

ConneXview

Device Type Editor Reference Guide

Version 2.1

11/2009

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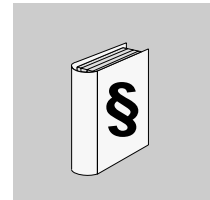
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Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

CAUTION

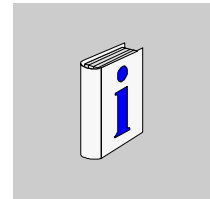
CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage.

PLEASE NOTE

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A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved.

About the Book



At a Glance

Document Scope

This document describes the features and capabilities of version 2.1 of the Device Type Editor, a companion software to the ConneXview Ethernet Diagnostic Tool software package.

Validity Note

Related Documents

Title of Documentation	Reference Number
ConneXview Frequently Asked Questions Reference Guide	31007265 (English), 31008023 (French), 31008024 (German), 31008025 (Italian), 31008026 (Spanish)
ConneXview Ethernet Diagnostic Tool Reference Guide	31007263 (English), 31008031 (French), 31008032 (German), 31008033 (Italian), 31008034 (Spanish)

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User Comments

We welcome your comments about this document. You can reach us by e-mail at techcomm@schneider-electric.com.

Device Type Editor



Overview

This chapter introduces the Device Type Editor, describes its user interface, explains its configuration settings, and directs you to sources of help and additional information about this tool.

What's in this Chapter?

This chapter contains the following topics:

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Device Type Editor - Overview

Introduction

The Device Type Editor is a stand-alone utility that complements ConneXview, Schneider-Electric's Ethernet diagnostics tool. Use the Device Type Editor to create new user-defined device types and edit the definition of existing device types. ConneXview uses your new or edited device type definition in 2 ways:

- As a filter, during automatic network discovery, to help ConneXview categorize each device it detects as an instance of a known device type.
- As an item on ConneXview's Add Device palette, from which you can add an instance of the device type to your network map.

For each new user-defined device type, the device type editor creates a new file - with a .TYP extension - and stores this file in the networks folder shared by the device type editor and ConneXview.

Create Device Wizard

By default, the Device Type Editor is configured to launch the Create Device wizard every time you create a new device. The wizard steps you through the multi-step process of creating a new device type, and provides you with simple, helpful instructions each step along the way.

Device Type Classes

Every new device type you create takes its place in a hierarchical structure as the progeny of 1 of 5 top-level—or default—device type classes:

- managed host
- managed MBAP host
- managed switch
- router
- unmanaged MBAP host

A managed device supports the SNMP protocol; an MBAP device supports the Modbus protocol; a managed MBAP device supports both.

Each top-level class represents a different collection of device properties. Each device type represents a unique variation of properties and property values within its class.

Device Type Properties

The Device Type Editor bundles a device type's properties into 7 separate groups. Not every property group applies to each device type. The property groups are:

Property Group	Description
General	Basic information about the device type including its name, class, the name of any other device type on which this device type is based, and this device type's relation (child or peer) to such other device type.
Static Properties	The device type's description; the ConneXview icon for the device type, and any MIB that applies to the device type.
Device Type Identity	Includes any identity filter, and attributes, that applies to the device type.
SNMP Properties	If the device type supports SNMP, a list of its SNMP-related properties, monitors and attributes.
Modbus Properties	If the device type supports Modbus, a list of its Modbus-related properties, monitors and attributes.
Derived Properties	Properties, typically presented in the form of <i>status</i> or <i>rate</i> , which are computed using more basic measurements of a device's operation.
Property Groups	A collection of dynamic properties that can be displayed in the Device Property Viewer.
Popup Menu Items	A list of menu commands for the device type, available by right clicking on an instance of the device type in ConneXview's Network Map Viewer. Each menu can include commands that open web pages, open a local document, or run a local executable.

Graphical User Interface

Overview

The Device Type Editor presents an intuitive, easy-to-use interface that includes the following features:

- Menubar
- Toolbar
- Device Type Editor window
- Create Device Type Wizard








Menubar

The device type editor Menubar contains the following commands:

- File menu commands (New, Open, Save, Print, Delete, Close, Exit) that help you work with device type files or exit the application, plus a list of most recently opened files.
- Edit menu commands (Cut, Copy, Paste) that help you work with file text.
- Tools menu commands that let you set underlying device type editor Options, create map keys for use in both the device type editor and ConneXview, and analyze device types for completeness.
- Help menu commands that open the device type editor's help file, and contain additional information About the device type editor.

Toolbar

The device type editor toolbar contains the following commands:

- *Create a New File*  command, that opens a new device type file for initial creation.
- *Open a File*  command, that opens an existing device type file for editing.
- *Save to a File*  command, that saves your edits to the currently open file.
- *Move selection to clipboard*  command, that cuts selected text and copies it to the clipboard for future use.
- *Copy selection to clipboard*  command, that copies the selected text to the clipboard for future use.
- *Paste clipboard to selection*  command, that pastes the text from the clipboard to the selected location.
- *Print the file*  command, that opens the Print dialog, where you can preview and print a report of the currently open device type.

Device Type Editor Window

Use the device type editor window to create new device types and edit existing device types. The device type editor window consists of the following parts:

- **Property List:** The left pane of the device type editor contains a list of 7 property types for the currently open device type. Click on a property type icon to open it for editing. Only icons for property types that apply to the currently open device type are enabled.
- **Property Editor:** The right pane of the device type editor displays properties for the property type selected in the left pane. You can create a new device type, or edit an existing device type, by editing and saving the properties displayed in this pane.

Create Device Type Wizard

The Create Device Type wizard steps you through the process of creating a new device type. The device type editor is pre-configured to open the Create Device Type Wizard when you click on the **New** (*see page 16*) command. Alternatively, you can disable the wizard in the Set Options (*see page 28*) dialog, by de-selecting the *Always launch wizard when creating new device types* option.

Help

Overview

Use the **F1** key to open the device type editor's help file, which contains help on every device type editor screen and command. The device type editor's help file includes the following:

- A table of contents, containing a structured topic list.
- A main window, in which individual help topics are displayed.
- An Index, containing an alphabetical topic list.

About

Overview

Use the Help menu's **About** command to open the About dialog. The About dialog displays version information and legal notices for the device type editor.

File Functions

2

Overview

The device type editor contains commands for the creation, use, storage and deletion of device type files. These file-related commands can be executed either from within the File menu or from the toolbar. This chapter describes these commands.

What's in this Chapter?

This chapter contains the following topics:

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New

Overview

Use the File menu's **New** command to create a new device type. Depending the settings in the Set Options dialog (*see page 28*), the New command will either open a new blank device type file for editing, or launch the Create Device Type wizard.

Create New Device Type

To create a new device type file:

Step	Action	Comment
1	Do one of the following: <ul style="list-style-type: none"> ● In the File menu, select New. ● Click the <i>Create new file</i> button  . 	Either a new blank device type file opens for editing, or the Create Device Type Wizard begins.
2	Complete all configuration settings in each of the following property screens that apply to the new device type: <ul style="list-style-type: none"> ● General ● Identity ● Static Properties ● SNMP Properties ● Derived Properties ● Modbus Properties ● Popup Menu Properties 	If you are using the Create Device Type Wizard, click the Next button to navigate to the next screen. Otherwise, click a property group button in the left panel to open configuration settings for that property group. Refer to the help topic for each device type property group for configuration instructions.
3	If you are using the Create Device Type Wizard, click Finish to close the wizard.	If you are not using the Create Device Type Wizard, skip this step.
4	Do one of the following: <ul style="list-style-type: none"> ● In the File menu, select Save. ● Click the <i>Save to a file</i> button  . 	The DTE File Save dialog opens, displaying both the contents of the networks folder and the new device type file name.
5	In the DTE File Save dialog, click Save .	The new device type is saved and added to the collection of available device types.


Open

Overview

Use the File menu's **Open** command to select an existing device type file for viewing or editing.

Open a Device Type File

To open a device type file:

Step	Action	Comment
1	Do one of the following: <ul style="list-style-type: none">● In the File menu, select Open.● Click the <i>Open a file</i> button  .	The Open dialog opens.
2	In the Open dialog, select a device type file from the list and click Open .	The selected device type file opens for viewing and editing.

Save

Overview


Use the File menu's **Save** command, or click the Save to a file toolbar button, to save edits to a device type file.

If the device type you are editing is a new file that has not yet been saved, the device type editor will open the **DTE File Save** dialog where you can both create the new device type file and save your edits.

NOTE: Saving a device type to a directory other than the networks directory does not add the device to the Device Catalog. The device will not be available for use in ConneXview.

Save a Device Type File

To save edits made to a new or existing device type file:

Step	Action	Comment
1	Do one of the following: <ul style="list-style-type: none">● In the File menu, click Save.● Click the <i>Save to a file</i> toolbar button  .	If you are editing a new device type file, the DTE File Save dialog opens. If you are editing a previously created device type file, your edits are saved to the existing file and the DTE File Save dialog does not open.
2	For a new device type file, click Save to close the DTE File Save dialog.	The new device type file is created and your edits are saved.

Print

Overview


Use the **Print** command, in either the File menu or the toolbar, to open the device type editor's Print dialog, where you can preview and print a report describing the device type presently open in the device type editor.

A complete device type report consists of:

Section	Containing...
cover page	The device type's: <ul style="list-style-type: none"> ● name ● icon ● class ● description ● number of SNMP properties ● number of Modbus properties ● number of Derived properties
body pages	The properties of the device type, grouped as follows: <ul style="list-style-type: none"> ● general information and static properties <ul style="list-style-type: none"> ● device class ● description ● icon file name ● MIB file names ● device type identity properties <ul style="list-style-type: none"> ● identity filter names and attributes ● SNMP properties <ul style="list-style-type: none"> ● SNMP property names and attributes ● Modbus properties <ul style="list-style-type: none"> ● Modbus property names and attributes ● Derived properties <ul style="list-style-type: none"> ● Derived property names and attributes ● Property groups <ul style="list-style-type: none"> ● property group names and related properties ● Popup menu items <ul style="list-style-type: none"> ● popup menu items and their attributes

Device List

To print a report of device type properties:

Step	Action
1	<p>With a device type file open, do one of the following:</p> <ul style="list-style-type: none"> ● In the File menu, select Print... ● Press the Ctrl + P keys ● Click on the toolbar's Print button 
2	<p>In the Print dialog's <i>Printer Options</i> section, you can:</p> <ul style="list-style-type: none"> ● select a printer ● click on the Properties button to configure properties for the selected printer
3	<p>In the Print dialog's <i>Copies</i> section, you can:</p> <ul style="list-style-type: none"> ● use the spin control to set the number of copies to print ● select collate, if you are printing more than 1 copy
4	<p>In the Print dialog's <i>Print Range</i> section, specify the pages to print:</p> <ul style="list-style-type: none"> ● select All, or ● select Pages, then type in the pages or page range, as follows: <ul style="list-style-type: none"> ● a single page number ● a page range (for example: 3 - 5) ● a series of page numbers (for example: 3,5,6,7) ● a combination of page numbers and ranges (for example: 1,3,5-7,9-12)
5	<p>(Optional) Click the Preview button to open the Print Preview screen. After previewing the list, you can:</p> <ul style="list-style-type: none"> ● click Close to return to the Print dialog, or ● click Print to print the report
7	<p>After all print settings have been made, click Print.</p>

Delete

Overview

Use the File menu's **Delete** command to open the Delete Device Type dialog box, where you can delete an existing device type file.

NOTE: If you delete a device type - an instance of which previously has been added to a ConneXview network map - ConneXview cannot again open that network map, but instead displays an error message indicating a device type is missing.

Deleting a device type is a non-reversible process. You cannot recover a corrupted network map by creating a new device type that has the same name and settings as the device type you deleted.

Before deleting a device type, be sure to first open ConneXview and delete every instance of that device type in every network map that you intend to retain.

Delete a Device Type File

To delete a device type file:

Step	Action	Comment
1	Do one of the following: <ul style="list-style-type: none"> ● Select Delete in the File menu. ● Simultaneously press the keyboard's Ctrl+D keys. 	The Delete Device Type dialog opens, displaying your device type hierarchy.
2	In the Delete Device Type dialog, navigate to and select the device type file you want to delete.	Click on the + sign to the left of an uppermost device type class, and repeat this process down the branch until you reach the device type you want to delete.
3	Do one of the following: <ul style="list-style-type: none"> ● Click Apply to delete the selected file and leave the Delete Device Type dialog open. ● Click OK to delete the selected file and close the Delete Device Type dialog. <p>Note: If the selected device type has 1 or more child device types, deleting the parent device type will also delete all child types. In this case, you will be asked if you want to continue. Click Yes to delete the selected and all child device types.</p>	The selected device type and all of its child device types - if any- are deleted.

Edit Functions



Overview

The device type editor includes the standard Cut, Copy and Paste text editing functions, which you can execute either from the Edit menu or the toolbar. The topics in this chapter describe these text editing functions.

What's in this Chapter?

This chapter contains the following topics:

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Paste	26


Cut

Overview

Use the Edit menu's **Cut** command to remove selected text from an editable field and move it to your PC's clipboard. The text you cut can be pasted from the clipboard into any editable field in the device type editor.

Cut Text

To cut text from an editable field in the device type editor:

Step	Action
1	Highlight the text you want to cut. You can: <ul style="list-style-type: none">● Drag the cursor over text to select it.● Double click on an unbroken string to select it.● Triple click within an editable field to select all text within the field.
2	Click Cut in the Edit menu, or click the  toolbar button.


Copy

Overview

Use the Edit menu's **Copy** command to copy selected text from an editable field to your PC's clipboard. You can paste copied text from the clipboard into any editable field in the device type editor.

Copy Text

To copy text from an editable field in the device type editor:

Step	Action
1	Highlight the text you want to copy. You can: <ul style="list-style-type: none">● Drag the cursor over text to select it.● Double click on an unbroken string to select it.● Triple click within an editable field to select all text within the field.
2	Click Copy in the Edit menu, or click the  toolbar button.


Paste

Overview

Use the Edit menu's **Paste** command to insert text from your PC's clipboard to an editable field in the device type editor. The inserted text will have been added to the clipboard by a previous copy or cut command.

Paste Text

To paste text into an editable field in the device type editor:

Step	Action
1	Position your cursor in an editable field in the device type editor.
2	Click Paste in the Edit menu, or click the  toolbar button.

Application Tools



Overview

This chapter describes the commands in the device type editor's Tools menu.

What's in this Chapter?

This chapter contains the following topics:

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Options

Overview

Use the Tools menu's **Options** command to open the Set Options dialog, where you can configure the device type editor to:

- Launch the Create Device Type wizard when you click the Create New File button.
- Display the most recently saved device type file when the device type editor starts-up.

