GE VERNOVA

EnerVista Viewpoint Monitoring

Instruction Manual

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WORLDWIDE 10 YEAR WARRANTY

EnerVista Viewpoint Monitoring Instruction Manual for version 8.15.

Part number: 1601-0270-E5 (May 2025)

EnerVista Viewpoint Monitoring

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EnerVista Viewpoint Monitoring

Chapter 1: Introduction

This Instruction Manual outlines how to use EnerVista™ Viewpoint Monitoring™ software.

This chapter outlines the following:

- Safety information
- Quickstart
- Technical support contacts

Safety symbols and definitions

Before attempting to install or use any device, review all safety indicators in its manual and in this document to help prevent injury, equipment damage, or downtime.

The following safety and equipment symbols are used in this document.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Indicates practices not related to personal injury.

Quickstart

EnerVista Viewpoint Monitoring is powerful data monitoring and recording software that provides an overall, integrated view of an electrical system. It collects critical real-time and historical disturbance data to assist with analyzing past and impending power system events. It is flexible, high-performance software with high-quality graphics and features to maximize productivity and minimize downtime and energy cost.

This section outlines how to install and set up Viewpoint Monitoring.

Features

Viewpoint Monitoring has the following features that make the system powerful and easy to use:

- Pre-configured memory maps of GE Vernova Grid Solutions devices
- Drag-and-drop construction of single-line monitoring screens
- Monitors up to 1,000 devices and up to 65,000 data points, depending on license, with visual and audio alarm capabilities
- Automatic collection of events and waveforms from GE Vernova Grid Automation devices
- Support for communications via Modbus RTU and Ethernet TCP/IP for easy communication setup
- Ability to create a historical archive of monitored data for multiple devices, using trend reports

Devices supported

The latest list of devices supported by EnerVista Viewpoint Monitoring is described on the EnerVista Viewpoint Monitoring website under the Specifications tab and in the Release Notes (also available on the website).

Note that the following products do not authenticate login attempts from EnerVista Viewpoint Monitoring to execute commands from One-Line screens. Events and waveforms also are not retrieved.

- 8 Series relay with Advanced Communication order code
- Universal Relay (UR) with CyberSentry order code

Installation overview

The process is as follows:

- Check the computer requirements
- Check the Microsoft SQL Server name
- Install the software
- Launch the software
- Enter the activation code
- Change default user accounts (passwords and email; optional)
- Add a device

Check computer requirements

EnerVista Viewpoint Monitoring is optimized for the Microsoft Windows operating system. A dedicated computer is required to run EnerVista Viewpoint Monitoring for optimal performance and data integrity.

This section describes the system requirements for EnerVista Viewpoint Monitoring installation.

Operating system

EnerVista Viewpoint Monitoring supports the following operating systems:

- Windows® 11 64 bit
- Windows® 10 64 bit
- Windows® Server 2022
- Windows® Server 2019

Windows Server 2022 or 2019 is required to use the Windows Remote Desktop Services to provide remote access (e.g. for remote viewing, remote troubleshooting).

Databases

EnerVista Viewpoint Monitoring requires a Microsoft SQL Server 2019/2022 Express or SQL Server 2019/2022 database to store events, reports, and other data.

Microsoft SQL Server 2019/2022 Express installs with Viewpoint Monitoring if SQL Server 2019/2022 Express or SQL Server 2019/2022 is not already installed on the workstation.

Hardware requirements

Recommended workstation:

- Intel® Core™ i3 CPU or higher
- 4 GB RAM (minimum)
- Speakers (to support audible alarms)

The following items are recommended:

- Additional hard disk space for increased storage of log and trend data
- Uninterruptible power supply (UPS)
- 17-inch or larger monitor

Check Microsoft SQL Server name

Viewpoint Monitoring uses a Microsoft SQL Server 2019/2022 Express database for storage and installs it with the right names when not already installed. Setup names are as follows:

SQL Server name — PMCSSQLSERVER12

Database name — EVENTLOGGERSQL

Location of database — C:\ProgramData\EnerVista\EnerVista Integrator\Database

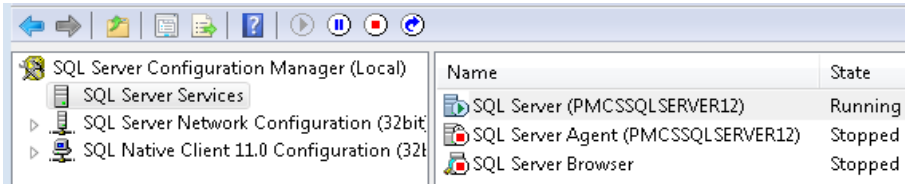
If you already have SQL Server installed, check the name.

To check the SQL Server name:

1. Click **Start > All Programs > Microsoft SQL Server 2019/2022 > Configuration Tools > SQL Server Configuration Manager**. Allow access at the prompt. The window opens; if not, due to permissions, ask your computer administrator to log in.

2. Select **SQL Server Services** in the left pane.
3. Look in the right pane for all SQL Server instances. If your instance is named differently, for example SQLEXPRESS instead of PMCSSQLSERVER12, log in to the computer as administrator, change the DB_CMD.CMD script located in the C:\ProgramData\EnerVista\EnerVista Integrator\Database folder, and run the script. You need to be logged in as computer administrator to replace the script file.

Figure 1: SQL Server installed



Install software

A license is required for the full installation of EnerVista Viewpoint Monitoring on a single workstation. If multiple installations are required, a license will be required for each computer.

This section outlines how to install version EnerVista Viewpoint Monitoring. If you cancel the installation at any time, you may be required to contact GE Vernova technical support in order to prepare the system for a successful installation.

Upgrade support

Viewpoint Monitoring automatically installs and upgrades over any previous installations of Viewpoint Monitoring. Existing settings/configurations are supported.

To view changes to the product, see the Release Notes, for example under **Start > All Programs > EnerVista > Monitoring Release Notes** after upgrading.

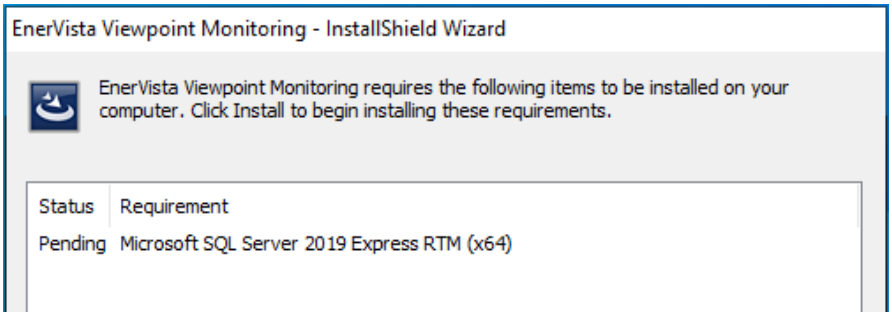
Installation

A trial version (and installation package) of EnerVista Viewpoint Monitoring is available for download from product website and can be unlocked with purchase. The installation package includes several files, including the Viewpoint Monitoring software installation, Microsoft SQL Server 2019 Express, and .NET framework.

To install Viewpoint Monitoring software:

1. Download the software from the GE Vernova website.
2. Close any open applications, including Viewpoint Monitoring and its watchdog icon in the Windows system tray on the taskbar.
3. Locate the .exe file (for example VPMon815ServerSetup.exe) and double-click it. If an error displays about Integrator, the program is located in C:\Program Files\EnerVista\EnerVista Integrator.
4. When prompted, allow the program to make changes to the computer.
5. The installation wizard launches. Complete it, allowing installation of all recommended programs, such as the SQL Server database. Installation, starting with SQL Server, takes from two to 20 minutes.
   The software installs Viewpoint Monitoring and Microsoft SQL Server entries into the Start menu, as well as a desktop shortcut for Viewpoint Monitoring.
   Restart the computer at the prompt.

Figure 2: Installation Wizard



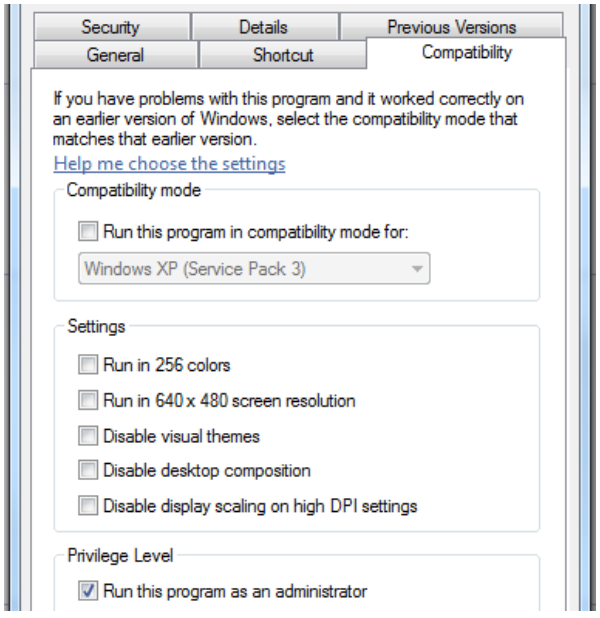
The Viewpoint Monitoring software installation is completed but requires activation.

The software needs to be launched as an Administrator.

Launch software

1. To run the Viewpoint Monitoring software as an Administrator, before launching the software, right-click its icon on the desktop and select **Properties**. The window opens.
2. In the **Compatibility** tab, enable the check box to **Run this program as an administrator**. Click the **OK** button to save and exit. This setting remains set each time that you launch the software; the prompt to allow the program to make changes to the computer appears each time.

Figure 3: Run Software as Administrator

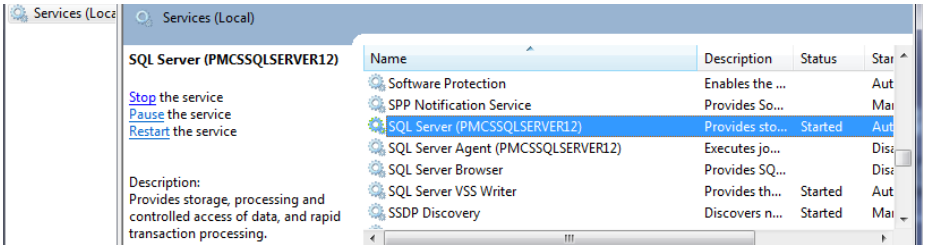


3. Launch Viewpoint Monitoring by clicking its desktop icon. With first launch, it takes up to a minute to verify the database.
4. When prompted, allow the program to make changes to the computer.
5. If you launch the software and it stalls at “Verifying Viewpoint Database” it means that there is an issue connecting to the database. Click this window and end the process, then restart the computer, and/or run the program as administrator as outlined. If that does not work, use the following information.

Figure 4: Launching the software

To troubleshoot, as administrator, verify that SQL Server service PMCSSQLSERVER12 exists and is started or running, as follows. In Windows, click **Start > All Programs > Accessories > System Tools > System Information**. Access **Software Environment > Services**.

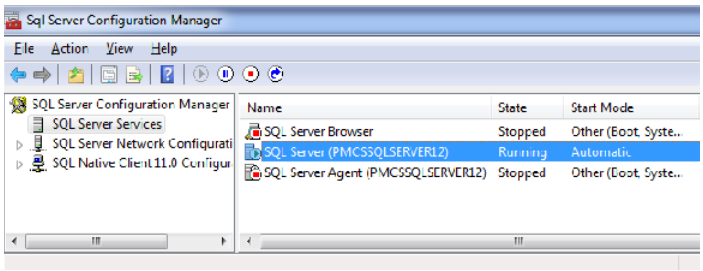
Figure 5: Verifying that the database is running



If your computer already had Microsoft SQL Server 2019 Express installed before the Viewpoint Monitoring installation, the EVENTLOGGERSQL database can fail to attach properly. Use the database installation script DB_CMD.CMD, located in the C:\ProgramData\EnerVista\EnerVista Integrator\Database folder.

If your SQL Server instance is named differently, for example SQLEXPRESS instead of PMCSSQLSERVER12, change the DB_CMD.CMD script accordingly, and run the script. To discover the name of the SQL Server instance go to **Start > All Programs > Microsoft SQL Server 2019 > Configuration Tools > SQL Server Configuration Manager**. Select **SQL Server Services** in the left pane. In the right pane are all SQL Server instances. In the example shown, there is only one instance, PMCSSQLSERVER12, which is correct.

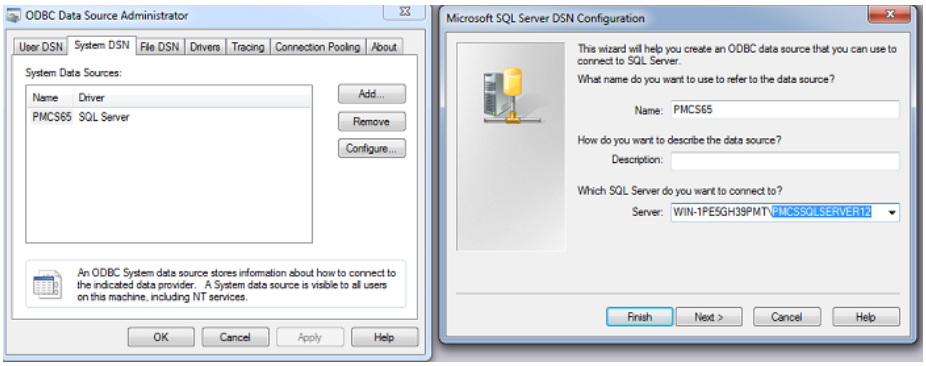
Figure 6: Checking the database name



If you need to check the DB_CMD.CMD script installed by Viewpoint Monitoring, it is located in the C:\Program Files(x86)\Enervista\EnerVista Viewpoint Monitoring\ folder.

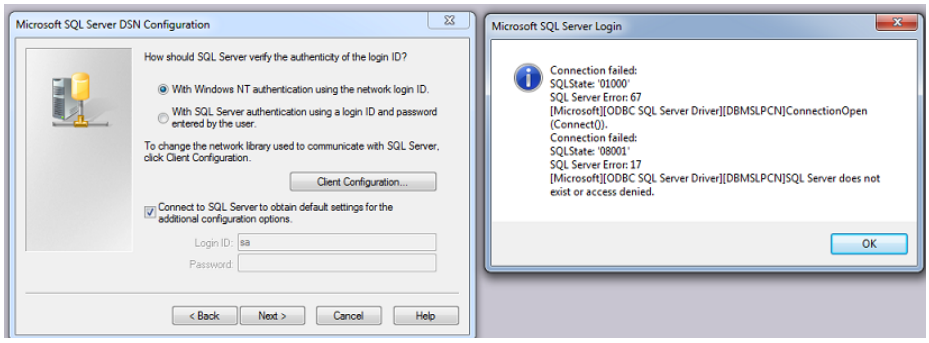
If you changed the script to attach EVENTLOGGERSQL database to a different SQL Server instance, you need to change ODBC settings. Open the ODBC Data Source Administration wizard by double-clicking the C:\Windows\System32\odbcad32.exe file (on Windows 32 system) or C:\Windows\SysWOW64\odbcad32.exe (on Windows 64 system). Click the **System DSN** tab. Select the **PMCS65** entry and click the **Configure** button. In the window that opens, verify the name of the SQL Server. The name needs to be the same as in the DB_CMD.CMD file. Click the **Next** button and continue in the wizard.

Figure 7: Checking the server name



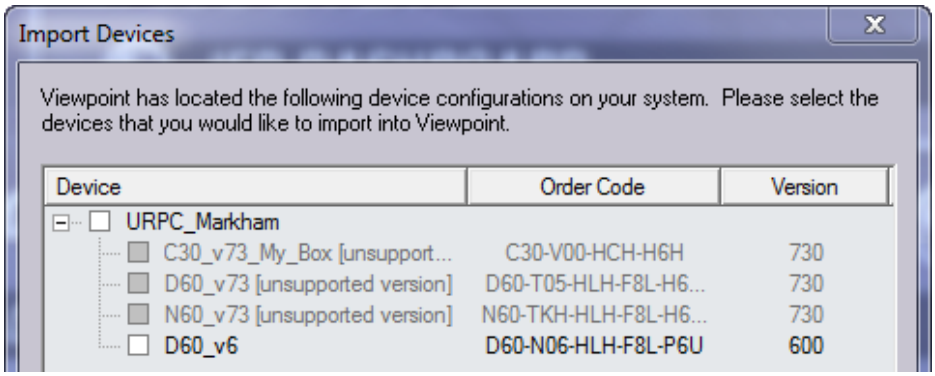
If the configuration is incorrect, a “Connection failed” message displays. Click the **Back** button in the wizard and verify your settings.

Figure 8: Incorrect configuration message



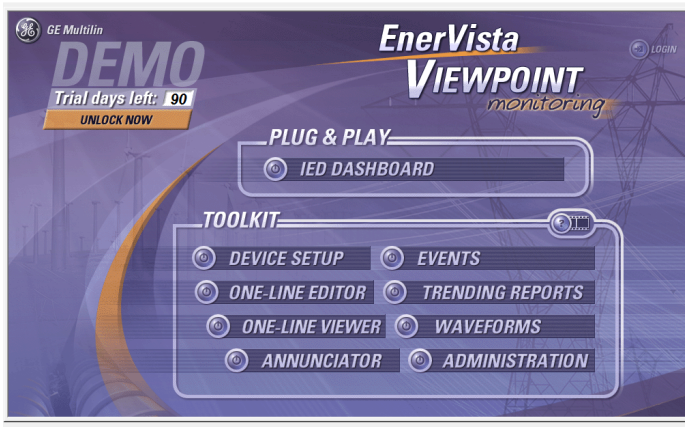
6. With successful launch of the Viewpoint Monitoring software, if GE Vernova supported devices are detected, a window displays providing the opportunity to import configuration for them. Select any supported devices, and click the Import button to do so. Otherwise, click the Cancel button to exit from the window.

Figure 9: Importing a UR family device



7. With successful launch, the main EnerVista Viewpoint Monitoring window displays. By default the software is in trial mode, which limits software use to 90 days and 50 devices (after 90 days, access is restricted to 1 device and 1000 tags). For a purchased version, unlock the software by entering the activation code (next section).

Figure 10: Main window



Enter activation code

A software license activation code allows for the installation of EnerVista Viewpoint Monitoring on one computer. Use the following procedure to generate a license activation code, and enter it into the software to activate.

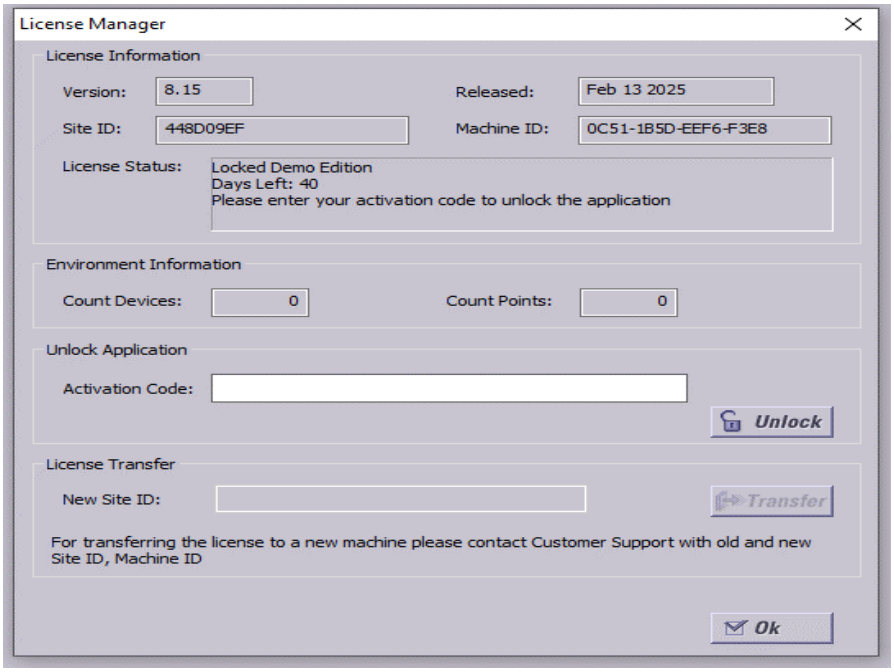
With the “OPC Option,” Viewpoint Monitoring can send data that is being read from the relays and meters to any third-party system compliant with the Object Linking and Embedding (OLE) for Process Control (OPC) standard. If your license code has this option, the unlock operation needs to be done with Viewpoint Monitoring run as administrator, as outlined earlier (right-click, **Properties > Compatibility > Run this program as an administrator**).

When updating the license, if the application is unlocked and you upgrade to a larger number of devices or add the “OPC option”, first do a license transfer (for example, use Site ID of 94AB083B) as outlined in the Instruction Manual. This removes the previous license, restarts the program, and you enter the new license code.

To unlock an installation:

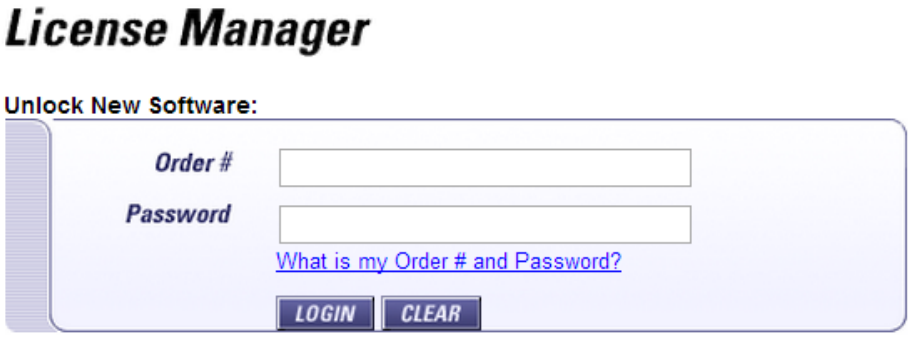
1. In the main window of Viewpoint Monitoring, click **Help > License Management**. The window opens.

Figure 11: License manager window



2. Note the **Site ID** and **Machine ID**, and leave the window open.
3. Generate an activation code as follows.
   Log in to https://apps-ex.gs.ec.ge.com/swmgr/ using the **Order #** and **Password** provided with the software or sent by email from GE Vernova.
   Enter the **Site ID** and **Machine ID**, and generate the activation code. Record the number.

Figure 12: Log in to generate the activation code



4. In Viewpoint Monitoring, enter the code in the **Activation Code** field, and click the **Unlock** button. This unlocks Viewpoint Monitoring. The software is ready to use.

Change default user accounts

Two user accounts (Administrator, Guest) and three user groups are created by default. Permissions are set at individual and group levels.

Table 1: Default user accounts

User account	Default password	Group	Permissions
Administrator	password	Administrator	Manage and edit accounts; full control in one-line, annunciator, trending reports
Guest	password	Guest	View-only access to one-line, annunciator, trending reports

After installation, optionally change the passwords and set the email addresses for the default accounts.

To change passwords and email addresses for user accounts:

1. Click **Tools > Administration** and select an option.

Further information is given in the Administration chapter of this manual.

Add a device

The latest list of devices supported by EnerVista Viewpoint Monitoring is described on the EnerVista Viewpoint Monitoring website under the Specifications tab and in the Release Notes (also available on the website).

Depending on the device count of the license (50, 100, 300, 500, or 1000) the number of devices can be added and configured in Viewpoint Monitoring.

Note that the trial version is restricted to 50 devices and runs for 90 days from installation. After 90 days, Viewpoint Monitoring access is restricted to 1 device or 1000 tags (data points).

The trial device configuration is exported to:
C:\Users\Public\Documents\EnerVista\Viewpoint Monitoring\VPMConfigBackup\folder

There are 3 ways to add devices in Viewpoint Monitoring:

1. By import of GE Vernova devices
2. By GE Vernova device setup
3. By creating custom files for third-party devices

The recommended approach for GE devices is by automatic import followed by GE device setup if required.

Third-party, non-GE Vernova devices should use method 3 - By creating custom files for third-party devices to add the device.

For a non-GE Vernova device and with .cdd file created in the Custom Device Editor the third procedure (creating custom files for third-party devices) is used to add the device.

Search the applicable computer for the .cdd file.

Such a file is created automatically for GE devices, for example, so there can be such a file on the computer.

The approach is as follows using BASSY_100.cdd as a file name and BASSY as the device name.

Locate the BASSY_100.cdd file, add it to the computer to prepare the server-side, then in the Viewpoint Monitoring software when adding a device, select **Others** for the **Device Type,** enter the BASSY name in the **Order Code** field, and click the **Test Communication** button.

To add a device by import:

1. Click **File > Import Devices > Perform Search**.
   Or if you have a .env or .ds file of the device to add, click **File > Import Devices >**

Specify Location.

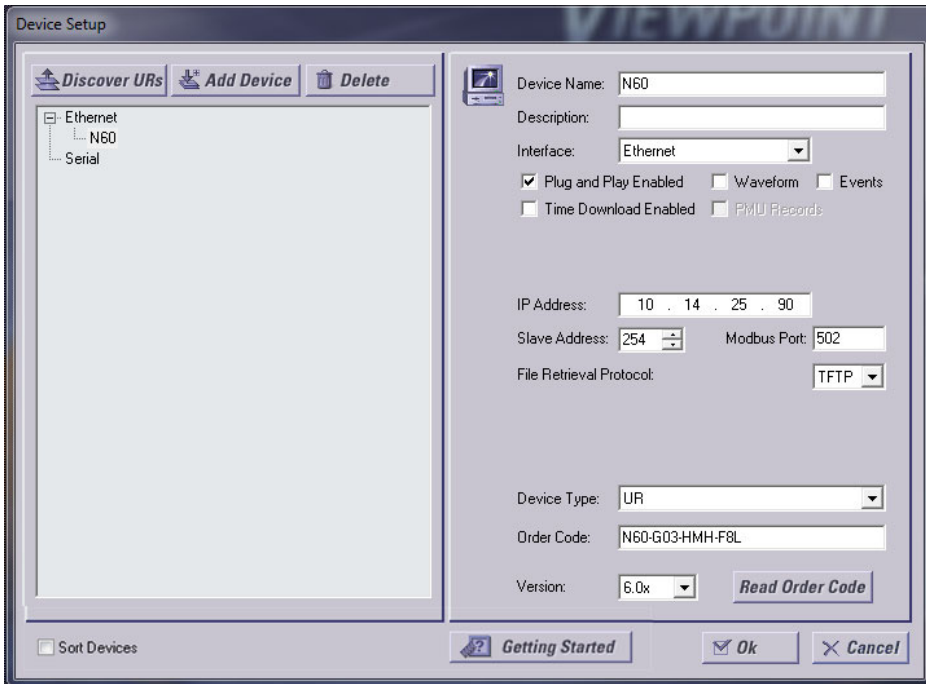
To add a third-party device:

1. Create a profile for it under **File > Custom File Editor**.
   The best way to determine if the device is a third-party device is to look in the **Device Type** drop-down list outlined in the next procedure. Further information on completing the fields is given later in this manual.

To add a device using device setup:

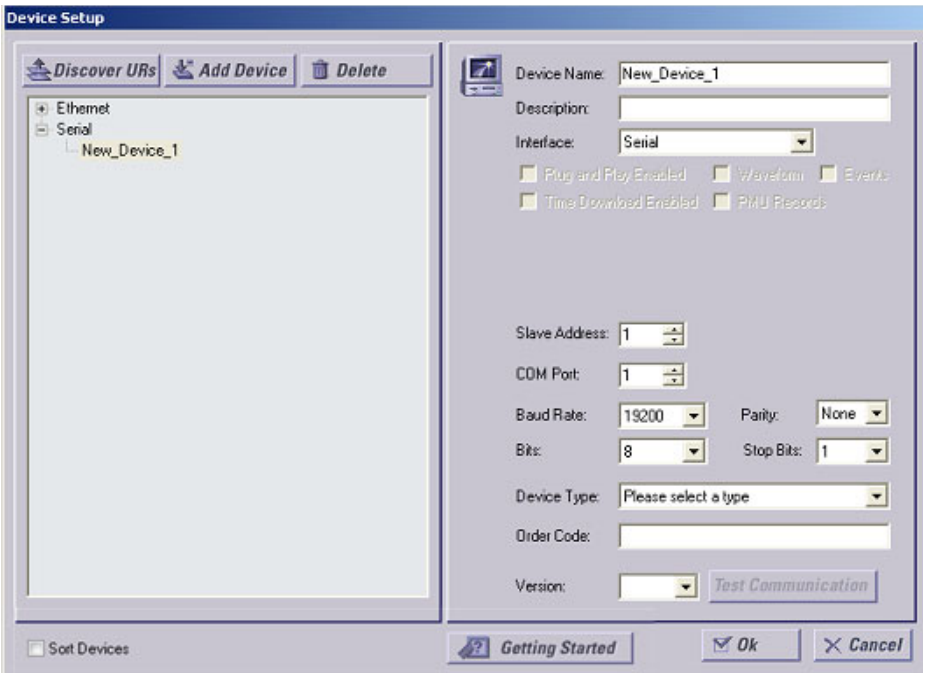
1. In the main Viewpoint Monitoring window, click the **Device Setup** button. The window opens.
2. To add devices automatically within the computer subnetwork, try clicking the **Discover URs** button. For example, if the computer IP address is 10.15. 21.70, the software checks for devices on 10.15.21. A message displays when none are found. If none are discovered, continue with the rest of this procedure.
3. Click the **Ethernet** or **Serial** option to reflect the interface over which the computer is to communicate with the device, then click the **Add Device** button. The fields will populate on the right side with the device information.
   Note: Modem connections are not supported.
4. Change the **Device Name**, for example to N60_v72 or London_UR_B30. Note that device names can be listed alphabetically by checking the sort devices box (lower left).
5. For Ethernet, enter the **IP Address**, **Slave Address**, and **Modbus Port** number. For a GE Universal Relay (UR) series device, the information on the screen looks similar to the following.

Figure 13: Adding a UR device (Ethernet interface)



For serial, the window looks similar to the following. Complete the **Slave Address** to **Stop Bits** fields.

Figure 14: Adding a device with a serial interface



6. From the **Device Type** drop-down list, select the device. The list is the same for Ethernet and serial interfaces. Select **Others** for non-GE devices, for example for which you have a .cdd file.
7. For Ethernet, the **File Retrieval Protocol** specifies the protocol to use to retrieve waveforms and events from the device. The trivial file transfer protocol (TFTP) and Modbus are supported for UR and 8 Series devices. The field becomes active with the **Device Type** selection. If in doubt about whether to choose TFTP or Modbus, then select TFTP, which is commonly used for those devices.
8. For some GE Vernova devices (UR, UR^{Plus}, 850, 369, 750, and so on), the **Read Order Code** button is active. Click it. The system populates the **Order Code** and **Version** fields.
   For all other devices, enter the order code; for a device for which you created the .cdd file simply enter the name for the device. An example of behavior when completing this field is that the order code populates as EPM 9900P when the EPM 9900P is selected as the **Device Type**. The following table shows examples.

Table 2: Example order codes for other devices

Device	Order code
Multilin DGCM Field RTU	DGCM
Enhanced Micro Versa Trip C	EMVTC
Enhanced Micro Versa Trip D	EMVTD
EntelliGuard Low-Voltage Switchgear	ELVS
EntelliGuard Trip Unit	GTU
EPM 2200	EPM2200
EPM 4600S	EPM4600S
EPM 4600T	EPM4600T
EPM 6000	EPM6000
EPM 6000T	EPM6000T
EPM 6010	EPM6010

Device	Order code
EPM 6100	EPM6100
EPM 7000	EPM7000
EPM 7000P	EPM7000P
EPM 7000PT	EPM7000PT
EPM 7100	EPM7100
EPM 9700	EPM9700
EPM 9900P	EPM9900P
FIRETRACER	FIRETRACER
MET	MET
MRPO	MRPO
MultiLink ML2400	ML2400
MultiNet MN1000	MN1000
PLEPM	PLEPM
Spectra Micro Versa Trip	MVT
UPS LAN PRO	UPSLP
UPS SG	UPSSG
VERSAMAX	VERSAMAX

After completing the **Order Code** field, click on the **Test Communication** button. The system tests communication access to the device and populates the **Version** field.
A square green LED indicator displays beside the button indicating successful communication.

Figure 15: Successful communication with device

9. Optionally enable any of the options displayed, which are active when supported by the device and which vary by device. If in doubt, enable all options.
10. **Plug and Play Enabled** — Displays the device in the Viewpoint Monitoring IED Dashboard, providing convenient access to the device, including the front panel to enter commands. Also provides a predefined, device-specific, set of online diagrams that allow an instant view of critical information.
11. **Waveform** — Monitors the device and downloads automatically the new waveform generated by the device.
12. **Events** — Downloads automatically and stores to the database the event records from the device.
13. **Time Download Enabled** — Synchronizes the real-time clock of the device with the computer clock; synchronization is done every 12 hours. Do not enable this option if the relay is write-protected or the password for commands is set on the relay.
    PMU Records — Display Phasor Measurement Unit (PMU) records.
14. Click the **OK** button to save the configuration and exit. Viewpoint Monitoring is now configured to work with the device.

EnerVista Viewpoint Monitoring is now installed and configured for general use. To launch the application, click **Start > All Programs > EnerVista > Viewpoint Monitoring** or click its desktop icon. Continue with the EnerVista Viewpoint Monitoring Instruction Manual, launched by pressing the **F1** key in the software.

The software supports an English keyboard only. Adding other languages in Windows under **Control Panel > Region and Language > Keyboards and Languages** can render the software unresponsive, for example when using the Formula Editor.

Add remote viewing computers - ViewNodes

The option exists to install remote viewer capability on other computers. This means that other computers can access output, reports, waveforms, event records and other output from Viewpoint Monitoring. The remote computer and function is referred to as a ViewNode. Instructions to install the ViewNode software and add remote computers are provided in the Instruction Manual.

Uninstall software

To uninstall the Viewpoint Monitoring software:

1. If you have ViewNode support running for remote computer access, stop it in Viewpoint Monitoring by clicking **File > ViewNode Management > Remove ViewNode Support**. The option is active when support is present and inactive when no support is present. When service stops, all remote computers lose access.
2. Close the software.
3. Click **Start > Control Panel**, then **Programs and Features**.
4. Click **EnerVista Viewpoint Monitoring** or **Viewpoint Monitoring**. If the item does not display, uninstall it using the .exe installation file.
5. Click **Uninstall** and confirm the deletion. The software uninstalls.

To uninstall the SQL Server database that was installed/used by Viewpoint Monitoring, follow a similar approach. Do not uninstall these applications when used by other software.

For further assistance

For current manuals and software go to:

Website: https://www.gevernova.com/grid-solutions

For product support, contact the information and call center as follows:

GE Vernova
650 Markland Street
Markham, Ontario
Canada L6C 0M1
Worldwide telephone: +1 905 927 7070
Europe/Middle East/Africa telephone: +34 94 485 88 54
North America toll-free: 1 800 547 8629
Fax: +1 905 927 5098
Worldwide e-mail: multilin.tech@gevernova.com
Europe e-mail: multilin.tech.euro@gevernova.com
Website: https://www.gevernova.com/grid-solutions

EnerVista Viewpoint Monitoring

Chapter 2: Product description

This chapter outlines the following:

- New features and supported products
- Viewpoint Monitoring
- Demonstration files
- Trial version

Introduction

EnerVista Viewpoint Monitoring is software for on-demand monitoring and control of electrical equipment. It uses Microsoft SQL Server or SQL Server Express as its database.

Viewpoint Monitoring comes with the following features that make the system powerful and easy to use:

- Pre-configured memory maps of GE Grid Solutions devices
- Drag-and-drop construction of single-line monitoring screens
- Monitors up to 1,000 devices and up to 65,000 data points, depending on license, with visual and audio alarm capabilities
- Automatic collection of events and waveforms from GE devices
- Built-in Modbus remote terminal unit (RTU) network compatibility for an open network architecture and high-speed communication
- Built-in Ethernet TCP/IP network compatibility for high-speed communication and reduced wiring costs
- Ability to create a historical archive of monitored data for multiple devices using trend reports

New features and supported products

See the current release notes for a complete list of new features and supported products.

For example look under **Start > All Programs > EnerVista > Monitoring Release Notes** after upgrading.

Features

The features of Viewpoint Monitoring include the following:

Add devices

Viewpoint Monitoring can communicate with devices that use Modbus protocol for accessing data. In addition to easy, predefined GE Vernova device setup and import of setup files, the Custom File Editor allows you to define a new device to be used within Viewpoint Monitoring as well as edit and delete devices already defined. The polling/scan interval is every second to retrieve actual values from devices.

View remotely on multiple computers

Viewpoint Monitoring is installed on a workstation retrieve and visualize data from supported and configured devices.

In addition, two options exist to access the Viewpoint Monitoring instance remotely: Windows Server Remote Desktop Services (RDS) Connection through Windows Server option installation or through Viewpoint Monitoring ViewNode client software installed on a remote workstation.

Scalable licensing

Depending on the license, 50, 100, 300, 500, or 1000 devices can be configured in the software. When using the trial version, the number of devices is limited to 50. The licensing is summarized as follows:

- 50 devices and 3,000 data points
- 100 devices and 5,000 data points
- 300 devices and 30,000 data points
- 500 devices and 65,000 data points
- 1,000 devices and 20,000 data points

Licenses can be upgraded to add capacity.

OPC data access

Viewpoint Monitoring provides the optional OPC option - Object Linking and Embedding (OLE) for Process Control (OPC) selected at time of purchase or a later upgrade. With the OPC, Viewpoint Monitoring the data collected from connected devices (GE Vernova and configured devices) can be accessed by third-party OPC compliant automation or monitoring system through OPC requests to Viewpoint Monitoring.

Functions

This section explains each component that displays in the main window of Viewpoint Monitoring. In addition, there are menu functions, such as password management, support for adding third-party devices, and template importing.

The general approach to using Viewpoint Monitoring is as follows:

- Add device
- Configure a diagram in the One-Line Editor
- View the data in the One-Line Viewer
- Set alarms in the Annunciator
- Monitor device operation in the IED Dashboard and/or the Annunciator

Figure 16: Part of the Viewpoint Monitoring main window

IED Dashboard

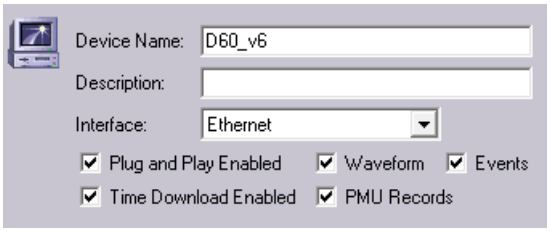
When the "Plug And Play" option is enabled for a device, the device displays in the IED Dashboard. The device can be controlled from the dashboard using a virtual view of its front panel. There is access to a set of device-specific online diagrams that offer a quick view of the most critical information for that device type.

Figure 17: IED Dashboard

Device Setup

The Device Setup function is used to identify devices for use in Viewpoint Monitoring. The information is added automatically, by import, or manually.

Figure 18: Name and Viewpoint Monitoring options for a device



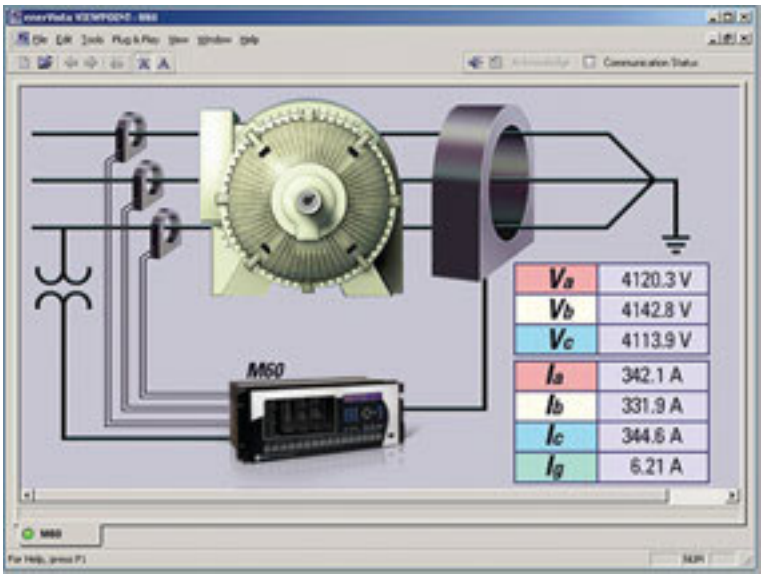
One-Line Editor and Viewer

The One-Line Editor is used to draw diagrams for equipment monitoring and control. It is used to create interactive one-line diagrams that are connected to devices to monitor and understand remote site configuration as well as view readings and status updates.

The One-Line Viewer then displays the data from the equipment.

The figure shows an example for monitoring motor status.

Figure 19: Diagram created to monitor motor status



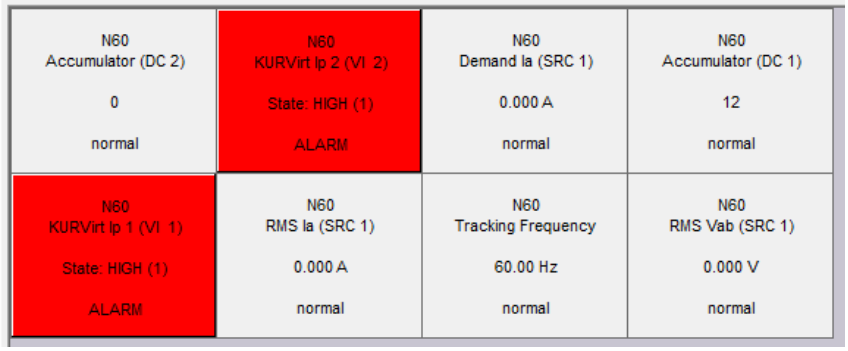
Annunciator

This function allows alarms and alerts to be set and managed.

The Annunciator actively monitors measured values and generates alarms. Alarms can be configured for activation whenever a digital status changes state or whenever analog values change beyond a threshold.

The Annunciator provides visual, audio, and email notifications.

Figure 20: Example of Annunciator alarms



Events

As enabled per-device, the event records from devices are downloaded automatically and stored in the database, creating a system-wide sequence of records. Viewpoint Monitoring continuously polls the device to see if any events have been detected, downloads the event records, and stores them. They are viewable in Viewpoint Monitoring.

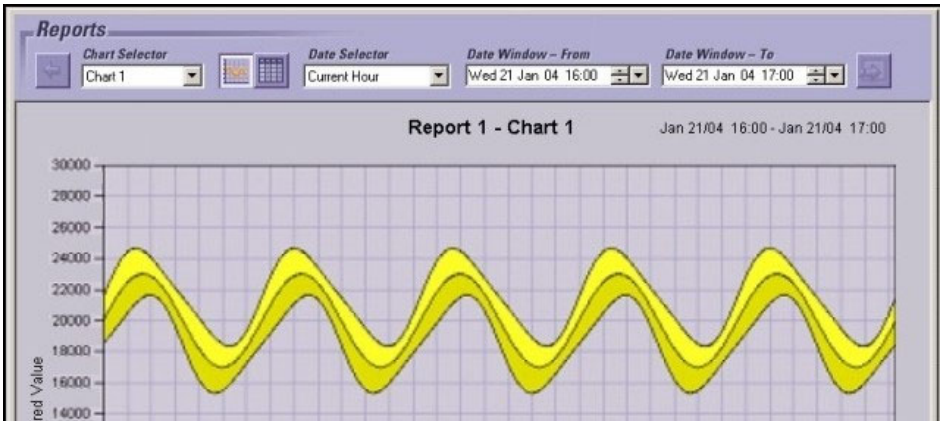
Figure 21: Event records

Event Type	Source Name	Display Name	Source Type	Event
System	GE32MTCP		OPC/DDE Server	Net2 C30v73 Devi
Event	C30v73		UR700 V-730	POWER ON
Event	C30v73		UR700 V-730	PROTOTYPE FIRMWARE

Trending Reports

Trending reports are used to archive monitored data for multiple devices. The trending reports record the values of monitored analog and digital points, with one-minute resolution. The data stored in the reports are viewable as graphs and tables. The data is stored in the database.

Figure 22: Example of chart

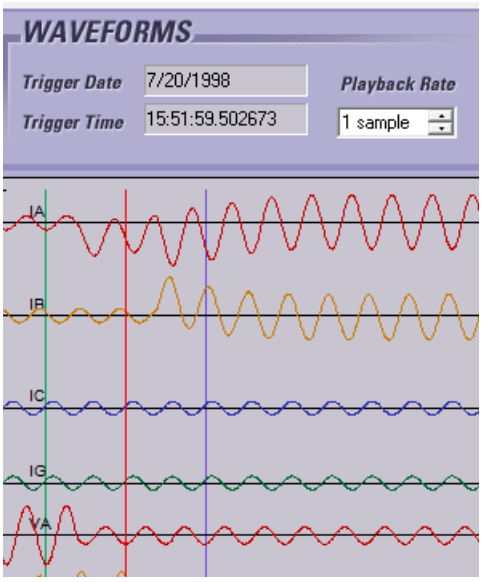


Waveforms

Waveform (oscillography) files from GE Vernova Grid Automation supported devices are downloaded automatically from each device and stored on the computer hard drive. When a new waveform is detected, the file is downloaded to the hard drive.

Support for COMTRADE files means that they are viewable in Viewpoint Monitoring. The COMTRADE viewer feature within Viewpoint Monitoring provides a visual display of power systems data and relay operation data captured during a specific triggered event.

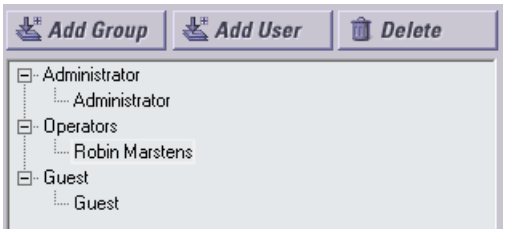
Figure 23: Part of a waveform file



Administration

Administration is performed in several windows in Viewpoint Monitoring. These functions include preferences, passwords, users, groups, and remote computer access.

Figure 24: User account management



Demonstration files

Viewpoint Monitoring includes several demonstration files. They are contained in the following folder and are accessed within Viewpoint Monitoring:

C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Examples\

Other EnerVista installations can have similar files, for example

C:\Program Files (x86)\GE Power Management\URPC\Data\Demo\

The following file extensions are used:

.cfg	Waveform diagram
.sf	One-line diagram
.ap	Annunciator alarm setup
.rep	Report file

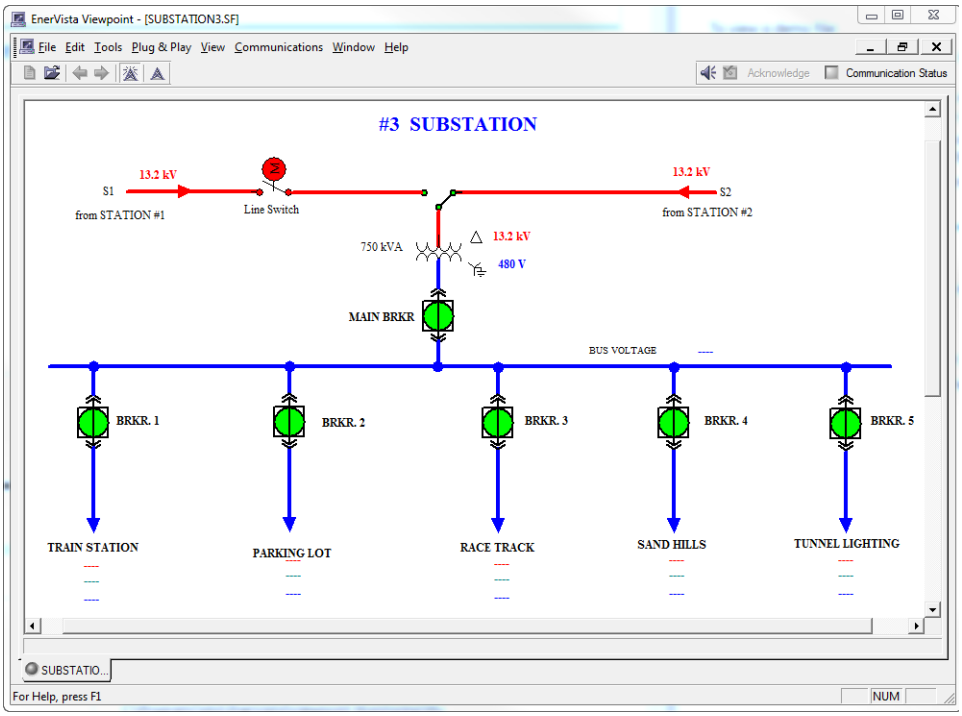
As documented later, these and other files can be imported into the software and customized for use.

To view a demonstration file:

1. In the Control Panel for Windows, change the Folder Options so that hidden files and folders show.
2. In the main Viewpoint Monitoring window, click **File > Open** and open the following file, which is a one-line diagram used as an example:

   C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Examples\SUBSTATION3.SF
3. When done, turn off hidden files and folders.

Figure 25: Viewing a one-line demonstration file of a substation



Trial version

Both Viewpoint Monitoring and Viewpoint ViewNodes (for optional remote access) install by default in trial mode to allow users to experience and use the software for a limited time period and functionality.

A license is required to be purchased for full functionality.

The latest version of Viewpoint Monitoring or Viewpoint ViewNodes can be downloaded from: https://www.gevernova.com/grid-solutions

The trial version functions as follows:

Viewpoint Monitoring

- Limited to 50 devices
- Trial runs for 90 days from installation
- After 90 days, Viewpoint Monitoring access is restricted to 1 device and 1000 tags.
  The trial device configuration is exported to:
  C:\Users\Public\Documents\EnerVista\Viewpoint Monitoring\VPMConfigBackup\folder

You unlock the software by entering the activation code as outlined in the Quickstart section of this manual.

Viewpoint ViewNodes (remote access)

- Use of ViewNode remote access for 15 days

Unlock the software by entering the activation code as outlined in the Quickstart section of this manual.

EnerVista Viewpoint Monitoring

Chapter 3: Interface

This chapter explains the software interface, preferences, communication status indicator, schema indicator, and formula editor. It explains the main Viewpoint Monitoring interface. Toolbars and buttons for individual windows are explained in the relevant chapters.

There are no “must configure” settings outlined in this chapter. If you are first getting started with Viewpoint Monitoring, consider adding passwords and user accounts as outlined in the Administration chapter, then skim this chapter to view the features available.

