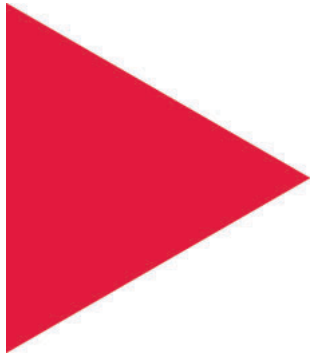




# enteliWEB v4.5

Operator Guide  
Edition 1.0



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## Introduction

The enteliWEB Operator Guide covers site maintenance functions related to typical daily facility operations using enteliWEB version 4.5. These functions include monitoring values, changing setpoints, setting schedules and calendars, handling alarms, trending, and printing.

The enteliWEB Operator Guide does not cover administrative functions.

The material in this document is taken from the enteliWEB help pages.

## Audience

This Operator Guide is meant for a facility operator who is responsible for the day-to-day operation of the site or sites that are managed by enteliWEB.

For the purpose of this document, it is assumed that the operator is a member of an enteliWEB user group with the following permissions:

- User Interface permissions for Dashboards, Navigation, Graphics, Alarms and Reports
- No Manage permissions.
- No Show Configuration Properties on Object Pages permission
- Allow permission for all devices on the site
- Read permission for all objects, except Create permission for Multitrend and Trend Log objects, and Write permission for schedule objects,

## What this document contains

[Chapter 1 – Getting Started](#) provides important information to get you started. Review the section about Changing your personal user settings and set up your account accordingly.

[Chapter 2 – Site and Device Navigation](#) covers site navigation and the site's device list. This chapter describes tasks associated with the device list and devices.

[Chapter 3 - Object List](#) covers the object list page, which allows you to manage a device's database. This chapter describes tasks associated with the object list and with commanding objects.

[Chapter 4 - Objects](#) provides information that is common to most BACnet object pages and covers common tasks associated with objects.

[Chapter 5 – Dashboards](#) describes the enteliWEB dashboards and covers the tasks associated with the personal dashboard.

[Chapter 6 – Calendars and Schedules](#) covers the Schedule object, both rev 3 and rev 4 versions, and the Calendar object. This chapter includes descriptions of the capabilities of the object and provides all the tasks you need to maintain schedules.

[Chapter 7 - Trend Logs](#) covers the Trend Log object and the Multitrend object. This chapter includes descriptions of the capabilities of the objects and provides all the tasks you need to create, maintain, visualize and print trend logs via the object pages.

[Chapter 8 – Alarms and Events Overview](#) introduces the Delta Controls Event Management System. Topics include alarm and event management, the alarm list page, the notification history window and how user group permissions affect alarm management

[Chapter 9 – Active Alarm List Details and Tasks](#) covers the alarm list page in detail by describing its components and its filtering capabilities. This chapter describes the wide range of tasks that are available to manage alarms and events.

[Chapter 10 – Totalizers](#) covers the analog and binary totalizer objects.

[Chapter 11 - Control Loops](#) covers the Loop object and describes how to monitor the performance of the loop.

[Chapter 12 – Optimum Start](#) covers the Optimum Start object and describes how to monitor the optimum start object's operational history.

[Chapter 13 – Reports](#) covers the tasks associated with printing the enteliWEB basic building automation reports: active alarms, BAS and print trend log, Multitrend charts and screen-printing.

[Chapter 14 – Energy Management Reports](#) covers the reporting aspects of Energy Management include a description of each report and the tasks associated with creating and managing the reports.

[Chapter 15 – Building Automation System Reports](#) covers some of the reports of building automation include a description of each report and the tasks associated with creating and managing the reports.

[Chapter 16 – Building Automation System Reports](#) covers the reports for access control activity include a description of each report and the tasks associated with creating and managing the reports.

## Chapter 1 – Getting Started

This chapter provides important information to get you started. Review the section about [Changing your personal user settings](#) and set up your account accordingly.

### Welcome

Welcome to enteliWEB - the complete control system software for BACnet-based facility automation systems.

enteliWEB combines the power of enterprise dashboards with easy-to-use facility management tools. Customizable energy management dashboards and powerful energy reports give managers the tools they need to reduce consumption and lower costs.

Visualizing both energy management and facility management on a single dashboard makes it easy to close the loop between monitoring and control.

### Support

This operator guide is intended to be an intuitive and comprehensive document about using enteliWEB as an operator. However, given the flexibility of enteliWEB and the many different ways in which our partners use it, we recognize you may have additional questions that are not covered.

Contact Delta Technical Services for assistance with any technical questions about Delta Controls products, at [technicalsupport@deltacontrols.com](mailto:technicalsupport@deltacontrols.com). Your email address must be registered in Delta's Case Management System or your question will not be received. Contact [tsadmin@deltacontrols.com](mailto:tsadmin@deltacontrols.com) to verify that your email address is registered.

### Version

This document is current for enteliWEB version 4.5

For complete information about this version of enteliWEB, see the release notes document that is available on the [enteliWEB product page](#) of George.

## Searching for Information in enteliWEB

Several pages in enteliWEB include a search function that allows you to narrow down the information displayed on the page based on a matching text fragment. Each search function is adapted to suit the type of information displayed on the page.

Follow the links below to learn about the available search functions.

[Search Alarm List](#)

[Search Devices on a Site Network](#)

[Search Navigation Tree for One or More Sites](#)

[Search Objects in One or More Devices](#)

## Searching the Graphics Tree View

The Graphics section in the left navigation pane includes a Search field that accepts a text fragment for the name of a graphic or graphic folder you want to find.

1. In the Search field at the top of the Graphics tree view, enter one or more characters and press Enter.  
The tree view lists only the graphics and graphic folders where the characters you entered occur anywhere in their name. When no graphic or graphic folder name matches the search text, the tree view is empty.
2. To restore the complete tree view, delete all the characters from the Search field and press Enter.

## Changing your personal user settings

The Settings page allows you to view and change your personal enteliWEB user information settings.

Click your username on the enteliWEB banner to open the Settings page.

### Username

Username displays the name that enteliWEB uses to identify you. Contact the administrator if you want to change your username.

### Old Password, New Password, Confirm Password

Old Password, New Password, and Confirm Password fields allow you to change your password.

When you open the Settings page, these fields are blank.



## Changing Your Password

1. Enter your current password in the Old Password field.
2. Enter the password you want in the New Password field. This password must comply with the password strength rules that are set by the enteliWEB administrator.
3. Enter the password you want in the Confirm Password field. The password you enter in the New Password field and in the Confirm Password field must be identical.
4. Click Save.

## Email Address

Email Address displays the email address that enteliWEB uses to send information such as alarm notifications to you.

Email Address is optional; the field can be blank.

To add or change your email address, enter the email address you want to use and click Save.

### *Supported email address formats*

Alarm notification email messages from enteliWEB encode the information in two formats: HTML and plain text. HTML format is suitable for recipients who receive the messages with an email client such as Microsoft Outlook. Plain text format is suitable for recipients who receive the messages as a text message on a mobile device.

### *To receive HTML formatted messages*

Specify the recipient by the email address that he or she uses to receive messages with an email client. For example, frankie@work.com.

### *To receive plain text formatted messages*

To receive an email as a text message, the carrier must provide Short Message Service (SMS) transit via a SMS gateway. For a list of email-to-SMS gateways, see your administrator.

Specify the recipient by a 10-digit phone number and the SMS gateway. The phone number must contain no punctuation. For example, for a phone number such as 987-555-0188 in the United States, enter the email address as 9875550188@SMS-gateway.

## Start Page

Start Page indicates the enteliWEB page that is displayed when you log in. Select your start page from the list. If you do not see the page you want on the list, then that is because the access permissions of the group you are a member of prevent it from being listed.

## Open in Fullscreen

Select Open in Fullscreen when you want the start page to occupy the entire screen.

### Language

Language allows you to select the language you want enteliWEB to use when you log in.

Select the language from the list and click Save.

### Group Third Party Devices in Network View

Select the Group Third Party Devices in Network View checkbox when you want devices from manufacturers other than Delta Controls to be separated in the Navigation tree into a folder labelled Third Party. When there are no third party devices on the network, the Third Party folder is not shown.

When Group Third Party Devices in Network View is not selected then third party devices and Delta devices are listed together in the Navigation tree.

## Chapter 2 – Site and Device Navigation

This chapter covers site navigation and the site's device list. This chapter describes tasks associated with the device list and devices.










### Site Navigation View

The Site Navigation view allows you to understand and monitor the operational status of devices on a site's BACnet network.

Site navigation consists of two components: a hierarchical network tree view in the left pane navigation section and the right pane list of devices, in a tabular format.

### Device Icons

Site navigation uses icons in the tree view and in the device list to identify various types of devices that are on the site's BACnet network. For example, the following are some of the icons that you may see displayed:

Device Icon	Description
	site
	devices manufactured by Delta Controls are represented by unique icons
	device from a manufacturer other than Delta Controls, also referred to as a third party device
	device is not configured correctly for its network number, that is, its network number conflicts with that of other devices on the network
	device is online but it is not operating properly. One or more objects are in fault.
	device is not available or could not be found, device is offline, enteliWEB cannot communicate with the device.
	enteliWEB server
	ORCAview OWS or Historian server
	CopperCube

### Tree View

The tree view pane lists all the sites known to enteliWEB. When you expand a site, tree view shows the devices on the site network, ordered by device address. Hierarchical relationships among devices, shown as parent-child relationships in the tree, are organized according to Delta's DNA (Derived Network Addressing) scheme. DNA is a method developed by Delta Controls for organizing and configuring devices on a network segment.

Servers and workstations are separated into the folder labelled Workstation. Servers that are offline when the tree is constructed are hidden. When a server that was online when the tree is constructed but then goes offline is indicated by **X**.

Devices from manufacturers other than Delta Controls, also referred to as third party devices, are separated into the folder labelled Third Party. When there are no third party devices on the network, the Third Party folder is not shown.

A search filter allows you to narrow down the number of devices in the tree view to show only the devices you are interested in.

LINKnet devices are not shown.

### Device List

The device list displays devices on the network in a tabular view. The organization of the device list can be tailored to meet your needs by rearranging the column positions and hiding columns you do not want to see.

A search filter allows you to narrow down the number of devices in the list to show only the devices you are interested in.

At the bottom of the page, the number of devices in the list is displayed.

When you select one or more of the devices in the device list, the [object list page](#) opens.

#### Name

Displays the name of the device. The device name is obtained from the Object\_Name property of the device's DEV object.

#### Device

Displays the device number. The device number is obtained from the Object\_Identifier property of the device's DEV object.

#### Model Name

Displays the model of the device hardware. The model name is obtained from the Model\_Name property of the device's DEV object.

## Version

Displays the software version that the device is compatible with. The software version is obtained from the `Application_Software_Version` property of the device's DEV object.

enteliWEB does not support Delta Controls devices with software version 3.30 and earlier.

## Firmware Version

Displays the firmware version that resides in the device. The firmware version is obtained from the `Firmware_Revision` property of the device's DEV object.

## Vendor

Displays the vendor identifier number that is obtained from the `Vendor_Identifier` property of the device's DEV object. The vendor identifier is a unique vendor identification code, assigned by ASHRAE to the manufacturer of the BACnet device.

## Status

Displays the device status in text. This column displays OK when the device is operating properly and none of its objects is in fault. The device status is obtained from the `System_Status` property of the device's DEV object.

## Action

The Action menu provides task commands, such as sending a network time-synchronization message and finding new devices, for managing the site, as follows:

### *Find Device*

When you use the action to find a device, enteliWEB prompts you for the device number of the device you want to find and then it looks for it. If the device responds, then enteliWEB updates its list of known devices. The device number is in the range from 0 to 4194304.



The Find Device action is disabled when you are not a member of a group that has permission to use it.

### *Find New Devices*

When you use the action to find new devices, enteliWEB looks for any new devices that may exist in the device number ranges between the known devices.

The server broadcasts BACnet Whols requests looking for the new devices. Any devices that exist in the requested Whols ranges respond with BACnet IAm messages and enteliWEB updates its list of known devices.



The Find New Devices action is disabled when you are not a member of a group that has permission to use it.

### *Set Time*

When you use the action to set devices time, enteliWEB sends the time synchronization message to all devices on the network.

The time synchronization message is sent in the following two formats:

- Local time, that is the current date and time as determined from the clock in the enteliWEB server, using the BACnet TimeSynchronization service.
- Universal Time Coordinated (UTC) time, using the BACnet UTCTimeSynchronization service.



The Set Time action is disabled when you are not a member of a group that has permission to use it.

### *Remove Offline Devices*

A device marked with **X** is offline; enteliWEB cannot communicate with the device.

The Remove Offline Devices action deletes offline devices, for the site you are viewing, from the BACnet Server's database that, in turn, causes the devices to be removed from the left pane tree view of the site and the device list.

When a device returns online, the BACnet Server's discovery process will restore the device to the device list.

## Tasks -Navigation Tree View, Device List View

### Searching the Navigation Tree view

1. Select the Network tab in the left pane Navigation section.
2. In the Search field at the top of the Navigation tree view, enter one or more characters and press Enter. The tree view displays only the sites where the characters you entered occur anywhere in any of the device names for that site. When no device in any site matches the search, the tree view is empty.
3. In the Navigation tree view, open the site in the tree to view the devices that match the search.
4. To restore the complete tree view, delete all the characters from the Search field and press Enter.

### Searching the Device List

1. Select a site in the Navigation tree view. The list of devices for that site is displayed in the Device List view.
2. In the Search field at the top of the Device List view, enter one or more characters and press Enter. The site list displays only the devices where the characters you entered occur anywhere in any of the device information fields.
3. To restore the complete list, delete all the characters from the Search field and press Enter.

### Sorting Device Information

You can sort the Site Navigation view of devices in many ways to let you view the information to suit your purpose. To sort, click the column heading that you want to sort by.

### Arranging Columns

To change the column arrangement by moving a column to a different position, click the column heading you want to move and drag it horizontally to the new position.

### Hiding and Showing Columns

1. Hover your mouse over any column heading to display the dropdown menu indicator.



2. Click the menu indicator to display the selection menu.
3. Hover your mouse over Columns from the menu to display the list of columns.
4. To show a column, select it by the adjacent checkbox. To hide a column, clear the adjacent checkbox.

As you select or clear a checkbox in the list, Site Navigation view is updated immediately to show or hide the column.

### Viewing Device Details for 1 Device

Click the device name. The Objects List view for that device opens.

### Viewing Device Details for Multiple Devices

Select multiple devices by holding down the CTRL key and clicking the device names in the network tree view in the left pane Navigation section. The Objects List view opens and lists the devices for all the selected devices.

Tip: In the Objects List view, make the [Device column or the Device Name column visible](#) so that you can distinguish among objects with the same name on different devices.

## Tasks - Performing Actions on Devices

### Finding New Devices

1. Click Action. The action list opens.
2. Select Find New Devices from the list.  
See [Feedback on Result of Action](#) to understand how the result of the action is displayed.
3. The left pane tree view of the site and the device list updates to display new devices that were found.

### Finding a Device

1. Click Action. The action list opens.
2. Select Find Device from the list. The Find Device dialog opens.
3. Enter the device number of the device you want to find.
4. Click Find.  
See [Feedback on Result of Action](#) to understand how the result of the action is displayed.
5. If the device is found then the left pane tree view of the site and the device list updates to display new device.



