



Liebert®

Nform™

Installer/User Guide

Infrastructure Monitoring Software

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. Visit <https://www.VertivCo.com/en-us/support/> for additional assistance.

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1 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 Vertiv™ for Technical Support?

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

Table 1.1 Technical support contact information

| | | |
|---------------------------------|---------------------------------------|---|
| UNITED STATES | 1 800 222 5877 | |
| FRANCE | +33 (0) 146 875152 | |
| 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: | www.VertivCo.com |
| | Liebert Nform Product Information: | www.VertivCo.com |
| Liebert Nform Technical Support | Liebert Nform Support Website Log in: | http://applications.liebert.com/nformsa |
| | E-Mail for Technical Support: | liebert.monitoring@vertivco.com |

1.2 What is Liebert Nform?

Liebert Nform uses Simple Network Management Protocol (SNMP) and Vertiv™ Velocity 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 Vertiv™ 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 Velocity 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.

1.2.2 Key Features

The following table summarizes important features available in Nform.

Table 1.2 Key features of Liebert Nform

| FEATURE | IMPROVEMENT |
|--------------------------|---|
| Dashboard View | <p>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.</p> <p>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.</p> <p>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.</p> |
| Area/Floorplan Views | <p>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.</p> |
| Detachable Windows | <p>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).</p> |
| Parametric Data Trending | <p>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.</p> |
| Priority Status Polling | <p>Users can define the polling priority for each managed device, allowing for quick response times on critical equipment.</p> |
| Internationalization | <p>The software supports the following languages: English, French, Italian, German, Spanish, Simplified Chinese and Japanese.</p> <p>Language settings are stored at each client, allowing users to specify their language of choice.</p> |
| Users and Groups | <p>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.</p> <p>Users can also create new user groups and define the access level and rights of each group.</p> |
| Audit Logging | <p>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.</p> |
| Device Info Links | <p>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.</p> |
| Alarm Management | <p>Each device's alarm events have been predefined in three (3) default severity levels: Critical, Warning and Information. These are the Vertiv™-recommended severity levels defined in the software.</p> <p>The software can be configured to auto-acknowledge alarms by severity level, thus allowing intelligent processing of alarm-event data.</p> |
| Additional Actions | <p>Shutdown: configuring graceful shutdown of client computers</p> <p>Forward trap: sending traps received to a specific computer (host name or IP address)</p> <p>Read data: collecting samples of data points from selected managed devices</p> <p>Write data: changing values of selected data points based on specified alarms or events</p> |

Table 1.2 Key features of Liebert Nform (continued)

| FEATURE | IMPROVEMENT |
|---|---|
| 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 email 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. |
| PDU Power Reports | Liebert Rack PDU data may be used to generate reports about power usage, consumption, temperatures and utilization. |
| Maintenance Mode Scheduling and Management | Devices may be scheduled to be placed in maintenance mode, preventing device-related alarms from triggering configured actions. Images in the navigation view change to maintenance icons. |

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 Requirements for Liebert Nform

Visit the Vertiv™ Web site at www.VertivCo.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:

- System Requirements
 - 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 www.VertivCo.com or contact your local Liebert representative, value-added reseller, or distributor for information.)
- This manual (download from the Vertiv™ Web site)
- A computer with Microsoft® Windows® 8 or 8.1 Professional or Enterprise, Windows 7 Professional or Enterprise with SP1, Windows 10, Windows Server 2008 with SP2 and R2; Windows Server 2012 (except Server Core) Windows Server 2012 R2 (except Server Core).
- 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 ports 161 and 162 for SNMP communication and notification(trap)
- Availability of UDP port 47808 for read-write access to devices with Velocity Protocol
- Availability of TCP port 3442 for remote viewer connections
- Availability of TCP port 443 for software registration
- Availability of TCP port 80 for support Web site
- Availability of TCP port 25 or TCP port 587 (if e-mail notification is desired)
- Availability of TCP port 1433 for SQL server database
- Supported Databases
 - SQL Server 2008
 - SQL Server 2008 R2
 - SQL Server 2012
 - SQL Server Compact Edition (CE) v3.5 SP2
 - SQL Server 2014

NOTE: We highly recommend using a SQL server if the Liebert Nform system will have more than 50 devices or may be expanded to 50 or more devices and more data logging frequency is desired. See [Database Menu](#) on page 117 for additional database management information.

- 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 a link above or paste the URL into your browser.

- The first link will take you to the Liebert Nform Support Log-in page.
- The second link will display a short message about the Software Assurance web service and then take you to the Liebert Nform Support Log-in 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 Vertiv™ (see [How Do You Contact Vertiv™ for Technical Support?](#) on page 1).

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 [Ordering Parts and Licenses From Vertiv](#) on page 129). 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 Velocity Protocol that can be contacted via the local network or the Internet. These devices include those made by Vertiv™ and by other manufacturers (with Device Type Definitions available from Vertiv™—see [Tools Menu - Install DTD](#) on page 120).

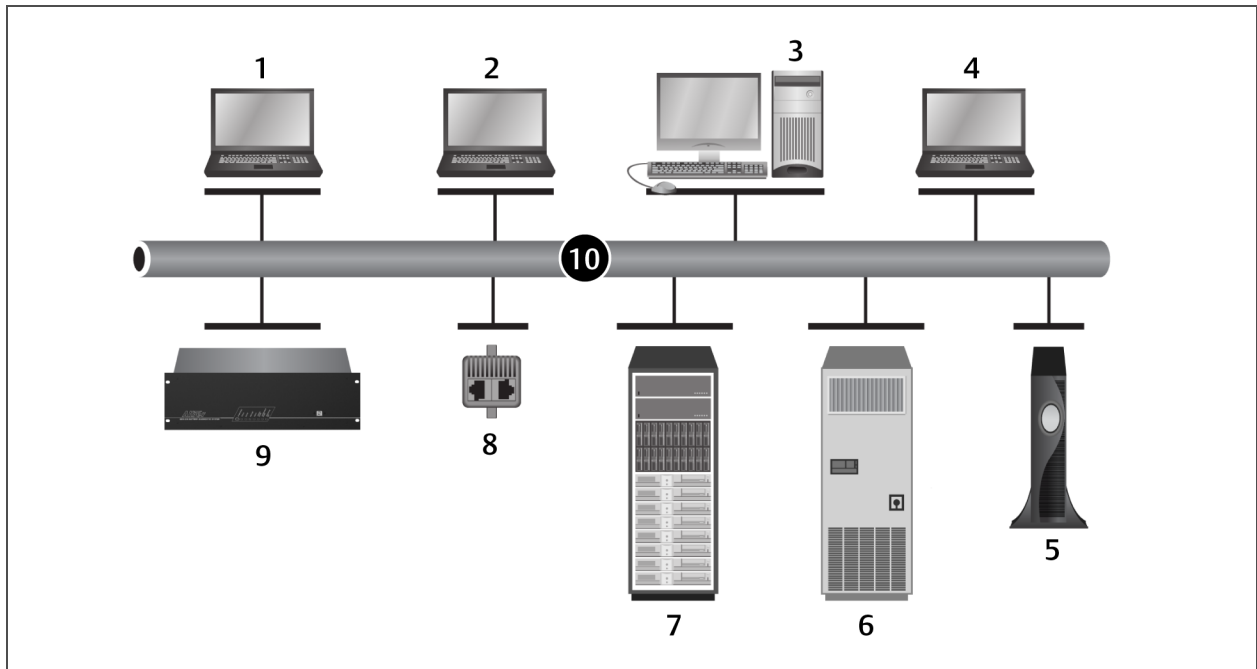
1.5 Sample Liebert Nform Configuration

Example of Liebert Nform on a Network

[Sample Liebert Nform configuration](#) on page 8 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 1.1 Sample Liebert Nform configuration



| ITEM | DESCRIPTION |
|------|---------------------------|
| 1 | Network management system |
| 2 | Nform client |
| 3 | Nform server |
| 4 | Shut-down software client |
| 5 | Third-party NX device |
| 6 | Environmental unit |
| 7 | DC unit |
| 8 | Monitoring unit |
| 9 | Battery-monitoring unit |
| 10 | Ethernet |

2 INSTALLING THE SOFTWARE

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

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).

NOTE: The SQL CE database is adequate for monitoring fewer than 50 devices. For 50 or more devices, We recommend installing the SQL Server database.

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 the **Start** button, then **Run**. In the Run window, Click **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:
 - We recommend using the default location for software installation. (To select a different location, Click the **Browse** button and choose the location.)
 - (If **Nform Full Package** on page 9 is selected in **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**.

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 log-in, the Nform System Start-up wizard will be activated to complete the setup process (see [Registering for Software Assurance](#) on page 10 and [Nform System Start up](#) on page 11).

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 start-up process described in [Nform System Start up](#) on page 11 provides a quick way to register. You may skip registration during the start-up process if you prefer to use the software for a temporary evaluation period and register later.

With the new purchase of Liebert Nform software product, the first year (one year) of Software Assurance (SA) maintenance is provided free of charge, commencing from the time of shipment. In addition, SA maintenance also provides support and the ability to request new device support to be added to Nform.

If a customer is current and active with Software Assurance (maintenance) coverage, without any break in coverage, software Upgrades will be available at no cost.

If SA maintenance expires, and, for example, customer decides to renew a year later, customer will be required to purchase an additional year, (for the year of non-coverage), to get back current on continuous coverage, before qualifying for free software upgrades.

For Example:

Customer's Liebert Nform Express SA expires 12/31/15.

Customer renews (re-purchases) Express SA coverage for 1 yr. on 12/31/16.

(Customer did not have continuous SA coverage for one year (Jan15-Jan16)).

For this example, to be eligible for free software upgrades, customer must now purchase 2 years of SA coverage, to get them back to current. (1 yr. renewal for Express SA coverage, and one additional year for the year of non-coverage).

Otherwise, customer has the option of purchasing a new copy of Nform software product, of which will include one year of free SA maintenance.

Contact your local Vertiv™ representative about resuming Software Assurance if the coverage has lapsed.

For systems that are not connected to the Internet or are otherwise quarantined, follow these steps and proceed to [Registering Offline \(Quarantined\) Systems](#) on page 14.

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. The viewer will display [EVALUATION] in the title bar until a product license is entered. An Evaluation Installation permits monitoring up to five devices, but it will have no 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 LiebertNform system is not registered, you will be prompted about registration in the title bar and with a reminder dialog. See [Title Bar](#) on page 11, and

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.

To register your Liebert Nform software after the start-up process described in [Nform System Start up](#) on page 11, 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 [Enter Customer Information for Nform and Software Assurance](#) on page 31 for details on the window that opens.
- Click the Application menu, then **Register Product** at any time to begin the registration process (see [Register Product](#) on page 31 for details).

2.3 Nform System Start up

The Nform System Start-up 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 [Registering for Software Assurance](#) on page 10 for more information.

FOR INITIAL START-UP 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 Start-up wizard opens immediately after the first log-in to the Nform Viewer while the Administrator password is not yet assigned.

The start-up 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). | Set Administrator Account Password on page 13 |
| 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 Create a separate Nform user account with administrator privileges . on page 12). | Enter Customer Information for Liebert Nform and Software Assurance on page 13 |
| 4. Enter license keys purchased with your system. 5. Register your system for Software Assurance using the license keys entered in step Enter license keys purchased with your system . on page 12. | Enter License Keys and Register on page 13 |

We recommend 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 [Register Product](#) on page 31.

Start the Wizard

To launch the Nform System Start-up wizard:

- Start the Nform Viewer.
- On initial start-up, the user name is **Administrator** and no password is required. The user may need to enter the host name or IP address of the Liebert Nform server on initial start-up.
 - User name: **Administrator** (*box filled in for initial start-up*)
 - Password: (*None required for initial start-up*)
 - Server: **localhost** (*box filled in if the Viewer is started on the Nform server*) or the host name or IP address of Nform server where **Nform Full Package** resides
- The Nform System Start-up wizard opens. Proceed to the next section, [Set Administrator Account Password](#) on page 13.

2.3.1 Set Administrator Account Password

After the Nform System Start-up wizard opens:

1. At the welcome screen, click **Next**.
2. 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.

We recommend creating at least one separate user account for daily use and for Software Assurance registration, as described in [Enter Customer Information for Liebert Nform and Software Assurance](#) on page 13.

3. 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.

4. 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.

2.3.3 Enter License Keys and Register

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

We recommend 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 [Enter the License Key](#) on page 28.

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.
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 Vertiv™, 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 [View License Key Information](#) on page 29.

5. Click the **Register** button to initiate registering the Nform system.

NOTE: To register the product offline (manually), refer to [Registering Offline \(Quarantined\) Systems](#) on page 14 for details on using the **Export Registration button to create an encrypted file for manual registration.**

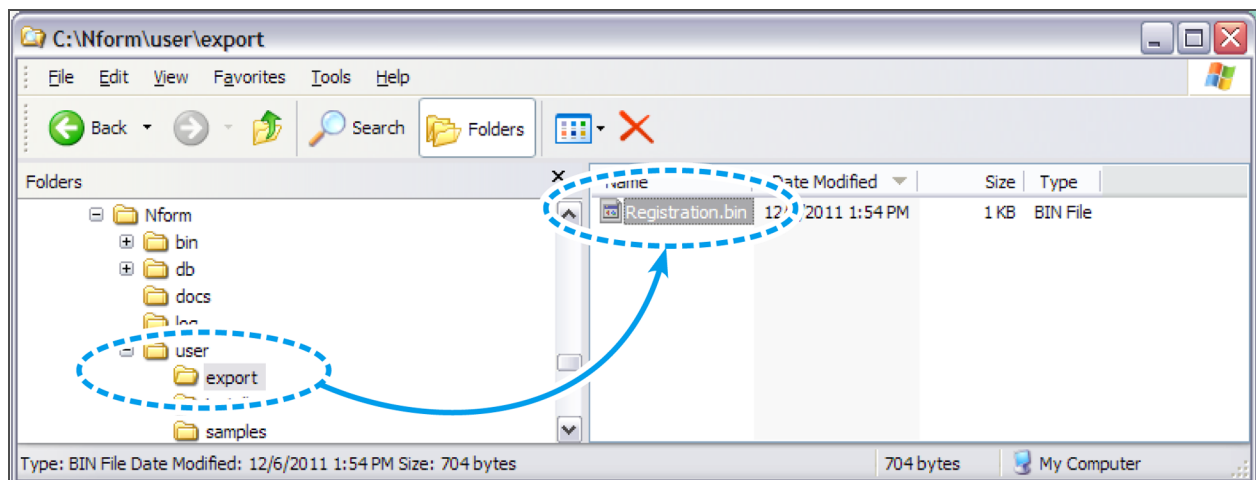
6. A confirmation dialog box appears if registration was successful. The following error message appears if the licenses could not be registered.

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 ([Enter License Keys and Register](#) on page 13), click the **Export Registration** button.
 - The 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** sub-folder of the **user** folder.
 - 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** sub-folder in the **user** folder on the machine where the Viewer is running.



3. [Visit the specified Nform SA site \(http://applications.liebert.com/nformsa/\)](http://applications.liebert.com/nformsa/) on a different, Internet-enabled computer.
 - Click **Register Product** in the My Nform System menu.
4. Upload the exported product registration file.
 - Click 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 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 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 is added to a system without an internet connection, the steps in [Registering Offline \(Quarantined\) Systems](#) on page 14 must be performed for the new license. Nform displays a reminder to register for software assurance.

Systems that are connected to the Internet will get the new license registered automatically as detailed in [Enter License Keys and Register](#) on page 13.

2.4 Upgrading From Older Versions of Liebert Nform

NOTE: Due to enhanced Federal Information Processing Standard (FIPS) encryption, in Liebert Nform 4.11, upgrading from any version of Liebert Nform to Liebert Nform 4.11 (or later) will reset the administrator's password to blank and require re-entering all users passwords, to comply with the enhanced FIPS encryption policies.

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 [Use the Export Feature in Liebert Nform 2.X](#) on page 16), or
- Run the **export_utility.exe** program in the **Upgrade** folder on the Liebert Nform 4.X CD (see [Use the Export Utility from the Liebert Nform 4 CD](#) on page 16).

NOTE: After upgrading from an earlier 4.x version of Liebert Nform, users with permission to manage licenses (see [Assigning Users to Groups](#) on page 84) will see the Reminder window described in [Registering for Software Assurance](#) on page 10 on the first log in.

