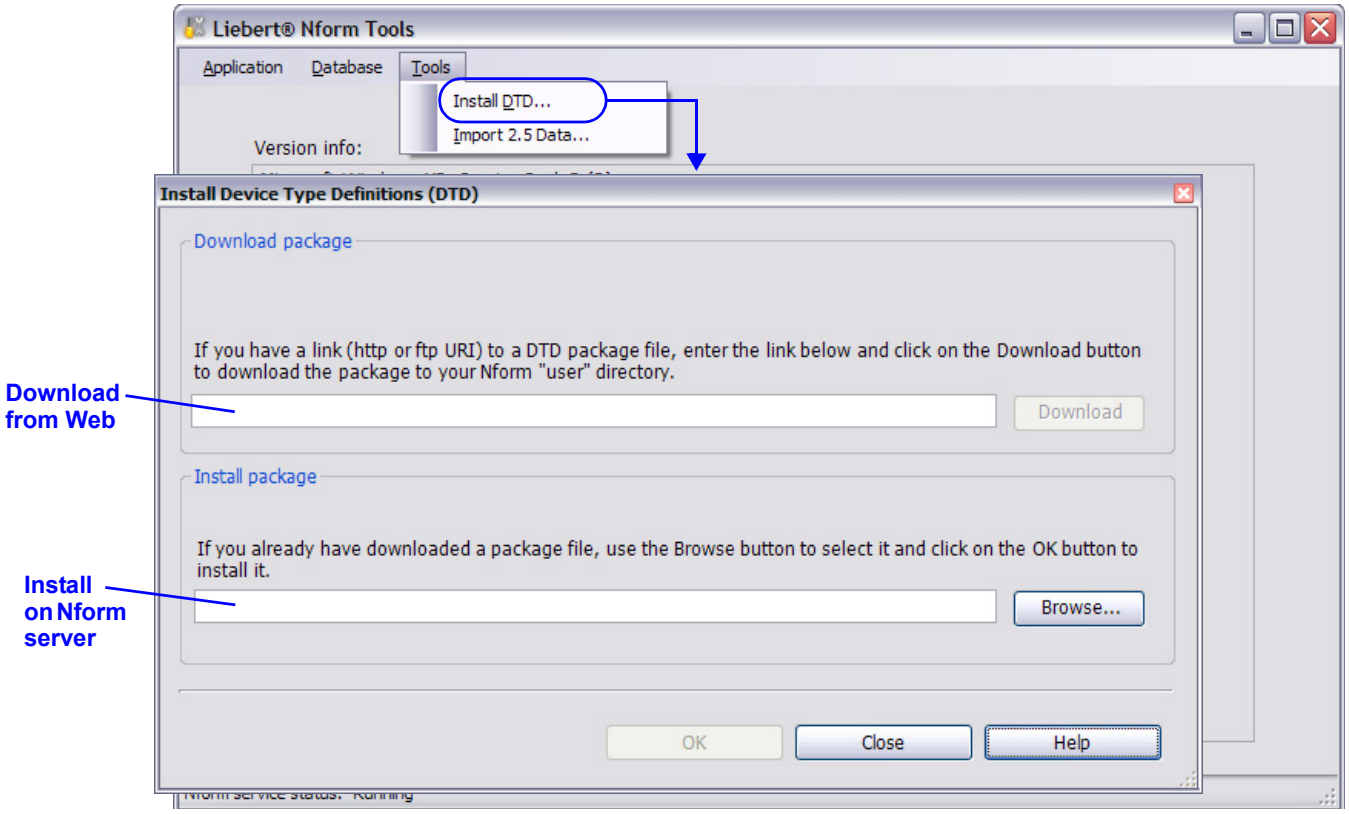
Download Package

- To download the file from the Liebert Web site, enter the URL in the Download Package box, then click the **Download** button. After downloading, continue to the next step to install.

Install Package

- After obtaining a DTD package file, enter the full path to that file in the Install Package text box or click on the **Browse** button to locate the file.