## Reinitializing or Reload Descriptors

Reinitializing descriptors is a site management task.

### *Device Discovery and Descriptors*

When the BACnet Server discovers a new device on the network, it performs following three operations:

1. The BACnet Server confirms the device. It reads definition settings from the device such as the model name, the vendor, the version information, the BACnet services supported, the object types supported and so on.  
The BACnet Server uses the device information to identify the device uniquely and to determine what the device is capable of doing. The device information is stored in the device table.
2. The BACnet Server loads the descriptors from the device. Once the BACnet Server has identified a device, it then needs to know what BACnet objects are in that device. The BACnet Server queries the list of object identifiers in the device and then reads the object name and optionally the HAL flag for every object.  
For the BACnet Server, a descriptor is essentially just an object name. For Version 3 systems and ORCAview, a descriptor was the collection of data that was associated with an object: the object name plus other object info that may have been cached.  
The object information is stored in the descriptor table.
3. The BACnet Server loads the alarm list from the device by querying the list of active alarms in the device.  
The alarm information is stored in the active alarm list tables.


Together, the device table (devices), the descriptor table (objects), and the active alarm list tables (alarms) act as local data caches. By using these caches, the BACnet Server provides much better performance than if it had to request the information directly from devices each time it was needed.

Because devices are not added or removed from the network frequently, and because objects are not created or deleted often, these tables allow enteliWEB to display the network tree view, device list and object list as soon as a user logs in.


### Feedback on Result of Action

The result of an action is indicated by a banner at the top of the page. The banner indicates that the action was initiated successfully. It does not indicate that the action was successful.

#### *OK Result*

When the BACnet Server has sent the request over the network successfully, then the confirmation banner  is displayed at the top of the page.

#### *Error Result*

When the BACnet Server was not able to send the request over the network, then the error banner  is displayed at the top of the page.

## Chapter 3 – Object List

This chapter covers the object list page that allows you to manage a device's database. This chapter describes tasks associated with the object list and with commanding objects.


### Object List

The Object List page provides a tabular list of the objects in 1 or multiple device databases. Important information about each object is displayed in columns.

The Object List page allows you to perform commands on one or multiple objects.

The information displayed in the object list can be organized to allow you to tailor how you view that information, as follows:

- by filtering or searching to reduce the amount of information displayed
- by sorting the order in which the information is displayed
- by grouping similar objects
- by arranging the columns of information differently
- by minimizing the width of individual columns to hide information
- by hiding or showing columns to display only the information you need.
- by adding columns to display additional object property information

enteliWEB lists the objects in the device that meet the search filter. The total number of objects listed on the Object List page is displayed in the lower left corner of the page. When there are more than several hundred objects to list, enteliWEB lists the objects in pages and provides the  button to allow you to add the next page of objects to the list.

The number of selected objects is displayed in the lower left corner of the page.

### Descriptors

enteliWEB maintains an information model of a site that it constantly keeps up to date as it discovers changes on the network.

The model includes information about the devices on the network and about their object databases. Collectively, the information is referred to as descriptors.

enteliWEB uses the site model information to construct the left pane tree view of the network in the Navigation pane and to maintain the list of objects and their status on the Objects List page.

When enteliWEB connects to a site for the first time it immediately begins to discover the site and to load descriptor information from the network. For a network with a large number of devices, the discovery process can take several minutes.

A user who is a member of a group with the proper permission can use an action to cause enteliWEB to reload or reinitialize the all the descriptors for the entire site or just the descriptors for one device.

### Card User Tab for Delta Access Control Application

To support the access control application, the Object List view of objects can be configured to display the CU (Card User) objects in a separate tab from the other objects.

The Card User tab is applicable only for controllers such as the ASM and eBCON that can act as an access control manager.

To display the Card User tab in Object List view, select Access in the DEV object's Applications setting.

The Card User tab is displayed when CU objects exist on the controller, whether or not the DEV object's Applications setting is selected.

### Object List Information

The object page displays information about the objects in the device database in tabular form.

You can add and remove, hide and show columns to suit your needs.

#### Select


The Select column allows you to select the object or objects you want to command.

#### Alarm Status

 icon is displayed when the object is in alarm

No icon is displayed when the object is not in alarm

#### Auto/Manual Status

 icon is displayed when the object is in Manual mode

No icon is displayed when the object is in Auto mode

#### Commissioned

 icon is displayed when the object is not commissioned

No icon is displayed when the object is commissioned

#### Description (hidden by default)

The Description column displays the object description property.

#### Device (hidden by default)

The Device column displays the device number of the controller that the object resides on.

## Device Name (hidden by default)

The Device Name column displays the device name of the controller that the object resides on.

## Name

The Name column displays the name of the object. The object name is obtained from the Name property of the object.

## Object

The Object column displays the object reference in the form: object abbreviation, object instance number. The interpretation of the information in the object instance number depends on the type of controller on which the point resides.

## I/O Object Instance Number on DSC/DAC Controllers

The instance number for an AI, AO, BI, BO and MI object that resides on a DSC/DAC controller reflects either the physical I/O point on the DSC/DAC controller or the LINKnet address and physical I/O point on a device that is connected to the DSC/DAC controller via LINKnet.

Format for a point on a DSC/DAC controller

yy

where: yy = I/O point terminal on the DSC/DAC in the range 01 to nn. Range depends on number of points on the controller.

The leading zero is removed to complete the format.

For example, AI3 represents analog input point 3 on the DSC/DAC controller.

*Format for a point on a LINKnet device that is connected to a DSC/DAC controller*

dd \* 100 + yy

where:

dd = LINKnet device number in the range 01 to 12.

yy = I/O point terminal on the LINKnet device in the range 01 to nn. Range depends on number of points on the device.

The leading zero is removed to complete the format.

For example, AI203 represents analog input point 3 on a device that is connected via LINKnet with LINKnet address of 02.

*Format for a point on an EnOcean device that is connected to a DSC/DAC controller*

For this information, see the CON-ENOC Application Guide on the EnOcean Wireless Solution product page on George.

### *Format for a point on a M-Bus device that is connected to a DSC/DAC controller*

For this information, see the CON-MBUS Application Guide on the CON-MBUS product page on George.

### **I/O Object Instance Number on enteliBUS Controllers**

The instance number for an AI, AO, BI, BO and MI object that resides on an enteliBUS controller is derived by encoding either the physical location of the eBM module and I/O point on the enteliBUS controller or by the LINKnet address and point on a device that is connected to the enteliBUS controller via LINKnet.

### *Format for a point on an enteliBUS eBM module*

ppddmmyy

where:

pp = port number = 00

dd = enteliBUS backplane number in the range 01 to 09. Backplane number 01 has the automation engine mounted on it. This is not the eBX address.

m = eBM module position on the backplane in the range 1 to 8.

yy = I/O point terminal on the eBM in the range 01 to nn. Range depends on number of points on the eBM.

The leading zeros are removed to complete the format.

For example, AI1403 represents analog input point 3 on eBM 4 on the first backplane of an enteliBUS controller.

### *Format for a point on an enteliBUS automation engine*

Some enteliBUS automation engines include internal I/O points. Think of them as points where the backplane number is zero and the eBM module position is zero. Therefore, their object instance number is just the point number, for example A086.

Format for a point on a LINKnet device that is connected to an enteliBUS controller

ppddmmyy

where:

pp = port number = 02

dd = LINKnet device number in the range 01 to 12

m = always 0

yy = I/O point terminal on the LINKnet device in the range 01 to nn. Range depends on number of points on the device.

The leading zero is removed to complete the format.

For example, AI202003 represents analog input point 3 on a device that is connected via LINKnet with LINKnet address of 02.

*Format for a point on an EnOcean device that is connected to an enteliBUS controller*

For this information, see the CON-ENOC Application Guide on the EnOcean Wireless Solution product page on George.

*Format for a point on a M-Bus device that is connected to an enteliBUS controller*

For this information, see the CON-MBUS Application Guide on the CON-MBUS product page on George.

### Object Icon



The Object Icon column displays the object icon. The object icon is unique for each object type.

### Site (hidden by default)

The Site column displays the name of the site on which the controller resides.

### Status

The Status column displays an icon that represents the fault or overridden status of the object, as follows.

- When the fault flag in the Status\_Flags property is true then  for Fault is displayed.
- When the overridden flag in the Flags property is true, such as when a physical output's HOA/HAO switch is in Hand or Off position, then  for Overridden is displayed

Otherwise, Status is blank; no text or icon is displayed.

### Value

The Value column displays the object value and unit of measure

## Tasks – Object List




These tasks assume you are viewing the Object List page for a selected device.

### Filtering and Searching

The Search field allows you to enter terms for a simple filter to narrow down the list of objects. When you search, the list of objects includes only those objects, based on object instance and object name, that match the terms in the Search field.

enteliWEB remembers your most recent search in your browser's cache memory and displays matching searches as you enter a new search term.

The  advanced filter allows you to specify the object types, object instances, object properties and comparison operators to narrow down the list of objects.

#### *Rules for Simple Filter*

The following table describes the features of the Search field and provides examples.


Search Field Feature	Example
Operations are case-insensitive	AI, ai, Ai and al all mean the same thing. AHU1, ahu1, Ahu1 all mean the same thing.
A term is treated as an object name or partial object name unless it is one of the following: <ul style="list-style-type: none"> <li>an object type abbreviation</li> <li>a logical operator: and, not, or</li> <li>IP or INPUT</li> <li>OP or OUTPUT</li> </ul>	Example: AHU results in a list of all objects with the text AHU in their name. Object name filtering is case-insensitive. To list objects with the text input in their names, use "input". To list objects with the text output in their names, use "output".
Wildcard operator *	Use wildcard with an object name search. Examples: AHU1* results in all objects that have a name that begins with the text AHU1 being listed. *AHU1 results in all objects that have a name that ends with the text AHU1 being listed *AHU1* is the same as using AHU1. Results in all objects with the text AHU1 in their name being listed.




Search Field Feature	Example
Logical operator and	Both terms must be present to list the object. Example: AV and *Setpoint* results in all AV objects with Setpoint in the name being listed.
Logical operator or	One or more terms must be present to list the object. When no logical operator is specified between terms, the logical or operation is assumed. Example: AI A0 AV results in all AI objects, all A0 objects and all AV objects being listed. AV Setpoint* results in all AV objects and all objects that have a name that begins with the term Setpoint being listed.
Logical operator not	Term must not be present to list the object. Example: AV and not Setpoint results in all AV objects, except those with Setpoint in the name, being listed.
- indicates a range of object instances	Example: AV10-AV50 results in all AV objects in the range of instances 10 through 50 being listed.
Parentheses enforce order of operations	Example: (AV or TL) and VAV results in all objects of type AV or TL objects that all have VAV in their name being listed.
Filter by one object type abbreviation	Examples: AV results in AV objects being listed. AVG objects are not listed. A0 results in A0 objects being listed. AOC objects are not listed. ZXX results in no objects being listed.
Filter by object instance for a specific object	Example: BV1 results in only the object BV1 being listed. BV11, BV10, BV111 are not listed.

Search Field Feature	Example
IP or INPUT lists input object types Input object types are AI, BI, MI and PI objects	Examples: IP results in all input objects being listed. ip1000-ip4999 results in all input objects with instance in the range 1000 through 4999 being listed. To list objects with the text input in their names, use "input".
OP or OUTPUT lists output object types Output object types are AO, BO, MO and LO objects	Examples: OUTPUT results in all output objects being listed. output1000-output4999 results in all output objects with instance in the range 1000 through 4999 being listed. To list objects with the text output in their names, use "output".

### Using the Simple Search Filter

To search and filter the object list, enter the search terms in the Search field and press Enter or click . See [Rules for Simple Filter](#) for guidelines about search terms.

Click  to display your recent searches and to select a previous search to execute.

The list of recent searches is deleted when you clear browser cache.

When your search finds no matches, it may be because of an incorrect search term. In this case, the Search box is outlined in red and, when you click in the Search box, suggestions are displayed.


Search doesn't find objects that are filtered out by the BACnet device filter.

### Rules for Advanced Filter

The rules for advanced filter applies to the object filter used by BAS reports. See [Object Filter](#) in the BAS reports chapter.

### Total Number of Objects Found by Search

enteliWEB lists the objects in the device that match the search filter. The total number of objects listed on the Object List page is displayed in the lower left corner of the page.

When there are more than 400 objects to list, enteliWEB indicates this by 2 numbers separated by a slash such as 400/895, meaning (objects listed in the page)/(total objects that match the filter) and by the  button to allow you to add the next 500 objects to the list.

## Arranging and Sorting the Object List

The list of objects can be arranged and sorted in many ways to let you view the information to suit your purpose.

To sort, hover your mouse over any column heading to display the dropdown menu indicator.



Click the menu indicator to display the selection menu.

### *Grouping Similar Objects*

Select the Show in Object Groups checkbox.

### *List Objects without Grouping*

Clear the Show in Object Groups checkbox.

### *Arranging Columns*

To change the column arrangement, click a column heading and drag it horizontally to a new position.

### *Hiding and Showing the Built-in Columns*

1. Hover your mouse over Columns from the menu to display the list of built-in columns.
2. To show a column, select it by the adjacent checkbox. To hide a column, clear the adjacent checkbox.

As you select or clear a checkbox in the list, the Object List view is updated immediately to show or hide the column.

### *Adding a Property or Sub-property Column*

1. Click Settings and select Add Property Column. The Add Property Column dialog opens.
2. Select the object type, as follows:
  - Clear the Object Type field and type the first letter or letters of the object type abbreviation, or
  - Open the list and scroll down to find the object type, or
  - Select All to list all properties
3. In the Property field, start to type the property name and then select the exact name from the auto-complete list. When you want to add a sub-property, then select the property with that sub-property from the list. When a property contains an array index, enter it as, for example, EventText[2].
4. Click OK. The new column is added to Object List view and the corresponding property for each object is displayed.

### *Removing a Property Column*

Select Remove Column from the menu. The column is removed.

### *Displaying CU Objects in Card User Tab*

The Card User tab is displayed only for controllers such as the ASM and enteliBUS controllers that can act as an access control manager.

The Card User tab is displayed when CU objects exist on the controller, whether or not you select the DEV object's Applications setting.

## Commanding Objects

### *Rule About Enabling and Disabling the Auto/Manual/Manual Value Commands*

When one or more of the selected object types does not support these commands then the commands are disabled.

#### *Set to Auto Mode*

1. Select the objects you want to command with the corresponding checkbox.
2. Click Command and select Auto from the list.

Auto commands the selected object or objects into Automatic mode.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

In Automatic mode, the object performs its function and updates its value accordingly.

#### *Set to Manual Mode*

1. Select the objects you want to command with the corresponding checkbox.
2. Click Command and select Manual from the list.

Manual commands the selected object or objects into Manual mode.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

In Manual mode, the object stops performing its function. The object's value remains unchanged until the object is returned to Auto mode.

The Manual mode icon  is displayed for the objects.

#### *Set to Manual Value*

1. Select the analog objects or multistate objects you want to command with the corresponding checkbox.
2. Click Command and select Manual Value from the list. The Manual Value dialog opens.
3. For an analog object, enter the value and click Save.

For a multistate object, select the value from the list and click Save.