Procedure

To configure the device type editor's User Options:

Step	Action
1	In the Tools menu, click Options . The Set Options dialog opens.
2	In the Set Options dialog, you can configure the following settings: <ul style="list-style-type: none">● Always launch wizard when creating new device types: Select this option to start the Create Device Type wizard when you click the Create New File button.● Load last saved device type on application startup: Select this option to display the most recently saved device type file when the device type editor starts-up.
3	Click OK to save your settings and close the Set Options dialog.

Map Keys

Overview

Use the Tools menu's **Map Keys** command to open a dialog where you can create and delete map keys. A map key is nothing more than a name - the Map Key Name - associated with color-codes that represent a property's state when its value reaches thresholds set for High-High, High, Low or Low-Low. When a map key is associated with a state-mapping derived property of a device type, the color-coded state of that device or link property can be monitored in the network map.

NOTE: Unlike other screens in the device type editor, the scope of the Map Keys screen is not limited to the device type you are creating or editing. Instead, the map keys created in this screen can be added to a state-mapping derived property of any new or existing device type.

Merely creating a map key does not by itself associate it with any device type. Instead, you associate a map key with a device type in the Derived Properties screen, by selecting a state-mapping derived property in the *Derived Properties and Monitors* list then selecting a Map-Key from the drop-down list in the *Property Attributes* grid.

Map Keys List

The Map Keys list displays all Map Keys for your installation of both the Device Type Editor and ConneXview. Select a map key to display its description and associated color-codes in the Attributes section, below. You can add new map keys and delete existing map keys.

Attributes

The Attributes section displays the map key Name and Description, and its color-codes. You can edit the map key Description, and change the colors associated with its High-High, High, Low, or Low-Low states.

Adding Map Keys

To add a map key:

Step	Action
1	Click the Add... button. The Add MapKey dialog opens.
2	In the Add MapKey dialog, type in the new map key name in the Enter Name text box, then click OK . The dialog closes and the new map key is added to the bottom of the list.
3	Select the new map key. Its attributes are displayed below.
4	In the Attributes section, type in a Description for the new map key.

Step	Action
5	Click on a button - marked with an ellipsis (...) - to the right of any of the following property value settings: High-High, High, Normal, Low, Low-Low. The Choose Color dialog opens.
6	In the Choose Color dialog, select a color in 1 of 3 ways: <ul style="list-style-type: none">● In the Swatches tab, click on a color in the color grid.● In the HSB tab, select a combination of color Hue (0-359), Saturation (0-100) and Brightness (0-100) values by selecting the H, S or B option button, then typing in or scrolling to a numerical value.● In the RGB tab, select a combination of Red, Green, and Blue values (0-255), using the scroll bar, scroll buttons, or by typing in value.
7	Click OK to close the Choose Color dialog box.
8	Repeat steps 5 through 7, until all colors for all thresholds are set.
9	Click OK to save your edits.

Deleting Map Keys

To delete a map key:

Step	Action
1	Select the map key you wish to delete.
2	Click the Delete button. A message box opens.
3	Select Yes , indicating you wish to delete the map key. The message box closes and the map key is deleted.

Analyze Device Types

Overview

Use the Tools menu's **Analyze Device Types** command to test the configuration settings of the existing device types for completeness and logical consistency. If the device type editor detects any improperly or incompletely configured device types, it will open the Device Type Analysis dialog listing each problem.

Armed with the information contained in the Device Type Analysis dialog, you can open the problem device type, and make any necessary corrections to the configuration settings for that device type, its properties, attributes and monitors.

Device Type Analysis Dialog

The Device Type Analysis dialog displays the following descriptive fields for each device type problem it detects:

- *Severity*: Either Attention or Error.
- *Source*: The name of the problem device type, and its offending property, attribute or monitor.
- *Message*: A description of the problem.

NOTE: A severity level of Error indicates a critical problem with the device type definition. ConneXview cannot monitor a device when there is a severity level of Error present.

The Analyze Device Types dialog can detect and display the following device type problems:

Message	Explanation	Severity
Bad value for Threshold setting	Threshold settings should be consistent: <ul style="list-style-type: none"> ● High-high should be > high ● high should be > low ● low should be > low-low 	Attention
Circular dependency with another Derived Property	A derived property should not reference another derived property that, directly or indirectly, references back to the first derived property.	Attention
Duplicate Device Type Identifier	Each device type has its own universally unique identifier (UUID) that may not duplicate any other device type's UUID. A device type with a UUID that is the same as the UUID of another device type - already loaded into the Add Device Palette - will not be loaded into the palette.	Attention

Message	Explanation	Severity
Duplicate Map Key reference with another Mapping Property	No two mapping properties of the same device type should reference the same map key coloring scheme.	Attention
Excessive value for Deadband setting	A mapping property's <i>Deadband</i> attribute should not exceed the difference between any two consecutive threshold values.	Attention
Inconsistent Interface Index Address (OID) for columns of MIB Table	All SNMP properties taken from the same MIB Table - with a <i>Link Property</i> attribute set to true - must have the same value for their <i>Link interface Index Address</i> attribute.	Error
Inconsistent Link Property settings for property's inputs	All properties identified as inputs to a derived property must have the same setting for their <i>Link Property</i> attribute.	Error
Input not found	An input to a derived property must be a reference to an existing property of the same device type.	Error
Map Key not found	A mapping property should reference only an existing map key coloring scheme.	Attention
MIB file not found	A device type should reference only existing MIB files.	Attention
No Document Name (or Program Name) provided for popup menu	A popup menu configured to open a local document or run a local program should be configured with the name of the local document or program.	Attention
No Help Reference provided for monitor	A property monitor should not be configured with a blank <i>Help Reference</i> attribute.	Attention
No Message Text provided for monitor	A property monitor should not be configured with a blank <i>Message Text</i> attribute.	Attention
Parent Device Type does not exist	A device type should reference only an existing device type in its <i>Device Type Parent</i> property.	Attention

Message	Explanation	Severity
Unable to read MIB file	A device type should reference only valid and readable MIB files.	Attention
Update priority mismatch for columns of MIB Table	All of a device type's SNMP properties - that are from the same MIB Table - should share the same <i>Update Priority</i> attribute setting. All SNMP properties from the same MIB Table are updated at the highest priority set for any other property from the same table.	Attention

Device Type Analysis Procedure

To analyze device types:

Step	Action
1	In the device type editor, select Analyze Device Types in the Tools menu. The device type editor opens the Device Type Analysis dialog, listing any problems with the device types in the Add Device palette.
2	In the Device Type Analysis dialog, carefully examine each item. Pay particular attention to the following fields: <ul style="list-style-type: none"> ● Source: identifies the location of the problem by specifying the device type, property, attribute or monitor. ● Message: describes the nature of the problem
3	Use the information from step 2 to open the device type file and fix the problem.
4	Repeat steps 2 and 3 for each problem listed in the Device Type Analysis dialog.
5	When all problems have been fixed in the device type editor, return to the Device Type Analysis dialog and click Close .

Create a New Device Type

5

Overview

This chapter describes how to create a new device type, either by using the Create Device Type Wizard or by opening a new device type file and completing it in the device type editor.

By default, the device type editor is pre-configured to open the Create Device Type Wizard when you click on the **New** (see page 16) command. Alternatively, you can disable the wizard in the Set Options (see page 28) dialog, by de-selecting the *Always launch wizard when creating new device types* option.

The process of creating a new device type can include up to 7 steps. Of these, only the first 2 steps - completion of the General Device Type Information and the Device Type Identity screens - are required. After these steps are complete, you can save the new device type file and later re-open it for editing at any time.

What's in this Chapter?

This chapter contains the following topics:

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General Device Type Information

Overview

Every new custom device type is a child of a device type class and occupies a specific place within the class hierarchy. Use the fields in this screen to define the new custom device type's class and its place in the class hierarchy.

The selections you make in this step determine the protocols (SNMP and MBAP) and properties available to your new device type.

General Properties

The following general device type properties must be configured in this screen:

Class: Any 1 of the following default device types:

- Managed Host
- Managed MBAP Host
- Managed Switch
- Router
- Unmanaged MBAP Host

A *Managed* device type supports the SNMP protocol and can possess SNMP-related properties. An *MBAP* device type supports the Modbus protocol and can possess Modbus-related properties. A *Managed MBAP* device type supports both SNMP and Modbus protocols and can possess both SNMP-related and Modbus-related properties.

NOTE: Your designation of a device type class, and your subsequent specification of the new device type's place in its class hierarchy, cannot be edited after the new device type has been created. Instead, the new device type must be deleted and a new device type created with the desired class and hierarchy settings.

Class Hierarchy

Selecting a class of device determines the hierarchical branch in which the new device type will reside. Selecting a base device type - and specifying its relationship (parent-child or sibling) to the new device type - place the new device type into a specific position within the class hierarchy. The new device type will inherit the base device type's collection of properties and property values.

Configuring General Device Type Info

To place the new device type in its hierarchical position:

Step	Action
1	<p>From the Select Class of Device drop-down list, select one of the following device classes:</p> <ul style="list-style-type: none"> ● Managed Host ● Managed Mbap Host ● Managed Switch ● Router ● Unmanaged Mbap Host <p>(Your selection will determine the branch of device types that will be displayed in the Select Device Type tree in Step 3, below.)</p>
2	<p>Select the option that indicates the new device type's place in the class hierarchy, as follows:</p> <ul style="list-style-type: none"> ● Base on Sibling Device Type: Indicates the new device type will reside at the same hierarchical level as the existing device type on which the new device type is based. ● Base on Parent Device Type: Indicates the new device type will reside at a hierarchical level immediately below the existing device type on which the new device type is based.
3	<p>In the Select Device Type to Base on list, navigate down the hierarchy until you arrive at the device type on which your new device type is based, then select that device type.</p> <p>Note: The Restore Defaults button is intentionally disabled when creating a new device type.</p>
4	<p>Do one of the following:</p> <ul style="list-style-type: none"> ● If you are using the wizard, click Next to move to the Device Type Static Properties step. ● If you are working in the device type editor, click the Identity icon in the left pane to open the Device Type Identity screen for editing.

Static Properties

Overview

Use the Static Properties screen to:

- Edit the device type description.
- Change the image associated with this device type.
- Add and delete MIB files for this device type.

Device manufacturers often include 1 or more private MIBs with the delivery of their custom network devices. Each private MIB occupies a manufacturer-defined position within the Enterprise branch of the SNMP MIB-2 hierarchy, and contains properties unique to that manufacturer and its devices. When you add a new device to your network, you will also create a new device type describing that device. To the new device type, you will add both the manufacturer's private MIBs and any public MIBs that apply to the device. After these MIBs have been added to the device type, you can add SNMP, Modbus and Derived properties to the new device type.

By default, the fields in this screen contain the same values as the parent or sibling device type on which this new device type is based.

Device Type Info

The Device Type Info section of the Static Properties screen contains the following fields:

Description: By default, this field contains a description of the device type on which the new device type is based. You will need to edit this field and enter a description that applies to your new device type.

Icon File Name: Each device type is associated with an image. You can assign a different image to a device type by clicking on the ellipsis button (...), which displays the Open dialog. By default, this dialog displays graphic files stored in the *networks* folder. Use the Open dialog to navigate to any other folder and add an image file. The device type editor will copy the image file and place it into the *networks* folder. Only image files stored in this folder are available to be assigned to the new device type. The new image is displayed beneath the Icon Preview label.

Select MIBs

The Select MIBs section of the Static Properties screen contains a list of MIB files for the new device type. By default, the list includes the same list of MIB files that apply to the parent or sibling device type on which the new device type is based. You can add MIB files to, and delete selected MIB files from, this list.

Both the device type editor and ConneXview store MIB files in a shared *networks* folder. However, a new MIB file can be added from any location. When you click on the **Add...** button, the Open dialog displays a list of MIB files that are stored in the *networks* folder. If the MIB file you wish to add resides in another folder, use the Open dialog to navigate to that MIB file and select it. The device type editor will place a copy of the selected MIB file into the *networks* folder. After you select a MIB file, its name appears in the Select MIBs list.

Configuring Static Properties

To configure the new device's static properties:

Step	Action						
1	Description: Type in text that describes the new device type.						
2	<p>Icon File Name: Either accept the default image file, or do the following:</p> <table border="1"> <tr> <td>a</td> <td>Click on the ellipsis (...) button. The Open dialog is displayed.</td> </tr> <tr> <td>b</td> <td>In the Open dialog, select a different .GIF or .JPG image file, then click Open. The Open dialog closes, the selected image file name appears in the Icon File Name input box, and the selected image is displayed beneath the Icon Preview label. Note: If the selected graphics file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.</td> </tr> </table>	a	Click on the ellipsis (...) button. The Open dialog is displayed.	b	In the Open dialog, select a different .GIF or .JPG image file, then click Open . The Open dialog closes, the selected image file name appears in the Icon File Name input box, and the selected image is displayed beneath the Icon Preview label. Note: If the selected graphics file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.		
a	Click on the ellipsis (...) button. The Open dialog is displayed.						
b	In the Open dialog, select a different .GIF or .JPG image file, then click Open . The Open dialog closes, the selected image file name appears in the Icon File Name input box, and the selected image is displayed beneath the Icon Preview label. Note: If the selected graphics file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.						
3	<p>In the Select MIBs list, you can add a new private MIB file for the new device type, as follows:</p> <table border="1"> <tr> <td>a</td> <td>Click on the Add... button. The Open dialog is displayed.</td> </tr> <tr> <td>b</td> <td>In the Open dialog, select the private MIB file for the new device type, then click Open. The Open dialog closes, and the selected MIB file name appears in the Select MIBs File Name input box. Note: If the selected MIB file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.</td> </tr> </table>	a	Click on the Add... button. The Open dialog is displayed.	b	In the Open dialog, select the private MIB file for the new device type, then click Open . The Open dialog closes, and the selected MIB file name appears in the Select MIBs File Name input box. Note: If the selected MIB file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.		
a	Click on the Add... button. The Open dialog is displayed.						
b	In the Open dialog, select the private MIB file for the new device type, then click Open . The Open dialog closes, and the selected MIB file name appears in the Select MIBs File Name input box. Note: If the selected MIB file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.						
4	<p>(Optional) To delete a MIB file from the list, do the following:</p> <table border="1"> <tr> <td>a</td> <td>Highlight the MIB file to be removed.</td> </tr> <tr> <td>b</td> <td>Click the Delete button. A message box opens asking you to confirm deletion.</td> </tr> <tr> <td>c</td> <td>Click Yes. The message box closes and the selected MIB file is removed from the list.</td> </tr> </table>	a	Highlight the MIB file to be removed.	b	Click the Delete button. A message box opens asking you to confirm deletion.	c	Click Yes . The message box closes and the selected MIB file is removed from the list.
a	Highlight the MIB file to be removed.						
b	Click the Delete button. A message box opens asking you to confirm deletion.						
c	Click Yes . The message box closes and the selected MIB file is removed from the list.						
5	<p>Do one of the following:</p> <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (see page 18). 						