- Click the **OK** button to install the DTD.



When finished, you may add any new device types to the configuration in the Nform Viewer (see **9.1 - Add Devices to the Configuration**).

18.5.2 Tools Menu - Import 2.5 Data

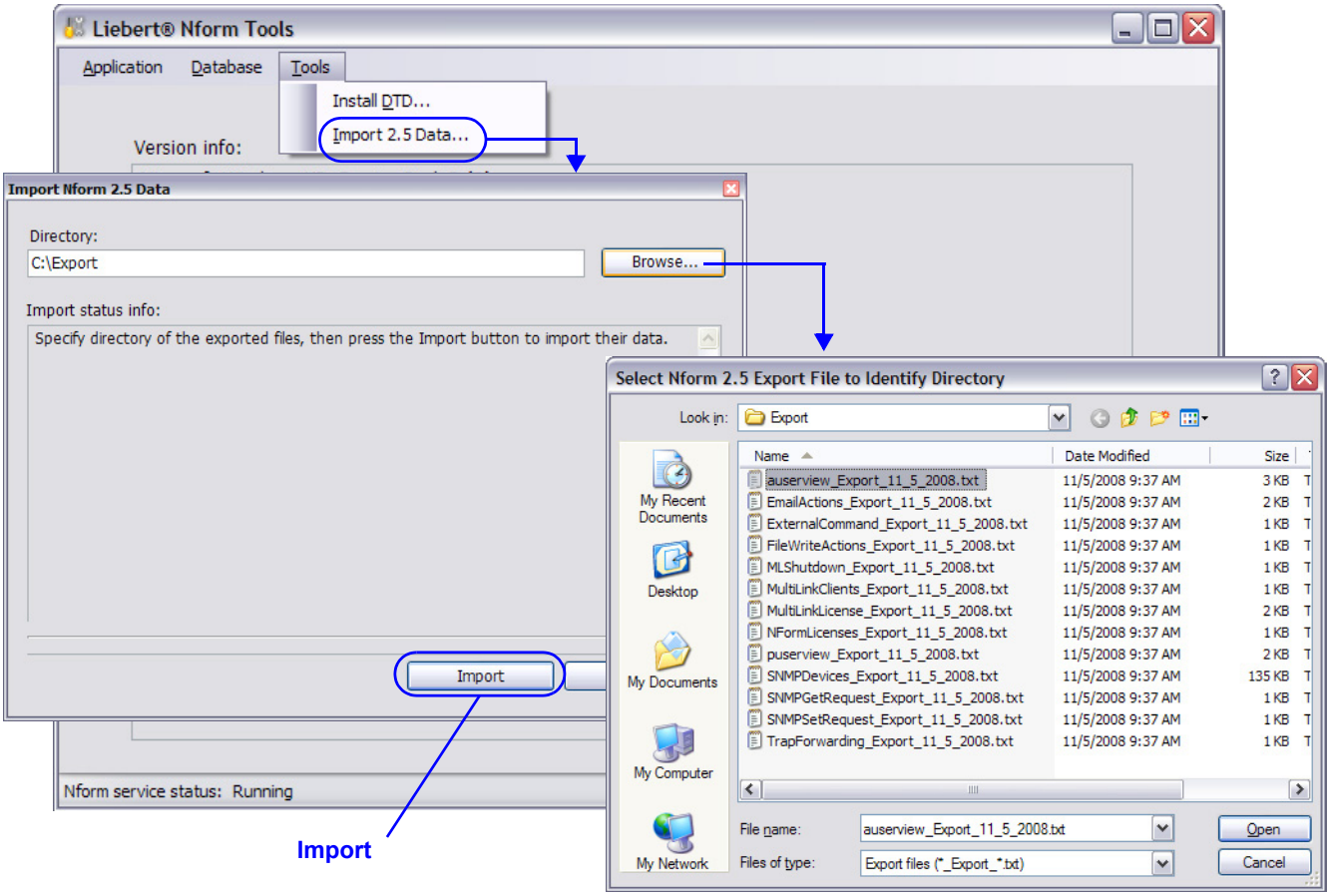
This feature may be used to import Liebert Nform version 2.X data from one server into version 4.X on a different server.