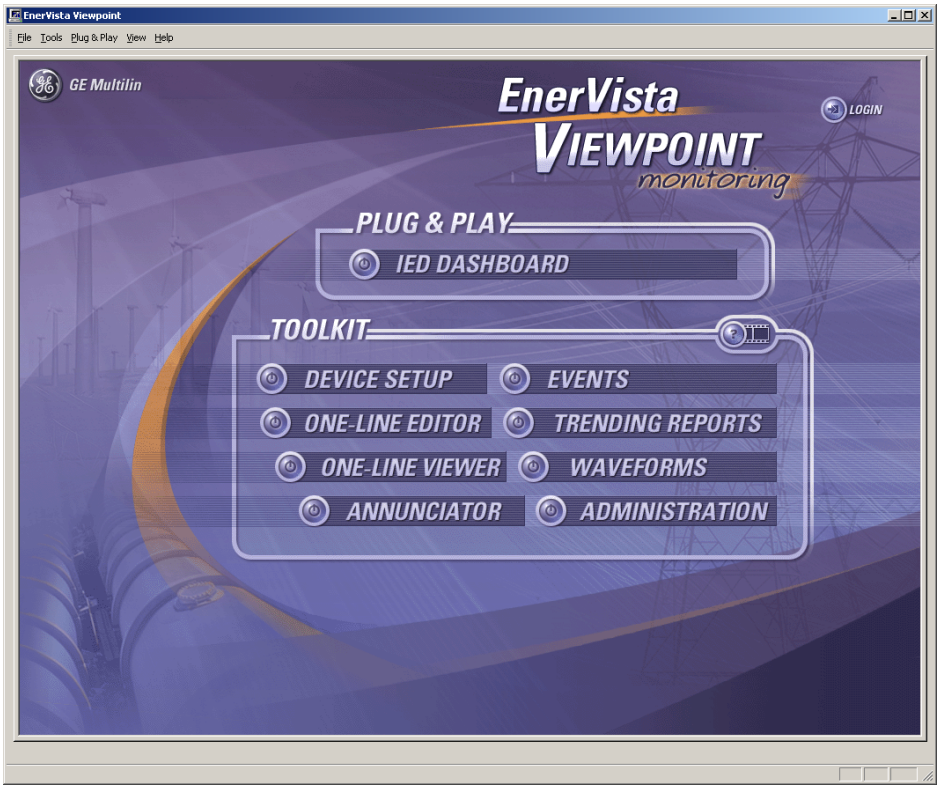
This chapter outlines the following:

- Main window
- Full screen mode
- Preferences
- Communication status
- Alarm indicators
- Formula editor
- Online help

Main window

Upon launch of Viewpoint Monitoring, the default view is the main window. This default can be changed, as outlined in this chapter.

Figure 26: Viewpoint Monitoring main window



Login (top right) — Active when authentication is required, as set in the preferences. Does nothing when inactive.

IED Dashboard — View and manage devices added.

Device Setup — Add and configure your devices and their components.

One-Line Editor — Create interactive one-line diagrams using graphical tools. These diagrams are called schema.

One-Line Viewer — View one-line diagrams.

Annunciator — View and monitor alarms and alerts.

Events — View event records for devices.

Trending Reports — View and create data/report diagrams.

Waveforms — Tools and viewer for COMTRADE-formatted waveform files.

Administration — Add/edit/delete groups and users who can access the system, set passwords.

To return to the main window:

1. Double-click the computer icon at the top left of the window, click **File > Close**, or click the **X** at the top-right of the window.

Full screen mode

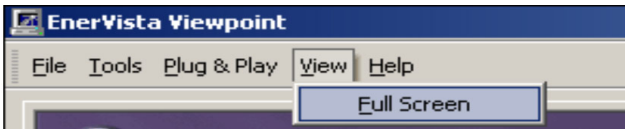
Full screen mode increases the viewable area for viewing one-line diagrams, annunciator panels, and COMTRADE oscillography files.

It can be activated separately (outlined here) or set as a default (outlined later for the **Startup Screen**).

To access Full Screen mode:

1. Click **View > Full Screen**. The display fills the entire monitor view.

Figure 27: Accessing Full Screen mode



To return the screen to original view:

1. Click the **Close FullScreen** icon, press the **Esc** key, or mouse-over the hidden menu at the top and select the **View > Full Screen** option.

Figure 28: Close FullScreen icon to exit Full Screen mode

Figure 29: Mouse-over hidden menu to exit Full Screen mode

Preferences

Although the software is fully functional using the default values, these defaults can be configured.

To access preferences:

1. Click **File > Preferences**.

Each of the tabs is outlined in this section.

Keyboard language

The software supports an English keyboard only. Adding other languages in Windows under **Control Panel > Region and Language > Keyboards and Languages** can render the software unresponsive, for example when using the Formula Editor.

Security

The following security settings can be configured in the **File > Preferences > Security** tab. These settings over-ride individual user account settings. For example, if the tab is used to specify that users do not log in to Viewpoint Monitoring, then users do not log in even when the user accounts have passwords assigned to them.

None — Users are not required to log in. Default.

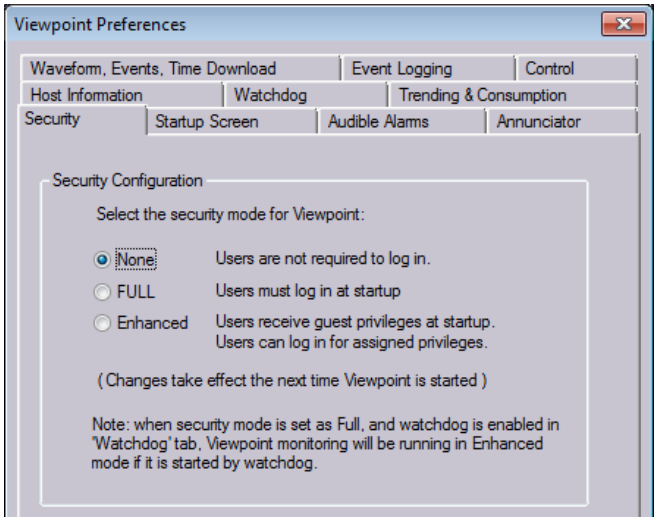
FULL — Users must log in at software startup.

Enhanced — Users receive guest privileges at startup, without login. Access is granted to the IED Dashboard, Waveforms, and viewing in One-Line Viewer, Annunciator, Events, and Trending Reports. The user does not have access to Device Setup, One-Line Editor, and Administrator functions. The user can log in to receive additional permissions assigned to their user account, such as full access to the One-Line Editor or Annunciator.

Regardless of login/security mode set, by default all users must hold down the **CTRL** key when entering a command. This feature is configured in the **Control** tab, outlined later.

For any change to take effect, the software needs to be closed and re-opened. If the Watchdog setting is on in its tab, you also need to either turn it off first or completely exit from the software in the system tray.

Figure 30: Security tab

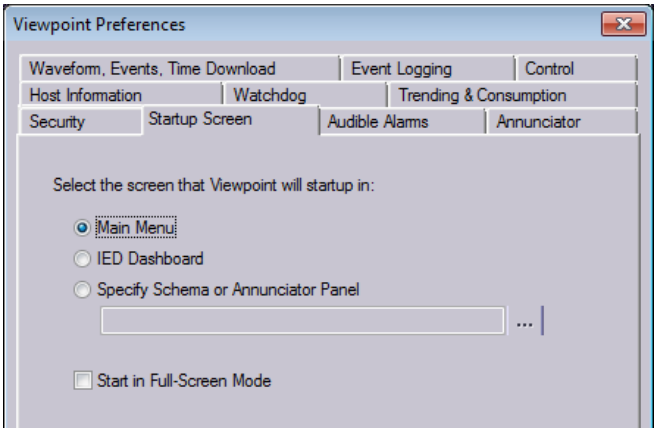


Startup screen

The main window displays by default with launch of Viewpoint Monitoring. The following windows can be selected under the **File > Preferences > Startup Screen** tab to display upon launch:

- Main window
- IED Dashboard
- Specific schema, such as an alert
- Specific Annunciator panel
- Full screen mode or normal

Figure 31: Default for startup



Up to 10 files can be opened automatically upon start of Viewpoint Monitoring.

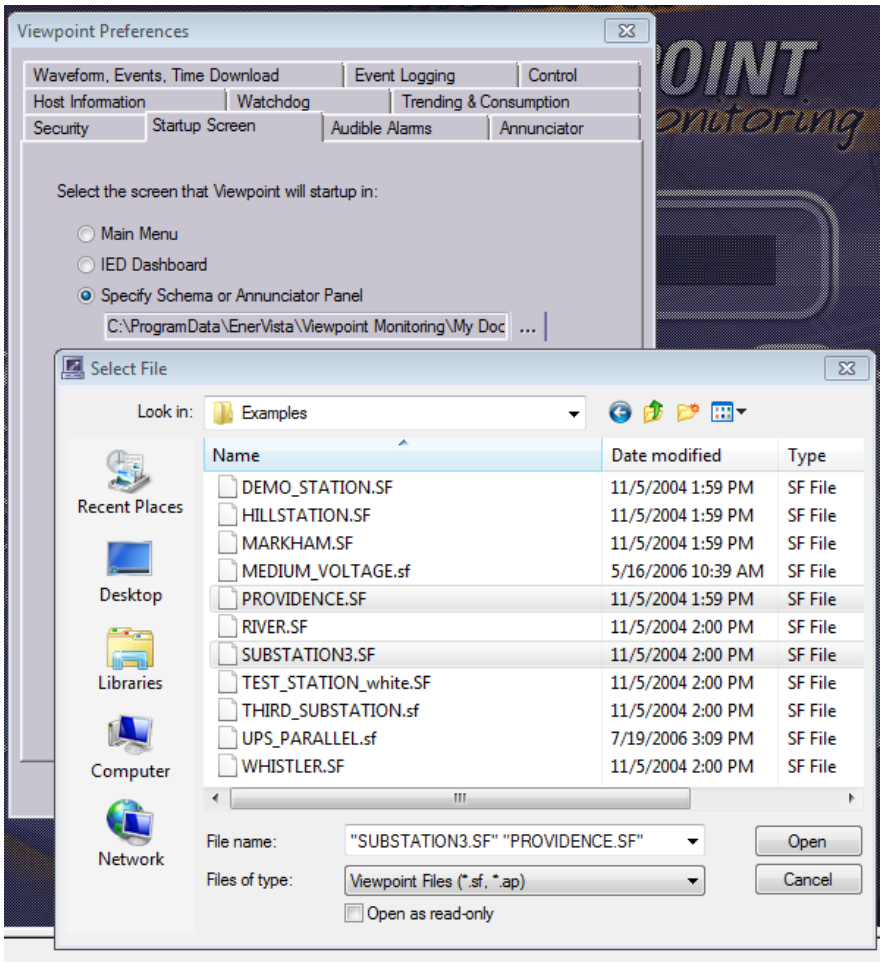
To select files to open upon startup:

1. Click the **... Browse** button and select one or multiple files.
   Multiple files are stored with full paths, delimited by ;
   There is a limitation of 1024 characters for the total of this composed path.
   An example of a path is

C:\Documents and Settings\All Users\Application Data\EnerVista\Viewpoint Monitoring\My Documents\PROVIDENCE.SF;C:\Documents and Settings\All Users\Application Data\EnerVista\Viewpoint Monitoring\My Documents\SUBSTATION3.SF

In the example shown, two one-line files are selected.

Figure 32: Selecting files to open upon startup



Audible alarms

Sounds serve to alert when an LED state changes in one of the opened schemas in the One-Line Viewer. The default sounds can be changed to any .wav files. When more than one opened schema has a condition to play a sound, the sound file for the LED type with highest priority plays.

The sounds are enabled by default without any sound files specified. Sound files in the .wav formats are included with Viewpoint Monitoring for use. The default folder is C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Sounds

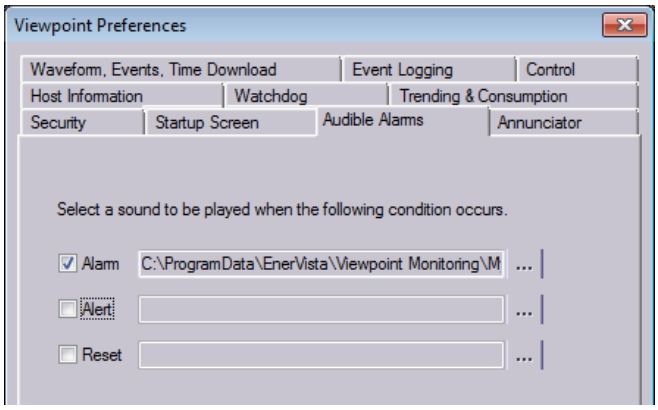
The following sounds can be set in the **File > Preferences > Audible Alarms** tab.

Alarm — Sounds when an LED changes to an Alarm condition.

Alert — Sounds when an LED changes to an Alert condition.

Reset — Sounds when LED changes state back to Normal after being Acknowledged and Reset.

Figure 33: Setting the sound file for alarms



To stop the sound:

1. Click the **Acknowledge** button when viewing the schema containing the active condition.

Annunciator

Use the **File > Preferences > Annunciator** tab to send email notifications from the Annunciator panel. You enter the Simple Mail Transfer Protocol (SMTP) mail server address in the space provided.

To configure email notification:

1. Access the **Watchdog** tab and enable the watchdog function.
2. In the **Annunciator** tab, configure the window.

   SMTP Mail Server — Address of the email server. Examples are mail.yourcompany.com and smtp.yourcompany.com.au. The address can be viewed in Microsoft Outlook under **File > Info > Account Settings > Account Settings > E-mail** in Windows 7, for example, or consult your information technology (IT) department, to ensure that the mail server is configured to accept SMTP mail requests, and that a user name and a password are not required when sending messages.

   Messages sent from the Annunciator Panel originate from — Enter a valid email address that is recognized by the SMTP mail server. Otherwise email cannot be sent by the mail server. An example is to use the email address of the employee who is the main Viewpoint Monitoring administrator or to create an email account specifically for Viewpoint Monitoring.

   Message Format:

   – **Standard Format** — The email message contains several lines of information:

     Name — Indicator's display name

     Device — Device name

     Report Type — Parameter name = Value

   – **Short Format** — This is a single line that can be used for texting to a mobile phone:

     time

     indicator's display name

     device name

     report type

parameter

value

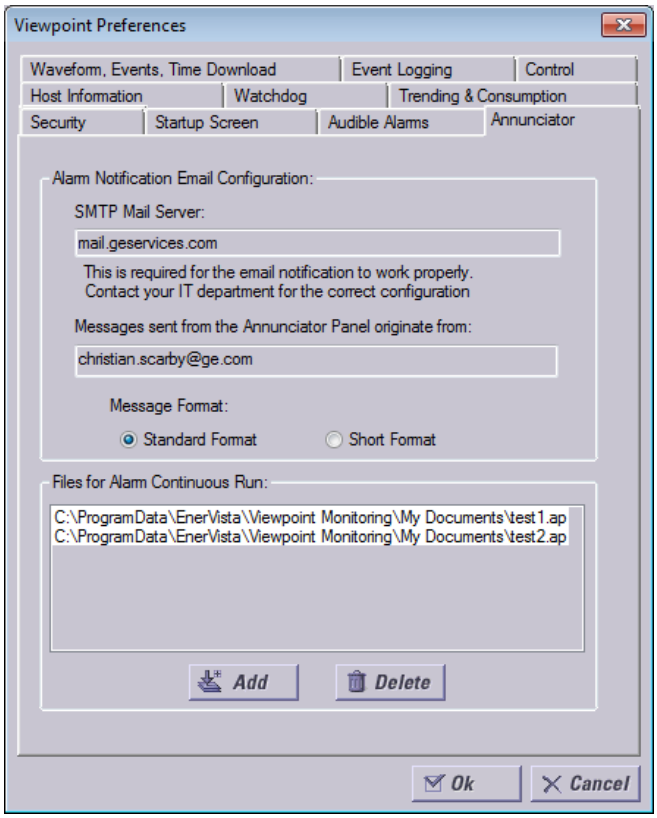
Files for Alarm Continuous Run — Set a maximum of five alarm files. Viewpoint Monitoring opens these files upon startup and keeps them running continuously. If you close an Annunciator panel file that is in the list of files to continuously run, Viewpoint Monitoring automatically opens it again.

Click the **Add** button to add any files.

In order to select the Annunciator panel files to run continuously, enable the Viewpoint Monitoring watchdog in the **Watchdog** tab. The watchdog is a Windows service to ensure Viewpoint Monitoring runs continuously.

After clicking the **Ok** button to activate the function, any alarms display automatically in the EnerVista Viewpoint software, in multiple tabs when multiple files have been added. For email to be sent, the alarm needs to be configured as such in the Annunciator window.

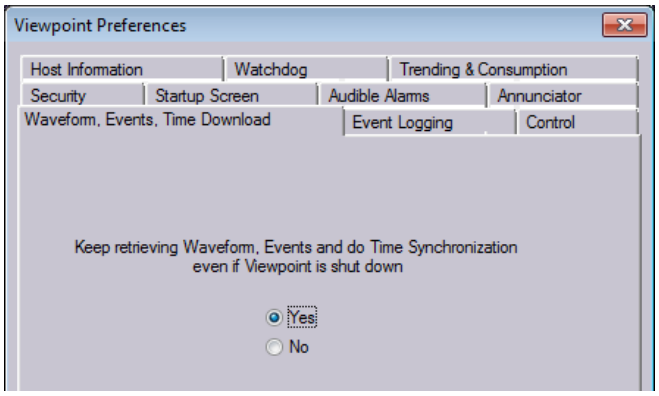
Figure 34: Configuring alarm notification defaults



Waveform and events

Waveform and event information, plus time synchronization, can be configured for continued retrieval from devices after you exit from the Viewpoint Monitoring software. Use the **File > Preferences > Waveform, Events, Time Download** tab.

Figure 35: Retrieve waveforms and events after software shutdown



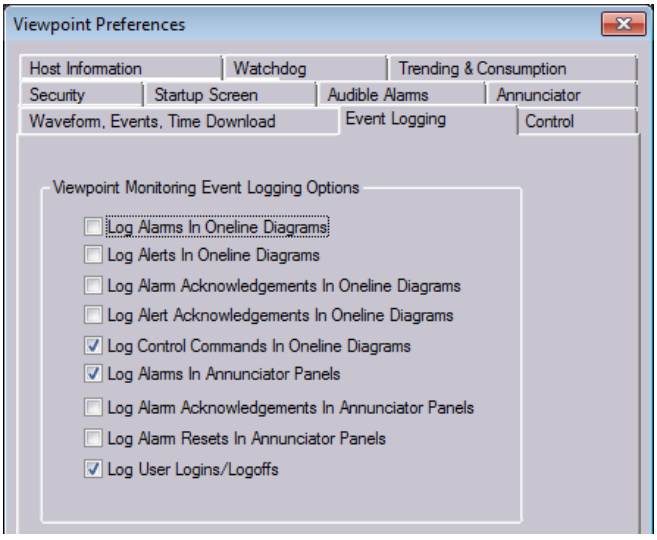
Event logging

Options for event logging are configured in the **File > Preferences > Event Logging** tab and can include login/logout and alarms and alerts from the one-line diagram and annunciator panels. This tab sets defaults for activity within the Viewpoint Monitoring software.

Events are accessed using the Events option in the main window.

Devices are configured for event retrieval using the Device Setup option in the main window.

Figure 36: Logging of activity within the software



Control

For security, by default the action of sending a control command to a relay requires the user to hold down the **CTRL** key as they select a button with the mouse pointer. This key can be changed to the **Shift** key or disabled under the **File > Preferences > Control** tab.

Note that the following products do not authenticate login attempts from EnerVista Viewpoint Monitoring to execute commands from One-Line screens. Events and waveforms also are not retrieved.

- 8 Series relay with Advanced Communication order code
- Universal Relay (UR) with CyberSentry order code

In the following example, the user is in the One-Line Viewer, clicks the purple **Clear Data Logger** button, and is prompted by a window to press the **CTRL** key to execute the command.

Figure 37: Prompt to press the CTRL key for command execution

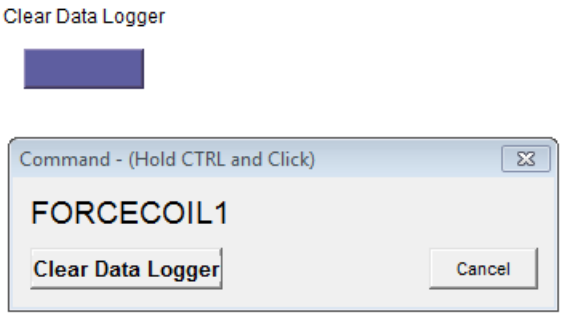
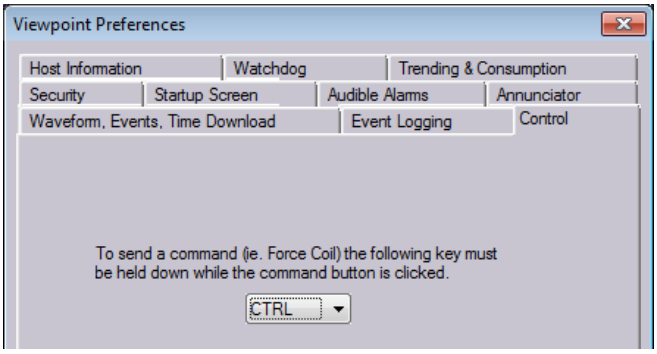


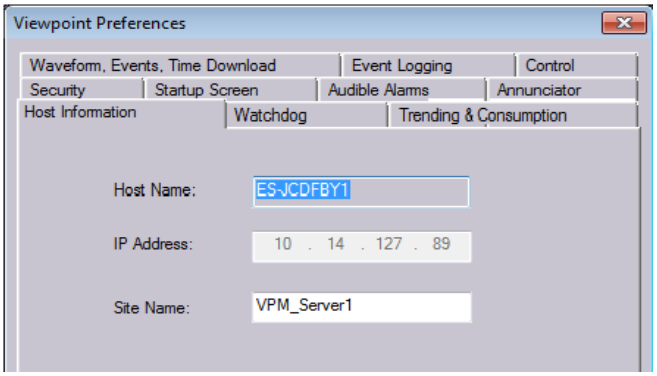
Figure 38: Default key to press for command entry



Host information

The **File > Preferences > Host Information** tab displays the name and IP address of the computer on which Viewpoint Monitoring is installed. The default **Site Name** can be changed; it is the user-defined name that a remote ViewNode computer sees when connected to the Viewpoint Monitoring server. Examples of user-friendly Site Names are "VPM_Server1" and "Viewpoint Monitoring 1."

Figure 39: Computer information and site name



Watchdog

The watchdog service can monitor Viewpoint Monitoring and ensure that the software runs continuously. It is disabled by default in the **File > Preferences > Watchdog** tab. Entry of a user name and password can be required to change the setting; use the Windows login password, not a Viewpoint Monitoring password.

When the watchdog is enabled, Viewpoint Monitoring does not exit when the user exits from the software. Instead, Viewpoint Monitoring minimizes and appears as an icon in the System Tray / Notification Area located in the bottom right corner of the Windows desktop or hidden as an icon in this area.

To restore Viewpoint Monitoring:

1. Double-click the icon in the System Tray. When hidden on the tray; click the up arrow to locate the icon.

To exit Viewpoint Monitoring when the watchdog is set to keep it running:

1. Right-click the icon in the system tray and select **Exit**.

Figure 40: Viewpoint Monitoring computer icon on System Tray beside clock

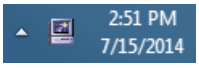
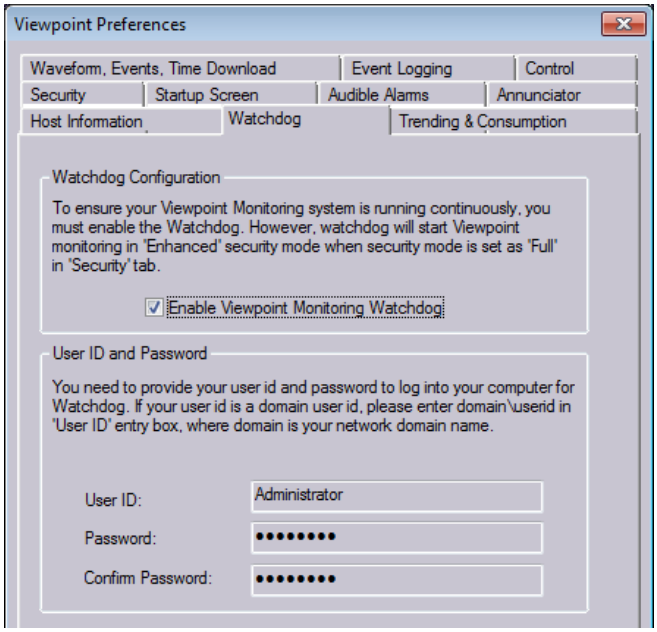


Figure 41: Watchdog set to keep software running



Trending reports and consumption data

Trending reports for a device record the values of monitored analog and digital points, with one-minute resolution.

The export consumption function provides a simple way to access energy use recorded by devices that support Energy values (URs, EPMs, 8 Series, and so on) and collected and stored by EnerVista Viewpoint Monitoring periodically. The data are for energy consumption as recorded by the device, not as used by the device. You can select one or more devices and one or more energy data values from a predefined list. Data is exported in a comma delimited format that can be processed further in Microsoft Excel including device name, parameter, units, start date/time, starting value, end date/time, ending value, consumption (end value - start value) and a quality code.

Trending reports and consumption data are stored in the local database. To prevent size-related problems, old records can be purged periodically. The preferences here purge records based on the number of days. There are additional purge functions in the Trending Reports function; see the Trending Reports chapter.

Configuration

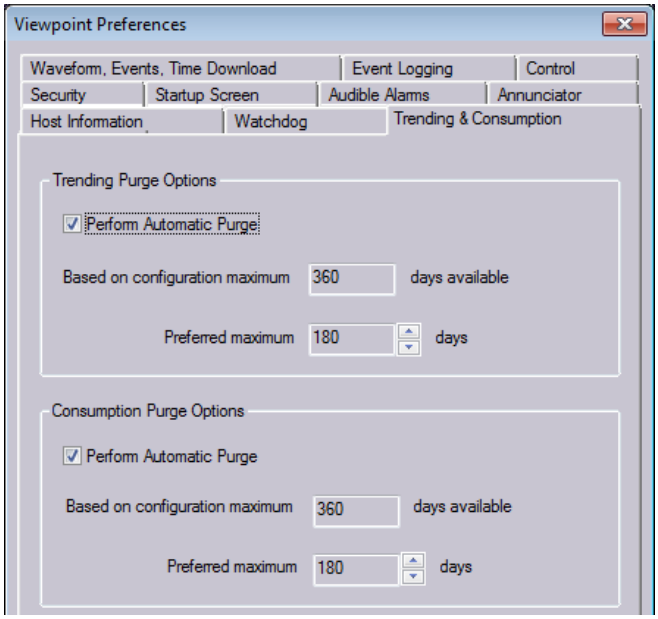
Use the **File > Preferences > Trending & Consumption** tab to set the following purge options.

Perform Automatic Purge — For the SQL Server Express database, automatic purge is mandatory, so this option is enabled by default and cannot be disabled. For all other editions of the installed SQL Server, users can opt out of automatic purge and do maintenance themselves.

Based on configuration maximum days available — For SQL Server Express, the maximum is 365 days. For all other SQL Server editions, the maximum is 730 days. The maximum is adjusted each time that a parameter is added/deleted. As such, the setting is read-only.

Preferred maximum days — Decreases or increases the maximum days. The minimum is 30 days. The maximum is determined by the previous field and the parameters added/deleted, for example 365 or 730 days.

Figure 42: Setting number of days for report storage

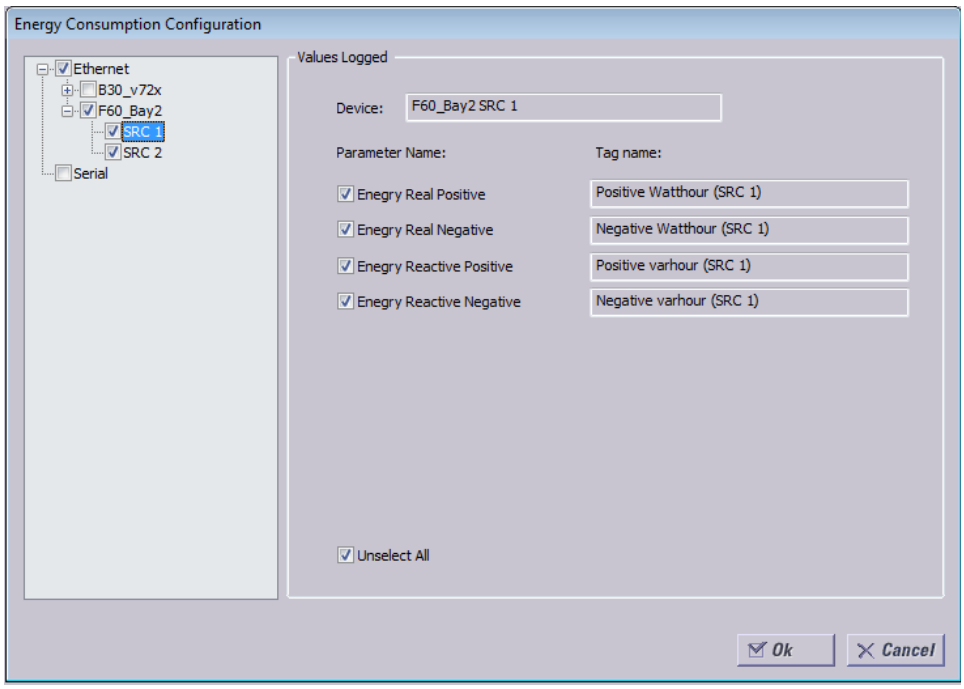


Configure energy consumption export

To configure energy consumption export:

1. Click **Tools > Energy Consumption > Configure**. The window opens. If you instead see a message to stop all Consumption Reports first, go to **Tools > Energy Consumption > Status** and click the **Stop** button.
2. Select the device and any functions, such as SRC1, on the left side. The devices are automatically listed under **Ethernet** when they are set up in the network this way. You can configure multiple devices for exports.
3. Select the values for which you want to generate an export on the right side. If you cannot see fields on the right side to select, select a field on the left side.
4. Click the **Ok** button to save and exit.

Figure 43: Energy data available to export



Check device status

To check device status before exporting energy consumption data:

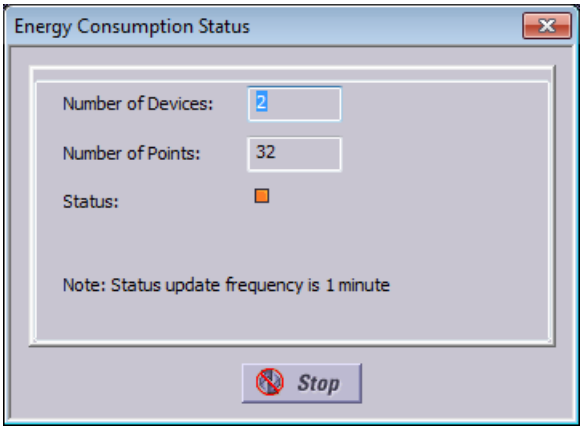
1. Click **Tools > Energy Consumption > Status**. The window opens.
2. Click the **Run** button. The indicator initially turns red while the device is checked. Wait 45 seconds to one minute for the check to complete.
3. The color of the **Status** field indicates the state of the device(s).

   Grey — No information. Click the **Run** button.

   Red — The device is offline, not functioning properly, or does not support power or energy monitoring in its order code. Fix the device before proceeding, for example by checking it in the **IED Dashboard** in Viewpoint Monitoring, then the **Dashboard** and **Power** buttons to ensure that all sources have energy data. If required, configure the device sources.
   A device can be online and appear to function normally, only to have no energy data available for reading because it does not support such functions in its order code. This is indicated by a dash, or -, where data is supposed to appear and can be verified by the absence in EnerVista software of **Actual Values > Metering > Source > Energy**.

   Green — The device is functioning normally. Energy consumption data can be exported.
4. Click the **Stop** button, else the status continues to be checked, even when the window is exited. There is no harm in leaving the status running, in which case it continues to fill the database, which is eventually cleared. If left running, you can be prompted later when exiting the software to turn off energy consumption data.

Figure 44: Checking status of two devices



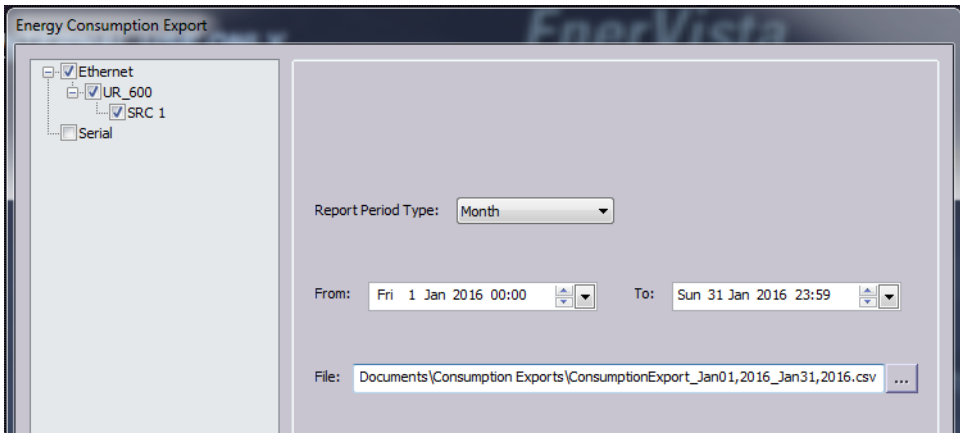
Export energy consumption data

To export energy consumption data:

1. Check device status as outlined in the previous procedure.
2. With the device in good status, click **Tools > Energy Consumption > Export**. The window opens.
3. Select the parameters for the device on the left side, for example the sources.
4. Configure the export on the right side. Options are custom, weekly, and monthly data. This refers to the data only and does not set up regular, periodic exports.

   Set the file path and name. The default is similar to C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\ Consumption Report

Figure 45: Exporting a week of consumption data



5. Click the **Ok** button to check data availability for time period specified and to export the data in the location specified. The file is saved as an Excel spreadsheet. Open it. For columns that display ########, expand the column width to view data.

   Quality — This column reads "Complete" when all the data points are present for the specific interval. It reads "Incomplete" when some data points are missing for the specific interval, for example because the device was not communicating for an interval of time. This column reads "No Data" when the software cannot communicate with the device, for example because the device is off.

Figure 46: Exported data

	A	B	C	D	E	F	G	H	I
1	Device	Parameter	Unit	Start Date	Start Value	End Date	End Value	Consumptic	Quality
2	N60_1 (SR	Positive Watthour (SRC 1)	kWh	9/14/2015 18:00	0	########	0	0	Complete
3	N60_1 (SR	Negative Watthour (SRC 1)	kWh	9/14/2015 18:00	0	########	0	0	Complete
4	N60_1 (SR	Positive varhour (SRC 1)	kVarh	9/14/2015 18:00	0	########	0	0	Complete
5	N60_1 (SR	Negative varhour (SRC 1)	kVarh	9/14/2015 18:00	0	########	0	0	Complete
6	EPM600	Delivered Watt-Hours	kWh	9/14/2015 18:00	0	########	0	0	Complete
7	EPM600	Received Watt-Hours	kWh	9/14/2015 18:00	0	########	0	0	Complete
8	EPM600	Positive var-hours	kVarh	9/14/2015 18:00	0	########	0	0	Complete
9	EPM600	Negative var-hours	kVarh	9/14/2015 18:00	0	########	0	0	Complete
10	PQMII	3 Phase Positive Real Energy Usec	kWh	9/14/2015 18:00	568059008	########	570880000	2820992	Complete
11	PQMII	3 Phase Negative Real Energy Use	kWh	9/14/2015 18:00	0	########	0	0	Complete
12	PQMII	3 Phase Positive React. Energy Us	kVarh	9/14/2015 18:00	327966016	########	329593984	1627968	Complete
13	PQMII	3 Phase Negative React. Energy U	kVarh	9/14/2015 18:00	0	########	0	0	Complete
14									

Communication status

This status, or LED, indicator displays in Viewpoint Monitoring. It provides visual and/or audible notification when an undesirable condition occurs. Both a digital state and an analog parameter can be attached to an LED state. In addition, existing analog parameters have been enhanced to include the option of defining an alarm condition.

The communication status shows one of two states:

All relays on the schema are successfully communicating

The schema is having communication problems with at least one relay

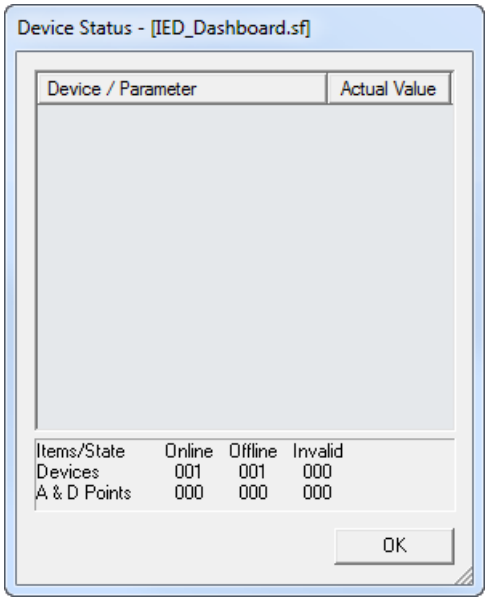
To view the communication status:

1. The communication status is located at the top-right of a window when a schema is opened in a One-Line Viewer, when using the Annunciator tool, and when in the IED Dashboard.

To view additional information about the communication state:

1. Click the **Communication Status** button. The Device Status window opens. This window is explained in the next section.

Figure 47: Device status window



Device status

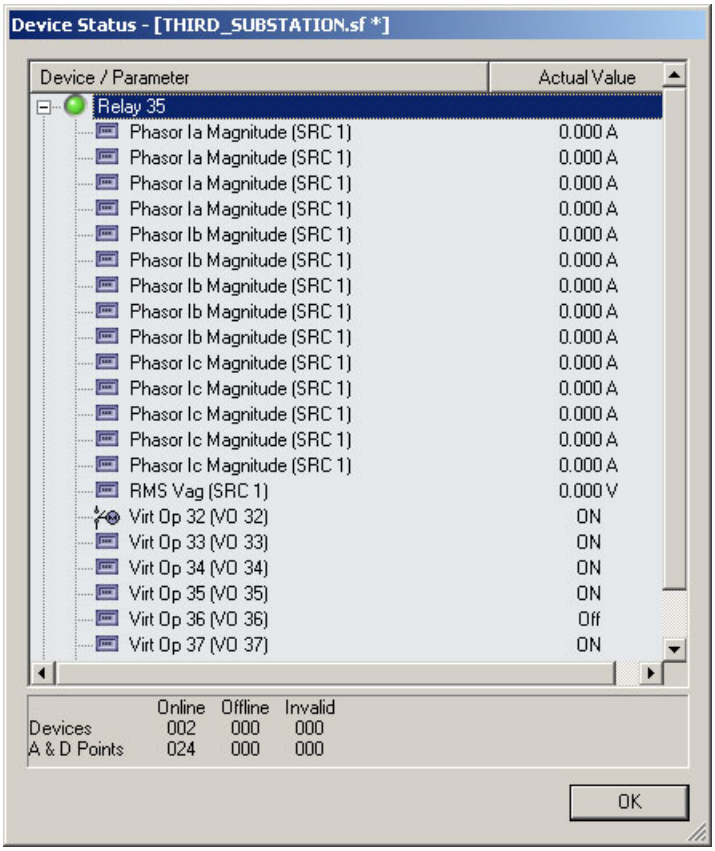
Clicking the **Communication Status** button opens the Device Status window. It does not open while in the Annunciator panel.

A green status represents a device that Viewpoint Monitoring is successfully communicating with. A grey status represents a device that Viewpoint Monitoring cannot communicate with. When no status displays, as in the previous figure, it means that nothing has been configured in Viewpoint Monitoring for that device, such as a One-Line schema.

One Device Status window can be open for each schema drawing (.sf file). When you have multiple schema diagrams open, you can have the same number of Device Status windows open.

The window displays the Device and Parameters being monitored, the Actual Values, and a summary at the bottom of the window. The parameters need to be configured in Viewpoint Monitoring, else the window is blank. Any parameters/components that have not been assigned to the device are not listed. The actual values are updated every few seconds. LED status indicators when using the One-Line Viewer are outlined in the LED indicators section on page 127.

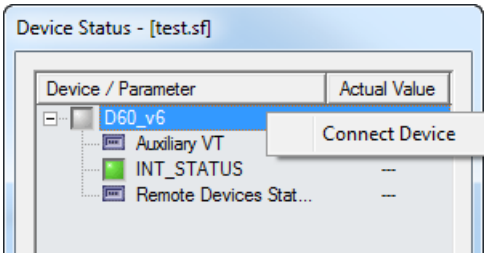
Figure 48: Device Status window accessed from One-Line Viewer



The summary at the bottom of the window is explained as follows:

- **Online** — The number of devices connected properly with any configured parameter readings being updated by Viewpoint Monitoring on a real-time basis
- **Offline** — The number of devices not connected properly. No parameter readings are being read by Viewpoint Monitoring. To attempt to reconnect all Parameters of a device, right-click the device and select **Connect Device**.

Figure 49: Reconnecting to a device



- **Invalid** — Device/parameter is not configured properly according to current schema settings. Open the One-Line Editor and reconfigure the component/ parameters.

When accessing the window within the One-Line Viewer, you can identify the parameter components in the schema diagram by double-clicking the item in the Device Status window.

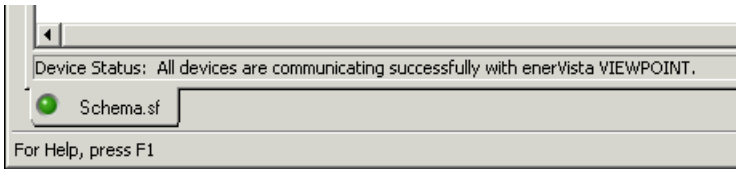
To identify a component in a schema diagram using the Device Status window:

1. In the Device Status window accessed in One-Line Viewer, expand the listing for a device by clicking the + icon or by double-clicking the device.
2. Double-click a parameter to identify it in the One-Line Viewer window. The parameter is highlighted in the One-Line Viewer window.

Alarm and alert LED indicators

Each opened schema has an associated tab located at the bottom-left of the screen. This section explains the status indicators and how to add them.

Figure 50: Schema indicator



Status explained

Each schema tab can have two pieces of information:

- A schema Indicator (round colored LED button)
- The name of the schema

For the tab to display a Schema Indicator, one of two rules must be satisfied as follows:

- The schema must contain at least one LED, or
- The schema must contain at least one analog parameter that has at least one alarm condition defined

	There are no LEDs on the schema
	All LEDs are in normal condition
	At least one LED is in alert condition and the operator has acknowledged the LED. There are no alarm conditions present.
	At least one LED is in alarm condition and the operator has acknowledged the LED
(flashing)	At least one LED has been reset. There are no alarms or alerts present.
(flashing)	At least one LED is in alert condition. There are no alarms. At least one LED has changed state.
(flashing)	At least one LED is in alarm condition. At least one LED has changed state.
	No communication to any of the relays on the schema

A flashing indicator means that there has been a state change.

The indicator displayed is the one with the highest priority, outlined as follows.

Table 3: Priorities

	Priority Level 1 - Lowest
	Priority Level 2
	Priority Level 3

Priority Level 4 - Highest

Table 4: Digital LED status

	Unknown	Communication failure or configuration problem
	Normal	LED is in normal condition
	Status	Lowest priority
	Alert	Medium priority
	Alarm	Highest priority

Statuses for the One-Line Viewer are outlined in the LED indicators section on page 127.

Alarm vs alert

When any alarm condition is met, the LED indicator changes from green to red. An alarm sound, when configured, plays once or continuously.

When any alert condition is met, the LED indicator changes to yellow. An alert sound, when configured, plays once or continuously.

An exception is that an alarm takes priority over any alert. If an alert occurs while an alarm is present, the alarm has priority. If an alert occurs followed by an alarm, the alarm overrides the alert.

When setting up conditions, the borders of the ranges can be configured to be either inclusive or exclusive. Ranges cannot overlap.

If the analog parameter selected is an enumeration, then configuring the alarm conditions is done in a different way. Instead of entering a numeric value, the operator selects an item from the list of available choices applicable to the parameter.

Sounds

Sounds serve to alert the attention of the user when an LED state changes in one of the opened schemas in the One-Line Viewer. Reset, alert, and alarm sounds are defined in the **File > Preferences > Audible Alarms** menu. You can set these sounds to any .wav files, and some are included with installation of Viewpoint Monitoring. The default folder is C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Sounds

Mute sound

The **Mute Sound** button at the top-right of the window mutes any configured audible alarm, alert, or status change.

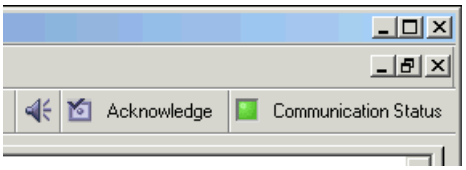
The button toggles from sound on  to sound off  .

Silence alarms and alerts

When an LED is active, it starts flashing the color associated with the LED type: red for alarm, yellow for alert. If an LED indicator is configured as type Status, it does not have to be acknowledged and does not flash while in an active condition.

Once an LED indicator changes state and goes from a solid green color to a flashing red/yellow color, a sound file plays continuously (by default) until either the **Acknowledge** button is clicked or the **Mute Sound** button is enabled. The **Acknowledge** button is located at the top-right toolbar when a schema is opened in the One-Line Viewer.

Figure 51: Acknowledge button turns off alarms and alerts



The function of the **Acknowledge** button is to

- Silence the Alarm, Alert, Status, and Reset sounds
- Change a flashing red/yellow LED to either a solid red/yellow or to a flashing green
- Reset a flashing green LED back to its solid green default state

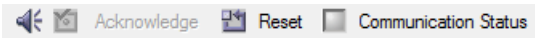
When the acknowledged LED indicator returns to a normal condition, the color of the LED changes from a solid red/yellow to a flashing green and the Reset sound file plays continuously (by default).

The flashing green indicates to the operator that there was an LED indicator with an acknowledged condition that changed back to a normal condition. The flashing green state now needs to be acknowledged again. Acknowledging the flashing green LED stops the sound. Click the **Acknowledge** button to reset the flashing green LEDs to a solid green state.

The function of the **Reset** button is to

- Reset all indicators whose alarms have been triggered and Acknowledged. The indicators go from a solid color back to a grey color.

Figure 52: Reset button resets alarm



Whether an alarm or alert plays once or continuously is set in the Annunciator panel in the **Audible** tab.

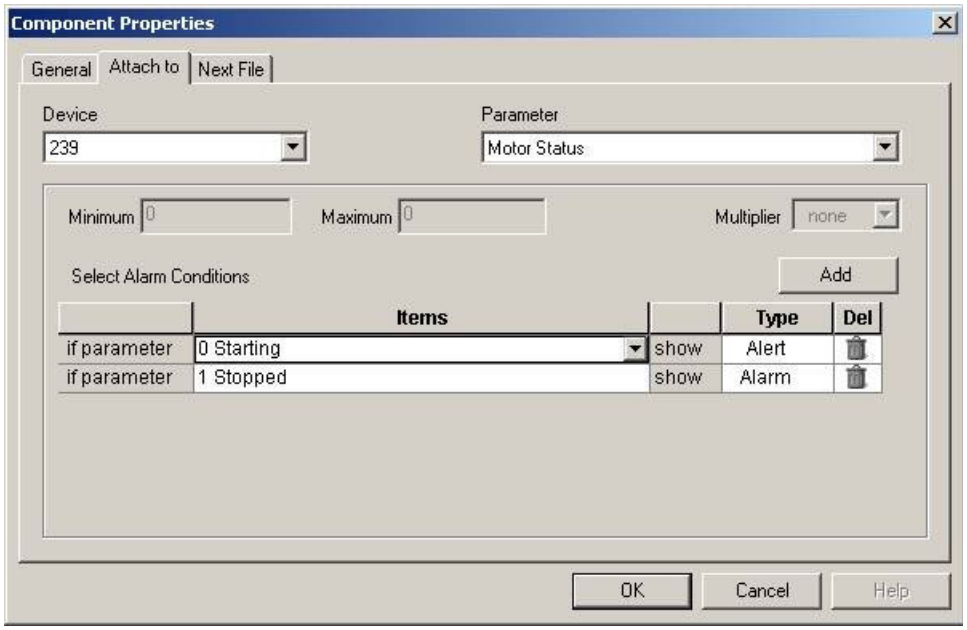
Add LED indicator

There are two ways to add an LED indicator to a schema, as follows:

- By selecting the LED icon, located on the Switch Gear and Control toolbar in the One-Line Editor
- By creating the LED indicator through the properties of an analog component/ parameter

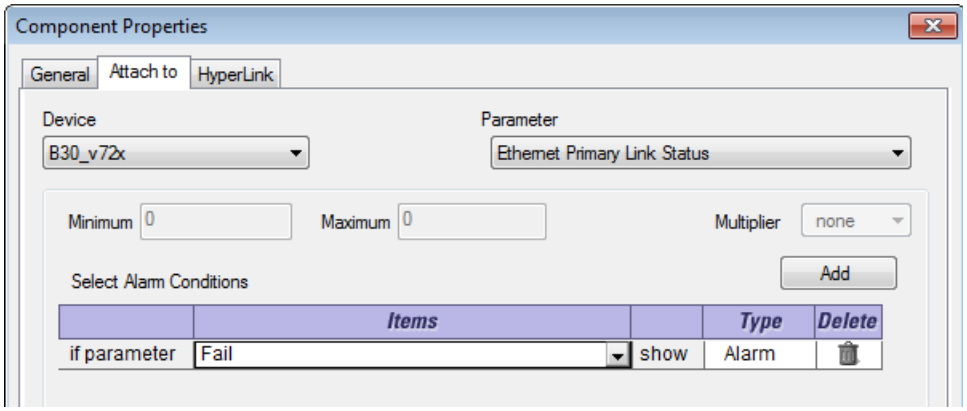
The figure shows an example. When the motor starts, an alert generates. When the motor stops, an alarm generates.

Figure 53: Configuring alert and alarm



As another example, an alarm generates when the Ethernet connection goes down.

Figure 54: Alarm for failed Ethernet connection



Analog and digital indicators are outlined here. The analog format enters normal equations, while the digital formula performs AND, OR, and NOT calculations.

Add analog LED indicator

An analog format enters normal equations. An LED indicator can be added.

There are two ways to add an LED indicator on an analog schema. The direct way is to select the LED icon and place the icon in the schema work area. The indirect way is by means of the analog component/parameter.

Method 1: Direct

To create an analog indicator:

1. In the main window of Viewpoint Monitoring, click the **One-Line Editor** option. The window opens.

2. Click the LED icon on the Switch Gear and Control toolbar. (If the toolbar is not present, enable it under the **View > Toolbar** menu.) The Create LED window opens.