Manual Value commands the selected object or objects into Manual mode and sets the values to a specified value.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

The Manual mode icon  is displayed for the objects.

### *Set to Manual On or Manual Off*

1. Select the binary objects you want to command with the corresponding checkbox.
2. Click Command and select Manual On or Manual Off from the list.
3. Manual On commands the selected binary object or objects into Manual mode and sets the value to the On state.

Manual Off commands the selected binary object or objects into Manual mode and sets the value to the Off state.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

The state text shown in the Value column is determined by the BDC object that is associated with the binary object.

The Manual mode icon  is displayed for the objects.

### *Set a Property or Sub-property Value*

Prerequisite: [Add a column to the Object List](#) page for the property or sub-property that you want to change.

1. Select the objects for the property or sub-property you want to command, with the corresponding checkbox.
2. Click Command and select Other from the list.  
Other displays a list of the property and sub-property columns that you added to the Object List page.
3. Select a property or sub-property name and the value dialog opens. Enter the value and click Submit.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

### *Resetting an Object*

1. Select the objects that you want to reset, with the corresponding checkbox.
2. Click Command and select Reset Object from the list.  
See [Feedback on Result of Command](#) to understand how the result of the command is displayed.


The operation of the reset function varies depending on the object type.

### Feedback on Result of Command

A banner at the top of the page indicates the result of a command on one or more objects. Each object that was acted on is listed in the banner with the result of the command.


Each object is listed as <command> <object name> <object reference>.

#### *OK Result*

When all objects completed the command successfully, then the confirmation banner  is displayed at the top of the page. The confirmation banner lists all the objects that were affected by the command, marked as OK.

Click **More...**, on the right side of the banner, to see the complete list of affected objects.

#### *Error Result*

When one or more objects could not complete the command, then the error banner  is displayed at the top of the page. The error banner lists all the objects that were affected by the command. When a change to an object was accepted, it is marked as OK. When a change to an object was rejected, it is marked with an error message.

Click **More...**, on the right side of the banner, to see the complete list of affected objects and their corresponding error messages.

## Performing Actions on the Device

The Object List page allows you to perform actions on the device using the Device Actions list.

Device actions affect the entire device. Selecting specific objects has no effect.

### Send a Time Synchronization Message

1. Click Device Actions. The command list opens.
2. Select Set Time from the list. The Set Time dialog opens and displays the local enteliWEB server time.
3. Adjust the date and time if that is required.
4. Click OK. The date and time that is displayed in the dialog is sent over the network to the device.

See [Feedback on Result of Command](#) to understand how the result of the command is displayed.

### Reload Objects

Click Device Actions and select Reload Objects from the list.

See [Feedback on Result of Command](#) to understand how the result of the action is displayed.

The Reload Objects action is a "lighter-weight" action than Reconfirm Status because it performs a subset of the Reconfirm Status processing and therefore it takes much less time to complete.

The Reload Objects action causes the BACnet Server to perform only the third step of the device discovery mechanism. This step gets a list of objects from the device and then sequentially reads each of the objects' names.

enteliWEB then updates the object list page with this new object list and gets the related information for each object.

## Reconfirm Device Status

Click Device Actions and select Reconfirm Status from the list.

See [Feedback on Result of Command](#) to understand how the result of the action is displayed.

The Reconfirm Status action causes the BACnet Server to execute its entire device discovery mechanism, for the selected device or devices. The device discovery mechanism is sometimes referred to as reloading descriptors. This mechanism consists of four main steps and can take many seconds to complete for each device.

When the discovery is completed, enteliWEB updates the object list page with this new object list and gets the related information for each object.

## Reset a Device

Click Device Actions and select Reset from the list.

See [Feedback on Result of Command](#) to understand how the result of the action is displayed.

Reset performs a software reset by sending the BACnet ReinitializeDevice service to the selected device or devices. Each device interprets the COLDSTART and WARMSTART arguments as it sees fit.


The Reset action may be password-protected by the Reset Command Password in the device's DEV object.

## Saving Object List to File Tasks


### Saving Object List to PDF File



The PDF file contains only the columns that are displayed on the object list page.

1. Use Adding a Property Column and Removing a Property Column to set up the object page with the columns you want to save in the PDF.
2. Use the search field to create a list of the objects that you want to capture in the PDF file. See Filtering and Searching for procedure.
3. Click . The PDF file is saved to your browser's download destination.

### Saving Object List to CSV File

1. Use the search field to create a list of the objects that you want to capture in the CSV file. See Filtering and Searching for procedure.
2. Click . The CSV file is saved to your browser's download destination.



## Chapter 4 - Object Pages

This chapter provides information that is common to most object pages and covers common tasks associated with objects.

### About Object Pages

An object page displays the status that apply to an instance of a specific type of object. The help page that you open from an object page provides information about what that object page displays.

Each object page includes features and tasks that are the same on almost every object page, certainly on every object page for a specific type of object.

Most object tasks can be performed only by a user with the proper permissions and are, therefore, outside the scope of this document.

### Object Reference

An object reference is an identifier for an object. An object reference, when the site name is included in the reference, is unique over all the sites that are managed by an enteliWEB server.

The format of an object reference is as follows.

`//sitename/device address.object identifier`

where:

*sitename* is the name of the site. *sitename* is case-sensitive. It must match exactly the name given to the site and shown in the left navigation pane, Navigation section. For example, when the name of the site is MainSite, enter MainSite, not mainsite or Mainsite.

*device address* is the numeric address that is assigned to the device or controller on which the object you are referring to resides.

*object identifier* is the object type abbreviation and object instance number for the object you are referring to. For example, PG3, where PG is the abbreviation for a GCL Program object with an instance number of 3.

Example: `//MainSite/5600.PG3`

### *Format of the I/O Object Reference Instance Number*

The object identifier for I/O objects often contain information about their local environment on the controller.

For information about the format of the object reference instance number for an I/O object that resides on an enteliBUS controller, see [I/O Object Instance Number on enteliBUS Controller](#).

For information about the format of the object reference instance number for an I/O object that resides on a DSC or DAC controller, see [I/O Object Instance Number on DSC/DAC Controllers](#).

### *Site Independence*

The device address.object identifier component of the object reference can be the same on different sites that are managed by an enteliWEB server but it must be unique in a particular site.

## Related Information Views

When an object page is open, information that is related to the object is displayed in a series of panes to the right of the main object pane.

The related information that is displayed varies, depending on the type of object and the BACnet permissions of the user group that you are a member of.

The following sections describe the possible related information panes.

### *Associated System*

The Associated System pane lists the system or systems that the object is a member of.

When the object is not a member of any system, the Associated System pane is not displayed.

### *Configuration*

The Configuration pane lists the objects that provide configuration information to the object you are viewing, or it lists the objects that reference the object you are viewing for configuration information. For example, an AIC object provides configuration information to an AI object which that object applies to its conversion algorithm for its present value, or a BDC object provides state numbers and state text state configuration information to BI, BO and BV objects.

An AIC object, for example, lists all the AI objects that reference that AIC object.

### *Controlled By*

The Controlled By pane lists the objects that provide control values to the object you are viewing, when it is in Auto mode. For example, a CO object provides a value in % to an AO object which that object converts to its present value, or a SCH object provides schedule state to an OS object.

Objects for which you are denied access because of your user group's BACnet permissions are not listed.

To command an object on this list, see [Commanding a Related Object](#)

### *Controlling*

The Controlling pane lists the objects that receive the output of the object you are viewing. For example, a CO object may control an AO object or a SCH object may provide its schedule state to multiple objects such as OS objects.

To command an object on this list, see [Commanding a Related Object](#)

### *Dashboard*

The Dashboard pane lists the watchlist widgets that watch the object you are viewing and it allows you to add the object to other watchlist widgets.

When there are no watchlists on any dashboards, the Dashboard pane is not displayed.

When the object is on all watchlists, then the Watchlist list and the Add button are not displayed.

### *Graph*

The Graph pane displays a real-time chart that corresponds to a TL object that is monitoring and recording samples of the object.

To open the TL object page, click the graph.

### *History*

The History pane displays the 10 most recent events that occurred for the object such as the results of each Save operation and alarm transitions.

#### **Save operations**

The result of a save operation displays date and time, property changed or attempted to be changed and the username of person who made the change. ✓ indicates that the save operation was successful. ✗ indicates that the save operation failed.

When a property has multiple components, such as a group, union or array, the results are formatted to make it clear what each component was set to.

### Alarm transitions

For alarm transitions, the date and time is the device date and time when the transition occurred.

When both the from state and the to state are known, then the History pane displays both states as from-state => to-state.

When only the to state is known, then the History pane displays only that state.

### Other transitions

For DEV objects, the History pane displays when the device goes online and offline.

### *Member*

The Member pane is displayed for the access group (AG) object. The Member pane lists the card users (CU objects) that are members of the access group you are viewing.

The Member pane limits the number of card users that it displays to 50 card users.

### *Member Of*

The Member Of pane is displayed for the card user (CU) object. The Member Of pane lists the access groups (AG objects) that the card user is a member of.

### *Monitored By*

The Monitored By pane lists the objects such as TL and MT objects that the object you are viewing is an input to.

Objects for which you are denied access because of your user group's BACnet permissions are not listed.

To command an object on this list, see [Commanding a Related Object](#)

### *Monitoring*

The Monitoring pane lists the objects that are inputs to the object you are viewing.

For example, the AV object that is providing a setpoint to a CO object or the AI object that is providing indoor temperature to an OS object.

Objects for which you are denied access because of your user group's BACnet permissions are not listed.

To command an object on this list, see [Commanding a Related Object](#)

### *Watch*

The Watch pane is used by the PG object to list the names and values of constants, object references and variables in the program you are viewing. The values are updated periodically when the program is running.

## Object Description Field

The description field that is present on every object page allows you to enter textual information about the object.

### *Entering URL with http:// or https://*

The description field also allows you to enter a URL link that starts with http:// or https://. When the link is clicked, the referenced page opens in a new tab in the browser.

### *Entering URL with file://*

The Description field allows you to enter a URL link that starts with file://. When the link is clicked, the referenced document opens in a new tab in the browser.

The URL link to the file must be according to one of the following formats.

- Filename with spaces: entire URL must be enclosed in quotation marks. For example "file://eZNS Application Guide.pdf"
- Filename without spaces: quotation marks not required but may be used for consistency

enteliWEB expects the file to be located in the public folder, that is, C:\Program Files (x86)\Delta Controls\enteliWEB\website\public. The document can be in a subfolder of public, in which case the folder name must be in the URL, as, for example, "file://catalog\_sheets/eZNS Application Guide.pdf", where catalog\_sheets is the name of the subfolder within the public folder.

## Common Object Page Tasks


The following sections describe the tasks that are common to most object pages.

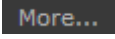
### Saving an Object Page

Click Save to send all configuration properties to the object for validation.


The result of the Save operation is indicated by a banner at the top of the object page.


### *OK Result*

When all configuration properties are valid, then the confirmation banner  is displayed at the top of the page. The confirmation banner lists all the properties that were affected by the save operation, marked as OK.

Click , on the right side of the banner, to see the complete list of affected properties.

### *Error Result*

When one or more of the configuration properties was invalid, then the error banner  is displayed at the top of the page. The error banner lists all the properties that were affected by the save operation. When a change to a property was accepted by the object, it is marked as OK. When a change to a property was rejected by the object, it is marked with an error message.



Click , on the right side of the banner, to see the complete list of affected properties and their corresponding error messages.

### Some Objects don't have a Save Button

When an object page doesn't have a Save button, then the changes you make are sent immediately to the object. For example, the MT object and the SCH object.

### Closing an Object Page Without Saving Changes

Use one of the following ways to close the object page without saving changes.

- Click Close. The Object List page is displayed.
- Click Back to Object List. The Object List page is displayed.
- Click . The previous object in the Object List is opened.  
The adjacent numbers show you the position in the object list of the object you are viewing. For example, 37 of 142 indicates that you are viewing the 37th object out of a total of 142 objects that are listed on the Object list page. The number of objects that are listed on the Object List page varies depending on the Object List page's search filter setting.
- Click . The next object in the Object List is opened.

When you have made changes to the object page, the Are you Sure You Want to Leave This Page dialog opens. Click Leave this page.

### Adding an Object to a Watchlist

1. In the Dashboard pane to the right of the main object pane, select the watchlist from the Watchlist list and click Add.

When there are no watchlists on any dashboards, the Dashboard pane is not displayed.

2. The Dashboard pane displays the watchlist as a link. Click the link to go to the dashboard. The watchlist widget on the dashboard lists the object you added.

See [Watchlist Widget Tasks](#) for information about adding a watchlist to a dashboard.

## Commanding a Related Object

1. In one of the related panes to the right of the main object pane, click ▼ adjacent to the object you want to command. The Command dialog opens.
2. Set the dialog to the command you want to issue to the object.
3. Click Save to send the command to the object.

### *When Commanding a PG Object ...*

When you open the Command dialog for a PG object, your choices are Auto and Manual. Auto means Run and Manual means Halt.

## Chapter 5 – Dashboards

This chapter describes the enteliWEB dashboards and covers the tasks associated with the personal dashboard.

### About Dashboards

Dashboards are task-driven visualizations that provide users with the information they need automatically, without them having to search for it. Dashboards make the process of navigating from high level operational views to specific elements of the system into a simple and intuitive task.

A dashboard type determines its intended purpose and whether or not a user can change its settings. enteliWEB defines the following three types of dashboards.

#### System dashboard type

A system dashboard displays a mechanical system or subsystem within the building automation system, as defined by an enteliWEB system. A system dashboard is visualized when it is included in an enteliWEB view. To learn about views, see About Views in the enteliWEB help.

#### Enterprise dashboard type

An enterprise dashboard provides high level information in simple graphical formats to help operators manage a facility's key operational goals.

Enterprise dashboards are created by the enteliWEB administrator and display the widgets assigned to them by the administrator. Enterprise dashboards cannot be modified by other users.

#### Personal dashboard type

To learn about personal dashboards, see below.

### Personal Dashboard

A personal dashboard displays widgets that are selected from the widgets provided by the enteliWEB administrator.

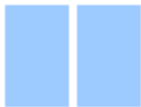
A personal dashboard is managed by the user who creates it. A personal dashboard cannot be viewed or modified by other users.




## Tasks - Personal Dashboard

### Creating a Personal Dashboard

1. Select the Dashboards section from the left navigation pane. A list of your personal dashboards is displayed.
2. From the Action list that is located at the bottom of the Dashboards section, select Create Personal Dashboard. The Create Personal Dashboard dialog opens.
3. Enter a name for the dashboard in the Name field and then click Add. A personal dashboard with this name is displayed in the Dashboards section of the left navigation pane.
4. Select the new personal dashboard to open it in the right pane.  
The layout of a personal dashboard is fixed to the following layout. The layout can't be changed.



### Adding a Widget to a Personal Dashboard

1. Open the dashboard you want to add the widget to.
2. Click Add Widget. The Add Widget dialog opens.  
The Add Widget dialog lists widgets that an enteliWEB administrator has created. It also includes the Watchlist widget.
3. Select the widget or widgets that you want to add to the dashboard.  
When there are many widgets to choose from, you can reduce the list of widgets that the dialog displays by selecting a widget type in the left column of the dialog or by selecting All and doing a text search using the Search field.
4. Click Add to Dashboard. The dashboard displays the widgets you selected.
5. Click and drag a widget to position it on the dashboard.
6. Configure the widgets that have user preferences. Click  to open a widget's user preferences dialog.