Device Type Identity

Overview

Use this screen to add identity filters to a new device type. Identity filters provide a means of uniquely identifying each custom device type. Every device type you create must include at least 1 identity filter, and can include many identity filters. The collection of identity filters for a device type must be unique within the device type's class.

There are 2 SNMP identity filters and one Modbus identity filter. Each identity filter defines a specific location and value within either the SNMP or Modbus range of addresses.

During the automatic discovery process, ConneXview uses the SNMP and MBAP protocols to interrogate each detected device, which returns its SNMP and Modbus data. ConneXview compares this returned data against every identity filter. ConneXview classifies a detected device as an instance of a known device type only if the returned data matches every identity filter for that device type.

The device type editor supports 3 kinds of identity filters:

- Enterprise ID
- SNMP Variable
- Modbus TCP

Enterprise ID Filter

The Enterprise ID filter points to a fixed-location within the SNMP MIB hierarchy of object identifiers. Specifically, this filter interrogates the value of the SNMP MIB-2 *sysObjectID* variable (OID = 1.3.6.1.2.1.1.2.). This variable returns information stored in a private MIB located within the Enterprise portion of the SNMP hierarchy, which unambiguously describes the device vendor and may also describe the particular device.

The Enterprise ID filter has the following configurable attributes:

Name The filter name—a string of up to 32 characters

Pattern The value of the *sysObjectID* variable for which the identity filter will search.

This value is a dotted decimal numerical sequence that includes the unique vendor identifier and, optionally, the vendor-assigned unique device identifier.

For example, the pattern for a Schneider-Electric NOE device is *3833.1.7.255.2.* and is constructed as follows:

- Vendor Identifier—Schneider Electric's unique OID is *3833*
- Device Identifier—Schneider Electric assigns the unique device identifier *1.7.255.2* to its NOE devices, with the lead *1.* to indicate a Transparent Ready device
- Ending Dot—because the filter is intended to capture only the single device with the final digit of 2, it must end with a dot (*.*). Failure to include the dot broadens the scope of the filter to capture devices with ending numbers of 20, 21, 22, and so forth

SNMP Variable Filter

The SNMP Variable filter lets you specify a location within the SNMP hierarchy of object identifiers, and define the text or numeric value to look for at that location. Numeric values can include dotted decimal notations - such as an SNMP object identifier, an IP address, or an operating system version - and must be preceded by a relational operator. By contrast, text values can include the wildcard characters *** and *?*, but may not be preceded by a relational operator. See the section Pattern Matching Criteria (*see page 42*), below.

The SNMP Variable filter has the following configurable attributes:

Name The filter name is an alpha-numeric string of up to 32 characters

Location The SNMP object identifier, or OID address, to interrogate

Pattern The value for which the identity filter searches—it can include either a relational operator followed by a numeric sequence or a text value without a relational operator

MODBUS TCP Filter

The MODBUS TCP filter lets you identify a PLC address to interrogate, and define the text or numeric value to look for at that location. Numeric values can include dotted decimal notations—e.g., an IP address, an operating system version—and must be preceded by a relational operator. By contrast, text values can include the *?* wildcard character, but may not be preceded by a relational operator. See Pattern Matching Criteria (*see page 42*) below.

The MODBUS TCP filter has the following configurable attributes:

Name The filter name—a string of up to 32 characters

PLC Address The PLC register address to interrogate. This address needs to be in the Quantum legacy (4x) format regardless of the actual PLC platforms to which the filter might be applied. For a PLC platform the normally uses the IEC (%MW/) style of addressing (e.g., Premium, Micro, Unity Quantum), you must convert a %MW*i*, %MD*i*, or %MF*i* address to its equivalent 4x address.

The first %MW*i* address always corresponds to the first 4x address, which is 400001.

- For a Premium PLC, 400001 corresponds with %MW0, %MD1, or %MF1.
- For a Unity Quantum PLC, 400001 corresponds with %MW1, %MD1, or %MF1.

Pattern The value for which the identity filter will search. This value can include a relational operator followed a numerical sequence, or a text value without a relational operator, as follows:

- If the pattern data type is set to *BOOL*, no relational operator may be used and pattern values include only **true** or **false**.
- If the pattern data type is set to *STR*, no relational operator may be used and the maximum pattern length is 60 characters.
- If the pattern data type is set to a value other than *BOOL* or *STR*, a numerical value preceded by a relational operator is required.

Pattern Data Type The data type of the pattern field, selected from the following list:

- **BOOL**: Boolean, 1 bit
- **INT**: Integer, 16 bits
- **DINT**: Double Integer, 32 bits
- **UINT**: Unsigned Integer, 16 bits
- **UDINT**: Unsigned Double Integer, 32 bits
- **REAL**: Real Number, 32 bits
- **STR**: String
- **BYTE**: Bit Pattern, 8 bits
- **SHORT**: Short Integer, 8 bits
- **USHORT**: Unsigned Short Integer, 8 bits

Pattern Matching Criteria

When ConneXview interrogates a device during automatic discovery, the data returned by the device is compared against the pattern configured in an identity filter. There are 2 methods of comparison: numerical comparison and string comparison. The presence of a relational operator preceding the pattern triggers numerical comparison; the absence of a relational operator triggers string comparison.

String Comparison

String comparison sequentially tests data, 1 character at a time, to determine if the returned value matches the configured pattern. Depending upon the filter you are creating, the following wildcard characters may be supported:

Character	Description	Applies to
?	Return a match for any single character.	Both the SNMP Variable filter and the MODBUS TCP filter
*	Returns a match for any string of 1 or more characters.	Only the SNMP Variable filter

For example:

- The pattern *Schn?ider* matches the text *Schneider*, but does not match the text *Schneider-Electric*.
- The pattern *Sch*der* matches the text *Schneider*, but does not match the text *Schneider-Electric*. However, the pattern *Schneider** does match the text *Schneider-Electric*.

Numerical Comparison

As noted above, the presence of any relational operator in the first position of a pattern will trigger numerical comparison. The following relational operators are supported:

=	Equal
==	Equal
!=	Not equal
>	Greater Than
>=	Greater Than or Equal
<	Less Than
<=	Less Than or Equal

NOTE: If you need to test for a range of values, create 2 filters: the first configured at the lower limit of the value range with a preceding > or >= operator, and the other configured at the upper limit of the value range with a preceding < or <= operator.

Creating an Identity Filter

To create an identity filter for a device type:

Step	Action
1	In the Device Type Identity page, click Add... The Add Identity Filter dialog opens.
2	In the Add Identity Filter dialog, in the Enter Name text box, type in a name for the new identity filter.
3	In the Add Identity Filter dialog, select an Identity Filter Type from the following list: <ul style="list-style-type: none"> ● Enterprise ID ● SNMP Variable ● MODBUS TCP
4	Click OK to close the Add Identity Filter dialog, and add a new item to the list of Identity Filters.
5	In the Identity Filter List, select the new identity filter. The filter's attributes appear in the Attributes window.
6	Configure the identity filter's attributes, as follows: <p>For an SNMP Variable filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● Location: Type in the SNMP OID address to interrogate. ● Pattern: Type in the value to search for at the above location. This value can be a numerical sequence preceded by a relational operator, or a text value without the relational operator. <p>For an Enterprise ID filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● Pattern: Type in the value of the <i>sysObjectID</i> variable for which the identity filter will test. This value is a dotted decimal numerical sequence that includes the unique vendor identifier and, optionally, the vendor-assigned unique device identifier. <p>For a MODBUS TCP filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● PLC Address: Type in the PLC register address to interrogate ● Pattern: Type in the value the filter will test for. This value depends upon your selection of a pattern data type, and can include a relational operator followed a numerical sequence, or a text value without a relational operator. ● Pattern Data Type: Select the pattern field's data type from the drop-down list.
7	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

SNMP Properties

Overview

Use this page to:

- Add SNMP properties to the device type.
- Add monitors to SNMP properties.
- Edit SNMP properties.
- Delete SNMP properties and monitors.

A standard SNMP property is either an SNMP object variable, or a computed rate value—expressed in units/s—based upon an SNMP object variable. Only SNMP properties contained in a MIB, which was added in the Static Properties screen, can be added to a device type.

A monitor is a trigger that sets off an alarm, during network monitoring, when a property's value changes or reaches a pre-defined setting.

The initial SNMP Properties screen displays the same list of properties and monitors, and their related attribute values, as the parent or sibling device type on which the new device type is based.

SNMP Properties and Monitors

The Standard Properties and Monitors list displays the new device's SNMP properties and related monitors in a tree structure. Each SNMP property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

SNMP Properties:

Click on the **Add Property...** button to open the Select SNMP Property dialog, where you can select 1 or more properties contained in a MIB file added to the new device type in the Static Properties screen. Properties are displayed as branches within a tree control, descending from the root MIB file. Navigate through the tree control by clicking on a series of + signs, thereby displaying the next level of MIB branches.

Click on a property to select it. By making multiple selections, you can add several properties at the same time. Properties that were originally included in the new device type are shown italicized.

NOTE: A property may be added to the Property List more than once—i.e., as a rate property or a counter property.

You cannot delete pre-selected properties in this dialog, but must instead delete them as described below. (see page 49) When you click **OK**, the dialog closes and all the properties you selected are added to the new device type. The new properties appear at the bottom of the properties list in the order they were selected. Click on a new property to display its attributes in the Attributes grid for editing.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, then click the **Delete** button. When you delete a property, all of its associated monitors are also deleted.

SNMP Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

When an alarm is triggered, ConneXview's current alarm list displays an alarm containing information configured in the monitor, including specific text describing the triggering event and its severity (*Attention*, *Critical*, or *Information Only*).

Attributes

The Attributes grid displays the attributes for the property or monitor selected in the Standard Properties and Monitors list.

Property Attributes:

The Attributes grid displays a constant list of 11 attributes for each property. Not every attribute applies to a property, as described below:

Attribute Name:	Description:
Name	The name of the SNMP object variable, up to 32 characters, as set forth in the public or private MIB defining it.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default setting (<i>enabled</i>) indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Address	The property's MIB object identifier (OID).
Link Property	This binary setting indicates whether the property relates to both the device and its communications links (<i>true</i>) or only to the device itself (<i>false</i>). If <i>true</i> , both the device and its link(s) will change colors when this property triggers an alarm.

Attribute Name:	Description:
Link Interface Index Address	The MIB OID address that contains the MIB table's interface index values. This attribute contains a value only if the Link Property attribute is set to <i>true</i> .
Update Priority	The default priority (<i>High</i> , <i>Medium</i> or <i>Low</i>) for updating the property's run-time values.
Units Label	The unit of measure for the property.
Scaling Multiplier	A constant multiplied against the property's actual value for linear scaling of the actual value into units of measure.
Scaling Offset	A constant added to the product of the property's actual value and the Scaling Multiplier for linear scaling of the actual value into units of measure.
Rate Property	This binary setting indicates whether the property's value is expressed as a computed rate per second (<i>true</i>), or reflects the property's raw value (<i>false</i>).

Monitor Attributes:

In addition to Name and monitor type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when an alarm is triggered.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	There are 2 kinds of setpoints: <ul style="list-style-type: none"> for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) See the topic Select Setpoints (<i>see page 64</i>) for help editing setpoints.	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	If set to: <ul style="list-style-type: none"> false, an alarm is triggered if the value of the monitored property <u>does not</u> equal one of a specified set of setpoint values (the default setting) true, an alarm is triggered if the value of the monitored property <u>does</u> equal one of a specified set of setpoint values 	state monitors

Adding and Configuring SNMP Properties

Add and configure SNMP properties as follows:

Step	Action
1	Click the Add Property... button. The Select SNMP Property dialog opens. Note: The Select SNMP Property dialog opens only if you have MIB files loaded in the Static Properties screen.
2	In the Select SNMP Property dialog, click on a series of + signs to navigate through the branches of the tree control and display the property or properties you wish to add.
3	Click on a property to select it. A check mark appears next to the each property you select. You can use the Ctrl-Alt keys to select multiple properties.
4	After all properties are selected, click the OK button. The Select SNMP Property dialog closes, and the properties you selected are added to the bottom of the Standard Properties and Monitors list in the order in which they were selected.
5	Click on a newly added property to display its attributes in the Attributes grid.
6	In most cases you will want to accept the default attribute configuration settings for the new property. However, you may wish to edit the following property attributes: <ul style="list-style-type: none"> ● Monitoring: This default setting indicating whether the property will be monitored. ● Update Priority: The default priority (high, medium or low) for updating the property's run-time values ● Rate Property Indicates whether the property is expressed as a computed <i>per second</i> value.
7	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (see page 18).

Adding and Configuring SNMP Monitors

Add and configure SNMP monitors as follows:

Step	Action
1	In the list of Standard Properties and Monitors, select the property.
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property.
6	Select the new monitor in the Standard Properties and Monitors list.

Step	Action
7	In the Attributes grid, configure the new monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	Repeat steps 1 - 7 for each new monitor you wish to add.
9	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (see page 18).

Deleting SNMP Properties and Monitors

NOTE: When deleting a SNMP, Modbus, or Derived property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted an SNMP, Modbus, or Derived property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete an SNMP property or monitor:

Step	Action
1	Select a property or monitor in the Standard Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

Modbus Properties

Overview

Use this page to:

- Add Modbus properties to the device type.
- Add monitors to Modbus properties.
- Edit Modbus properties.
- Delete Modbus properties and monitors.

A Modbus property is a collection of 1 or more PLC data registers.

The initial Modbus Properties screen displays the same list of properties and monitors, and their related attribute values, as the parent or sibling device type upon which the new device type is based.

Modbus Properties and Monitors

The Modbus Properties and Monitors list displays the new device's Modbus properties and related monitors in a tree structure. Each Modbus property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

Modbus Properties:

Click on the **Add Property...** button to open the Add Modbus Property dialog, where you can create and assign a name to a new Modbus property. When you click **OK**, the dialog closes and the new Modbus property is added to the bottom of the properties list. Click on the new property to display its attributes in the Attributes grid for editing.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the property. When you delete a property, all of its associated monitors are also deleted.

Modbus Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

When an alarm is triggered, ConneXview's current alarm list displays an alarm containing information configured in the monitor, including specific text describing the triggering event and its severity (*Attention*, *Critical*, or *Information Only*).

Attributes

The Attributes grid displays the attributes for the property or monitor selected in the Modbus Properties and Monitors list.