Figure 55: Switch Gear and Control toolbar

3. Select the **Analog** option, then the size of the LED indicator. The size is either Small or Large.

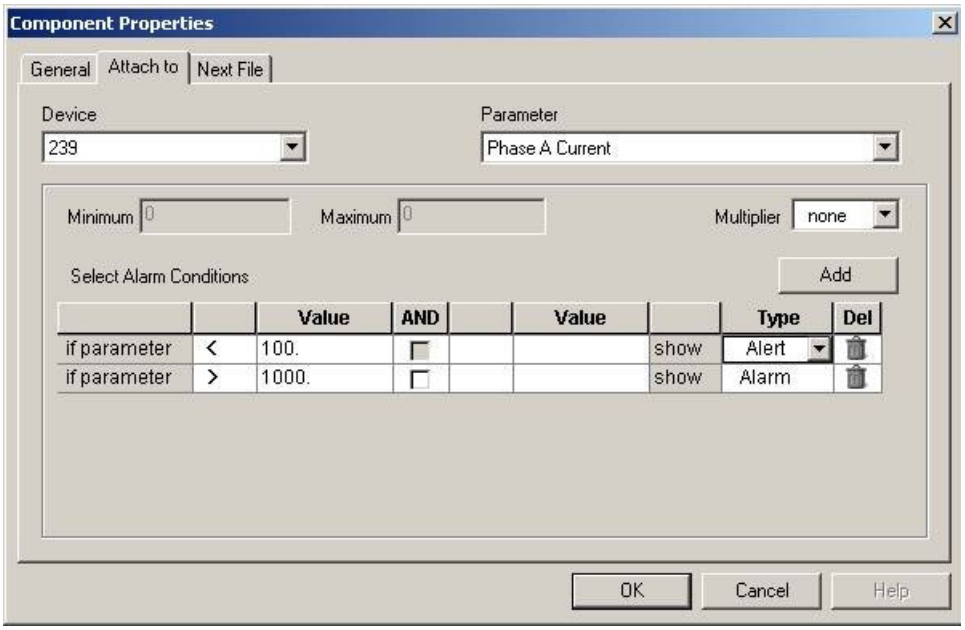
Figure 56: Selecting the type of analog indicator

4. After selecting the size, press the left mouse button at the location on the schema to place the LED indicator.

Figure 57: Unconfigured indicator

5. Double-click the LED indicator and edit the properties to attach the LED indicator to a device and an analog parameter. For proper functioning, the LED needs to have at least one range defined. The multiplier can also be selected in order to adjust Viewpoint Monitoring's displayed value to match the value displayed by a device.

Figure 58: Configuring the analog indicator



For the LED indicator to work properly, there needs to be at least one alarm condition. The number of alarm conditions that can be created for each LED is unlimited.

Each range condition entered can be configured as one of two **Types**: Alarm or Alert.

Click the **OK** button to save and exit.

6. After specifying a device and an analog parameter, the LED changes to its normal-condition state (green). If not, click the **One shot test** button on the menu bar or press the **F5** key.

Figure 59: Configured indicator

Method 2: Indirect

In the One-Line Editor, all of the analog components found in the Gauges toolbar can be configured to show an alarm/alert state, except for the multi-value circle, the multi-value bar, and the phasor graph.

When an analog parameter has a condition configured, the parameter displays with a double border.

Figure 60: Double border indicates alert/alarm configuration

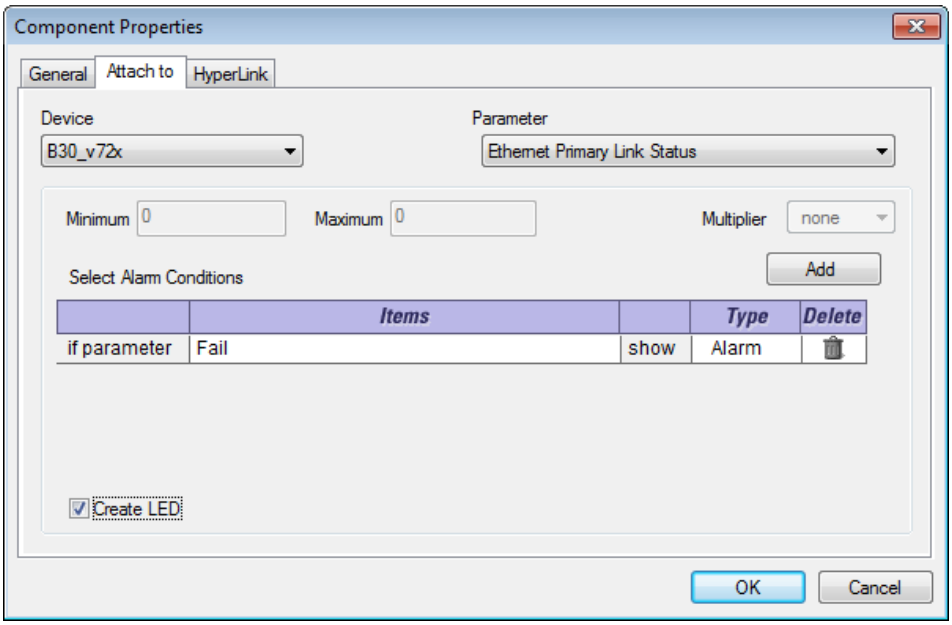
If an analog component has conditions defined, the Line, Fill, and Font settings for the parameter cannot be changed. This means that the parameter's color is predefined to be green (normal), red (alarm) or yellow (alert).

There is a **Create LED** check box located in the bottom left of the parameter properties window to create a small LED that has the same condition properties as the analog parameter being edited.

To create an analog indicator:

1. In the One-Line Editor, access the **Attach to** tab of the parameter.
2. Enable the **Create LED** check box at the bottom-left of the window. This creates a small LED that has the same condition properties as the analog parameter being edited.

Figure 61: Adding an indicator for an analog component



3. Click the **OK** button to save and exit. The LED changes to its normal-condition state (green). If not, click the **One shot test** button on the menu bar or press the **F5** key.

Add digital LED indicator

A digital formula performs AND, OR, and NOT calculations. An LED indicator can be added.

To add a digital indicator:

1. In the main window of Viewpoint Monitoring, click the **One-Line Editor** option. The window opens.
2. Click the LED icon on the Switch Gear and Control toolbar. (If the toolbar is not present, enable it under the **View > Toolbar** menu.) The Create LED window opens.

Figure 62: Switch Gear and Control toolbar

3. Select the **Digital** option, then the size of the LED indicator. The size is either Small or Large.

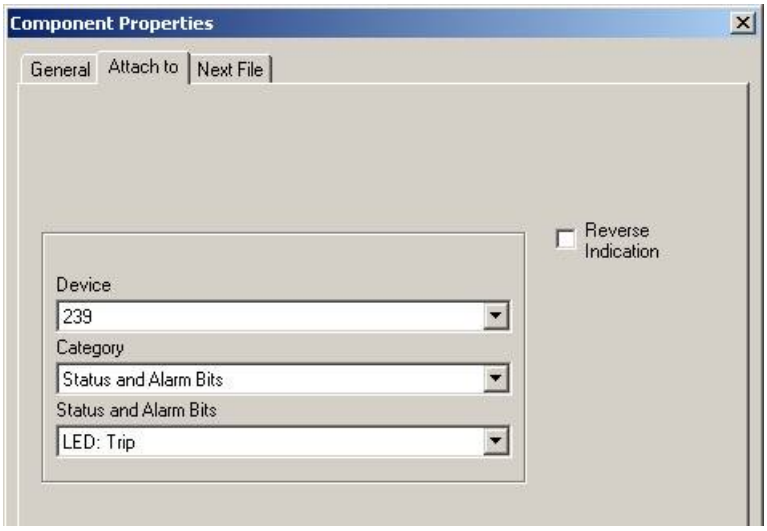
Figure 63: Selecting the type of digital indicator

4. After selecting the size, press the left mouse button at the location on the schema to place the LED indicator.

Figure 64: Unconfigured indicator

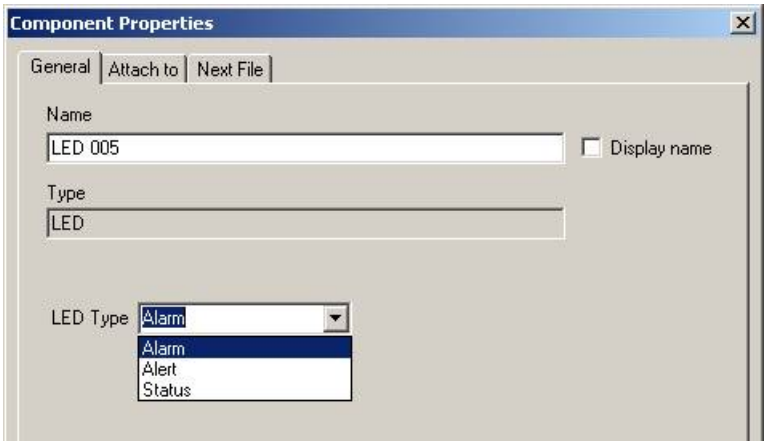
5. Double-click the LED indicator and edit the properties. In the **Attach to** tab, edit the LED properties to attach the indicator to a device and a parameter. The indicator can also be configured to become active when the digital parameter has a value of 0 by enabling the **Reverse Indication** check box. The LED indicator shows the current state of device's digital parameter (0 or 1).

Figure 65: Configuring the digital indicator



6. In the **General** tab, select the **LED Type**. A digital LED indicator can be one of three LED types: Alarm, Alert, or Status.

Figure 66: Selecting the type of digital indicator



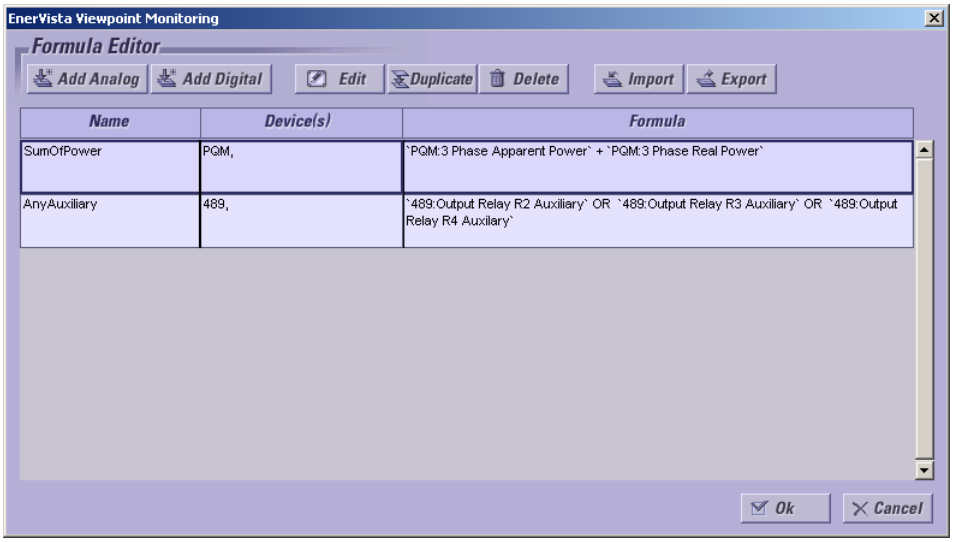
7. Click the **OK** button to save and exit. The LED changes to its normal-condition state (green). If not, click the **One shot test** button on the menu bar or press the **F5** key.

Formula editor

The Formula Editor is a tool available within Viewpoint Monitoring to create Virtual Variables. These Virtual Variables are based on values from relays that can be modified with simple math operators and trigonometric functions. Up to 1,000 formulas can be added.

Formulas can be added, used, duplicated, imported, exported, updated, and deleted. The figure shows examples.

Figure 67: Formulas



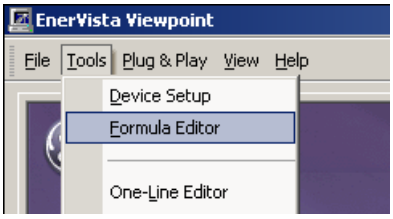
Formulas are stored in the EVVPmonitoring.for file. This file is located in the installation folder where EVVPmonitoring.exe is located, for example C:\Program Files (x86)\Enervista\EnerVista Viewpoint Monitoring. The file contains a list of records. Each line in the file is a comma-delimited record, where each record defines the properties for a single formula.

Add formula

To add a formula:

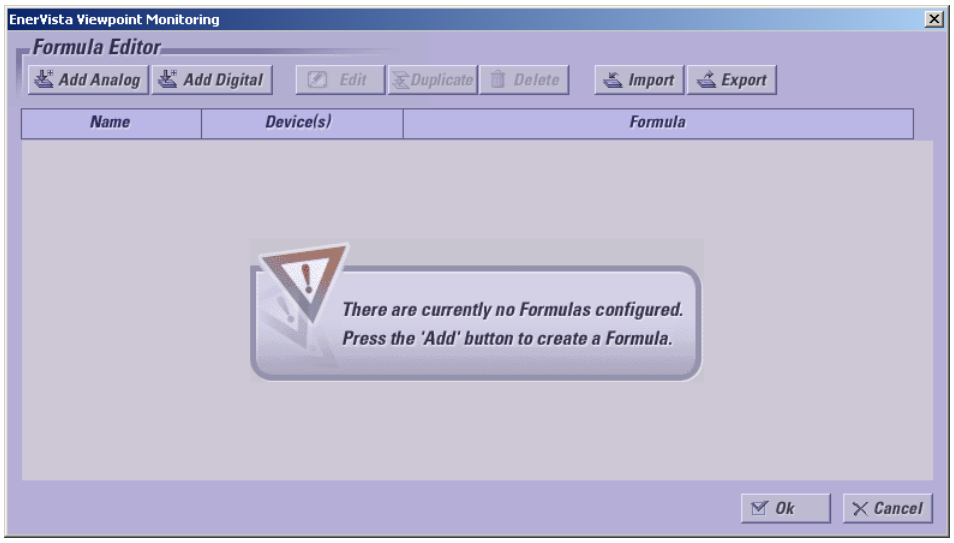
1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens, with any existing formulas listed.

Figure 68: Accessing the Formula Editor



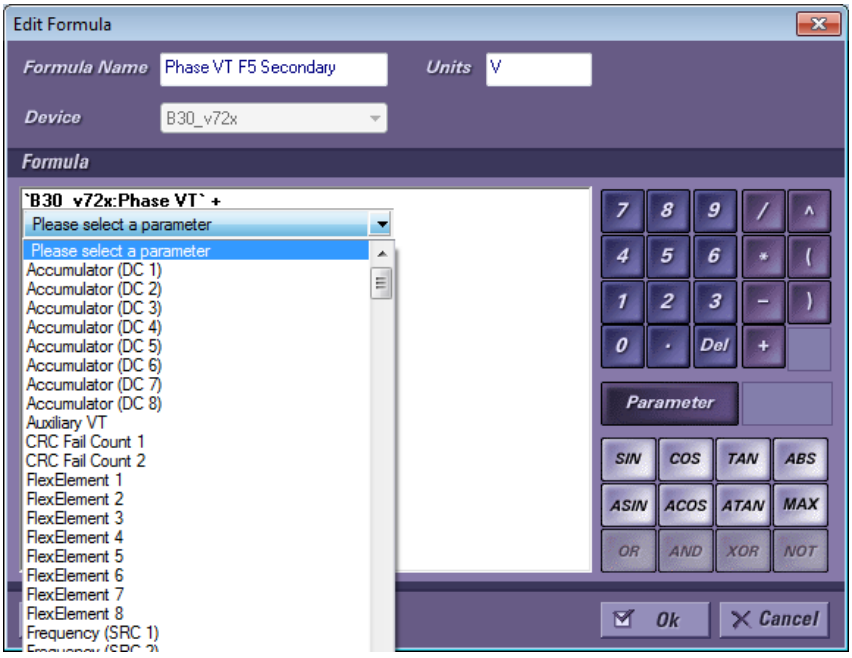
2. Click the **Add Analog** or **Add Digital** button. The analog format enters normal equations, while the digital formula performs AND, OR, and NOT calculations. The Edit Formula window opens.

Figure 69: Formula Editor window



3. Use the graphical keypad and buttons displayed to enter the formula. Use the mouse to move the cursor position and to highlight blocks of the formula.

Figure 70: Analog formula window



Formula Name — Name of formula. Required field.

Units — The units of measure for the formula. Required field.

Device — Select a device from which the parameters are selected. The device is used only as a template. If you reference another, similar device, then the same formula is available to other devices.

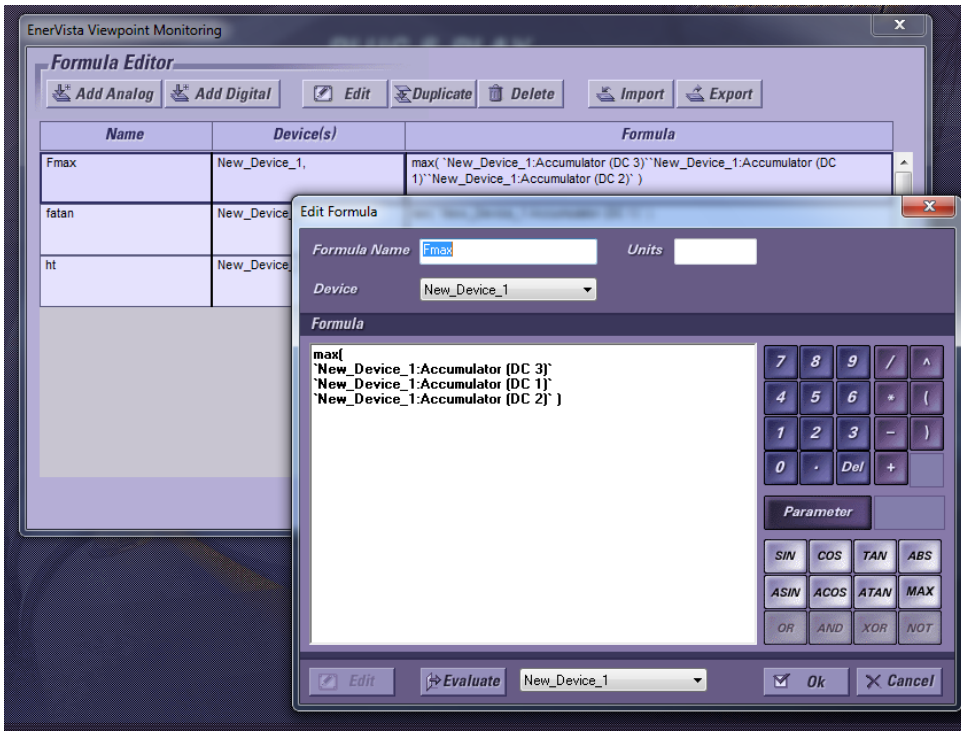
Formula — Enter the formula. Click the **Parameter** button to insert a parameter variable in the formula. You then click it to select this parameter from the drop-down box containing a list of all possible analog parameters for this particular device.

+ — In the example shown in the previous figure, one parameter value is to be added to another. The plus sign appears after the first parameter.

Del — Click this button to delete any selected formula entry, for example when you have two parameter fields and only want one.

Max — Computes the maximum among operands in brackets. Available only for Analog formulas. The following figure shows how to use the Max feature.

Figure 71: Maximum of several operands



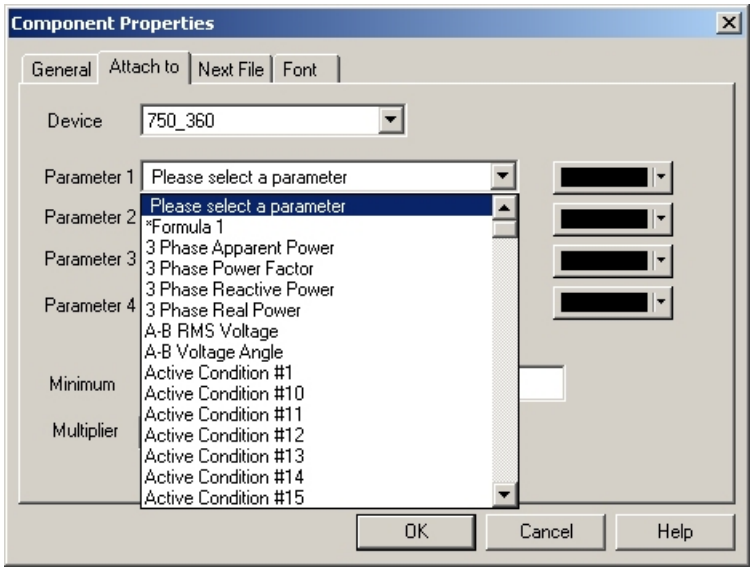
4. If applicable, add any other operator, for example by clicking the **+** button.
5. Click the **Evaluate** button to have the formula parameters resolved (communication requests retrieve data values). Instead of the formula, all of the individual parameter values and the formula results display.
6. Click the **Ok** button to save and exit.

Use formula

In the One-Line Editor window, for example, device formulas are accessible in any parameter list. The list of formulas created for a device is appended to the parameter list of a device. Analog formula names are prefixed with "*" to differentiate the formulas from the device's analog parameters. Digital formula names are prefixed with '#' to differentiate the formulas from the device's digital parameters.

The figure shows the component properties of a multi-value circle gauge. "Formula 1" was previously created for the device and is seen in the analog parameter list prefixed by "*".

Figure 72: Using an analog formula prefixed with *



Duplicate formula

To copy a formula:

1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens.
2. Select a formula.
3. Click the **Duplicate** button.

Import formula

Files of the .for format can be imported.

To import a formula file:

1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens.
2. Click the **Import** button.
3. Select the file. Viewpoint Monitoring reads the records from the selected file and appends the formulas to the existing formula file.

Export formula

A formula can be exported in the .for format. This is simply a "Save As" feature. The data is not reformatted.

To export a formula:

1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens.
2. Click the **Export** button. The window opens.
3. Enter a file name and click the **Save** button.

Update formula

To edit a formula:

1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens.
2. Select the formula and click the **Edit** button, or double-click it. The window opens.

Delete formula

To delete a formula:

1. In the main window of Viewpoint Monitoring, click **Tools > Formula Editor**. The window opens.
2. Select the formula.
3. Click the **Delete** button and confirm the deletion.

Online help

To view this instruction manual, click **Help > Contents**.

EnerVista Viewpoint Monitoring

Chapter 4: IED Dashboard

This chapter outlines how to use the dashboard.

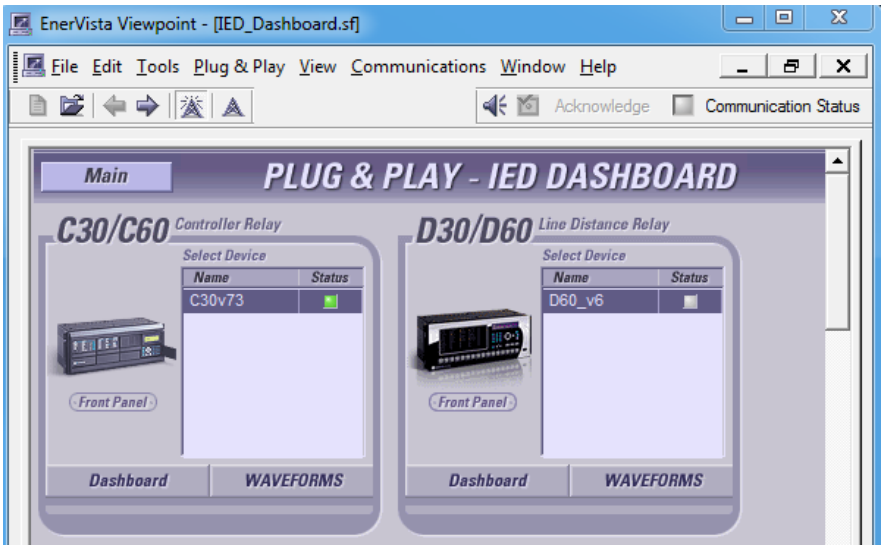
- Access dashboard
- Access device front panel
- Import templates
- Toolbars and buttons

Introduction

The Plug & Play IED (Intelligent Electronic Device) Dashboard allows you visualize the status various monitored devices. Devices can be added through the Device Setup to create representations devices being monitored.

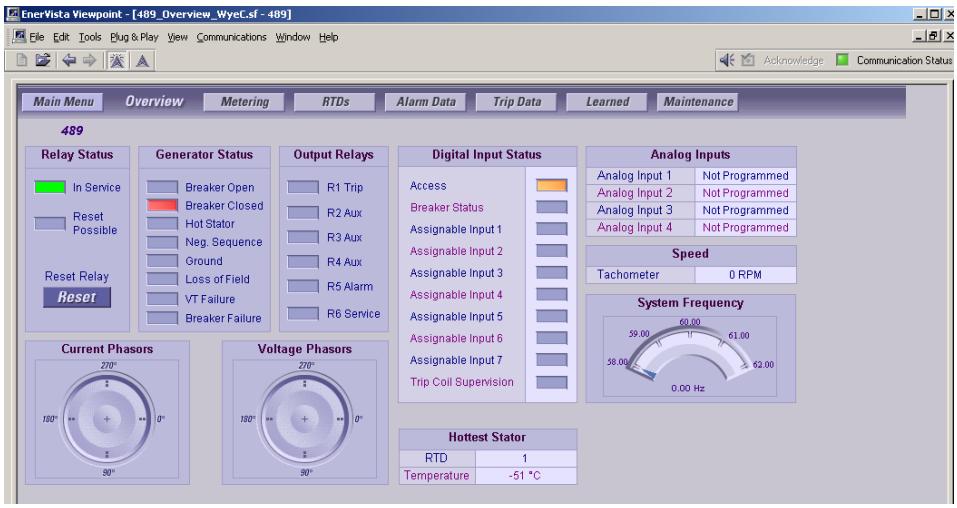
The views can be customized and updated to reflect newly setup devices

Figure 73: IED Dashboard



Each device within the dashboard has its own configured plug and play screens, as shown in the following figure. These screens have navigation buttons at the top that vary by product. The LED indicator at the top right of the screen shows the communication status of the device and is green when communicating successfully with the device. The **Main Menu** button returns the view to the IED Dashboard.

Figure 74: Dashboard for a product

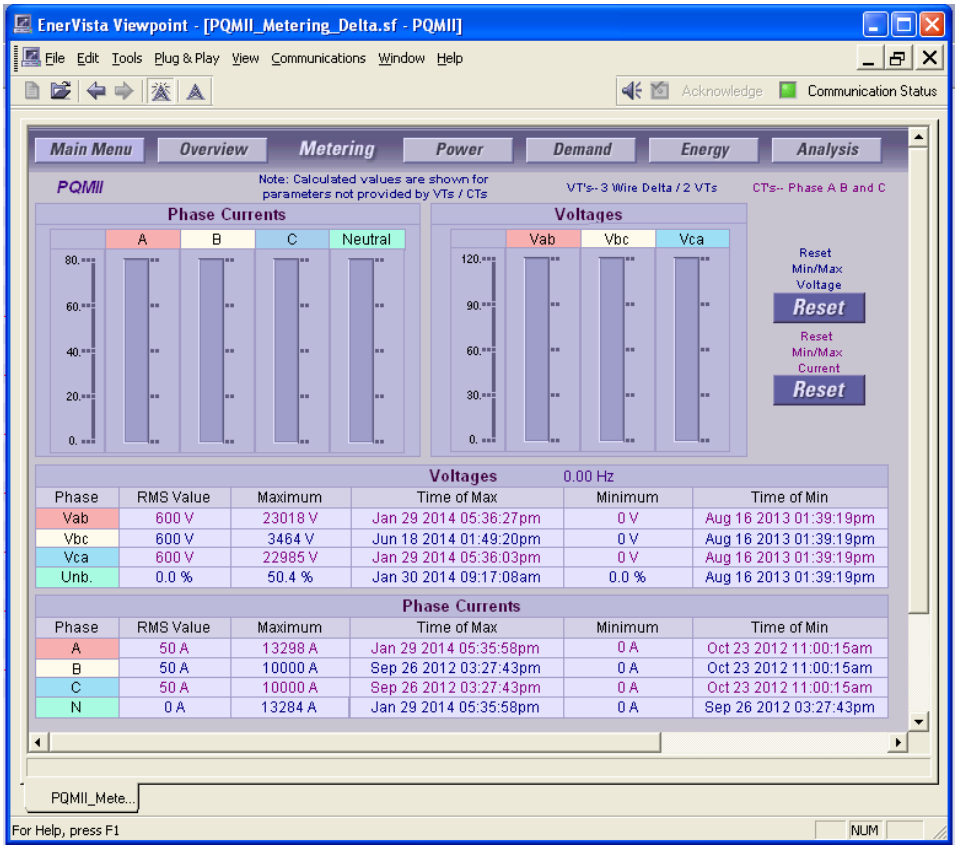


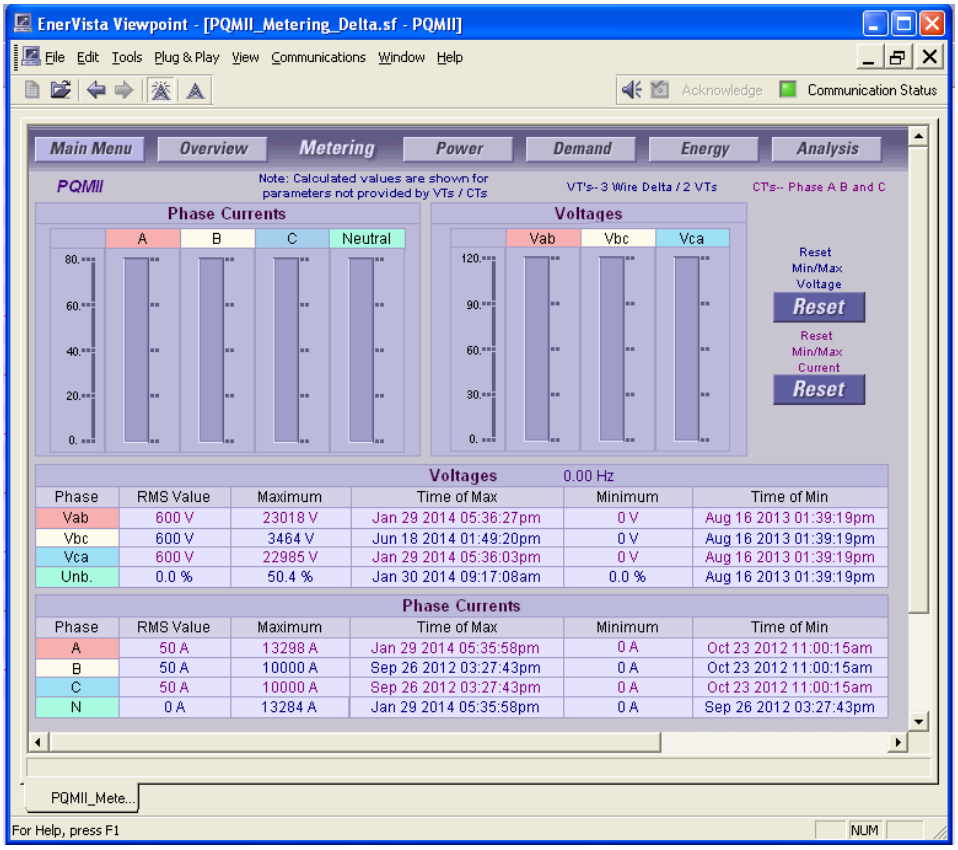
The following figure shows an example for a PQMII Power Quality Meter device to instantly view the following critical information:

- Power quality and equipment status

- Load unbalances using real time and maximum and minimum values
- Consumption and cost of energy using inputs from revenue meters
- Amount of total harmonic distortion on the power system

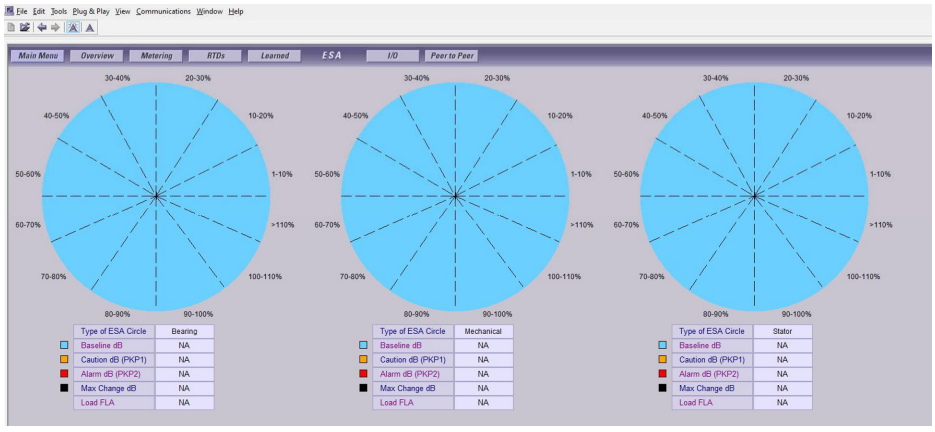
Figure 75: Viewing critical information quicklyDashboard for a product





The visualization of data in the device screens also highlights specific features of the device offering. For example, in the 859, 869 the Electrical Signature Analysis (ESA) functionality is visualized in the device screen under the ESA tab:

Figure 76: ESA Functionality



New releases/updates of Enervista Viewpoint Monitoring provides support for new devices as well as updates to existing devices. The updates are detailed in the release notes for each release.

As part of the Enervista Viewpoint Monitoring v8.15, support for the Multilin Agile and MM300 Enhanced were added providing data collection, monitoring and visualization.

Figure 77: Multilin Agile and MM300E supported in V8.15

Access dashboard

Add devices using Device Setup before accessing the dashboard. See the Quickstart Guide to add devices.

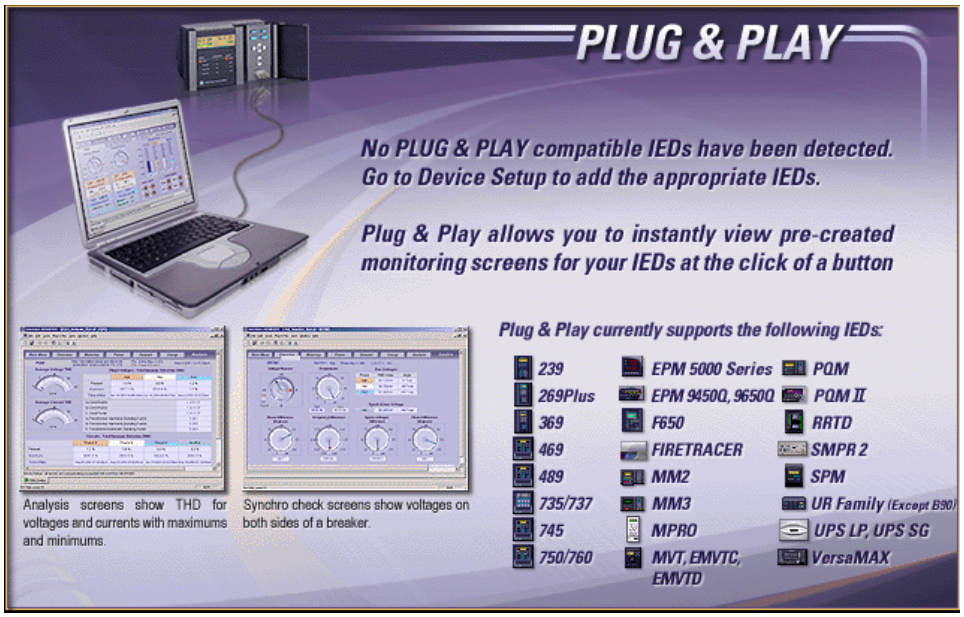
To access the dashboard:

1. In the main Viewpoint Monitoring window, click the **IED Dashboard** option. The window opens.

Figure 78: Access the dashboard from the main window

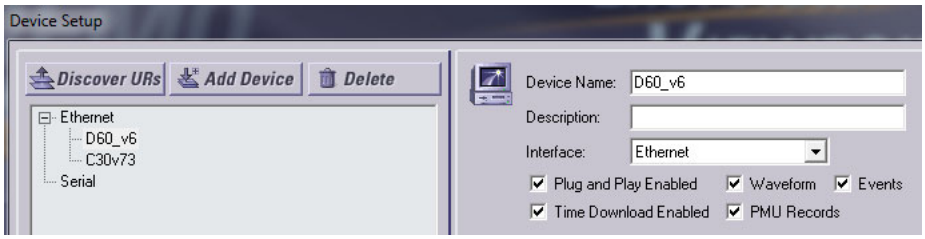
2. When no devices have been set up within the software for use, the only available option is to Import Templates.

Figure 79: Dashboard when no devices set up



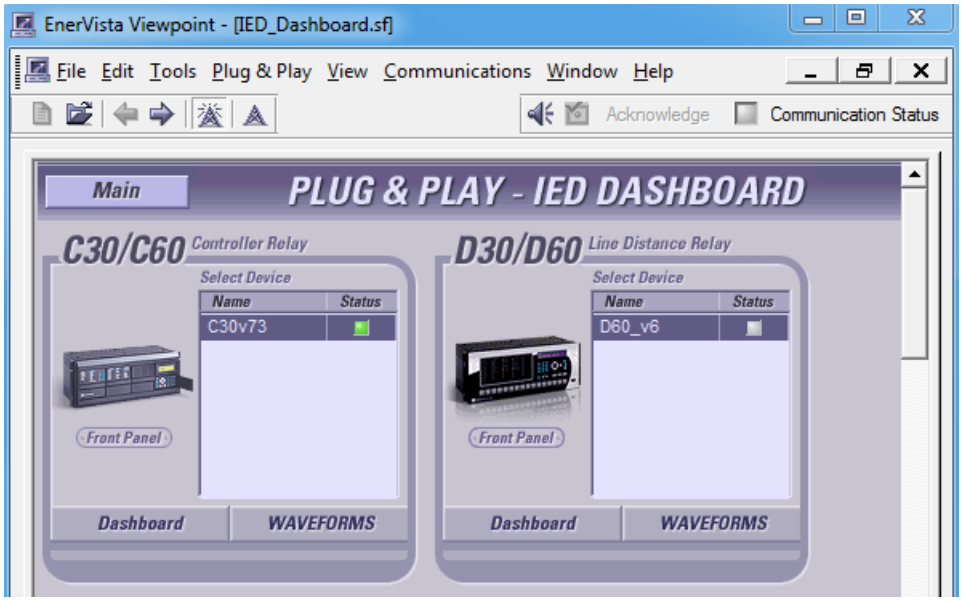
When devices have been set up within the software for use, they appear in boxes. The device needs to be configured in the Device Setup window with **Plug and Play Enabled** to allow display here.

Figure 80: Device configured to allow display (Plug and Play Enabled)



When a device changes state between online and offline, it can take 30 seconds to a minute for the status to be updated in the window. The following figure shows one device that is online and one that is offline, as indicated by the green and gray LED indicators.

Figure 81: Dashboard when devices set up



3. To access the dashboard for a product, click its **Dashboard** button. The window opens.

The interface is explained at the end of this chapter.

Note: If configured and used, the User Definable P&P screens are only available on the Viewpoint Monitoring instance. Remote access through Viewpoint Monitoring ViewNode does not support User Definable P&P (Plug & Play) screens as the plug and play files for different devices type are not copied or dynamically(published) from Viewpoint Monitoring instance to the remote workstation with ViewNode installed.

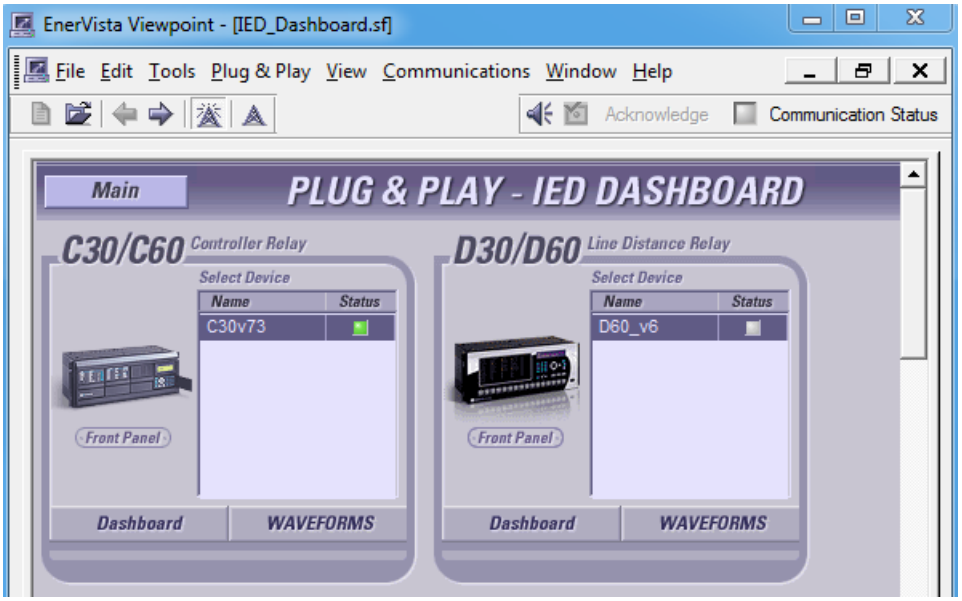
Access device front panel

The front panel of a device can be accessed in Viewpoint Monitoring, which creates a virtual view. For a device that supports remote capability, the device can be controlled remotely through this interface. It does not matter if the device is online or offline, but control can only be done when the device is online. The ability to make changes depends on user account permissions and whether login is required in Viewpoint Monitoring. For example, buttons are inactive for a Guest user account.

To access the front panel of a device:

1. Access the dashboard window.
2. Click the **Front Panel** button for the device. The window opens, which varies by device.

Figure 82: Click Front Panel button to view device



3. Click a button, for example the arrow keys to scroll through the menu for setup or actual values. When the device is offline and a key is clicked, a "failed" message displays. Or click a panel to open a larger view, then click a button to control the device.

   To send a command to the device, by default the **CTRL** key needs to pressed while the command button is clicked. This does not apply to navigation with arrow keys, only to command entry. This setting is configured under **File > Preferences > Control**.
4. Exit by clicking the **X** at the top-right of the window.

Figure 83: Controlling a device in Viewpoint Monitoring

Import templates for customization

The virtual views of devices in the dashboard are templates. These templates are included with installation of Viewpoint Monitoring. These are the demonstration files referred to earlier in this document. They can be imported into Viewpoint Monitoring, opened, and customized for use.

With hidden files and folders showing (as set in the Control Panel in Windows), files can be imported from the following folders:

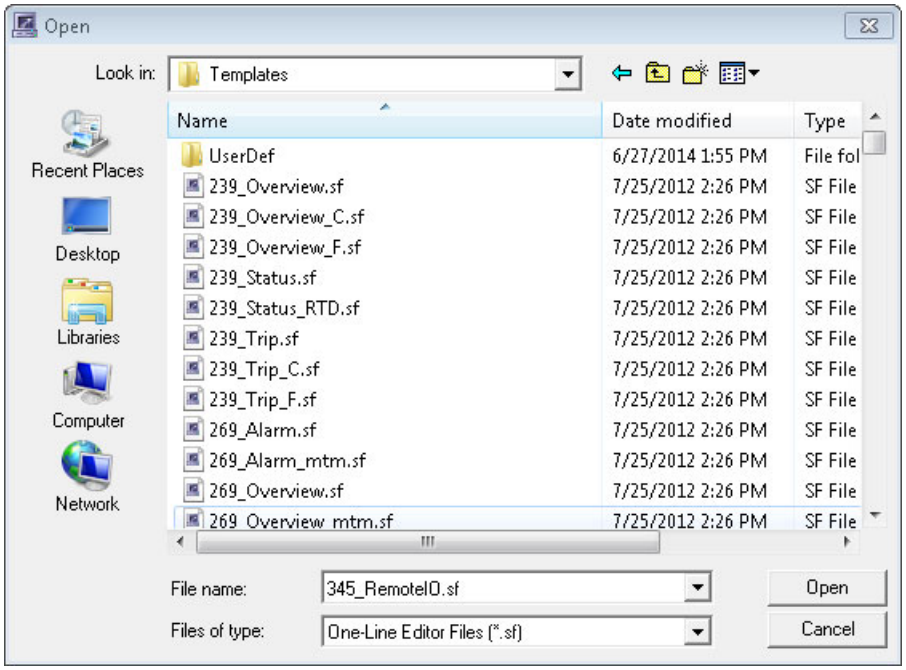
C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Plug and Play\Templates\

C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Examples\

To import templates:

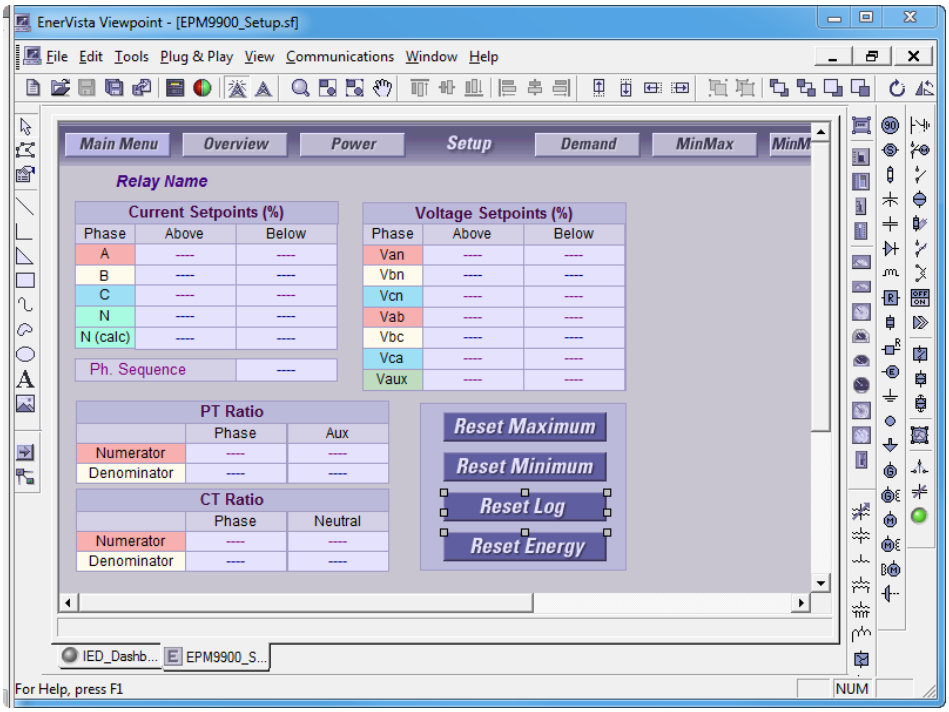
1. In the main Viewpoint Monitoring window, click **Plug & Play > Import Templates**. The option can be inactive when using a trial version of the software. A window opens.
2. In the Templates or other folder, select one of the .sf files. At the prompt, verify the import of all information associated with that file.

Figure 84: Importing a template



3. Open the file in the One-Line Editor function, for example.

Figure 85: EPM9900 template open in the One-Line Editor



Toolbar and buttons

The dashboard window contains the following information.

Figure 86: Product box

---	Select Device	List with the name and communication status of each configured device belonging to the product group. The status indicator is green when communications is established between Viewpoint Monitoring and a device.
	Dashboard	Opens the virtual-view template associated with the highlighted device in the Select Device window
	Waveforms	Opens the COMTRADE viewer so that oscillography/waveforms downloaded from the device can be viewed
	Front Panel	Opens the virtual front panel associated with the highlighted device. The virtual front panel allows direct access to the device.

EnerVista Viewpoint Monitoring

Chapter 5: Device Setup

This chapter outlines device configuration within Viewpoint Monitoring.

- Add device
- Add and manage devices with custom file editor
- Import device
- Update device
- Delete device

Introduction

This chapter describes the various elements of adding, editing and deleting devices.

A device needs to be added to Viewpoint Monitoring before it can monitored. This requires the device information which can be added automatically, manually, or by import as detailed in this section.

Devices in Viewpoint Monitoring are defined by the following files:

- .cdd definition file

- .bmp image file

These files are located in the installation folder for Viewpoiint Monitoring (C:\ProgramData\EnerVista\Viewpoint Monitoring\Devices).

The Custom File Editor provides the capability to add new GE Vernova and non-GE Vernova (third-party) devices.

Finally, this chapter also details how to update and delete devices in Viewpoint Monitoring.

Add device

Refer to Chapter 1 Introduction > Quickstart > Add a Device for instructions on adding or importing GE Vernova devices and adding non-GE Vernova devices for which you have a .cdd file.

To add other devices, use the next section Add and manage devices with custom file editor to manually define and add a device.

The current list of devices supported is shown in the Enervista Viewpoint Monitoring release notes which can be found on the website or also under **Start > All Programs > EnerVista > Monitoring Release Notes** after upgrading.

Add and manage devices with custom file editor

The Custom File Editor allows you to define a new device to be used within Viewpoint Monitoring as well as edit and delete devices already defined. This allows Viewpoint Monitoring to communicate with any device that uses the Modbus protocol for accessing data. You normally use the Custom File Editor when automatic import or automatic discovery of devices does not work.

To add a new device type, you need a product image in the .bmp format. This figure is for use in the IED Dashboard and is typically a front view of the device. The size is about 34 by 50 pixels. Place the file in the C:\ProgramData\EnerVista\Viewpoint Monitoring\Devices folder, which can require that you show hidden files and folders in the Control Panel of Windows. Or instead of creating a new image, an option is to use an existing image in that folder, for example for a similar device.

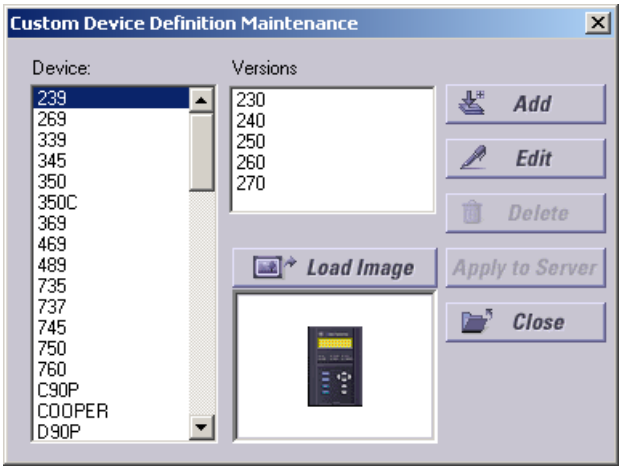
To define a device:

1. In the main window of Viewpoint Monitoring, click **File > Custom File Editor**. The window opens.
2. Scroll through the **Device** and **Versions** lists to view if the device is listed.

   Device — Displays a list of devices already defined that can be used in Viewpoint Monitoring. UR Series devices are not listed because UR products are supported differently; the memory maps are included in the code of Viewpoint Monitoring for all supported UR products and versions. The B95^{Plus} of the UR^{Plus} series is not listed because it is not supported.

   Version — Displays a list of all versions available for a product.

Figure 87: Adding a device



3. If the device is listed, skip this step.

   If the device is not listed, there are two ways to add it.

   3.1. The first way to add a device is to select a similar device and version, click the **Edit** button, rename it in the **Device Identification** field, and exit. This creates another entry in the **Device** and **Version** lists.

   3.2. The second way to add a device is to add a completely new device, as follows.

   Click the **Add** button. A window opens.

   Complete the fields.

   Product — The model or brand of the product. All text is converted later to uppercase.

Version — The version number of the device firmware without punctuation, for example 100 instead of 1.00.

Figure 88: Defining a device

Click the **OK** button to save and exit. Select the **Device** and **Version**. Click the **Load Image** button.

In the window that opens, upload a figure to display in the IED Dashboard in Viewpoint Monitoring. The default folder for the other images is the C:\ProgramData\EnerVista\Viewpoint Monitoring\Devices folder. Only the .bmp format is supported. Any other uploaded file type does not display.