### Adding an Object to a Watchlist Widget

A watchlist widget displays a list of objects that you are interesting in monitoring.

You can add multiple watchlist widgets to a dashboard.

To add an object to a watchlist, you must be a member of a group that has view objects permissions.

1. Navigate to the object page for the object you want to add to the watchlist.
2. On the right side of the object page, in the Dashboard pane, select your watchlist widget from the Add to Watchlist list and click Add.
3. Return to your personal dashboard to confirm that the object is included in the watchlist widget.

### Removing an Object from a Watchlist Widget

1. On the watchlist widget, select the objects you want to remove.
2. Click Remove. The selected objects are removed from the list.

### Deleting a Personal Dashboard

1. Select the Dashboards section from the left navigation pane. A list of your personal dashboards is displayed.
2. Select the dashboard you want to delete.
3. From the Action list that is located at the bottom of the Dashboards section, select Delete Personal Dashboard. The dashboard is deleted.  
You are not prompted to confirm that you want to delete the dashboard.

## Chapter 6 – Calendars and Schedules

This chapter covers the Schedule object, both rev 3 and rev 4 versions, and the Calendar object. This chapter includes descriptions of the capabilities of the object and provides all the tasks you need to maintain schedules.

### Calendar Object

The Calendar (CAL) object defines calendar date entries which might be thought of as special event days such as holidays or as simply a list of dates. When the controller's current date matches a date that is defined as a special event day or calendar entry in the CAL object, the CAL object's present value changes to On for the entire day. When controller's current date doesn't match a date that is defined as a special event day or calendar entry in the CAL object, the CAL object's present value remains Off.

Typically, objects such as Schedule objects and GCL programs monitor the CAL object's present value and operate differently on special event days.

### Calendar view

The CAL object page Calendar view displays a traditional monthly calendar. In the Calendar view, a special day or calendar entry is indicated by a single date or a date range, a descriptive phrase, and an associated square-shaped color dot. See the legend for the association between color and type of calendar entry.

### Types of calendar entries

A calendar entry specifies a date range during which the CAL object's present value is On. For all dates that are not within a calendar entry, the CAL object's present value is Off.

You can specify multiple calendar entries and overlapping calendar entries. Calendar entries in the past are deleted automatically, when the CAL object is configured to do so.

When you add a calendar entry, you choose from the following four types of calendar entries to add.


#### *Single Date*

A Single Date entry specifies the date for one day.

 indicates a Single Date.


#### *Date Range*

A Date Range entry specifies the dates for one or more consecutive days.

 indicates the dates that the Date Range entry occurs on.


### *Recurring Week and Day*

A Recurring Week and Day entry specifies a repeating pattern for one weekday or all weekdays. The selected weekday can be configured to repeat in many ways.

 indicates the dates that the recurring entry occurs on.

### *Recurring Date*

A Recurring Date entry specifies a repeating pattern for one day in a month. The selected day can be configured to repeat in many ways.

 indicates the dates that the recurring entry occurs on

### Auto Delete Expired Entries After

Calendar entries that have occurred in the past and are, therefore, expired, and yet remain in the calendar are occupying CAL object memory unnecessarily. It is recommended that you set the Auto Delete Expired Entries After feature to automatically remove expired calendar entries. By default, the auto delete feature is disabled and no calendar entries are deleted.

To allow expired calendar entries to be deleted automatically, enter the number of weeks, in the range 1 to 254, that you want to retain an expired calendar entry before it is deleted.

To disable the auto delete feature, enter zero as the number of weeks.

## Tasks – Calendar Object

### Adding a Single Date calendar entry

1. Click Add Entry. The Calendar Entry dialog opens.
2. Select Single Date from the Type list.
3. Enter a short phrase that describes this calendar entry. In the calendar view, this phrase appears on the date that this calendar entry occurs on.
4. Select the date that you want the calendar entry to occur. Dates in the past are not accepted.
5. Click Save to save the calendar entry.

## Adding a Date Range calendar entry

1. Click Add Entry. The Calendar Entry dialog opens.
2. Select Date Range from the Type list.
3. Enter a short phrase that describes this calendar entry. In the calendar view, this phrase appears on the dates that this calendar entry occurs on.
4. Select the date that you want to be the first date in the range that this calendar entry occurs on, from the Start Date calendar.
5. Select the date that you want to be the last date in the range that this calendar entry occurs on, from the End Date calendar.
6. Click Save to save the calendar entry.

## Adding a Recurring Week and Day calendar entry

1. Click Add Entry. The Calendar Entry dialog opens.
2. Select Recurring Week and Day from the Type list.
3. Enter a short phrase that describes this calendar entry. In the calendar view, this phrase appears on the dates that this calendar entry occurs on.
4. Select the week that you want the calendar entry to recur on, from the Week list. Select Every when you want the calendar entry to recur on all weeks. Select Last when you want the calendar entry to recur on the last week of the month regardless of whether that week is the fourth week or the fifth week.
5. Select the weekday that you want the calendar entry to recur on, from the Weekday list. Select Week when you want the calendar entry to recur on every day of the week.
6. Select the month that you want the calendar entry to recur on, from the Month list. Select Every when you want the calendar entry to recur on all months.
7. Click Save to save the calendar entry.

## Adding a Recurring Date calendar entry

1. Click Add Entry. The Calendar Entry dialog opens.
2. Select Recurring Date from the Type list.
3. Enter a short phrase that describes this calendar entry. In the calendar view, this phrase appears on the dates that this calendar entry occurs on.
4. Select the month that you want the calendar entry to recur on, from the Month list. Select Every when you want the calendar entry to recur on all months.
5. Select the day date that you want the calendar entry to recur on, from the Date list. Select Every when you want the calendar entry to recur on every day of the month.
6. Select the year that you want the calendar entry to recur on, from the Year list. Select Every when you want the calendar entry to recur on all years.
7. Click Save to save the calendar entry.

### Deleting a calendar entry

1. Click the calendar entry you want to delete, in the Calendar view. The Calendar Entry dialog opens. The dialog displays the settings for the calendar entry you clicked.
2. Click Delete to confirm you want to delete that calendar entry.
3. The Calendar view is displayed with the deleted calendar entry removed.

## Schedule Object – Rev 4

The Schedule (SCH) object describes a periodic sequence of weekly schedules and event schedules that recurs during a range of dates. A weekly schedule specifies schedule times that recur every week. An event schedule can occur and recur at arbitrary dates and arbitrary times.

When weekly schedules and event schedules overlap, a priority mechanism determines which weekly schedule or event schedule is in control.

The current state of the SCH object, the value of its Present Value property, is calculated from the weekly schedules and event schedules defined in the schedule. When no weekly schedule or event schedule is in effect, the present value is set to the SCH object's default value.

### Schedule Types

The schedule type setting determines the nature of the schedule state values and therefore which type of objects can be controlled by the schedule. Three schedule types are possible as described below:

- Binary object schedule which provides On and Off schedule states.
- Multi-state object schedule which provides schedule values as integers in the range from 1 to 65534.
- Analog object schedule which provides schedule values as analog values, such as periodic setpoint changes, in the range from -65534 to +65534.

When the present value changes, the SCH object writes the present value to subscriber objects that require schedule control information.

### Navigation Buttons

The navigation buttons displayed on the SCH object's Title Bar provide the following functions:

**Week** displays the schedule week view and the weekly schedules and event schedules for that week.

**Month** displays the schedule month view and allows you to navigate the timeline from month to month.

**Details** displays a list view of the weekly schedules and event schedules that are in the schedule.

**Setup** displays configuration fields that allow certain SCH object properties to be viewed and changed.

## Time Ranges

The schedule represented by a SCH object consists of one or more time ranges and corresponding schedule values that you define. Time Ranges are defined by weekly schedules, event schedules and the SCH object's default value.

### *Default value*

The default value is applied to all time ranges that are not covered by a weekly schedule or an event schedule and for the time ranges before Start Date and after End Date.. The SCH object's default value is configured when the object is created.

For a binary schedule, the choices are On and Off.

For a multi-state schedule, enter an integer number in the range from 1 to 65534.

For an analog schedule, enter a number in the range from -65534 to +65534.

### *Weekly schedule*

A weekly schedule is typically used to define the facility's normal weekly equipment operation or its occupancy hours. A weekly schedule time range repeats every week, at the same times and days. Although you can define multiple weekly schedules, a given time range can be defined by only one weekly schedule. Unlike event schedules described below, a weekly schedule doesn't have a priority setting and doesn't overlap with other weekly schedules.

### *Event schedule*



Event schedules are not supported on enteliZONE controllers.

An event schedule defines a temporary or recurring event that take priority over the default value and the weekly schedule time ranges. An event schedule is typically for a one-time event such as a holiday or an event that occurs regularly but doesn't work as a weekly schedule.

An event schedule can repeat, for example as a specific month and day every year such as the first Monday of January, the New Year's Day holiday, or as a recurring time range such as the third week of every month. Alternatively, an event schedule can link to a local calendar which defines its time ranges.

You can add up to 100 event schedules to a schedule. Event schedules that will never occur again can be deleted automatically.

You can add the following types of event schedules:

### Single Date event schedule

A Single Date event schedule defines an event schedule that occurs on one day only.

### Date Range event schedule

A Date Range event schedule defines an event schedule that occurs at the same time on one or more consecutive days.

### Recurring Week and Day event schedule

A Recurring Week and Day event schedule defines an event schedule that recurs at the same time on specified days, weeks and months.

### Recurring Date event schedule

A Recurring Date entry specifies a repeating pattern for one day in a month. The selected day can be configured to repeat in many ways.

### Calendar Reference event schedule

A Calendar Reference event schedule defines an event schedule that occurs at the same time on the days determined by the referenced Calendar object. A Calendar Reference event schedule provides a convenient method of overriding the normal weekly schedule of a Schedule object.

### *Start Date*

Start Date specifies when the SCH object schedule is in effect. Leave this field blank to display No Start Date and allow the schedule to be effective immediately. For the time ranges before Start Date, the SCH object value is the Default Value.

### *End Date*

End Date specifies when the SCH object schedule is no longer in effect. Leave this field blank to display No End Date and allow the schedule to be effective forever. For the time ranges after End Date, the SCH object value is the Default Value.

## Week view

In the Week view, color shading indicates the time range associated with weekly schedules and event schedules. When a time range is colored white, no weekly schedule or event schedule is defined for that time range and therefore the default schedule value is in effect for that time range. See the legend for the association between color and event type.



### *Navigating Week view*

The buttons that are located above the days of the week provide the following functions:



Click this button to display the previous week in the schedule timeline.

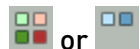


Click this button to display the next week in the schedule timeline.



Click this button to display the calendar dialog where you can choose the week and month that you want to view the schedule for.

Display Events checkbox in Week view, allows you to select whether or not the event schedules are displayed. When Display Events is not selected, then weekly schedules only are displayed



Click this button to display the legend for the colors associated with each type of weekly schedule and event.

### **Month view**

In the Month view, the month calendar lists the time ranges and associated color dot on the days when they occur to indicate weekly schedules and events and their schedule types. When a time range is not listed, the default schedule value is in effect for that time range. See the legend for the association between color and event type.

### *Navigating Month view*

The buttons that are located above the month calendar provide the following navigational functions:



Click this button to display the previous month in the schedule timeline.



Click this button to display the next month in the schedule timeline.



Click this button to display the calendar dialog where you can choose the month that you want to view the schedule for.



Click this button to display the legend for the colors associated with each type of weekly schedule and event.

### *Details view*

In the Details view, all weekly schedules and all event schedules for the schedule object are listed in tabular format. The schedules are organized in the tables by date and time.

## Tasks – Schedule object Rev 4

### Adding a Weekly Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence drop-down list, select Weekly.
3. Set the weekly schedule's daily start time by hour and minute in the left Time field.
4. Set the weekly schedule's daily end time by hour and minute in the right Time field.
5. Using the checkboxes, select the day or days that this weekly schedule applies to.
6. In the Value field, set the weekly schedule's value. For a binary schedule, the choices are On and Off. For a multi-state schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
7. Click Save to add the weekly schedule to the schedule. This new weekly schedule replaces any other weekly schedule that it overlaps with. It doesn't affect event schedules that it overlaps with.

### Adding a Single Date Event Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence list, select Single Date.
3. In the Description field, enter a short phrase that describes this event schedule. In the Week view and Details view, this phrase appears on the dates that this event schedule occurs on.
4. Set the event schedule's start time by hour and minute in the left Time field.
5. Set the event schedule's end time by hour and minute in the right Time field.
6. Set the date that you want this event schedule to occur on.
7. In the Value field, enter the event schedule's value. For a binary schedule, the choices are On and Off. For a multi-state schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
8. In the Priority list, select the priority for this event schedule, in the range 1 to 16. 1 is the highest priority.
9. Click Save to add the single date event schedule to the schedule.

### Adding a Date Range Event Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence list, select Date Range.
3. In the Description field, enter a short phrase that describes this event schedule. In the Week view and Details view, this phrase appears on the dates that this event schedule occurs on.
4. Set the event schedule's daily start time by hour and minute in the left Time field.
5. Set the date that you want this event schedule to begin on.
6. Set the event schedule's daily end time by hour and minute in the right Time field.

7. Set the date that you want this event schedule to end on.
8. In the Value field, enter the event schedule's value. For a binary schedule, the choices are On and Off. For a multistate schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
9. In the Priority list, select the priority for this event schedule, in the range 1 to 16. 1 is the highest priority.
10. Click Save to add the date range event schedule to the schedule.

## Adding a Recurring Week and Day Event Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence list, select Recurring Week and Day.
3. In the Description field, enter a short phrase that describes this event schedule. In the Week view and Details view, this phrase appears on the dates that this event schedule occurs on.
4. Set the event schedule's daily start time by hour and minute in the left Time field.
5. Set the event schedule's daily end time by hour and minute in the right Time field.
6. Select the week that you want the event schedule to recur on, from the Week list. Select Every when you want the event schedule to recur on all weeks. Select Last when you want the event schedule to recur on the last week of the month regardless of whether that week is the fourth week or the fifth week.
7. Select the weekday that you want the event schedule to recur on, from the Day list. Select Every when you want the event schedule to recur on every day of the week.
8. Select the month that you want the event schedule to recur on, from the Month list. Select Every when you want the event schedule to recur on all months. Select Odd Months when you want the event schedule to recur on January, March, May, July, September and November. Select Even Months when you want the event schedule to recur on February, April, June, August, October and December.
9. In the Value field, enter the event schedule's value. For a binary schedule, the choices are On and Off. For a multistate schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
10. In the Priority list, select the priority for this event schedule, in the range 1 to 16. 1 is the highest priority.
11. Click Save to add the recurring week and day event schedule to the schedule.

## Adding a Recurring Date Event Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence list, select Recurring Date.
3. In the Description field, enter a short phrase that describes this event schedule. In the Week view and Details view, this phrase appears on the dates that this event schedule occurs on.