Property Attributes:

The Attributes grid displays a constant list of 12 attributes for each property. Not every attribute applies to a property, as described below:

Attribute Name:	Description:
Name	The name of the Modbus property, up to 32 characters, as created in the Add Modbus Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default setting of <i>enabled</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Data Type	The kind and amount of information the Modbus property can contain: <ul style="list-style-type: none"> ● BOOL: Boolean, 1 bit. ● INT: Integer, 16 bits ● DINT: Double Integer, 32 bits. ● UINT: Unsigned Integer, 16 bits. ● UDINT: Unsigned Double Integer, 32 bits. ● REAL: Real Number, 32 bits.
Address	The address of the first PLC data register for the Modbus property (<i>see page 55</i>).
Link Property	This setting indicates whether the property relates to both the device and its communications links (<i>true</i>) or only to the device itself (<i>false</i>). If <i>true</i> , both the device and its link(s) will change colors when this property triggers an alarm.
Link Interface Index Address	The address of the PLC data reference that contains the device's interface index values. This attribute contains a value only if the Link Property attribute is set to <i>true</i> .
Quantity	This number of sequential PLC data references that collectively define the Modbus property.
Update Priority	The default priority (<i>high</i> , <i>medium</i> or <i>low</i>) for updating the property's run-time values.
Units Label	The unit of measure for the property.

Attribute Name:	Description:
Scaling Multiplier	A constant multiplied against the property's actual value for linear scaling of the actual value into units of measure.
Scaling Offset	A constant added to the product of the property's actual value and the Scaling Multiplier for linear scaling of the actual value into units of measure.

Monitor Attributes:

In addition to Name and Type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when a an alarm is triggered.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	<p>There are 2 kinds of setpoints:</p> <ul style="list-style-type: none"> for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) <p>See the topic Select Setpoints (<i>see page 64</i>) for help editing setpoints.</p>	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	<p>If set to:</p> <ul style="list-style-type: none"> false, an alarm is triggered if the value of the monitored property <u>does not</u> equal one of a specified set of setpoint values (the default setting) true, an alarm is triggered if the value of the monitored property <u>does</u> equal one of a specified set of setpoint values 	state monitors

Adding and Configuring Modbus Properties

Add and configure Modbus properties as follows:

Step	Action
1	Click the Add Property... button. The Add Modbus Property dialog opens.
2	In the Add Modbus Property dialog, type in the name of the Modbus property, then click OK . The dialog closes, and the new property is added at the bottom of the list of Modbus Properties and Monitors.
3	In the Attributes grid, complete the new Modbus property by configuring all attributes (<i>see page 51</i>).
4	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Adding and Configuring Modbus Monitors

Add and configure Modbus property monitors as follows:

Step	Action
1	In the list of Modbus Properties and Monitors, select the property.
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property.
6	Select the new monitor in the Modbus Properties and Monitors list.
7	In the Attributes grid, configure the new monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	Repeat steps 1 - 7 for each new monitor you wish to add.
9	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Deleting Modbus Properties and Monitors

NOTE: When deleting a Modbus, SNMP, or Derived property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted a Modbus, SNMP, or Derived property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete a Modbus property or monitor:

Step	Action
1	Select a property or monitor in the Modbus Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

PLC Addresses Supported

Overview

ConneXview supports address formats for:

- Quantum and Quantum for Unity PLCs
- Premium and Premium for Unity PLCs

Valid Addresses for a Quantum PLC

Valid addresses for *legacy Quantum PLCs* are:

- 0x coils
- 1x discrete inputs
- 3x input registers
- 4x output/holding registers
- 6x extended memory registers

For *Unity Quantum PLCs*, addresses also include:

- %Mi (same as 0x coils)
- %Ii (same as 1x discrete inputs)
- %IWi (same as 3x input registers)
- %MWi, %MDi, %MFi (same as 4x output/holding registers)

For a Unity Quantum PLC, a single bit of any word address (for example, %MWi, %IWi) can be specified by appending *.j* to the address, where *.j* is a bit index in the range 0 (LSB) to 15 (MSB). For example, bit 4 of the value at %MW101 can be specified as %MW101.4.

Also, an address can include an index specification that allows it to be treated as an array variable. Indexed addressing can be used with a %Mi, %MWi, %MDi, or %MFi address by appending *[[j]]* to the address of the beginning of the array, where *j* is an unsigned integer value. For example, the third value of an array of floating point values starting at %MF201 can be specified as %MF201[2].

Valid Addresses for a Premium PLC

The following table contains the valid addresses for a *legacy Premium PLC*:

Address	Type	R(ead) or W(rite) Access
%KWi	WORD 16	R
%KDi	WORD 32	R
%MDi	WORD 32	R/W
%SDi	WORD 32	R/W
%Irs.c	BOOLEAN	R
%Qrs.c	BOOLEAN	R/W
%Mi	BOOLEAN	R/W
%Si	BOOLEAN	R/W
%MFi	REAL 32	R/W
%IWrs.c.i	WORD 16	R
%MWi	WORD 16	R/W
%SWi	WORD 16	R/W
%QWrs.c.i	WORD 16	R/W
%MWrs.c.i	WORD 16	R/W
%MWrs.MOD.i	WORD 16	R/W
%KWrs.c.i	WORD 16	R/W
r = rack number, s = slot number, c = channel number, and i = range number		

The following table contains the valid addresses for a *Unity Premium PLC*:

Address	Type	R(ead) or W(rite) Access
%KWi	WORD 16	R
%KDi	WORD 32	R
%MDi	WORD 32	R/W
%SDi	WORD 32	R/W
%I _{r.s.c}	BOOLEAN	R
%Q _{r.s.c}	BOOLEAN	R/W
%Mi	BOOLEAN	R/W
%Si	BOOLEAN	R/W
%MFi	REAL 32	R/W
%IW _{r.s.c}	WORD 16	R
%MWi	WORD 16	R/W
%SWi	WORD 16	R/W
%QW _{r.s.c}	WORD 16	R/W
%MW _{r.s.c.i}	WORD 16	R/W
%KW _{r.s.c.i}	WORD 16	R/W
r = rack number, s = slot number, c = channel number, and i = range number		

For Unity Premium, a single bit of any "word address" (for example, %MWi, %SWi, %KWi) can be specified by appending *.j* to the address, where *j* is a bit index in the range of 0 (least significant bit) to 15 (most significant bit). For example, bit 4 of the value at %MW101 would be specified as %MW101.4.

Also for Unity Premium PLC, a direct address can include an index specification that allows it to be treated as an array variable. Indexed addressing can be used with a %Mi, %MWi, %MDi, %MFi, %KWi or %KD address by appending *[j]* to the address of the beginning of the array, where *[j]* is an unsigned integer value. For example, the third value of an array of float values starting at %MF201 would be specified as %MF201[2].

Derived Properties

Overview

Use this page to:

- Add properties derived from SNMP, Modbus or other derived properties.
- Add monitors to derived properties.
- Edit derived properties.
- Delete derived properties and monitors.

The initial Derived Properties screen displays the same list of derived properties and monitors and their related attribute values as the parent or sibling device type upon which the new device type is based.

Derived Property Types

There are 3 types of derived properties. Each derived property type is defined by the function that created it, as follows:

Binary Arithmetic Function The result of an arithmetic function (add, subtract, multiply or divide) performed on 2 numeric inputs.

Interface Load Calculation The combination of a device's input and output interface load measurements into a single composite value. For full-duplex interfaces, the derived value equals the greater of the input or output load values; for half-duplex interfaces, the derived value equals the total of the input and output load values.

State Mapping Function The relative condition of a single property, based upon pre-defined value thresholds (High-High, High, Low, Low-Low). A State Mapping derived property can be associated with a Map Key, which permits monitoring of the condition of that derived property for all devices with that derived property.

Derived Properties and Monitors List

The Derived Properties and Monitors list displays the new device's derived properties and related monitors in a tree structure. Each derived property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

Properties:

Click on the **Add Property...** button to open the Add Derived Property dialog, where you can assign a name to a new derived property, and define its type. When you click **OK**, the dialog closes and the new derived property is added to the bottom of the list. Click on the new property to display its attributes in the Attributes grid for editing.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the property. When you delete a property, all of its associated monitors are also deleted.

Derived Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

When an alarm is triggered, ConneXview's current alarm list displays an alarm containing information configured in the monitor, including specific text describing the triggering event and its severity (*Attention*, *Critical*, or *Information Only*).

Derived Property Attributes

The Attributes grid displays a list of attributes for the selected derived property. The attributes displayed in the list will depend upon the type of derived property selected (Binary Arithmetic Function, Interface Load Calculation, or State Mapping Function) as follows:

Binary Arithmetic Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>enabled</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property, up to 32 characters.
Input Property 1	The name of the first SNMP, Modbus or Derived property that is to be used as the first operand.
Input Property 2	The name of the first SNMP, Modbus or Derived property that is to be used as the second operand.
Multiplier	A numeric multiplier for linear scaling of the derived property's value.
Operation	The arithmetic function performed on the 2 inputs: Addition, Subtraction, Multiplication, Division.

Interface Load Calculation Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>enabled</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property, up to 32 characters.
Input LoadProperty	The name of the SNMP, Modbus or Derived property whose value is to be used as the input load of the interface.
Output LoadProperty	The name of the SNMP, Modbus or Derived property whose value is to be used as the output load of the interface.

State Mapping Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>enabled</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property, up to 32 characters.
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm or state mapped message will clear.
High High Setting	The threshold value, in measurement units, that sets the value of this property to High-High.
High Setting	The threshold value, in measurement units, that sets the value of this property to High.
Input Property	The name of the SNMP, Modbus or Derived property whose value is to be used as the input value for this state mapping property.
Low Low Setting	The threshold value, in measurement units, that sets the value of this property to Low-Low.
Low Setting	The threshold value, in measurement units, that sets the value of this property to Low.
Map Key	(Optional) The name of the map key, set in the Map Keys screen, associated with this derived property, thereby enabling color-coded network map monitoring of this property value (or state).

Derived Property Monitor Attributes

In addition to Name and Type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when a an alarm is triggered.	all monitor types
Help Reference	Reference to the associated Network Assistant Help ID. For more information, see Help on the Alarm Panel. These are Schneider-defined attributes—do not edit these values.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	<p>There are 2 kinds of setpoints:</p> <ul style="list-style-type: none"> ● for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on ● for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) <p>See the topic Select Setpoints (<i>see page 64</i>) for help editing setpoints.</p>	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	<p>If set to:</p> <ul style="list-style-type: none"> ● false, an alarm is triggered if the value of the monitored property does not equal one of a specified set of setpoint values (the default setting) ● true, an alarm is triggered if the value of the monitored property does equal one of a specified set of setpoint values 	state monitors

Adding and Configuring Derived Properties

Add and configure Derived properties and monitors as follows:

Step	Action
1	Click the Add Property... button. The Add Derived Property dialog opens.
2	In the Add Derived Property dialog, type in the Name of the new derived property.
3	Select a type of derived property: <ul style="list-style-type: none"> ● Binary Arithmetic Function ● Interface Load Calculation ● State Mapping Function
4	Click OK . The dialog closes, and the new property is added at the bottom of the list of Derived Properties and Monitors.
5	In the Attributes grid, complete the new Derived property by configuring all attributes (<i>see page 51</i>).
6	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Adding and Configuring Derived Property Monitors

Add and configure derived property monitors as follows:

Step	Action
1	In the list of Derived Properties and Monitors, select the property.
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property.
6	Select the new monitor in the Derived Properties and Monitors list.
7	In the Attributes grid, configure the new monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	Repeat steps 1 - 7 for each new monitor you wish to add.
9	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Deleting Derived Properties and Monitors

NOTE: When deleting a Derived, SNMP, or Modbus property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted a Derived, SNMP, or Modbus property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete a Derived property or monitor:

Step	Action
1	Select a property or monitor in the Derived Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

Select Setpoints

Overview

Use the Select Setpoints dialog to:

- add setpoints to a state monitor, or
- edit setpoints for an existing state monitor.

State monitors apply only to properties with directly measurable values. These values, can be:

- limited to an enumerated list—typically a list of sequential integer values, or
- unlimited, presenting a range of values that may consist of both integer and fractional values

The Select Setpoints dialog presents two different interfaces: one for properties with values limited to an enumerated list, and another for properties with values that are not limited to an enumerated list.

Editing Setpoints

Configure setpoints for a state monitor as follows:

Step	Action	Comment
1	In the SNMP, Modbus, or Derived properties page, select a state monitor.	The lower pane of the SNMP, Modbus or Derived Properties page displays the selected state monitor's attributes.
2	To the right of the <i>Setpoint(s)</i> attribute—in the Values column—click the ellipsis (...) button. Note: This button may not be visible unless the Values column for the <i>Setpoint(s)</i> attribute has focus.	The Select Setpoints dialog opens.
3	If the monitored property's values are: <ul style="list-style-type: none"> • limited to an enumerated list: <ul style="list-style-type: none"> • In the <i>Select Setpoints</i> list, select one or more available setpoints • not limited to an enumerated list: <ul style="list-style-type: none"> • In the <i>Enter Value(s)</i> field, type in one or more setpoint values, separated by commas (For example: 1.0,3.0,5.0) 	The Select Setpoints dialog presents two different interfaces.
4	Click OK .	The Select Setpoints dialog closes.
5	Save (<i>see page 18</i>) your edits.	—

Property Groups

Overview

Use this page to create property groups for a selected device type. A property group is a user-defined collection of dynamic properties that can be displayed in the Device Property Viewer.

Use property groups to limit the number of device properties displayed in the Device Property Viewer. When you select a property group, the Device Property Viewer displays only the dynamic properties assigned to the selected group.

NOTE: By default, only the property group *All Properties* exists for a device type.

Available Properties

Only properties that are already associated with a device type can be added to a property group. A property is associated with a device type if that property is:

- a property that was inherited from a parent or sibling device type when the device type was created
- an SNMP property that was added to the device type in the SNMP page (*see page 45*)
- a Modbus property added to the device type in the Modbus page (*see page 50*)
- a Derived property added to the device type in the Derived page (*see page 58*)

Adding a New Property Group

To add a new property group to a selected device type:

Step	Action	
1	In the Device Type Editor, select File → Open . The Open dialog is displayed.	
2	In the Open dialog, select a device type, then click Open . The selected device type file opens in the Device Type Editor.	
3	Select Property Group from the left pane. The Property Group page opens.	
4	In the Property Group page, click Add . The Add Property Group dialog opens.	
5	In the Add Property Group dialog, type in a Name for the new property group, then click OK . The Add Property Group dialog closes. Note: The property group name must be unique, and can consist of not more than 32 characters.	
6	In the <i>Available Properties</i> list of the Property Group page, navigate to and select the properties you want to add to the new property group:	
	a	Expand any folders, as necessary.
	b	Hold down the Ctrl key and use the mouse to select every property you want to add.
	c	Click Add>> .
	The selected properties appear in the <i>Properties</i> list (on the right). Note: To remove a property from this list, select it then click <<Remove .	
7	Save (<i>see page 18</i>) your changes to the device type profile. If ConneXview is open, you are prompted to close and then re-open it to import the modified Device Type profile.	