4. In the Custom Device Definition Maintenance window, click the **Edit** button. The Custom Device Definition window opens.
5. Add the Modbus entries or edit any existing .cdd file that displays. The window is explained in the next section.
6. To add the new custom device type to the communication server, with the **Device** and **Version** selected, click the **Apply to Server** button.
7. Click the **Close** button to exit.

Custom Device Definition window

This section is for advanced users.

The Custom Device Definition window is used to configure existing and new devices using Modbus addresses. Changes made here affect the .cdd file for the device. The window varies with device, for example the check boxes displayed. By completing this window, you manually create a representation of the memory map of the device in the form of a .cdd file. It is for use within Viewpoint Monitoring only.

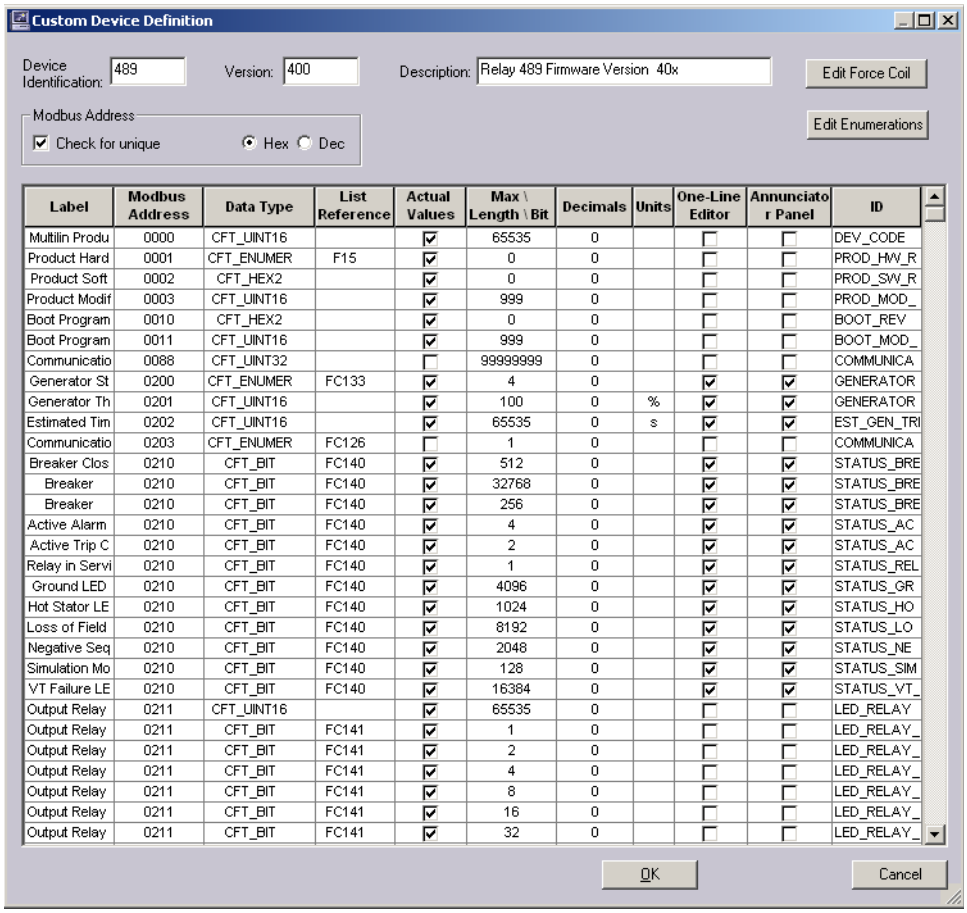
There is no option to import a .cdd file.

When entering in a new Modbus entry in the spreadsheet part of the window, the **Label** and **Modbus Address** are required. All other fields load automatically with default values.

You add only the registry entries that you want to read/monitor, not the entire memory map of a device. The entries added are usually actual values, such as power, energy, and currents. You look them up in the communications guide / memory map supplied with the device.

All entries in the custom table need to be in the communications guide / memory map supplied with the product.

Figure 89: Editing device information



Label	Modbus Address	Data Type	List Reference	Actual Values	Max \ Length \ Bit	Decimals	Units	One-Line Editor	Annunciator Panel	ID
Multilin Produ	0000	CFT_UINT16		☑	65535	0		☐	☐	DEV_CODE
Product Hard	0001	CFT_ENUMER	F15	☑	0	0		☐	☐	PROD_HW_R
Product Soft	0002	CFT_HEX2		☑	0	0		☐	☐	PROD_SW_R
Product Modif	0003	CFT_UINT16		☑	999	0		☐	☐	PROD_MOD_
Boot Program	0010	CFT_HEX2		☑	0	0		☐	☐	BOOT_REV
Boot Program	0011	CFT_UINT16		☑	999	0		☐	☐	BOOT_MOD_
Communicatio	0088	CFT_UINT32		☐	99999999	0		☐	☐	COMMUNICA
Generator St	0200	CFT_ENUMER	FC133	☑	4	0		☑	☑	GENERATOR
Generator Th	0201	CFT_UINT16		☑	100	0	%	☑	☑	GENERATOR
Estimated Tim	0202	CFT_UINT16		☑	65535	0	s	☑	☑	EST_GEN_TRI
Communicatio	0203	CFT_ENUMER	FC126	☐	1	0		☐	☐	COMMUNICA
Breaker Clos	0210	CFT_BIT	FC140	☑	512	0		☑	☑	STATUS_BRE
Breaker	0210	CFT_BIT	FC140	☑	32768	0		☑	☑	STATUS_BRE
Breaker	0210	CFT_BIT	FC140	☑	256	0		☑	☑	STATUS_BRE
Active Alarm	0210	CFT_BIT	FC140	☑	4	0		☑	☑	STATUS_AC
Active Trip C	0210	CFT_BIT	FC140	☑	2	0		☑	☑	STATUS_AC
Relay in Servi	0210	CFT_BIT	FC140	☑	1	0		☑	☑	STATUS_REL
Ground LED	0210	CFT_BIT	FC140	☑	4096	0		☑	☑	STATUS_GR
Hot Stator LE	0210	CFT_BIT	FC140	☑	1024	0		☑	☑	STATUS_HO
Loss of Field	0210	CFT_BIT	FC140	☑	8192	0		☑	☑	STATUS_LO
Negative Seq	0210	CFT_BIT	FC140	☑	2048	0		☑	☑	STATUS_NE
Simulation Mo	0210	CFT_BIT	FC140	☑	128	0		☑	☑	STATUS_SIM
VT Failure LE	0210	CFT_BIT	FC140	☑	16384	0		☑	☑	STATUS_VT_
Output Relay	0211	CFT_UINT16		☑	65535	0		☐	☐	LED_RELAY
Output Relay	0211	CFT_BIT	FC141	☑	1	0		☐	☐	LED_RELAY_
Output Relay	0211	CFT_BIT	FC141	☑	2	0		☐	☐	LED_RELAY_
Output Relay	0211	CFT_BIT	FC141	☑	4	0		☐	☐	LED_RELAY_
Output Relay	0211	CFT_BIT	FC141	☑	8	0		☐	☐	LED_RELAY_
Output Relay	0211	CFT_BIT	FC141	☑	16	0		☐	☐	LED_RELAY_
Output Relay	0211	CFT_BIT	FC141	☑	32	0		☐	☐	LED_RELAY_

Device Identification — Displays a text description for the device. For an existing device, if you change the entry here and exit from the window, a new device type is added to the **Device** and **Version** lists.

Check for unique Modbus Address (check box)— Enable to have the software prompt when you enter a Modbus address that is not unique. You must then change the value in order to continue. The only exception to this rule is when you want to manipulate bit values for a specific Modbus entry. Thus, if the data type is set to a bit for a particular **Modbus Address** mapping, you can use that Modbus Address in a different entry.

Hex/Dec (radio buttons) — Changes the way that the **Modbus Address** is entered or viewed in the spreadsheet.

Received data is LSB-MSB order (check box; not always displayed) — Enable to have the register stores values with the byte order from least-significant bit (LSB) being in the first byte position to most-significant bit (MSB) being in the last byte position. By disabling the check box, it is assumed that the register stores values in the reverse byte order.

Byte Swap (check box; not always displayed) — Modbus is a protocol where data is read as 16 bits (named words) from the devices. A word is composed of two bytes (each byte is 8 bits). For some devices, the bytes need to be swapped in order to display the information correctly in Viewpoint Monitoring.

Polling Optimization (check box; not always displayed) — When enabled, if Viewpoint Monitoring is asking for information from adjacent addresses, the information is requested from the device as a block (for example read address 1000, one word, and read address 1050, one word, the first representing the Ia RMS and the second representing some voltage Va). If all addresses between 1000 and 1050 are valid, the request from the device is read from block 1000 to 1050 in one transaction. After that, Viewpoint Monitoring picks up the required information from that block.

Some devices do not allow this kind of block reading. If you turn the Polling Optimization off, a request is made to read one word from address 1000 in our example, and a separate request is made to read one word from address 1050. This is slower in general.

Edit Force Coil (button) — To enter preset operation codes that the device has been programmed with, that the user can perform. For third-party devices, the Force Coil is the only method of sending control commands to the device. See the device's communication guide, specifically for a description of the device's Modbus Command 05 implementation.

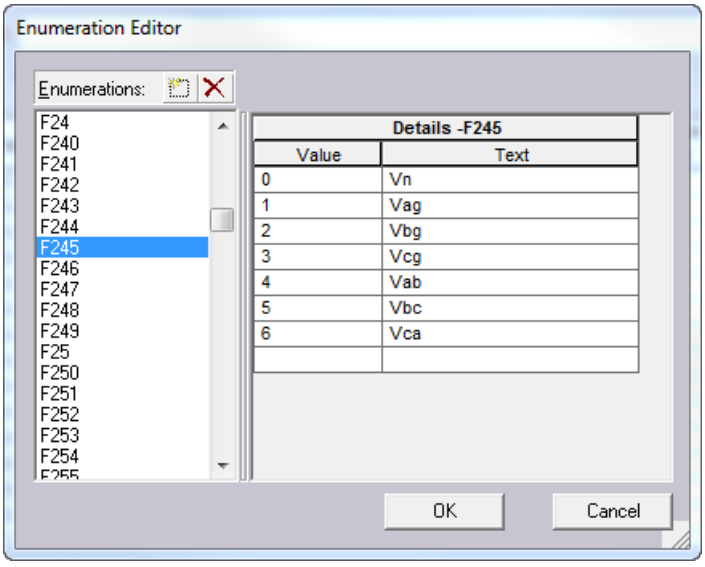
Edit Enumerations (button) — Enumeration refers to a list where we read a numeric value but want to display it as more user-friendly text. An example is that F100 can be entered as F100 or something more convenient, such as FormatYesNo.

Use this button to create number to text string mappings. These mappings can then be used to format the display of individual registers. A Modbus entry can use these mappings by entering a list name (first column in the window that opens) in the **List Reference** column.

To create the list mapping:

1. Click the **Edit Enumerations** button. The window opens.
2. Click the **New** icon near the top left. It is the square icon. A blank entry is added.
3. Enter a unique string name for the mapping in the **Enumerations** section.
4. Enter the list of numeric values and their corresponding string values.

Figure 90: Defining enumeration codes



For the following fields, when entering a new Modbus entry in the spreadsheet part of the window, the **Label** and **Modbus Address** are required. All other fields load automatically with default values.

Label — Unique name to identify the Modbus entry. Displayed when showing the value for this Modbus entry.

Modbus Address — The numeric address location for the Modbus entry. Enter the address in hexadecimal format, such as 000c or dc4e.

After entering the **Label** and **Modbus Address**, the rest of the row populates. Some of the other fields have drop-down lists for additional configuration or check boxes to enable or disable functions.

Data Type — A drop-down list that allows selection of the data type that the number represents. The table shows the options.
CFT refers to format type.
SINT refers to a signed integer, which can be a positive or negative number.
UINT refers to an unsigned integer, which is a positive number.
Integers are used in the software to define analog inputs/outputs.
Boolean values are used in the software to define digital inputs/outputs, where a Boolean value can have two possible values, such as true or false, or 0 or 1.

Table 5: Data type options

Data type	Description
CFT_BCD_TIMESTAMP	Modbus data item has an eight-bite long value. The value is encoded as first byte = hour, second byte = minute, third byte = second, fourth byte = millisecond, fifth byte = month, sixth byte = day, and the seventh and eighth byte = year. It is four Modbus registers long. Viewpoint Monitoring displays the data value in the format, such as 'Jan 27 15 10:20:30am'.
CFT_BIT	16-bit bitmask value that is converted using mask and shift operations. Modbus data item has the single bit value 0 or 1. However, when this data item is read from the Modbus device, a single Modbus register, 16 bits, is always being read. You must enter the bit mask in the **Max** column to specify which bit is to be used. The bit mask value is always 2s power based, and counted from right to left. If your CFT_BIT is the first bit from the right in the 16 bits Modbus register, you need to specify the max value as 1 (2^0. 0x0001). If your CFT_BIT is the second bit in the 16 bits Modbus register, you need to specify the max value as 2 (2^1. 0x0002). If your CFT_BIT is the ninth bit from the right in the 16 bits Modbus register, you need to specify the max value as 256 (2^8. 0x0100). If your CFT_BIT is the sixteenth bit from the right, you need to specify the max value as 32768 (2^15. 0x8000). Hence, you enter the max value as 2^(bit count - 1), where the bit count is from the right to the left. CFT_BIT value also needs an enumeration to specify the text descriptions for the value 0 and 1.
CFT_BYTE	A single byte value. However, Viewpoint Monitoring has to read at least a single Modbus register that is two bytes long. In this case, in the **Max** column, you need to enter a value to specify how many counts the bits have to be shifted to the right for the 16-bit Modbus register value. Viewpoint Monitoring uses that value to shift the Modbus register value from the device, and it uses the lower byte of the 16-bit value. For example, if the 16-bit Modbus register value is 0x02C7, the max value specified in the **Max** column is 8, Viewpoint Monitoring shift the bits of 0x02C7 eight times to the right, and after the shift, the value is 0x0002, and the lower byte 0x02 is used.
CFT_COIL_BIT	The same as CFT_BIT data type, except that the Modbus function 1 is used for reading the data item
CFT_DATE	A four-byte long value. The first two bytes represent the year, the third byte represents the day, and the fourth byte represents the month. Viewpoint Monitoring presents the value in the format of 'MM/DD/YYYY'.

Data type	Description
CFT_ENUMERATION	Enumeration stored in an unsigned 16-bit integer. Modbus data item has a fixed set of values, and each value in the set has a corresponding text description. A named enumeration has to be created in Enumeration Editor for the values and their corresponding text descriptions. Select the enumeration name for this data type in the **List Reference** column. This data type is two bytes long (one Modbus register).
CFT_FLOAT2	IEEE floating-point value with upper and lower 16-bit words reversed. Modbus data item has the value of floating point. However, the word order has to be swapped by the Viewpoint Monitoring system to correctly present the value. It is four bytes long (two Modbus registers).
CFT_FLOATING_POINT	Modbus data item has the value of floating point. Decimal points can be specified in the **Decimals** column. If the value is range-bounded, the minimum and maximum values can be entered in the columns of **Min** and **Max**. Floating point value is four bytes long (two Modbus registers).
CFT_HEX2	Modbus data item is a Modbus register, 16 bits long. Viewpoint Monitoring presents the value in the format of '0x?? 0x??', such as '0x1A 0x20'.
CFT_INPUT_BIT	The same as CFT_BIT data type, except that the Modbus function 2 is used for reading the data item
CFT_MILLI_SEC_COUNTS	A six-byte long Modbus data item. It represents the milliseconds since Jan. 1, 2000, 00:00:00. Viewpoint Monitoring system presents it in the format of 'MM/DD/YYYY HH:MM:SS.ssss'. It is three Modbus registers long.
CFT_SINT16	Signed 16-bit integer. If the value is range-bounded, the minimum and maximum values can be entered in the columns of **Min** and **Max**. It is two bytes long (one Modbus register).
CFT_SINT32	Signed 32-bit integer. If the value is range bounded, the minimum and maximum values can be entered in the columns of **Min** and **Max**. It is four bytes long (two Modbus registers).
CFT_SINT64	Signed 64-bit integer (four Modbus registers long)
CFT_TEXT	Modbus data item has the value of text string. You must enter how many characters in this text string in the **Max** column.
CFT_TIME	A four-byte long value. The first byte represents the hundredth of a second. The second byte represents the second. The third byte represents the minutes, and the fourth byte represents the hours. Viewpoint Monitoring presents the value in the format of 'HH:MM:SS:hh'.
CFT_UINT16	Unsigned 16-bit integer. If the value is range-bounded, the minimum and maximum values can be entered in the columns of **Min** and **Max**. It is two bytes long (one Modbus register).
CFT_UINT32	Unsigned 32-bit integer. If the value is range-bounded, the minimum and maximum values can be entered in the columns of **Min** and **Max**. It is four bytes long (two Modbus registers).
CFT_UINT64	Unsigned 64-bit integer (four Modbus registers long)

List Reference — Configured with the **Edit Enumerations** button, which creates a drop-down list here for selection. It maps the output values for this specific register to a text string. The text string displays instead of the numeric value on the device. Click the cell to select the enumeration mapping from the drop-down list. You can define the number-to-string mapping by clicking the **Edit Numerations** button.

Actual Values (check box) — Identifies if this register stores an actual value. When enabled, an Actual Value register is read from the device using the Modbus function 4. When disabled, the read uses Modbus function 3. This does not apply for the CFT_COIL_BIT and CFT_INPUT_BIT data types.

Max \ Length \ Bit — Largest stored value. When the **Data Type** is a String, the maximum value represents the maximum string size.

Decimals — Enter the number of decimals to display for the Modbus value.

Units — Enter the unit of measure that the register value is in, for example Hz, Hz/s, or kV. The unit string is appended to the data value prior to displaying the data.

One-Line Editor (check box) — Enable to allow the One-Line Editor to see this register mapping.

Annunciator Panel (check box) — Enable to allow the Annunciator function to see this register mapping.

ID — Unique identification. Examples are PRODUCT_ID and UR_DATA_AUTOMATION_VIRTUAL_INPUT_STATES107. These values are generated automatically by the editor, for example if the label entered in the first column is "Ia RMS," then the ID generated is IA_RMS.

Apply to server

Clicking the **Apply to Server** button allows the user to add new custom device type to the communication server. The button is active only for new device types. Select the **Device** and **Version** before clicking the button.

Delete device with custom file editor

To delete a device:

1. In the main window of Viewpoint Monitoring, click **File > Custom File Editor**. The window opens.
2. Select the **Device** and **Version**.
3. Click the **Delete** button and confirm the deletion. This deletes the .cdd file from Viewpoint Monitoring. The default folder with the files is C:\ProgramData\EnerVista\Viewpoint Monitoring\Devices
4. Manually delete the .bmp image file if you know its name and folder location. The default folder is C:\ProgramData\EnerVista\Viewpoint Monitoring\Devices

Import device

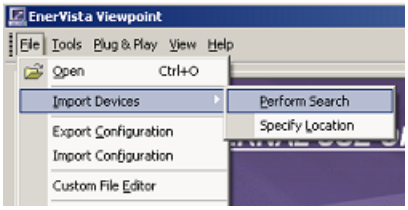
During installation of the Viewpoint Monitoring software, the system checked automatically for devices and provided the opportunity to import configurations. The function also can be invoked manually.

Each time that the software launches, it checks for existing 32-bit xxxPC programs (for example, 469PC and PQMPC). The xxxPC environment files are searched and any new devices are added to a list from which you can select the devices to import into Viewpoint Monitoring.

In addition to checking for xxxPC programs, a system scan is done for the EnerVista UR Setup environment file and EnerVista URPlus Setup environment files.

There are two options for importing devices. One is to search. The second is to specify the file location. First try the search, then use the second option to browse for the device.

Figure 91: Importing devices



To import devices:

1. Click **File > Import Devices > Perform Search**.

   If you import any devices, verify in Device Setup that the devices were imported; sometimes it appears that a device is to be imported but then it is not.

2. If Viewpoint Monitoring cannot locate automatically the environment file, select **Specify Location** instead. This allows you to browse and select a specific environment file (.ENV or .DS file).

Update device

Device information can be updated, for example when the device is upgraded or moved.

To update device information:

1. In the main window of EnerVista Viewpoint Monitoring, click the **Device Setup** option. The window opens.
2. Expand the **Ethernet** or **Serial** category as required, and click the device. Information for the device displays on the right side.
3. Edit the fields. See the Quickstart Guide for an explanation of the fields.
4. Click the **Ok** button to save and exit.

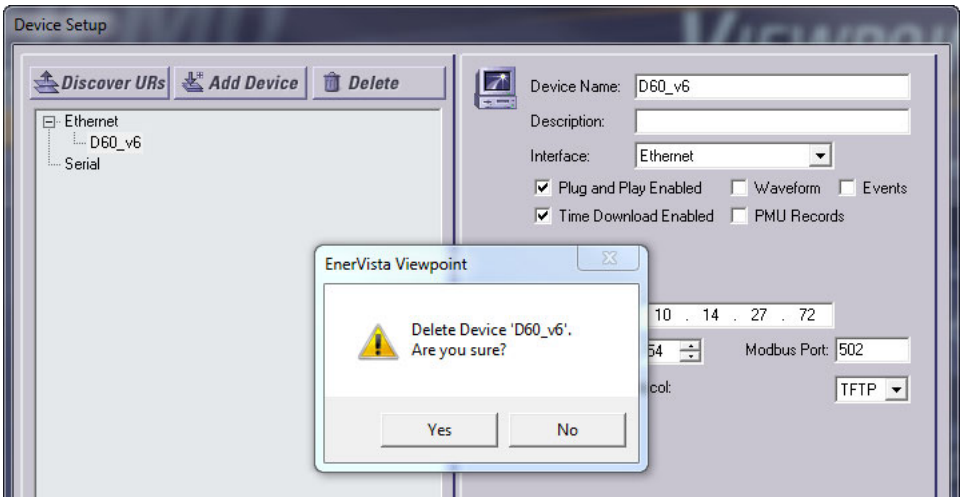
Delete device

Device configuration can be deleted to remove the device from the software. Deleting a device does not delete any files manually saved for it, such as a .ap alarm file.

To delete a device:

1. In the main window of EnerVista Viewpoint Monitoring, click the **Device Setup** option. The window opens.
2. Expand the **Ethernet** or **Serial** category if required, and click the device. Information for the device displays on the right side.
3. Click the **Delete** button, and confirm the deletion.

Figure 92: Deleting a device



Offline Mode

In some cases, users may want to place devices temporarily offline (e.g. the device is off for maintenance, servicing, checking)

The device can be set to offline, and will remain visible. When the device is set offline, events, waveforms, timedownload will not be performed for that device.

For the devices that are set offline, the communication server will only try to connect again after 24 hours versus more frequency (within one minute) if a device is not responding.

When a device is set to offline there can be a significant improvement to the data refresh performance as there is a reduction to the communications connection retries for the offiline device. This improvement to the data refresh performance for is especially applicable when there are devices connected through a communications gateway via a daisy chain connection (e.g. legacy devices (e.g. PQMII, 469, SR, etc).

EnerVista Viewpoint Monitoring

Chapter 6: One-Line Editor

This chapter outlines use of the One-Line Editor.

- View demonstration files
- Draw schema diagram
- Save file
- Connect/test with One Shot
- Update schema diagram
- Delete schema diagram
- Edit and view simultaneously
- Change page size and units
- Create custom symbols
- Toolbars and buttons

Introduction

The One-Line Editor is used to draw diagrams, called schemas, for equipment monitoring and control. It is used to create interactive one-line, or single-line, diagrams that are connected to devices to monitor and understand remote site configuration as well as to view readings and status updates. An example is to create an alarm so that you see when a motor is shut off.

You create a schema in the One-Line Editor, then view the data from the device in the One-Line Viewer (next chapter).

The toolbars and buttons are explained at the end of the chapter, as well as how to change page size, units of measure, and create custom symbols.

View demonstration files

Examples of one-line diagrams can be viewed.

These and other files can be imported into the software and customized for use.

To view demonstration files:

1. In the Control Panel for Windows, change the Folder Options so that hidden files and folders show.
2. In the main Viewpoint Monitoring window or the One-Line Editor, click **File > Open** and open any .sf file in the following folders:

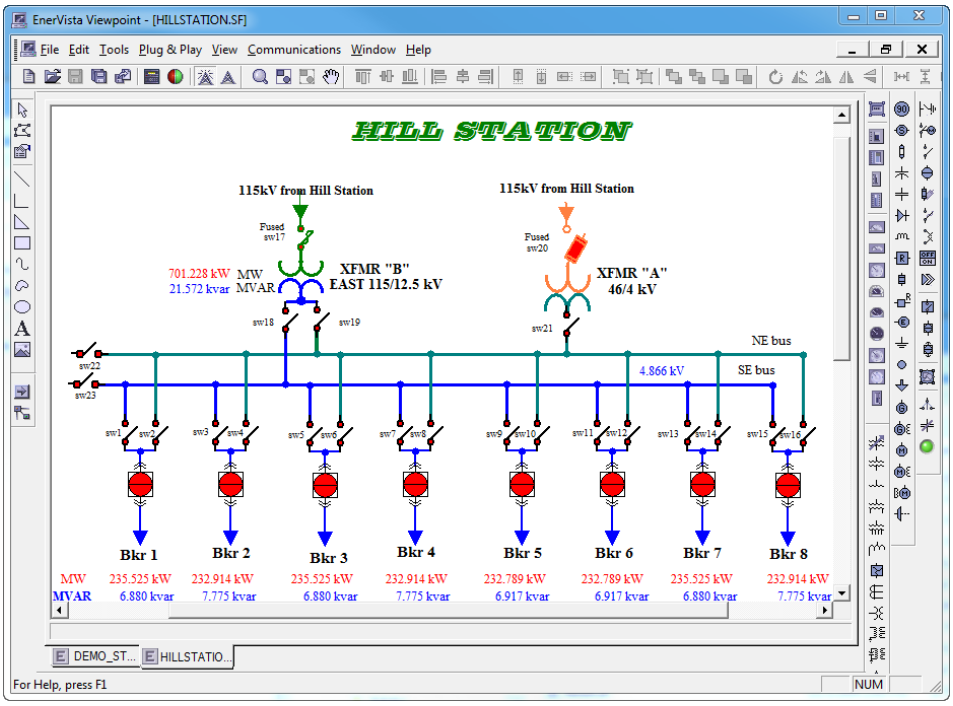
   C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Examples\

   or for UR series devices

   C:\Program Files (x86)\GE Power Management\URPC\Data\Demo\

   The diagram opens in the One-Line Editor window.
3. When done, turn off hidden files and folders.

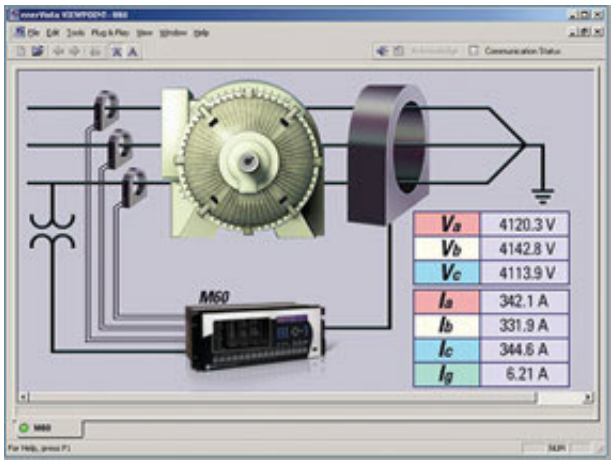
Figure 93: Example of one-line diagram



Draw schema diagram

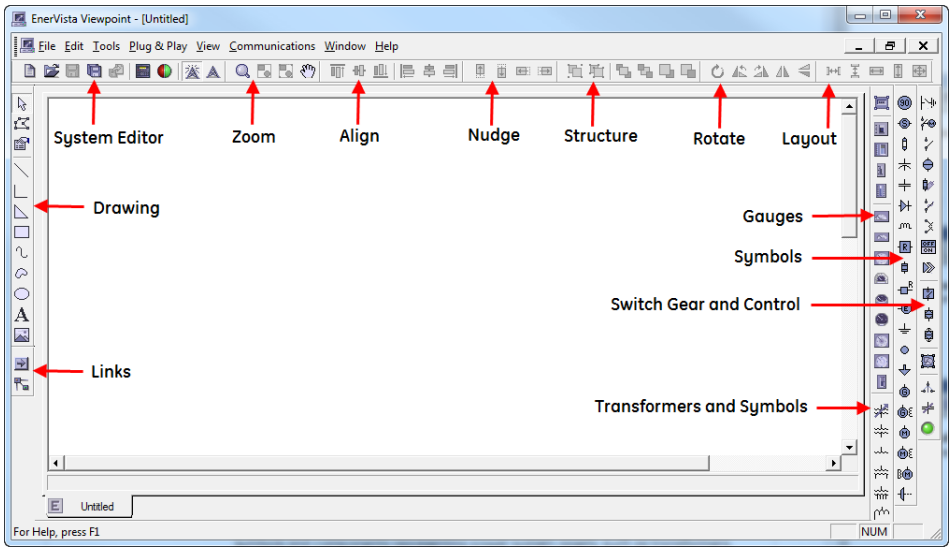
The One-Line Editor allows you to create one-line diagrams, with standardized symbols representing power system assets, such as transformers, breakers, current transformers (CTs), and potential transformers (PTs). Support is also provided to add JPG and PNG images.

Figure 94: Example of diagram for monitoring motor status



Before starting, read the Toolbars and Buttons section at the end of this chapter to understand options and functions.

Figure 95: One-Line Editor Toolbars



It's recommended to draw the entire diagram first, then configuring each symbol.

The flow is as follows:

- Add a title in the diagram
- Add symbols, such as breakers
- Add lines
- Add arrows

- Add text
- Configure each symbol

Examples

Two examples follow.

- Display phase meter value
- Add breaker with on/off indicator

Display phase meter value

The following figure shows how to add a phase voltage meter value to display in real time.

Figure 96: Adding a metered value

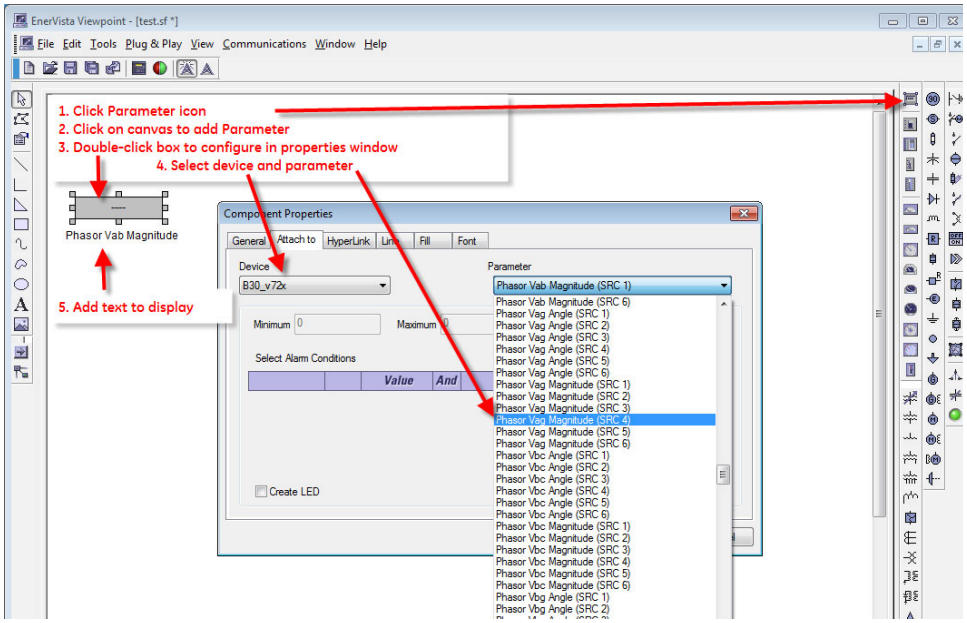
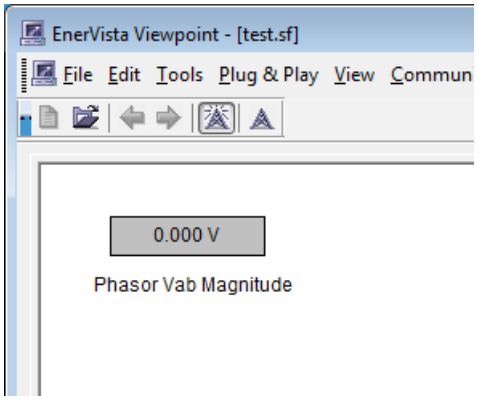


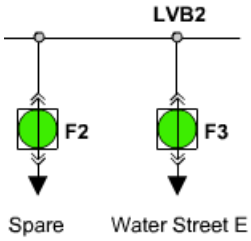
Figure 97: Metered value in real time in One-Line Viewer



Add breaker with on/off indicator

This example shows how to add a breaker, configure it, and show its status.

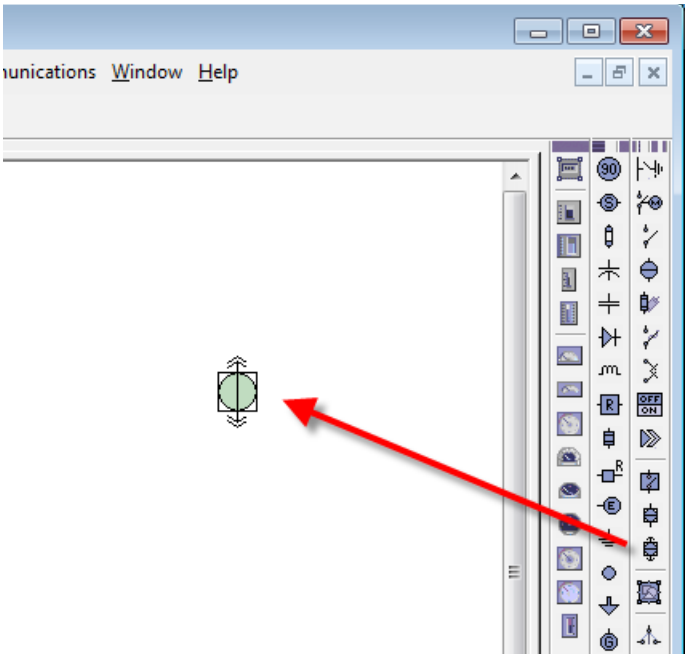
Figure 98: Breakers showing green "on" status



To add a breaker:

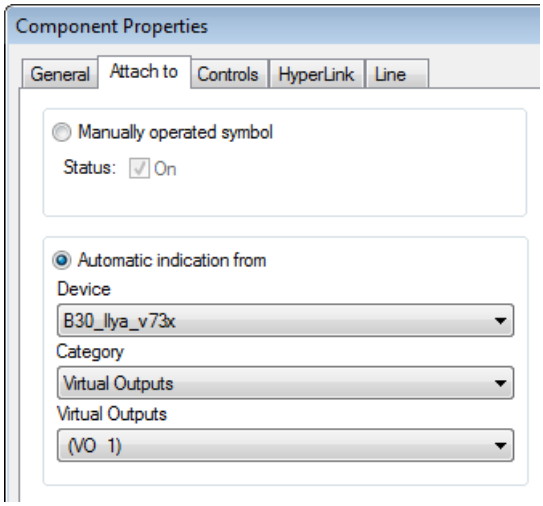
1. Add the breaker by clicking the **Drawout Breaker** icon  on the Switch Gear and Control toolbar, then clicking in the drawing.

Figure 99: Add breaker



2. Configure the symbol by double-clicking it. The properties window opens.

Figure 100: Configuring the breaker

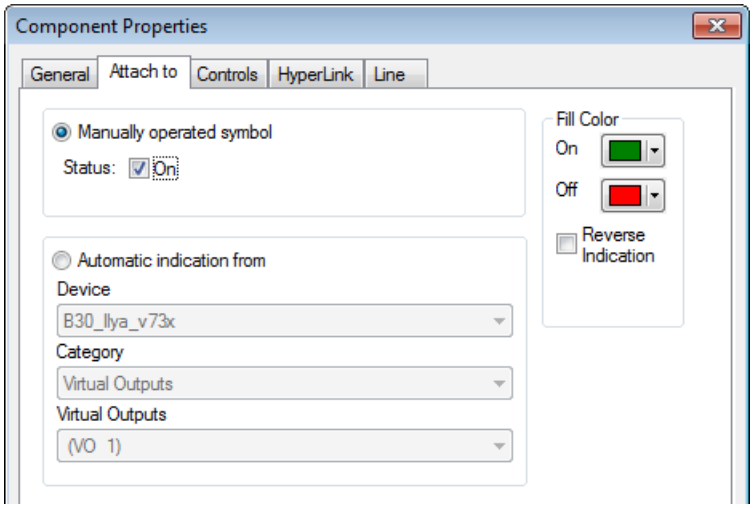


In the **Attach to** tab, enable the **Automatic indication from** check box, select the device from the **Device** drop-down list, select **Virtual Outputs** from the **Category** drop-down list, and select a virtual output from the **Virtual Outputs** drop-down list. The last item, the virtual output, is the one to be monitored.

Note that in this example, the breaker is being monitored and is not a control breaker. The **Controls** tab is used instead to configure a control breaker.

3. In the same window, add the status indicator. Enable the **Manually operated symbol** radio button, enable the **Status** check box, and select the **On** and **Off** colors, for example green for On and red for Off.

Figure 101: Setting colors to indicate when on and off



4. Click the **OK** button to save and exit from the window, then save the file. Clicking the breaker enables the on/off indicator to be toggled. Because it is not a control breaker, the breaker itself is not being turned on and off.

Figure 102: Configured breaker, off

Draw diagram

To draw a schema diagram:

1. In the main window of Viewpoint Monitoring, click the **One-Line Editor** option. The window opens.

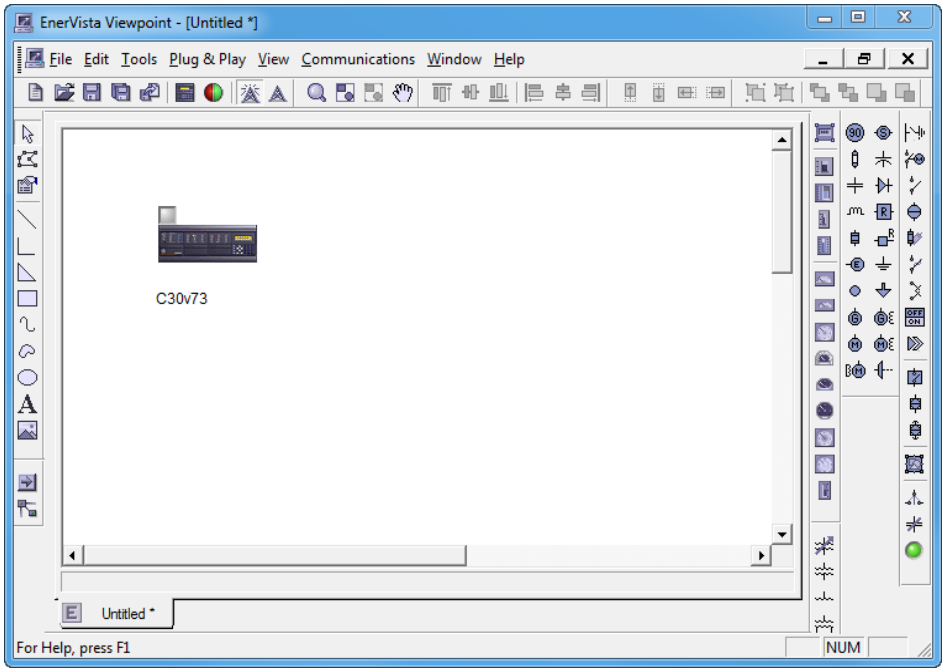
Figure 103: Access the editor from main window

2. To add a figure of a device, click the **Device** button  on the System Editor toolbar, then select the device by double-clicking the entry and selecting the device from the drop-down list. The device needs to already have been added in the **Device Setup** function.

   In the example shown, the grey box above the device indicates that there is no communication with the device. To update the status of the device, click the **One Shot**

   Test button  on the System Editor toolbar. The LED indicator changes to green with communication.

Figure 104: One-Line Editor window with a device added



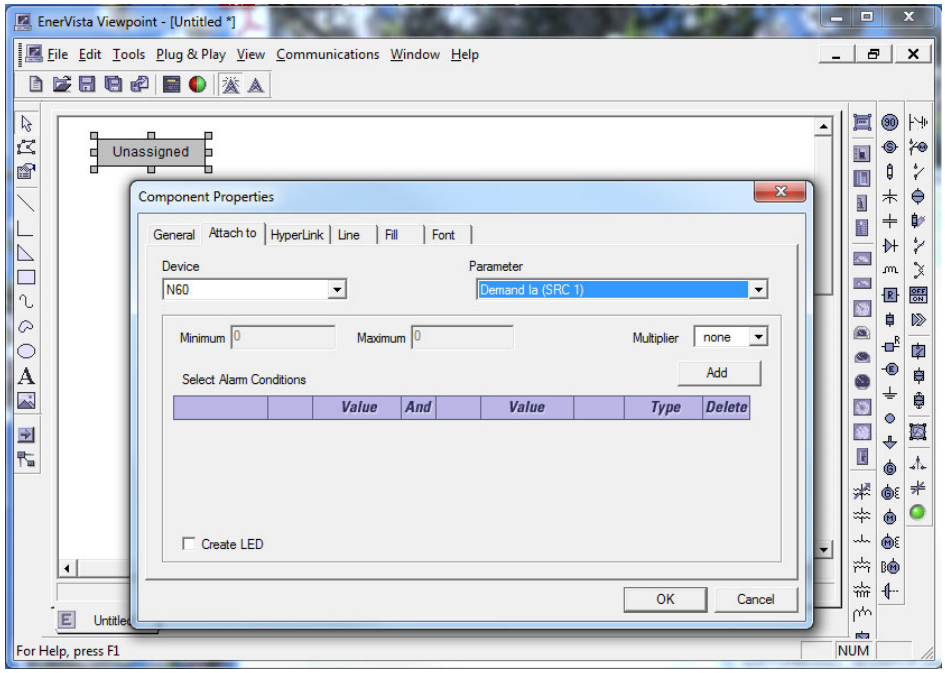
3. Click one of the symbols from the toolbars and edit the properties of the symbol. Specifically, select from the Gauges, Switch Gear and Control, Symbols, or Transformers and Symbols toolbar. Only components in the Switch Gear and Control toolbar can be used for manual indication. Only components in the Switch Gear and Control toolbar can be used for control. To display any of the toolbars, click **View > Toolbar**.
4. Drop the parameter on the canvas by clicking a spot in the window.
5. Double-click the symbol to open the configuration window. Continue with the applicable procedure that follows:
   - Add gauge parameter
   - Add component for manual indication
   - Add alarm or alert
   - Add component for control
   - Add a figure to a schema

Add gauge parameter

To configure the component:

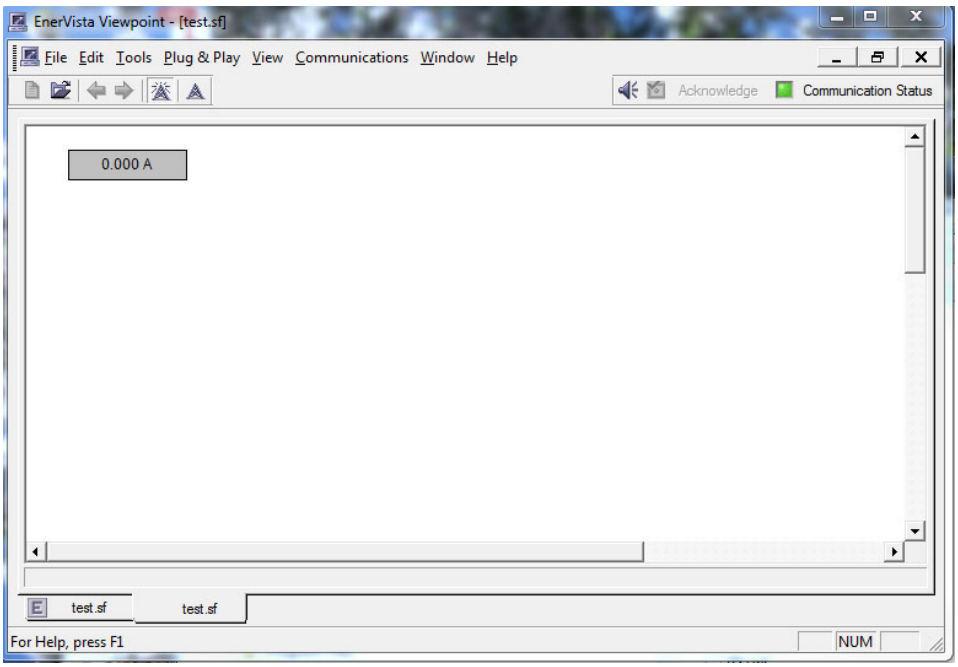
1. In the **Attach to** tab, select the device and parameter.

Figure 105: Setting device and parameter



2. Complete the **General** tab by either keeping the default **Name** or entering another one. The **Type** field reflects what is being added and cannot be changed.
3. The **Line**, **Fill**, and **Font** tabs provide options to set object borders, fill, and font.
4. Optionally set the **Hyperlink** tab to complete an action, such as open a file.
5. Click the **OK** button to save and exit the configuration window and return to the One-Line Editor window. Then save the One-Line Editor file.
6. In the main window of Viewpoint Monitoring, click the **One-Line Viewer** option to open the viewer. Open the file in One-line Viewer. Viewpoint Monitoring then reads the value from the device and shows it inside the Parameter symbol.

Figure 106: Parameter display



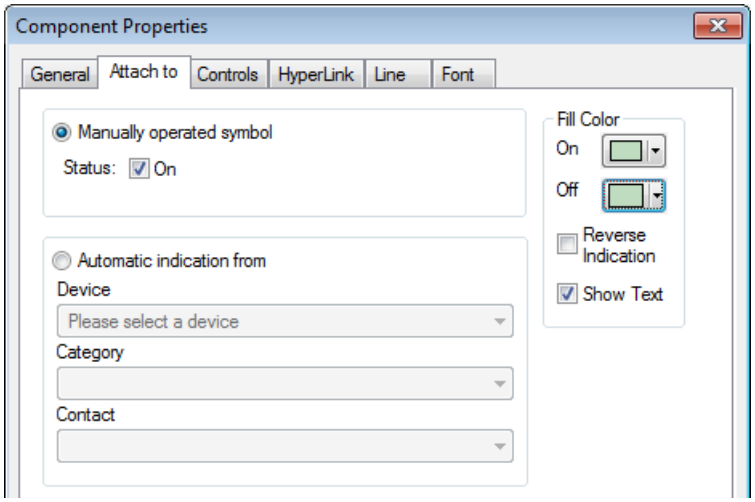
Add component for manual indication

An example is the **Send command to Virtual Input** option, on the Switch Gear and Control toolbar.

To configure the component:

1. In the **Attach to** tab, select the **Manually operated symbol** radio button to specify that the component is a manual indicator. Select the **Status** to be either in the ON or OFF state. Optionally select the color to fill the component in each state (ON and OFF) if the selected component supports this function. The Show Text option displays On or Off in the One-Line Editor window.

Figure 107: Setting manual indicator

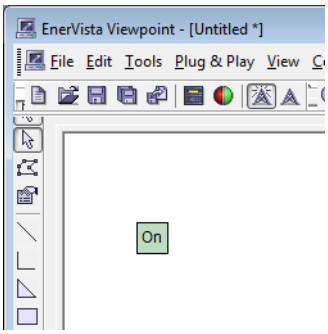


2. Complete the **General** tab by either keeping the default **Name** or entering another

one. The **Type** field reflects what is being added and cannot be changed.

3. The **Line** tab provides the option to set object borders.
4. Click the **OK** button to save and exit the configuration window and return to the One-Line Editor window. Then save the One-Line Editor file.

Figure 108: Parameter with text in One-Line Editor window



5. In the main window of Viewpoint Monitoring, click the **One-Line Viewer** option to open the viewer. Open the file in One-line Viewer. Viewpoint Monitoring then reads the value from the device and shows it inside the Parameter symbol.

Add alarm or alert

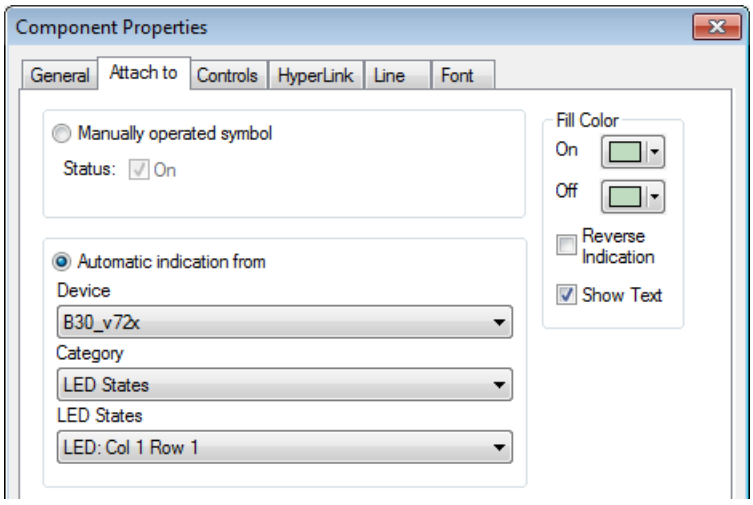
See the Add LED indicator section on page 48.

Add component for control

To configure the component:

1. In the **Attach to** tab, select the **Automatic indication from** radio button. Select the **Device** to which the component is connected. Select the indication **Category**. Select the specific item that you want the component to control.

Figure 109: Setting automatic indicator

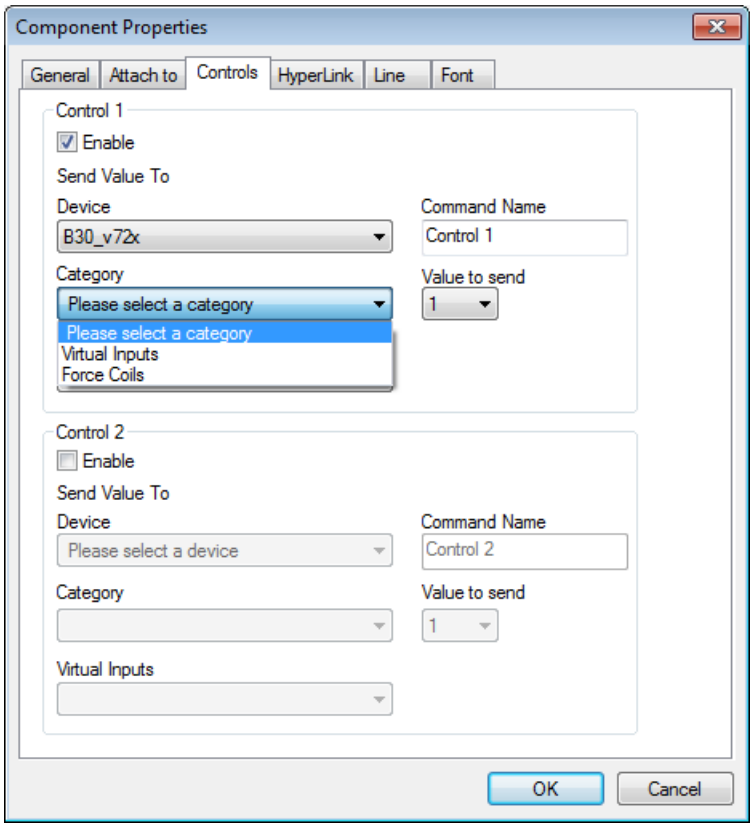


2. Complete the **General** tab by either keeping the default **Name** or entering another one. The **Type** field reflects what is being added and cannot be changed.
3. In the **Controls** tab, enable the check box for control 1 or 2. Select the **Device**.