4. Set the event schedule's start time by hour and minute in the left Time field.
5. Set the event schedule's end time by hour and minute in the right Time field.
6. Select the month that you want the event schedule to recur on, from the Month list. Select Every when you want the event schedule to recur on all months. Select Odd Months when you want the event schedule to recur on January, March, May, July, September and November. Select Even Months when you want the event schedule to recur on February, April, June, August, October and December.
7. Select the date that you want the event schedule to recur on, from the Date list. Select Every when you want the event schedule to recur on every day of the month. Select Last when you want the event schedule to recur on the last day of the month regardless of the date.
8. Select the year that you want the event schedule to recur on, from the Year list. Select Every when you want the event schedule to recur on every year.
9. Select the weekday with the specified date that you want the event schedule to recur on, from the Day list. Select Every when you want the event schedule to recur on any weekday with the specified date.  
If Every Year and a specific Day is selected, then the event schedule applies only to the years when the specified date also occurs on the specified weekday.
10. In the Value field, enter the event schedule's value. For a binary schedule, the choices are On and Off. For a multistate schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
11. In the Priority list, select the priority for this event schedule, in the range 1 to 16. 1 is the highest priority.
12. Click Save to add the recurring date event schedule to the schedule.

### Adding a Calendar Reference Event Schedule

1. Click Add Schedule. The Add Weekly/Event Schedule dialog opens.
2. In the Recurrence list, select Calendar Reference.
3. In the Description field, enter a short phrase that describes this event schedule. In the Week view and Details view, this phrase appears on the dates that this event schedule occurs on.
4. Set the event schedule's daily start time by hour and minute in the left Time field.
5. Set the event schedule's daily end time by hour and minute in the right Time field.
6. Select or enter the name of the Calendar object.
7. In the Value field, enter the event schedule's value. For a binary schedule, the choices are On and Off. For a multistate schedule, enter an integer number in the range from 1 to 65534. For an analog schedule, enter a number in the range from -65534 to +65534.
8. In the Priority list, select the priority for this event schedule, in the range 1 to 16. 1 is the highest priority.
9. Click Save to add the calendar reference event schedule to the schedule.

## Editing a Schedule

1. Click Details to display information about all the schedules.
2. Click the schedule's link in the Description column. The Edit Event Schedule or the Edit Weekly Schedule dialog opens.
3. Change the settings as required.
4. Click Save to save the changes.

## Deleting a Schedule

1. Click Details to display information about all the schedules in a table.
2. Select the schedule you want to delete. The Delete button becomes active.
3. Click Delete. You are prompted to confirm that you want to delete the schedule.
4. Click Yes to delete the schedule.

## Changing Schedule Configuration Properties

1. Click Setup display the configuration properties.
2. Change as needed, the properties Name, Default Value, Start Date and End Date.
3. Before you make changes to the Controlled Objects list, review the information about Controlled Objects
4. Click Save.

## Schedule Object – Rev 3

A weekly schedule is typically defines the facility's normal weekly equipment operation or its occupancy hours. A weekly schedule time range repeats every week, at the same times and days.

The BACnet Revision 3 Schedule (SCH) object describes a weekly schedule with seven days that recurs during a range of dates.

Each day of the week contains up to eight time ranges when the schedule is in the On state.

Portions of the day that are not covered by a time range are in the Off state.

When the schedule transitions to On or to Off, the SCH object writes the present value to controlled objects that subscribe to the schedule.

You can associate one or two calendar (CAL) objects with the SCH object. The CAL objects act as overrides to the SCH object. When a calendar day is On, then a separate set of up to eight time ranges are in effect, regardless of the schedule for that week day

## Control Information

### *Last On*

Last On displays the date and time that the schedule most recently transitioned to the On state.

### *Last Off*

Last Off displays the date and time that the schedule most recently transitioned to the Off state.

### *Next On*

Next On displays the date and time that the schedule's next transition to the On state will occur today.

### *Next Off*

Next Off displays the date and time that the schedule's next transition to the Off state will occur today.

## Schedule Information

### *Day of Week*

Day of Week specifies the day of the week that you want to add, edit or delete an On time range for.

### *On*

On specifies the time of day when you want a time range to transition to the On state.

On time can be specified to the nearest minute.

### *Off*

Off specifies the time of day when you want the time range to transition to the Off state for the time range that starts with the specified On time.

Off time can be specified to the nearest minute.

### *Current Device Time*

Current Device Time displays the date and time that the controller thinks it is. The controller's date and time is used by the SCH object to know when its On and Off transitions should occur.

### *Event Schedules*

Event Schedules specify the associated CAL objects.

### *Start Date*

Start Date specifies when the SCH object schedule is in effect. Leave this field blank to display No Start Date and allow the schedule to be effective immediately.

### *End Date*

End Date specifies when the SCH object schedule is no longer in effect. Leave this field blank to display No End Date and allow the schedule to be effective forever.



## Tasks – Schedule Object Rev 3

### Adding a Time Range

1. In the drop-down list, select the week day or calendar object that you want to add the time range to.
2. Set the time range's start time by hour and minute in the On field. Select the closest time from the list and then edit minutes to exact time.
3. Set the time range's end time by hour and minute in the Off field. Select the closest time from the list and then edit minutes to exact time.
4. Click Add Time to add the time range to the schedule. The time range is displayed on the schedule as a grey rectangle.

See [Saving an Object Page](#) to understand how the result of the save operation is displayed.

### Adding a Calendar Object Reference

1. In the Event Schedules table, click  Add. A row opens in the table.
2. Select the CAL object from the list.
3. Click  Add to add the calendar object reference to the schedule.

### Editing a Time Range

1. On the schedule, select the time range you want to change. The time range changes color from grey to blue.
2. Change the On and Off settings as required.
3. Click Edit Time to save the changes.

See [Saving an Object Page](#) to understand how the result of the save operation is displayed.

### Viewing Time Range Setting

To view the exact On time and Off time for a time range, move your mouse cursor over the time range. The time range and duration are displayed.

### Deleting a Time Range

1. On the schedule, select the time range you want to delete. The time range changes color from grey to blue.
2. Click Delete Time. You are prompted to confirm that you want to delete the time range.
3. Click OK to remove the time range from the schedule.

## Chapter 7 - Trend Logs and Multitrend Logs

This chapter covers the Trend Log object and the Multitrend object. This chapter includes descriptions of the capabilities of the objects and provides all the tasks you need to create, maintain, visualize and print trend logs via the object pages.

### Trend Log Object

The Trend Log (TL) object collects samples that consist of a monitored object's value and a corresponding timestamp. The samples are recorded in the internal buffer memory of the TL object.

The TL object collects the samples either periodically on a fixed time interval or it collects a sample when a significant change in the monitored object's value has occurred.

To extend the TL object's limited sample storage capacity, you can add a Historian device or one or more CopperCubes to the network. The data samples are transferred from the TL object memory to the Historian archive or the CopperCube archive where the capacity is unlimited.

The TL object page allows you to visualize the samples on a line chart and view the samples in tabular format.

The TL object page allows you to download samples, in CSV (Comma Separated Values) format, to a file.

When samples are stored in a Historian archive or a CopperCube archive, then the TL object allows you to view that archived data, in increments of up to 6000 samples.

### Viewing sample data

You request the number of samples you want to view from the TL object by entering that number in the Showing Samples field and then clicking [Go](#). On the TL object page, the sample data is listed in the table and plotted on the chart. The table also lists non-data samples or status messages such as Log Enabled, Log Disabled and so on.

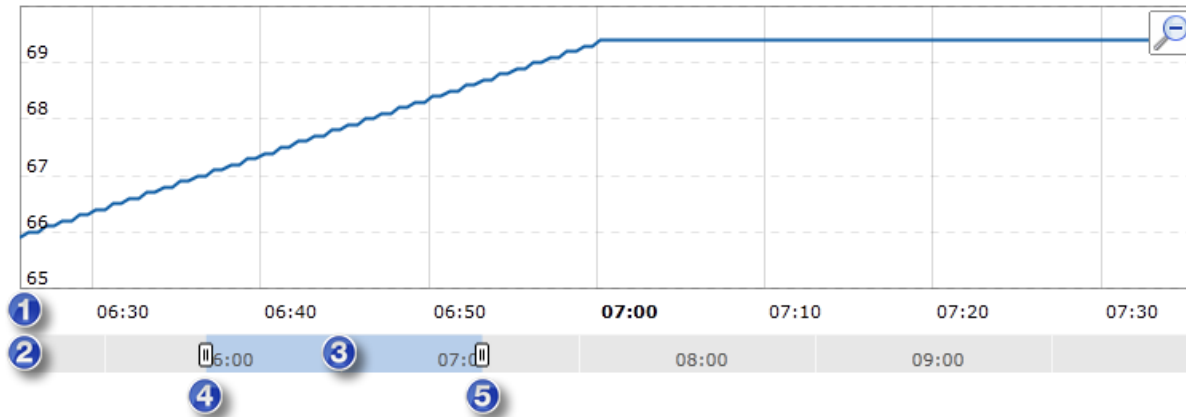
The TL object detects when its samples are being stored in a Historian archive or a CopperCube archive and automatically retrieves the samples to plot from the archive rather than from the TL object internal buffer memory.

You can change the chart time span by zooming in and zooming out.



### *Chart Span axis and the Time Span Axis*

The example chart below, identifies and describes the time axes and the time range adjusters.



### *Legend*

1. The Chart Span axis displays the time range of the samples that are plotted on the chart.
2. The Time Span axis displays the entire time range of the samples that are listed in the sample data table.
3. The Time Span axis displays the time range of the samples that are plotted on the chart, highlighted in blue.
4. Time range adjuster that sets the earliest time for the Chart Span axis.
5. Time range adjuster that sets the latest time for the Chart Span axis.

### *Plotting COV Samples*

When the monitored object provides an analog value and the TL object collects samples based on change of value, then the following rules are applied when plotting the line that joins the samples.

- When the difference between two adjacent samples is greater than 1.5 times the COV increment, then the points are joined by a step change line.
- When the difference between two adjacent samples is less than or equal to 1.5 times the COV increment, then the points are joined by a sloped line.

When more than one sample has the same time stamp then increments of one one-hundredth of a second are added to the time stamps to differentiate them.

### Archiving to Historian

Historian is a licensed ORCAview add-on that collects and archives trend log data permanently in a standard SQL database. Data samples that are collected by thousands of TL objects are collected by Historian over the BACnet network and archived in its SQL database. Historian provides an opportunity to record, view, analyze and manage data in ways that are not possible using the TL object and the MultiTrend (MT) object.

### Data Archiving Design Goals

To achieve reliable data archiving, two design principles must be observed:

- Ensure no data is lost, that Historian doesn't miss samples
- Reserve Historian capacity for future or dynamic increases in data archiving

Data archiving reliability is affected primarily by two controller TL object settings:

- Max Samples which specifies the number of samples buffered by the controller TL. Historian must collect the controller TL's new samples before the buffer memory is full and the samples are overwritten.
- Log Type which specifies when a sample is collected from the monitored object: by polling or by change of value (COV).

Clearly, a controller TL with a low Max Samples setting coupled with a frequent Sample Interval setting or a monitored object with a low COV Minimum Increment setting is a high usage TL and a candidate for experiencing data loss.

While a controller TL with Log Type set to Polling means a predictable and constant sampling rate, a controller TL with Log Type set to COV means a dynamic sampling rate. Depending on the COV Minimum Increment, rapid changes in the monitored value generate more frequent samples than when the value is constant.

For example, a room temperature is relatively constant during occupied times but may change rapidly when the space is scheduled to unoccupied and the temperature conditioning is turned off.

Therefore, the rapid change in temperature causes a controller TL with Log Type set to COV to experience a sudden influx of samples in a short period. Historian's scheduler may not be able to respond quickly enough to avoid data loss.

### How to Avoid Data Loss

#### *When Log Type is set to Polling*

When Log Type = Polling, two controller TL object settings work together to determine the number of samples collected: Max Samples and Sample Interval. When controller memory is a limitation, you must increase the Sample Interval setting to reduce the rate at which samples

are collected. If you absolutely must collect your sample at the high rate, then you must increase Max Samples to allocate more sample buffering memory in the controller.

#### *When Log Type is set to Change of Value*

When Log Type = Change of Value, two settings work together to determine the number of samples collected: the controller TL Max Samples settings and the monitored object's COV Minimum Increment setting. When controller sample buffering memory is a limitation, you must increase the COV Minimum Increment setting to reduce the number of samples generated due to the rapid signal changes. If you absolutely must monitor with a low COV Minimum Increment, then you must increase Max Samples to allocate more sample buffering memory in the controller.

### Archiving to a CopperCube

A CopperCube is a licensed device from CopperTree Analytics that collects and archives trend log data permanently in a standard SQL database. Data samples from thousands of TL objects are collected by CopperCube over the BACnet network and archived in its SQL database.

A CopperCube provides a comprehensive user interface that allows you to configure trend log archiving and to manage data in ways that are not possible using the TL object and the MultiTrend (MT) object.

The same data archiving and design goals described for Historian apply for the CopperCube.

Before you can view trend log data that is being archived on a CopperCube, an administrator must create a connection between enteliWEB and the CopperCube.

#### *Multiple CopperCubes*

It is possible for multiple CopperCubes to be connected to the same BACnet network and for those CopperCubes to be archiving samples from the same TL object, to provide a degree of redundancy.

When you open the TL object page for a TL object that is being archived on multiple CopperCubes, enteliWEB selects the CopperCube that has archived the most samples for that TL object. The samples from the selected CopperCube archive are displayed on the TL object page.

The TL object page does not select the CopperCube based on any other criteria such as older samples versus newer samples and it does not merge archived samples from multiple CopperCubes.

## Trend Log Object Settings

### *Monitored Object*

Monitored Object specifies the name of the object that you want the TL object to collect samples from. By default, the TL object collects samples of the monitored object's present value.

To monitor a property other than present value, specify that property name. For example, 9100.AI1.Commissioned causes the TL object to collect samples of the object's commissioned status.

When the collected samples are being archived by Historian, the Monitored Object field is read-only.

### *Log Type*

Log Type specifies how the TL object collects samples.

When Polling is selected, the TL object's Sample Interval setting determines the time interval between the collected samples.

When you select Change of Value, a sample is collected whenever the change in the monitored object's value is greater or equal to its COV minimum increment setting. When you select Change of Value, you may want to adjust the monitored object's COV minimum increment setting.

### *Max Samples*

When the TL object is not archiving to Historian or to a CopperCube, Max Samples specifies the maximum number of samples you want to hold in the TL object's buffer memory.

As a rough guide, each sample requires approximately 10 bytes of memory. For example, when Max Samples is set to 100 then 1000 bytes of buffer memory is used to store 100 data samples.

When the maximum number of samples are stored in the TL object memory then the trend log is considered to be full. When the trend log is full, the next sample overwrites the earliest sample unless you set Stop Sampling at to When Trend Log is Full.

When the TL object is archiving to Historian, Max Samples is disabled. It displays Unlimited.

### *Start Sampling at*

Start Sampling at specifies when the TL object will begin to collect samples.

When the Start Sampling at checkbox is cleared, the text "No Start Date" is displayed. The TL object begins to collect samples immediately or when the controller is reset or when the controller time changes.

To start sampling on a specific date and time, select the Start Sampling at checkbox and configure the date and time when you want the sampling to begin.

When Log Type is set to Polling, the Start Sampling at time affects when the TL object polls for the sample. The TL object calculates the poll time using the Start Time at setting and the Sample Interval setting. The table below provides several examples of the behavior for determining when the poll occurs.