To prepare for the import, see **2.4.3 - Import Exported Data from a Different Server** for details on these steps:

- Install Liebert Nform 4.X.
- Create a temporary folder on the 4.X server, then copy the exported files from the 2.X server.
- Open Nform Tools on the 4.X server (see **18.1 - Open the Nform Tools Application From the Start Button**).

To import the data:

- Click on the **Tools** menu in the Liebert Nform Tools window, then on **Import 2.5 Data**.
- In the **Directory** box, enter the full path or click the **Browse** button to locate the folder containing the exported files, then click **Open**.



- Click **Import**. The import utility will stop the Nform service, import the appropriate files and restart the service. A message confirms the process is complete.
- When finished, close the Nform Tools application by clicking on the **Application** menu, then on **Exit** (see **18.3.2 - Application Menu - Close Nform Tools**).

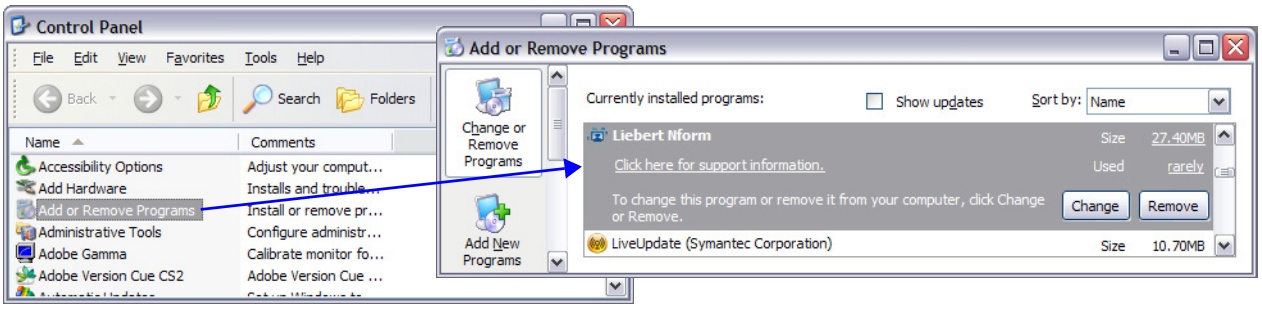
19.0 UNINSTALLING LIEBERT NFORM / REMOVING LICENSE KEYS

This section describes how to remove the Liebert Nform application and how to delete a license key.