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 the **Configure** tab.
- Click 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
- Shut-down software 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 the file or click the **Start** button, then click **Run**, enter the full path or **Browse** to locate the file, then click **OK**.)
- Click 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
- Shut-down software 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 [Using Nform Tools](#) on page 115):

- Install Liebert Nform 4 as described in [Installation](#) on page 9.
 - 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 the **Start** button, then Click **Programs, Liebert Nform** and finally **Nform Tools**.
 - In the Liebert Nform Tools window, Click 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 [Application Menu - Close Nform Tools](#) on page 117).

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 [Installation](#) on page 9.
- 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.

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3 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

Figure 3.1 Nform Viewer window



NOTE: Changing the size of the system-display text from 100% may affect the appearance and location of the icons and menus.

| ITEM | DESCRIPTION |
|------|-----------------------|
| 1 | Menu bar |
| 2 | Top frame |
| 3 | Bottom frame |
| 4 | Configuration buttons |
| 5 | Viewer display area |
| 6 | View tabs |
| 7 | Status buttons |

- The **Menu Bar** at top left offers access to all Liebert Nform features (see [Menus](#) on page 23):
 - Application
 - View
 - Configure
 - Tools
 - Help
- **Status Buttons** in the top frame show the number of devices by condition (see [Buttons](#) on page 21). This top frame may be minimized to expand the Viewer Display Area. The device conditions are:
 - No Communication
 - Normal
 - Maintenance
 - Alarm
- **View Tabs** determine which type of information—device status, navigation tree or alarm data—is shown in the Viewer Display Area (see [Buttons](#) on page 21):
 - 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 [Operation - Using the Viewer](#) on page 97). 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 [Buttons](#) on page 21). 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

The following tables list the buttons available in the Viewer and where to learn more about each.

NOTE: Changes to system display text size, different from 100% setting, may affect the appearance and location of graphic icons and menus.

The number of devices in each status displays below the status buttons.






| BUTTON | DESCRIPTION | COLOR STATUS |
|--------|--|---|
| | No Communication Click to toggle dashboard view between not-communicating and all devices. | Gray symbol - all devices are communicating with server. Flashing - requires attention, 1 or more devices not communicating with a configured computer |
| | Normal Click to toggle dashboard view between devices operating normally and all devices. | Green symbol - 1 or more devices operating normally Flashing - requires attention, no devices operating normally |
| | Maintenance Click to toggle dashboard view between devices in maintenance mode and all devices. | Gray symbol - no devices in maintenance mode Flashing - One or more devices are in maintenance mode |
| | Alarms Present Click to toggle dashboard view between devices in alarm and all devices. | Gray symbol - no devices currently in alarm Flashing - requires attention, 1 or more devices in alarm |

NOTE: Use the arrow next to the tabs, to open the selected view in a separate window.

Table 3.1 View tabs on the desktop

| TAB |
|--|
| <p>Dashboard. View status of configured devices in Detail area. See Dashboard Tab on page 97</p> |
| <p>Navigate. View navigation tree with configured devices and floor plans, Web browser interface, parametric data, alarms, trend data and Web links in Detail area. See Navigate Tab - Device on page 104.</p> |
| <p>Alarms tab. View alarm data for all configured devices in Detail area. See Alarms Tab on page 108</p> |

Table 3.2 Configuration buttons on the desktop

| BUTTON | DESCRIPTION |
|---|---|
|  | Configure Licenses. Shortcut to Configure > Licenses to add Nform licenses. See Enter the License Key on page 28 |
|  | Configure Server Options. Shortcut to Configure > Server Options to view or change global settings. See Configuring Server Options on page 37 |
|  | Configure Devices. Shortcut to Configure > Devices to add devices and floor plans. See Configuring Devices on page 47 |
|  | Configure Actions. Shortcut to Configure > Actions to set up actions (e.g., send e-mail, write file). See Configuring Actions on page 69 |
|  | Configure Users & Groups. Shortcut to Configure > Users and Groups to add user accounts and customize user options. See Configuring Users and Groups on page 83 |

3.1.2 Menus

The menu bar at the top of the Viewer window provides access to all Nform features and is summarized in the following table.

Table 3.3 Menu options - summary

| MENU | OPTION | FUNCTION (CONFIGURATION BUTTON, IF ANY) | FOR MORE DETAILS, SEE: |
|-------------|----------------------------|--|--|
| Application | Nform Tools | Open the Nform Tools application | Nform Tools on page 31 |
| | Register Product | Register for Software Assurance | Register Product on page 31 |
| | Restart Session | Restart the Client session without logging out | Restart Session on page 32 |
| | Log in As | Log in with a different user name and password without closing the Viewer | Log in As on page 32 |
| | Exit | Close the Viewer window (requires login the next time the Viewer is opened) | Exit on page 32 |
| View | Show Expanded Top Frame | Show large status buttons at top of window or display smaller status buttons | Show Expanded Top Frame on page 33 |
| | Show Expanded Bottom Frame | Show or hide the configuration buttons at the bottom of the window | Show Expanded Bottom Frame on page 33 |
| | Full screen | Expand to full-screen display (no title bar, menu bar or window frame) or restore to normal window | Full Screen (F11) on page 34 |
| Configure | Devices | Add devices and their properties to the configuration | Configuring Devices on page 47 |
| | Actions | Create actions—e.g., e-mail notifications—to be executed when an alarm is received | Configuring Actions on page 69 |
| | Shutdown Clients | Configure shut-down client computers that may be selected for shutdown actions | Configuring Shutdown Clients on page 66 |
| | Views | Add devices, floor plans and logical groups to the configuration | Configuring Views for the Navigate Tab on page 59 |
| | Users and Groups | Create new users and define access privileges for groups of users | Configuring Users and Groups on page 83 |
| | Licenses | Add licenses purchased from Vertiv™ for Liebert Nform or shut-down software. | Enter the License Key on page 28 |
| | Server Options | Change global settings—e.g., for language, alarms, devices, e-mail servers, SNMP | Configuring Server Options on page 37 |
| | Change Password | Create or change a password to use at login | Change the User Password on page 27 Add Individual Users on page 83 |
| | User Options | Customize user preferences for language, time zone, alarm and other colors, visual and audible alerts | Configuring User Options on page 35 |
| 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 | <i>Submenu items:</i> Export Alarm History on page 89 Export Action History on page 90 Export Data Log History on page 91 |
| | Reports | Generate tabular data or charts of records about status or history of monitored devices. | Reports on page 92 |

Table 3.3 Menu options - summary (continued)

| MENU | OPTION | FUNCTION (CONFIGURATION BUTTON, IF ANY) | FOR MORE DETAILS, SEE: |
|------|------------------------|--|---|
| 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 (<i>w/ Manage Licenses permission</i>) | — |
| | About Liebert Nform | View details on Nform Viewer version, server, database, installed license keys, registration, how to contact technical support | View License Key Information on page 29 |

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4 GETTING STARTED WITH LIEBERT NFORM

This section provides details on starting the Nform Viewer, logging in and entering license keys to configure 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 , the Nform Viewer icon on the desktop.
– or –
- On the Start menu, click *Programs > Liebert Nform > Nform Viewer*.

4.2 Log on as Administrator and Connect to Server

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

- On initial start-up, 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 start-up*).
 - Password: Enter the password that was assigned to you—if none assigned, leave blank (*none required for initial start-up 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 host name or IP address of Nform server where **Nform Full Package** resides.
- Click the **Log in** 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 log in** option (see [Add Individual Users](#) on page 83) and for initial start up of an evaluation edition.

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

- Start the Viewer with permission to change the password (see [Add Individual Users](#) on page 83).
- Click the **Configure > Change Password**.
- Enter the existing password in the Old Password box.

(During the first log in, leave this box blank.)
- Enter a password in the New Password box.

The password is case-sensitive and must consist of 2 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 Start up Wizard on initial start up, see [Section Nform System Start up](#) on page 11, especially [Set Administrator Account Password](#) on page 13.
- Passwords may also be assigned when creating or editing user accounts, as described in [Add Individual Users](#) on page 83.

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 Vertiv™ representative or see [Ordering Parts and Licenses From Vertiv](#) on page 129.

If another license for Liebert Nform is added to a system without an internet connection, the steps in [Registering Offline \(Quarantined\) Systems](#) on page 14 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 [Enter License Keys and Register](#) on page 13.

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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Licenses** icon at the bottom of the window (or click the **Configure > 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 Vertiv™, 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 [View License Key Information](#) on page 29.

4.4.2 View License Key Information

Users with **Licenses** access (see [Assigning Users to Groups](#) on page 84) may view information about installed license keys in either of two ways:

- **Licenses Window**
 - Start the Viewer with permission to manage licenses (see [Assigning Users to Groups](#) on page 84).
 - Click the **Configure Licenses** icon at the bottom of the window (or Click **Configure > Licenses**).
 - Click 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 **Help > About Liebert Nform**.
 - Click the **License** tab to view details of all license keys that are installed.

To remove a license key, see [Deleting a License Key](#) on page 123.

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5 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 Vertiv™, 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 [Open the Nform Tools Application From the Start Button](#) on page 115) or directly from this menu item in the Viewer.

To open the Nform Tools application from the Viewer:

- 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 [Assigning Users to Groups](#) on page 84).
- Click **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 [Using Nform Tools](#) on page 115 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 [Registering for Software Assurance](#) on page 10).

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 [Assigning Users to Groups](#) on page 84).
- Click **Application > Register Product**.
- Proceed to the next two sections:
 - [Enter Customer Information for Nform and Software Assurance](#) on page 31
 - [Enter License Keys and Register](#) on page 32

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.

5.2.2 Enter License Keys and Register

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

We recommend 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 [Enter the License Key](#) on page 28.

To install a Liebert Nform license key:

1. In the Licenses window, click the **Add** button at the top right.
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 Vertiv™, 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 [View License Key Information](#) on page 29.

5. Click the **Register** button to complete the process. A confirmation dialog box appears if registration was successful or an 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 **Application > Restart Session**.

5.4 Log in As

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

- Click **Application > Log in As**.

5.5 Exit

To close the Viewer window:

- Click **Application > Exit**.
Log-in will be required 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 [Starting or Stopping the Liebert Nform Service](#) on page 113.

6 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.

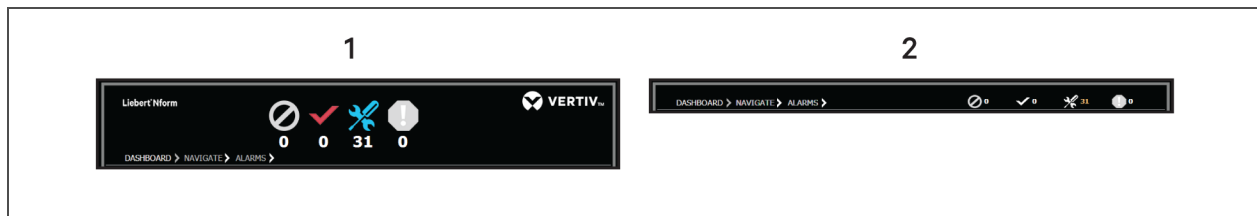
6.1 Show Expanded Top Frame

The default Viewer window has large status buttons in the top frame. This top area may be minimized to enlarge the Viewer Display Area. The function of the status buttons remains the same if the frame is expanded or collapsed. (For details on the status buttons, see [Overview](#) on page 19.)

To expand or collapse the top frame:

- On menu bar, click **View > Show Expanded Top Frame** to place or remove a check mark:
 - Place a check mark to show large buttons.
 - Remove the check mark from the box to minimize the status buttons.

Figure 6.1 Status buttons expanded and collapsed



| ITEM | DESCRIPTION |
|------|---|
| 1 | Top frame expanded, large status buttons |
| 2 | 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 [Overview](#) on page 19.)

To expand or collapse the bottom frame:

- On menu bar, click **View > Show Expanded Bottom Frame** to place or remove a check mark:
 - Place a check mark to show the configuration buttons.
 - Remove the check mark from the box to hide the status buttons.

6.3 Full Screen (F11)

The Viewer window may be maximized to full-screen display mode with no menu bar. 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 enter full-screen display mode:

- On the menu, click **View > Full Screen**.
– or –
- On the keyboard, press F11.

To exit full-screen mode:

- On the keyboard, press F11.
– or –
- Hover the cursor over the top of the screen to display the menu bar, then click **View > Full Screen** to clear the check mark.

7 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.

To access the user options:

1. On the menu bar, click **Configure > Users and Groups**.
2. Select the user to update, and click **Edit**.
3. In the lower-right section of the dialog, click **User Options**.
The User Options dialog opens.

7.1 User Options - External Tab

The **External** tab chooses a language for the display of text in all Viewer menus, windows and dialog boxes in the Liebert Nform application.

To choose a display language

- Select a language from the drop-down list, then click **OK** to accept the changes.
- Restart the Viewer for the language change to take effect.

7.2 User Options - General Tab

The **General** tab sets time zones and alarm colors.

To select the displayed time zone

1. Choose **Local time** (the default) of the user's workstation.
– or –
Server time—the time of the server where Liebert Nform is installed.
2. Then click **OK** to accept the changes.

To select displayed alarm colors

1. In the Alarm Colors section, select the **Unacknowledged**, **Acknowledged** and **Background** buttons to customize the color schemes for the user's alarms.

NOTE: These changes apply to display in the Alarms tab (see [Alarms Tab](#) on page 108).

2. In the Color window, choose a color from the swatches or custom colors, then click **OK**.
 - To define a custom color, click **Define Custom Colors**, then select a color using the slider tools or enter RGB values in the Red, Green and Blue boxes, and click **OK** when finished.)

Examples of the colors are displayed in the Alarm Colors section.

3. When finished, click the **OK** button to accept the changes.

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 the changes.

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.

NOTE: The sounds to be played with each choice may be changed using the sound applet in the Windows Control Panel. Each version of the operating system may have different default sounds.

- When finished, click the **OK** button to accept all changes in the User Options window.

8 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 [Assigning Users to Groups](#) on page 84 for permission required for various functions).
2. Click the **Configure Server Options** icon at the bottom of the window (or Click **Configure > Server Options**).
3. The Server Options window has tabs for various types of options. Refer to the following sections for details on each tab.

NOTE: Consider the following when deciding on the recovery model for your Nform database(s). By default, the recovery model is "Full." However, you can use the "Simple" recovery model to keep the space requirements small, but the disadvantage of this model is that it does not support point-in-time recovery. The decision is between the importance of recovering stored Nform data in the event of a lost or damaged data file and the rate of disk consumption from rapid increase in log-file size. Consult with your database administrator to determine the best approach and back-up strategy.

8.1 Server Options - General Tab

- Start the Viewer (see [Assigning Users to Groups](#) on page 84 for access privileges).
- Click the **Configure Server Options** icon at the bottom of the window (or Click **Configure > Server Options**).
- Click 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 [Assigning Users to Groups](#) on page 84).
To make changes:
 - In the Language box, Click 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 .
- The Audit log file area requires permission to manage logging parameters (see [Assigning Users to Groups](#) on page 84).
This section displays the name and size of the audit log, a record of logins and logouts and changes to the system configuration. We recommend 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 changes.

NOTE: If the language was changed, the service must be restarted for the change to take effect (see [Application Menu - Service](#) on page 117).

- The Liebert RSD global value area requires permission to manage server parameters (see [Assigning Users to Groups](#) on page 84)
- This feature allows you to set a global site ID for remote monitoring, which may be overridden for any device (see [Liebert RSD Tab](#) on page 52). 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 [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click 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. We recommend 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 changes.

8.3 Server Options - Alarms Tab

- Start the Viewer with permission to manage server parameters (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click **Configure > Server Options**).
- Click 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).