Start Time	Sample Interval	Poll Times
0:00:00	15 minutes	0:00:00, 0:15:00, 0:30:00, 0:45:00, 1:00:00 and so on
0:00:10	15 minutes	0:10:00, 0:25:00, 0:40:00, 0:55:00, 1:10:00 and so on
0:00:00	1 hour	0:00:00, 1:00:00, 2:00:00, 3:00:00, 4:00:00 and so on
0:30:00	1 hour	0:30:00, 1:30:00, 2:30:00, 3:30:00, 4:30:00 and so on
0:00:00	2 hours	0:00:00, 2:00:00, 4:00:00, 6:00:00, 8:00:00 and so on
1:00:00	2 hours	1:00:00, 3:00:00, 5:00:00, 7:00:00, 9:00:00 and so on
17:00:00	24 hours	every day at 17:00:00

### *Sample Interval*

Sample Interval specifies the time interval you want to elapse between samples when Log Type is set to Polling.

When you select Daily, a sample is collected at 24 hour intervals.

When you select Interval, enter the time interval in the adjacent field in hours, minutes and seconds. Sample interval range is from 00:00:01 second to 23:59:59 hours.

### *Stop Sampling at*

Stop Sampling at specifies when the TL object will stop collecting samples.

When the Stop Sampling at checkbox is cleared, the text "No End Date" is displayed.

To stop collecting samples on a specific date and time, select the Stop Sampling at checkbox and configure the date and time when you want the TL object to stop collecting samples.

To stop collecting samples when the TL object has collected the number of samples specified by Max Samples, select When Trend Log is Full.


## Tasks – Trend Log Object

### Configuring a Trend Log Object

1. Enter a name for the trend log. When the TL object is being archived by Historian, changing the TL object name does not change the name of the archive trend log.
2. In the Monitored Object field, select the object you want to collect samples from, using the object picker.

To monitor a property other than present value, append the property to the object name you selected from the list, separated by a decimal point.

For example:

 Hot Water Supply Temp.MaxValue

Alternatively, enter the complete object reference and specify the property name. For example, //MainSite/9100.AI1.MaxValue

3. Select the Log Type.  
Select Polling when you want the TL object to collect samples at regular time intervals. When you select Polling, the Sample Interval setting appears below Start Sampling At to allow you to set the polling interval.  
Select Change of Value when you want the TL object to collect a sample whenever the change in the monitored object's value is greater or equal to its COV minimum increment setting.
4. Enter the maximum number of samples you want the trend log to hold.
5. Select when you want the TL object to start sampling. Clear the checkbox to start immediately. Select the checkbox to set a date and time to start sampling.
6. Select Sample Interval. The Sample Interval setting is displayed when you select Polling for the Log Type setting.  
When you select Interval, enter the sampling or polling interval in the form hh:mm:ss or choose it from the list.
7. Select when you want the TL object to stop sampling. To set a specific date and time select the left-most checkbox and enter the date and time. To stop sampling when the TL object reaches the maximum number of samples, select When Trend Log is Full. To have sampling continue forever and never stop, clear both checkboxes.
8. Click Save to send the configuration to the object.  
See [Saving an Object Page](#) to understand how the result of the save operation is displayed.

## Updating Sample Data from the TL Object

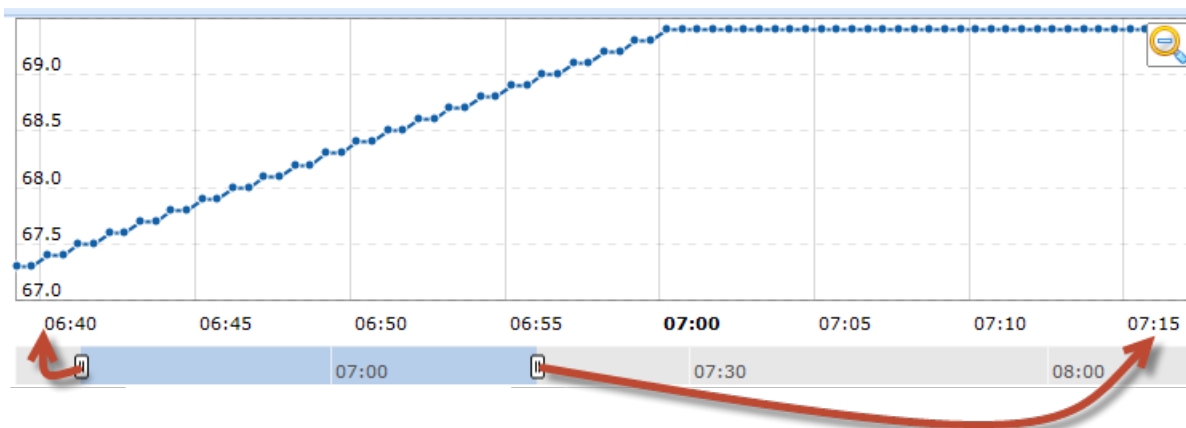
The TL object does not update the sample data from the TL object automatically. When you need a trend chart that is updated automatically, use the MultiTrend (MT) object.

1. Set the Showing Samples field to the number of samples that you want to retrieve from the TL object.
2. Click Go. A progress bar appears adjacent to the Go button. When the update is completed, the progress bar is removed.

## Zooming In the Chart View


1. Method A: Click and drag the mouse cursor over the chart to highlight the time range you want to expand. Release the mouse and the chart timeline expands to display only the selected time range.
2. Method B: Click and drag the time range adjusters to the earliest and latest times you want to view on the chart. The chart plot adjusts to display only the samples that were collected between those times.

For example, as shown below, the time range adjusters set the earliest time to 06:40 and the latest time to approximately 07:20.



## Zooming Out the Chart View

This procedure operates over the range of samples you requested from the TL object when you clicked Go. To view earlier samples, increase the Showing Samples setting and click Go.

1. Method A: Click  to zoom out to display all the samples that you obtained from the TL object. When this button is not displayed, the chart is displaying all the samples as specified by the Showing Samples setting.
2. Method B: Position the time range adjusters to the earliest and latest times you want to view on the chart. The chart plot adjusts to display only the samples that were collected between those times.

### Locating a Specific Sample on the Chart From the Table

1. Select the row in the sample table that you want to locate on the chart.
2. A vertical dark blue dotted line appears on the chart to mark the timestamp of the row you selected. The chart also attempts to center its plot on that data sample.

### Viewing Sample Data from the Chart

1. Move your mouse cursor over the chart.
2. When the mouse cursor passes near a sample, the sample value is displayed adjacent to the data point and the associated timestamp is displayed on the Chart Span axis.

### Displaying the Sample Data Table

1. Click Show Sample Data. The sample data table is displayed.
2. Set Showing Samples to the number of samples you want to display in the sample data table and in the chart. Set Showing Samples to the maximum value to display all the samples in the TL object.
3. Click Go to update the sample data table and chart with current samples from the TL object. When the Showing Samples setting is less than the Max Samples setting, the most recent samples are displayed.

### Changing the Sample Table View

1. To order the samples by time, click the Time column heading. On each click, the Sample Data table alternates between earliest to latest sample and latest to earliest sample.
2. To order the samples by value, click the Value column heading. On each click, the Sample Data table alternates between sort ascending and sort descending.
3. To reverse the positions of the columns, click a column heading and drag it to the new position.
4. To view only values or only times in the sample table, hover your mouse over either column heading to display the dropdown menu indicator.



- Click the menu indicator to display the selection menu. Select Columns from the menu then select or clear a checkbox to add or remove a column.
5. Clear the Include Non-Data Samples checkbox to remove all the non-data samples from the sample data table. The non-data samples are not deleted from the TL object memory.



## Viewing Non-Data Samples

1. The TL object collects non-data samples or status messages such as Log Enabled, Log Disabled and so on.
2. Set Showing Samples to the maximum value and click Go to upload all samples from the TL object.
3. Select Include Non-Data Samples to list both the sample data and the non-data samples in the sample data table.
4. Sort the Value column as Sort Descending. When the data samples are numeric, the non-data samples are all displayed at the top of the Value column. When the data samples are text, you need to scan the Value column for groups of non-data samples.

## Printing the Chart

Click  to begin. Follow your browser's print dialogs to complete.

## Deleting Sample Data from a TL Object

This task applies to controller TL objects only.

1. Click Delete Sample Data to delete all samples from the TL object memory.
2. Click Save to confirm that you want to complete this operation or click Delete Sample Data again to cancel the operation.

## Multitrend Object

The Multitrend (MT) object allows you to visualize the samples that have been collected and stored by multiple Trend Log (TL) objects, in line chart format.

The MT object plots the samples of up to 8 TL objects. The MT object can obtain samples from the following sources:

- TL object memory on the controller
- CopperCube archive of a TL object
- Historian archive of a TL object

The MT object updates its plots with the most recent samples periodically, from the TL objects.

The MT object page includes several features that allow you to arrange the chart to display the samples for the time range window you want and to move or pan your view both forward and backward along the time range window.

## Chart Options

Two settings, View Samples and Time Span, together, allow you to set the time range window for the samples that the MT object loads from the TL objects and that you can view on the chart. The pan and zoom functions are constrained to operate in this time range window.

View Samples / Most Recent allows you view new samples as they are collected by the TL objects. Then, Time Span allows you to set the time interval in the past that you want to view samples for.

View Samples / Go To sets the time of the sample that is displayed at the mid-point of the axis. Then, Time Span allows you to set the width of the time range window.

Adjusters on the chart allow you to move the time range window in increments of the Time Span setting.

### *Time Span Axis and the Chart Span Axis*

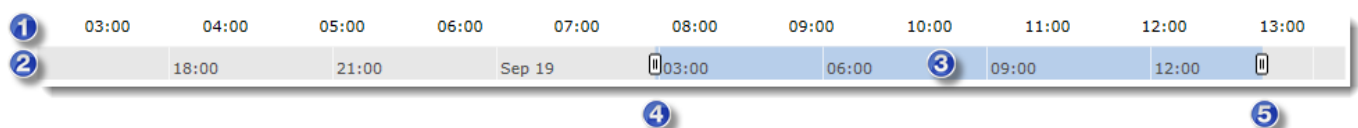
The Time axis displays two scales: the chart span axis and the time span axis.

The chart span axis displays the time line of the samples that visible and are plotted in the chart.

The time span axis displays the time line for all of the samples that the MT object loaded from the TL objects. The View Samples and the time span settings determine what samples are loaded.

When you zoom and pan, the chart span axis time line changes and the time span axis doesn't. However, the chart span time line is highlighted in blue on the time span axis. The two time adjusters mark the earliest and latest times of the chart span time line, on the time span axis.

The example below identifies the chart span axis, the time span axis and the time range adjusters.



### *Legend*

1. The chart span axis with zoom in applied
2. The time span axis when Time Span is set to 24 Hours.
3. The time span axis displays the chart span axis time range highlighted in blue.
4. Time range adjuster that sets the earliest time for the chart span axis.
5. Time range adjuster that sets the latest time for the chart span axis.

## Legend

The legend, which is located above the chart, displays the names of the objects that are monitored by the TL objects and the colors of their plots.

When a TL object resides on a remote controller rather than on the controller with the MT object, then the remote controller's address is shown as a prefix to the object name.

The legend may be displayed in up to four groups that are labelled Left, Right, Digital and Multistate. Objects listed for the Left group are associated with the y-axis scale on the left side of the plot, objects listed for the Right group are associated with the y-axis scale on the right side of the plot, objects listed for the Digital group are associated with TL objects that contain digital samples and objects listed for the Multistate group are associated with TL objects that contain multi-state samples.

## Plotting COV Samples

When the monitored object provides an analog value and the TL object collects samples based on change of value, then the following rules are applied when plotting the line that joins the samples.

- When the difference between two adjacent samples is greater than 1.5 times the COV increment, then the points are joined by a step change line.
- When the difference between two adjacent samples is less than or equal to 1.5 times the COV increment, then the points are joined by a sloped line.

When more than one sample has the same time stamp then increments of one one-hundredth of a second are added to the time stamps to differentiate them.

## Configuration Fields

### *View Samples*

Most Recent specifies that you want the chart to be dynamic and to always displays new samples as they are collected by the TL objects.

The MT object loads and displays data samples relative to the enteliWEB client browser time, not relative to the device's local time. When the device is in a different time zone than the client browser, Most Recent doesn't work.

Go To allows you to select the time and date that you want to display at the center of the chart's timeline.

### *Time Span*

Time Span specifies the time interval that you want to view data samples for. That is, it sets the maximum extent of the chart's timeline.

When you select Go To and set a date and time, then half of the data samples that the MT object loads are later than the date and time, and half of the data samples are earlier than the date and time.

### *TL Reference*

TL Reference specifies the local or remote TL object that you want to view data samples from.

### *Axis*

Axis specifies, for analog values, which y-axis, left or right, has the corresponding units of measure.

Axis specifies, for digital values, that the digital area of the chart is to be used for the plot.

### *Color*

Color specifies the color of the line on the chart for the TL object samples.

## Tasks – Multitrend Object

### Configuring a Multitrend Object - Main Steps

1. Add the TL objects you want to view samples from, as described in [Adding A Trend Log Object to the MultiTrend Object Chart](#).
2. Adjust the View Samples and Time Span settings to load the data samples you want to plot from the TL objects, as described in [Setting the Time Span](#).
3. The changes that you make take effect immediately.

### Adding a Trend Log Object to the Multitrend Object Chart

1. In the area titled Trend Setup, click Add. The Edit Settings dialog opens.
2. Enter the TL Reference, as follows:
  - By the object name. Enter a letter or number contained in the name of the object. enteliWEB builds and displays a list of matching objects. Choose the object you want from the list. This field is an object picker. See About the Object Picker for information about a field that is an object picker.
  - By the object reference number. For example, 9100.TL1 or just TL1 when the TL object is local.
3. Select the y axis that pertains to the type of data samples that the TL object collects.
4. Select the line color you want for the plot of the data samples.
5. Click OK to add the TL object to the chart. The chart refreshes immediately to plot the TL object's data samples on the chart. The name of the monitored object is added to the legend above the chart.

When the TL object's samples are not displayed, consult the History log to determine the reason.


### Setting the Time Span to View New Samples

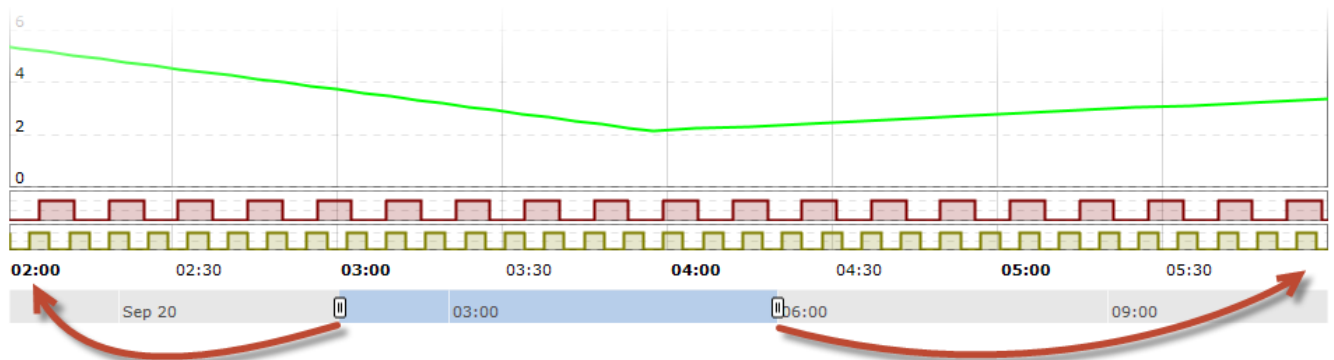
1. In Chart Options, select Most Recent
2. With View Samples, set the date and time you want to anchor the right end of the Time Span axis.
3. Select the Time Span from the list to set how far in the past you want to view.
4. The Time Span axis is updated immediately.