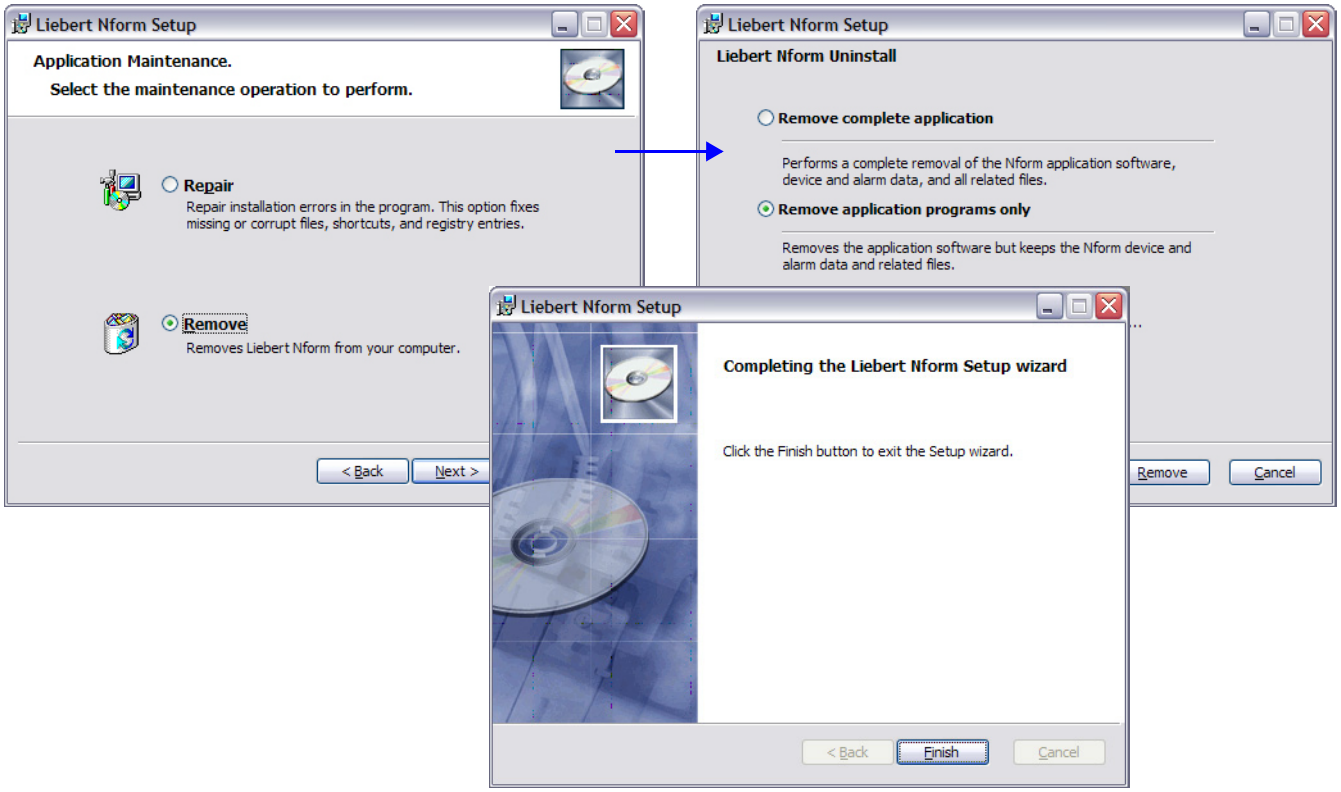
19.1 Uninstalling Liebert Nform

To remove Liebert Nform from your computer, run the Windows Add/Remove Programs, which is found in the control panel.

1. Open the Control Panel: Click on the **Start** button, then **Settings**, and finally **Control Panel**.



2. In the Control Panel window, above left, double-click on **Add or Remove Programs** *(in Windows Vista, double-click on **Programs and Features**)*.
3. In the list of installed programs, above right, double-click on **Liebert Nform**.



4. In the Application Maintenance window, above left, click **Remove** to uninstall the software.
5. In the Liebert Nform Uninstall window, above right, choose one of these options:
   - **Remove complete application** to remove the Liebert Nform software, as well as device and alarm data and all related files.
   - **Remove application programs only** to remove the software only, keeping device and alarm data and related files.
6. Click **Remove**.
7. When the process is complete, a window appears, as shown above. Click **Finish** to exit.

19.2 Deleting a License Key

If more than one license key is installed, there may be a need to remove a secondary license key—for example, to move it to another computer to monitor a different group of devices.

WARNING

Liebert Nform does NOT prevent users from deleting the base license, even if doing so would reduce the authorized number of devices below the number of configured devices.

Deleting the base license would prevent remote user login, data trending and trap forwarding to a remote management center.

NOTE

The initial license key permits a certain number of devices and unlimited remote users.

Supplemental license keys allow for 30, 100 or 500 additional devices. Contact your local Emerson representative or see ***Appendix C - Ordering Parts and Licenses From Emerson Network Power*** *for details.*

At least one license key containing a device license must be installed to manage the network.

Any number of users can log into the local host.