Popup Menu Items

Overview

Use this screen to:

- Add new menu items to the new device type's popup menu.
- Edit menu items.
- Delete menu items.

Every device appearing in a network map can display a popup menu listing commands that will open a web document, open a local document, or run a local program. To open the popup menu, just right-click on a device in the network map. The popup menu will contain items added to its device type in this screen, plus any popup menu items the device type inherited from the parent or sibling device type on which it is based.

NOTE: If no popup menu appears for a device in the network map, no popup menu has been configured in the Popup Menu Items screen for its device type.

List of Menu Items

The initial Popup Menu Items screen displays the same list of items configured for the parent or sibling device type upon which the new device type is based. An empty list indicates the base device type was not configured to include a popup menu.

Create a new a new menu item and add it to the list by clicking the **Add...** button, then type in the new menu item text and indicate the kind of menu command you are creating. A menu item can open a web page, open a local document or run a local program. After you add a menu item, select it to configure its attributes in the Attributes grid.

You can delete both new and inherited items from the list, one item at a time. Just select an item in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the item.

Attributes

This grid displays the attributes for the menu item currently selected in the List of Menu Items. Use this grid to edit attributes for the selected menu item. Not all attributes can be edited. After a menu item has been created, neither its *Menu item Text* nor its *Menu item Type* attributes can be changed. To change these settings you must delete the menu item and create a new menu item with the desired name and type settings.

For **Web Documents**, the following attributes can be edited:

- *Document Name*: the URL of the document.
- *Web Server Host*: the host name or IP address of the host for the web server. If blank, the IP address of the actual device will be used. An association must exist on your PC's operating system between the document type and the application that opens it.

For **Local Documents**, the following attribute can be edited:

- *Document Name*: the full path name for the local document file.

For **Local Programs**, the following attributes can be edited:

- *Program Name*: the full path name for the local executable program.
- *Program Parameter*: an optional parameter, if any, that is required to run the local program.

Adding and Configuring a Popup Menu Item

To add and configure a popup menu item:

Step	Action
1	To add an item to the device type popup menu:
a	Click the Add... button. The Add Popup Menu Items dialog opens.
b	In the Menu Item Text field, add the menu command by typing a string of alphanumeric characters. Note: After you save the popup item, this text cannot be edited. To change this text, you must delete this item and create a new one.
c	Select the Type of Menu Item: <ul style="list-style-type: none"> • Open Web Document • Open Local Document • Run Local Program
c	Click OK to close the Add Popup Menu Items dialog. The new menu item appears at the bottom of the List of Menu Items.

Step	Action
2	To configure a new popup menu item:
a	Select the item in the List of Menu Items. Its attributes are displayed in the Attributes grid.
b	In the Attributes grid, complete the editable attributes that apply to the new menu item. The item types and their editable fields are: <ul style="list-style-type: none"> ● Open Local Document: <ul style="list-style-type: none"> ● <i>Document Name:</i> Type the full path name of the local document. Be sure an association exist on your PC's operating system between the document type (file extension) and the application that opens it. ● Open Web Document: <ul style="list-style-type: none"> ● <i>Web Server Host:</i> Type in the host name or the IP address of the host for the Web Server. Leave blank to use the IP address of the specific device. ● <i>Document Name:</i> Type in the URL of the web document to open. ● Run Local Program: <ul style="list-style-type: none"> ● <i>Program Name:</i> Type the full path name of the local executable program. ● <i>Program Parameters:</i> (Optional) Type in the parameters - if any - required to run the executable program.
3	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Deleting Popup Menu Items

To delete a Popup Menu Item:

Step	Action
1	Select an item in the <i>List of Menu Items</i> .
2	Click the Delete button. A message box opens asking if you want to delete the selected item.
3	Click Yes . The message box closes and the selected item is removed from the list.

Edit a Device Type

6

Overview

The topics in this chapter describe the process for editing an existing device type. Use the Open (*see page 17*) command to display a device type file for editing. If the device type editor is configured to load the last saved device type (*see page 28*) when it starts up, the file for the most recently edited device type will open and be ready for editing when you start the device type editor.

What's in this Chapter?

This chapter contains the following topics:

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General Device Type Info - Edit

Overview

Use the fields in this screen to restore the original settings for a default device type. Except for restoring the default settings of default device types, the fields in this screen are read-only and cannot be edited.

There are 7 default device types:

- Default managed host
- Default managed MBAP host
- Default managed switch
- Default router
- Default unmanaged host
- Default unmanaged switch
- Default unmanaged MBAP host

If the settings of a default device type have been changed, you can restore the default device type's original settings.

A custom device type is a user-defined device type, which is a progeny of a default device type. The general device type info settings for a custom device type are enabled only when a new device type is created, and are read-only when an existing device type file is opened for editing.

After a custom device type has been created, you cannot edit its class, or the identity of the device type on which it was based, or its relationship - parent or sibling - to the device type on which it was based. Instead, use the **Delete** command to remove a custom device type from the hierarchy of available device types, then create a new custom device type with different class and hierarchy settings.

Restore Default Settings

To restore the original settings for a default device type:

Step	Action
1	With a default device type open, click on the General button to display the General Device Type Info screen.
2	Click the Restore Defaults button. A message box opens asking if you restore the default settings for the selected default device type.
3	Click Yes to restore the default device type settings and close the message box. Another message box opens informing you the File was successfully saved. Click OK to close the second message box.
4	To save your edits, click Save (see page 18).

Static Properties - Edit

Overview

Use the Static Properties screen to:

- Edit the device type name.
- Change the image associated with this device type.
- Add and delete MIB files for this device type.

Device manufacturers often include 1 or more private MIBs with the delivery of their custom network devices. Each private MIB occupies a manufacturer-defined position within the Enterprise branch of the SNMP MIB-2 hierarchy, and contains properties unique to that manufacturer and its devices. Once you add a MIB file in this screen, you can add its SNMP, Modbus and Derived properties to the device type.

Device Type Info

The Device Type Info section of the Static Properties screen contains the following editable fields:

Description: The common name of this device type.

Icon File Name: Each device type is associated with an image. You can assign a different image to a device type by clicking on the ellipsis button (...), which opens the Open dialog. By default, this dialog displays graphic files stored in the *networks* folder. Use the Open dialog to navigate to any other folder and add an image file. The device type editor will copy the image file and place it into the *networks* folder. Only image files stored in this folder are available to be assigned to the device type. The new image is displayed beneath the Icon Preview label.

Select MIBs

The Select MIBs section of the Static Properties screen contains a list of MIB files for the device type. You can add MIB files to, and delete selected MIB files from, this list.

Both the device type editor and ConneXview store MIB files in a shared *networks* folder. However, a new MIB file can be added from any location. When you click on the **Add...** button, the Open dialog displays a list of MIB files that are stored in the *networks* folder. If the MIB file you wish to add resides in another folder, use the Open dialog to navigate to that MIB file and select it. The device type editor will place a copy of the selected MIB file into the *networks* folder. After you select a MIB file, its name appears in the Select MIBs list.

Editing Static Properties

To edit a device's static properties:

Step	Action
1	Description: Type in text that describes the device type.
2	<p>Icon File Name: To change the graphic image associated with the device type:</p> <p>a Click on the ellipsis (...) button. The Open dialog is displayed.</p> <p>b In the Open dialog, navigate to and select a different .GIF or .JPG image file, then click Open. The Open dialog closes, the selected image file name appears in the Icon File Name input box, and the selected image is displayed beneath the Icon Preview label. Note: If the selected graphics file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.</p>
3	<p>In the Select MIBs list, you can add a new private MIB file for the device type, as follows:</p> <p>a Click on the Add... button. The Open dialog is displayed.</p> <p>b In the Open dialog, select the private MIB file for the device type, then click Open. The Open dialog closes, and the selected MIB file name appears in the Select MIBs File Name input box. Note: If the selected MIB file resides in a location other than the <i>networks</i> folder, the device type editor will copy the selected file and place that copy into the <i>networks</i> folder.</p>
4	<p>(Optional) To delete a MIB file from the list, do the following:</p> <p>a Highlight the MIB file to be removed.</p> <p>b Click the Delete button. A message box opens asking you to confirm deletion.</p> <p>c Click Yes. The message box closes and the selected MIB file is removed from the list.</p>
5	To save your changes, click Save (<i>see page 18</i>) in the File menu (or click the Save toolbar button). A message box opens indicating changes to the device type file have been saved. Click OK to close the message box.

Device Type Identity - Edit

Overview

Use this screen to:

- add new identity filters to a device type.
- delete identity filters.
- edit existing identity filters.

Identity filters provide a means of uniquely identifying each custom device type. Every device type must include at least 1 identity filter, and can include many identity filters. The collection of identity filters for a device type must be unique within the device type's class.

There are 2 SNMP identity filters and 1 Modbus identity filter. Each identity filter defines a specific location and value within the SNMP or Modbus range of addresses.

During the automatic discovery process, ConneXview uses the SNMP and MBAP protocols to interrogate each detected device, which returns its SNMP and Modbus data. ConneXview compares this returned data against every identity filter. ConneXview will classify a detected device as an instance of a known device type only if the returned data matches every identity filter for a device type.

The device type editor supports the creation of 3 types of identity filter:

- Enterprise ID
- SNMP Variable
- MODBUS TCP

Enterprise ID Filter

The Enterprise ID filter points to a fixed-location within the SNMP MIB hierarchy of object identifiers. Specifically, this filter interrogates the value of the SNMP MIB-2 *sysObjectID* variable (OID = 1.3.6.1.2.1.1.2.). This variable returns information stored in a private MIB located within the Enterprise portion of the SNMP hierarchy, which unambiguously describes the device vendor and may also describe the particular device.

The Enterprise ID filter has the following configurable attributes:

Name The filter name, a string of up to 32 characters

Pattern The value of the *sysObjectID* variable for which the identity filter will search.

This value is a dotted decimal numerical sequence that includes the unique vendor identifier and, optionally, the vendor-assigned unique device identifier.

For example, the pattern for a Schneider Electric NOE device is *3833.1.7.255.2.* and is constructed as follows:

- Vendor Identifier: Schneider Electric's unique OID is *3833*
- Device Identifier: Schneider Electric has assigned the unique device identifier of *1.7.255.2* to its NOE devices, with the lead *1*. indicating a transparent ready device
- Ending Dot: Because the filter is intended to capture only the single device with the final digit of 2, it must end with a dot (*.*). Failure to include the dot will broaden the scope of the filter to capture devices with ending numbers of 20, 21, 22, and so forth.

SNMP Variable Filter

The SNMP Variable filter lets you identify a location within the SNMP hierarchy of object identifiers to interrogate, and define the text or numeric value to look for at that location. Numeric values can include dotted decimal notations - such as an SNMP object identifier, an IP address, or an operating system version - and must be preceded by a relational operator. By contrast, text values can include the wildcard characters *** and *?*, but may not be preceded by a relational operator. See the section Pattern Matching Criteria, below.

The SNMP Variable filter has the following configurable attributes:

Name The filter name, a string of up to 32 characters

Location The SNMP object identifier, or OID address, to interrogate

Pattern The value for which the identity filter will search. This value can include either a relational operator followed by a numeric sequence or a text value without a relational operator.

MODBUS TCP Filter

The MODBUS TCP filter lets you identify a PLC address to interrogate, and define the text or numeric value to look for at that location. Numeric values must be preceded by a relational operator. By contrast, text values can include the *?* wildcard character, but may not be preceded by a relational operator. See the section Pattern Matching Criteria, below.

The MODBUS TCP filter has the following configurable attributes:

Name The filter name, consisting of an alpha-numeric string of up to 32 characters

PLC Address The PLC register address to interrogate. This address needs to be in the Quantum legacy (4x) format regardless of the actual PLC platforms to which the filter might be applied. For a PLC platform the normally uses the IEC (*%MWi*) style of addressing (e.g., Premium, Micro, Unity Quantum), you must convert a *%MWi*, *%MDi*, or *%MFi* address to its equivalent 4x address.

The first *%MWi* address always corresponds to the first 4x address, which is 400001.

- For a Premium PLC, 400001 corresponds with *%MW0*, *%MD1*, or *%MF1*.
- For a Unity Quantum PLC, 400001 corresponds with *%MW1*, *%MD1*, or *%MF1*.

Pattern The value for which the identity filter will search. This value can include a relational operator followed a numerical sequence, or a text value without a relational operator, as follows:

- If the pattern data type is set to *BOOL*, no relational operator may be used and pattern values include only **true** or **false**
- If the pattern data type is set to *STR*, no relational operator may be used and the maximum pattern length is 60 characters
- If the pattern data type is set to a value other than *BOOL* or *STR*, a numerical value preceded by a relational operator is required

Pattern Data Type The data type of the pattern field, selected from the following list:

- *BOOL*: Boolean, 1 bit
- *INT*: integer, 16 bits
- *DINT*: double integer, 32 bits
- *UINT*: unsigned integer, 16 bits
- *UDINT*: unsigned double integer, 32 bits
- *REAL*: real number, 32 bits
- *STR*: string
- *BYTE*: bit pattern, 8 bits
- *SHORT*: short integer, 8 bits
- *USHORT*: unsigned short integer, 8 bits

Pattern Matching Criteria

When ConneXview interrogates a device during automatic discovery, the data returned by the device is compared against the pattern configured in an identity filter. There are 2 methods of comparison: numerical comparison and string comparison. The presence of a relational operator preceding the pattern triggers numerical comparison; the absence of a relational operator triggers string comparison.

String Comparison

String comparison sequentially tests data, 1 character at a time, to determine if the returned value matches the configured pattern. Depending upon the filter you are creating, the following wildcard characters may be supported:

Character	Description	Applies to
?	Return a match for any single character.	Both the SNMP Variable filter and the MODBUS TCP filter
*	Returns a match for any string of 1 or more characters.	Only the SNMP Variable filter

For example:

- The pattern *Schn?ider* matches the text *Schneider*, but does not match the text *Schneider-Electric*.
- The pattern *Sch*der* matches the text *Schneider*, but does not match the text *Schneider-Electric*. However, the pattern *Schneider** does match the text *Schneider-Electric*.