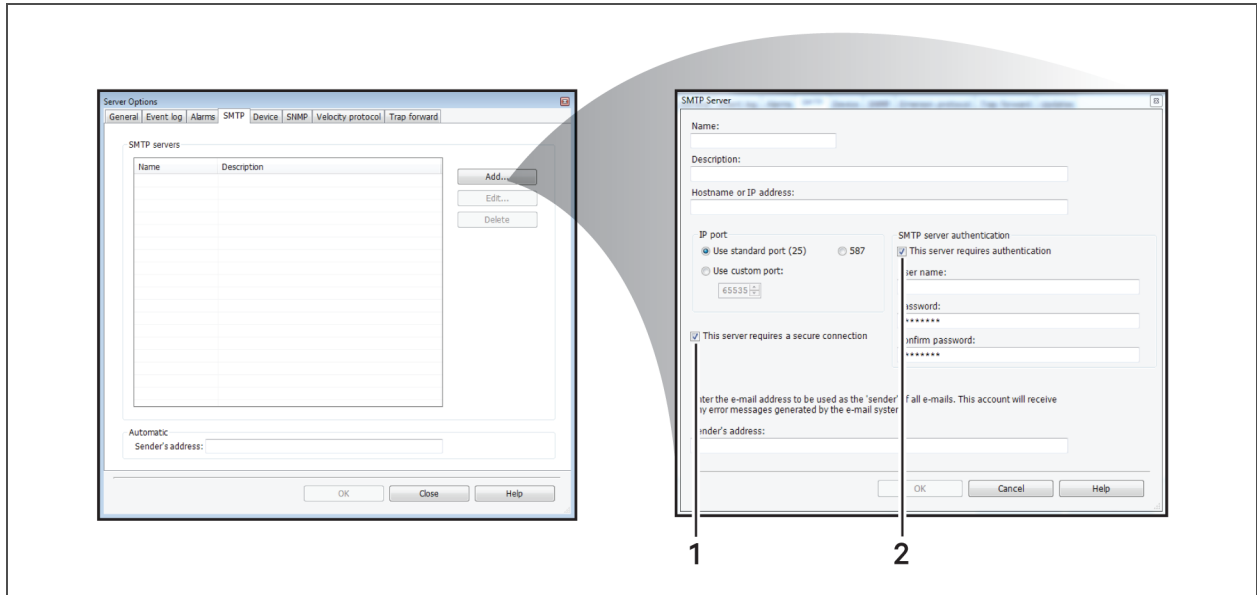
Specify the **Minimum free space** (default is 10%) to use as criteria for deleting records.

- Maintenance alarms may be enabled to alert personnel to scheduled or unscheduled maintenance for a monitored device. Maintenance alarms may be enabled by clicking on **Configure>Server Options>Alarms** or by right-clicking a device in the menu tree. This alarm may be enabled to have personnel determine whether a device should still be in Maintenance Mode.
 - Maintenance mode alarm interval will repeat the alert at the specified interval, notifying personnel that the device has been in alarm since the original maintenance date.
- Click **OK** to save changes.

8.4 Server Options - SMTP Tab

- Start the Viewer with permission to manage e-mail parameters (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click **Configure > Server Options**).
- Click the **SMTP** tab to specify SMTP mail servers for e-mail notifications.

Figure 8.1 Add SMTP mail servers



| ITEM | DESCRIPTION |
|------|---|
| 1 | Check the box if the server requires a secure connection. |
| 2 | Check the box if the you are using Gmail or another SMTP server that requires authentication. |

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 Host name 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.
 - **587**, a commonly used port for sending e-mail messages to an SMTP server, is also available.
 - 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.

- If using Gmail or another SMTP server requiring authentication:
 - Put a check in the box for **This server requires authentication** and enter the user name and password.
- 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 [Configure E-Mail Actions](#) on page 71), 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 changes.

8.5 Server Options - Device Tab

- Start the Viewer (see [Assigning Users to Groups](#) on page 84 for access privileges).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click the **Device** tab.
- **Global status polling** options require permission to manage global device parameters (see [Assigning Users to Groups](#) on page 84).

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 [Communications Tab](#) on page 50).

- **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 **Data Logging Storage** features require permission to manage logging parameters (see [Assigning Users to Groups](#) on page 84). *Data logging requires a license with Advanced Communications (see [Ordering Parts and Licenses From Vertiv](#) on page 129).*

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 changes.

8.6 Server Options - SNMP Tab

The SNMP tab specifies global settings for trap ports, community strings and the log-in 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 [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click 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 log-in section, enter the User name and Password to be used globally for all devices. The default is **Liebert** for both user name and password (the passwords will be hidden when entered).
- 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; We suggest that 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 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 [Protocol Tab - SNMP](#) on page 51).

NOTE: Liebert Nform permits 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.

NOTE: Because of the high consumption of resources with SNMPv3 encryption and decryption, we recommend that you use a high-performance server and that you reduce the data-logging interval. In addition, we recommend that you decrease the time-out and retries settings for SNMP properties, see [Server Options - SMTP Tab](#) on page 39.

NOTE: Because of encryption limits at this time, Nform cannot auto-discover SNMPv3 devices.

In the SNMPv3 parameters box, enter the settings for accessing SNMPv3 devices. The user name, as well as the pass phrase(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 - Velocity Protocol

The Velocity protocol tab specifies global settings for monitoring and managing devices that support the protocol. Vertiv™ equipment that accept Liebert IntelliSlot™ cards will communicate over the protocol. The protocol is enabled by default.

- Start the Viewer with permission to manage global device parameters (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click the **Velocity protocol** tab.
- The **Enable Velocity Protocol** option requires permission to manage server parameters (see [Assigning Users to Groups](#) on page 84).

Place a check mark in this box to use Velocity Protocol for communication with compatible Vertiv™ devices via Ethernet or IEEE-485 links.

- Specify the settings for all compatible devices or accept the default settings:
 - Timeout (msec)—default is 5000 msec
 - Retries—default is 2
- Click **OK** to save your changes.

8.8 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 [Edit the Device Properties](#) on page 50).

The Trap Forwarding feature is available only in the Nform Enterprise version. The feature differs from the Forward Trap action, which may be configured to forward individual traps to multiple destinations (see [Configure Forward Trap Actions](#) on page 77 for details).

- Start the Viewer with permission to manage SNMP trap forwarding (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click 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 changes (or **Cancel** without saving).

8.9 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 [Register Product](#) on page 31).

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 [Check for Updates](#) on page 96).

- Start the Viewer with permission to manage licenses (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Server Options** icon at the bottom of the window (or Click the **Configure** menu, then choose **Server Options**).
- Click the **Updates** tab.
- Choose an option of checking for updates in the Product Updates and DTD Updates sections:
 - a. Download updates and notify me when finished.
 - b. Notify me but don't download them (*the default*).
 - c. Don't check for updates (see [Check for Updates](#) on page 96 to check manually).

- Specify a schedule in the Check for Updates area for Option **a** (download) or **b** (notify):
 - Decide how often Nform should check for updates by clicking on:
 - Click **Daily** to check for updates every day.
 - Click **Weekly** to check for updates once a week, then choose the day of the week (*Sunday* through *Saturday*).
 - Click **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 changes (or **Cancel** without saving).

The **Updates Available** button, , appears in the Viewer when updates are available. Clicking on this button opens the Updates Available window (see [Check for Updates](#) on page 96).

9 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 Vertiv™, you must first install the DTD before the device may be added to the configuration (see [Tools Menu - Install DTD](#) on page 120).

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 host name or IP address of an individual device (see [Add a Single Device](#) on page 47)
- by entering a range of IP addresses for automatic detection of supported devices on a network (see [Detect Devices on a Network](#) on page 48)
- by importing devices from a file of device properties (see [Import Devices From a File](#) on page 56)

9.1.1 Add a Single Device

Devices may be added one at a time.

1. Start the Viewer with permission to configure devices (see [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Devices** icon at the bottom of the window (or click **Configure > Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard, shown below right.
4. Click **Add a single device**.
5. In the Add a Single Device window, enter the host name 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 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 [Edit the Device Properties](#) on page 50. 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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Devices** icon at the bottom of the window (or click the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard.
4. Click **Discover new devices to add**.
5. In the Discover Un-managed Devices window, 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.
 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 [Edit the Device Properties](#) on page 50. 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 [Export Managed Device Configurations to a File](#) on page 56) 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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Devices** icon at the bottom of the window (or click the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard.
4. Click **Import devices from a file** to open the Add Device window .
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. For more information, open the text file named **DeviceImportErrors.txt** in the **user** sub-directory 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 [Edit the Device Properties](#) on page 50. 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 [Configuring Server Options](#) on page 37) and some from automatic detection of device settings (see [Add Devices to the Configuration](#) on page 47). Most of these settings may be changed.

To edit the properties of a device:

- Start the Viewer with permission to configure devices (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Devices** icon at the bottom of the window (or click 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.

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 **Communications** tab provides the following options:

- **Host name 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 Velocity Protocol—for example, the Liebert MPX—via BACnet router through MSTP (RS-485), enter the address of the BACnet router for this device (see [Protocol Tab - Velocity Protocol](#) on page 52).
- **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 host name 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 [Server Options - Device Tab](#) on page 41, as shown below. The options for individual devices may be customized as follows:

| GLOBAL OPTION | OPTIONS FOR CUSTOMIZING INDIVIDUAL DEVICES |
|---------------|---|
| Priority | <p>High - device will be polled approximately every 2 to 5 seconds *</p> <p>Low (default) - device will be polled approximately every 20 seconds *</p> <p>Disabled - no polling will occur for this device</p> |
| Daily | <p>Disabled - no polling will occur for this device</p> <p>If enabled, all devices will be polled at the same specified time each day</p> |
| Interval | <p>Disabled - no polling will occur for this device</p> <p>If enabled, all devices will be polled at the same specified interval</p> |
| Disabled | <p>None—this option disables the polling option for all devices (to change polling for an individual device, the global option must be changed)</p> |

* The polling interval for high or low priority varies by the total number of devices

- **Enable trap forwarding for this device** - Place a check mark to activate this feature (available only in the Nform Enterprise version).
- **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 [Server Options - SNMP Tab](#) on page 42).

9.2.2 Protocol Tab - SNMP

If the communication protocol for the device is SNMP, the **SNMP** tab provides the following options:

| OPTION | NOTES |
|-------------------|--|
| IP port | <p>The default is Use global port (161), the most commonly used port.</p> <p>The IP port corresponds to the Request port in the Server Options global settings (see Server Options - SNMP Tab on page 42).</p> <p>To specify a different port, click Use custom port and choose a number from the drop-down list.</p> |
| SNMP version | <p>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 <i>SNMPv2c</i> to <i>SNMPv1</i>—to help troubleshoot communication problems with the device.</p> <p>SNMPv1—unencrypted protocol</p> <p>SNMPv2c—unencrypted protocol</p> <p>SNMPv3—protocol that can use authentication and be encrypted</p> <p>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 Server Options - SNMP Tab - SNMPv3 on page 43).</p> |
| Request community | <p>The global value displayed below the text box (see Server Options - SNMP Tab on page 42) will be used by default.</p> |
| Trap community | <p>To change this value, place a check mark <input checked="" type="checkbox"/> in the Override Global Value check box and enter a new value in the text box.</p> |

9.2.3 Protocol Tab - Velocity Protocol

If the communication protocol for the device is Velocity protocol, the **Velocity Protocol** tab provides the following options:

- If using the Velocity 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 the **Communications** tab, then enter the address of the BACnet router for this device in the **Host name or IP Address** box (see [Communications Tab](#) on page 50).

9.2.4 Liebert RSD Tab

The **Liebert RSD** tab appears only when the Global Setting for Liebert RSD is activated (see [Server Options - General Tab](#) on page 37), and provides the following options:

- 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 [Navigate - Info Links View](#) on page 107).

To open the Information Links window for:

- Devices: Click **Info Links** in the Device Properties window.
- Areas: Click **Info Links** in the Area Properties window. See [Add or Edit an Area](#) on page 60.
- Logical Groups: Click **Info Links** in the Group Properties window. See [Group Properties - Logical Groups](#) on page 65.

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.vertivco.com* or *c:\text.txt*).
- Click 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 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 the link, then click the **Delete** button.

- Click **OK** to save changes and close the window (or **Cancel** to close without saving).

9.2.6 Device-properties 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 [Assigning Users to Groups](#) on page 84).
- Click 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.
- To change a name, click an alarm at the top of the window, then enter text in the Name box in the User-Defined section in the lower right corner of the dialog.
- To change the severity, click 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.

9.2.7 Device-properties Data Tab

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

- Start the Viewer with permission to edit device definitions (see [Assigning Users to Groups](#) on page 84).
- Click 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.
- To change a name, click a data point at the top of the window, then enter text in the Name box in the User-Defined section in the lower right corner of the dialog.
- 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.

9.2.8 Data Logging

NOTE: This feature requires a license with **Advanced Communications** (see [Ordering Parts and Licenses From Vertiv](#) on page 129).

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 [Configure Read Data Actions](#) on page 78).

Both features collect the same type of data, which may be viewed in a trend graph (see [Navigate - Trends View](#) on page 106) or exported to a text file (see [Export Data Log History](#) on page 91).

Items selected for data logging will have a check mark in the Log column in the Device Data Logging window, and the Trend Data Selection window (see [Navigate - Trends View](#) on page 106).



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

- Start the Viewer with permission to configure data logging (see [Assigning Users to Groups](#) on page 84).
- Click 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 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 [Informational Icons in the Navigation Tree](#) on page 111), 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:

- In floor plans, the maintenance icons, , indicate that devices are in maintenance mode.
- In navigation tree, a smaller version of the maintenance icon , appears next to the device name. For details about status icons, see [Informational Icons in the Navigation Tree](#) on page 111.

9.3.1 Shortcuts to Place Devices Into or Out of Maintenance Mode

- In the Navigate view, right-click an area to set the Maintenance Mode for all devices in that area.
- In the Navigate view, right-click a single device to set that device alone to maintenance mode.

9.3.2 Configure Maintenance Mode

To configure maintenance mode:

- Start the Viewer with permission to configure devices (see [Assigning Users to Groups](#) on page 84).
- Click the **Configure Devices** icon at the bottom of the window (or click **Configure > Devices**) to open the Managed Devices window. This window is also accessible from the **Edit** button from any device window.
- Highlight the devices to configure for Maintenance Mode using shift-click and control-click methods to select multiple devices.
- Click the **Maintenance** button.
The Device Maintenance window opens.
- 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.
- **Maintenance Alarm** - click check *Override global value* to enable the Maintenance alarm. This lets Nform alert personnel that maintenance is being performed on a particular device.
- **Alarm interval** - specify a time interval for an alert to remind personnel that a device has been in maintenance mode since the Start date specified. Action sets may be mapped to this alarm as with any other alarm. See [Map Action Sets to Devices and Alarms](#) on page 81 for more information.
- When finished, click **OK**.

9.3.3 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 [Export Managed Device Configurations to a File](#) on page 56) 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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Devices** icon at the bottom of the window (or click the **Configure** menu, then choose **Devices**) to open the Managed Devices window.
3. Click the **Add** button to open the Nform Add Devices wizard.
4. Click **Import devices from a file** to open the Add Device window.
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. For more information, open the text file named **DeviceImportErrors.txt** in the **user** sub-directory 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 [Edit the Device Properties](#) on page 50. 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.

9.4 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 [Assigning Users to Groups](#) on page 84).
- Click the **Configure Devices** icon at the bottom of the window (or click 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 the devices to export using shift-click and control-click methods to select multiple devices.
- Click the **Export** button.
The Export Devices window opens.
- 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 or had errors.

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10 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 [Navigate Tab - Device](#) on page 104 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 [Assigning Users to Groups](#) on page 84).
- Click 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 [Add or Edit Views](#) on page 59.
 - **Copy** to create a new view based on a selected view - see [Add or Edit Views](#) on page 59.
 - **Edit** to make changes to an existing view - see [Add or Edit Views](#) on page 59.
 - **Delete** to remove a view from the list - see [Add or Edit Views](#) on page 59.
 - **Logical groups**: for details, refer to [Create Logical Groups](#) on page 64.

10.1 Add or Edit Views

To create or edit a customized view:

1. Start the Viewer with permission to configure navigation views (see [Assigning Users to Groups](#) on page 84).
2. Click 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 an existing view, then click **Edit** to make changes to the selected view.
 - Click 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,
 - 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:
 - a. Select one or more items, then drag-and-drop to the desired location.
 - b. 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 [Place Devices in Floor Plans](#) on page 61.
5. Be sure to click **OK** to save 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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure** menu, then choose **Views** to open the Navigation Views window.
3. Open the Navigation View Properties window (see [Add or Edit Views](#) on page 59).
4. Choose one of these options to open the Area Properties window:
 - Click **Add** to create a new area.
 - Click an existing area, then click **Edit** to make changes to the selected area.
 - Click 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 [Place Devices in Floor Plans](#) on page 61.