You will not be able to log in remotely if the base license is removed.

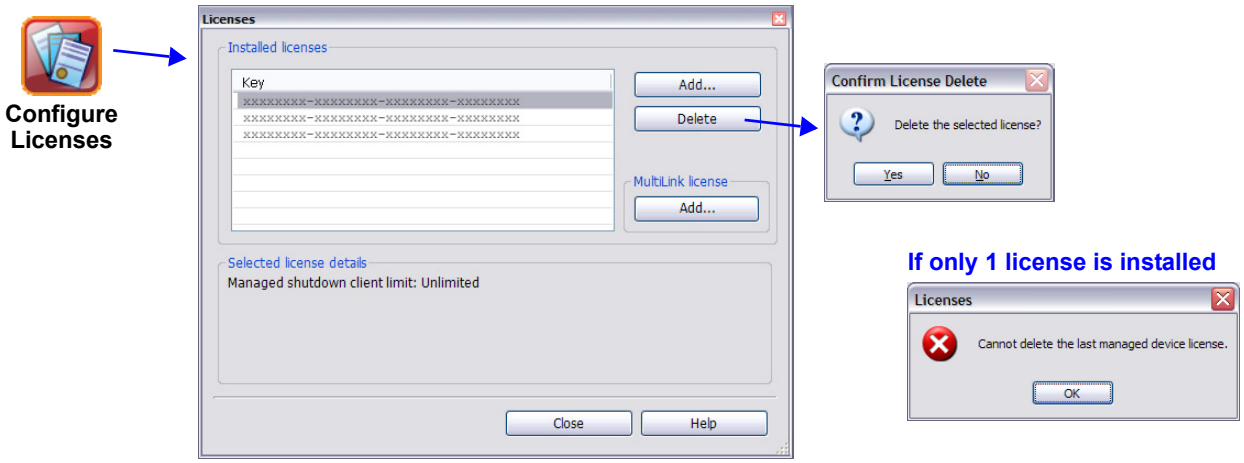
Liebert Nform prevents users from deleting a license if:

- *the deletion would reduce the number of allowed remote users to fewer than the number of logged-in remote users.*
- *the deletion would reduce the number of allowed devices to fewer than the number of configured devices.*

If a license is inadvertently deleted, Liebert Nform allows the user to reinstall it (see ***4.4 - Enter the License Key****).*

To remove a license key:

1. Start the Viewer with permission to manage licenses (see **13.2 - Assigning Users to Groups**).
2. Click on the **Configure Licenses** icon at the bottom of the window (or click on the **Configure** menu, then choose **Licenses**).



3. In the Licenses window, click on the license key to be removed, then click the **Delete** button.
4. A confirmation window asks whether to continue with the deletion. Click **Yes** to delete the license key (or **No** to cancel without deleting it).

   If the license to be deleted is the only license, an alert window displays a message that the last managed device license cannot be deleted (shown above right).

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This section contains the license agreement for Liebert Nform.

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Liebert Nform Software License revision June 28, 2008

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 **17.0 - Running Liebert 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 LIEBERT 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 **10.0 - Configuring Views for the Navigate Tab**).

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

Table 11 below show sample data points and alarms for environmental and UPS units with SNMP cards.

B.1 SAMPLE DATA POINTS AND ALARMS

The following table shows examples of data points and alarms for a precision cooling unit.