Select the control-type **Category**. Select the corresponding Category Force Coil or Virtual Input command below the Category. Change the text of the Command Name to what you want. Select a **Value to send** when control is initiated.

If you want another control function added to this component, enable the other check box for control 1 or 2 and complete the fields.

Figure 110: Controls tab



4. Optionally set the **Hyperlink** tab to complete an action, such as open a file.
5. The **Line** tab provides the option to set object borders.
6. Click the **OK** button to save and exit the configuration window and return to the One-Line Editor window. Then save the One-Line Editor file.
7. In the main window of Viewpoint Monitoring, click the **One-Line Viewer** option to open the viewer. Open the file in One-line Viewer. Viewpoint Monitoring then reads the value from the device and shows it inside the Parameter symbol.

Add figure to a schema

Follow the steps to add an image file to your schema work area. Viewpoint Monitoring allows bitmap files to be imported (.bmp, .dib, .jpg, .png).

To add an image of a device, see the Draw schema diagram section on page 94.

To add an image to the drawing:

1. Click the **Image** button on the Drawing toolbar. A window opens.
2. Select the image.
3. Click the canvas to add the image.

Save file

A one-line schema can be saved in the .sf format two ways.

- Absolute, such as C:\MyFiles\MyG60File.sf
- Relative, such as MyG60File.sf — Use this for remote ViewNode access

When the path is relative, it is relative to the My Documents folder of Viewpoint Monitoring. For example, if the path of the Viewpoint Monitoring documents folder is: C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents, the software searches for MyG60File.sf in that directory.

If the relative path is ...\TestDir\MyG60File.sf, the link opens the file from the C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\TestDir folder.

All .sf files published from the Viewpoint Monitoring server are downloaded to a remote ViewNode computer in the C:\ProgramData\EnerVista\Viewnode\My Documents folder. If the path of the hyperlink is absolute, for example C:\MyFiles\MyG60File.sf, the link does not work on the Viewnode. When saving One-Line diagrams, use relative paths if you plan to use the links on the ViewNode.

To save the file:

1. Click the **Save** icon on the toolbar.

Connect / test with One Shot

You use the One Shot Test command in the One-Line Editor to see a one-time, actual value update for all digitals and analog components that are connected and configured in your current schema. For example, it shows that a device is connected.

To use the One Shot Test function:

1. In the One-Line Editor, click the **One Shot Test** button  on the System Editor toolbar. If the toolbar is not displayed, enable it under **View > Toolbar**.

Figure 111: System Editor toolbar

Any readings or values for any of your measurable components are cleared and within a five to 15 second period, new values display, showing the current readings for those connected and configured devices.

Figure 112: Device connected

Update schema diagram

There are two ways to update the properties of a selected component: double-click the component, or right-click it and select **Properties**. This displays the Component Properties window used when adding the diagram, as outlined earlier.

Delete schema diagram

To delete a diagram:

1. Locate the .sf file on the computer and delete it.

Edit and view simultaneously

When editing a schema, you can view it in the One-Line Viewer at the same time. This allows you to view changes in real-time.

To edit and view a scheme simultaneously:

1. While in the One-Line Editor, click the **Tools > One-Line Viewer** menu. The One-Line Viewer opens.
2. In the One-Line Viewer, open the same schema file that you are currently editing.
3. Switch between the Editor and Viewer using the tabs at the bottom of the screen. The tab with the letter "E" enclosed in a box is the Editor, and the tab with a blank or blinking indicator is the Viewer.

The figures show an example of a schema first in the Editor, then in the Viewer.

Figure 113: Example of schema in One-Line Editor

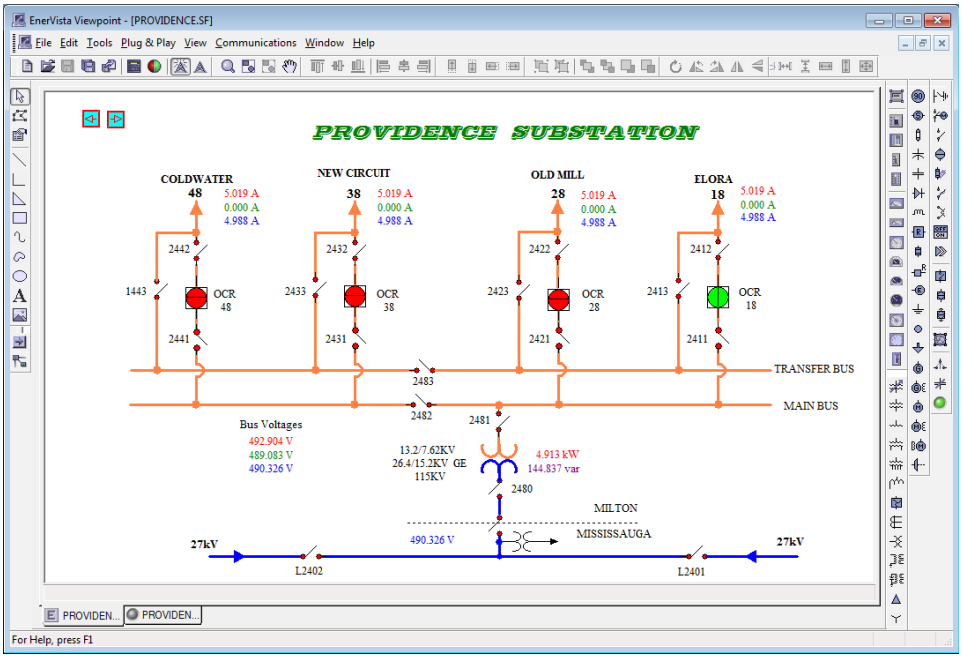
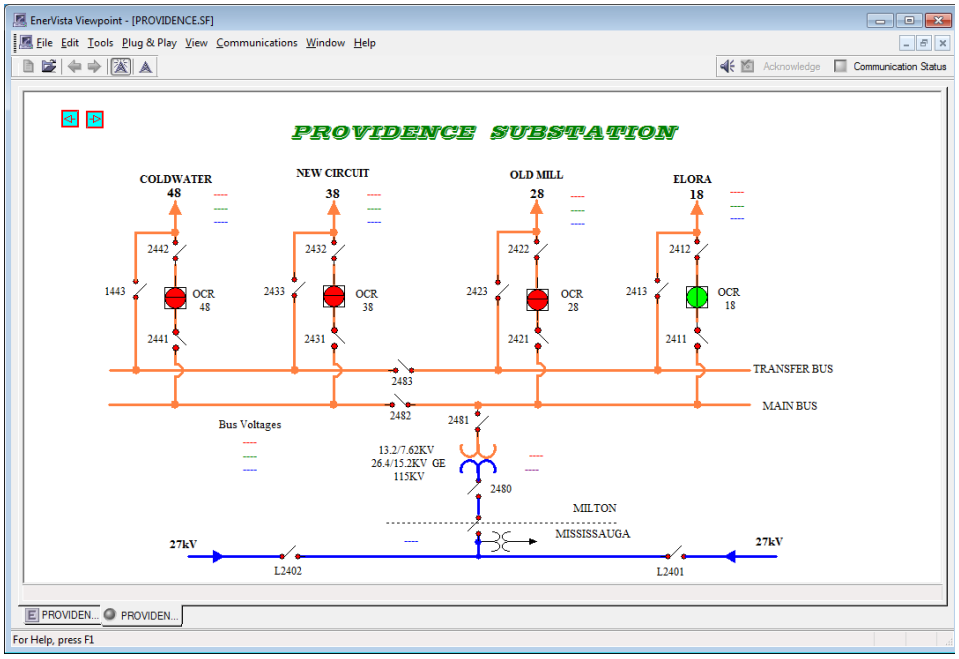


Figure 114: Example of same schema in One-Line Viewer



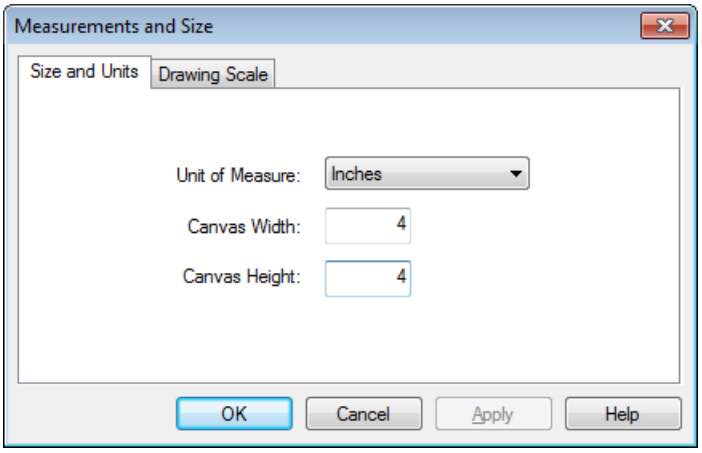
Change page size and units

The size of the work area in the One-Line Editor can be changed. Units of measure can be specified, for example inches or centimeters.

To change page size or units:

1. In One-Line Editor, click **Edit > Measurements and Size**. The window opens.
2. In the **Size and Units** tab, select the **Unit of Measure**, then change the **Canvas Width** and **Canvas Height**. For example, set the page size to 4 x 4 inches.

Figure 115: Page setup



3. In the **Drawing Scale** tab, set how much a unit represents. For example 1 inch on the drawing can represent 1 inch. If you set the ratio higher, for example 1 inch on the canvas represents 1 foot, the drawing area becomes much smaller.
4. Click the **OK** button to save and exit.

Create custom symbols

The One-Line Editor is highly customizable and allows creation of symbols. If you want to use measurable digital components (not analog) that are not part of the default symbols, use the **Custom Labels** button to do so. These custom symbols are generalized digital components where the visual look of the OFF/ON states can be customized to whatever bitmap image files that you create or apply. The software also supports JPG and PNG formats.

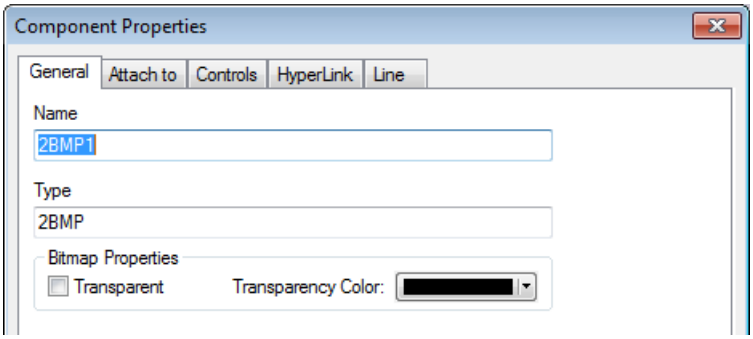
To create a custom symbol:

1. Create or obtain bitmap images to use for the ON and OFF states.
2. In the One-Line Editor, click the **Custom Symbol** button  located on the Switch Gear and Control toolbar.

Figure 116: Switch Gear and Control toolbar

3. Click anywhere on your schema work area to place the custom symbol.
4. Either double-click the custom symbol area or right-click it and select **Properties** to open the window.

Figure 117: Properties of a custom symbol

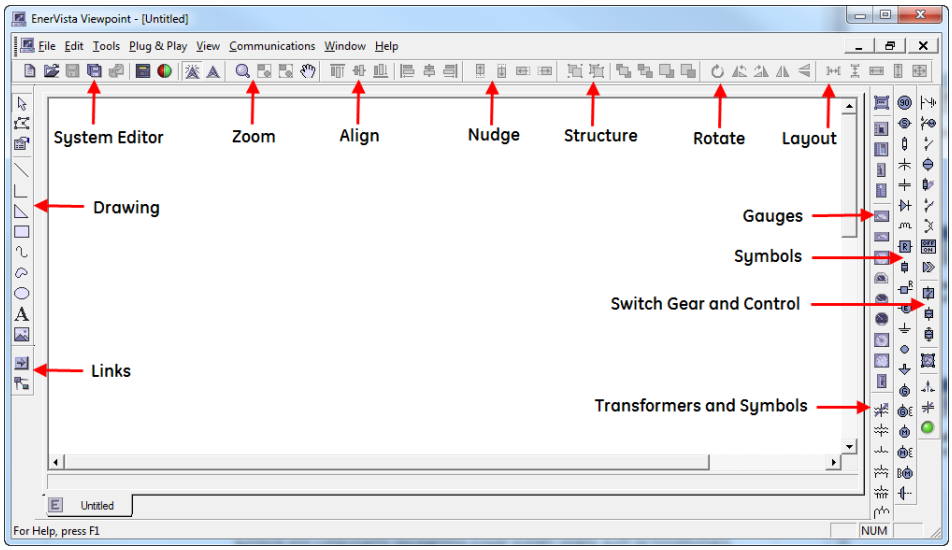


5. Complete the fields as explained in previous sections for the **General**, **Attach to**, and other tabs. Specify the bitmap images to use in the **Attach to** tab.
6. Click the **OK** button to save and exit.

Toolbars and buttons

The figure shows the toolbars available in the **View > Toolbar** menu. When you mouse-over an icon/button, its name displays.

Figure 118: One-Line Editor Toolbars



Links — To create link buttons or hot-spots on the schema that when viewed in the One-Line Viewer can navigate the user to another connected schema.

Drawing — To create basic lines, curves, text, and shapes for use in your schema.

System Editor — Basic functionality of creating/opening and saving schema files as well as providing access to certain One-Line Editor tools, such as "Insert Device" and the "One Shot Test."

Figure 119: UR device added with Insert Device tool

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Zoom — To resize, zoom, and pan around the schema.

Align — To align two components in an variety of ways.

Nudge — To move components of your schema by minute lengths.

Structure — To group/ungroup components of your schema and also to move components in between the viewable layers of your schema.

Rotate — To rotate or flip the components created on your schema.

Layout — To adjust and size the components created on your schema.

Gauges — An assortment of interactive analog gauge symbols to represent their respective real-life components on a schema.

Symbols — Electrical diagram symbols to represent their respective components on a schema.

Switch Gear and Control — Interactive digital symbols to represent their respective real-life components on a schema.

Transformers and Symbols — Transformer symbols to represent their respective components on a schema.

Links

	Hot Spot	Creates a button that allows users to navigate to other schemas, functions, devices, or applications when clicked. Once the button is created, specify the schema to link to by double-clicking the Hot Spot button and editing the properties in the tab.
	Link	Draws connecting lines between two selected components. Once this tool is selected, select the first component to begin drawing connecting lines. Select the second component to stop drawing connecting lines.

Drawing

	Select	Used to select components. Click one component and then hold down the **CTRL** key to select others, or just drag an area that contains the components that you want to select.
	Edit Vertices	Shows vertices points for the current component that you have selected (if the component support vertices manipulation)
	Properties	Shows the properties of the selected component
	Line	Used to draw one line
	Polyline	Used to draw connecting lines. Double-click to end drawing a component.
	Polygon	Used to draw an enclosed variable-sided polygon. Double-click to end drawing a component.
	Rectangle	Used to draw a right-angle rectangle
	Polycurve	Used to draw connecting curved lines. Double-click to end drawing a component.
	Close Curve	Used to draw an enclosed connecting curved lined object. Double-click to end drawing a component.
	Ellipse	Used to draw a elliptical component
	Text	Used to add text to your schema

	Image	Used to insert a figure into your schema

System Editor

	New Schema	Creates a new schema (.sf) file
	Open File	Opens and loads an existing schema
	Save File	Saves current schema with current file name (if there is none, Viewpoint Monitoring asks you to provide a file name)
	Save As	Saves current schema by specifying the file name
	Save and View Schema	Saves current schema and then displays schema using the One-Line Viewer
	Insert Device	Inserts a device picture into the schema. This picture then can be connected and configured to a real device.
	One Shot Test	Provides a one-time reading of all the current values or status from each of the connected and configured components on the schema
	Master Connect On	Allows for but does not initiate connections to devices. Use One Shot Test or open the One-Line Viewer to initiate connections to devices.
	Master Connect Off	Disconnects all connected devices

Zoom

	Zoom	To zoom in and center the screen to the spot selected
	Zoom to Fit	To zoom in to a magnitude that fits the entire schema layout on the screen
	Zoom to Selection	To zoom in on the components selected
	Pan	Moves the viewable area of the screen around the schema. To activate, select this tool and then place the hand icon over part of your schema. Click and drag the hand in a direction to move the schema.

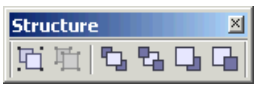
Align

	Align Top	Aligns the top sides of all the selected components to the top of the reference component
	Align Horizontal Centers	Aligns the horizontal centers of all the selected components to the horizontal center of the reference component
	Align Bottom	Aligns the bottom sides of all the selected components to the bottom side of the reference component
	Align Left	Aligns the left sides of all the selected components to the left side of the reference component
	Align Vertical Centers	Aligns the vertical centers of all the selected components to the vertical center of the reference component
	Align Right	Aligns the right sides of all the selected components to the right side of the reference component

Nudge

	Nudge Up	Moves selected component up one pixel
	Nudge Down	Moves selected component down one pixel
	Nudge Left	Moves selected component left one pixel
	Nudge Right	Moves selected component right one pixel

Structure



	Group	Combines all selected components into one entity
	Ungroup	Breaks apart all components of one entity into their respective original components
	Front	Moves current components to the absolute front of all viewable layers
	Back	Moves current components to the absolute rear of all viewable layers

	Forwards	Moves current components on layer higher than its original layer hierarchy
	Backwards	Moves current components on layer lower than its original layer hierarchy

Rotate

	Rotate	Rotates selected component freely. Once selected, put your mouse cursor over the component and move the component clockwise or counter-clockwise.
	Rotate Left	Rotates selected component 90 degrees counter-clockwise
	Rotate Right	Rotates selected component 90 degrees clockwise
	Flip Vertical	Flips the selected component on the vertical axis (left/right)
	Flip Horizontal	Flips the selected component on the horizontal axis (up/down)

Layout

	Space Across	Evenly spaces the selected components across an imaginary horizontal axis, starting from the far left component and ending at the far right component
	Space Down	Evenly spaces the selected components across an imaginary vertical axis, starting from the top component and ending at the bottom component
	Same Width	Sets the width of the selected components to the same width as the reference component
	Same Height	Sets the height of the selected components to the same height as the reference component
	Same Size	Sets the width and height of the selected components to the same width and height of the reference component

Gauges

Before these gauges can measure real time values, you specify the device to connect the gauge to by double-clicking the gauge.

	Parameter	Creates a generic analog reading component
	Bar 2D	Creates a 2D bar gauge component
	Bar 3D	Creates a 3D bar gauge component
	Thermometer 2D	Creates a 2D thermometer gauge component
	Thermometer 3D	Creates a 3D thermometer gauge component
	Semicircle 2D	Creates a 2D semicircle gauge component
	Segment 2D	Creates a 2D segment gauge component
	Circle 2D	Creates a 2D circle gauge component
	Semicircle 3D	Creates a 3D semicircle gauge component
	Segment 3D	Creates a 3D segment gauge component
	Circle 3D	Creates a 3D circle gauge component
	Circle Multi Values	Creates a multi-value circle gauge component
	Phasors	Creates a phasor gauge component
	Bar Multi Values	Creates a multi-value bar gauge component

Symbols

	Automatic Voltage Regulator		Exciter
	Sectionalizer		Ground
	Test Switch		Bus Connection
	Capacitor 1		Bus End
	Capacitor 2		Generator
	Rectifier		Generator Synchronous
	Reactor		Motor

	Resistor		Motor Synchronous
	Fuse		Motor Round Rotor
	Recloser		Turbine

Switch Gear and Control

	Switch Ground	
	Switch Motorized	
	Test Switch 1	
	Test Switch 2	
	Switch Fused 1	
	Switch Fused 2	
	"V" Switch	
	Send Command	Can only be used to send out virtual inputs
	Force Coil	
	Circuit Breaker 1	
	Circuit Breaker 2	
	Drawout Breaker	
	Custom Symbol	
	Switch Double Throw	
	Contactor	
	LED Indicator	Analog and Digital types

Transformers and Symbols

	Tapchanger		Transformer Voltage 1
	Transformer 1		Transformer Voltage 2
	Transformer 2		Transformer 5
	Transformer 3		Transformer Delta
	Transformer 4		Star
	Transformer AUTO		Zig Zag
	Transformer Phase Shifting		Star Grounded
	Transformer Current		Star Zig Zag Grounded

EnerVista Viewpoint Monitoring

Chapter 7: One-Line Viewer

This chapter outlines use of the One-Line Viewer.

- View data
- Control devices
- Create screen captures
- Toolbar and buttons
- LED indicators

Introduction

The One-Line Viewer displays data from the equipment and allows you to control devices. An example is turning a motor on and off. A schema diagram needs to be created first using the One-Line Editor (previous chapter). For the on/off example of a motor, a digital schema is created.

With the One-Live Viewer, you can view data, control the device, and take screen captures.

Files are saved in the .sf format.

The toolbar and buttons are explained at the end of the chapter.

View data

To view data from a One-Line diagram:

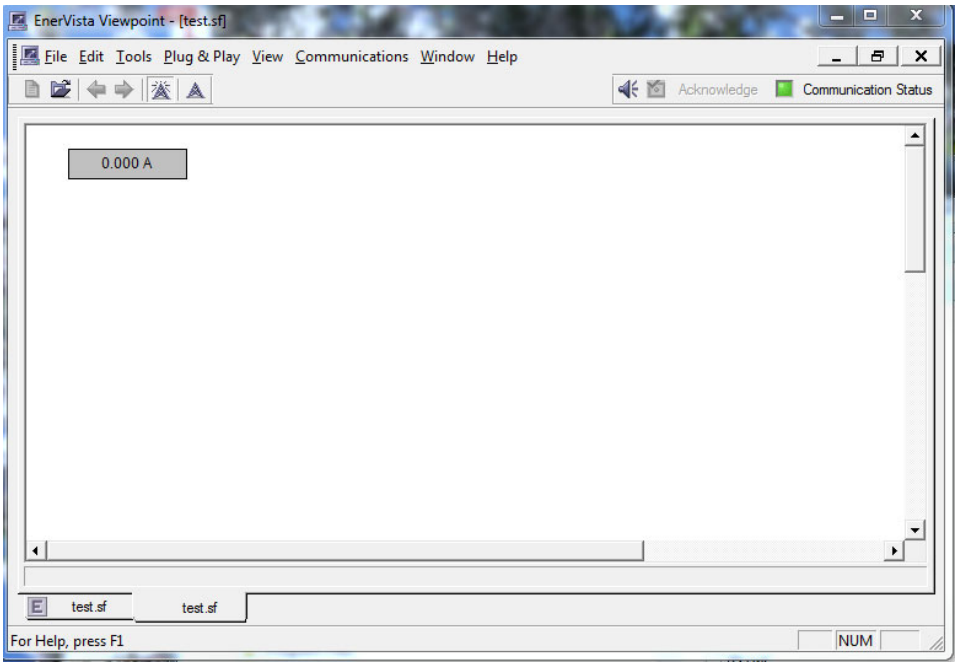
1. In the main window of Viewpoint Monitoring, click the **One-Line Viewer** option to open the Viewer.
2. Open a file by clicking the **Open File** button on the toolbar, or click **File > Open** and select the .sf file.

   Viewpoint Monitoring reads the values from the device and displays them. In the example shown here, Viewpoint Monitoring communicates successfully withe device, shown by the green LED indicator.

Figure 120: Successful communication with a UR device

3. If no data displays, check the LED indicator in the tab at the bottom of the window or by the **Communication Status** button at the top-right. These are explained at the end of the chapter and in the Interface chapter. Clicking the **Communication Status** button opens the Device Status window, which is outlined in the Device status section on page 43.

Figure 121: Parameter display



Control devices

When viewing schemas, you can manually convert non-connected, digital components to their other state. An example is to switch a motor from ON to OFF. The schema diagram already needs to have the functions added as Switch Gear and Control buttons in the One-Line Editor.

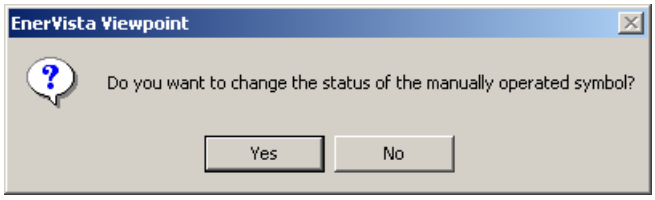
You can also toggle between states, for example from ON to OFF then OFF to ON, for digital components.

If you click an inserted picture of a device, it opens the virtual front panel.

To control a device:

1. In the One-Line Viewer, select the digital component to be switched by clicking it once. The front panel of the device displays or the system prompts if you want to change the status of the symbol.

Figure 122: Prompt to change equipment status



2. Click the **Yes** button to confirm the change. The digital component switches to the opposite state.

To toggle the state:

1. Select the digital component to be toggled. A prompt appears.

Figure 123: Prompt to toggle state

2. Use both hands to issue the control command. In Viewpoint Monitoring, press and hold the **Ctrl** key (default) and simultaneously click the button with the state that you want the component to be in (for example, CLOSE or OPEN). If you just click the button without pressing the **Ctrl** key, nothing happens. If the state of the item being controlled is already set (that is, you send an OPEN command when the state is already OPEN), nothing happens.

   The digital component that you have selected is switched to the required state.

Create screen captures

Within the One-Line Viewer tool, follow these steps to take a screen shot of your current schema and place it on the Windows clipboard.

To create a screen capture:

1. In the One-Line Viewer, click **Edit > Screen Capture**. A copy of the active screen is placed on the computer clipboard. It excludes the menus and toolbars.
2. Paste the screen capture into a graphics program, such as the Paint or CorelDRAW.

Toolbar and buttons

The figure shows the toolbar available in the **View > Toolbar** menu. Only the main System Viewer toolbar displays.

	Open File	Opens a Viewpoint Monitoring schema file (.sf)
	Left arrow	Jumps backward to previous schema, function, or application (only available for schemas that contain links)
	Right arrow	Jumps forward to next schema, function, or application (only available for schemas that contain links)
	Master Connect On	Allows for but does not initiate connections to devices
	Master Connect Off	Disconnects all connected devices

LED indicators

An LED status indicator can display in the bottom tab and by the **Communications Status** button. Clicking the latter opens the Device Status window. The LEDs are explained as follows.

Red	At least one correctly configured device is not communicating
Yellow	All correctly configured devices are communicating but at least one analog or digital device on the schema is configured incorrectly
Green	All devices are communicating and configured correctly
Grey	Either no analog or digital device exists on the schema or all are configured incorrectly

EnerVista Viewpoint Monitoring

Chapter 8: Annunciator alarms

This chapter outlines use of the Annunciator.

- Add alarm
- Acknowledge and reset alarm
- Delete persistent alarm
- Manage email notification
- Manage alarm sounds
- Toolbar and buttons

Introduction

The Annunciator actively monitors measured values and generates alarms. Alarms can be configured for activation whenever a digital status changes state or whenever analog values change beyond a threshold.

The Annunciator allows visual, audio, and email notifications. The notifications can be recorded in the database for post-event analysis.

Use the Annunciator to create and view visual dashboards or alarm status screens to monitor and acknowledge the status of remote sites and devices.

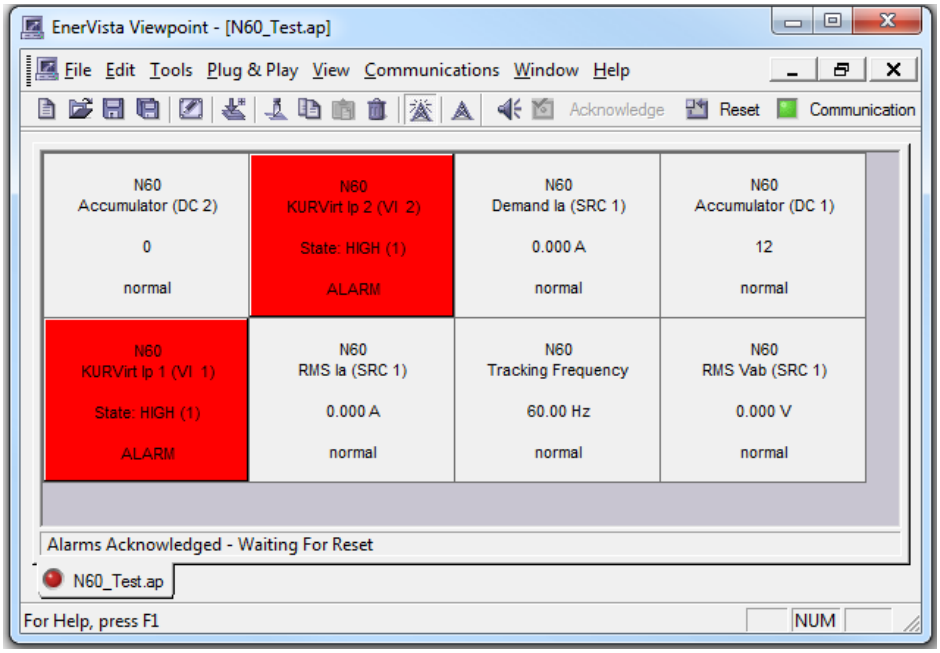
Files are saved in the .ap format.

This chapter outlines the Annunciator window to set up alarms. Alarm sounds are configured under **File > Preferences > Audible Alarms**. To have the alarms that you set up in the Annunciator window run after you exit Viewpoint Monitoring, configure **File > Preferences > Annunciator**.

Alarms display automatically. If you close the Annunciator window and an alarm condition exists for a saved file, the Annunciator window launches automatically with the alarm.

The toolbar and buttons are explained at the end of the chapter.

Figure 124: Example of Annunciator alarms



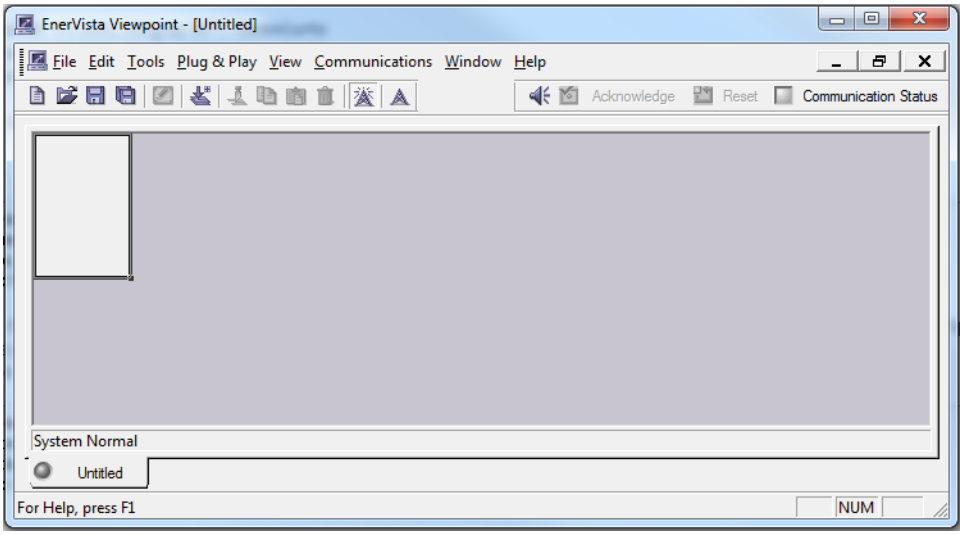
Add alarm

Each Annunciator panel can have up to 100 alarm indicators.

To add an alarm:

1. In the main window of EnerVista Viewpoint Monitoring, click the **Annunciator** option. The Annunciator window launches with an empty box.

Figure 125: Creating the first alarm

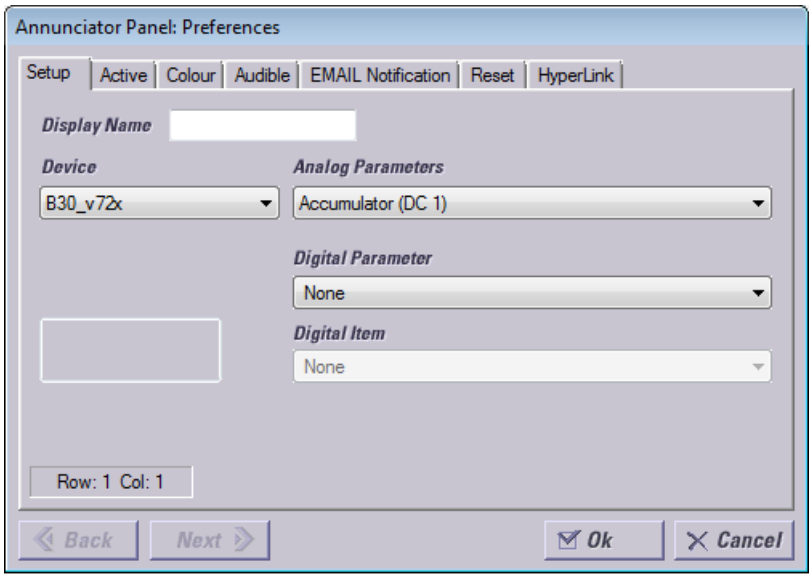


2. Click the **Insert Indicator** button on the toolbar. This creates an alarm box in the empty box.

Figure 126: Alarm ready for configuration

3. Right-click the box and select **Properties**, or click the **Edit** button on the toolbar. The preferences window opens.

Figure 127: Alarm setup window



4. Configure the **Setup** tab.

   Display Name — The name of the indicator. Optional.

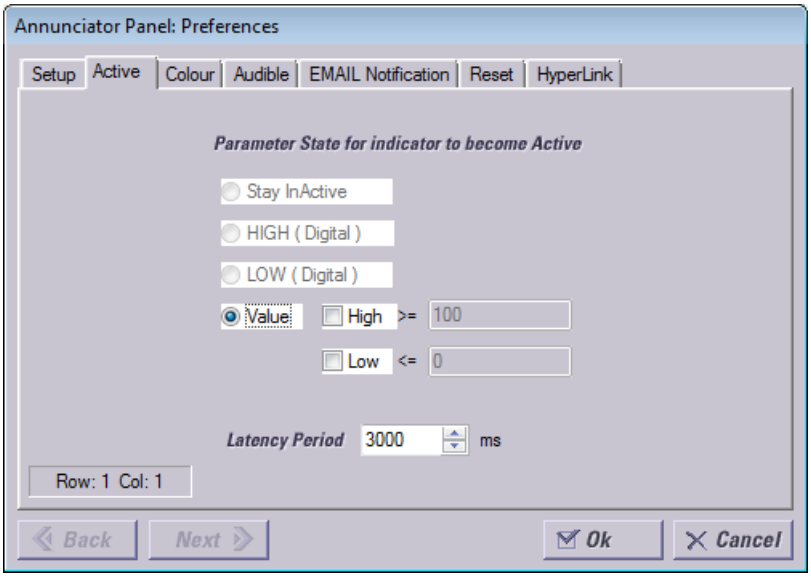
   Device — The device to attach this indicator to.

   Analog Parameters or **Digital Parameter** — Select one. You cannot configure both. Selects the alarm trigger. For a Digital Parameter, also select the **Digital Item**, which is a more specific trigger, such as a specific contact input.

   Row and **Col** — The location of the indicator on the Annunciator panel, meaning the row and column. They cannot be edited. Use the **Back** and **Next** buttons to jump between alarms.

5. Configure the **Active** tab. The active options depend on the analog or digital parameters set in the previous tab.

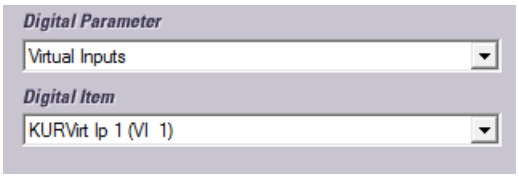
Figure 128: Active configuration window



Stay InActive — This option displays with selection of a digital parameter as a data item for the indicator. When enabled, there is no alarming for the parameter, which means that the Annunciator displays the value, it does not become alarmed, and the state displays as normal. In other words, the alarm remains inactive.

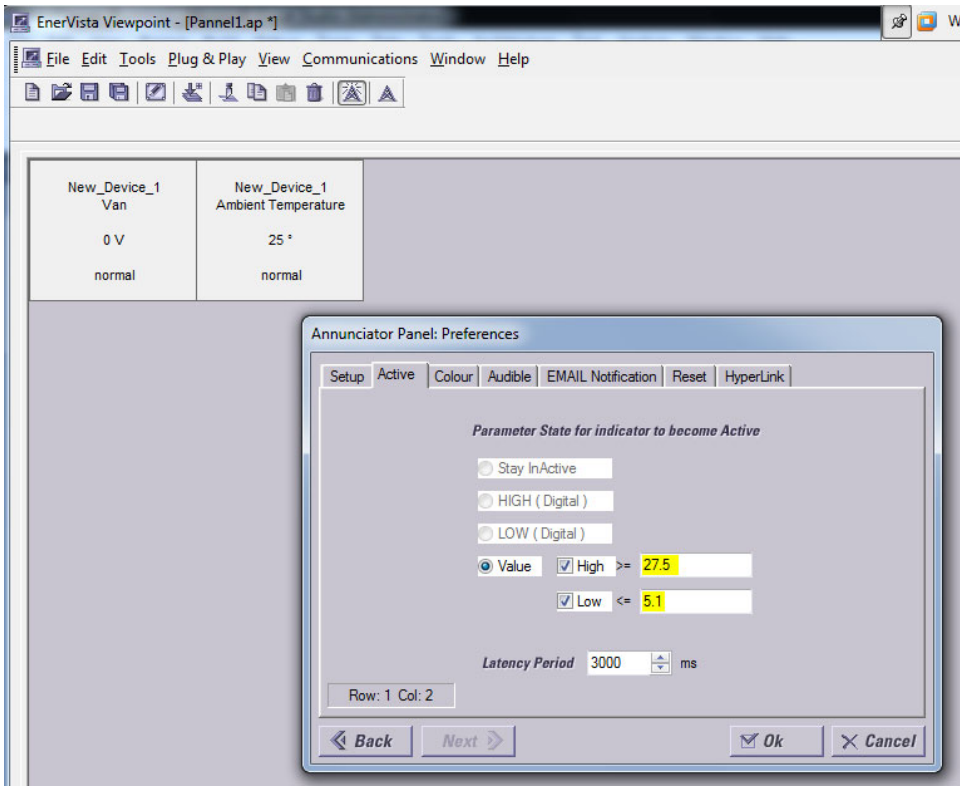
HIGH/LOW — This option displays with selection of a digital parameter as a data item for the indicator. An example is a digital output of 0 or 1. If you set the **High** option and the value 1 is read from the device, the alarm displays. If you set the **Low** option and the value 0 is read from the device, the alarm displays. An example is Virtual Inputs that can have a 0 or 1 value.

Figure 129: Digital parameter set



Value — The high and/or low conditions to trigger the indicator alarm. The following figure shows an example of an ambient temperature alarm being set between 5.1 and 27.5 degrees.

Figure 130: Setting high and low values for temperature

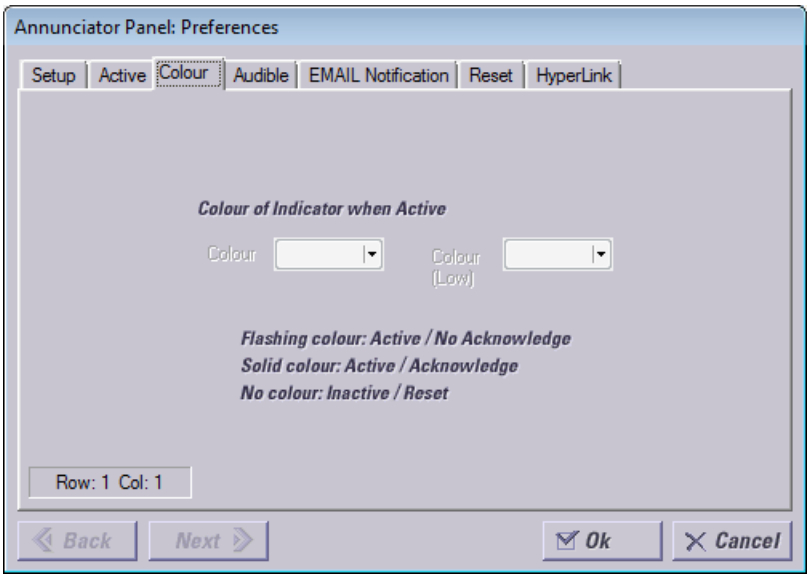


Latency Period — The amount of time that the value is in the alarm state before the alarm is triggered. The period is specified in milliseconds, where 3000 ms equals three seconds.

6. Configure the **Colour** tab. The active options depend on the analog or digital parameters set in the previous tabs. The fields are inactive when the alarm is

active; click the **Acknowledge** button at the top-right of the window.

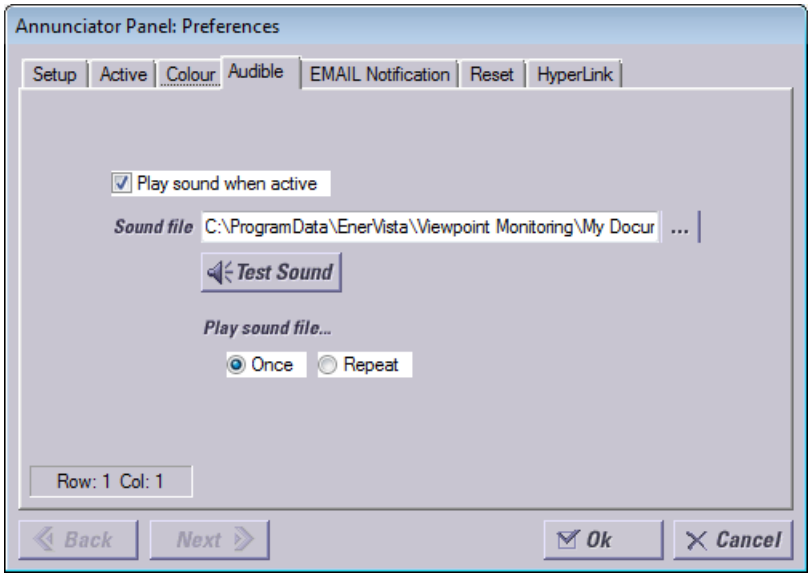
Figure 131: Alarm color configuration window



Colour — Select the color to use on the Annunciator panel when the alarm is triggered. The Low color option is active when the trigger has a low trigger.

7. Configure the **Audible** tab.

Figure 132: Alarm sound configuration window

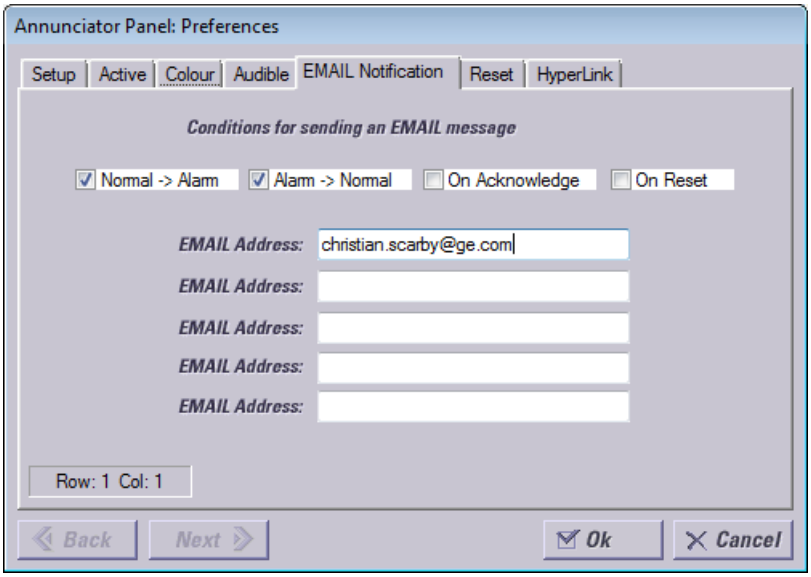


Play sound when active — Enable to sound an alarm when the indicator is triggered. Select the file to play. The .wav format is supported. If you specify other file types, such as an .mp3 file, the sound does not play. Disable to have no alarm sound when the indicator is triggered. Also specify if the sound is to be played **Once** or **Repeat**ed continuously until silenced.

8. Configure the **EMAIL Notification** tab. None, one, or more notifications can be sent. This feature supports only SMTP addressing; check configuration in the **Annunciator** tab under **File > Preferences** (see the Annunciator section on page

33).

Figure 133: Email notification configuration window



Normal -> Alarm — Enable to send an email message when the alarm is triggered.

Alarm -> Normal — Enable to send an email message when the alarm is no longer active and returns to a normal state.

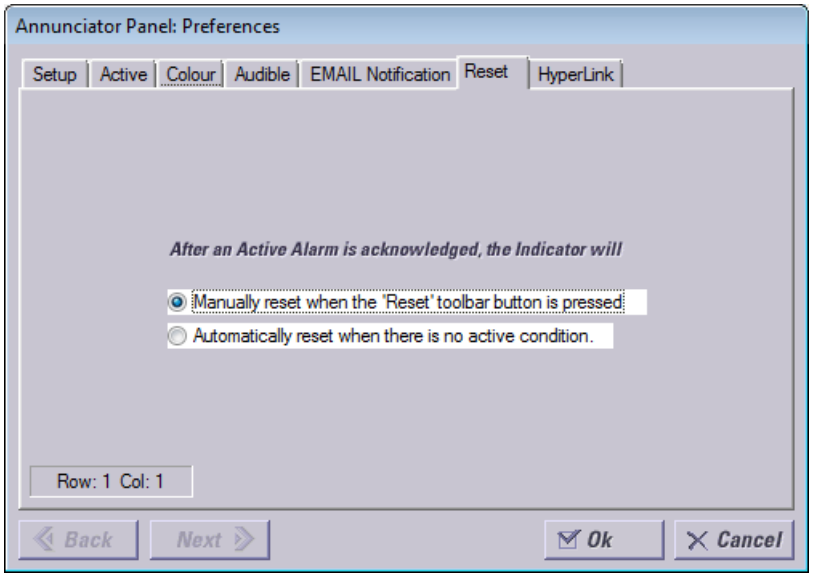
On Acknowledge — Enable to send an email message when the alarm is acknowledged by clicking the **Acknowledge** button.

On Reset — Enable to send an email message when the alarm is reset by clicking the **Reset** button.

Email Address — Specify up to five email addresses to which the message is sent.

9. Configure the **Reset** tab.

Figure 134: Reset configuration window

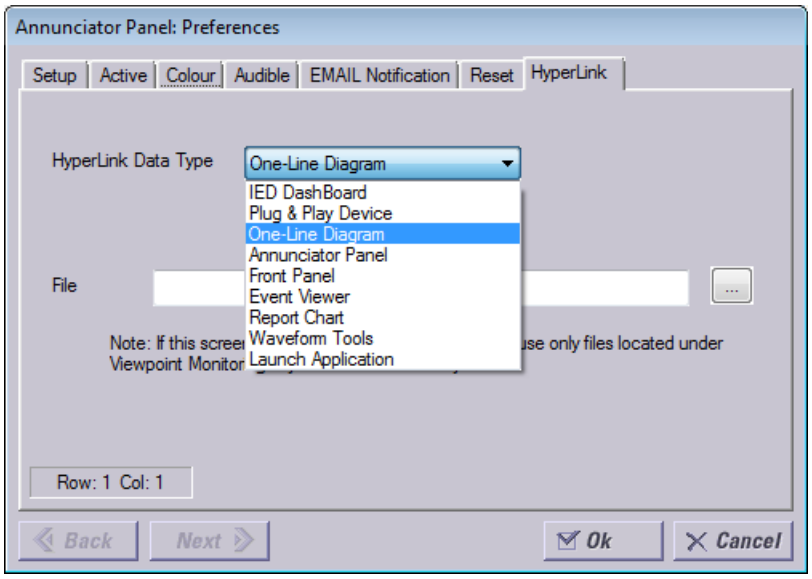


Manually reset — Returns the alarm to its original color when the **Reset** button is clicked.

Automatically reset — Returns the alarm to its original color when the alarm condition is removed and it returns to a normal state.

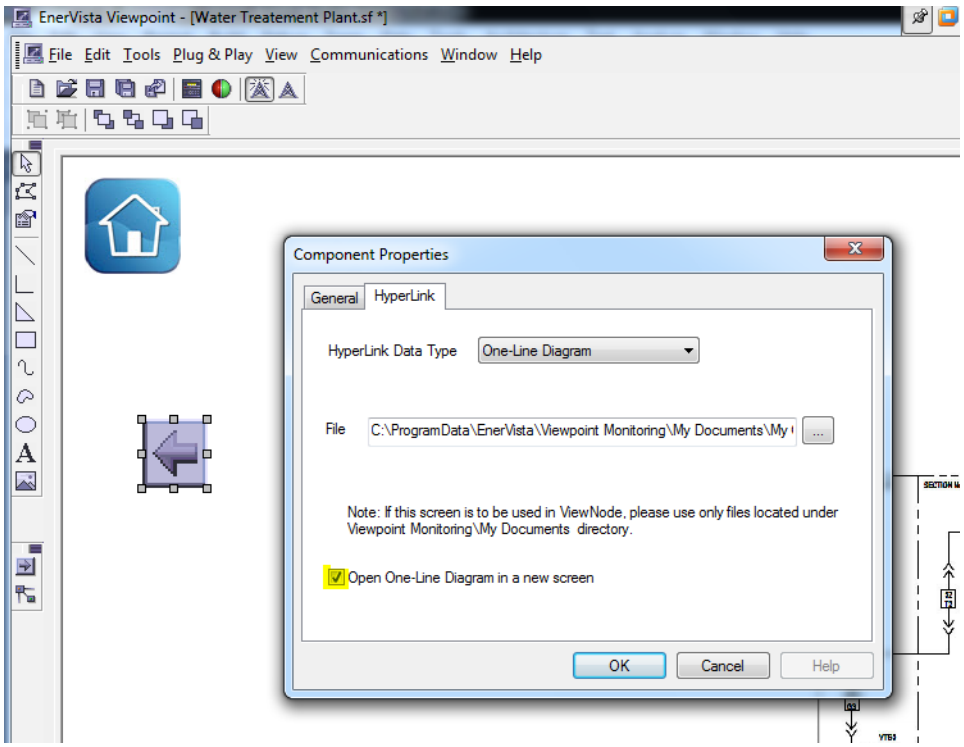
10. Configure the **Hyperlink** tab. This allows quick access to another annunciator or one-line diagram.