 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 Vertiv™ 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)**

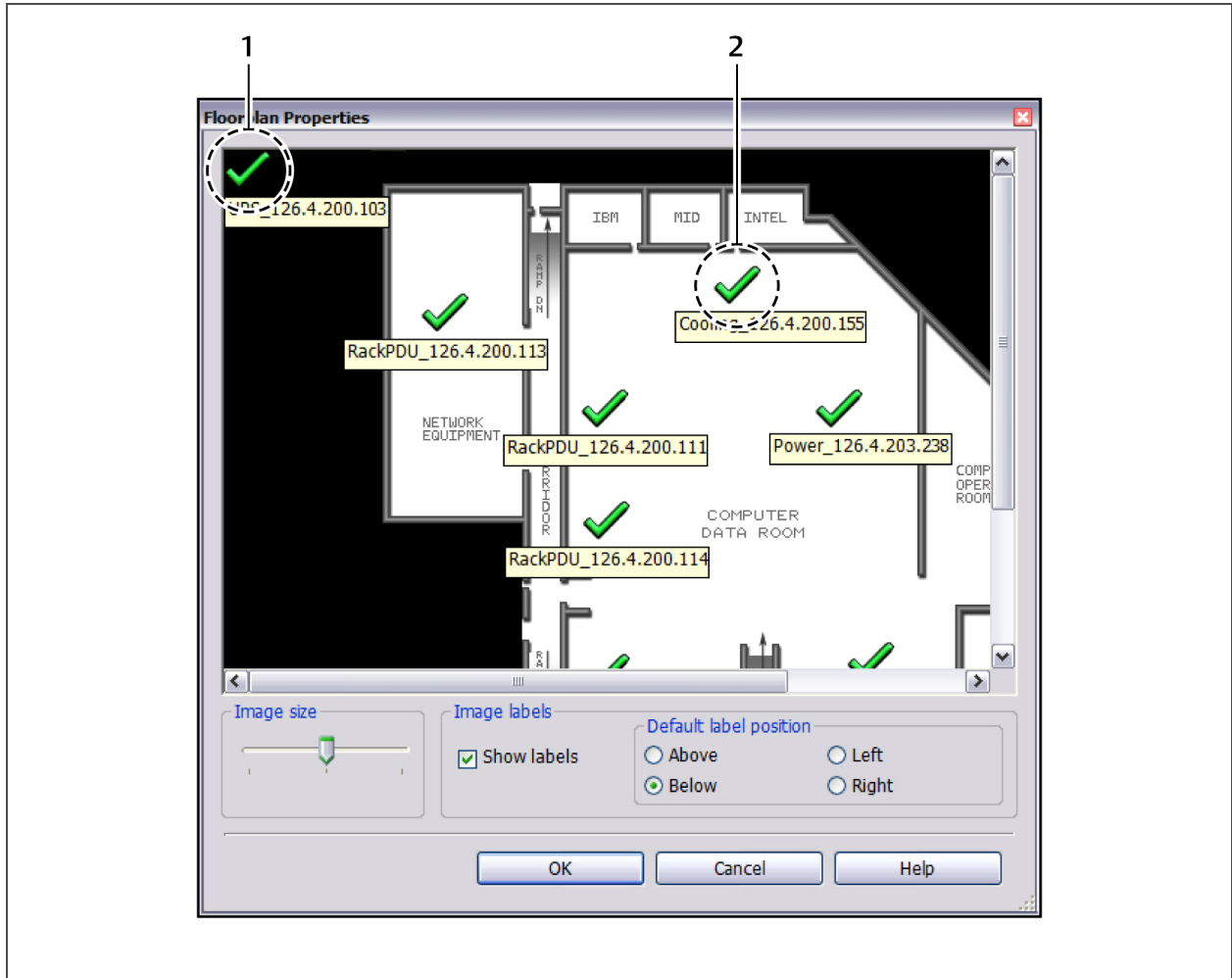
 To add a link to a Web page or file, click the **Info Links** button (see [Info Links](#) on page 52).
 - Click **OK** to close the Area Properties window.
 - Be sure to click **OK** in the Navigation View Properties window to save the changes.
6. Move devices to areas as needed (see [Add or Edit Views](#) on page 59).
7. To remove an area from the tree, Click 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 [Add or Edit an Area](#) on page 60), to place a device in a floor plan map:

1. Start the Viewer with permission to configure navigation views (see [Assigning Users to Groups](#) on page 84).
2. Click the **Configure** menu, then choose **Views** to open the Navigation Views window.
3. Open the Navigation View Properties window (see [Add or Edit Views](#) on page 59).
4. In the Navigation View Tree, Click an area with a floor plan image, then Click the **Floorplan** button.
5. In the Floorplan Properties window:
 - 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.

Figure 10.1 Positioning device icons



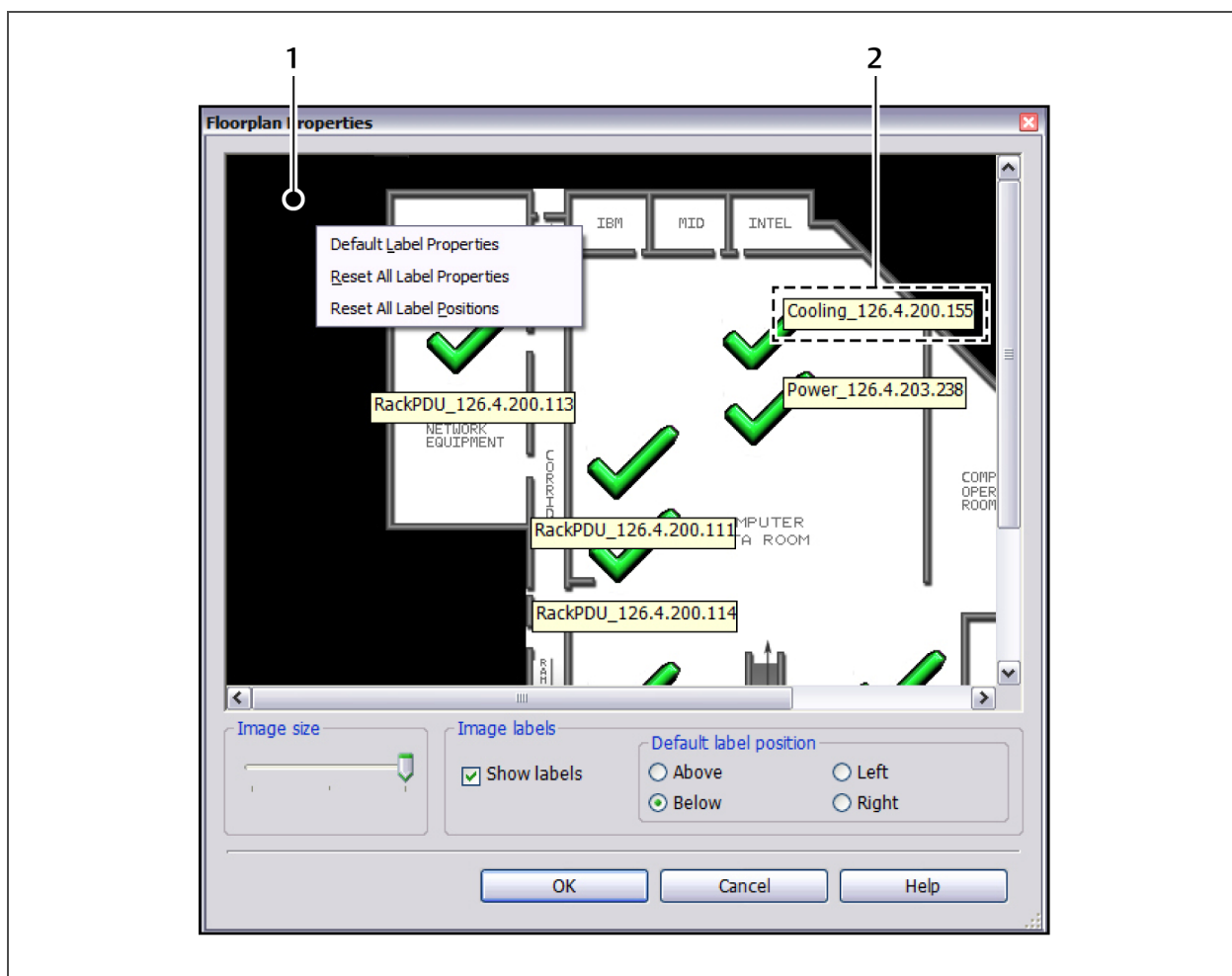
| ITEM | DESCRIPTION |
|------|---|
| 1 | Available devices along the top |
| 2 | Device moved from top to floor-plan map (medium-sized icon, label below icon) |

- Right-Click 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.

Figure 10.2 Right-click options for floor-plan labels



| ITEM | DESCRIPTION |
|------|--|
| 1 | Right-click on the area away from the floor plan to change all labels. |
| 2 | Right-click on a label to customize only that label. |

7. Right-Click 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 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.

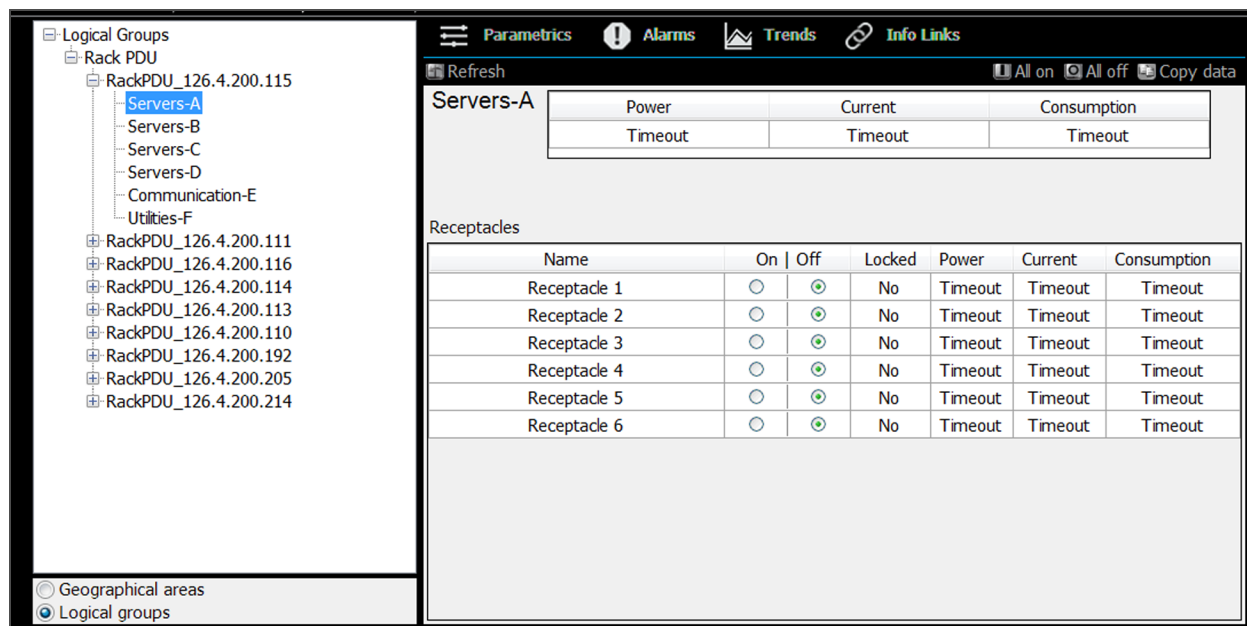
10.4 Create Logical Groups

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.

Figure 10.3 Logical groups in the navigation tree



To create a logical group:

1. Start the Viewer with permission to configure navigation views (see [Assigning Users to Groups](#) on page 84).
2. Click the **Configure** menu, then choose **Views**.
3. Click 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 an existing group, then click **Edit** to make changes to the selected group.
 - Click 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 [Group Properties - Logical Groups](#) on page 65.
6. To remove a group from the tree, Click the group, then click **Delete**.
7. To move a group in the tree, Click the group, then use the up and down arrows in the center.
8. Click **OK** to save changes.

10.4.1 Group Properties - Logical Groups

To open the Group Properties window, see [Create Logical Groups](#) on page 64.

- 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 [Info Links](#) on page 52).
- Click **OK** to close the window.
- Be sure to click **OK** in the Logical Group Properties window to save the changes.

11 CONFIGURING SHUTDOWN CLIENTS

NOTE: This feature requires Vertiv™ or a third-party shut-down software.

This section describes how to configure shutdown client computers so they may be selected for shutdown actions (see [Configure Shutdown Actions](#) on page 76).

Before adding shutdown clients:

- The shut-down software must be installed on all workstations and servers that require orderly shutdown.
- Any required license is installed on the Nform server.

To configure shutdown clients:

- Start the Viewer with permission to manage shutdown clients (see [Assigning Users to Groups](#) on page 84).
- Click 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 [Add a Shutdown Client](#) on page 66.
 - **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 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 host name.
 - 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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure > Shutdown Clients**.
3. In the Shutdown Clients window, click the **Add** button. The Shutdown Client Properties window opens.
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. In the Client Type box, select the type of shut-down software client.
7. In the Hostname or IP Address box, enter the client computer's IP address or host name, 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 |
|--------------------|-----------------------|------------------------|
| Shut-down software | 3029 | 3027 |
| Standard SNMP | 162 | 161 |

9. Enter a string in the default Trap Community.
10. Click **OK**.
11. Continue adding workstations that are running the shut-down software, then proceed to [Configure Shutdown Actions](#) on page 76.

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12 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 client computers running shut-down software.
- **Forward trap:** sending traps received to a specific computer (host name 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

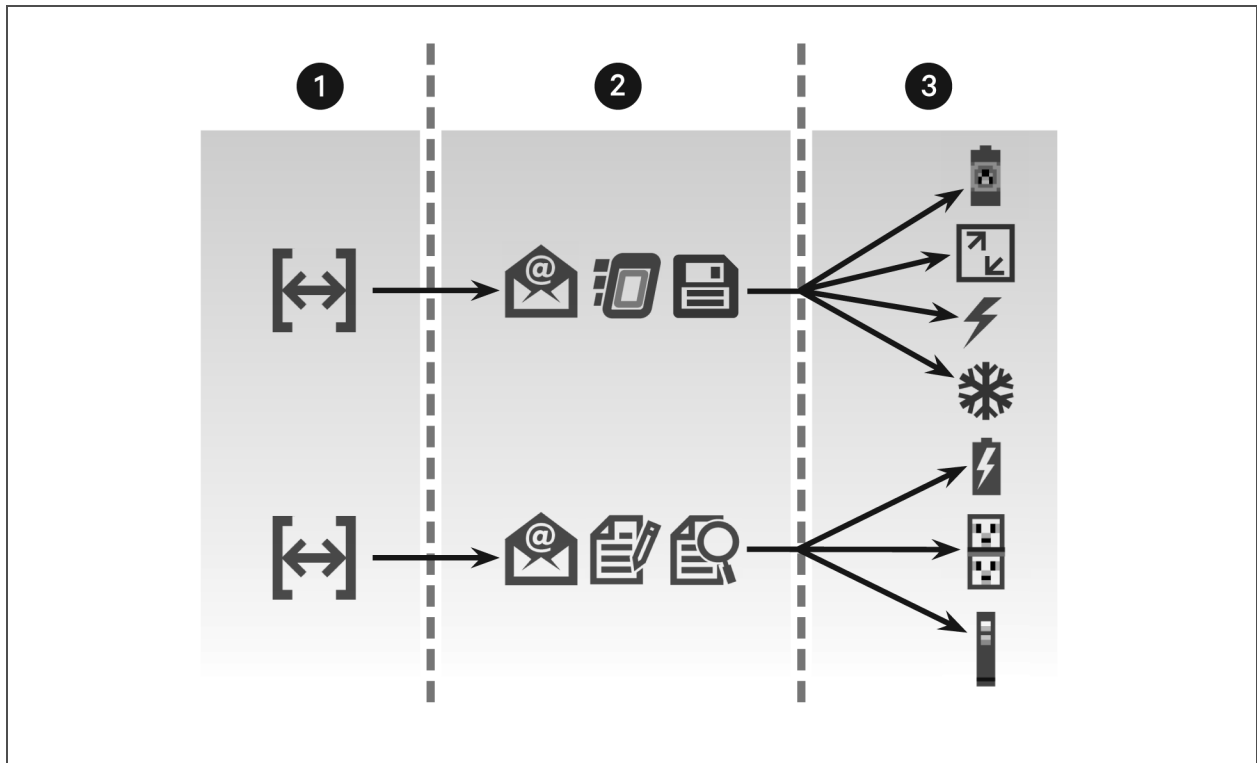
Setting up actions involves three steps, as shown in the example below:

1. Create an action set—a named group of individual actions (see [Configure an Action Set](#) on page 70).
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 [Configure an Action Set](#) on page 70).