Table 11 Sample data points and alarms - Precision cooling unit

Data points	Alarms	
Agent lost device communication	Conditions present	Statistics humidifier run hour
High temperature	Statistics run hours	Statistics reheat element 1 run hour
Low temperature	Agent manufacturer	Statistics reheat element 2 run hour
High humidity	Agent model	Statistics cooling mode hours
Low humidity	Agent firmware version	Statistics heating mode hours
Change filter	Agent serial number	Statistics humidify mode hours
High head pressure 1	Agent reboot	Statistics dehumidify mode hours
High head pressure 2	Temperature setting	Board battery voltage
Water under floor	Temperature setting	Device manufacturer
Low water in humidifier	Humidity setting	Device model
Lost power	System state	Device firmware version
Local alarm 1	Humidifying state	Device unit number
Local alarm 2	Dehumidifying state	Device serial number
Compressor 1 low pressure	Fan state	Device manufacture date
Compressor 2 low pressure	General alarm output state	Control temperature
Faulty sensor detected	Cooling capacity state	Return air temperature
Service cooling	Heating capacity state	Supply air temperature
Service humidifier	Audible alarm state	Control high temperature alarm setpoint
System control battery low	Cooling unit 1's state	Return air high temperature alarm setpoint
Agent firmware corrupt	Cooling unit 2's state	Control low temperature alarm setpoint
	Heating unit 1's state	Return air low temperature alarm setpoint
	Heating unit 2's state	Control temperature
	Configure restart delay	Return air temperature
	Configure remote shutdown	Supply air temperature
	Configure cooling service interval	Control high temperature alarm setpoint
	Configure humidifier service interval	Return air high temperature alarm setpoint
	Configure filter service interval	Control low temperature alarm setpoint
	Control shutdown after delay	Return air low temperature alarm setpoint
	Control startup after delay	Control humidity
	Statistics compressor 1 run hour	Return air humidity
	Statistics compressor 2 run hour	Supply air humidity
	Statistics main fan run hour	Humidity high alarm setpoint

APPENDIX C - ORDERING PARTS AND LICENSES FROM EMERSON NETWORK POWER

The table below lists part numbers for items available from Emerson Network Power. To obtain any item, visit the Liebert Web site at **http://nform.liebert.com** or contact your local Emerson representative, value-added reseller or distributor.

Table 12 Liebert Nform part and license numbers

Item	Part/License Number	Description

Liebert Nform Software on CD-ROM	NFORM-EXP	Liebert Nform with license key[1] for:
		• 30 devices, not expandable
		• Unlimited users
		• Advanced Communications—enables:
		  • Data Logging function (see Section **9.2.7**)
		  • Read Data action (see Section **12.2.6**)

Liebert Nform Software on CD-ROM	NFORM-STD	Liebert Nform with license key[1] for:
		• 30 devices, expandable to 4,800 with additional license keys
		• Unlimited users
		• Advanced Communications—enables:
		  • Data Logging function (see Section **9.2.7**)
		  • Read Data action (see Section **12.2.6**)

Liebert Nform Software on CD-ROM
Liebert MultiLink 1.5 Shutdown Client Software on CD-ROM
	NFORM-ENT	Liebert Nform with license key[1] for:
		• 100 devices, expandable to 10,000 with additional license keys
		• Unlimited users
		• Advanced Communications—enables:
		  • Data Logging function (see Section **9.2.7**)
		  • Read Data action (see Section **12.2.6**)
		• Advanced Notifications—enables:
		  • Trap Forwarding (see Section **8.7**)
		  • Forward Trap (see Section **12.2.5**)
		• Unlimited MultiLink 1.5 Shutdown Clients[2] must be installed separately and enables:
		  • Configure Shutdown menu (see Section **11**)
		  • Shutdown action (see Section **12.2.4**)

30 Device License	NFORM-30D	License key[3] for 30 additional devices
100 Device License	NFORM-100D	License key[3] for 100 additional devices
500 Device License	NFORM-500D	License key[3] for 500 additional devices
Liebert Nform Upgrade to Standard Edition	NFORM-STD-UP	License key for upgrading Liebert Nform to the Standard Edition

1. See **4.4.1 - Add a Liebert Nform License Key** for step-by-step instructions.
2. The shutdown license must be installed in addition to the Liebert Nform license key, as described in **4.4.2 - Add a Liebert MultiLink 1.5 Shutdown License**.
3. Each additional license key must be installed separately, as described in **4.4.1 - Add a Liebert Nform License Key**.

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