Figure 135: Hyperlink tab



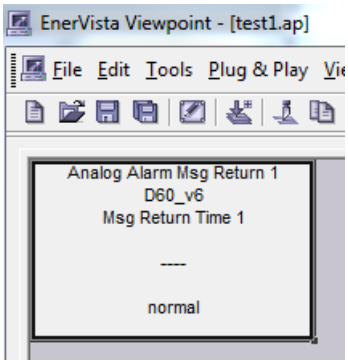
Select the feature from the drop-down list. In this example, we link to a one-line diagram named "Water Treatment Plant.sf." When an indicator has an active hyperlink, the cursor changes from an arrow to a hand on user mouse-over. To navigate to the hyperlink, the user double-clicks the indicator. The following figure shows what the view looks like when the user right-clicks the Properties. Note the option for one-line diagrams to open the hyperlink destination in a new tab.

Figure 136: End-user accesses hyperlink properties



11. When all tabs have been configured, click the **OK** button to save and exit. The alarm has been configured and text reflects configuration. The default color of the box is white; this cannot be configured. The "normal" indicates that the alarm is not triggered.

Figure 137: Configured alarm on Annunciator panel



12. Save the file, the format for which is .ap.
13. Add additional alarms/alerts as needed and configure them. Up to 100 are possible per Annunciator panel. To add another panel, click **File > New**.

Acknowledge and reset alarm

When a configured alarm is triggered, the information appears in the Annunciator panel, for example the alarm flashes red when configured as such, displays "ALARM," and information appears at the bottom of the window.

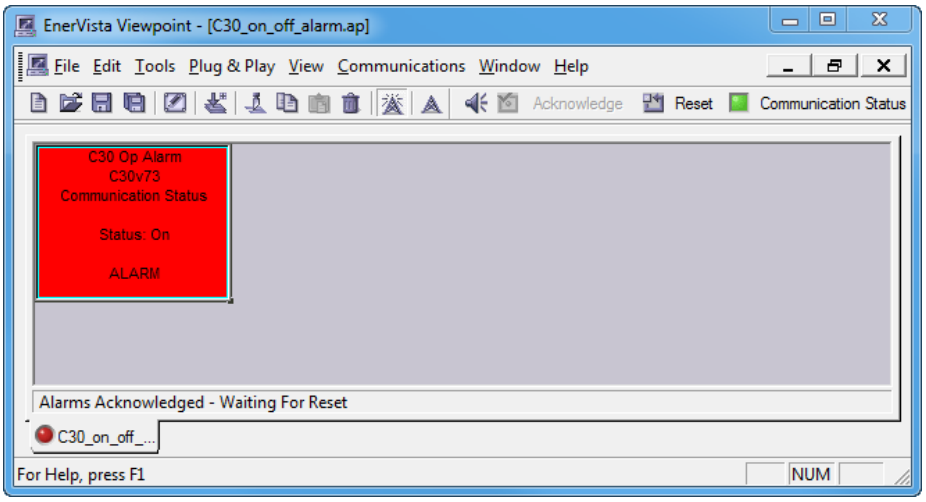
To fix an alarm:

1. Select the alarm box.
2. Click the **Acknowledge** button at the top-right of the window. The alarm stops flashing.
3. When the alarm reset mode was set to **Automatically reset**, the alarm resets, returns to a "normal" state and the default white color displays, provided that the indicator is no longer in the alarm state.

   When the alarm reset mode was set to **Manually reset**, click the **Reset** button at the top-right of the window. The alarm resets, returns to a "normal" state, and the default white color displays, provided that the indicator is no longer in the alarm state.

In the example shown here for the online/offline state of a device, the **Acknowledge** button was clicked and the **Reset** button needs to be clicked (message at bottom of window). The device has come back online (green LED for **Communication Status**), but the alarm still needs to be cleared by pressing the **Reset** button. Upon reset, the alarm box is white and displays the "normal" state. If the alarm condition still exists, this does not clear the alarm.

Figure 138: Alarm for online/offline status of device



Delete persistent alarm

If you delete an alarm and it continues to activate, delete the .ap alarm file, exit the software, and restart the computer.

Manage email notification

Emails can be sent when alarms are triggered, acknowledged, reset, and/or returned to a normal state. Configuration is done in the following two places:

- **EMAIL Notification** tab when configuring an alarm (outlined earlier in this chapter)
- **File > Preferences > Annunciator** (see the Annunciator section on page 33)

To view who receives email notification for an alarm:

1. Right-click the alarm and select **Notification Report**.

Manage alarm sounds

Alarm sounds can be triggered. Configuration is done in the following two places:

- **Audible** tab when configuring an alarm (outlined earlier in this chapter)
- **File > Preferences > Audible Alarms** (see the Audible alarms section on page 32)

Use the **Mute Sound** button at the top-right of the window to turn off sound. This does not affect the alarm itself.

The button toggles from sound on  to sound off  .

Toolbar and buttons

A single toolbar displays in the Annunciator window. There are no optional toolbars.

	New	Creates a new annunciator panel file (.ap)
	Open	Opens/loads an existing annunciator panel file (.ap)
	Save	Saves current .ap file with existing file name. If a file name has not been specified, ViewPoint Monitoring prompts you to name it.
	Save As	Saves current .ap file with a new file name
	Edit	Edits the selected alarm
	Insert Indicator	Inserts an alarm box that can be configured
	Cut	Copies and removes the current selected alarm box and places it on the Windows clipboard
	Copy	Copies the current selected alarm box and places it on the Windows clipboard
	Paste	Pastes the current selected alarm box that is on the Windows clipboard
	Delete	Deletes the selected alarm
	Master Connect On	Allows for but does not initiate connections to devices
	Master Connect Off	Disconnects all connected devices

EnerVista Viewpoint Monitoring

Chapter 9: Events

This chapter outlines use of event records.

- Enable or disable event recording
- View events
- Filter events
- Change event type
- Delete event
- Toolbar and buttons

Introduction

Event records can be viewed for Viewpoint Monitoring and devices. Entellisys and 8 Series devices do not support Events and Waveform retrieval using a serial interface.

As enabled per-device, the event records from devices are downloaded automatically and stored in the database, creating system-wide sequence of event records. When the **Events** check box is enabled in the Device Setup window for a device, Viewpoint Monitoring continuously polls the device to see if any events have been detected, downloads the event records, and stores them.

Event entries are color-coded and can be filtered.

Enable or disable event recording

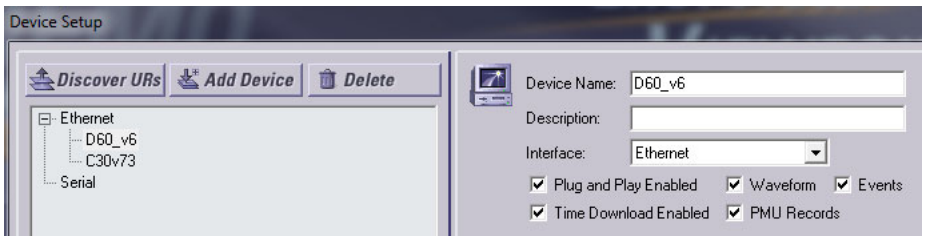
Configuration was done when adding a device, and it can be changed at any time.

To have events retrieved from devices after you exit from Viewpoint Monitoring, configure the **Waveform, Events, Time Download** tab under **File > Preferences**.

To enable or disable event recording for a device:

1. In the main window of Viewpoint Monitoring, click the **Device Setup** option. The window launches.
2. Access the device.
3. Enable or disable the **Events** check box.
4. Click the **OK** button to save and exit.

Figure 139: Device configured to allow event record retrieval



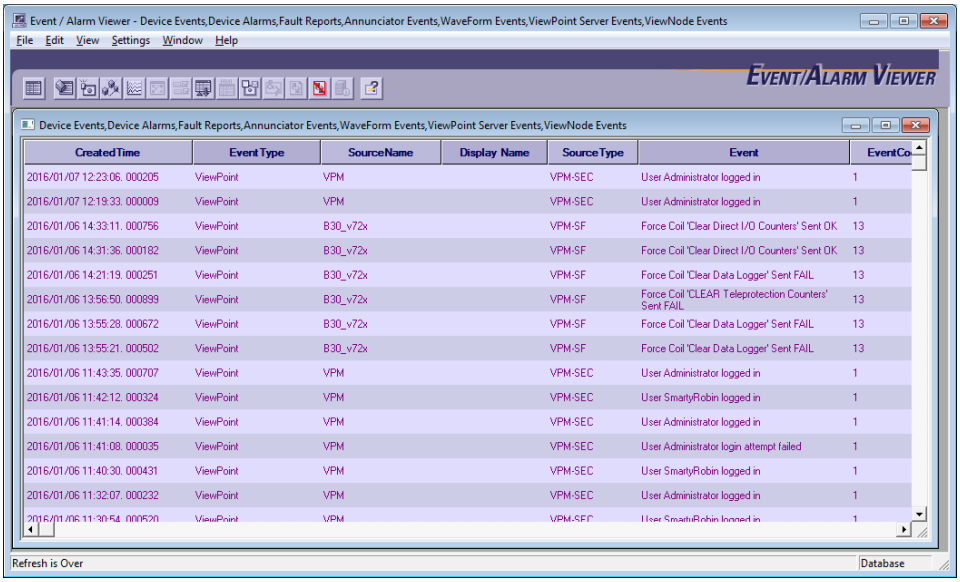
View events

To view events:

1. In the main window of Viewpoint Monitoring, click the **Events** option. The window launches, which is actually a separate application.

   Within the application, the window can be relaunched by clicking the **Sequence Of Events** button on the left side of the toolbar.

Figure 140: Event viewer



Examples of the messages displayed in the **Event** column are as follows.

Force Coil 'Clear Data Logger' Sent FAIL — A command to clear the data log was initiated from the one-line schema by the user, but it failed.

Panel: ALARM (high) Accumulator (DC 1), 55022 — The accumulator value, at 55022, triggered an alarm that was set up by the user in the Annunciator panel.

Device is Dead — The device went offline, for example lost power or was unplugged.

Net 2 ... Device ACTIVE — The device came online, for example regained power.

Panel RESET (PASSED). Communication Status On — An alarm was triggered, acknowledged, and, specifically, the **Reset** button was clicked and all is okay with the device.

Filter events

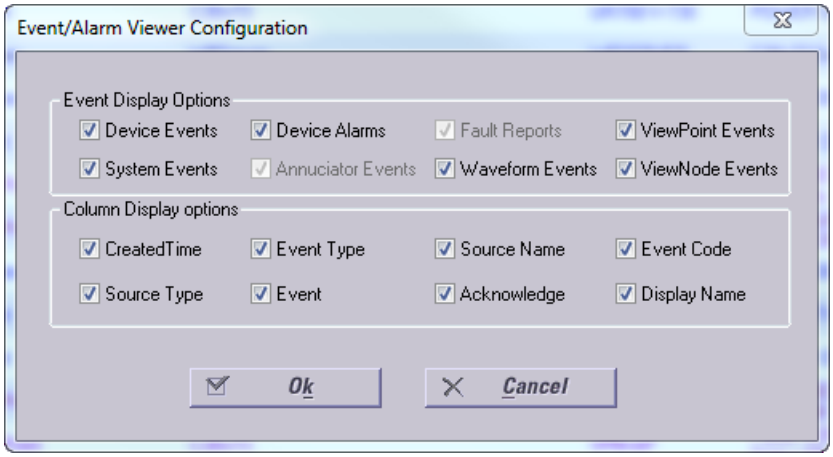
Event entries are color-coded and can be filtered. The window also can be configured to display only the events wanted.

Configure events displayed

To configure which events display:

1. Click the **Seq. Config** button on the toolbar. The window opens.
2. Enable and disable the appropriate check boxes of the event types in the window. The System Events, ViewPoint Events, and ViewNode Events are for Viewpoint Monitoring. To view only events for devices, disable these three options.
3. Click the **Ok** button to save and exit.

Figure 141: Configure events displayed



Filter events

To filter events:

1. Click the **View** menu and select an option. Or click one of the filtering buttons on the toolbar, such as Device Events, Alarms, System, Waveforms, or Unacknowledged Alarms.

   A new window opens with the filtered events. The window is blank where there are no event entries.

Change event type

Events can be changed to alarms and vice-versa.

To change an event type:

1. In the event record window, select an event.
2. Right-click the event, select **ChangeEvent Type**, and select **Event** or **Alarm**.

Delete event

Entries can be deleted.

To delete an event:

1. In the event record window, select an event.
2. Right-click the event and select **Delete**. The entry is deleted. The entry needs to be selected in order for it to be deleted; if another entry is selected instead of the one that you want to delete then the incorrect entry is deleted.

Toolbar and buttons

A single toolbar displays in the Events window. There are no optional toolbars.

	Sequence of Events	Displays all events
	Device Events	When the device is powered on or off, plus firmware version
	Alarms	Any active alarms. Blank when none.
	System	When Viewpoint Monitoring detects events for the device, such as the device going offline or online, for example because an alarm was triggered
	Waveform	Any active waveform events. Blank when none.
	Annunciator	
	Fault Reports	
	Seq. Config	To select the types of event records to display and to select the columns that display in the table
	HMI Device Types	
	Unacknowledged Alarms	
	User-Defined Events	
	Enables Refresh	
	Disables Refresh	
	Display Query Results	
	About	Displays the version number of the Event viewer, which is a separate application launched from Viewpoint Monitoring.

EnerVista Viewpoint Monitoring

Chapter 10: Trending Reports

This chapter outlines use of reports.

- Add report
- Quick add report
- View report
- Change report and parameters
- Print chart
- Export chart
- Archive report
- Automatic backup and purge
- Delete report or chart
- Purge report data
- Toolbars and buttons

Introduction

Trending reports are used to archive data for devices. They record the values of monitored analog and digital points, with one-minute resolution. The data stored in the reports is viewable as graphs and tables.

EnerVista Viewpoint Monitoring from v7.2 and above uses a database instead of the flat files (.REP) used with EnerVista Viewpoint Monitoring prior to v7.2. Legacy .REP files are supported in a view mode and can be converted to the database. Any reports available for conversion are listed in a .RPC Reports

Configuration files reside in the C:\Program Data\EnerVista\Viewpoint Monitoring\My Documents\reports folder. Database Reports support all functionality available in the previous Viewpoint Monitoring versions. The method for calculating daily and hourly averages also was changed, allowing more precise averaging. This explains any noticeable deviation when comparing an old flat file report and new database reports.

Reports are stored in the table ReportData in the local database, meaning the PMCSSQLSERVER12 database that is used for storing events from devices. The ReportData table has ChannelID, Time, and Data columns, where ChannelID corresponds to ParameterID, Time is a timestamp, and Data is the polled value of the data point.

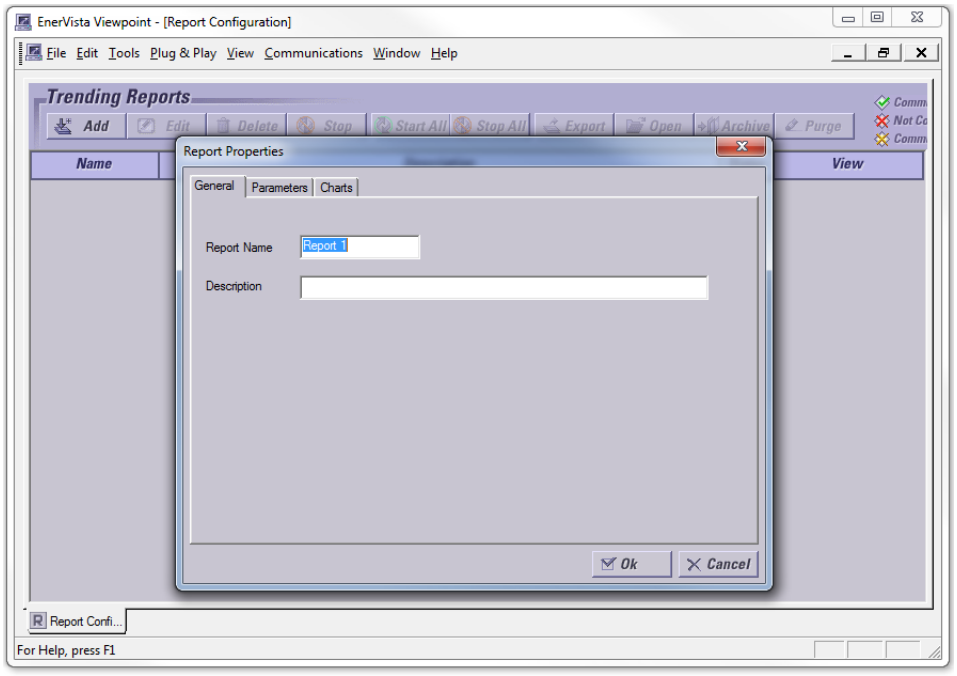
Add report

A maximum of 100 reports can be created and run concurrently, with a maximum of 50 parameters in each report and a maximum of 50 charts in each report.

To add a report:

1. In the main window of Viewpoint Monitoring, click the **Trending Reports** option. The window opens.
2. Click the **Add** button. The properties window opens.

Figure 142: Enter name of report



3. Configure the **General** tab.

   Report Name — The name of the report.

   Description — Optional description of the report.
4. Configure the **Parameters** tab. If the report is running, stop it by clicking the **Stop** button in the Trending Reports window before accessing the properties window.

   Click the **Add** button. The window opens. If the button or fields are not active, stop the report as outlined.

   Name — The name of the parameter.

   Color — The color of the parameter, for example on the chart.

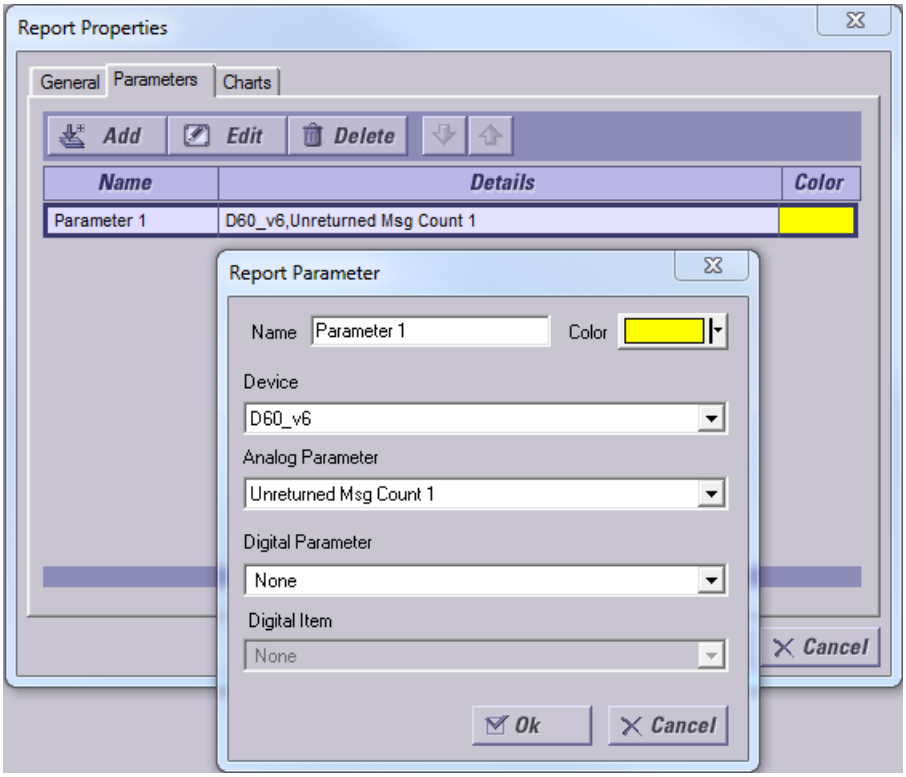
   Device — The device to read data from.

   Analog Parameter or **Digital Parameter** — Select one or the other.

   Digital Item — Select the specific items for a digital parameter.

   Click the **OK** button to save and exit. Use the up and down arrows to arrange the order.

Figure 143: Adding parameters to a report



5. Configure the **Charts** tab; click the **Add** button. A maximum of 50 charts can be configured for each report.

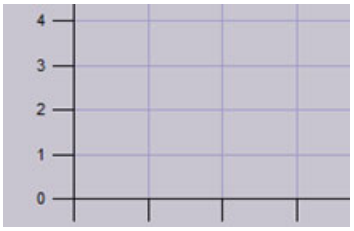
   Chart Name — The name to appear at the top of the chart or table along with the report name, for example Report 1 - LED Test.

   Description — Optional information that does not appear on the chart or table.

   Show — Enable to show the parameter on the chart or table.

   Show Zero — When enabled, the base of the graph is always 0.

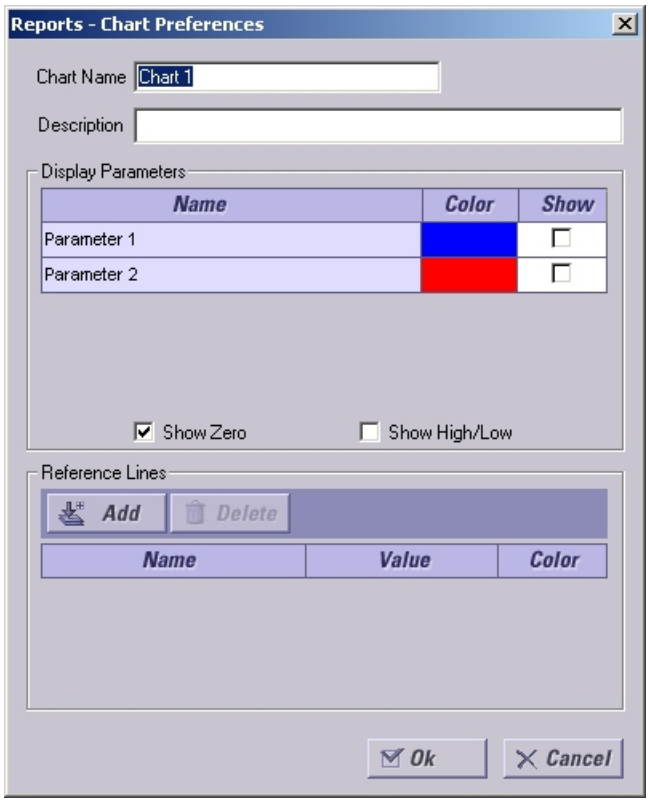
Figure 144: Base of graph at 0



Show High/Low — Enable to draw separate lines on the graph to indicate the High and Low values when averaging is used to plot values. The graph is vertically axed between the high and low values; the 0 base value does not display unless it is part of the high/low range.

Reference Lines — Draws a line on the chart grid, for example a red line at 0.500 horizontally across the graph. Each reference line is defined by a name, value to graph the line, and the color to plot the reference line. Up to 10 reference lines can be added to each chart.

Figure 145: Chart configuration window



6. Click the **OK** button to save and exit, then again. A window asks if you want to start the report. If the answer is Yes, Viewpoint Monitoring records each minute the value for the parameters configured in the report. The values are stored in the database, and they can be exported to a file in comma-delimited format that can be imported into Microsoft Excel. If No, data is not recorded.

Figure 146: Prompt to create report

7. Save the report under **File > Save**. The file is saved in a .sf format; you are not saving individual reports in the .rep format.

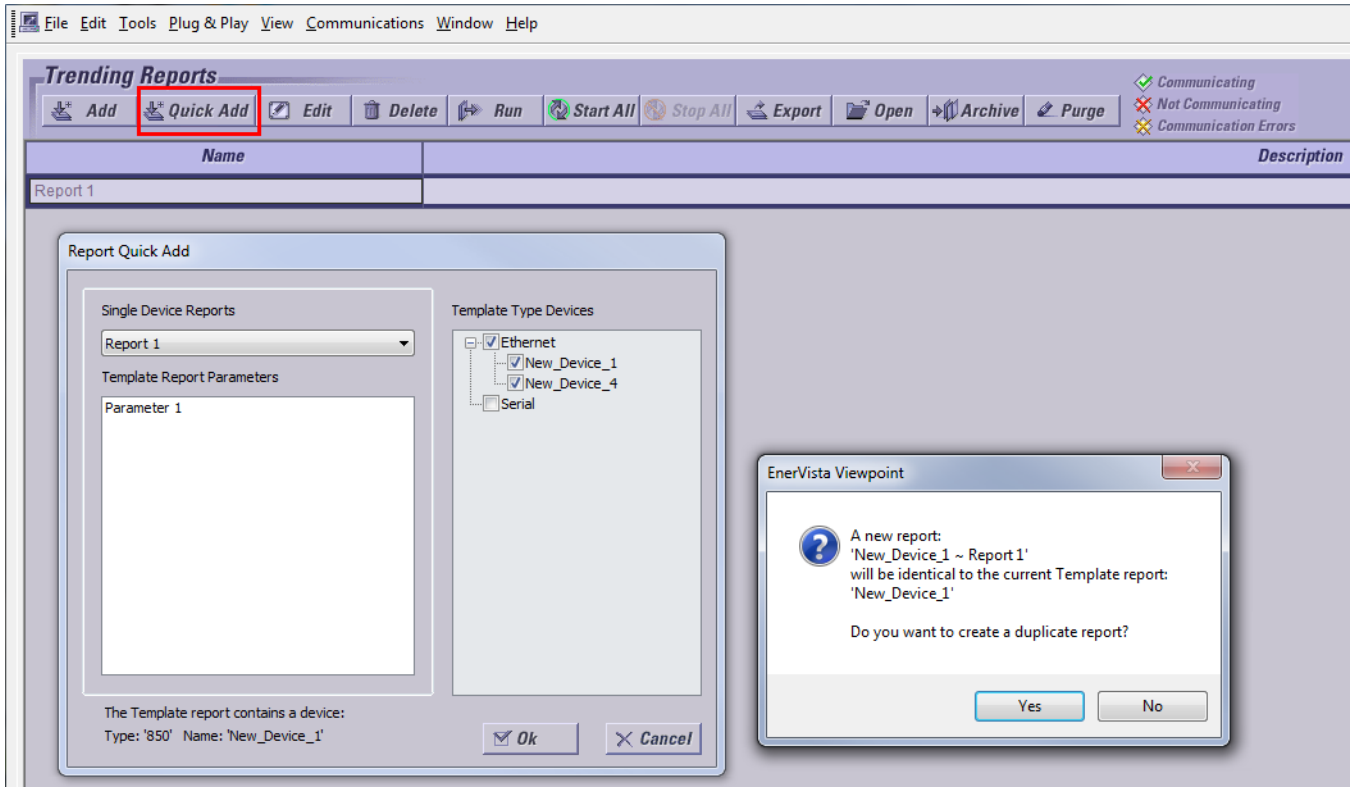
Quick add report

Use the Quick Add button to duplicate an existing report with parameters from only one device.

To duplicate a report:

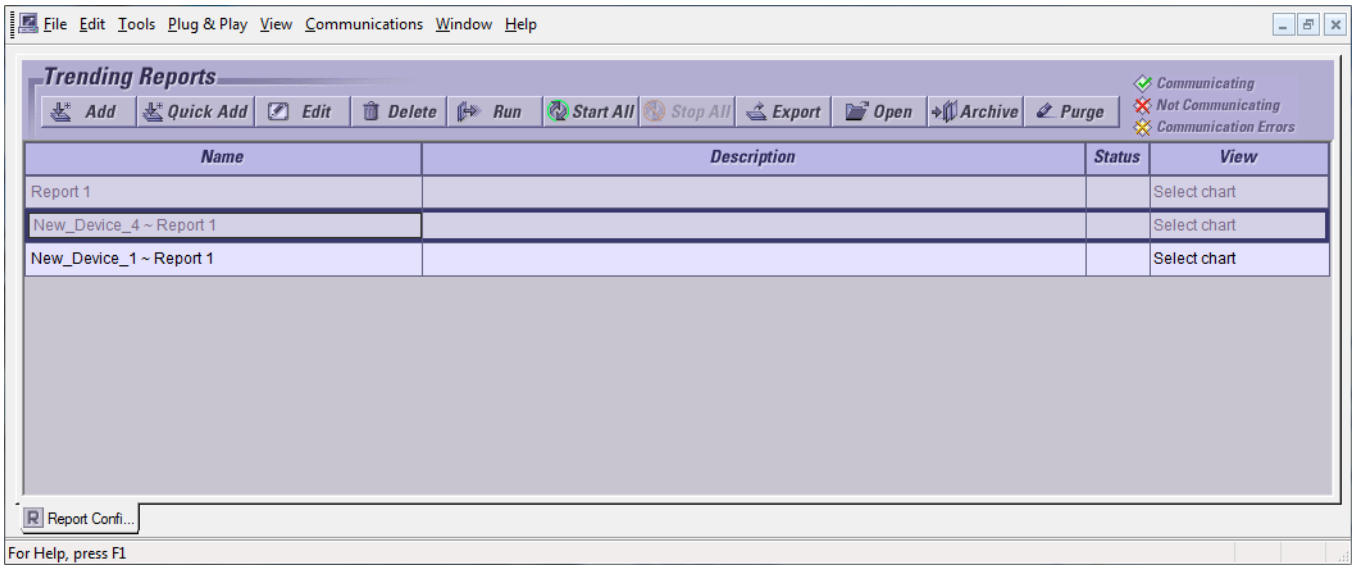
1. In the main window of Viewpoint Monitoring, click the **Trending Reports** option. The window opens.
2. Click the **Add** button. The report quick add window opens.

Figure 147: Select single device report to duplicate



3. Select a single device report and click **OK**. Click **Yes** to confirm, and the report is duplicated.

Figure 148: New report

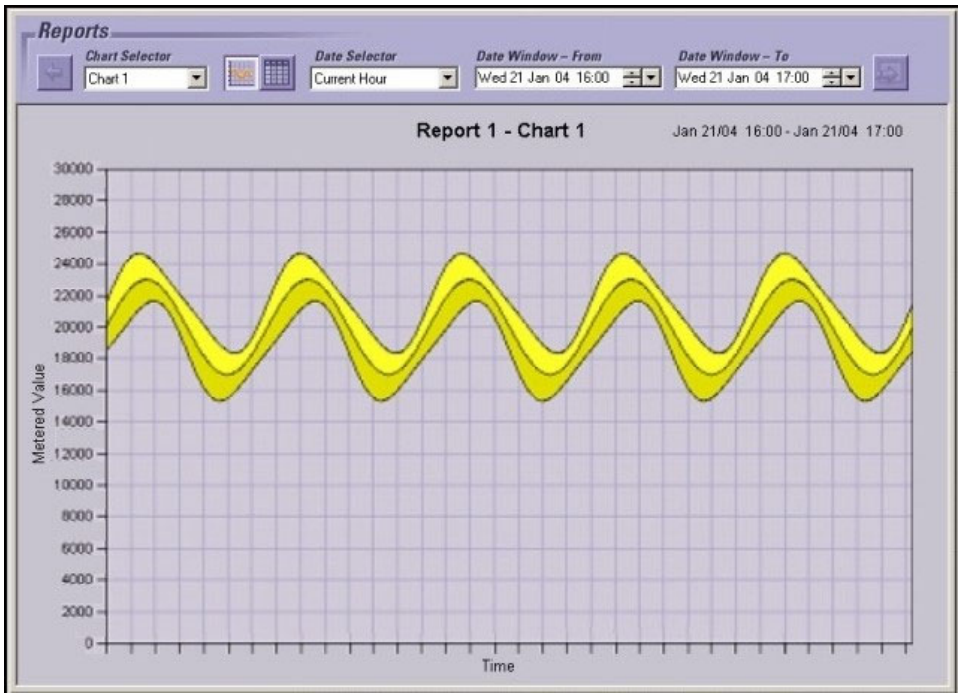


4. If any changes are required, edit as for a new report in the previous Add report section.

View report

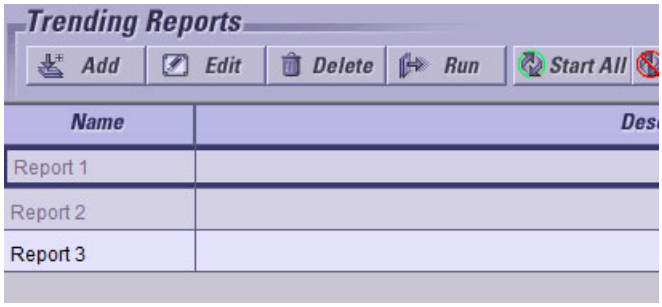
The chart must be configured and enabled before display (previous section). You launch the chart, then can switch to a table view, as well as change the time period used to display the chart.

Figure 149: Example of chart



Reports are listed automatically when opening the Trending Reports application; you do not need to manually open a file. When a report is not running, it is listed with a lighter font. In the example shown here, two reports are inactive and one is active.

Figure 150: Two reports not running



To start a report, select the entry, and click the **Run** button. If the button does not display, it means that the report is already running.

There are report status indicators show after the **Run** button is pressed:

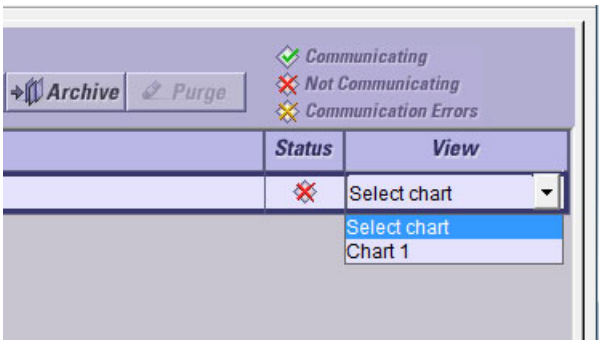
- **Communicating** - if the report is communicating with the device and the data is recorded, the status column of the report will display a checkbox with a green checkmark.

- **Not Communicating** - if no parameters are read from the device, meaning that there is no communication from the devices in the report, then the status column will display a checkbox with a red cross.
- **Communication Errors** - if only some of the parameters from the report are read, which could happen if some of the parameters are from different devices, the status checkbox will have a yellow cross.

To view an archived report, click **File > Open**, and select the .rep file to open it.

To view a chart in a report, select the chart from the **Select chart** drop-down list in the **View** column of the Trending Reports window. The pre-configured chart opens.

Figure 151: Displaying a report chart



To view a table, click the table icon  .

Change time period in chart

Data points are sampled constantly and an average for a data point is calculated every minute.

In order for the data to display properly, the size of the date window determines the format of the data displayed. The following rules govern how the time range displays:

- If the date window is less than one day, the minute data are charted
- If the date window is greater than one day and less than two months, each data point is the average for an hour. There is an option to show the High/Low range on the same graph.
- If the date window is greater than three months, each data point is the average for a day. There is an option to show the High/Low range on the same graph.

The High/Low range is based on the highest and lowest stored minute samples.

To change the time period in a chart:

1. Open the chart as outlined.
2. Select the period from the **Date Selector** drop-down list or change it in the **From** and **To** fields. The period is not saved, even when you save the report; you select the period each time that you access the chart.

Figure 152: Selecting time period to display

Change report and parameters

Starting from Viewpoint Monitoring 7.10, parameters can be added to existing reports that were already run. You can also add parameters from other reports, existing and running for a while. The data previously accumulated in these reports can be viewed in the report to which the parameters were added.

Once set, default values can be changed in the reports and chart windows.

To change the parameters:

1. In the Trending Reports window, double-click the entry. In the chart window, click the

   Preferences button on the toolbar. The window opens.
2. Configure as outlined.

Print chart

Charts can be printed or saved to an output format supported by your computer, such as PDF.

To print a chart:

1. Open the chart as outlined.

2. Click the **Print** button on the toolbar.
3. Choose to print to a printer or save to an output format such as PDF.

Export chart

Charts for a specific time period and frequency can be exported in .csv format, which can be opened in Microsoft Excel. In order to export a chart, device communication/ connection is not required. The export will only export the data that is already recorded in the SQL database.

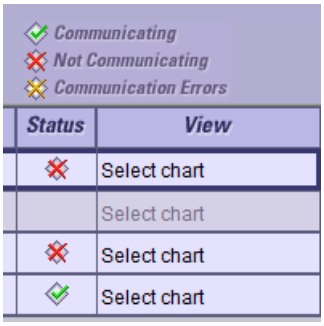
Charts can be exported from either the Trending Reports or Chart windows, both outlined below.

Trending Reports window

To export a chart in the Trending Reports window:

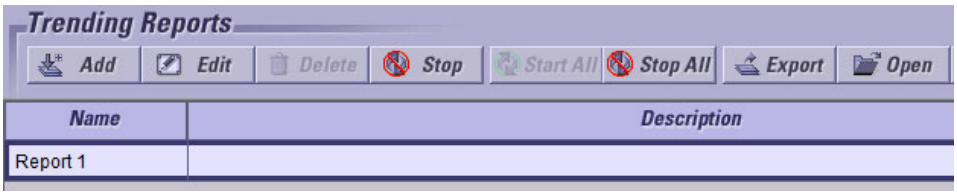
1. Select the required report/chart.

Figure 153: Select the report/chart to export



2. Click the **Export** button at the top of the window. The following window opens.

Figure 154: Export button



3. Select the time period and frequency to export, and check the file name and location for the export. If the fields are inactive, the report has not been run in order for it to be exported.

   Show Min/Max — This check box is active when the **Frequency** selected is other than “Minute samples”. Enable the check box to export the minimum and maximum hourly or daily averages.

   Clicking the left arrow button sets the start date to the oldest date recorded in the report. Clicking the right arrow button sets the last date recorded in the report.

4. Click the **Ok** button to export and exit. In the following figure, the --- values indicate time in the future so no readings have been reported.

Figure 155: Example of report in Excel

	A	B	C
1	Report 2		
2	Time	Parameter 1	Parameter 2
3	Jul 08 14 09:59	0	0
4	Jul 08 14 10:00	0	0
5	Jul 08 14 10:01	0	0
6	Jul 08 14 10:02	0	0
7	Jul 08 14 10:03	0	0
8	Jul 08 14 10:04	0	0
9	Jul 08 14 10:05	0	0
10	Jul 08 14 10:06	0	0
11	Jul 08 14 10:07	---	---
12	Jul 08 14 10:08	---	---
13	Jul 08 14 10:09	---	---
14	Jul 08 14 10:10		

Chart window

To export a chart in the Chart window:

1. Click the **Export** button on the toolbar.
2. Select the time period to export, the frequency to export, and check the file name and location for the export. If the fields are inactive, it means that there is a problem communicating with the device; the **Status** needs to be good in the main window.
3. Click the **Ok** button to export and exit.

Archive report

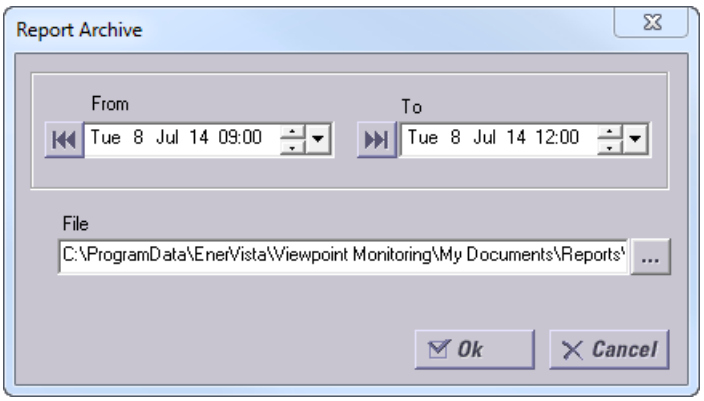
Reports, meaning the data and charts, can be manually archived. The data is saved from the database into the .rep format. The next section outlines automatic backups.

The default location is C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\reports\

To manually archive a report:

1. In the Trending Reports window, select the report.
2. Click the **Archive** button. The window opens.

Figure 156: Archiving chart data for a report



3. Specify the time period, and check or specify the file name and location for the archive.

   Clicking the left arrow button sets the start date to the oldest data recorded in the report. Clicking the right arrow button sets the end date to the last date recorded in the report.

   If the start date selected is the start of the report data, the software prompts if you want to purge the data after the archiving is completed.

   If the report contains Parameters shared with other reports, the software prompts if shared channels are to be purged.
4. Click the **Ok** button to archive and exit.

Automatic backup and purge

Starting from ViewPoint Monitoring 7.10, a feature was added to the reports: Automatic Backup and Purge. This purge function is not the same as the Purge Data outlined later.

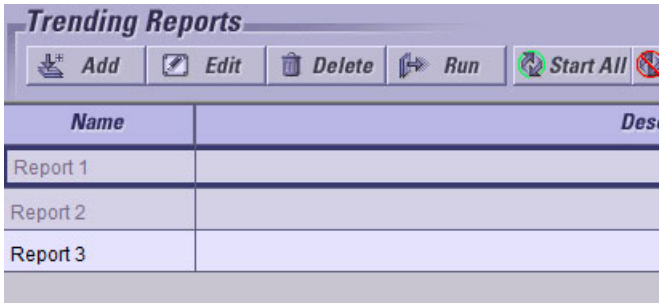
Automatic backup and purge is performed every day at midnight, after reaching the Preferred Maximum of days set in Preferences. Backup data is saved to "C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\reports\Backup\ ReportData_YYYY_MM(n).csv" files, where n is a zero-based index, indicating number of files in a month. After creating a first file, at the beginning of each month new portions of data are appended to the end of the existing file every day up to the end of the month. Unless the CSV file reaches maximum size of 100 MB, only one CSV file is created monthly. If the file exceeds maximum size, a new file for that month is created.

There are no instructions for backup and purge, which are performed automatically every day at midnight.

Delete report or chart

If a report appears inactive in the window, it means that its file is not running or it has been deleted. You can still click into the entries and save them.

Figure 157: Inactive reports when file not found



To delete a report:

1. In the Trending Reports window, select the report.
2. If the **Delete** button is not active, click the **Stop** button.
3. Click the **Delete** button, and confirm the deletion.

To delete a chart:

1. In the Trending Reports window, double-click the report. The properties window opens.
2. Click the **Charts** tab.
3. Select the chart.
4. Click the **Delete** button, and confirm the deletion.

Purge report data

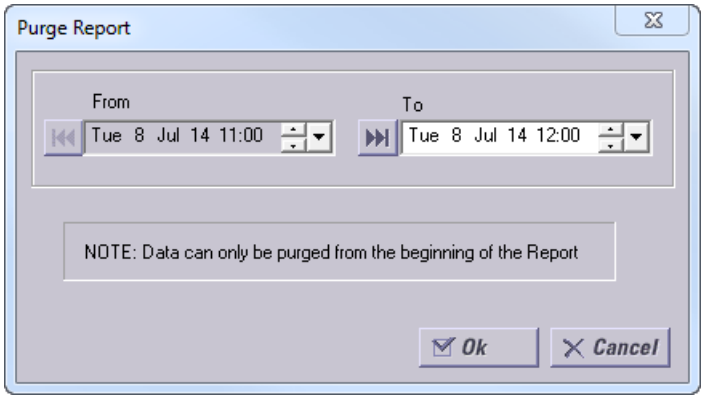
Report data can be manually deleted. This differs from the Automatic Backup and Purge function outlined earlier.

Purging of data always begins with the oldest data, which is found at the beginning of the report.

To purge report data:

1. In the Trending Reports window, select the report.
2. If the **Purge** button is inactive, click the **Stop** button
3. Click the **Purge** button. The window opens. The left arrow button is inactive because purging is done starting from the oldest data recorded in the report.

Figure 158: Deleting oldest data from report



4. Check the end period in the **To** field. Clicking the right arrow button sets the end date to the last date recorded in the report, which is selected by default when the window opens.

   If the report contains Parameters shared with other reports, the software prompts if shared channels are to be purged.
5. Click the **Ok** button to purge, confirm the purge, and exit. If there is no data to purge, a message displays to this effect. The report needs to be started again to generate new data.

Toolbar and buttons

The following toolbar and buttons display in a chart window.

	Open	Opens an archive report file in the .rep format
	Preferences	Opens the window to configure the chart
	Export	Exports the chart data as an Excel spreadsheet in the .csv format
	Print	Outputs the chart to a printer, a PDF file, or other formats supported by the computer
	Left Arrow Button	The Left Arrow Button is used to return back to the larger time range graph. When viewing a graph that displays the time in days, click that day in the graph to display the hours of that days in a graph. Similarly, when viewing a graph that displays the time in hour, click that hour in the graph to display the minutes of that hour in a graph.
	Chart Button	Displays the data in a 2D graph
	Table Button	Displays the data in a table
	Date Selector	Select one of the Report's predefined charts. Selecting from the **Date Selector** drop-down list initializes the Date Window to the specified date range. Options for the **Date Selector** are: Current Hour Last Hour Today Last 24 Hours Yesterday Current Week (M-S) Current Week (S-S) Last 7 days Current Month Last 30 days Current Year Custom Date
	Date From ... To	To select a custom time range to view the data. Simply select the start and end time in the **Date Window From** and **Date Window To** drop-down boxes. When the user edits these drop down boxes, the **Date Selector** drop-down box displays "Custom Date." The user must then click the right arrow button to display the Custom Date in the viewer.
	Right Arrow Button	Select a custom date with the **Date Window From** and **Date Window To** drop-down boxes, then click the right arrow button to display the time range in the viewer

EnerVista Viewpoint Monitoring

Chapter 11: Waveforms

This chapter outlines use of waveform diagrams and COMTRADE files.

- View demonstration files
- View COMTRADE file
- View phasors
- View harmonics
- Convert waveform to COMTRADE file
- Merge COMTRADE files
- Resample COMTRADE file
- Toolbar and buttons

Introduction

Waveform files

When enabled in Viewpoint Monitoring for a device, waveform (oscillography) files from GE Vernova Grid Solutions devices are downloaded automatically from the device and stored on the computer hard drive. When a new waveform is detected, the file is downloaded to the hard drive.

Figure 159: Waveform files can be downloaded automatically from GE devices

View and analyze waveform fault data retrieved from devices.

Waveform files from third-party devices are not supported. They cannot be downloaded from a third-party device or viewed in Viewpoint Monitoring.

Entellisys and 8 Series devices do not support Events and Waveform retrieval using a serial interface.

COMTRADE files

The Common Format for Transient Data Exchange (COMTRADE) is a file format for storing waveform, status, and fault data. The format is an IEEE standard, specifically C37.111.

Viewpoint Monitoring supports the C37.111-1991 and C37.111-1999 COMTRADE standards. As such, four file types can be generated, as follows:

- Header (.HDR)
- Configuration (.CFG; required)
- Data (.DAT; required)
- Information (.INF)

Support for COMTRADE files means that they are viewable in Viewpoint Monitoring. The COMTRADE viewer feature within Viewpoint Monitoring provides a visual display of power systems data and relay operational data captured during a specific triggered event.

Previously captured and saved waveform/oscillography COMTRADE files (.CFG) can be viewed while offline. Oscillography data has to be first extracted from a device while online, but once extracted, the data can be saved to disk. Any .CSV files retrieved from GE Vernova Grid Solutions products can be combined with existing COMTRADE files and viewed within a single window. These files can then be opened in Viewpoint Monitoring and allows the user to analyze the captured waveforms.

Figure 160: Selection window for waveforms

View demonstration files

Demonstration waveform files can be viewed.

As documented in the IED Dashboard chapter, these and other files can be imported into the software and customized for use.

To view demo files:

1. In the Control Panel for Windows, change the Folder Options so that hidden files and folders show.
2. In the main Viewpoint Monitoring window, click **File > Open** and open the following file as an example:

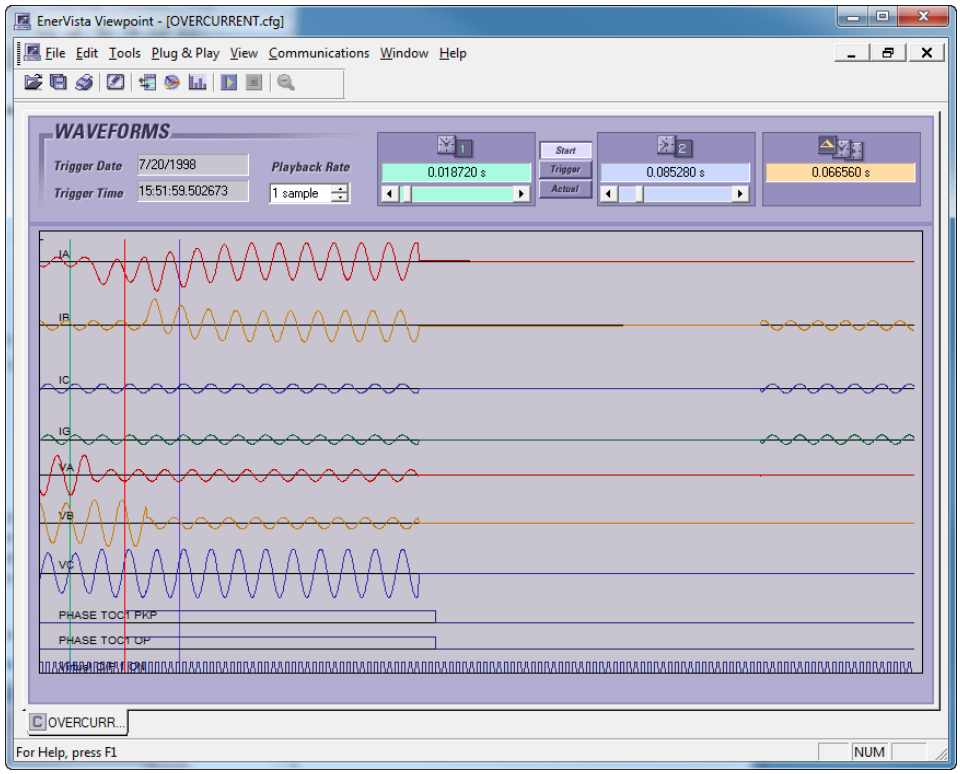
   C:\ProgramData\EnerVista\Viewpoint Monitoring\My Documents\Examples\OVERCURRENT.cfg

   or when using a UR device

   C:\Program Files (x86)\GE Power Management\URPC\Data\Demo\OVERCURRENT.cfg

   Note that other .cfg files for viewing are located in the same directory.
3. When done, turn off hidden files and folders.