3. Link action sets to managed devices (see [Map Action Sets to Devices and Alarms](#) on page 81).

Any action set can be linked to any configured devices, and the diagram shows 2 examples.

Figure 11.1 Example action configurations



| ITEM | DESCRIPTION |
|------|--|
| 1 | Create a named group of individual actions, the Action Set |
| 2 | Add actions to the set, for example: send e-mail(s), run commands, write files, shutdown, forward trap, read and write data. |
| 3 | Link the action sets to devices. |

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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Actions** icon at the bottom of the window (or click 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: **Email**, **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:
 - [Configure E-Mail Actions](#) on page 71 for customized e-mail messages to selected recipients
 - [Configure Run Command Actions](#) on page 74 to launch scripts when alarms are received
 - [Configure Write File Actions](#) on page 75 to record alarm information in a file
 - [Configure Shutdown Actions](#) on page 76 for graceful shutdown of computers running shut-down software.
 - [Configure Forward Trap Actions](#) on page 77 to send traps to a specific computer
 - [Configure Read Data Actions](#) on page 78 to collect samples of data points from a device
 - [Configure Write Data Actions](#) on page 79 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 the name, then click the Up or Down arrow.
 - To change an action's properties, click the name, then click the **Edit** button and make changes.
 - To remove an action from the list, click 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 Email 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 [Assigning Users to Groups](#) on page 84).
2. Open the E-Mail Action Properties window (see [Configure an Action Set](#) on page 70).
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 email address (see [Configuring Users and Groups](#) on page 83).
 - 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 the following table).
8. Uncheck **Automatically send to recipient's server** if using Gmail or another SMTP server requiring authentication.

Table 11.1 Substitution fields for e-mail messages

| SUBSTITUTION FIELD | DESCRIPTION |
|-----------------------|--|
| Substitution 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 <i>Nform</i> |
| Device address | The IP address or domain name of the device that sent the alarm |
| Alarm name | The alarm name—for example, <i>High Temperature</i> or <i>On-Battery</i> |
| Alarm description | The alarm description |
| Alarm severity | The severity level of the alarm—for example, <i>Critical</i> |
| Alarm state | The state of the alarm— <i>Active</i> or <i>Cleared</i> |
| RSD site ID | A string supplied by Liebert Services to identify a group of devices |
| RSD device tag | A string supplied by Liebert Services to identify a particular device |
| Alarm ID | A numeric identifier for the alarm's type |

SMTP Server

1. 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 [Server Options - SMTP Tab](#) on page 39). This window is available from the button in the E-Mail Action Properties window or the Configure menu as described in [Server Options - SMTP Tab](#) on page 39.

Use the **Send Test** button to verify the e-mail address is reachable (see step [5 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.](#) on page 72 in [Configure E-Mail Actions](#) on page 71).

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.

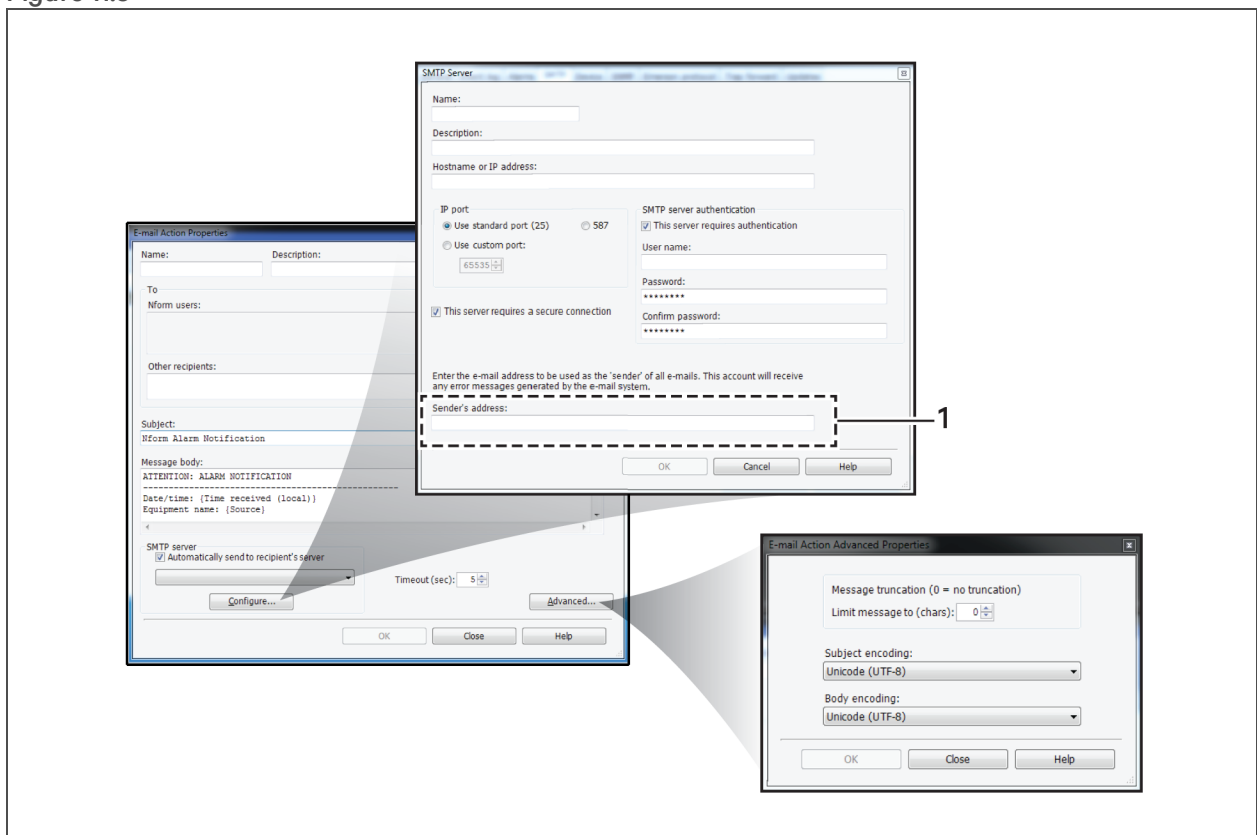
To specify a server that has not yet been configured, click the **Configure** button to open the SMTP Server window (see Figure 11.2 on the next page, and [Server Options - SMTP Tab](#) on page 39). Configure the server and click **OK**, then choose that server from the drop-down list.

- 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.
2. The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.

3. Click the **Advanced** button to open the E-Mail Action Advanced Properties window, see Figure 11.2 below.
 - 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 changes in the E-Mail Action Advanced Properties window.
4. Click **OK** to save changes in the E-Mail Action Properties window.

Figure 11.2 Configure SMTP Server and Advanced E-mail Properties

Figure 11.3



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 [Assigning Users to Groups](#) on page 84).
2. Open the Run Command Action Properties window (see [Configure an Action Set](#) on page 70).
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.

- 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.

NOTE: The Browse button appears only when using the Viewer on the application server where the full Nform package is installed; see [Installation](#) on page 9.)

- 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 the following table). These fields will be appended to the Run command line.

Table 11.2 Substitution fields for command-line arguments

| SUBSTITUTION 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 <i>Nform</i> |
| Device address | The IP address or domain name of the device that sent the alarm |
| Alarm name | The alarm name—for example, <i>High Temperature</i> or <i>On-Battery</i> |
| Alarm description | The alarm description |
| Alarm severity | The severity level of the alarm—for example, <i>Critical</i> |
| Alarm state | The state of the alarm— <i>Active</i> or <i>Cleared</i> |
| RSD site ID | A string supplied by Liebert Services to identify a group of devices |
| RSD device tag | A string supplied by Liebert Services to identify a particular device |
| Alarm ID | A numeric identifier for the alarm's type |

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

12.2.3 Configure Write File Actions

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

- Start the Viewer with permission to configure write file actions (see [Assigning Users to Groups](#) on page 84).
- Open the Write File Action Properties window (see [Configure an Action Set](#) on page 70).
- 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.
- In the Description box, enter text to describe the action, if desired.
- 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 [Installation](#) on page 9.) If the file does not exist, Nform will create it.

- 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 the following table).

Table 11.3 Substitution 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 <i>Nform</i> |
| Device address | The IP address or domain name of the device that sent the alarm |
| Alarm name | The alarm name—for example, <i>High Temperature</i> or <i>On-Battery</i> |
| Alarm description | The alarm description |
| Alarm severity | The severity level of the alarm—for example, <i>Critical</i> |
| Alarm state | The state of the alarm— <i>Active</i> or <i>Cleared</i> |
| RSD Site ID | A string supplied by Liebert Services to identify a group of devices |
| RSD Device tag | A string supplied by Liebert Services to identify a particular device |
| Alarm ID | A numeric identifier for the alarm's type |

- Enter the upper limit of the file size in MB in the **Maximum size** box. The default is 1 MB.
- 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.
- An encoding method may be specified in the **File encoding** box. The default is *Unicode (UTF-8)*.
- The Timeout box displays the number of seconds to wait for a valid response if the action fails. The default is 5 seconds.
- Click **OK** to save changes.

12.2.4 Configure Shutdown Actions

NOTE: This feature requires a computer running shut-down software (see [Ordering Parts and Licenses From Vertiv](#) on page 129).

To configure a Shutdown action:

- Start the Viewer with permission to configure shutdown actions (see [Assigning Users to Groups](#) on page 84).
- Open the Shutdown Action Properties window (see [Configure an Action Set](#) on page 70).
- 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.
- In the Description box, enter text to describe the action, if desired.

5. In the Shutdown Type box, click 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 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 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 [Server Options - Trap Forwarding Tab](#) on page 44). (Trap Forwarding is available only in Nform Enterprise.)

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 [Assigning Users to Groups](#) on page 84).
2. Open the Forward Trap Action Properties window (see [Configure an Action Set](#) on page 70).
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 Host name 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 changes.

12.2.6 Configure Read Data Actions

NOTE: This feature requires a license with Advanced Communications (see [Ordering Parts and Licenses From Vertiv](#) on page 129).

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 [Data Logging](#) on page 53).

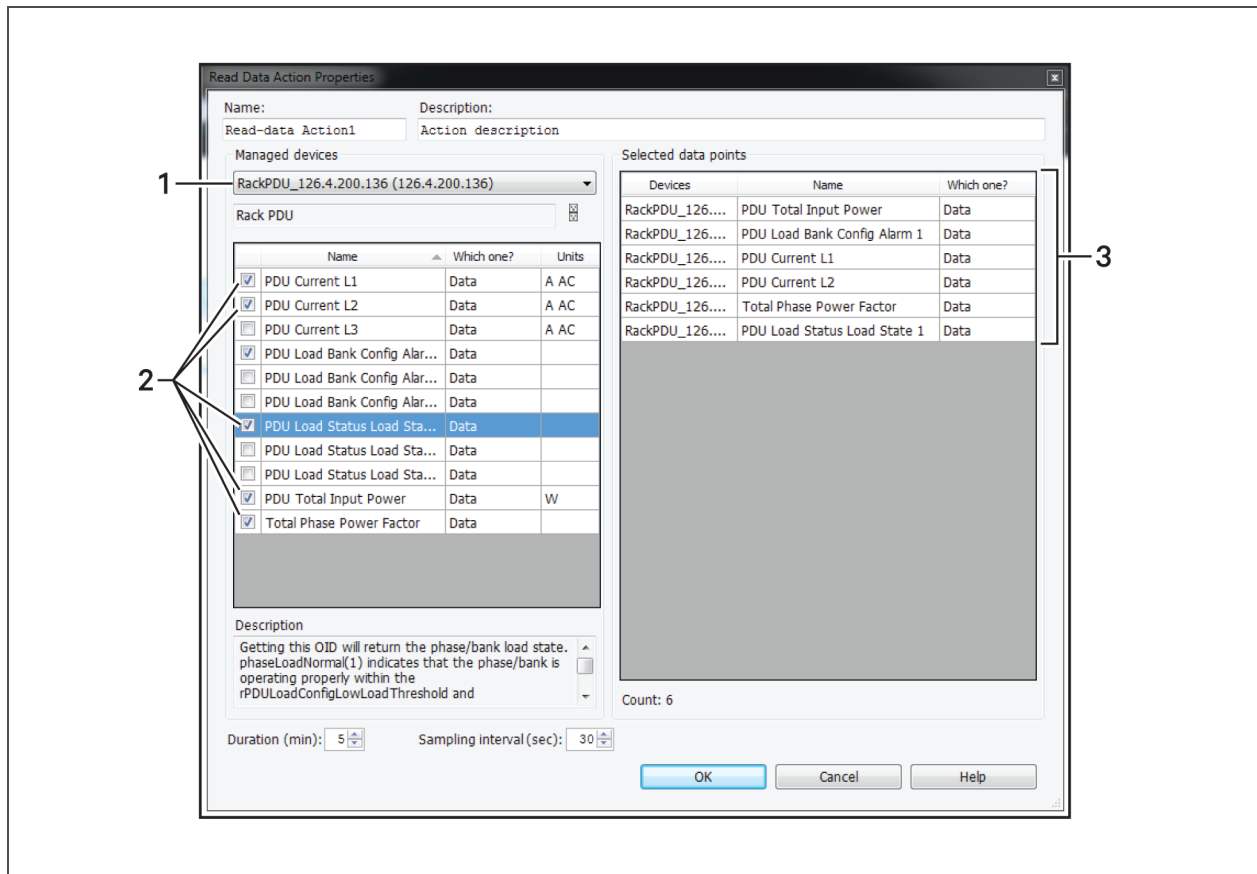
Both features collect the same type of data, which may be viewed in a trend graph (see [Navigate - Trends View](#) on page 106) or exported to a text file (see [Export Data Log History](#) on page 91).

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 [Assigning Users to Groups](#) on page 84).
2. Open the Read Data Action Properties window, see Figure 11.4 on the facing page (see [Configure an Action Set](#) on page 70).
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 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 changes.

Figure 11.4 Read Data Action Properties



| ITEM | DESCRIPTION |
|------|---|
| 1 | Select a device. |
| 2 | Check mark to select data points. |
| 3 | The selected data points display in the list. |

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:

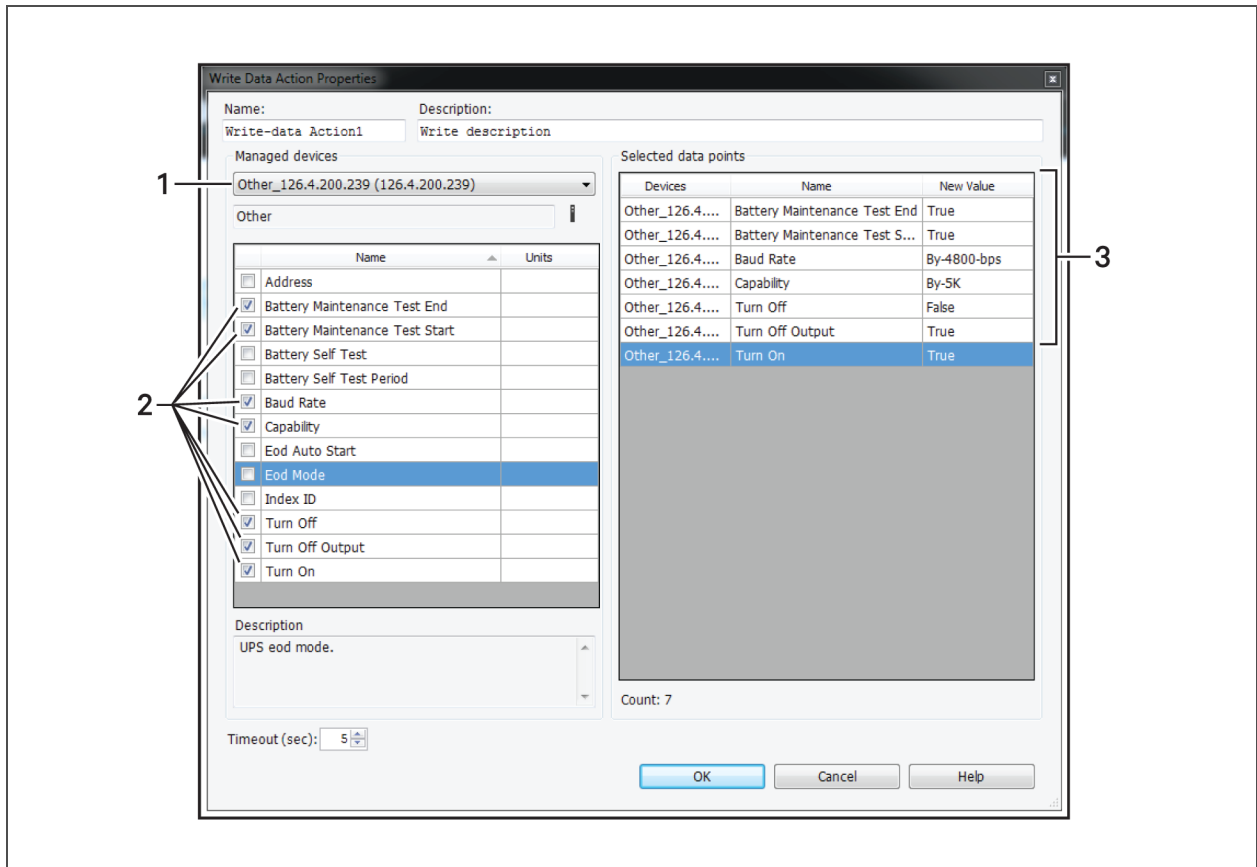
1. Start the Viewer with permission to configure write data actions (see [Assigning Users to Groups](#) on page 84).
2. Open the Write Data Action Properties window, Figure 11.5 on the next page (see [Configure an Action Set](#) on page 70).
3. In the Name box, enter an identifying name for the action—for 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.
The available data points for the selected device appear in the window below the device name, along with units where appropriate.
6. Click 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 changes.