Numerical Comparison

As noted above, the presence of any relational operator in the first position of a pattern will trigger numerical comparison. The following relational operators are supported:

=	Equal
==	Equal
!=	Not equal
>	Greater Than
>=	Greater Than or Equal
<	Less Than
<=	Less Than or Equal

NOTE: If you need to test for a range of values, create 2 filters: the first configured at the lower limit of the value range with a preceding > or >= operator, and the other configured at the upper limit of the value range with a preceding < or <= operator.

Create / Edit an Identity Filter

To create an identity filter for a device type:

Step	Action
1	To create a new identity filter, follow the instructions beginning with step 1.a. To edit an existing identity filter, proceed to step 2.
a	In the Device Type Identity page, click Add... The Add Identity Filter dialog opens.
b	In the Add Identity Filter dialog, in the Enter Name text box, type in a name for the new identity filter.
c	In the Add Identity Filter dialog, select an Identity Filter Type from the following list: <ul style="list-style-type: none"> • Enterprise ID • SNMP Variable • MODBUS TCP
d	Click OK to close the Add Identity Filter dialog, and add a new item to the list of Identity Filters.

Step	Action
2	In the Identity Filter List, select an identity filter. The filter's attributes appear in the Attributes window.
3	<p>Configure the identity filter's attributes, as follows:</p> <p>For an SNMP Variable filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● Location: Type in the SNMP OID address to interrogate. ● Pattern: Type in the value to search for at the above location. This value can be a numerical sequence preceded by a relational operator, or a text value without the relational operator. <p>For an Enterprise ID filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● Pattern: Type in the value of the <i>sysObjectID</i> variable for which the identity filter will test. This value is a dotted decimal numerical sequence that includes the unique vendor identifier and, optionally, the vendor-assigned unique device identifier. <p>For a MODBUS TCP filter, complete the following:</p> <ul style="list-style-type: none"> ● Name: The filter name is automatically input. ● PLC Address: Type in the PLC register address to interrogate ● Pattern: Type in the value the filter will test for. This value depends upon your selection of a pattern data type, and can include a relational operator followed a numerical sequence, or a text value without a relational operator. ● Pattern Data Type: Select the pattern field's data type from the drop-down list.
4	In the File menu, click Save (<i>see page 18</i>) (or click the Save toolbar button) to save your edits. A message box opens informing you that changes to the device type file have been saved. Click OK to close the dialog.

Delete an Identity Filter

To delete an identity filter:

Step	Action
1	Click on an identity filter in the Identity Filter list. The Delete button is enabled.
2	Click on the Delete button. A dialog asks you if you really want to delete the identity filter.
3	Click Yes to delete the identity filter and close the dialog.
4	In the File menu, click Save (<i>see page 18</i>) (or click on the Save toolbar button). A dialog opens indicating the device type file has been saved. Click OK to close the dialog.

SNMP Properties - Edit

Overview

Use this page to:

- Add SNMP properties to the device type.
- Add monitors to SNMP properties.
- Edit SNMP properties.
- Delete SNMP properties and monitors.

A standard SNMP property is either an SNMP object variable or a computed rate value - expressed in units/s—based upon an SNMP object variable. Only SNMP properties contained in a MIB, which was added in the Static Properties screen, can be added to a device type.

A monitor is a trigger that sets off an alarm during network monitoring, when a property's value changes or reaches a pre-defined limit.

SNMP Properties and Monitors

The Standard Properties and Monitors list displays the device's SNMP properties and related monitors in a tree structure. Each SNMP property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

SNMP Properties:

Click on the **Add Property...** button to open the Select SNMP Property dialog, where you can select 1 or more properties from a MIB file. Properties are displayed as branches within a tree control, descending from the root MIB file. Navigate through the tree control by clicking on a series of + signs, thereby displaying the next level of MIB branches.

Click on a property to select it. By making multiple selections, you can add several properties at the same time. Properties that were originally included in the device type are shown italicized.

NOTE: A property may be added to the Property List more than once—i.e., as a rate property or a counter property.

You cannot delete pre-selected properties in this dialog, but must instead delete them as described below. When you click **OK**, the dialog closes and all the properties you selected are added to the device type. The new properties appear at the bottom of the properties list in the order they were selected. Click on a new property to display its attributes in the Attributes grid for editing.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, then click the **Delete** button. When you delete a property, all of its associated monitors are also deleted.

SNMP Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

When an alarm is triggered, ConneXview's current alarm list displays an alarm containing information configured in the monitor, including specific text describing the triggering event and its severity (*Attention*, *Critical*, or *Information Only*).

Attributes

The Attributes grid displays the attributes for the property or monitor selected in the Standard Properties and Monitors list.

Property Attributes

The Attributes grid displays a constant list of 11 attributes for each property. Not every attribute applies to a property, as described below:

Attribute Name:	Description:
Name	The name of the SNMP object variable, up to 32 characters, as set forth in the public or private MIB defining it.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting (<i>false</i>) indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Address	The property's MIB object identifier (OID).
Link Property	This binary setting indicates whether the property relates to both the device and its communications links (<i>true</i>) or only to the device itself (<i>false</i>). If <i>true</i> , both the device and its link(s) will change colors when this property triggers an alarm.
Link Property Index	The MIB OID address that contains the MIB table's interface index values. This attribute contains a value only if the Link Property attribute is set to <i>true</i> .
Update Priority	The default priority (<i>High</i> , <i>Medium</i> or <i>Low</i>) for updating the property's run-time values.

Attribute Name:	Description:
Units Label	The default measure, in units/second, of the property. Applies only to computed rate properties.
Scaling Factors	The default factor for scaling the property's value into units of measure. A value of 1.0 indicates no scaling.
Rate Property	This binary setting indicates whether the property's value is expressed as a computed rate per second (<i>true</i>), or reflects the property's raw value (<i>false</i>).

Monitor Attributes

In addition to Name and monitor type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when a an alarm is triggered.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	<p>There are 2 kinds of setpoints:</p> <ul style="list-style-type: none"> for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) <p>See the topic <i>Select Setpoints (see page 64)</i> for help editing setpoints.</p>	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	<p>If set to:</p> <ul style="list-style-type: none"> false, an alarm is triggered if the value of the monitored property <u>does not</u> equal one of a specified set of setpoint values (the default setting) true, an alarm is triggered if the value of the monitored property <u>does</u> equal one of a specified set of setpoint values 	state monitors

Adding and Configuring SNMP Properties

Add and configure SNMP properties as follows:

Step	Action
1	Click the Add Property... button. The Select SNMP Property dialog opens. Note: The Select SNMP Property dialog opens only if you have MIB files loaded in the Static Properties screen.
2	In the Select SNMP Property dialog, click on a series of + signs to navigate through the branches of the tree control and display the property or properties you wish to add.
3	Click on a property to select it. A check mark appears next to the each property you select. You can use the Ctrl-Alt keys to select multiple properties.
4	After all properties are selected, click the OK button. The Select SNMP Property dialog closes, and the properties you selected are added to the bottom of the Standard Properties and Monitors list in the order in which they were selected.
5	Click on a newly added property to display its attributes in the Attributes grid.
6	In most cases you will want to accept the default attribute configuration settings for the new property. However, you may wish to edit the following property attributes: <ul style="list-style-type: none"> ● Monitoring: This default setting indicating whether the property will be monitored. ● Update Priority: The default priority (high, medium or low) for updating the property's run-time values ● Rate Property Indicates whether the property is expressed as a computed <i>per second</i> value.
7	In the File menu, click Save (see page 18) (or click the Save toolbar button). A message box opens informing you your changes have been saved. Click OK to close the dialog.

Adding and Configuring SNMP Monitors

Add and configure SNMP monitors as follows:

Step	Action
1	In the list of Standard Properties and Monitors, select the property.
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property.
6	Select the new monitor in the Standard Properties and Monitors list.

Step	Action
7	In the Attributes grid, configure the new monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	Repeat steps 1 - 7 for each new monitor you wish to add.
9	In the File menu, click Save (see page 18) (or click the Save toolbar button). A message box opens informing you your changes have been saved. Click OK to close the dialog.

Deleting SNMP Properties and Monitors

NOTE: When deleting a SNMP, Modbus, or Derived property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted a SNMP, Modbus, or Derived property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete an SNMP property or monitor:

Step	Action
1	Select a property or monitor in the Standard Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

Modbus Properties - Edit

Overview

Use this page to:

- add Modbus properties to the device type
- add monitors to Modbus properties
- edit Modbus properties
- delete Modbus properties and monitors

A Modbus property is a collection of 1 or more PLC data registers.

Modbus Properties and Monitors

The Modbus Properties and Monitors list displays the device's Modbus properties and related monitors in a tree structure. Each Modbus property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

Modbus Properties:

Click on the **Add Property...** button to open the Add Modbus Property dialog, where you can create and assign a name to a new Modbus property. When you click **OK**, the dialog closes and the new Modbus property is added to the bottom of the properties list. Click on the new property to display its attributes in the Attributes grid for editing.

To edit an existing Modbus property, just select it in the Modbus Properties and Monitors list, then edit its attributes in the Property Attributes list.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the property. When you delete a property, all of its associated monitors are also deleted.

Modbus Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

Attributes

The Attributes grid displays the attributes for the property or monitor selected in the Modbus Properties and Monitors list.

Property Attributes:

The Attributes grid displays a constant list of 11 attributes for each property. Not every attribute applies to a property, as described below:

Attribute Name:	Description:
Name	The name of the Modbus property, up to 32 characters, as created in the Add Modbus Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default setting of <i>enabled</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Data Type	The kind and amount of information the Modbus property can contain: <ul style="list-style-type: none"> ● BOOL: Boolean, 1 bit. ● INT: Integer, 16 bits ● DINT: Double Integer, 32 bits. ● UINT: Unsigned Integer, 16 bits. ● UDINT: Unsigned Double Integer, 32 bits. ● REAL: Real Number, 32 bits.
Address	The address of the first PLC data register for the Modbus property (<i>see page 55</i>).
Quantity	The number of sequential PLC data references that collectively define the Modbus property.
Link Property	This binary setting indicates whether the property relates to both the device and its communications links (<i>true</i>) or only to the device itself (<i>false</i>). If <i>true</i> , both the device and its link(s) will change colors when this property triggers an alarm.
Link Property Index	The address of the PLC data reference that contains the device's interface index values. This attribute contains a value only if the Link Property attribute is set to <i>true</i> .
Update Priority	The default priority (<i>high, medium or low</i>) for updating the property's run-time values.
Units Label	The default measure, in units/second, of the property. Applies only to computed rate properties.
Scaling Factors	The default factor for scaling the property's value into units of measure. A value of 1.0 indicates no scaling.
Rate Property	This binary setting indicates whether the property's value is expressed as a computed rate per second (<i>true</i>), or reflects the property's raw value (<i>false</i>).

Monitor Attributes:

In addition to Name and Type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when a an alarm is triggered.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	<p>There are 2 kinds of setpoints:</p> <ul style="list-style-type: none"> • for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on • for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) <p>See the topic Select Setpoints (<i>see page 64</i>) for help editing setpoints.</p>	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	<p>If set to:</p> <ul style="list-style-type: none"> • false, an alarm is triggered if the value of the monitored property <u>does not</u> equal one of a specified set of setpoint values (the default setting) • true, an alarm is triggered if the value of the monitored property <u>does</u> equal one of a specified set of setpoint values 	state monitors

Adding and Editing Modbus Properties

Add and configure Modbus properties and monitors as follows:

Step	Action
To add a new Modbus property:	
1	Click the Add Property... button. The Add Modbus Property dialog opens.
2	In the Add Modbus Property dialog, type in the name of the Modbus property, then click OK . The dialog closes, and the new property is added at the bottom of the list of Modbus Properties and Monitors. Proceed to step 3, below.
To edit an existing Modbus property:	
3	Select the property in the Modbus Properties and Monitors list.
4	In the Attributes grid, complete the new Modbus property by configuring all attributes (<i>see page 86</i>).
5	In the File menu, click Save (<i>see page 18</i>) (or click the Save toolbar button). A message box opens informing you your changes have been saved. Click OK to close the dialog.

Adding and Configuring Modbus Monitors

Add and configure Modbus property monitors as follows:

Step	Action
1	In the list of Modbus Properties and Monitors, select the property.
To add and configure a new monitor:	
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property. Proceed to step 7, below.
To edit an existing monitor:	
6	Select the new monitor in the Modbus Properties and Monitors list.
7	In the Attributes grid, configure the new monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	In the File menu, click Save (<i>see page 18</i>) (or click the Save toolbar button). A message box opens informing you your changes have been saved. Click OK to close the dialog.

Deleting Modbus Properties and Monitors

NOTE: When deleting a Modbus, SNMP, or Derived property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted a Modbus, SNMP, or Derived property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete a Modbus property or monitor:

Step	Action
1	Select a property or monitor in the Modbus Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

Derived Properties - Edit

Overview

Use this page to:

- Add properties derived from SNMP, Modbus or other derived properties.
- Add monitors to derived properties.
- Edit derived properties.
- Delete derived properties and monitors.

The initial Derived Properties (*see page 58*) screen displays the same list of derived properties and monitors, and their related attribute values, as the parent or sibling device type upon which the device type is based.

Derived Property Types

There are 3 types of derived properties. Each derived property type is defined by the function that created it, as follows:

Binary Arithmetic Function The result of an arithmetic function (add, subtract, multiply, or divide) performed upon 2 numeric inputs

Interface Load Calculation The combination of a device's input and output interface load measurements into a single composite value. For full-duplex interfaces, the derived value equals the greater of the input or output load values; for half-duplex interfaces, the derived value equals the total of the input and output load values.

State Mapping Function The relative condition of a single property, based upon pre-defined value thresholds (High-High, High, Low, Low-Low). A State Mapping derived property can be associated with a Map Key, which permits monitoring of the condition of that derived property for all devices with that derived property.

Derived Properties and Monitors List

The Derived Properties and Monitors list displays the device's derived properties and related monitors in a tree structure. Each derived property is preceded by the letter **P**. Each monitor is preceded by the letter **M** and appears as a branch beneath the property to which it relates. To display monitors for a property, click on the + sign to the left of that property. When you select a property or a monitor, its attributes are displayed in the Attributes grid.

Properties:

Click on the **Add Property...** button to open the Add Derived Property dialog, where you can assign a name to a new derived property, and define its type. When you click **OK**, the dialog closes and the new derived property is added to the bottom of the list. Click on the new property to display its attributes in the Attributes grid for editing.

To edit a derived property, just select it in the Derived Properties and Monitors list, then edit its attributes in the Property Attributes list.

You can delete both new and pre-existing properties from the list, 1 property at a time. Just select a property in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the property. When you delete a property, all of its associated monitors are also deleted.