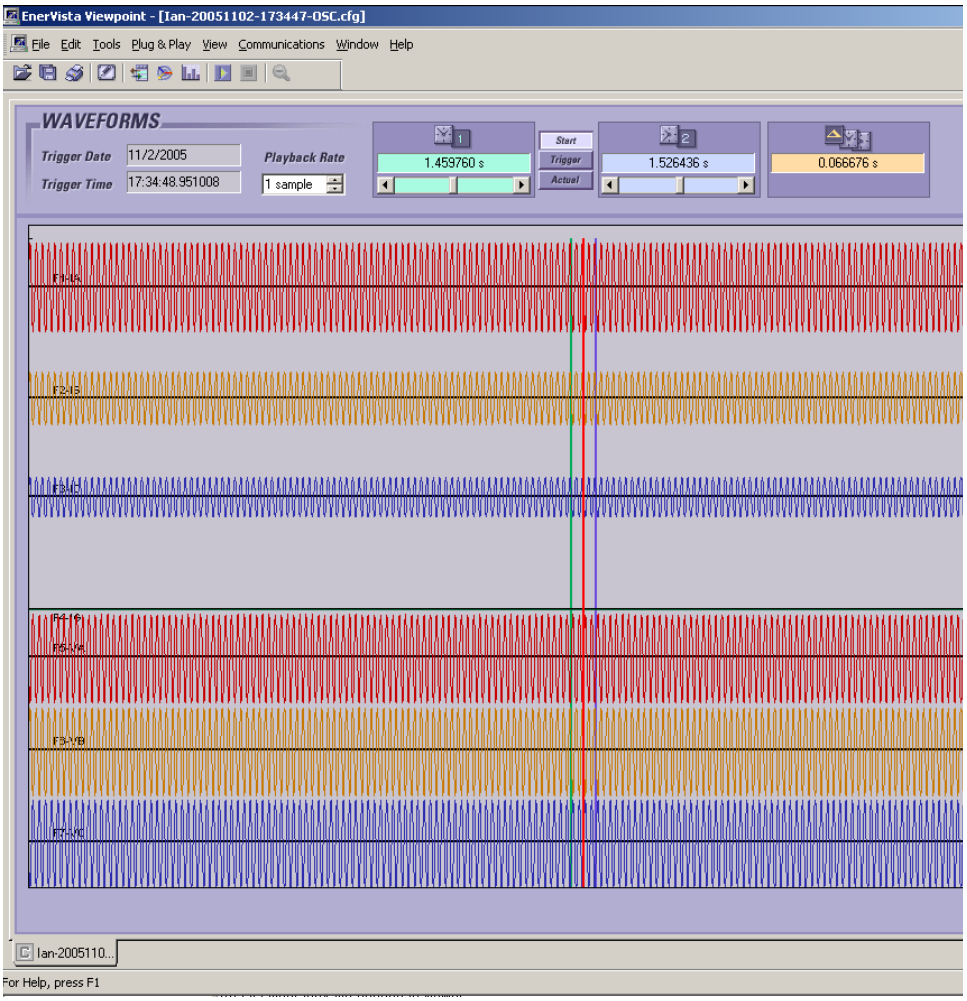
Figure 161: Demonstration file



View COMTRADE file

The viewer provides a visual display of power systems data and relay operational data captured during a specific triggered event. It can display oscillography, phasors, harmonics, and actual values retrieved from the COMTRADE file.

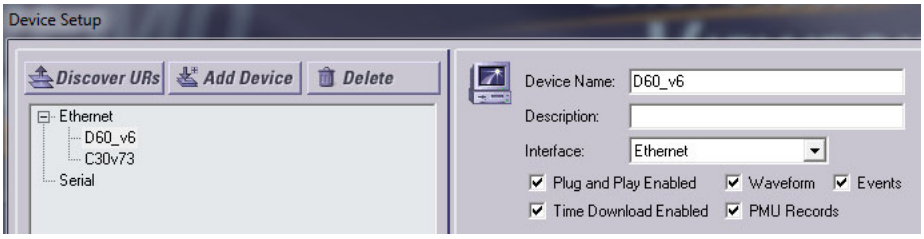
Figure 162: COMTRADE file displayed in Viewpoint Monitoring



Files can be viewed that were downloaded automatically by Viewpoint Monitoring or that are available separately. Both methods are documented here. The toolbars and functions are explained at the end of the chapter.

The device needs to be configured in the Device Setup window to allow waveform retrieval. The **Waveform** option needs to be enabled.

Figure 163: Device configured to allow waveform retrieval



To view a COMTRADE file that was downloaded automatically:

1. In the main window of Viewpoint Monitoring, click the **Waveforms** option. The selection window opens.
2. Click the upper **View** option to open files that were downloaded automatically by Viewpoint Monitoring. If there are no such files to open, a message appears to that effect, and then a window displays to open an existing waveform file in the .cfg format.

To view all other COMTRADE files:

1. In the main window of EnerVista Viewpoint Monitoring, click the **Waveforms** option. The selection window opens.
2. Click the lower **View** option. A window opens.
3. Select the .cfg file to open.

The interface is explained at the end of this chapter.

Set preferences

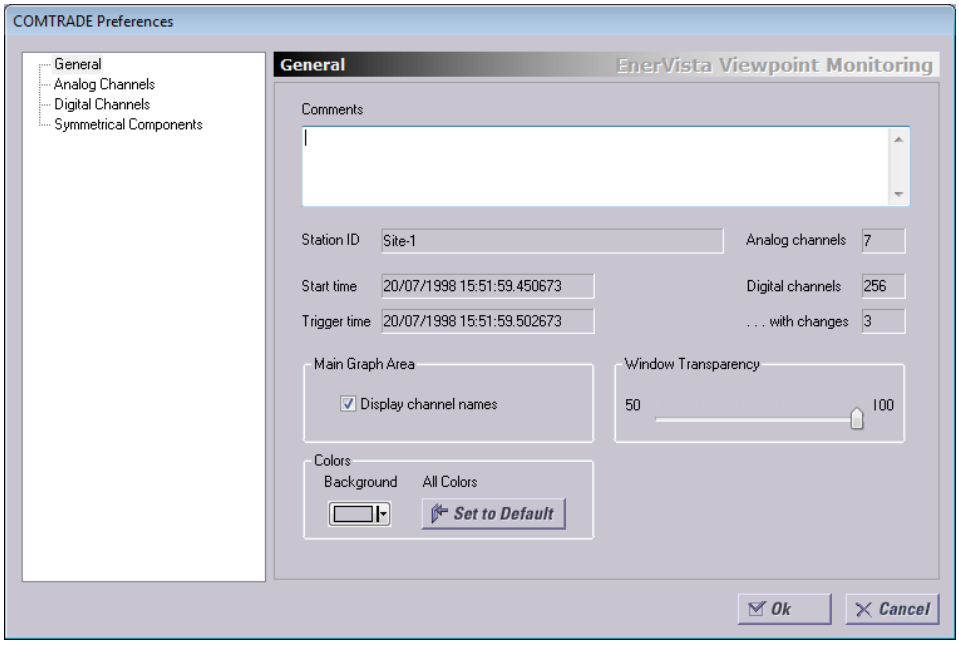
Up to 40 channels can be plotted in various colors, line styles, and groups for simultaneous display. These 40 channels can be a combination of analog and digital channels. Phasors can only be set up to the number of analog channels being used. For example, if 20 Analog channels are enabled, 20 Phasors channels can be used.

Other than the preferences outlined here, to have waveforms retrieved from devices after you exit from Viewpoint Monitoring, configure the **Waveform, Events, Time Download** tab under **File > Preferences**.

To set preferences:

1. With the waveform file open, click the **Preferences**  button on the toolbar. The window opens.

Figure 164: Configuring the waveform view



2. Complete the General panel. Use this panel to add comments to a COMTRADE file, display channel names, alter the window transparency, and choose a background color. These changes effect the display of the Oscillography, Phasor, and Harmonics screens.
3. Complete the Analog Channels panel.

   Channel — Displays the name of each channel/waveform. Read-only.

   Color — Click the color to change the displayed color for that channel.

   Scaling — Allows for channels to be grouped so that they share the same scale.

   Line Style — Selects the format of the displayed line for that channel.

   Graph — Enable to display the channel on the waveform graph.

   Phasor — Enable to display the channel on the phasor graph.

   FFT — Enable to display the channel on the harmonic graph.

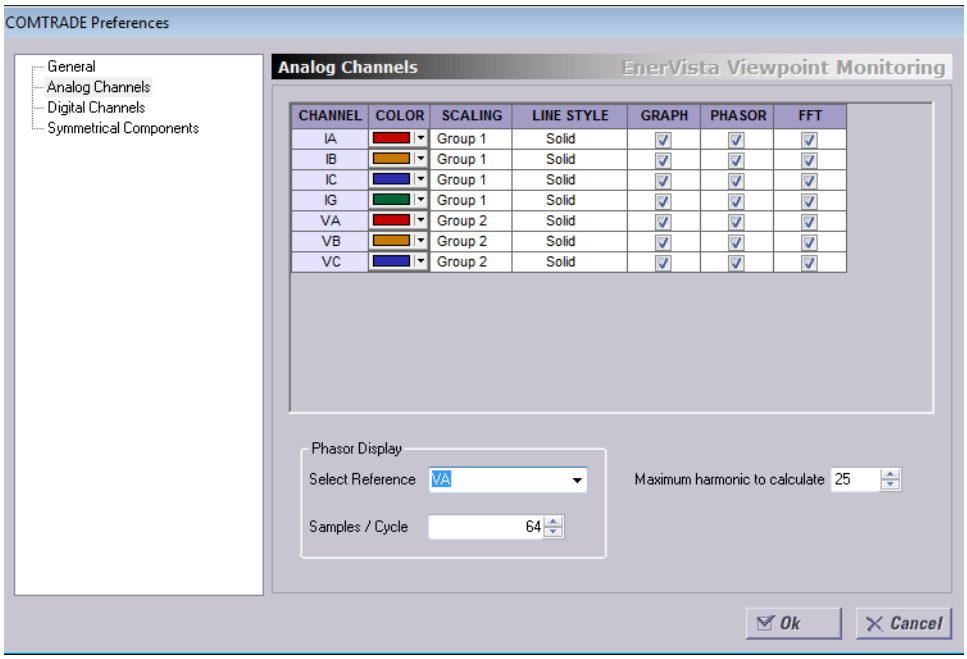
   Optionally customize the Phasor display of the analog channels with the following options.

   Select Reference — Allows the selection of an analog channel to be used as a zero phase angle reference for the phasor graph. If None is selected, the absolute channel magnitudes and phase angles are plotted according to the position of cursor 1.

   Maximum harmonic to calculate —

   Samples/Cycle — For proper display of the phasor angle(s), enter the sampling rate for the data points of the COMTRADE file. Phasors are incorrect if an incorrect value is specified for the samples/cycle.

Figure 165: Analog Channels panel



4. Complete the Digital Channels panel.

   Channel — Displays the name of each channel/waveform. Read-only.

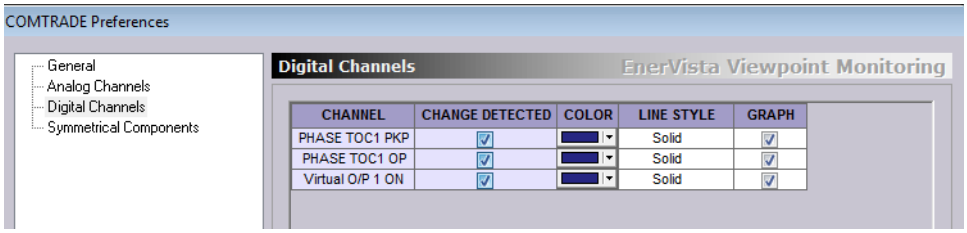
   Change Detected — A check mark is generated when a change of state is detected.

   Color — The color displayed for that channel on the waveform.

   Line Style — The format of the displayed line for that channel.

   Graph — Enable to display the channel on the waveform graph.

Figure 166: Digital Channels panel



5. Complete the Symmetrical Components panel. This panel allows the symmetrical components to be calculated and shown for a three-phase system.

   Channel — Displays the name of each channel/waveform. Read-only.

   Scaling — Allows for the channels to be grouped so that they share the same scale.

   Phase A — Phase A component to be used.

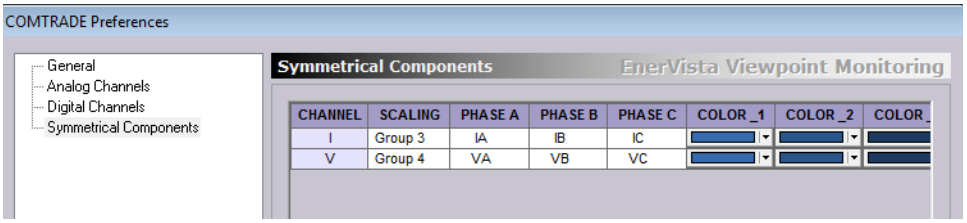
   Phase B — Phase B component to be used.

   Phase C — Phase C component to be used.

   Colors — The colors displayed for channel phases on the waveform.

   Phasor — Enable to display the channel on the phasor graph.

Figure 167: Symmetrical Components panel



6. Click the **Ok** button to save and exit.

View phasors

A Phasor diagram indicates the rotation, magnitude, and angle with respect to a selected reference component chosen in the Preferences window.

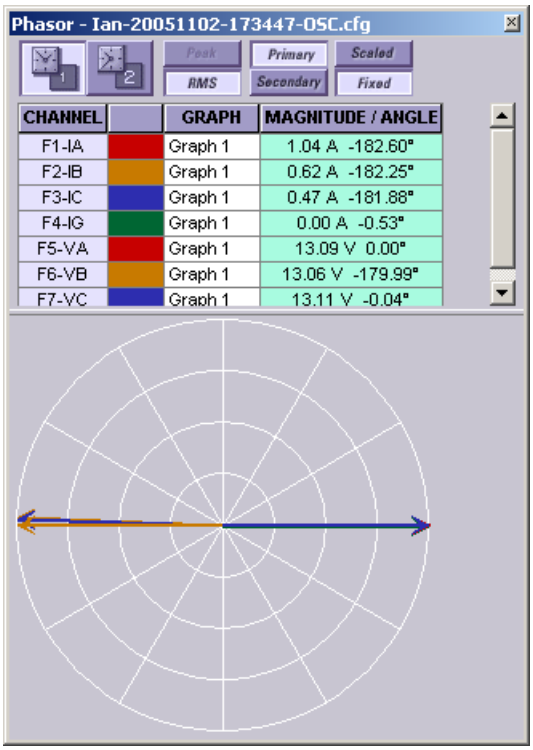
A Phasor diagram is viewed simultaneously with the oscillography waveforms and can be resized. By either dragging the cursor or clicking the play button, the Phasor diagram updates the position of the cursor based on the playback rate.

Clicking an icon on the toolbar opens the Phasor window.

To open the phasor window:

1. With the waveform/COMTRADE file open, click the **Phasor** button on the toolbar. The window opens. The actual values for the phasor quantities, such as amplitude and phase angle, display in the **Magnitude/Angle** column.
2. Click the **Play** button on the main toolbar (not the Phasor window).
3. In the oscillography window, click and drag the vertical green line left, for example, to change the display.

Figure 168: Phasor window



The interface is explained at the end of this chapter.

View harmonics

The Harmonics table lists the calculated percentage of total harmonic distortion (THD) due to each phase. The Preferences window can be used to change which values display and the colors.

The harmonic spectrum is viewed simultaneously with the oscillography waveforms. Clicking an icon on the toolbar opens the window. The window can be resized.

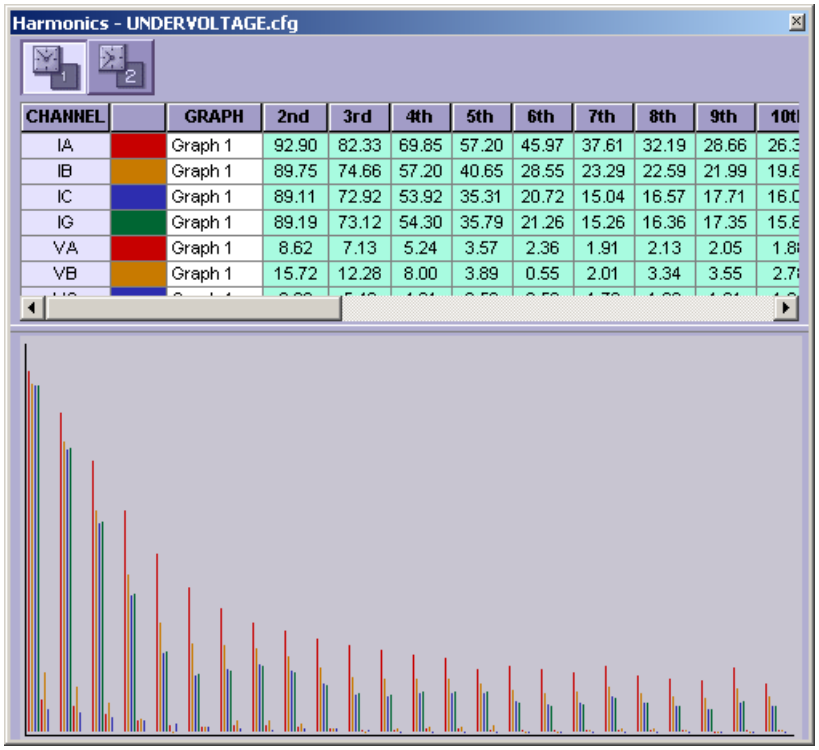
To open the harmonics window:

1. With the waveform/COMTRADE file open, click the **Harmonics** button on the toolbar. The window opens.

2. Click the **Play** button on the main toolbar (not the Harmonics window).
3. In the oscillography window, by either dragging the green line or clicking the Cursor 1 or 2 button, the diagram updates to the corresponding position of the cursor.

   The table lists the calculated percentage of THD due to each phase.

Figure 169: Harmonics window



Convert waveform to COMTRADE file

This function converts a CSV oscillography file into a COMTRADE file viewable by the COMTRADE viewer within Viewpoint Monitoring. GE Vernova Grid Solutions products that create CSV oscillography files include 369PC, 469PC, 489PC, 745PC, 750/760PC, PQMPC, and PQMIIPC.

If converted into an ASCII data file, an oscillography COMTRADE (.cfg) file can be readable by spreadsheet applications.

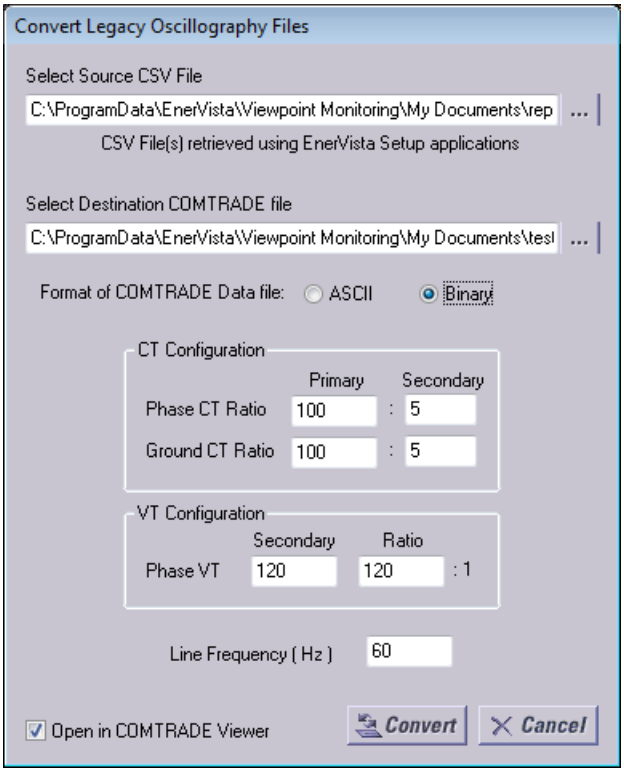
You specify the CSV file, the name for the resulting COMTRADE file, and configure the COMTRADE file.

Waveform files from third-party devices are not supported.

To convert a CSV file to a COMTRADE file:

1. In the main Viewpoint Monitoring window, click the **Waveforms** option. The selection window opens.
2. Click the **Convert** option. The window opens.
3. Complete the fields.

Figure 170: Converting a file



Select Source CSV File — Click the **...** browse button and select the .csv file to convert.

Select Destination COMTRADE file — Enter the name and destination of the output file. Use the **...** browse button to navigate.

Format of COMTRADE Data file — Select **ASCII** to save the files in a text format and view them as a spreadsheet. Select **Binary** to save smaller files that are viewable only in the COMTRADE viewer.

CT Configuration — Specify the current transformer (CT) ratios for the phase and ground CTs for the current channels. The CSV file displays only Primary values, but COMTRADE has support for displaying current information in either Primary or Secondary quantities. Locate this information for a GE device in its EnerVista software under Settings > System Setup > AC Inputs > Current. (This displays the values, not the ratio.)

VT Configuration — Specify the voltage transformer (VT) ratio for the voltage channels. The CSV file displays only Primary values, but COMTRADE has support for displaying voltage information in either Primary or Secondary quantities. Locate this information for a GE device in its EnerVista software under Settings > System Setup > AC Inputs > Voltage.

Line Frequency — Specify the line frequency at which the CSV information was recorded. The line frequency is the frequency for electrical currents and plugs used in countries, which is 60 Hz in North America and 50 Hz in Europe, for example. Electrical line frequency by country can be looked up on the Internet.

Open in COMTRADE Viewer — Enable the check box to view the COMTRADE file after it is created. Disable to convert the file and not view it.

4. Click the **Convert** button in the window to convert and exit. If the file is a .csv file but not a waveform file, a message appears to that effect. With conversion, a .CFG file results. When the option to open the file is selected, the viewer launches.

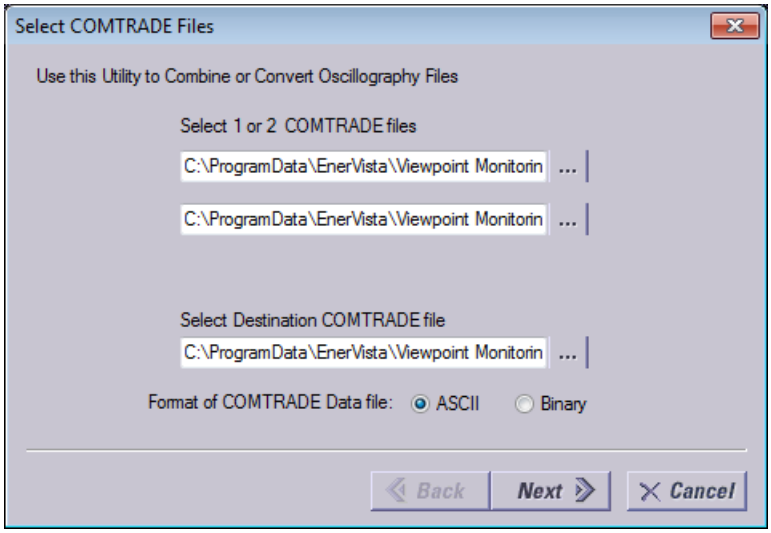
Merge COMTRADE files

The convert utility converts a CSV oscillography file into a COMTRADE file viewable by COMTRADE viewer. If converted into an ASCII Data file, an oscillography COMTRADE (.cfg) file is readable by spreadsheet applications. Such files can be merged.

To merge CFG files:

1. In the main Viewpoint Monitoring window, click the **Waveforms** option. The window opens.
2. Click the **Merge** option. A wizard opens.
3. Complete the fields.

Figure 171: Merging files



Select 1 or 2 COMTRADE files — Click the **...** browse button and select the .cfg files to merge. The first COMTRADE file entered in the list is considered the reference file, which determines the start time and trigger time of the merged file.

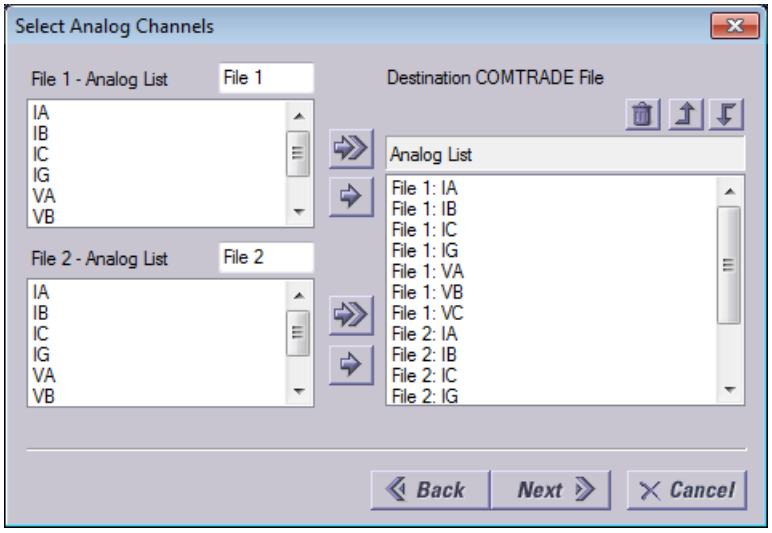
Select Destination COMTRADE file — Enter the name and destination of the output file. Use the **...** browse button to navigate.

Format of COMTRADE Data file — Select **ASCII** to save the files in a text format and view them as a spreadsheet. Select **Binary** to save smaller files that are viewable only in the COMTRADE viewer.

Click the **Next** button. The wizard advances.

4. Complete the fields.

Figure 172: Analog channels



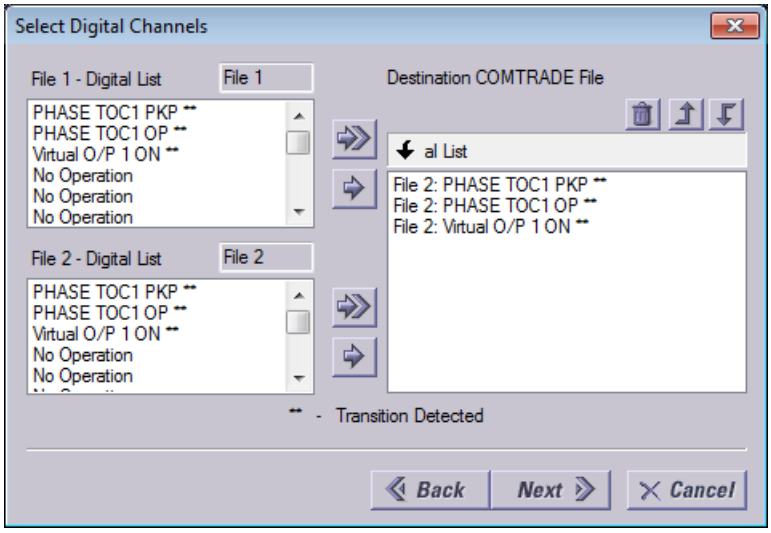
On the left side are the available waveforms from both source COMTRADE files. On the right are the selected waveforms for the destination COMTRADE file. Highlight the required waveforms from the source files and use the single right arrow button to move it to the destination file. Or use the double right arrow button to move all the waveforms from the analog list to the destination file.

To remove any incorrectly selected waveforms from the destination list, use the trash can icon. The up and down buttons are provided for re-ordering the analog list of the destination file.

Click the **Next** button. The wizard advances.

5. Complete the fields, this time for digital channels.

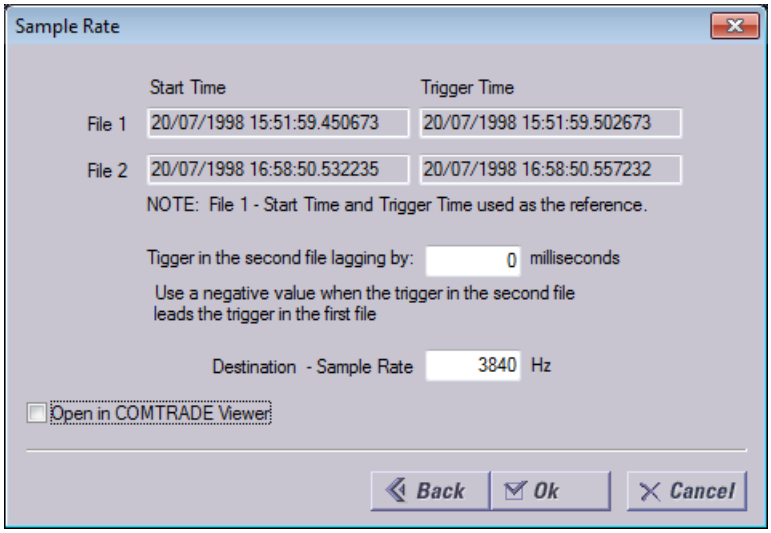
Figure 173: Digital channels



Click the **Next** button. The wizard advances.

6. Complete the fields.

Figure 174: Sample rate



At the top of the window are four boxes detailing the start and end times of the two source COMTRADE files. If synchronization is required, the **Trigger in the second file lagging by** field is given to add an offset to the second file. This offset can be negative, in which case the first file lags the second file.

Destination - Sample Rate — Enter the resample rate in Hertz. The default value is 3840 Hz. This is the rate for the destination file. You know the original sampling rate from computer software settings, for example 64 samples/cycle.

Open in COMTRADE Viewer — Enable the check box to view the COMTRADE file after merging. Disable to merge the file and not view it, or if you are generating ASCII files.

7. Click the **Ok** button. The two source COMTRADE files are merged into the specified destination file. If three or more files are to be merged, this process can be repeated using the destination file from the first merge as one of the source files for a second merge.

Resample COMTRADE file

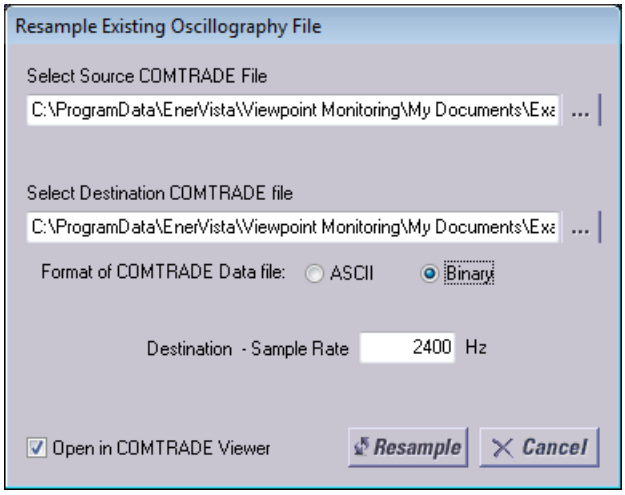
Sampling refers to the data collected. Sampling rate is the frequency at which the data is collected. For COMTRADE files, the sampling rate is specified in Hertz (Hz). Resampling takes a subset of the sample data collected.

Resampling a COMTRADE file allows you to convert a COMTRADE file with a variable sampling rate to a COMTRADE file with a fixed sampling rate. Additionally, a fixed sampling rate of a COMTRADE file can be changed to a new value.

To resample a COMTRADE file:

1. In the main Viewpoint Monitoring window, click the **Waveforms** option. The selection window opens.
2. Click the **Resample** option. The window opens.
3. Complete the fields.

Figure 175: Changing the sampling rate



Select Source COMTRADE file — Click the **...** browse button and select the .cfg file to resample.

Select Destination COMTRADE file — Enter the name and destination of the output file. Use the **...** browse button to navigate, for example to select the existing file and change its name, for example to "_new."

Format of COMTRADE Data file — Select **ASCII** to save the files in a text format and view them as a spreadsheet. Select **Binary** to save smaller files that are viewable only in the COMTRADE viewer.

Destination - Sample Rate — Enter the resample rate in Hertz. The default value is 3840 Hz.

Open in COMTRADE Viewer — Enable the check box to view the COMTRADE file after it is created. Disable to resample the file and not view it.

4. Click the **Resample** button in the window to resample and exit. When the option to open the file is selected, the viewer launches. A .cfg file, a .dat data file, and a .hdr header file are generated.

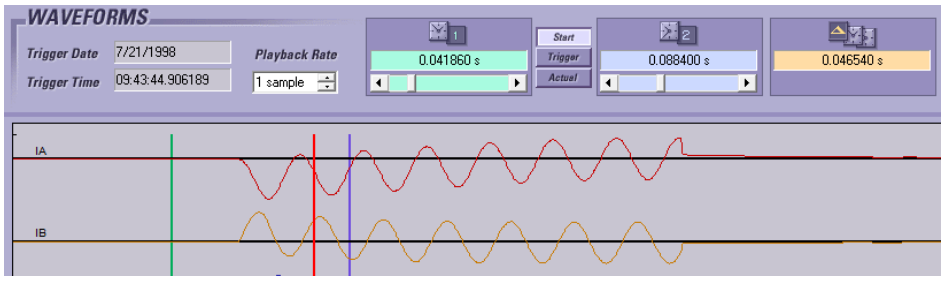
Toolbar and buttons

This section explains the waveform viewer and the phasor window.

Toolbar

	Open	Opens/loads an existing COMTRADE file (.CFG)
	Save	Saves current .CFG file with existing file name. If a file name has not been specified, the software prompts you to name it.
	Print	Prints the waveform
	Preferences	Opens the COMTRADE Viewer preferences window
	Data	Shows the actual value of the waveform at the specified cursor position
	Phasors	Shows the phasor diagram of the waveform at the specified cursor position
	Harmonics	Shows the harmonic spectrum of the waveform at the specified cursor position
	Play	Begins moving the first cursor through waveform samples at the specified sampling rate. During playback, the Phasors screen and Harmonic screen also are updated accordingly in real time based on the position of cursor 1. The playback automatically rewinds and repeats when the end of oscillography record is reached.
	Stop	Stops moving the first cursor through the waveform; stops the waveform
	Zoom out	Zooms out from the previous selected scale. A selected section of waveform(s) can be zoomed in on by right-mouse clicking and dragging the outline box over the desired segment. Multiple zooms are possible. Waveforms can be super-imposed on top of each other by selecting and dragging them with the left mouse button.

Waveform functions

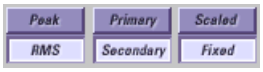


	vertical red line	Indicates the trigger position (%) of the data capture
	blue and green vertical lines/cursors	Indicate initial time and final time. Can be moved either by clicking and dragging them left and right across the duration period of the signal, or by using the Cursor 1, Cursor 2 scrolling bars at the top of the window. The red line is the Trigger position and cannot be moved across the captured waveforms.
	Playback Rate	The number of samples shown every second. Can be increased/ decreased in order to improve the resolution of the playback. The default is 1 sample. The larger the value, the faster the cursor travels across the signal.
	green	Displays the parameter value at the green cursor 1 position. When in Start mode, displays the time offset from the start time of the COMTRADE file. When in Trigger mode, displays the amount of time from the trigger position (red line).
	blue	Displays the parameter value at the blue cursor 2 position. When in Start mode, displays the time offset from the start time of the COMTRADE file. When in Trigger mode, displays the amount of time from the trigger position (red line).
	yellow	Displays the difference between the green and blue parameter values. The box shows the difference in time (milliseconds).
	Start	Displays cursor times as an offset from the "Start Time" of the COMTRADE file. These times are always a positive value.
	Trigger	Displays cursor times as an offset from the "Trigger Time" of the COMTRADE file. A negative time indicates a time that occurs before the trigger and a positive time indicates a time that occurs after the trigger.
	Actual	Displays cursor times as an actual time stamp. The format for the time stamp is "mm/dd/yy HH:mm:ss.ssssss" and the hours are based on a 24 hour system.

Phasor window

Use the Preferences window in the COMTRADE window to change the values displayed, the number of phasors, and the colors.

Selects between cursor positions.



Phasor magnitude view attributes are set by highlighting the following options.

Peak versus **RMS** — Select between peak and root mean square (RMS) phasor magnitudes.

Primary versus **Secondary** — Select between the primary or secondary phase voltages.

Scaled versus **Fixed** — Select between scaled phasors or fixed magnitude phasors. Fixed magnitude phasors ignore the magnitude value and only show the angles.

EnerVista Viewpoint Monitoring

Chapter 12: Administration

This chapter outlines passwords, users, and groups. See the Quickstart Guide and the Device Setup chapter for device management.

This chapter outlines the following:

- Default passwords
- Password rules
- Administrator user account and group
- Guest user account and group
- Turn login on and off
- Manage password
- Lost password
- Manage user accounts
- Manager user groups

Introduction

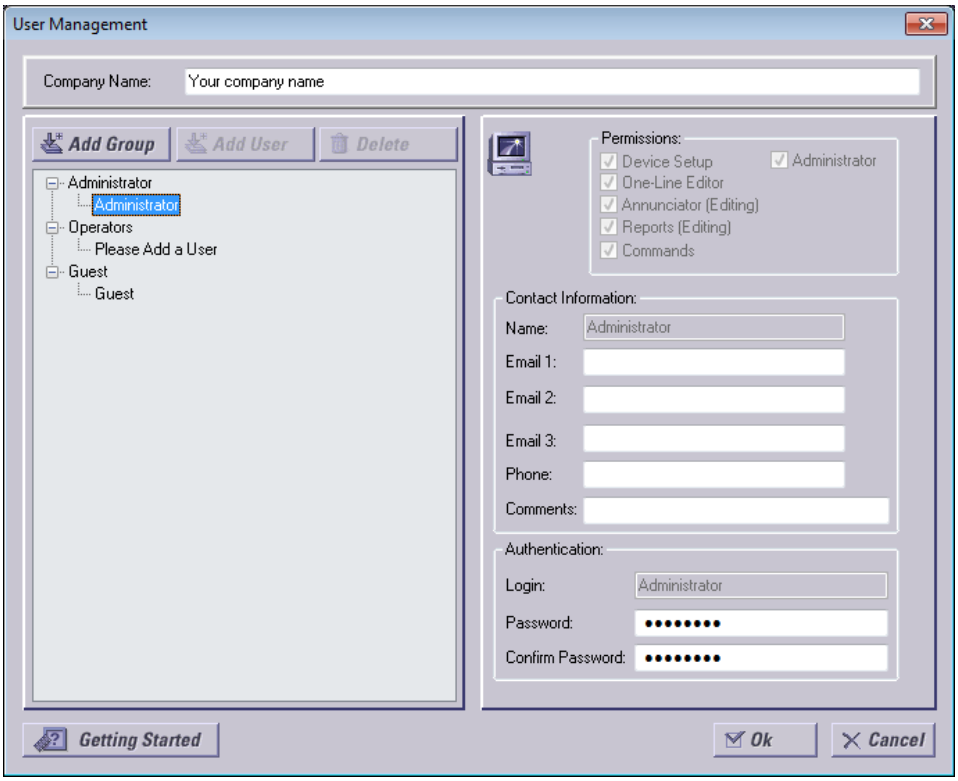
Administration is performed in several windows in Viewpoint Monitoring.

By default, no login or password are required to open and use Viewpoint Monitoring, there are Administrator and Guest user accounts, and there are three user groups.

Upon installation of Viewpoint Monitoring, the change-password window appears repeatedly when accessing some functions as long as the Administrator password remains at the default of "password".

Permissions to various functions in Viewpoint Monitoring first are set on a group level, then on an individual basis as a subset of the group permissions.

Figure 176: Default user and group management view



Default passwords

The default passwords are as follows:

- Administrator — password
- Guest — Guest

Password rules

Passwords are case-sensitive. No other rules are enforced.

Administrator user account and group

An Administrator user group and an Administrator user account are added by default. The account and group cannot be deleted or renamed. Only one administrator account is allowed.

Guest user account and group

A Guest user group and a Guest user account are added by default. Their permissions cannot be changed. The account and group cannot be deleted.

The Guest user account becomes active when you set Viewpoint Monitoring to require login. There is also a separate access mode with limited functions, as outlined here.

To turn Guest use on or off:

1. In the main window of Viewpoint Monitoring, click **File > Preferences**. The window opens.
2. Set the security to FULL or Enhanced.

   FULL — Users must log in at startup, for example with the Guest user account.

   Enhanced — Users receive limited privileges at startup, without login. Access is granted to the IED Dashboard, Waveforms, and viewing in One-Line Viewer, Annunciator, Events, and Trending Reports. A user can then log in to receive additional permissions assigned to their user account, such as full access to the One-Line Editor or Annunciator.
3. Click the **Ok** button to save and exit. Note that you also need to exit from the software on the system tray if the Watchdog function is active and keeping the software running.

   To exit from Enhanced mode, click **Tools > Administration > Login User** and log in as Administrator, for example.

Figure 177: Active options when Enhanced access set in preferences

Turn login on and off

The requirement to enter a user name and password can be turned on and off and over-rides any authentication configuration in the user account setup. For example, if you enter a user name and password for a user account, the user is not required to log in unless ViewPoint Monitoring is configured to force login.

Configuration at the software level is done in the **Security** tab under **File > Preferences**. See the Security section on page 30.

Manage password

By default, no password is required to open and use Viewpoint Monitoring. The software prompts for the Administrator password to be set before access to user account management is allowed. This window continues to appear as long as the Administrator password remains at the default of "password". You can simply re-enter this password to continue use without resetting the password, but the window re-appears with next access.

The setting in the **Security** tab under **File > Preferences** determines if users are required to login, regardless of any passwords set.

Set password

To set the password immediately after installation:

1. In the main Viewpoint Monitoring window, click the **Administration** option. The Set Password window opens. A password appears in the **Enter Old Password** field even when one has not yet been set.

   Otherwise, see the next section to access the window.
2. Enter the password in the two password fields. Passwords are case-sensitive and no other rules are enforced.
3. Add a question and answer to use when you forget or lose the password. Examples of questions are what make was your first car, what is your mother's maiden name, and what is your favorite color.

   The window shown here is the one that appears repeatedly as long as the Administrator password remains at the default.

Figure 178: Password window

4. Click the **Change** button. The password and security question are set, and the user management window opens.

Change password

To change the set password:

1. In the main Viewpoint Monitoring window, click **Tools > Administration > Change Password**. The Change Password window opens.
2. Enter the existing password in the field. Other fields do not become active until the correct password is entered. When the fields do become active, the existing security question and answer display.
3. Enter the new password in the two new password fields. Passwords are case-sensitive and no other rules are enforced.
4. Leave or change the question and answer to use when you forget or lose the password. Examples of questions are what make was your first car, what is your mother's maiden name, and what is your favorite color.
5. Click the **Change** button. The password and security question are set, and the window closes.

Lost password

The default passwords for the Administrator and Guest are "password".

For user accounts other than Guest, there is a **Forget your password?** button to click in the login window if you forget your password. This allows you to answer whatever security question was set for your user account, then displays the password.

If these methods do not work and you are locked out of the software, contact GE Grid Solutions technical support as outlined in the Quickstart section on page 3. There is a procedure to default the passwords.

Figure 179: Login window

Manage user accounts

By default, there is an Administrator account that is included in an Administrator group. Neither can be deleted. Only one administrate account is allowed, and its name cannot be changed.

The three types of user accounts are described as follows:

- **Administrator** — All access
- **User account** — Specified permissions for viewing or modifying functions
- **Guest** — View-only. Cannot modify any functions or acknowledge any alarms. No permissions can be set for guests.

Upon installation, the software prompts for the Administrator password to be set before access to user account management is allowed. This window continues to appear as long as the Administrator password remains at the default of "password". You can simply re-enter this password to continue use without resetting the password, but the window re-appears with next access.

Permissions to various functions in Viewpoint Monitoring first are set on a group level, then on an individual basis as a subset of the group permissions. For example, if a group has permission to three of four functions, a user account in the group can have permission to three or fewer functions.

The setting in the **Security** tab under **File > Preferences** determines if users are required to log in, regardless of any passwords set at the user account level.

Add user account

To add a user account:

1. In the main window of Viewpoint Monitoring, click the **Administration** option or click **Tools > Administration > User Management**. The user management window opens.
2. Click and expand a group on the left side of the window, for example Operators. You cannot add a user to the Administrator or Guest groups.
3. Click the **Add User** button. The panel displays on the right side.
4. Configure the user account on the right side of the panel. For the permissions, all or a subset of the permissions granted at the group level can be granted. All four permission entries appear only when configured as such for the group.

Figure 180: User account settings

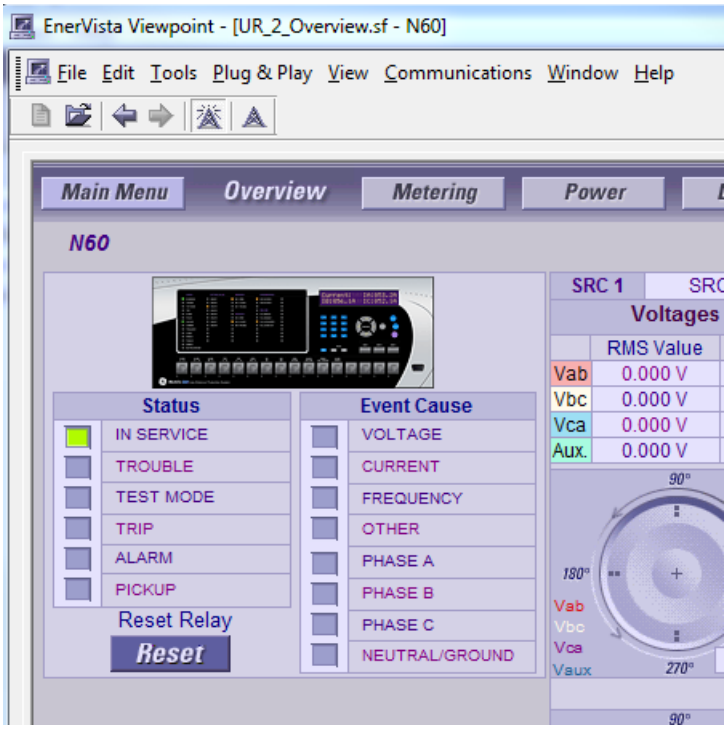
One-Line Editor — Enable to allow access to the One-Line Editor in which to draw diagrams for control and monitoring of devices.

Annunciator — Enable to allow access to the Annunciator, to set and manage alarms and alerts.

Reports — Enable to allow access to the Trending Reports, to view and archive data.

Commands — Enable to allow the user to send commands to devices. For the N60 example shown as follows, the user can click the **Reset** button. (This view is accessed by clicking the **Dashboard** button on a device in the IED Dashboard.) When the user is not allowed to send commands, the button is inactive/disabled.

Figure 181: Reset button command example



Name — The name of the user account, for example John Smith.

Email 1, 2, 3 — Optionally enter email address(es) for the user account. The address here has nothing to do with email addresses entered in the Annunciator for alarm notification. The email address(es) are for reference only.

Phone — Optionally enter a telephone number for the user.

Comments — Optionally enter information about the user, such as job function, location, employment status.

Login — Enter a user name for logging in to the user account. A random default is provided, such as User458923732, which can be overwritten.

Password — Enter a password for logging in to the user account, overwriting the default entered, which is "password".

Confirm Password — Re-enter the password.

Changes are saved in real-time when you click into another panel; you do not need to click the **Ok** button, which exits from the window.

5. Record the user name and password, and provide them to the user.
6. Check that the permissions granted to the user are consistent with the permissions granted at the group level. Group permission is required for user permission too.
7. When done working in the panel for all users and groups, click the **Ok** button to exit.

Update user account

To update a user account:

1. In the User Management window, select the user account.
2. Enter the changes on the right side of the panel. The Administrator or Guest

account name and permissions cannot be changed.

3. Click the **OK** button to exit.

Delete user account

To delete a user account:

1. In the User Management window, select the user account. Or select a group to delete all user accounts in the group and the group itself.
2. Click the **Delete** button. The button is inactive for the Administrator and Guest user accounts because they cannot be deleted.
3. Confirm the deletion. The user account(s) and/or group is deleted. This action cannot be reversed.
4. Click the **OK** button to exit.

Manage user groups

Administrator and Guest groups are present by default.

Permissions to various functions in Viewpoint Monitoring first are set on a group level, then on an individual basis as a subset of the group permissions. For example, if a group has permission to three of four functions, a user in the group can have permission to three or fewer functions.

Add group

To add a group:

1. In the main window of Viewpoint Monitoring, click the **Administration** option or click **Tools > Administration > User Management**. The user management window opens.
2. Click the **Add Group** button. A group is added at the bottom of the list; subgroups cannot be added to existing groups.
3. Configure the group on the right side of the panel.

   Name — The name of the user group, for example Technicians.

   Comments — Optionally add information about the group, such as location or type of employee included in the group.

   One-Line Editor — Enable to allow access to the One-Line Editor in which to draw diagrams for control and monitoring of devices.

   Annunciator — Enable to allow access to the Annunciator, to set and manage alarms and alerts.

   Reports — Enable to allow access to the Trending Reports, to view and archive data.

   Commands — Enable to allow the user to send commands to devices, for example click a **Reset** button in the IED Dashboard of a device.

   Changes are saved in real-time when you click into another panel; you do not need to click the **Ok** button, which exits from the window.
4. Add a user to the group by clicking the **Add User** button, and enter the information as outlined previously.
5. When done working in the panel for all users and groups, click the **Ok** button to exit.

Update group

To update a group:

1. In the User Management window, select the group.
2. Enter the changes on the right side of the panel.

   The Administrator or Guest group name cannot be changed.

   If you disable any permissions that apply to user accounts in the group, the user accounts are also affected. This can mean that some user accounts have no permissions assigned to them, for example you disable the One-Line Editor permission and a user with access to only that one function no longer has permissions assigned to them.
3. Click the **OK** button to exit.

Delete group

To delete a group:

1. In the User Management window, select the group.
2. Click the **Delete** button. The button is inactive for the Administrator and Guest groups because they cannot be deleted.
3. Confirm the deletion. The user accounts and group are deleted. This action cannot be reversed.
4. Click the **OK** button to exit.

EnerVista Viewpoint Monitoring

Chapter 13: Remote computers

This chapter outlines how to add computers for remote access of Viewpoint Monitoring.

- Set up Viewpoint Monitoring for remote access
- Install remote access client software on a computer
- Access Viewpoint Monitoring remotely
- Uninstall remote access client software
- Set time-out
- Remote computer interface

Introduction

Remote viewer capability to a EnerVista Viewpoint Monitoring instance is optionally available through EnerVista Viewpoint Monitoring ViewNodes (requires separate EnerVista Viewpoint ViewNodes license) or Windows Server Remote Desktop Services connection (requires Windows Server option for Viewpoint Monitoring and Windows Remote Desktop Services (RDS) license from Microsoft).

EnerVista Viewpoint Monitoring ViewNodes

EnerVista Viewpoint Monitoring ViewNode client software is installed on remote Windows non-server workstations to remotely connect to the workstation running the EnerVista Viewpoint Monitoring instance. For remote access there are no additional licensing requirements for the EnerVista Viewpoint Monitoring instance, however, a EnerVista Viewpoint Monitoring ViewNodes license is required for each remote workstation client.

Up to 10 concurrent EnerVista Viewpoint Monitoring ViewNode clients can access a EnerVista Viewpoint Monitoring instance. Support for the remote access is configured in the Viewpoint Monitoring instance and then the ViewNode client software is installed and configured on the remote workstation to remotely access.

Windows server remote desktop services connection

With a Windows Server 2019/2022 installation, up to five computers can access the server connecting using Remote Desktop Services (RDS). One access can be the administrator and the others are users.

This installation requires both the Viewpoint Monitoring License with Windows Server option as well as Windows Server 2019/2022 Remote Desktop Services (5-pack of Windows Server 2019/2022 Remote Desktop Services (per User, or per Device)).

No extra software installation is required on the remote workstation as the connection is through Windows Remote Desktop Services. Remote workstations with EnerVista Viewpoint Monitoring ViewNodes will not be able to connect to Viewpoint Monitoring Windows Server Installations using a ViewNodes remote connection as remote access is only provided using Windows Remote Desktop Services.

Trial version

For evaluation purposes, a trial version of EnerVista Viewpoint Monitoring ViewNode software is available for download from the GE Vernova Grid Solutions website.

The trial version will operate for 15 days from installation before requiring a license.

Set up Viewpoint Monitoring for remote access

This section applies to ViewNode remote access, not when using Remote Desktop Connection.

Viewpoint Monitoring supports multiple ViewNodes remotely connecting to it and viewing its published One-Line diagrams, Annunciator panels, Trending Reports, Waveforms, and Events. Up to 10 ViewNodes can connect concurrently to a Viewpoint Monitoring system.

Communication between Viewpoint Monitoring and ViewNodes is HTTP-based. The default HTTP port 80 is used. If you have trouble with any procedures outlined here, consult your system administrator to have your Viewpoint Monitoring system accessible from the Internet.

The ViewNode software needs to be installed on the remote computer. The ViewNode software can be downloaded from the Internet. No additional licensing is required to use the ViewNode client software.