Figure 11.5 Write Data Action Properties



| ITEM | DESCRIPTION |
|------|---------------------------------------|
| 1 | Select a device. |
| 2 | Check mark to select the data points. |
| 3 | Enter the new values in the list. |

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 each device. 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 [Assigning Users to Groups](#) on page 84).


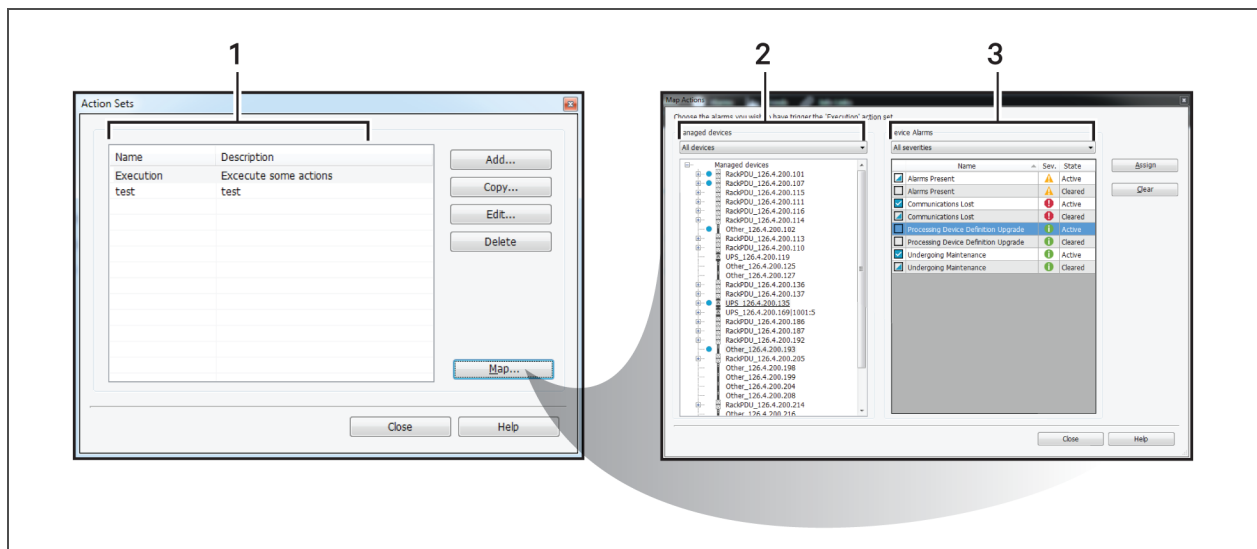
2. Click  at the bottom of the window (or click **Configure > Actions**).
3. In the Action Sets window, click an action set, then click the **Map** button, Figure 11.6 below.

Figure 11.6 Action-set Mapping






| ITEM | DESCRIPTION |
|------|--|
| 1 | Choose an action set. |
| 2 | Choose one or more devices. |
| 3 | Choose from the alarms that are common to the selected devices, then click Assign. |

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. To further filter the devices, select **Select device types** from the drop-down list, to display a list of devices by manufacturer and model.
 - Click a device at left to display all applicable alarms in the right side of the window. (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. (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):

Table 11.4 Device-alarm mapping status indicators

| BOX | APPEARANCE | INDICATES |
|---|-------------|--|
|  | Filled | Alarm is mapped to All selected devices for the action set. |
|  | Half-filled | Alarm is mapped to at least one selected device for the action set. |
|  | Empty | Alarm is mapped to none of the selected devices for the action set. |

13 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 [Add Individual Users](#) on page 83). 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 [Assigning Users to Groups](#) on page 84).

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 [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Users & Groups** icon at the bottom of the window (or click the **Configure** menu, then choose **Users and Groups**).
The Users list displays all configured users.
3. 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.

NOTE: If you are using Single Sign-on (SSO), you must include the domain in the name field, in the format: domain\username. See [Setting Up Single Sign-on](#) on page 86 to enable SSO.

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 2 to 14 characters—with any combination of letters, numerals and symbols. Be sure to record the password in a secure place.

NOTE: If you are using Single Sign-on (SSO), leave the password fields blank. SSO will not work if a password is entered. See [Setting Up Single Sign-on](#) on page 86 to enable SSO.

8. Enter this information about the user for 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 [Configuring Views for the Navigate Tab](#) on page 59.

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

NOTE: If you are using Single Sign-on (SSO), make sure that "User must change password at next login" is un-checked. SSO will not work with this feature. Checking any of the other features does not affect SSO. See [Setting Up Single Sign-on](#) on page 86 to enable SSO.

12. Click the **User Options** button for additional features (see [Configuring User Options](#) on page 35).
13. When finished, click the **OK** button to save 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 that follows).
2. Click the **Configure Users & Groups** icon at the bottom of the window (or Click the **Configure** menu, then choose **Users and Groups**).
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 12.1 Summary of group privileges

| CATEGORY | PRIVILEGE | FOR DETAILS, SEE: |
|-------------------|--------------------------------------|--|
| Manage Users | Configure users | Add Individual Users on page 83 |
| | Configure groups | Assigning Users to Groups on page 84 (this section) |
| Manage Devices | Configure devices | Add Devices to the Configuration on page 47 |
| | Set device data | Navigate - Parametrics View on page 105 (Edit option) |
| | Configure navigation views | Configuring Views for the Navigate Tab on page 59, including: Add or Edit Views on page 59 Add or Edit an Area on page 60 Place Devices in Floor Plans on page 61 Create Logical Groups on page 64 |
| | Discover new devices ¹ | Detect Devices on a Network on page 48 |
| | Configure data logging ¹² | Data Logging on page 53 |
| | Edit device definitions ¹ | Device-properties Alarms tab on page 53 (both tabs): Device-properties Alarms tab on page 53 Device-properties Data Tab on page 53 |
| Manage Alarms | Acknowledge and close alarms | Navigate - Alarms View on page 106 Managing Alarms on page 110 |
| Manage Actions | Assign actions | Map Action Sets to Devices and Alarms on page 81 |
| Configure Actions | E-mail | Configure E-Mail Actions on page 71 |
| | Run command | Configure Run Command Actions on page 74 |
| | Write file | Configure Write File Actions on page 75 |
| | Shutdown ⁴ | Configure Shutdown Actions on page 76 |
| | Forward trap ³ | Configure Forward Trap Actions on page 77 |
| | Read data | Configure Read Data Actions on page 78 |
| | Write data | Configure Write Data Actions on page 79 |
| Manage System | Server parameters | Server Options - General Tab on page 37 (Locale) Server Options - Alarms Tab on page 38 Server Options - Device Tab on page 41 (Velocity Protocol) |
| | Licenses | Add a Liebert Nform License Key on page 28 |
| | Global device parameters | Server Options - Device Tab on page 41 (Global status polling) Server Options - SNMP Tab on page 42 |
| | Email parameters | Server Options - SMTP Tab on page 39 |
| | Start/stop server | Application Menu - Service on page 117 Tools Menu - Install DTD on page 120 |
| | Logging parameters | Server Options - General Tab on page 37 (Audit log file) |

Table 12.1 Summary of group privileges (continued)

| CATEGORY | PRIVILEGE | FOR DETAILS, SEE: |
|----------|-----------------------------------|--|
| | | Server Options - Event Log Tab on page 38 Server Options - Device Tab on page 41 (Data logging storage ²) |
| | SNMP trap forwarding ³ | Server Options - Trap Forwarding Tab on page 44 |
| | Shutdown clients ⁴ | Configuring Shutdown Clients on page 66 |

1. Selecting this option automatically gives permission to configure devices (**Configure devices** box is checked & disabled).

2. Requires a license with Advanced Communications (see [Ordering Parts and Licenses From Vertiv](#) on page 1).

3. Requires a license with Advanced Notifications (see [Ordering Parts and Licenses From Vertiv](#) on page 1).

4. Requires a shutdown client license (see [Ordering Parts and Licenses From Vertiv](#) on page 1).

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

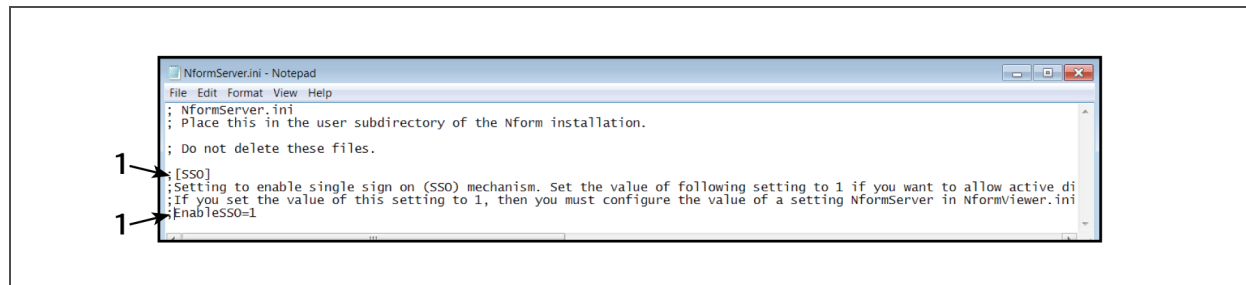
13.3 Setting Up Single Sign-on

Single Sign-on (SSO) automatically uses the user credentials of a domain network.

Users are added with domain information in the user name and without a password because they are already logged-in to the network on which Nform is running (see [Add Individual Users](#) on page 83. to set up SSO users).

To enable SSO, you must update the Nform configuration files as follows:

- Open Windows Explorer, browse to C:\Nform\user, and open NformServer.ini in a text editor.
 - Make sure that word wrap is off in the text editor.
- Un-comment the lines "EnableSSO=" and "[SSO]" by removing the semicolon from the beginning of the row as shown in the following figure, then save and close the file.



| ITEM | DESCRIPTION |
|------|--|
| 1 | Delete the semi-colon for these lines. |

3. Set the value for the line to **EnableSSO=1**.

The following figure shows the NformServer.ini file with the correct formatting.

```

NformServer.ini - Notepad
File Edit Format View Help
; NformServer.ini
; Place this in the user subdirectory of the Nform installation.
; Do not delete these files.

[SSO]
;Setting to enable single sign on (SSO) mechanism. Set the value of following setting to 1 if you want to allow active dir
;If you set the value of this setting to 1, then you must configure the value of a setting NformServer in NformViewer.ini
EnableSSO=1
  
```

4. In same folder, C:\Nform\user, open NformView.ini in a text editor.
5. Un-comment the lines "NformServer =" and "[SSO]" by removing the semicolon from the beginning of the row as shown in the following figure, then save and close the file.

```

NformViewer.ini - Notepad
File Edit Format View Help
; NformViewer.ini
; Place this in the user subdirectory of the Nform installation.
; Do not delete these files.

[SSO]
;You must specify the IP address/ host name of the the Nform server to connect to when single sign on mechanism (SSO) is e
NformServer = 10.203.90.165
  
```

| ITEM | DESCRIPTION |
|------|--|
| 1 | Delete the semi-colon for these lines. |

6. Set the value for the line to the IP address of the SSO server.

The following figure shows the NformViewer.ini with the correct formatting.

```

NformViewer.ini - Notepad
File Edit Format View Help
; NformViewer.ini
; Place this in the user subdirectory of the Nform installation.
; Do not delete these files.

[SSO]
;You must specify the IP address/ host name of the the Nform server to connect to when single sign on mechanism (SSO) is e
NformServer = 10.203.90.165
  
```

7. Restart the Nform server for the changes to take effect:
 - On the Nform Viewer menu bar, click **Application > Nform Tools**.
 - On the Nform Tools dialog, click **Application > Service**.
 - On Service Control, click **Restart**.

SSO is enabled.

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14 USING THE TOOLS MENU

The Tools menu offers options to export data to text files that may be opened with a text editor, spreadsheet program or PDF reader. Logs that may be exported include:

- Alarm History log
- Action History log
- Data Log History

The Tools menu also permits creating reports in text or chart form that detail the status or operation of a device, either at a particular time or during a specified period.