## Setting the Time Span to View Samples in the Past

1. In Chart Options, select Go To
2. Select the time and date that you want to be displayed at the mid-point of the axis and click Go.
3. Select the Time Span from the list. Time Span sets the entire range of the axis.  
The Time Span axis is updated immediately.


## Zooming In the Chart View

1. Method A: Click  to enable Zoom mode. Click and drag the mouse cursor over the chart to highlight the time range you want to expand. Release the mouse and the chart timeline expands to display only the selected time range.
2. Method B: Click and drag the time range adjusters to the earliest and latest times you want to view on the chart. The chart plot adjusts to display only the data samples that were collected between those times.  
For example, as shown below, the time range adjusters set the earliest time to 02:00 and the latest time to 06:00.






## Panning the Chart View


The panning function described here operates over the data samples that the MT object has loaded from the TL objects. It is similar to moving both time range adjusters in the same direction.

1. Zoom in the chart.
2. Click  to enable Pan mode.
3. Click the mouse cursor on the chart and drag left to view later data samples or drag right to view earlier data samples, from the data samples.

## Loading and Viewing Adjacent Earlier or Later Data Samples

1. Click  to zoom out to display all the data samples that the MT object loaded from the TL objects. When this button is not displayed, the chart is already displaying all the data samples that were loaded from the TL objects.
2. Click  to load the adjacent later data samples for the interval specified by Time Span.
3. Click  to load the adjacent earlier data samples for the interval specified by Time Span.

## Zooming Out the Chart View

1. Method A: Click  to zoom out to display all the data samples that the MT object loaded from the TL objects. When this button is not displayed, the chart is already displaying all the data samples that were loaded from the TL objects.
2. Method B: Position the time range adjusters to the earliest and latest times you want to view on the chart. The chart plot adjusts to display only the samples that were collected between those times.

## Viewing Sample Data from the Chart

1. Move your mouse cursor over the chart.
2. When the mouse cursor passes near a sample, the sample value is displayed adjacent to the data point and the associated timestamp is displayed on the Time axis.

## Removing and Restoring a TL Object Plot from the Chart Temporarily

### *Removing a TL Object Plot from the Chart Temporarily*

In the area titled Trend Setup, clear the checkbox that is adjacent to the TL object you want to remove from the chart. The plot for that TL object is no longer displayed on the chart.

### *Restoring a TL Object Plot to the Chart*

In the area titled Trend Setup, select the checkbox that is adjacent to the TL object you want to restore to the chart. The plot for that TL object is displayed on the chart.


## Printing the Chart

Click  to begin. Follow your browser's print dialogs to complete.

## Downloading Data Samples to CSV File

The CSV (Comma Separated Values) file contains data samples for the time interval defined by the Time Span setting.

The name of the CSV file is of the form MT\_<MT object name>.csv. Characters that are not allowed in a filename are removed from the MT object name.

1. Adjust Time Span for the time interval of the data samples that you want to download. Wait for the samples to be retrieved from their sources.
2. Click  that is located near the upper right corner of the chart to begin the download process. Please wait. There is no visible change immediately to the user interface.
3. Eventually your browser prompts you to save the csv file.

## Importing CSV file into Excel

Data from TL and MT objects can be exported to a CSV (Comma Separated Value) file. The following procedure ensures that special characters such as unit symbols are converted correctly when a CSV file is imported into Excel.

1. Open Excel
2. Select Data > From Text. The Import Text File dialog opens.
3. In the Import Text File dialog, set the file type to \*.csv
4. Navigate to and select the CSV file you want to import into Excel.
5. Click Import. The Text Import Wizard Step 1 dialog opens.
6. In the area titled Original data type, select Delimited.
7. From the list labeled File origin, select 65001 : Unicode (UTF-8).
8. Click Next. The Text Import Wizard Step 2 dialog opens.
9. In the area titled Delimiters, select Comma.
10. Click Next. The Text Import Wizard Step 3 dialog opens.
11. Click Finish. The Import Data dialog opens to ask the question Where do you want to put the data?
12. Make any necessary changes to this dialog and click OK.
13. The data is imported and is displayed in the Excel spreadsheet.





## Chapter 8 – Alarms and Events Overview

This chapter provides an introduction to the Delta Controls Event Management System. Topics include alarm and event management, the alarm list page, the notification history window and how user group permissions affect alarm management.

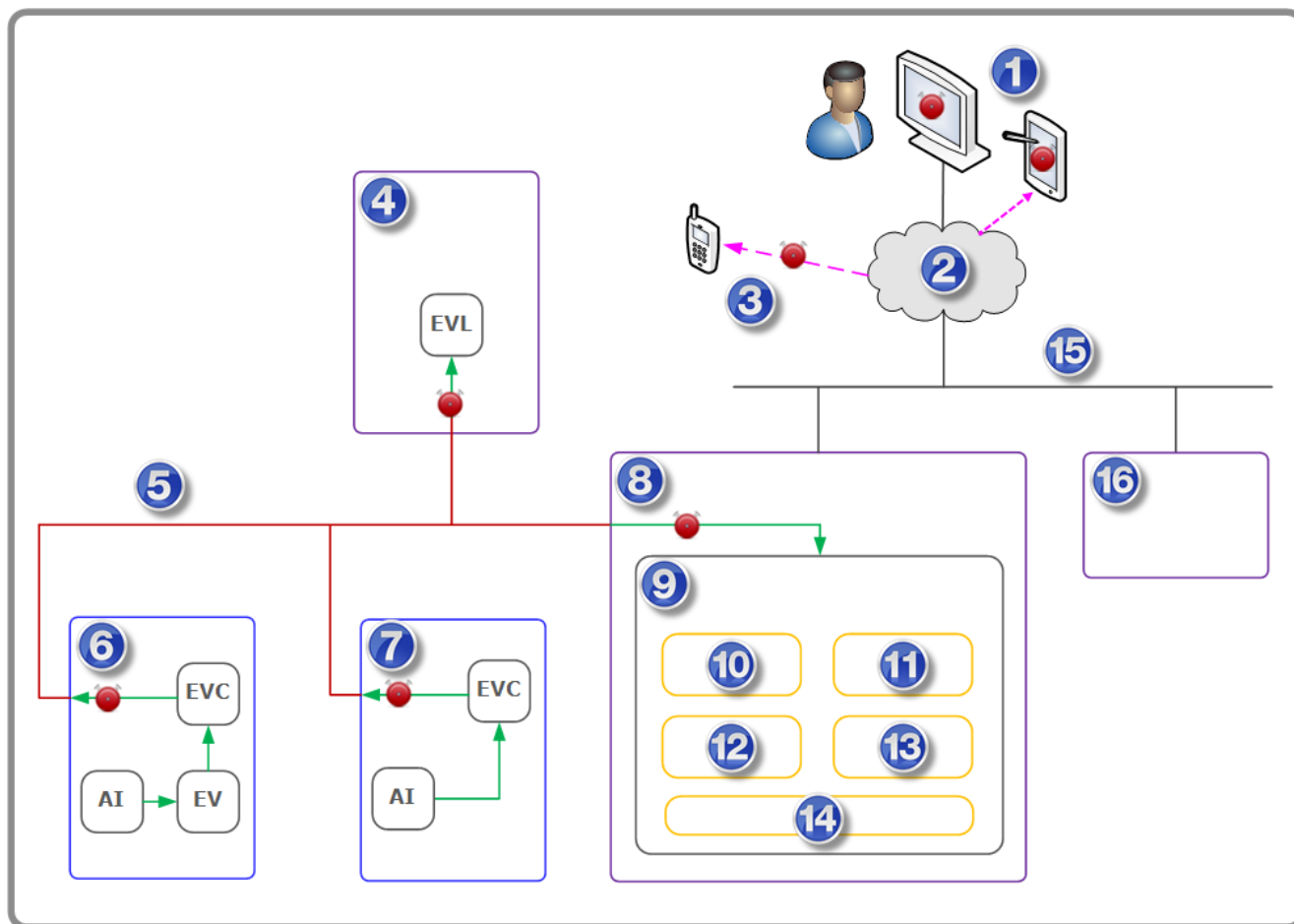
### Overview of the Delta Controls Event Management System

The Delta Controls Event Management System conforms to the ASHRAE Standard for the management of events and alarms. However, it also includes additional proprietary features that enhance the operation and maintenance of event management across one or more sites.

In the Delta Controls Event Management System, the standard BACnet event management objects are referred to by slightly different names and abbreviations than in the standard, as follows:

ASHRAE Standard Object Name	Delta Object Name	Delta Object Abbreviation
Event Enrollment object	Event object	EV
Notification Class object	Event Class object	EVC
Event Log object	Event Log object	EVL

## Illustration: Delta Controls Event Management System



### *Legend: Delta Controls Event Management System*

1. User manages alarms with enteliWEB using the Alarm List page and the Notification History window.
2. LAN, WAN or Internet cloud
3. User receives alarm notifications via email or SMS message.
4. Historian server logs and archives alarm notifications
5. BACnet network
6. In this example, the EV object detects the alarm condition in the monitored object, the AI object. The EVC object sends an alarm notification over the network.
7. In this example, the intrinsic alarming function of the object, the AI object, detects the alarm condition. The EVC object sends an alarm notification over the network.
8. enteliWEB server
9. enteliWEB's alarm and event management system
10. Alarm list
11. Notification history

12. Alarm groups
13. Alert rules
14. Log
15. TCP/IP network
16. SMTP server, needed for emailing alarm notifications

## Example Sequence of Steps in Event Management

The following example describes the sequence of steps that occurs when the event management system detects and reports an alarm condition.

For example, a room temperature is monitored and an alarm is reported when the room temperature becomes too high or too low. An AI object obtains the room temperature from the room temperature sensor. An EV object monitors the AI object's value. The EV object is configured with the parameters for what the reasonable temperature limits are for this room.

Alternatively, instead of using an EV object, the AI object's intrinsic alarming capability could be used to monitor the room temperature. That is, the AI object would be configured with the parameters for what the reasonable temperature limits are for this room.

At 72°F (22.2°C), the room temperature is acceptable. However, if the room temperature rises to 85°F (29.4°C), the room is clearly too hot and this condition must be reported.

The EV object recognizes the alarm condition and reports it by notifying the associated EVC object.

The EVC object prioritizes the event as to its importance and then sends a notification message over the BACnet network so other controllers and the operator work station can act on it.

At this point the AI, EV and EVC objects have done their jobs by reporting the alarm to the rest of the system. Now, depending on the destinations that are configured in the EVC object's recipient list, the following actions may occur:

- an EVL object on a controller records the alarm in its local log
- an EVL object on a Historian server records the alarm in its SQL database
- enteliWEB adds the alarm to its alarm list and notifies one or more users who are logged in
- enteliWEB sends a message by email to notify other users about the alarm
- an enteliWEB user manages the alarm to ensure that the condition that caused the room temperature to rise is fixed.
- an enteliWEB user acknowledges the alarm if that is required.

## Detecting Alarm Conditions

The ASHRAE Standard specifies the algorithms that can be used to detect alarm conditions. Delta has implemented most of these algorithms in the EV object and in the objects that support intrinsic alarming.

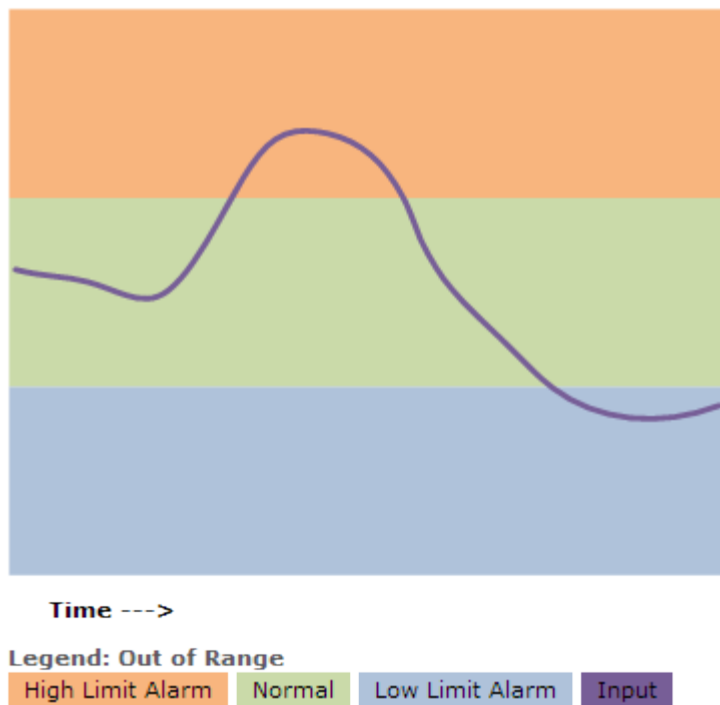
Delta recommends the following algorithms for alarm detection. Other algorithms that are specified in the ASHRAE standard, such as change of bitstring and change of value, are not typically useful in a building automation system.

### Out of Range

The out of range algorithm asks the question: "Is the analog input in its normal range between fixed limits?". A setpoint is not involved.

When the input is not in the normal range, then a high limit or low limit alarm is generated. See Event Class object out of range settings in the enteliWEB help for information about configuring the out of range algorithm.

*Illustration: Out of Range*

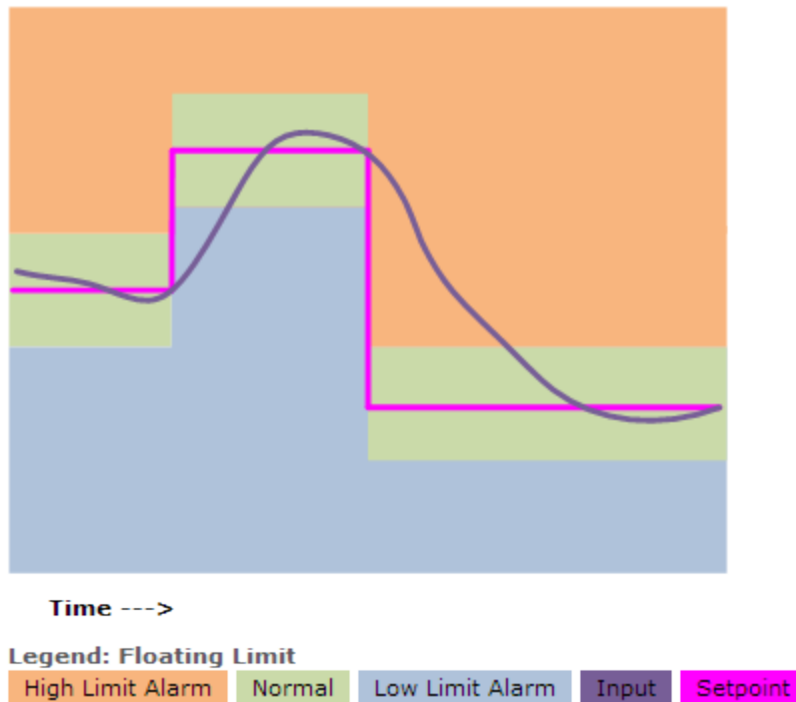


## Floating Limit

The floating limit algorithm ask the question: "Is the analog input close to the setpoint?".