Derived Property Monitors:

There are 3 types of monitors:

monitor type	triggers an alarm during network monitoring when...
limit	the monitored property's actual value rises above, or falls below, a pre-set value
change	the related property's value changes
state	the monitored value either does or—depending upon the configuration of the <i>Invert?</i> attribute—does not equal any one of a group of specified values

Property Attributes

The Attributes grid displays a list of attributes for the selected derived property. The attributes displayed in the list will depend upon the type of derived property selected - Binary Arithmetic Function, Interface Load Calculation, or State Mapping Function - as follows:

Binary Arithmetic Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>false</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property.
Input Property 1	The name of the first SNMP, Modbus or Derived property that is to be used as the first operand.
Input Property 2	The name of the first SNMP, Modbus or Derived property that is to be used as the second operand.
Multiplier	A numeric multiplier for linear scaling of the derived property's value.
Operation	The arithmetic function performed on the 2 inputs: Addition, Subtraction, Multiplication, Division.

Interface Load Calculation Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>false</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property.
Input LoadProperty	The name of the SNMP, Modbus or Derived property whose value is to be used as the input load of the interface.
Output LoadProperty	The name of the SNMP, Modbus or Derived property whose value is to be used as the output load of the interface.

State Mapping Function derived property attributes include:

Attribute Name:	Description:
Name	The name of the derived property, up to 32 characters, as created in the Add Derived Property dialog.
Description	A textual description of the property, up to 1024 characters.
Monitoring	The default binary setting of <i>false</i> indicates the property will be monitored and its value displayed in ConneXview's device property viewer during network monitoring.
Units Label	The unit of measure for the property.
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm or state mapped message will clear.
High High Setting	The threshold value, in measurement units, which sets the value of this property to High-High.
High Setting	The threshold value, in measurement units, which sets the value of this property to High.
Input Property	The name of the SNMP, Modbus or Derived property whose value is to be used as the input value for this state mapping property.
Low Low Setting	The threshold value, in measurement units, which sets the value of this property to Low-Low.
Low Setting	The threshold value, in measurement units, which sets the value of this property to Low.
Map Key	(Optional) The name of the map key - set in the Map Keys screen - associated with this derived property, thereby enabling color-coded network map monitoring of this property value (or state).

Monitor Attributes

In addition to Name and Type, the attributes of value monitors include:

Attribute	Description	Applies to...
Message Text	The message that appears in the current alarms list, when a an alarm is triggered.	all monitor types
Help Reference	Reference to the associated Network Assistant Help ID. For more information, see Help on the Alarm Panel. These are Schneider-defined attributes—do not edit these values.	all monitor types
Type	The direction of the limit: high or low.	limit monitors
Monitoring	The state of the monitor: enabled or disabled.	all monitor types
Severity	The importance of the triggering network event: critical, attention, or information only.	all monitor types
Setpoint(s)	<p>There are 2 kinds of setpoints:</p> <ul style="list-style-type: none"> ● for limit monitors: a single high or low value trip point, in measurement units, at which the monitored property's alarm turns on ● for state monitors: one or more specified values, in measurement units, that does—or does not—trigger an alarm for the monitored property (depending upon the <i>Invert?</i> attribute setting) <p>See the topic Select Setpoints (<i>see page 64</i>) for help editing setpoints.</p>	limit and state monitors
Deadband	The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm will clear.	limit monitors
Invert?	<p>If set to:</p> <ul style="list-style-type: none"> ● false, an alarm is triggered if the value of the monitored property does not equal one of a specified set of setpoint values (the default setting) ● true, an alarm is triggered if the value of the monitored property does equal one of a specified set of setpoint values 	state monitors

Adding and Configuring Derived Properties

Add and configure Derived properties and monitors as follows:

Step	Action
To add a new Derived property:	
1	Click the Add Property... button. The Add Derived Property dialog opens.
2	In the Add Derived Property dialog, type in the Name of the new derived property.
3	Select a type of derived property: <ul style="list-style-type: none"> ● Binary Arithmetic Function ● Interface Load Calculation ● State Mapping Function
4	Click OK . The dialog closes and the new property is added at the bottom of the list of Derived Properties and Monitors. Proceed to step 5., below.
To edit an existing Derived property:	
5	Select the derived property in the Derived Properties and Monitors list.
6	In the Attributes grid, complete the new Derived property by configuring all attributes (<i>see page 51</i>).
7	In the File menu, click Save (<i>see page 18</i>) (or click the Save toolbar button). A message box opens indicating your changes are saved. Click OK to close the message box.

Adding and Editing Derived Property Monitors

Add and configure derived property monitors as follows:

Step	Action
To add a new Derived property monitor:	
1	In the list of Derived Properties and Monitors, select the property to monitor.
2	Click Add Monitor... The Add Monitor dialog opens.
3	In the Add Monitor dialog, type in the monitor's name in the Enter Name box.
4	In the Add Monitor dialog, select a monitor type: <ul style="list-style-type: none"> ● Limit Monitor ● Change Monitor ● State Monitor
5	Click OK to close the Add Monitor dialog. A new monitor appears beneath the selected property. Proceed to step 6, below.
To edit a Derived property monitor:	
6	Select the monitor in the Derived Properties and Monitors list.
7	In the Attributes grid, edit the monitor's properties. (Refer to the explanatory list of monitor attributes, above.)
8	Do one of the following: <ul style="list-style-type: none"> ● If you are using the wizard, either click Next to move to the next screen, or click Finish to save the new device type file. ● If you are working in the device type editor, click Save (<i>see page 18</i>).

Deleting Derived Properties and Monitors

NOTE: When deleting a Derived, SNMP, or Modbus property—which has been used as the Input Property for one or more Derived Properties—you also must delete all derived properties based on that property. Failure to do so will cause ConneXview to display the message **Invalid Device Type** in the value field for every property of a device of that type, when monitoring device properties in the *Device Property Viewer*.

If you have already deleted a Derived, SNMP, or Modbus property—but did not also delete the derived properties based on the deleted property—you can repair the corrupted device type as follows:

- For predefined device types:
 - Restore the original device type by copying the device type file from the folder \ConneXview\dat to the folder \ConneXview\networks.
- For user-defined device types:
 - In ConneXview, delete any network file with an instance of the user-defined device type.
 - In the Device Type Editor, delete the edited device type.
 - In the Device Type Editor, re-create the device type, adding all of the original properties.
 - In the Device Type Editor, use the Tools menu's **Analyze Device Types** command to insure that there are no known issues with the edited device type.
 - In ConneXview, use automatic network discovery to re-draw your network map.

To delete a Derived property or monitor:

Step	Action
1	Select a property or monitor in the Derived Properties and Monitors list.
2	Click the Delete button. A message box opens asking if you want to delete the selected property or monitor.
3	Click Yes . The message box closes and the selected property or monitor is removed from the list. If you deleted a property with monitors, the monitors associated with that property are also deleted.

Property Groups - Edit

Overview

Use this page to:

- add properties to an existing property group
- remove properties from an existing property group
- delete an existing property group

A property group is a user-defined collection of dynamic properties that can be displayed in the Device Property Viewer.

Use property groups to limit the number of device properties displayed in the Device Property Viewer. When you select a property group, the Device Property Viewer displays only the dynamic properties assigned to the selected group.

NOTE: You cannot change the name of an existing property group. However, you can delete an existing property group, then create a new property group with the desired name and the same properties as the deleted group.

Available Properties

Only properties that are already associated with a device type can be added to a property group. A property is associated with a device type if that property is:

- a property that was inherited from a parent or sibling device type when the device type was created
- an SNMP property that was added to the device type in the SNMP page (*see page 45*)
- a Modbus property added to the device type in the Modbus page (*see page 50*)
- a Derived property added to the device type in the Derived page (*see page 58*)

Editing a Property Group

To add properties to—or remove properties from—an existing property group for a selected device type:

Step	Action
1	In the Device Type Editor, select File → Open . The Open dialog is displayed.
2	In the Open dialog, select a device type, then click Open . The selected device type file opens in the Device Type Editor.
3	Select Property Group from the left pane. The Property Group page opens.
4	In the <i>Property Groups</i> section, select a property group from the list. The properties associated with the selected group appear in the Properties list.

Step	Action
5	In the Add Property Group dialog, type in a Name for the new property group, then click OK . The Add Property Group dialog closes. Note: The property group name must be unique, and can consist of not more than 32 characters.
6	To add properties to the selected group:
	a In the <i>Available Properties</i> list, expand any folders, as necessary.
	b Hold down the Ctrl key and use the mouse to select every property you want to add.
	c Click Add>> . The selected properties are added to the <i>Properties</i> list.
	To remove properties from the selected group:
	d In the <i>Properties</i> list, hold down the Ctrl key and use the mouse to select every property you want to remove
e Click <<Remove . The selected properties are removed from the <i>Properties</i> list.	
7	Save (<i>see page 18</i>) your changes to the device type profile. If ConneXview is open, you are prompted to close and then re-open it to import the modified Device Type profile.

Deleting a Property Group

To delete an existing property group for a selected device type:

Step	Action
1	With the Property Groups page displayed for the selected device type, select the property group you want to delete from the Property Groups list.
2	Click Delete . The selected property group is removed from the list.
3	Save (<i>see page 18</i>) your changes to the device type profile. If ConneXview is open, you are prompted to close and then re-open it to import the modified Device Type profile.

Popup Menu Items - Edit

Overview

Use this screen to:

- add menu items to the device type's popup menu
- edit menu items
- delete menu items

Each device appearing in a network map can be configured to display a popup menu with commands that will open a web document, open a local document, or run a local program. You can open a popup menu, when monitoring a network map, by right-clicking on a device in the network map. The popup menu will contain items you added and configured in this screen, plus any popup menu items your device type inherited from the parent or sibling device type on which it is based.

NOTE: If no popup menu appears for a device in the network map, no popup menu has been configured in the Popup Menu Items screen for its device type.

List of Menu Items

The initial Popup Menu Items screen displays the same list of items configured for the parent or sibling device type upon which the device type is based. An empty list indicates the base device type was not configured to include a popup menu.

Create a new menu item and add it to the list by clicking the **Add...** button, then type in the new menu item text and indicate the kind of menu command you are creating. A menu item can open a web page, open a local document or run a local program. After you add a menu item, select it to configure its attributes in the Attributes grid.

You can delete both new and inherited items from the list, 1 item at a time. Just select an item in the list, click the **Delete** button, then confirm the deletion when asked if you really want to delete the item.

Attributes

This grid displays the attributes for the menu item currently selected in the List of Menu Items. Use this grid to edit attributes for the selected menu item. Not all attributes can be edited. After a menu item has been created, neither its *Menu item Text* nor its *Menu item Type* attributes can be changed. To change these settings you must delete the menu item and create a new menu item with the desired name and type settings.

For **Web Documents**, the following attributes can be edited:

- *Document Name*: the URL of the document.
- *Web Server Host*: the host name or IP address of the host for the web server. If blank, the IP address of the actual device will be used. An association must exist on your PC's operating system between the document type and the application that opens it.

For **Local Documents**, the following attribute can be edited:

- *Document Name*: the full path name for the local document file.

For **Local Programs**, the following attributes can be edited:

- *Program Name*: the full path name for the local executable program.
- *Program Parameter*: an optional parameter, if any, that is required to run the local program.

Adding and Configuring a Popup Menu Item

To add and configure a popup menu item:

Step	Action
1	To add an item to the device type popup menu:
	a Click the Add... button. The Add Popup Menu Items dialog opens.
	b In the Menu Item Text field, add the menu command by typing a string of alphanumeric characters. Note: After you save the popup item, this text cannot be edited. To change this text, you must delete this item and create a new one.
	c Select the Type of Menu Item: <ul style="list-style-type: none"> ● Open Web Document ● Open Local Document ● Run Local Program
c Click OK to close the Add Popup Menu Items dialog. The new menu item appears at the bottom of the List of Menu Items.	
2	To configure a new popup menu item:
	a Select the item in the List of Menu Items. Its attributes are displayed in the Attributes grid.
b In the Attributes grid, complete the editable attributes that apply to the new menu item. The item types and their editable fields are: <ul style="list-style-type: none"> ● Open Local Document: <ul style="list-style-type: none"> ● <i>Document Name</i>: Type the full path name of the local document. Be sure an association exist on your PC's operating system between the document type (file extension) and the application that opens it. ● Open Web Document: <ul style="list-style-type: none"> ● <i>Web Server Host</i>: Type in the host name or the IP address of the host for the Web Server. Leave blank to use the IP address of the specific device. ● <i>Document Name</i>: Type in the URL of the web document to open. ● Run Local Program: <ul style="list-style-type: none"> ● <i>Program Name</i>: Type the full path name of the local executable program. ● <i>Program Parameters</i>: (Optional) Type in the parameters - if any - required to run the executable program. 	
3	In the File menu, click Save (<i>see page 18</i>) (or click the Save toolbar button.) A message box opens indicating your changes have been saved. Click OK to close the message box.

Deleting Popup Menu Items

To delete a Popup Menu Item:

Step	Action
1	Select an item in the <i>List of Menu Items</i> .
2	Click the Delete button. A message box opens asking if you want to delete the selected item.
3	Click Yes . The message box closes and the selected item is removed from the list.

Device Type Files

7

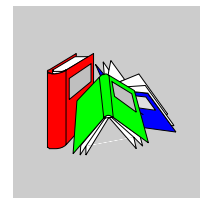
Device Type Files Included with ConneXview

The device type files included with ConneXview and the products they represent are listed below.