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 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 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 [Data Logging](#) on page 53 and [Configure Read Data Actions](#) on page 78). *Data logging requires a license with Advanced Communications (see [Ordering Parts and Licenses From Vertiv](#) on page 129).*
2. Click 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,
```

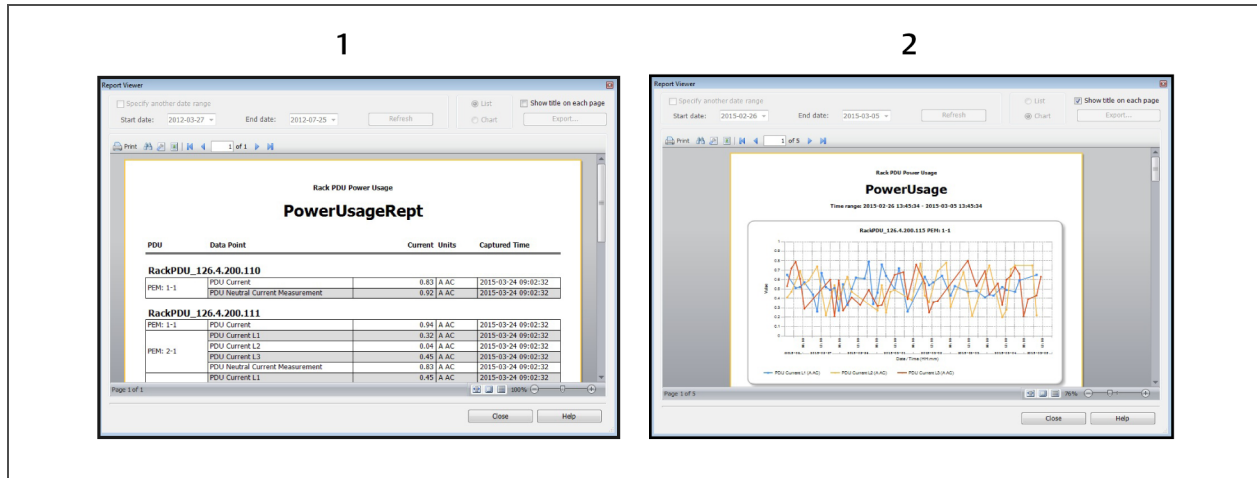
14.4 Reports

To create a report about a monitored device, Click the Tools menu and choose **Reports**.

- In the Reports window, Click the **Add** button.
- Choose the type of report. The available choices will depend on the devices being monitored. Possible options are:
 - UPS Asset
 - UPS Status
 - Rack PDU power usage
 - Rack PDU temperatures
 - Rack PDU utilization
- Click **OK**.
- Configure the report's properties
 - Name the report; using a logical name will assist in understanding the data
 - Give the report a description to assist in understanding the data. A report is generated for each device.
 - Choose **Latest** or **Historical** to set the report's time frame. Choosing **Historical** enables the setting the period beside **Last**.
 - **Access**, set to **Private** in the example, determines who can view the report. **Private** restricts the report to the report's creator. Setting access to **Public** permits others to view the report. **Private** is indicated by a latched lock, **Public** by an open lock.
 - **Display type** determines how the report appears. A **List** is a spreadsheet; **Chart** shows data points at the specified series of times graphically. Lists are more useful in showing a device's status at a particular time. Charts are helpful in showing a device's history. Because of the nature of the data, charts are available only for historical data.
 - **Data selection** permits choosing All Devices or one or more devices.
- Click the **Preview** button to see a dummy report with the selected properties. Nform does not collect data for the preview, instead generating random data points to show the report's general appearance.

- Click **OK** to finish setting the report's properties. This saves the report's settings and closes the report properties window. (This saves only the settings that will be used to generate the report.)
- Click **View** in the main Reports window to generate and see the report.

Figure 13.1 Example reports



| ITEM | DESCRIPTION |
|------|--------------|
| 1 | List report |
| 2 | Chart report |

Reports are not automatically saved. To retain a report, export it by clicking on the Tools menu, choosing **Export** and selecting the report.

Once a report is generated for one or more devices, the settings can be used later to generate a report for the same devices, time period and type of report.

To view such a report, go to Reports page, select a report and click **View**. Liebert Nform will pull information from the database as specified in the previous report and display the new data

After a report is generated, its properties can be edited to show a different time, add or remove devices. The time period may be changed in the View window. Adding or removing a device requires returning the Reports window and choosing **Edit**.

NOTE: When creating a new report shortly after a server start or after adding new devices, verify that all devices are ready to communicate by selecting each device in the navigation view's Parametrics tab to ensure that data points are being read.

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15 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.

- On the Viewer, click the **Help > Contents** on the menu bar.
The NformHelp window opens with the Contents tab selected

15.2 Index

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

- On the Viewer, click the **Help > Index** on the menu bar.
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.

- On the Viewer, click the **Help > Supported Device Types** on the menu bar.
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.


- On the Viewer, click the **Help > Technical Support** on the menu bar.
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 [Server Options - Updates Tab](#) on page 45 to have this done automatically.

To check for updates manually:

- Start the Viewer with permission to manage licenses (see [Assigning Users to Groups](#) on page 84).
- Click the **Help > Check for Updates** on the menu bar.
 - If no updates are available, a notification window appears.
– or –
 - 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 file name 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, , appears in the Viewer when updates are available. Clicking on this button opens the Updates Available window described previously.

To download updates manually, go to the Software Assurance Web site (see [Technical support contact information](#) on page 1).

15.6 About Liebert Nform

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

- On the Viewer, click the **Help > About Liebert Nform** on the menu bar. The about dialog opens.
- Click any tab—Viewer, Server, Database, License or Registration—to view the appropriate information. 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 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:

- [Dashboard Tab](#) on page 97 - quick graphical look at the current status of managed devices
- [Navigate Tab - Area](#) on page 102 - hierarchical view of configured areas, with detailed data
- [Navigate Tab - Device](#) on page 104 - hierarchical view of managed devices, with detailed data
- [Alarms Tab](#) on page 108 - 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:

- [Dashboard View](#) on page 98 - overview of the Dashboard window
- [Select Devices for Gadgets](#) on page 98 - use status buttons and filters to select devices
- [Customize Gadgets](#) on page 101 - limit devices shown, change graph type and colors
- [Add Gadgets](#) on page 101 - create a new gadget
- [Global Gadget Options](#) on page 102 - additional options to change the appearance of any pie chart

16.1.1 Dashboard View

The Dashboard tab is the default view, showing all of the devices in gadgets, when the Viewer is opened.

NOTE: Changing the size of the system-display text from 100% may affect the appearance and location of the icons and menus.

Figure 15.1 Dashboard tab view



| ITEM | DESCRIPTION |
|------|---------------|
| 1 | Dashboard tab |
| 2 | Gadgets |

- Click the Dashboard tab to display **gadgets** that show device status data in graph or list form in the viewer's display area.
- The following default gadgets appear after installation (see [Add Gadgets](#) on page 101 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

16.1.2 Select Devices for Gadgets

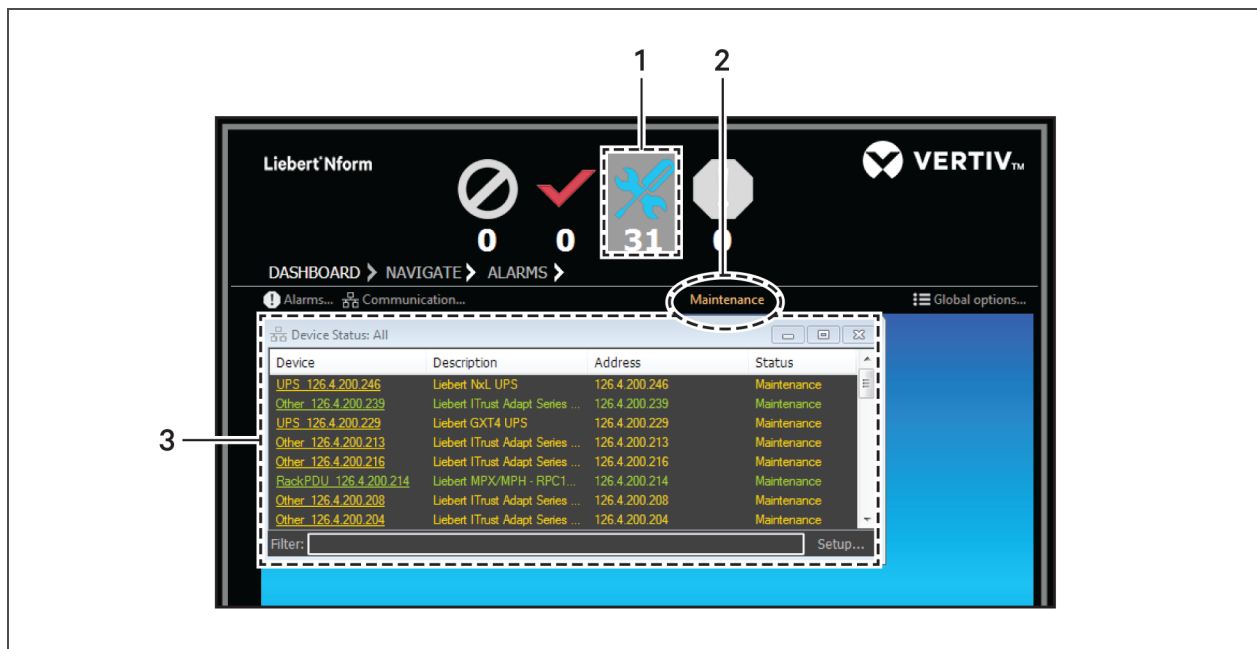
Status buttons and filters offer a quick way to select which devices to show in gadgets.

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 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.

Figure 15.2 Using status buttons



| ITEM | DESCRIPTION |
|------|--|
| 1 | Status button selected, outlined in gray. |
| 2 | Name of selected status category (Maintenance in this example). |
| 3 | The device-status gadget shows only the devices in the selected status category (Maintenance). |

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.

Figure 15.3 Filters on gadgets



| ITEM | DESCRIPTION |
|------|-------------------------------------|
| 1 | Filter on the alarm-status gadget |
| 2 | Filter on the alarm-severity gadget |

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 [Global Gadget Options](#) on page 102 for additional sizing and label options for pie charts.

To customize a gadget:

- Click **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 a category—for example, *Normal* or *Unacknowledged*—then click 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 the **Define Custom Colors** button to select a different color). 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 [Global Gadget Options](#) on page 102). 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 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 [Customize Gadgets](#) on page 101).
- 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 **Global Options** in the right side of the window—with the Dashboard tab selected—to open the Configure Global Gadget Display window.
- Click 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 [Customize Gadgets](#) on page 101).
 - 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:

- [Navigate - Floor Plan View](#) on page 103 - display of placement of devices in the selected area
- [Navigate - Alarms View](#) on page 103 - listing of alarms for the selected area
- [Navigate - Info Links View](#) on page 104 - click-able 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 [Add Devices to the Configuration](#) on page 47).

Customized views may be created for any reason and may be specified as the opening view for any user (see [Configuring Views for the Navigate Tab](#) on page 59).


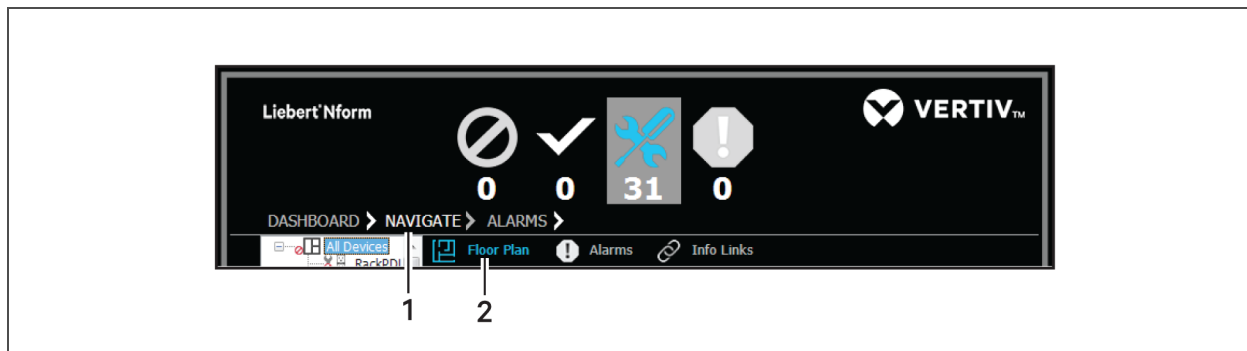
Double-clicking the arrow next to the tab name, , opens the Navigate view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Navigate tab disappears from the viewer as long as the separate window remains open.

Figure 15.4 View options for areas on the Navigate tab



| ITEM | DESCRIPTION |
|------|--|
| 1 | Navigate tab selected |
| 2 | Views available for each area (Floor Plan, Alarms, Info Links) |

16.2.1 Navigate - Floor Plan View

- Click the **Navigate** tab, then click an area in the tree at left.
- In the right side of the window, click 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 [Informational Icons in the Navigation Tree](#) on page 111).

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 [Alarms Tab](#) on page 108). The Alarms view described in this section shows alarms for all devices that are part of the selected area.

To view this data:

- Click the **Navigate** tab, then click an area in the tree at left—the example below shows the **All Devices** area selected.
- In the right side of the window, click 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 an alarm in the list, then click any of the following buttons above the alarm list for additional options, which are available to users with permission to manage alarms (see [Assigning Users to Groups](#) on page 84):
 - **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 [Alarms Tab](#) on page 108 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 the **Navigate** tab, then click an area in the tree at left.
- In the right side of the window, click 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:
 - [Info Links](#) on page 52 for details on adding or changing an info link
 - [Add or Edit an Area](#) on page 60 to add an info link for an area
 - [Group Properties - Logical Groups](#) on page 65 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:

- [Navigate - Web View](#) on page 105 - access to the device using a Web browser interface
- [Navigate - Parametrics View](#) on page 105 - tabular display of parametric data for the device
- [Navigate - Alarms View](#) on page 106 - listing of alarms for the selected device
- [Navigate - Trends View](#) on page 106 - graph of data points collected through data logging
- [Navigate - Info Links View](#) on page 104 - click-able 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 [Add Devices to the Configuration](#) on page 47).

Customized views may be created for any reason and may be specified as the opening view for any user (see [Configuring Views for the Navigate Tab](#) on page 59).


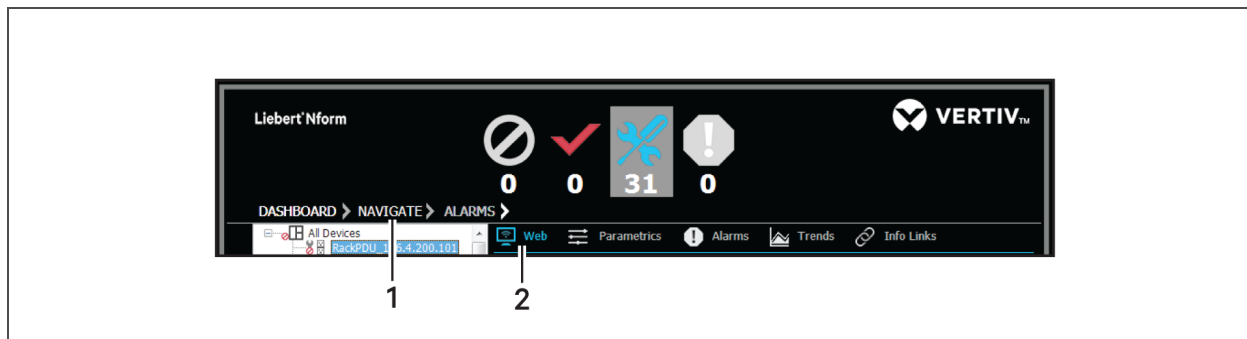
Double-clicking the arrow next to the tab name, , opens the Navigate view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Navigate tab disappears from the original window as long as the separate window remains open.

Figure 15.5 View options for devices on the Navigate tab



| ITEM | DESCRIPTION |
|------|---|
| 1 | Navigate tab selected |
| 2 | Views available for each device (Web, Parameters, Alarms, Trends, Info Links) |

16.3.1 Navigate - Web View

- Click the **Navigate** tab, then click a device in the tree at left.
- In the right side of the window, click 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 the **Navigate** tab, then click a device in the tree at left.
- In the right side of the window, click the **Parameters** tab to display parametric data for the selected device in the Viewer Display Area.
- Two types of parametric data are available. Click 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 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 **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 [Assigning Users to Groups](#) on page 84).

When Edit mode is active, this tab toggles to **Read only** - leave Edit mode and return to display-only mode (see [Device-properties Alarms tab](#) on page 53 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 [Alarms Tab](#) on page 108). The Alarms view described in this section shows alarms for a **single device**, rather than for all devices.

To view this data:

- Click the **Navigate** tab, then click a device in the tree at left.
- In the right side of the window, click 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 an alarm in the list, then click these tabs above the list for additional options, which are available to users with permission to manage alarms (see [Assigning Users to Groups](#) on page 84):
 - **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 [Alarms Tab](#) on page 108 for more information).

16.3.4 Navigate - Trends View

NOTE: Data logging requires a license with Advanced Communications (see [Ordering Parts and Licenses From Vertiv](#) on page 129). This feature requires logged data via Data Logging or the Read Data action (see [Data Logging](#) on page 53 and [Configure Read Data Actions](#) on page 78).

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 the **Navigate** tab (below left), then click a device in the tree (left side of the window).
- In the right side of the window, click the **Trends** tab.
- Click the **Refresh** button—above the graph to the left—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 [Data Logging](#) on page 53 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.

16.3.5 Navigate Trends - Change the Range

- To change the time axis, click the **Range** button above 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.
- Scroll bars will appear along the axes of the graph. Those scroll bars can be used to pan. The scroll bars will disappear when “Undo all zoom” is selected from the context menu.
- Right-click anywhere on the graph area for a pop-up menu with these additional options:

| MENU OPTION | | DESCRIPTION |
|-----------------------|------------------|--|
| Print the graph image | Print setup... | Change settings for printing the graph |
| | Print... | Send the graph to a printer |
| Restore original view | Undo all zoom | Restore original view after zooming or panning |
| 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 |

16.3.6 Navigate - Info Links View

The Info Links tab displays information links for a selected device. These include both click-able 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 the **Navigate** tab, then click a device in the tree at left.
- In the right side of the window, click 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:
 - [Info Links](#) on page 52 for details on adding or changing an info link
 - [Add or Edit an Area](#) on page 60 to add an info link for an area