ViewNode Support on the Viewpoint Monitoring computer requires Microsoft .NET Framework 4.0. This is because the XML-DA web service is a Microsoft .NET 4.0 based web application. If .NET Framework 4.0 is not present, it is installed when Viewpoint Monitoring installs.

You configure support for the service in Viewpoint Monitoring, then install the ViewNode client software on a remote computer.

Software requirements for Viewpoint Monitoring

Microsoft Internet Services Manager (IIS) is required to use remote ViewNode workstations. It needs to be installed on the host computer only, meaning the computer with Viewpoint Monitoring already installed.

To check if Internet Services Manager (IIS) is installed:

1. On the computer with Viewpoint Monitoring installed, click **Start > Control Panel** and open the **Programs and Features**. The window opens.
2. Click the **Turn Windows features on or off** option on the left side. At the prompt, allow the program to make changes to the computer. A window opens.
3. Check if the **Internet Information Services** check box is colored or enabled. (See the following figure.) A colored box without a check mark indicates that the function is selected and some but not all features selected; this is okay.

   If IIS is active, expand the entry, then the **World Wide Web Services** folder, then the **Application Development Features** folder, and check if **ASP.NET** is installed.

   If no (both IIS and ASP.NET are not installed), install them as outlined in the next procedure.

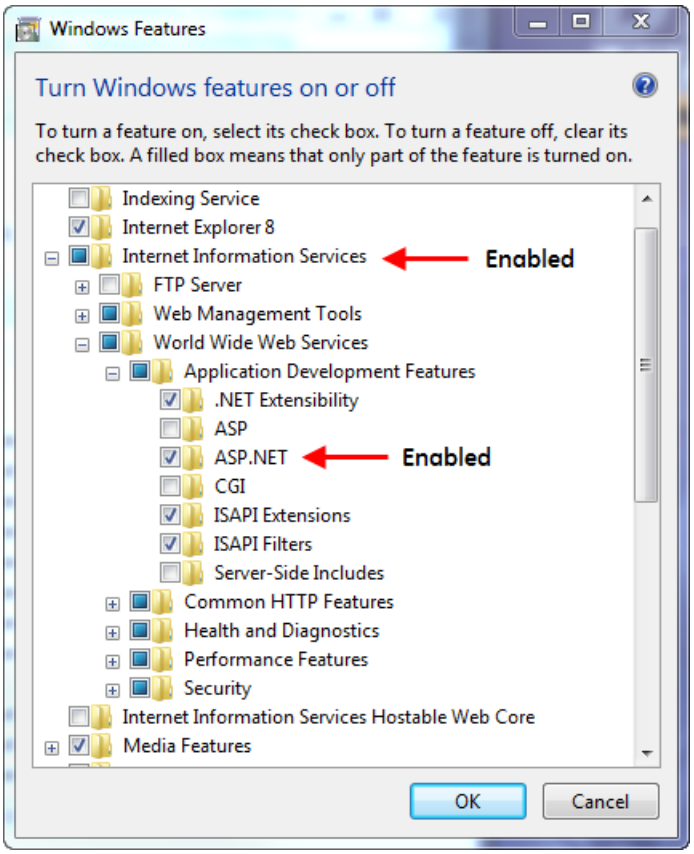
To install Internet Services Manager (IIS):

1. Close Viewpoint Monitoring.
2. In the Programs and Features window outlined, click the **Turn Windows features on or off** option on the left side. At the prompt, allow the program to make changes to the computer. A window opens.
3. Expand the **Internet Information Services** entry.
4. Expand the **World Wide Web Services** entry.
5. Enable the **Internet Information Services** and **ASP.NET** options. Leave the other default selections as is. A colored box without a check mark indicates that

the function is selected and some but not all features selected; this is okay.

6. Click the **OK** button to install, and restart the computer at the prompt. Internet Information Services installs. Continue with the next section to configure Viewpoint Monitoring in the wizard.

Figure 182: Installing Internet Information Services



Set up and configure ViewNode support

To configure Viewpoint Monitoring for ViewNode remote access:

1. In the main window of Viewpoint Monitoring, click **File > ViewNode Management > Setup ViewNode Support**.

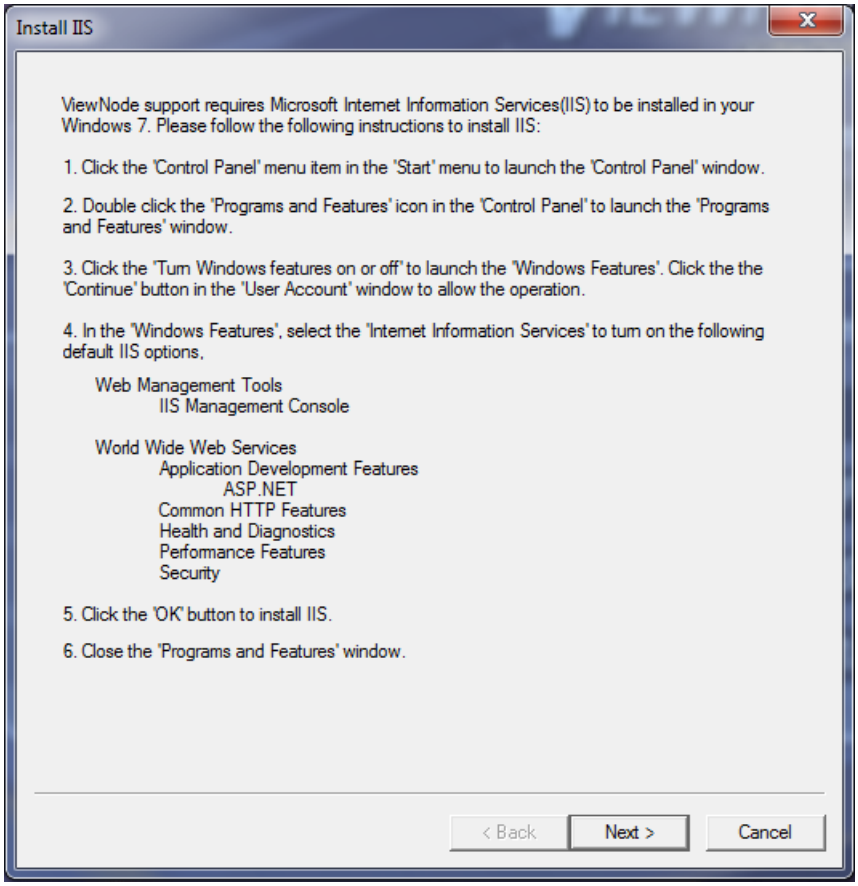
   If you are logged in to the software without administrator rights, as message appears that you need to be logged in to the computer with administrator rights. Exit from Viewpoint Monitoring, right-click its icon on the desktop, select the **Run as administrator** option, and accept access at the prompt.

   With successful launch, a wizard opens.

2. Viewpoint Monitoring checks if all needed software is installed and prompts when not, as follows.

   First, it checks if Internet Information Services (IIS) has been installed. If not, the wizard explains how and does not let you continue (see the following figure). Exit, install IIS as outlined in the previous section, and try again.

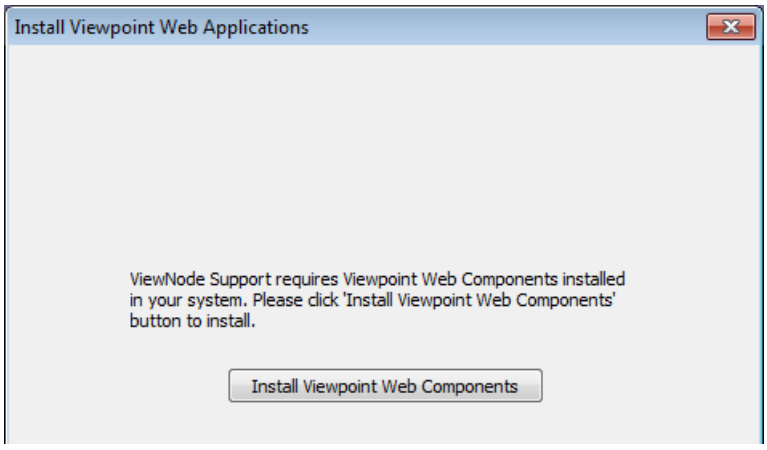
Figure 183: Prompt to install Microsoft Internet Information Services (IIS)



Second, Viewpoint Monitoring checks that Microsoft .NET Framework is installed. If not, the Install .NET Framework window opens. Click the button to install .NET.

Third, Viewpoint Monitoring checks that required web applications are installed. If not, the Install Viewpoint Web Applications window opens. Click the button to install them.

Figure 184: Prompt to install related web components



If installation does not work at this point, contact GE technical support.

3. With all components installed, click the **Next** button in the wizard. The Publishing window opens. Or after initial setup, to access the window manually for configuration, click **File > ViewNode Management > Configure ViewNode Support**.
4. Complete the fields.

   Site Name — The computer or site name for the Viewpoint Monitoring installation. This is used for the remote computer to know which Viewpoint Monitoring installation they are connecting to. In the example shown, the name of the Viewpoint Monitoring installation is "VPM_Server1."

   When you change the name here, it also changes in **File > Preferences > Host Information**.

   Waveforms — Enable to allow waveform/oscillography diagrams to be published to and viewable by the remote ViewNode computers.

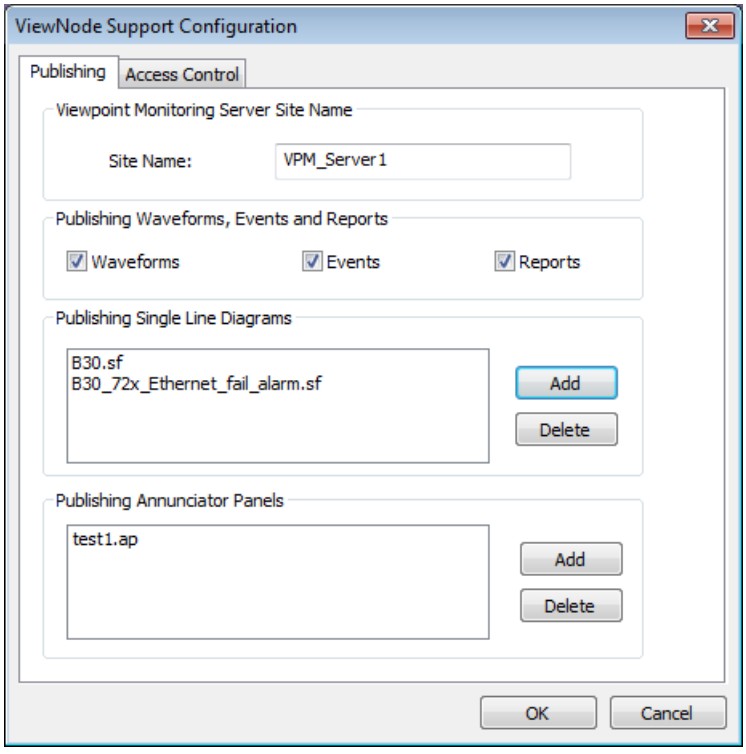
   Events — Enable to allow event records to be published to and viewable by the remote ViewNode computers.

   Reports — Enable to allow trending reports to be published to and viewable by the remote ViewNode computers.

   Publishing Single Line Diagrams — Click the **Add** button to enable specific One-Line Editor diagrams to be made available to the remote ViewNode computers. You can choose not to publish any diagrams at this time and do configuration later. These are .sf files.

   Publishing Annunciator Panels — Click the **Add** button to enable specific alarm panels created in the Annunciator function to be made available to the remote ViewNode computers. You can choose not to publish any annunciator panels at this time and do configuration later. These are .ap files.

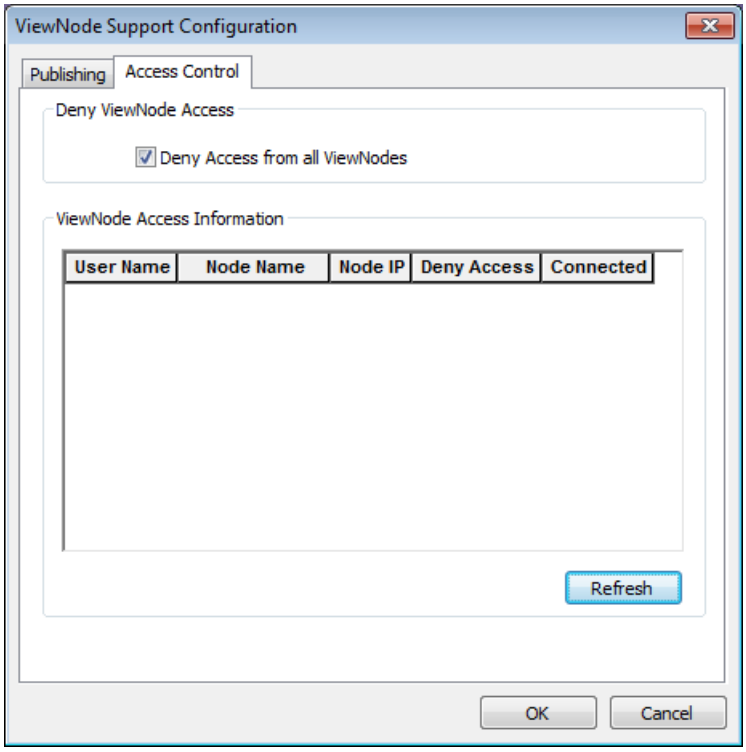
Figure 185: ViewNode support configuration window



If using the wizard, click the **Next** button to continue. Otherwise, click the **Access Control** tab.

5. The Access Control window/tab displays all ViewNodes currently connected to your system in the ViewNode Access Information table. You can also enable the **Deny Access from all ViewNodes** check box to deny access. At initial setup of ViewNodes, there are none connected to your system, and access is denied. Disable the check box to allow access.

Figure 186: Access Control tab displays remote computers connected



6. Click the **Finish** or **OK** button. Your Viewpoint Monitoring system is able now to support up to 10 ViewNodes concurrently to remotely connect to your system and view any published One-Line diagrams, alarm panels, trending reports, waveforms, and events.

Remove remote access

If the ViewNode Support is set up and you no longer need it in your Viewpoint Monitoring system, you can discontinue it, which unregisters the components that are used for ViewNode support. The service can be re-instated.

To remove remote service:

1. In Viewpoint Monitoring, click **File > ViewNode Management > Remove ViewNode Support**. The ViewNode Support service unregisters and no remote ViewNode computers can connect to the Viewpoint Monitoring system; a call from a ViewNode fails after that.

   To reinstall the service, use the **Setup ViewNode Support** menu option.

Install remote access client software

This section describes the installion of ViewNodes client software for remote access.

The ViewNodes software needs to be installed on each workstation that is to access

Viewpoint Monitoring remotely and a license is required for activation.

The software is available from the GE Vernova website at: https://www.gevernova.com/grid-solutions/automation/substation-solutions/software-tools/enervista-viewpoint-monitoring

The ViewNodes client software cannot be installed on the same computer as the Viewpoint Monitoring system

Software requirements for remote computer

The ViewNode client software can be installed on computers running the following operating system:

- Windows 10, 11 (64 bit)

The ViewNode client software needs to be the same as the Viewpoint Monitoring installation being accessed. For example, ViewNode 8.0 works with Viewpoint Monitoring 8.0, but not with 7.2.

The remote computer also requires Microsoft SQL Server 2019/2022 Express. The installation wizard prompts automatically to install it when not found on the computer.

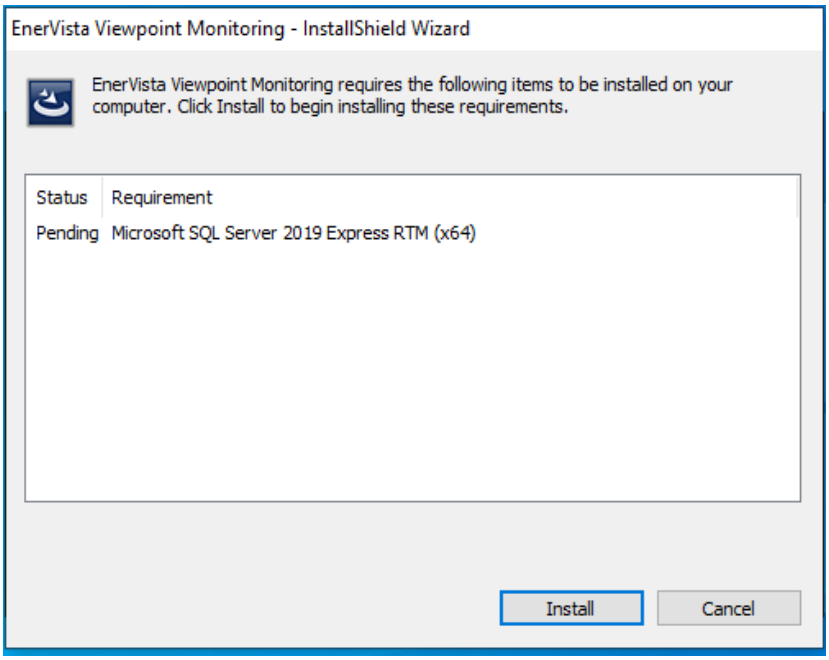
Install client software

To install the ViewNodes remote access client software:

1. If the computer has pending Windows or Microsoft updates that require restart, restart the computer now.
2. Once logged in again, locate and click or double-click the ViewNodes Installation file, for example by placing it on the computer desktop. Allow changes to the computer at the prompt. The wizard opens.
3. When the computer does not have Microsoft SQL Server 2019/2022 Express installed, the system prompts to install it. Click the **Install** button to do so, then confirm at the prompt. The software installs.

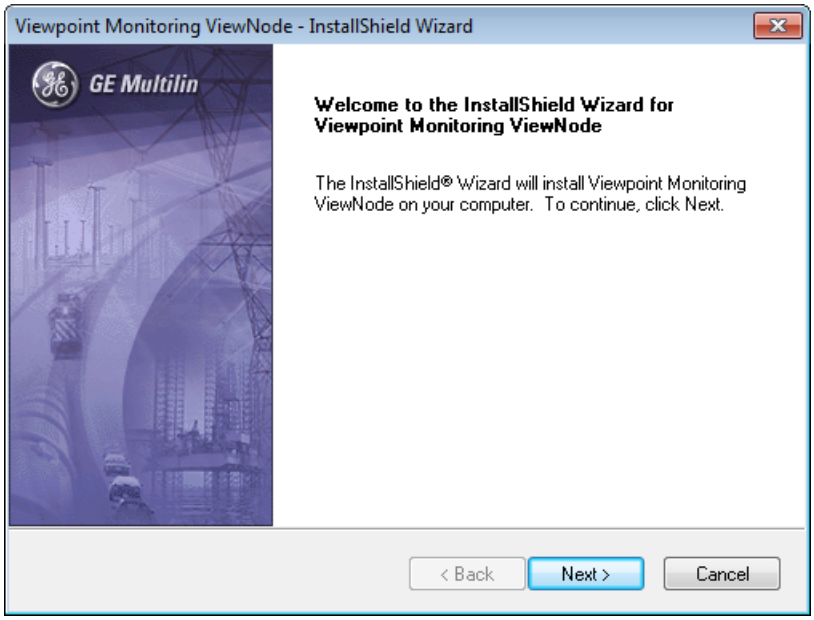
   If installing on a 32-bit computer and a message appears that installation appears to have failed, continue with the installation, then contact GE technical support. You can have a failed Microsoft SQL Server 2019/2022 installation and a successful ViewNode installation, but the latter does not function properly until the Microsoft SQL Server installation is fixed. The Microsoft SQL Server 2019/2022 is not supported on a Windows 10 32-bit computer. In this case you can manually install the Microsoft SQL Server 2012 Express SP1. Please contact the Customer support for this.

Figure 187: Prompt to install Microsoft SQL Server Express on remote computer



4. When the ViewNode wizard opens, complete it to install the software. The default location is C:\Program Files (x86)\EnerVista\Viewpoint Monitoring\ViewNode. An icon is added to the desktop, and a menu item added in the location specified.

Figure 188: ViewNode installation wizard



Access Viewpoint Monitoring remotely

The following two options can be used to access the software remotely:

- Remote Desktop Connection when you have a Windows Server 2019 installation
- With Viewpoint Monitoring ViewNode

Access remotely with Remote Desktop Connection

When Viewpoint Monitoring is installed on a Windows Server 2019/2022 computer, Remote Desktop Connection can be used to access Viewpoint Monitoring. Because Remote Desktop Connection normally is installed with Windows, no extra installation is required. The remote access is also referred to as Remote Desktop Services.

You run the service over the Internet with Remote Desktop Connection. Five concurrent connections to Viewpoint Monitoring are available, one being an Administrator and others being Guest accounts that can be logged in instead as user accounts. Since multiple users can run Viewpoint Monitoring, to avoid concurrency conflicts, adhere to the following rules:

- One master instance of Viewpoint Monitoring on the Windows Server 2019/2022 computer
- Administrator access can be local or remote
- When Administrator access is in use, the login window switches automatically to Guest login
- When a Guest requires Administrator access, the Administrator must log out
- The Administrator has full control, regardless of local or remote access
- A Guest has limited control as follows:
  - Administration including Preferences and License Management are not available
  - ViewNode support management is not available
  - Custom File Editor and Formula Editor are not available
  - Device Setup is not available
  - Watchdog Service cannot be configured
  - Reports are available in view mode only
  - Events and Waveforms are available in view mode only
  - One-Line Editor and Viewer as well as Annunciator can be configured and viewed
- Before logging out from Remote Desktop Connection, exit Viewpoint Monitoring because logging out from Remote Desktop Connection does not free the application instance
- Quit the application only by clicking the **Exit** button. If Viewpoint Monitoring is exited using the Task Manager, this does not free the application instance. Eventually users run out of the four available concurrent connections. The only way to restore four available connections is by restarting the server.

To use Remote Desktop Connection, you need to know the full name or IP address of the remote computer and it needs to be configured to allow access. The **Full computer name** displays in the Control Panel in the System panel. An example is T123.server1.yourcompany.com

To allow a remote desktop connection:

1. Click **Start**, then right-click **Computer** and select **Properties**. Click the **Remote**

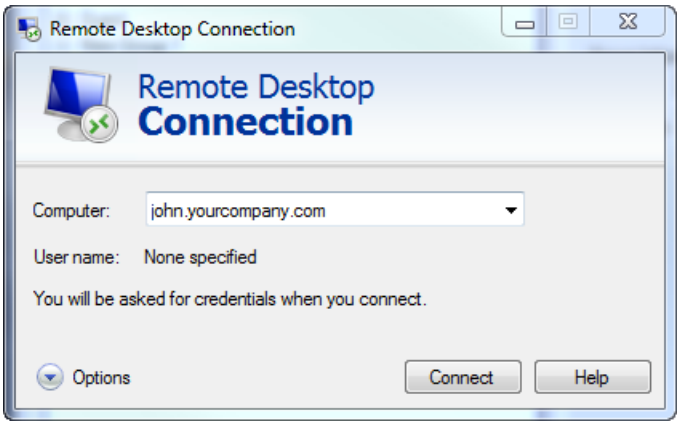
Settings option.

2. Enable the **Allow connections from...** option and apply.

To make a remote desktop connection:

1. Click **Start > All Programs > Accessories > Remote Desktop Connection**. The window opens.
2. Enter the full computer name of the remote computer, for example john.yourcompany.com. Or enter the IP address.
3. Click the **Connect** button.

Figure 189: Connecting to a remote computer



4. Log in at the prompt, where the user name and password are for the remote computer being accessed, not for Viewpoint Monitoring.
5. Once logged in to the computer, launch Viewpoint Monitoring and log in as Administrator, Guest, or with a user account.

Access remotely with ViewNode

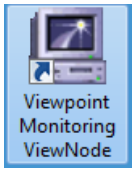
Viewpoint Monitoring ViewNode is installed on a remote workstation to remotely connect to the Viewpoint Monitoring instance and is used on a remote workstation to view One-Line diagrams, Trending Reports, Annunciator alarm panels, Waveforms, and/or Events.

Note: If configured and used, the User Definable P&P screens are only available on the Viewpoint Monitoring instance. Remote access through Viewpoint Monitoring ViewNode does not support User Definable P&P (Plug & Play) screens as the plug and play files for different devices type are not copied or dynamically(published) from Viewpoint Monitoring instance to the remote workstation with ViewNode installed.

To connect remotely to Viewpoint Monitoring:

1. Click the Viewpoint Monitoring ViewNode icon on the desktop, or click **Start > All Programs > EnerVista > Viewpoint Monitoring ViewNode**. The Viewpoint Server Configuration window opens.

Figure 190: Launching the software



2. If not already displayed, enter the IP address of the Viewpoint Monitoring computer, click the **Discover** button, or select the computer from the drop-down list. Then click the **Test Communication** button to verify access.

Figure 191: Enter the Viewpoint Monitoring computer information

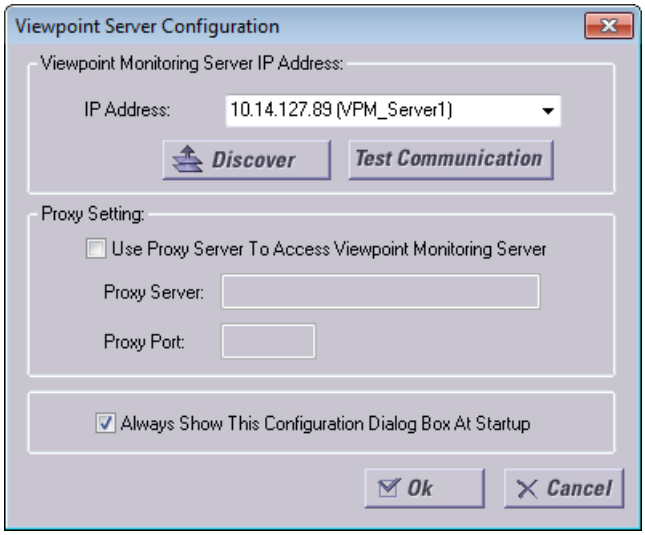
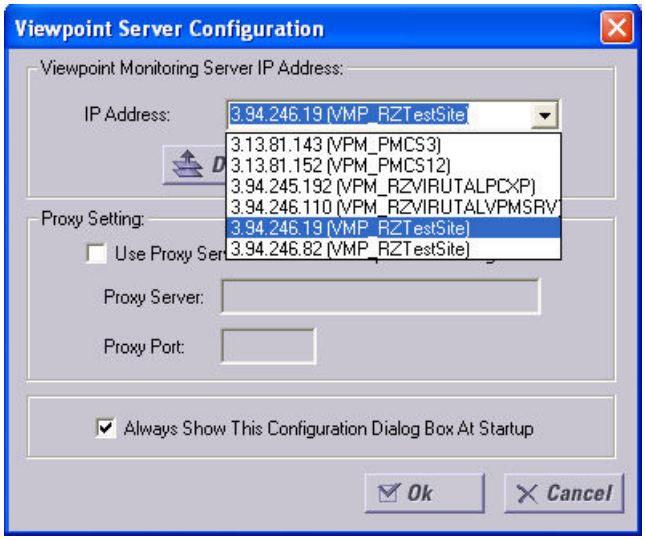


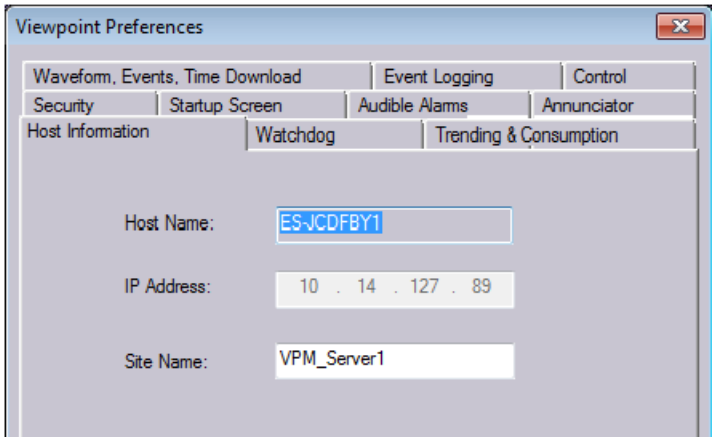
Figure 192: Automatic discovery of Viewpoint Monitoring computers



If the Viewpoint Monitoring computer is not located automatically, then enter its **IP Address** in the box. When using a local area network with a gateway enter `ipconfig` in a command window to view the multiple IP addresses and use the one in the network (for example with DNS suffix specified). Otherwise, find the IP address at the ViewPoint Monitoring computer in the **Host Information** tab under **File > Preferences**.

After entering the IP address, click the **Test Communication** button to verify access.

Figure 193: IP address of Viewpoint Monitoring in Preferences

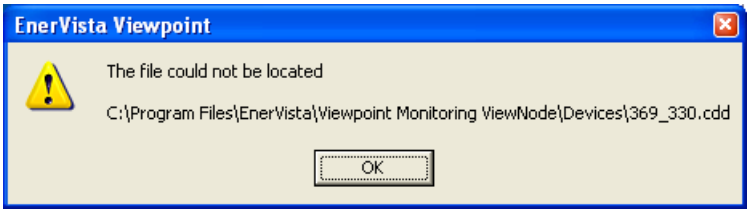


A proxy server is a computer on your network that sits between your computer and the Internet, transferring information for web browsing. It is used for security, website blocking, caching, and to obscure IP addresses of senders. If you use one to access the Internet, you need to enter the information here. To view proxy server information, open the Control Panel in Windows, access the **Internet Options** function, click the **Connections** tab, then the **LAN settings** button. Or look in the same panel in the Internet Explorer web browser. Or contact your information technology (IT) department for the information to enter in the fields. Because the proxy server information is not always visible when scripts are used for computer settings, you can need to contact your IT department.

Click the **Ok** button when done.

3. If messages display that the device is not supported or the file cannot be located, it means that the ViewNode client software version is too old. Upgrade the ViewNode client software on the remote computer.

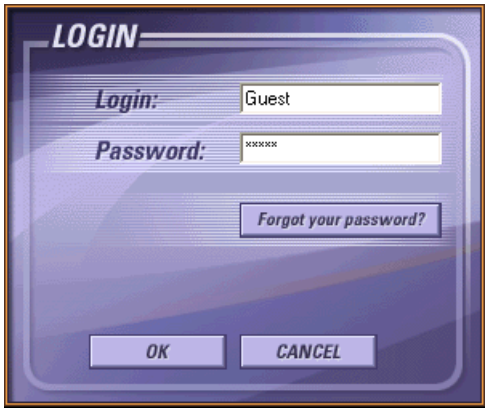
Figure 194: Errors when using old ViewNode client software



4. With successful launch of the Viewpoint Monitoring ViewNode application, the ViewNode login window displays. By default, ViewNode shows Guest as the login

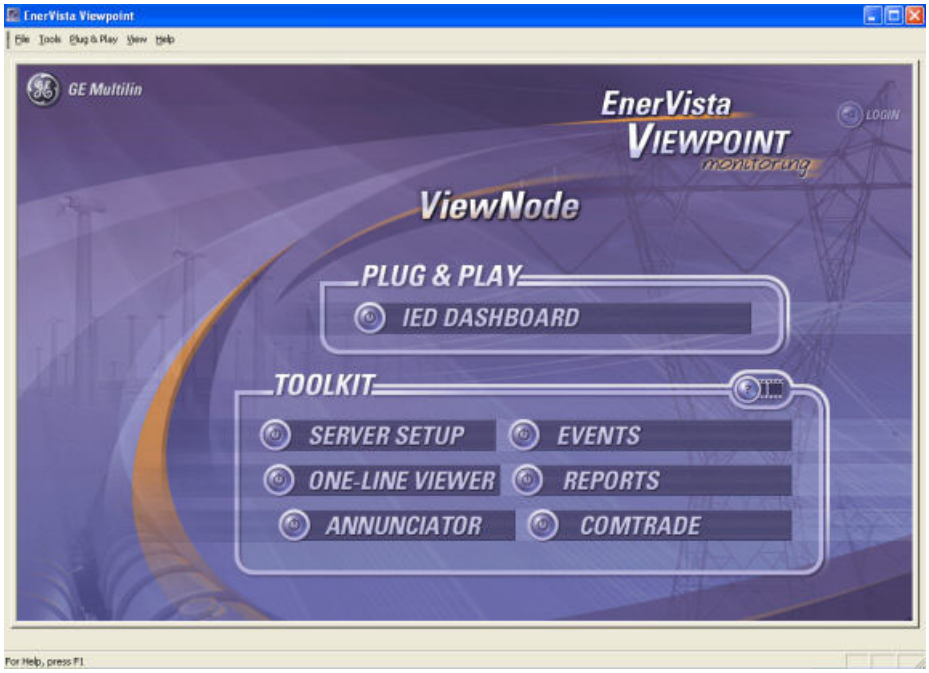
user name. Log in as Guest or any valid login name created in the Viewpoint Monitoring system. When logging in as Guest, leave the password at the default; simply click the **OK** button to log in. The default Guest password is "Guest".

Figure 195: Logging in remotely



After clicking the **OK** button to log in, ViewNode contacts Viewpoint Monitoring to verify that a valid user login name and password have been entered. After receiving the response of successful login verification, ViewNode downloads all necessary settings from Viewpoint Monitoring and starts the main window. The ViewNode view differs from the Viewpoint Monitoring view. The window is explained at the end of the Interface chapter.

Figure 196: ViewNode main window



If you are unable to access files, the reasons can be as follows:

- No files have been identified for sharing, as outlined in the Set up and configure ViewNode support section on page 208
- Files were saved with an absolute path, such as C:\MyFiles\MyG60File.sf. The files need to be saved with a relative path, such as MyG0File.

Uninstall remote access client software

See the Uninstall software section on page 227.

Set time-out

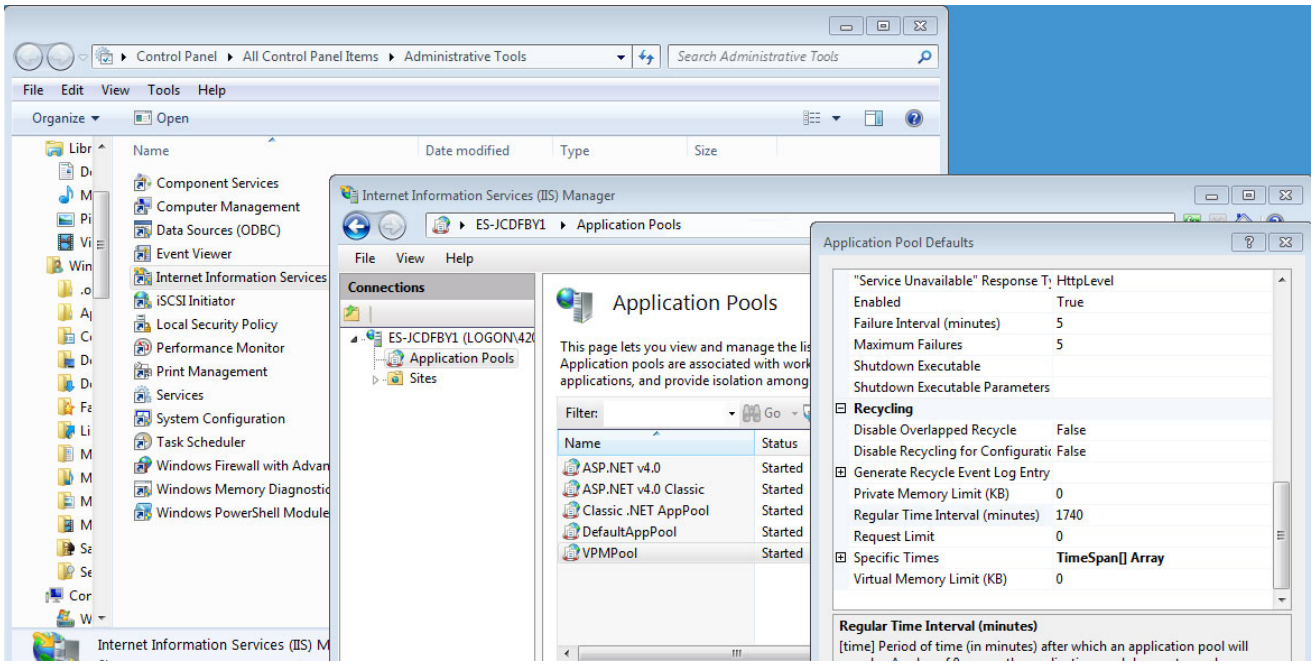
This section applies to ViewNode remote access.

By default, a remote computer connection times out after 1740 minutes, or 29 hours. This period can be changed.

To change the time-out:

1. At the main Viewpoint Monitoring computer, click **Start > Control Panel**, then **Administrative Tools**, then **Internet Informations Services (IIS) Manager**. Or click **Start > Run** and enter `inetmgr` in the Run window.
2. Expand the menu on the left side. Click the **Application Pools** entry, right-click the **VPMPool** entry that is for ASP.NET 4.0, and select **Set Application Pool Defaults**. The window opens.
3. Scroll to the **Regular Time Interval** option near the bottom of the window, set the time, and click **OK** to save and exit. Enter 0 to run the remote computers continuously without timing out.

Figure 197: Setting remote computer time-out



The connection between the ViewNode and Viewpoint Monitoring usually is not indefinite. If an error is detected polling data for a single line diagram or annunciator, the ViewNode disconnects and a message displays to inform the user that the ViewNode needs to be restarted. The message reads "Communication error with Viewpoint Monitoring server was detected. Please restart Viewpoint node."

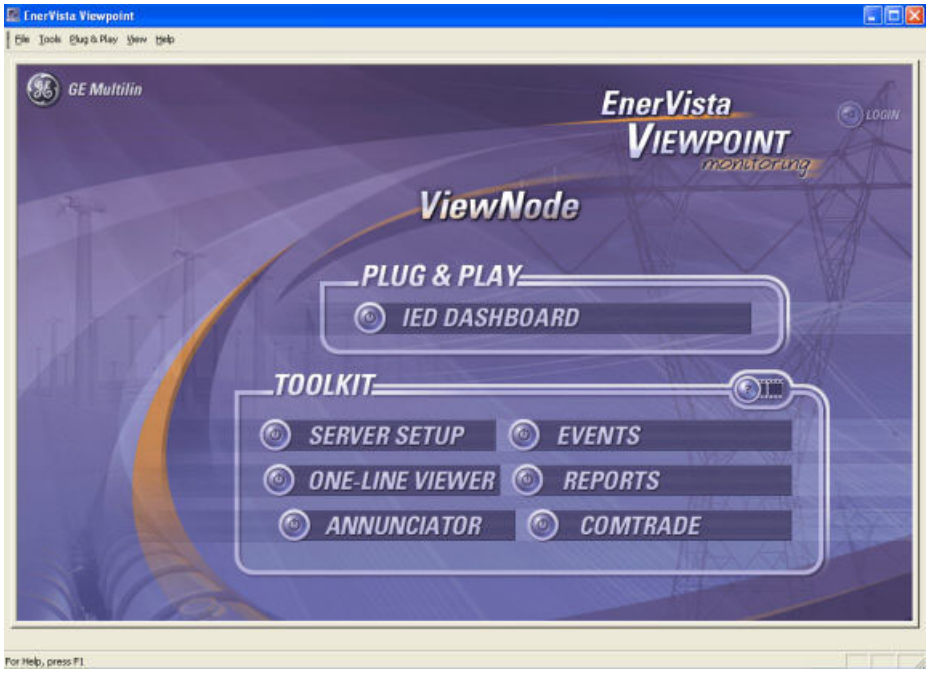
Remote computer interface

This section applies to ViewNode remote access.

Remote computers accessing Viewpoint Monitoring with the client software are referred to as ViewNodes. The ViewNode interface differs from the Viewpoint Monitoring interface and is explained here. Functions accessible depend on permissions.

When ViewNode starts, a portion of report data, meaning the current hour, is synchronized immediately. The rest of the historical data is downloaded gradually. Data is downloaded backward for the period defined in the preferences, but not greater than 180 days. The speed of download depends on a number of parameters. For 500 parameters in all reports, a block of data of one-hour length is downloaded every 30 seconds. The period for download is readjusted dynamically, if the number of parameters changes. For example, for 50 parameters, a block of data of 10 hours length is downloaded every 30 seconds.

Figure 198: ViewNode main window



IED Dashboard — View online information of configured devices.

Server Setup — Set the Viewpoint Monitoring system to connect to on next ViewNode startup.

One-Line Viewer — View published One-Line diagrams. The One-Line diagrams need to be specified for remote viewing and are referred to as published, as configured under **File > ViewNode Management > Configure ViewNode Support**.

Annunciator — View published Annunciator alarm/alert panels. The panels need to be specified for remote viewing and are referred to as published, as configured under **File > ViewNode Management > Configure ViewNode Support**.

Events — View event records collected. Events are downloaded and updated dynamically in a local ViewNode database. The function needs to be enabled for remote viewing, as configured under **File > ViewNode Management > Configure ViewNode Support**.

Reports — View trending reports configured. Reports are downloaded and synchronized dynamically in a local ViewNode database. The function needs to be enabled for remote viewing, as configured under **File > ViewNode Management > Configure ViewNode Support**. For the Reports function, the Communication Status legend in a ViewNode is labeled Communicating and differs from the ViewPoint Monitoring server in that it has two states, as follows:

- **Connected** — When reports are updated dynamically
- **Blank** — Means that reports are not updated dynamically because they are not running on the Viewpoint Monitoring computer because of a communication error between the server and the ViewNode or because of another other reason

COMTRADE — View waveforms collected. The function needs to be enabled for remote viewing, as configured under **File > ViewNode Management > Configure ViewNode Support**.

EnerVista Viewpoint Monitoring

Chapter 14: Maintenance

This chapter outlines maintenance of the software.

- View software version
- View and manage software license
- Update software
- Manage activation code
- Transfer software license
- Uninstall software

View software version

To view the version number of Viewpoint Monitoring:

1. Click **Help > About EnerVista Viewpoint...** The window opens.
2. View the number in the **Version** field.
3. Click the window to exit.

The Events window is a separate application.

To view the version number of the Event viewer:

1. In the main window of Viewpoint Monitoring, click the **Events** option. The window opens.
2. Click the **About** icon on the toolbar or click **Help > About Event/Alarm Viewer**. The window opens.
3. View the number in the **Version** field.
4. Click the window to exit.

View and manage software license

After installation, the software license is viewable from a folder on the computer. The number of licenses purchased can be viewed.

To view the software license on computer:

1. Navigate to the ViewNode folder, for example
   C:\Program Files (x86)\Enervista\Viewpoint Monitoring ViewNode
   or
   C:\Program Files\EnerVista\EnerVista Viewpoint Monitoring
   The license is available as .pdf and .txt files, for example Software_License.pdf.

To view number of software licenses purchased:

1. Log in to
   https://apps-ex.gs.ec.ge.com/swmgr/
   using the **Order #** and **Password** provided with the software or sent by email upon purchase.

Update software

The software can be upgraded for new features and fixes. When purchased with the optional upgrade package, the updates are free for one year.

The Viewpoint Monitoring license also can be upgraded to add new Viewpoint Monitoring installations and/or options (purchase required) by entering a new activation code.

To check for updates:

1. In the main window of Viewpoint Monitoring, click **Help > EnerVista Viewpoint on the Web > Home Page**. A web browser and the EnerVista web page open.
2. Click the **Software** option.
3. Download any updated version specific to your release.

After initial activation, if the license manager detects any license options still available for upgrade, the license upgrade section is enabled in the license management window.

If your license code generated has the "OPC Option," the unlock operation needs to be done with Viewpoint Monitoring run "As Administrator" because the program changes all user settings of the servers, an activity similar to installing the application.

When updating the license, if the application is unlocked and you upgrade to a larger number of devices or add the "OPC option," first do a license transfer (for example, use the Site ID). This removes the previous license, restarts the program, and you enter the new license code.

Manage activation code

A valid software license is required, which is managed using an activation code. See the Quickstart Guide to add the activation code and unlock the software.

When updating the license, if the application is unlocked and you upgrade to a larger number of devices or add the "OPC option," first do a license transfer (for example, use the Site ID). This removes the previous license, restarts the program, and you enter the new license code.

Transfer software license

A license/activation code does not allow installation on more than one computer, but you can move the software license from one installation to another. You cannot move a complete installation with its database to another computer, only the license.

You install Viewpoint Monitoring at the new computer, look up its **Site ID**, then transfer the license at the old Viewpoint Monitoring computer.

Also transfer the license when upgrading to a larger number of devices or adding the "OPC option." This removes the previous license, restarts the program, and you enter the new license code.

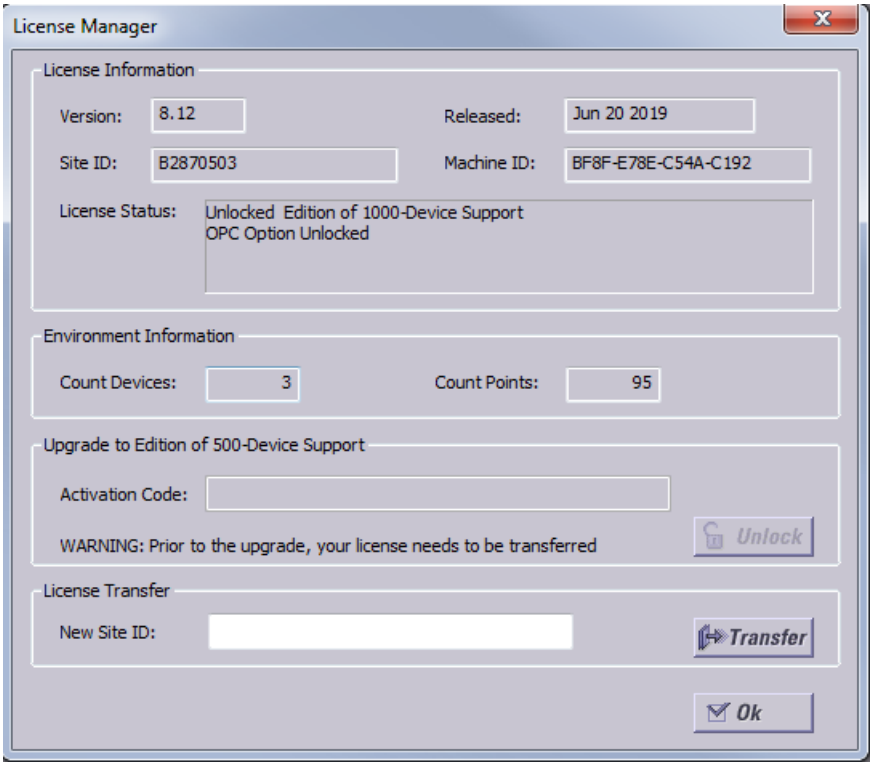
To view the Site ID:

1. In the new installation of the Viewpoint Monitoring computer, click **Help > License Management**. The window opens.
2. Record the **Site ID**.

To transfer the license:

1. On the old computer, open Viewpoint Monitoring and click **Help > License Management**. The window opens.
2. Enter the site ID in the **New Site ID** field, then click the **Transfer** button. You cannot transfer the license for a trial version of the software. With successful transfer, the license on the old installation is disabled, and the license on the new installation is enabled.
3. Click the **Ok** button to exit.

Figure 199: Transfer software license



Uninstall software

If required, the Viewpoint Monitoring and/or the ViewNode client software can be uninstalled.

Uninstalling Viewpoint Monitoring also deletes configuration information. It does not delete some files, such as error logs, system logs, and configuration records, which are created after the Viewpoint Monitoring installation completes. Since these files are not part of the initial installation, they are not removed by the uninstaller and must be deleted manually. The SQL Express database remains.

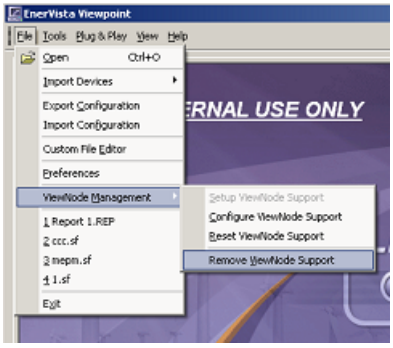
If you have the "ViewNode Support" set up in your Viewpoint Monitoring system and have any ViewNodes remotely connected to your system, you must remove the "ViewNode Support" service first within Viewpoint Monitoring, as outlined here.

Uninstall Viewpoint Monitoring

To uninstall the Viewpoint Monitoring software:

1. If you have ViewNode support running for remote computer access, stop it in Viewpoint Monitoring by clicking **File > ViewNode Management > Remove ViewNode Support**. The option is active when support is present and inactive when no support is present. When service stops, all remote computers lose access.

Figure 200: Stopping remote access



   The Viewpoint Monitoring software can now be uninstalled.
2. In Windows, click **Start > Control Panel**.
3. Click **Programs and Features**.
4. Click **EnerVista Viewpoint Monitoring**.
5. Click **Uninstall** and confirm the deletion. The Viewpoint Monitoring software is deleted.

To uninstall the Microsoft .NET Framework and any Microsoft SQL Server Express that were installed/used by Viewpoint Monitoring, follow a similar approach. Do not uninstall these applications when they are being used by other software on your computer.

Uninstall ViewNode remote client

To uninstall the ViewNode client software:

1. At the remote computer, click **Start > Control Panel**.
2. Click **Programs and Features**.

3. Click **EnerVista Viewpoint Monitoring ViewNode**.
4. Click **Uninstall** and confirm the deletion. The client software is deleted.

To uninstall the Microsoft .NET Framework and Microsoft SQL Server that was installed/used by the remote computer, follow a similar approach. Do not uninstall these applications when they are being used by other software on your computer.

EnerVista Viewpoint Monitoring

Appendix A: Miscellaneous

This chapter outlines the document revision history.

Revision history

The tables outline the releases and revision history of this document.

Table 1: Revision history

1601 part number	Software	Release date
1601-0270-A1	5.7x	21 March 2013
1601-0270-B1	7.1x	1 August 2014
1601-0270-C1	7.2x	8 April 2015
1601-0270-D1	8.0x	30 June 2016
1601-0270-D2	8.0x	14 September 2016
1601-0270-E1	8.1x	5 July 2018
1601-0270-E2	8.1x	15 February 2020
1601-0270-E3	8.1x	15 January 2021
1601-0270-E4	8.1x	03 March 2023
1601-0270-E5	8.15	5 June 2025

Table 2: Major changes for latest version E5

Chapter	Change
All	Updates for instruction clarity
4	Added additional details for Plug & Play Dashboard - 8 Series ESA, MM300E
5	Added details for device Offline Mode functionality update

Table 3: Major changes for latest version E4

Chapter	Change
1	Updates for v8.14 release (Operating systems, System requirements).
4	Clarified Remote Access via Window Server Windows Remote Desktop Services and Viewpoint ViewNodes.
2, 13	Clarified Trial Version descriptions for Viewpoint Monitoring and ViewNodes.
10	Clarifications made on running and exporting reports and charts.

Table 4: Major changes for previous version E3

Chapter	Change
1	Quickstart guide merged into the Introduction.
3	Adobe Flash video help removed due to Flash no longer being supported.
13	Windows 10 64 bit and Windows Server 2019 are the operating systems supported from version 8.13 going forward. Microsoft SQL Server 2019 Express updated as the database supported. Microsoft.Net Framework no longer installed because is part of the supported operating systems.