File Name	Product
ATV58Host.typ	Altivar ATV58 drive
CEV300Host.typ	174CEV30020 Modbus to Ethernet gateway
CloudHub.typ	Generic cloud to represent an undetectable hub
ConneXium NxS Switch RM.typ	ConneXium 499Nx17100 and 499NxS27100 managed switch redundancy manager
ConneXium NxS Switch SM.typ	ConneXium 499Nx17100 and 499NxS27100 managed switch ring coupling standby manager
ConneXium NxS Switch.typ	ConneXium 499NxS17100 and 499NxS27100 managed switch
ConneXium Switch.typ	ConneXium TCSESM managed switch in initial mode, i.e., not configured for hiper-ring or MRP protocol
ConneXium TCSESM Switch.typ	ConneXium TCSESM managed switch configured for hiper-ring but not redundancy or standby manager
ConneXium Switch SM.typ	ConneXium TCSESM managed switch ring coupling standby manager
ConneXium TCSESM Switch RM.typ	ConneXium TCSESM managed switch redundancy manager
ConneXium MRP.typ	ConneXium TCSESM managed switch with MRP protocol
ConneXium TCSESM MRP RM.typ	ConneXium TCSESM managed switch redundancy manager with MRP protocol
DefaultManagedHost.typ	Generic end device supporting SNMP
DefaultManagedMbapHost.typ	Generic end device supporting Modbus and SNMP
DefaultManagedSwitch.typ	Generic managed switch

File Name	Product
DefaultRouter.typ	Generic network router
DefaultUnmanagedHost.typ	Generic end device not supporting Modbus or SNMP
DefaultUnmanagedMbapHost.typ	Generic end device supporting Modbus but not SNMP
DefaultUnmanagedSwitch.typ	Generic Ethernet switch not supporting SNMP
ETCHost.typ	Premium EtherNet/IP module
EntV1Host.typ	Momentum I/O modules 170ENT11000 and 170ENT11002 communication adapters
EntV2Host.typ	Momentum I/O module 170ENT11001 communication adapter
Ety410xhost.typ	Premium Ethernet adapter TSXETY4102 and TSXETY4103
Ety510xhost.typ	Premium Ethernet adapter TSXETY5102/5103 managed FactoryCast module
EtyPortHost.typ	Premium ETY Port (Ethernet)
ETZHost.typ	Modicon Micro ETZ410/510 communication module
M1EHost.typ	Momentum PLC 170M1E9x0-20 and 170M1E9x0-30
M340EGD.typ	M340 Modbus Plus Proxy module
NICHost.typ	Advantys STB Ethernet/IP NIM
NIMHost.typ	Advantys STB I/O NIP2212 NIM
NOCHost.typ	Quantum EtherNet/IP module
NOEHost.typ	Quantum 140NOE77100/01 Ethernet and 140NOE77110/11 FactoryCast modules
NWMHost.typ	Quantum 140NWM100-00 FactoryCast HMI module
WMY100.typ	Premium FactoryCast HMI module
PCoproHost.typ	Unity Premium TSX574624/5634 PLC Ethernet
QCoproHost.typ	Unity Quantum 140CPU651-50/60 PLC Ethernet
TrHost.typ	<p>Generic device supporting:</p> <ul style="list-style-type: none"> ● Modbus ● SNMP ● Transparent Ready <p>and services such as:</p> <ul style="list-style-type: none"> ● Web ● Ethernet I/O scanner ● SMTP ● NTP ● Global Data

Glossary



A

acknowledge

The act of recognizing the existence of a network alarm. It implies that the person acknowledging the alarm will proceed to diagnose and resolve it.

address server

Available in Quantum and Premium communications modules to assign IP address parameters to clients using BootP. Additionally, Quantum NOE 771-01/11 and Premium ETY 4103/5103 modules support Faulty Device Replacement.

alarm

An indicator of a network problem. An alarm is triggered when the value of a monitored device property—with its *Severity* attribute set to either **Critical** or **Attention**:

- exceeds a value for a limit monitor, or
- changes more than a pre-set limit for a change monitor, or
- changes to or from one of a group of pre-set values for a state monitor

arithmetic property

A derived dynamic property that takes its value from an arithmetic function (add, subtract, multiply or divide) performed against the values of two other dynamic properties.

ARP

Address Resolution Protocol. The Ethernet protocol used to map an IP address to a MAC address.

attribute

One of a collection of field values that together define a property or property monitor.

B

bandwidth

The data-carrying capacity of a network connection. ConneXview monitors bandwidth utilization—the percentage of bandwidth that is being used.

bend

The point of a curve in a communications link, created in edit mode either by selecting a form of orthogonal layout, or by manually selecting and stretching a communications link.

broadcast

A message that is sent out to all devices on the network.

C

change monitor

A pre-configured alarm trigger, based on any change in the value of a monitored property.

client/server mode

A method of installing and operating ConneXview as a distributed software application, consisting of 2 (or more) separate components including: 1 server component that performs functions and provides information via an NT service, and 1 or more client components—one of which must be installed on the server PC—that act as remote GUIs and subscribe to the ConneXview server's NT service.

color map key

A color map key points to a state mapping property and relates the value of that property to a color scheme. Selecting a color map key in monitor mode causes the Network Map Viewer to display each device and communications link in a color reflecting the value of the mapped property.

community name

The alpha-numeric character string name used as a security protection mechanism to permit Read/Write access to a group of devices. ConneXview requires only the Read community string. Most vendors give the Read community string a default value of *Public*, but you may alter that string on the device for security.

CRC

(cyclical redundancy check) A way of checking for errors in a message by doing mathematical calculations on the number of bits in the message, the results of which are sent along with the data to the recipient. The recipient repeats the calculation on the received data. If there are any discrepancies in the two calculations, the recipient requests a retransmission from the originator.

D**data link layer**

Layer 2 of the seven-layer OSI reference model for communication between computers on networks. This layer defines protocols for data packets and how they are transmitted to and from each network device. It is a medium-independent, link-level communications facility on top of the physical layer, and is divided into two sub-layers—medium-access control (MAC) and logical-link control (LLC).

datagram

A discrete package of data - sometimes called a packet - that contains data and a header with address information to route it from a source device to a destination device over a network.

deadband

The amount, in measurement units, below (for high settings) or above (for low settings) the threshold value that the monitored property must reach before the alarm or state-mapped message will clear.

default gateway address

1. The gateway in a network that a computer uses to access another network if a gateway is not specified for use.
2. In a network using subnets, the router that forwards traffic to a destination outside of the subnet of the transmitting device.

derived property

A dynamic property that takes its value from a function or calculation performed against one or more SNMP, Modbus or other derived properties.

device

The hardware located at a network node. An instance of a device type.

device type

A category of device, created and editable in the Device Type Editor.

discovery range

The devices to be discovered are defined by a range of IP addresses. The range is determined by the subnet address and the subnet mask value which defines a list of all candidate addresses within the subnet. You can manually restrict the range by adjusting the start address and/or the end address in either the **Edit Subnet** or **Add Subnet** dialog box.

dynamic property

A device or communications link property whose value is not a constant, but instead can dynamically change during operation.

E

edit mode

The state of ConneXview with a network map open and displayed for editing.

Ethernet

A family of local area network protocols covered by IEEE 802.3.

F

FDR

faulty device replacement A process to easily replace a device should it fail and restore the configured parameters of the previous device.

firewall

A router or workstation with multiple network interfaces that controls and limits specific protocols, types of traffic within each protocol, types of services and the direction of information flow.

FTP

(file transfer protocol) The communications protocol that allows file transfer between devices.

G**gateway**

1. Typically refers to a router. A router is a device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its Internet service provider's network. Routers are located at gateways, the places where two or more networks connect. Routers use headers and forwarding tables to determine the best path for forwarding the packets, and they use protocols such as ICMP to communicate with each other and configure the best route between any two hosts.

2. A combination of hardware and software that interconnects otherwise incompatible networks or networking devices. Gateways include packet assembler/disassembler (pads) and protocol converters. Gateways operate at layers 5, 6 and 7—the session, presentation and application layers, respectively—of the OSI model.

Global Data Service

Global Data Service (GDS) uses *real time publish/subscribe* for a device to publish a variable register table. Other devices within the same subnet then subscribe to the variable table. Global Data uses UDP Multicast to distribute the variable simultaneously to multiple packets with a single UDP packet. Reference the Quantum NOE 771-01/11 or Premium ETY 4103/5103 for additional details on the Global Data Service.

H**header**

The control information added to the beginning of a transmitted message. It contains essential information such as the packet or block address, source, destination, message number, length and routing instructions.

host

An end node attached to a network, for example, a PC, PLC, I/O device or other such device. A host device does not include, and is contrasted with a router or switch.

HTTP

(Hyper Text Transfer Protocol) The communications protocol that allows web browsing.

I

ICMP

internet control message protocol. The internet protocol that reports errors and provides information related to datagram processing.

IO Scanning Service

An automatic client available on Quantum, Premium and Momentum platforms. IO Scanning allows entry of holding register Reads, Writes and Read/Writes to remote devices at an interval configurable in milliseconds. Setup of IO Scanning is performed in your programming application using a table instead of programming logic functions.

IP

internet protocol. That part of the TCP/IP protocol family that tracks the internet addresses of devices, routes outgoing messages, and recognizes incoming messages.

IP address

A unique 32-bit address assigned to TCP/IP devices on the internet, written as four octets - represented as decimals - separated by periods. An IP address includes a network number, an optional sub-network number, and a device number. The network and sub-network numbers enable the routing of messages; the device number serves as the specific address on a network or sub-network. A subnet mask is a filter that separates the network number from the sub-network number.

J

jabber

Network error caused by an interface card placing corrupted data on the network. Also, an error condition caused by an Ethernet node transmitting longer packets than allowed.

L

limit monitor

A preconfigured alarm trigger that is actuated when a monitored property's value reaches or exceeds the setpoint value.

link

communications link. A network connection between two devices.

load property

A derived dynamic property that is based upon two interface-related properties - an input measure and an output measure - and expresses their combined value in terms of units/time.

LTM E

The expansion module of the TeSys T motor management system.

LTM R

The controller module of the TeSys T motor management system.

M

MAC address

media access control address. A 48-bit number unique on a network that is programmed into each network card or device when it is manufactured.

mapping property

state mapping property. A derived dynamic property that can be linked to a color map key. A state mapping property contains four user-defined value threshold triggers (High-High, High, Low, Low-Low). A color map key points to a state mapping property and relates each threshold trigger to a color.

MBAP

modbus application protocol. The TCP/IP based standard protocol used to manage master-slave/client-server communications between intelligent devices on an Ethernet network.

MIB

management information base. A uniformly accepted hierarchical data structure containing objects - sometimes referred to as device properties - that a device in an SNMP network can read and, in some cases, write. The hierarchical data structure contains both public (or standard) branches, and private (or proprietary) branches.

Modbus

An application layer messaging protocol. Modbus provides client and server communications between devices connected on different types of buses or networks. Modbus offers many services specified by function codes.

monitor mode

The state of ConneXview with a network map open and displayed for real-time network monitoring.

N

network map

A diagrammatic representation of a network, in either edit or monitor mode.

node

An endpoint of a network section (for example, one leading to a host PC) or an intersecting point of two or more network paths (for example, the location of a hub, switch or router).

NTP

network time protocol A communication protocol used to exchange and synchronize time over a network.

NWM

network map A file extension for a network map file, which contains information about all the devices on a network, their interconnections and settings.

O**OID**

object identifier. A dotted decimal numerical sequence that uniquely relates to, and describes, an object in a MIB. Each numerical segment in the sequence describes a unique location in the MIB hierarchy, with each successive numerical segment indicating a sub-branch from higher-level segments.

P**packet**

A series of bits containing data and control information, formatted for transmission from one node to another. It includes a header with a start frame, the source and destination addresses, control data, the message itself, and a trailer with error control data (called the *frame check sequence*).

packet sniffer

A software that intercepts and analyzes traffic on an Ethernet network. It can be used to monitor network usage, detect network intrusion, and gather and report network statistics.

physical layer

Layer 1 (the bottom layer) of the OSI reference model is implemented by the physical channel. It governs hardware connections and byte-stream encoding for transmission. It is the only layer that involves a physical transfer of information between network nodes. The physical layer insulates layer 2 (the data link layer) from medium-dependent physical characteristics such as baseband, broadband or fiber optic transmission. Layer 1 defines the protocols that govern transmission media and signals.

ping

packet internet groper. The combination of an ICMP echo request message and its reply, used in IP networks to determine if a network device can be reached and the time to reach it.

polling

Discovery method where a device performing network management requests, of other known intelligent network devices, if the latter have data to transmit. Receipt of this message by a network device authorizes it to send a transmission in response.

publish

To make information available and distribute it. The Quantum NOE 771-01/11 and ETY 4103/5103 with the Global Data Service enabled can publish a single multicast network variable containing up to 512 registers to a group of Global Data subscribers, configurable on intervals of CPU Scan.

R

router

A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its Internet service provider's network. Routers are located at gateways, the places where two or more networks connect. Routers use headers and forwarding tables to determine the best path for forwarding the packets, and they use protocols such as ICMP to communicate with each other and configure the best route between any two hosts.

S

scan

A non-intrusive method of identifying active network devices and their open ports.

SMTP

simple mail transfer protocol The most common communication protocol for sending and receiving email across a network.

SNMP

simple network management protocol. The UDP/IP standard protocol used to manage devices - including hosts (i.e. client or server PCs), routers, switches and hubs - on an IP network. ConneXview supports SNMP v1.

stand-alone mode

A method of installing and operating ConneXview as an integrated software application on a single PC.

standard property

An SNMP or Modbus property whose value changes dynamically during the course of operations.

startup mode

The state of ConneXview with no network map open.

state monitor

A preconfigured alarm trigger that is actuated when a monitored property's value either equals, or does not equal, a member of a set of specified setpoint values.

static property

A device or communications link property whose value is set when the device or communications link is created, and does not dynamically change during operation.

subnet

subnetwork. A collection of devices sharing the same network address. Typically a segment of a larger network.

subnet mask

A filter applied to an IP Address to distinguish the network address from the host - or device - address.

subscribe

The act of declaring interest in available information by a device. A device can subscribe to up to 2,048 4x registers total from up to 64 Global Data publishers. Note that a subscriber has to subscribe to the entire published network variable, even if only a portion of the register data is required.

T

TCP/IP

(transmission control protocol/Internet protocol) A set of protocols developed by the U.S. Defense Department's Advanced Research Projects Agency (ARPA) during the early 1970s. Its intent was to develop ways to connect different kinds of networks and computers. TCP/IP does not have the functionality that OSI provides.

TCP/IP is a transport and Internet working protocol—i.e., the de-facto networking standard. It is commonly used over X.25 and Ethernet wiring and is viewed as one of the few protocols available that is able to offer a true migration path towards OSI. TCP/IP is able to operate in most environments. TCP/IP operates at Layers Three and Four of the OSI model (Network and Transport respectively).

TCP and IP are the standard network protocols in UNIX environments. They are almost always implemented and used together.

TeSys T

TeSys T is an advanced motor management and protection system. It is able to guard against all motor malfunctions: overload, current peak, excessive consumption, etc.

TsSys T comprises:

- the LTM R
a controller providing main protection and control functions
- the LTM E
an extension module that completes the functions of the controller by the voltage protection and monitoring
- an operator control unit for reading, diagnostics and modification of the parameters monitored

TFTP

(trivial file transfer protocol) A very simple form of the File Transfer Protocol, implemented on top of UDP and which provides no security features.

U

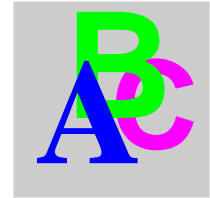
UDP

user datagram protocol. A connectionless mode protocol in which messages are delivered in a datagram to a destination device. The UDP protocol is typically bundled with the Internet Protocol (UDP/IP).

X**XWAY**

Premium addressing in {Network, Station} format for using Modbus or UNI-TE protocol messaging.

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