 - [Group Properties - Logical Groups](#) on page 65 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 [Navigate - Alarms View](#) on page 106). The Alarms tab described in this section shows alarms for **all** devices, rather than for a single device.

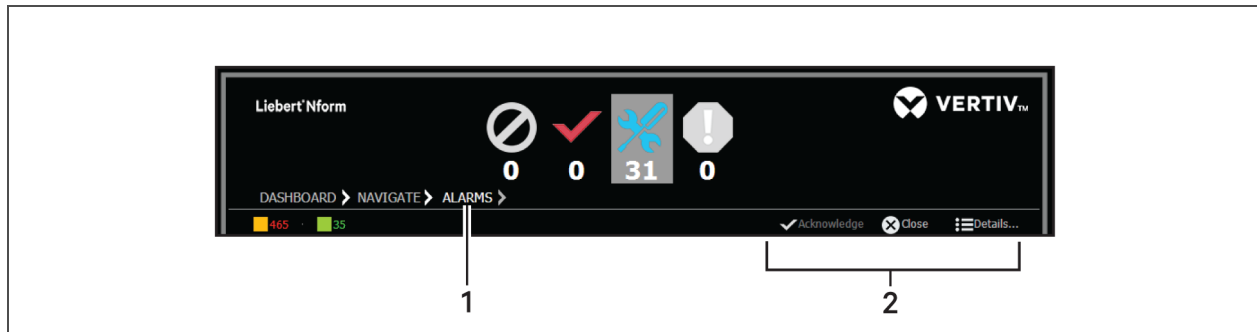
Double-clicking the arrow next to the tab name, , opens the Alarms view in a separate window, which can be dragged anywhere on the screen or to another monitor. The Alarms tab disappears from the original window as long as the separate window remains open.

16.4.1 Viewing Alarms

To view this data:

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

Figure 15.6 Alarms tab and alarm-management options



| ITEM | DESCRIPTION |
|------|--|
| 1 | Alarms tab selected |
| 2 | Alarm-management options (Acknowledge, Close, Details) |

- The Viewer Display Area displays history data for each alarm (see [Managing Alarms](#) on page 110):
 - **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 [Informational Icons in the Navigation Tree](#) on page 111)
 - **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 |
|---------------------|---------------------------|----------|-----------------|---------|-----------|
| 2016-12-16 09:53:24 | Utility failure - Cleared | Device12 | • Critical | * | |
| 2008-12-16 09:58:55 | Service started | Nform | • Informational | | IncidentA |

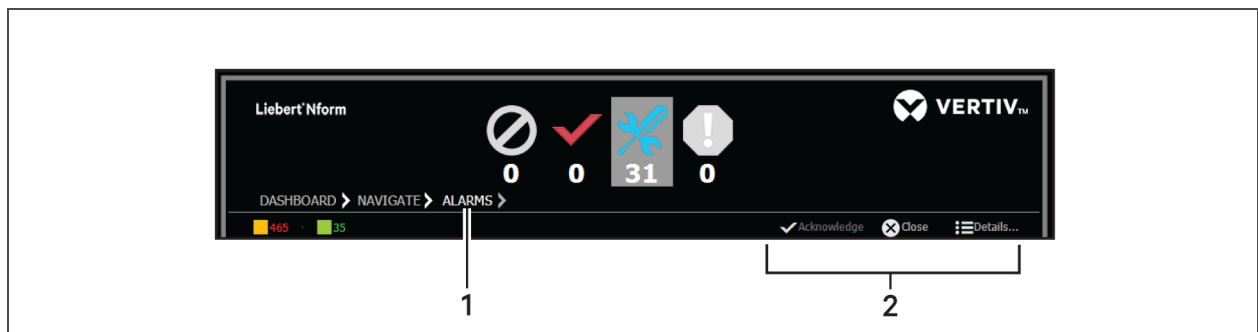
- Double-clicking on a device name—e.g., *Device12*—opens the Navigate tab view of that device. Double-clicking on any other part of an alarm listing opens the Alarm Details window (see [Managing Alarms](#) on page 110).
- To sort the list, click any heading—for example, *Alarm* or *Source*.
- Color-coded numbers of acknowledged and unacknowledged alarms appear above the Detail area.
- For a device in Maintenance mode (see [Maintenance Mode](#) on page 54): 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.

16.4.2 Managing Alarms

To manage alarms:

- Start the Viewer with permission to manage alarms (see [Assigning Users to Groups](#) on page 84)
- Click 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 these buttons to manage alarms:
 - **Acknowledge** - to acknowledge the selected alarm
 - **Close** - to remove the selected alarm from the display

Figure 15.7 Alarm management options



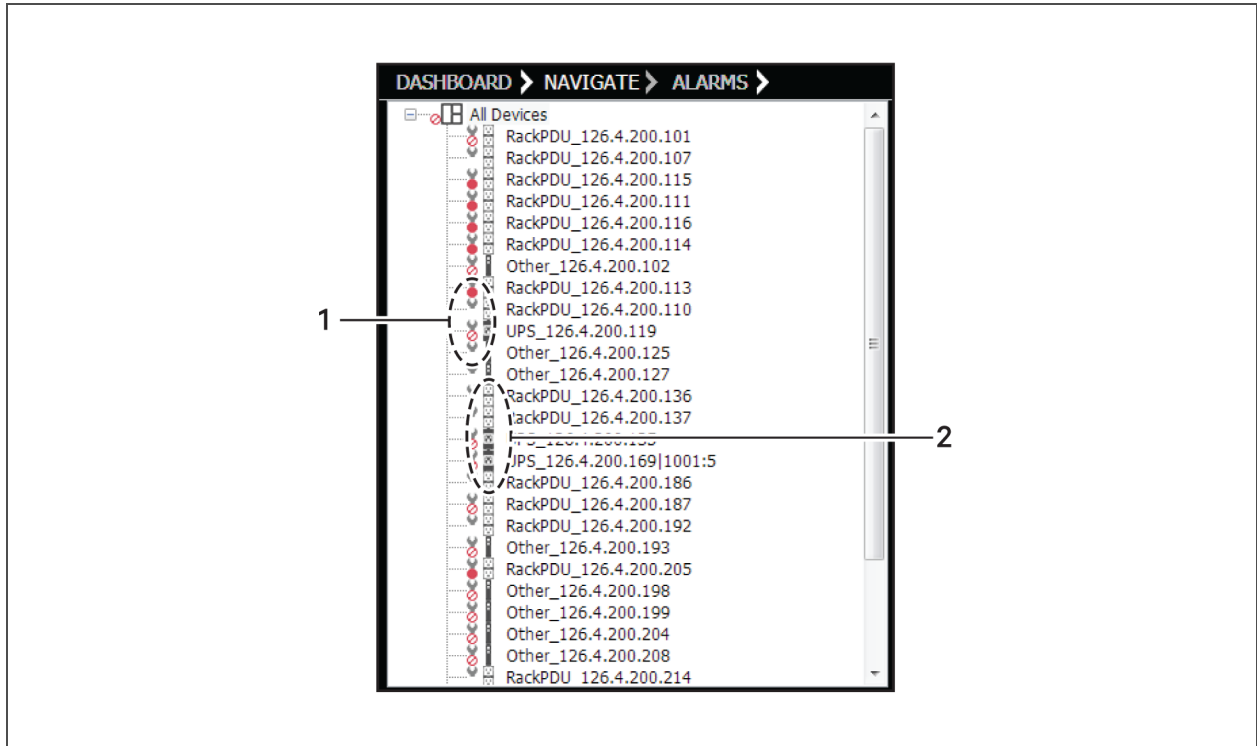
| ITEM | DESCRIPTION |
|------|--|
| 1 | Alarms tab selected |
| 2 | Alarm-management options (Acknowledge, Close, Details) |

- To view or add details for alarms, select one or more alarms in the list, then click the **Details** button to open the Alarm Details window.
 - 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 [Navigate - Trends View](#) on page 106).
 - 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.
















Figure 15.8 Icons in the Navigation tree



| ITEM | DESCRIPTION |
|------|--------------|
| 1 | Status icons |
| 2 | Device icons |

The following table summarizes the meaning of icons that indicate the status of monitored and managed devices.

Table 15.1 Informational icons summary

| ICON | DESCRIPTION |
|---|--|
| Device Icons | |
|  | Battery monitoring device |
|  | I/O device |
|  | Power device |
|  | Precision cooling device |
|  | Rack PDU device |
|  | UPS device |
|  | Other device |
| Status Icons (next to device) | |
|  | Device in normal status |
|  | Active alarm received from this device |
|  | Device in maintenance mode Appears for a device in maintenance mode above any status icon—e.g., <i>Active alarm</i> or <i>No communication</i> . |
|  | 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. |
| Alarm Icons | |
|  | Critical alarm |
|  | Warning alarm |
|  | Informational alarm |
|  | Maintenance mode See Maintenance Mode on page 54. |

17 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: |
|--|--|
| <ul style="list-style-type: none"> The Windows Services application allows you to stop the Liebert Nform service manually. | Stop the Liebert Nform Service on page 113 |
| <ul style="list-style-type: none"> The same Services application allows you to resume the Liebert Nform service without having to restart the computer. | Restart the Liebert Nform Service on page 114 |
| <ul style="list-style-type: none"> The service is stopped automatically during operations performed in the Tools application. | Using Nform Tools on page 115 |
| <ul style="list-style-type: none"> After being stopped automatically, the service restarts automatically when exiting the Tools application. | Application Menu - Close Nform Tools on page 117 |

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 [Application Menu - Service](#) on page 117) or from the Windows Services application, as described below.

17.1.1 Open the Services Application

1. Click the **Start** button, then **Control Panel**.
2. In the Control Panel window:
 - (Windows 7 and Server 2008 R2) Click **System and Security**.
 - (Windows Vista and Server 2008) Click **System and Maintenance**.
 - (Windows Server 2003) Click **Performance and Maintenance**.
3. Click **Administrative Tools**.
4. Double-Click **Services**.
 - (Windows Vista & Server 2008) Click **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 **Liebert Nform**, then Click **Stop** in the pop-up menu.
(Or Click **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:

- On the desktop, click **Start > Control Panel**, then select **System and Security > Administrative Tools > Services**.
- In the Services dialog, right-click **Liebert Nform**, then click **Restart** in the pop-up menu. (Or click **Liebert Nform**, then on the **Action** menu at the top of the window, then **Restart**.)

18 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 [Nform Tools](#) on page 31).

To open the application from the Start button:

- Click 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.
- Menus at the top of the window—**Application, Database** and **Tools**—are described in the following sections:
 - [Menus in Nform Tools](#) on page 116
 - [Application Menu](#) on page 116
 - [Database Menu](#) on page 117
 - [Tools Menu](#) on page 120
- 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 the following table.

Table 17.1 Nform Tools menu options - summary

| MENU | OPTION | FUNCTION | FOR MORE DETAILS, SEE: |
|-------------|-------------|--|--|
| Application | Service | Start, stop or restart the Liebert Nform service. | Application Menu - Service on page 117 |
| | Exit | Close the Tools application. (If the Liebert Nform service is stopped, it restarts automatically when the application is closed.) | Application Menu - Close Nform Tools on page 117 |
| Database | Connection | Make changes to database connection options or specify a different type of database after installation (see step 5 of Installation on page 9). | Database - Connection on page 117 |
| | Verify* | Check the integrity of an Nform database. If a database fails the test, use the Repair option to try to fix it. | Database - Verify on page 118 |
| | Repair* | Attempt to fix a corrupted Nform database—for example, if a database fails the Verify test. | Database - Repair on page 118 |
| | Shrink* | Reduce database size by moving free space, then truncating the file (less thorough but quicker than the Compact option). | Database - Shrink on page 119 |
| | Compact* | Reduce database size by creating a new file from the existing database file (more thorough but takes longer than the Shrink option). | Database - Compact on page 119 |
| | Upgrade* | <i>(Not needed in most cases)</i> 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. <i>The SQL CE database is adequate for monitoring fewer than 50 devices. For 50 or more devices, We recommend installing the SQL Server database.</i> | Database - Upgrade on page 120 |
| Tools | Install DTD | Install Device Type Definitions for new equipment from a package file available from Vertiv™. | Tools Menu - Install DTD on page 120 |
| | Tools | Import Liebert Nform version 2.X data from one server into version 4.1 on a different server. | Tools Menu - Import 2.5 Data on page 121 |

* These Database menu options apply only to bundled databases (see step 5 of [Installation](#) on page 9), 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 ([Application Menu - Service](#) on page 117)
- Exiting the Tools application ([Application Menu - Close Nform Tools](#) on page 117)

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 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.

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 [Running Liebert Nform](#) on page 113 and [Application Menu - Service](#) on page 117.

To close the Nform Tools application:

- Click 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 ([Database - Connection](#) on page 117)
- Database maintenance tasks for a bundled database (Describe in the sections [Database - Verify](#) on page 118 through [Database - Upgrade](#) on page 120)

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 the **Database** menu in the Liebert Nform Tools window, then on **Connection**.
- To switch to a different type of database, Click the type of database at the top of the window, then click **OK**.

- To make changes to connection options, Click 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 host name 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 log-in user name in the User Name box.
- If needed, enter a log-in 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 [Database - Repair](#) on page 118). This applies to bundled databases only ([Installation](#) on page 9). 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 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 [Database - Repair](#) on page 118. If the condition cannot be corrected with a repair operation, contact Vertiv™ 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 [Database - Verify](#) on page 118). This applies to bundled databases only ([Installation](#) on page 9). 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 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 Vertiv™ 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 ([Database - Compact](#) on page 119). This applies to bundled databases only ([Installation](#) on page 9). 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 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 Vertiv™ 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 ([Database - Shrink](#) on page 119). This applies to bundled databases only ([Installation](#) on page 9). 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 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 ([Installation](#) on page 9). 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 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 Vertiv™ 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 ([Tools Menu - Install DTD](#) on page 120)
- Importing Liebert Nform version 2.X data from one server into version 4.X on a different server ([Tools Menu - Import 2.5 Data](#) on page 121)

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 Vertiv™ and may include devices made by Vertiv™ 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 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:

To Download a 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.

To Install a Package

- After obtaining a DTD package file, enter the full path to that file in the Install Package text box or Click 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 [Add Devices to the Configuration](#) on page 47).

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 [Import Exported Data from a Different Server](#) on page 16 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 [Open the Nform Tools Application From the Start Button](#) on page 115).

To import the data:

- Click 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 [Application Menu - Close Nform Tools](#) on page 117).

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19 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 the **Start** button, then **Settings**, and finally **Control Panel**.
2. In the Control Panel window, double-click **Add or Remove Programs** (*in Windows Vista, double-click **Programs and Features***).
3. In the list of installed programs, above right, double-click **Liebert Nform**.
4. In the Application Maintenance window, click **Remove** to uninstall the software.
5. In the Liebert Nform Uninstall window, 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.

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.



WARNING! 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 Vertiv™ representative or see [Ordering Parts and Licenses From Vertiv](#) on page 129 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 [Enter the License Key](#) on page 28).

To remove a license key:

1. Start the Viewer with permission to manage licenses (see [Assigning Users to Groups](#) on page 84).
2. Click the **Configure Licenses** icon at the bottom of the window (or Click the **Configure** menu, then choose **Licenses**).
3. In the Licenses window, Click 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.

APPENDICES

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 host names to be allocated dynamically when computers are connected to a network. This protocol is often used to remotely grant a host name 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 [Running Liebert Nform on page 113](#).

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.

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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 [Configuring Views for the Navigate Tab](#) on page 59).

- **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.

[Sample Data Points and Alarms](#) on page 127 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 B.1 Sample data points and alarms - Precision cooling unit

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

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

Table C.1 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: <ul style="list-style-type: none"> • 30 devices, not expandable • Unlimited users • Advanced Communications—enables: <ul style="list-style-type: none"> • Data Logging function (see Data Logging on page 53) • Read Data action (see Section Configure Read Data Actions on page 78) |
| Liebert Nform Software on CD-ROM | NFORM-STD | Liebert Nform with license key ¹ for: <ul style="list-style-type: none"> • 30 devices, expandable to 4,800 with additional license keys • Unlimited users • Advanced Communications—enables: <ul style="list-style-type: none"> • Data Logging function (see Section Data Logging on page 53) • Read Data action (see Section Configure Read Data Actions on page 78) |
| Liebert Nform Software on CD-ROM | NFORM-ENT | Liebert Nform with license key ¹ for: <ul style="list-style-type: none"> • 100 devices, expandable to 10,000 with additional license keys • Unlimited users • Advanced Communications—enables: <ul style="list-style-type: none"> • Data Logging function (see Section Data Logging on page 53) • Read Data action (see Section Configure Read Data Actions on page 78) • Advanced Notifications—enables: <ul style="list-style-type: none"> • Trap Forwarding (see Section Server Options - Trap Forwarding Tab on page 44) • Forward Trap (see Section Configure Forward Trap Actions on page 77) |
| 30 Device License | NFORM-30D | License key ² for 30 additional devices |
| 100 Device License | NFORM-100D | License key ² for 100 additional devices |
| 500 Device License | NFORM-500D | License key ² 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 [Add a Liebert Nform License Key](#) on page 28 for step-by-step instructions.

3. Each additional license key must be installed separately, as described in [Add a Liebert Nform License Key](#) on page 28.

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SL-29002_REV13/590-1442-501B