When the input is not in the normal range with respect to the setpoint, then a high limit or low limit alarm is generated. See Event Class object floating limit settings in the enteliWEB help for information about configuring the floating limit algorithm.

### *Illustration: Floating Limit*

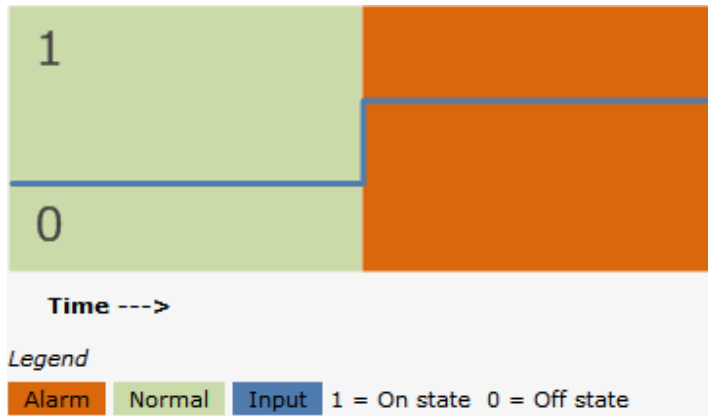


## Change of State

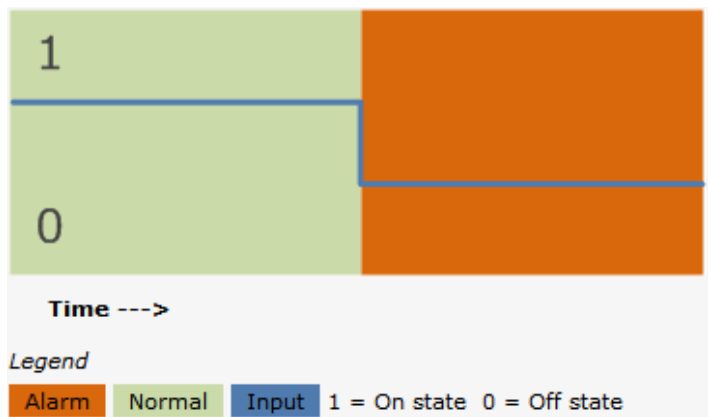
The change of state algorithm ask the question: "Is the binary input on or off?".

When the input is not in the expected state, then an alarm is generated. See Event Class object change of state settings in the enteliWEB help for information about configuring the change of state algorithm.

### *Illustration: Change of State to On*



### *Illustration: Change of State to Off*

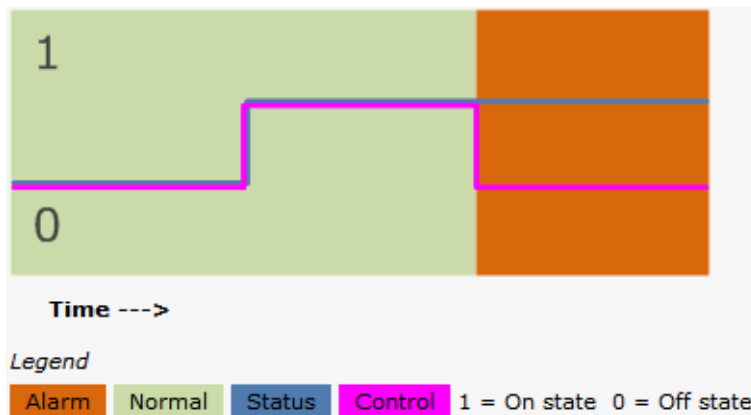


## Command Failure

The command failure algorithm ask the question: "Is the status of the binary input equal to the control signal?".

When the status input is not in the same state as the control signal, then an alarm is generated. See Event Class object command failure settings in the enteliWEB help for information about configuring the command failure algorithm.

### *Illustration: Command Failure*



## Prioritizing Events and Alarms in the Delta System

In the Delta system, the Event Class (EVC) object is responsible for setting the importance or priority of the event or alarm. In the ASHRAE Standard, the EVC object is referred to as a Notification Class object.

### Categorizing Events With EVC Object

The EVC object allows the many events that a building automation system generates to be grouped into categories. Each category takes its name from the name of an EVC object.

The database in a Delta controller includes the following EVC objects:

EVC Name	Object Reference
Maintenance	EVC1
Network	EVC2
Security	EVC3
Critical	EVC4
Notification	EVC5
Fire	EVC6
Access Control Event	EVC7
Access Control Alarm	EVC8
Archival	EVC9

Additional EVC objects can be created to allow better alarm filtering. It is important, however, that each controller on the network contains the same EVC objects.

A multi-building WAN building automation system often benefits from having a unique event class or classes for each building.

The EVC object also allows you to set an individual BACnet priority for each of the three event transitions: To Alarm, To Fault and Return to Normal. The BACnet priority provides enteliWEB with an alternative to the Delta event class categories, for prioritizing alarms.

### Prioritizing Alarms With Alarm Groups

Alarm prioritization takes place when the alarm notification reaches enteliWEB. enteliWEB determines the priority from the alarm groups you create and maintain. An alarm group is assigned a combination of event classes and BACnet priority numbers.

The order that the alarm groups are listed on the Alarm Settings page determines their relative priorities. Alarm groups is an administrative function.



## Managing Events and Alarms

### Presenting Active Alarms to a User

See [Alarm List Concepts](#) for information about enteliWEB's capabilities for managing events and alarms.

### Annunciating an Alarm to a User

enteliWEB provides a range of capabilities for annunciating the alarm notification to the user. See [Alarm Notifications](#) for that information.

### Acknowledging Alarms

The acknowledge settings in the EVC object determine if someone has to acknowledge the alarm when it occurs. The EVC object allows you to set an individual acknowledge requirement for each of the three event transitions: To Alarm, To Fault and Return to Normal. Typically, Return to Normal does not require an acknowledgment.

The acknowledge settings in the EVC object are particular to each controller. For consistent system behavior, the acknowledge settings for a given event class must be kept the same in all controllers.

### Logging Events and Alarms

Event and alarm logging is performed by an Event Log (EVL) object. An EVL object on a controller can keep a history of recent alarms only, due to the memory limitations of the controller.

An EVL object on a Historian server can archive an unlimited history of alarms.

### Archiving Events and Alarms

Historian is a licensed Delta software application that maintains a data archive for alarms and events in an SQL database. Historian stores data for an unrestricted period of time and allows users to record a large data set.

To record alarm events, Historian uses an Event Log object named EVL1 which records all non-access control events via Event Class objects (EVCs) 1 through 6. These six EVC objects correspond to the alarm classes: Maintenance, Network, Security, Critical, Notification and Fire.

Additional EVL objects can be created on the Historian computer and linked to an EVC object. All events recorded by these EVL objects are stored directly in the Historian database.

To view the contents of Historian's alarm database, use the EVL1 object's dialog.

## Alarm List Concepts

The Alarm List page provides all the tools you need to manage the alarm notifications that are reported to the enteliWEB alarm and alert management system.

The Alarm List page lists active alarms that have been reported by objects in devices on a BACnet network. Alarms are reported when the object that detects a problem generates an alarm notification that is sent over the BACnet network.

The alarm list reflects only the alarm notifications that reach enteliWEB. Therefore, the definitive source for active alarms remains in the objects.

The Alarm List page allows you to perform the following tasks:

- Acknowledge one or multiple alarms
- Search the alarms list based on text
- Filter the alarms list based on text
- Filter the alarms list based on numerous criteria
- Create reusable filters based on numerous criteria
- Flag one or multiple alarms for specific treatment
- Assign one or multiple alarms to a user
- Add notes to one or multiple alarms
- View trend log plot
- View the alarm history
- View related objects
- Configure the emailing of alarm notifications to users or groups of users
- Update the alarm list from the source devices
- Remove one or multiple alarms from the alarm list
- Save alarm list as PDF or as CSV file

See [Tasks - Alarm List](#) for the detailed procedures.

### What is an Active Alarm?

When a problem is detected by the building automation system such as a room temperature that is too high or a freeze stat that is tripped, an alarm notification is generated and is sent to enteliWEB over the BACnet network. enteliWEB notifies the user and places the alarm on the alarm list.

An alarm is active, and therefore remains on the alarm list, when one or both of the following two conditions is present:

1. The building automation system component that is reporting the problem is in either an alarm state or the fault state currently  
or
2. The building automation system component no longer has the problem and is in the normal state currently but it was previously in either an alarm state or the fault state that was not acknowledged

An alarm notification is generated by an Event (EV) object or an Event Enrollment object that is associated with the monitored object or by the monitored object itself when it supports intrinsic reporting.

An alarm notification can also be generated by a custom module.

## What is an Alert?

When a problem is detected with an enteliWEB subsystem in the enteliWEB server, an alert notification is generated. An alert, therefore, is an alarm that reports an internal problem rather than an alarm that reports a problem from the building automation system via the BACnet network.

In addition, an application module that has been implemented with the enteliWEB API can generate alerts.

The Alarm List page allows you to manage alerts in the same way that you manage alarms.

For detailed information about alerts, see [Alerts](#).

## What is Filter?

Perhaps the most powerful feature of the Alarm List page is its filters. A filter allows you to narrow down the number of alarms that are listed by specifying the criteria that an active alarm must match to be on the Alarm List page.

Filters are additive, that is, you can apply more than one filter to the alarm list. The criteria of each filter is ANDed to create a composite filter. The result is that only active alarms that match the composite filter are listed on the Alarm List page.

You can create any number of filters to allow you focus quickly on the alarms you are interested in, such as critical alarms, alarms assigned to you, alarms from certain devices, and so on.

A filter also governs some aspects of the treatment of the alarms such as visual notifications and email notifications.

### How Do You Extinguish an Alarm?

To extinguish an alarm and remove it permanently from the alarm list you must resolve the condition or conditions that make the alarm an active alarm.

If the alarm requires an acknowledgment, then you must acknowledge it.

If the component that has the problem is in either an alarm state or the fault state currently then you must correct the problem to allow the component to return to the normal state.

### When Happens to an Alarm When it is No Longer Active?

When an alarm is no longer active, it is placed in the enteliWEB log. To view the enteliWEB log, select the Log section from the left navigation pane.

## How the Alarms List Page is Organized

The Alarm List page is organized to allow for many different alarm management styles and approaches. The following illustration identifies the functional components and their location on the Alarm List page. Following the illustration, each component is described.

*Illustration: Layout of the Alarms List Page*



### *Legend*

1. Source for alarms
2. Command list
3. Search
4. Filter and Manage Filters buttons, save as PDF or CSV buttons
5. Quickbar
6. List of active alarms
7. Alarm flags, Assign to and Notes
8. Trend log plot
9. History
10. Related Items
11. Page Selection and Refresh

### *Source for alarms*

The alarms that are listed on the Alarm List page come from the one source that you select in the Alarms section of the left navigation pane or from the source or sources you configure in the advanced filter.

The Alarms section of the left navigation pane lists the following types of sources, in tree view format:

- Sites
- Alerts
- Views

The advanced filter allows you configure the following types of sources:

- Multiple sites
- Multiple systems/views
- Range of device addresses
- Types of objects

### *Command list*

The Command list allow you to select from the following commands.

**Acknowledge:** Acknowledges the alarms that you have selected from the alarm list. You are prompted to add an acknowledge message.

**Acknowledge All:** Acknowledges all alarms on the alarm list that require an acknowledgement. You are prompted to add an acknowledge message.

**Update Alarm List:** Discards the current alarm list that is held in the BACnet Server and reloads the active alarms from all devices and objects on the network.

### *Search*

The search allows you to narrow down the number of active alarms that are displayed in the alarm list.

Search matches the text fragment you enter with any occurrence of that fragment in any field in an alarm notification, for the active alarms that are listed. For example, enter temp in the search field to view only the active alarms in the list in which temp or words that include the letters temp appear in the alarm notification or in associated information such as alarm flags, assign to and notes.

## *Filter and Manage Filter Buttons*

### **Filter**

The Filter dialog allows you to search based on information in certain fields of an active alarm. You can save the filters that you use regularly.

The Filter dialog is where you can create filters and apply them against the active alarm list to test them. The Filter dialog is hidden when it is not being used.

### **Advanced Filter Dialog**

The Advanced Filter dialog allows you to create a BACnet network-oriented filter to filter across multiple sites, by device range, system and object type. The Advanced Filter dialog is included as an option in the Filter dialog.

When multiple filters are activated, then the alarm list displays only the active alarms that meet the filter settings of all of the activated filters. That is, search, filter and quickbar are logically ANDed.

### **Manage Filters**


The Manage Filters dialog allows you to view and change the filter setting and attributes of saved filters, depending on the your permissions. Administrative users are granted more capabilities than non-administrative users.

The Manage Filters dialog allows administrative users to assign filters to users and groups and to subscribe users and groups to receive alarm notification emails.

See [Managing Filters](#) for information about filter management capabilities for administrative and non-administrative users.

## *Save as PDF or CSV File Buttons*

The  button allows you to save the active alarms in the list to a file in PDF format.

The  button allows you to save the active alarms in the list to a file in CSV (Comma-Separated Value) format.

## *Quickbar*

The quickbar pane holds the filters that you use frequently to allow you to activate and deactivate them with a click. An activated filter is displayed with red background highlighting.

The quickbar is consistent across the alarm lists for multiple sites and views. That is, when you select different items in the Alarms section of the left navigation pane, the quickbar remains in place with the all the filters displayed.

The quickbar is hidden when it holds no filters. You add a filter to the quickbar using the Manage Filters dialog.

### *Alarm List*

The alarm list displays detailed information about the active alarms that match your text search and filter settings.

When you are not using the Advanced filter, the alarm list displays active alarms for the one source that you selected in the Alarms section of the left navigation pane. Alternatively, if you are using the advanced filter then the alarm list displays active alarms for the sources that you have selected in the advanced filter.

When the text search and filter settings are empty then the alarm list displays all of the active alarms that enteliWEB knows about, for the source that you selected in the Alarms section of the left navigation pane.

See [Alarm List Reference](#) for the organization of the information that is presented in an active alarm.

### *Alarm Flags, Assign To and Notes*

The Alarm Flags, Assign To and Notes pane displays information about the active alarm that you selected in the alarm list.

The Alarm Flags and Assign To assignments and the Notes information you enter for an alarm are saved by enteliWEB. Then when the same alarm occurs again and is listed on the alarms list, the Alarm Flags, Assign To and Notes from the previous occurrence of that alarm are displayed.

You can add and save the following information about the alarm, information which you can then filter on:

**Alarm Flags:** An alarm flag is an attribute that you can assign to one or more alarms. Typically an alarm flag is used to mark a critical alarm or to assist you to implement a workflow for managing certain types of alarms. Alarm flags have no inherent meaning to enteliWEB.

enteliWEB has four built-in alarm flags: Nuisance, Important, Needs Repair, Under Repair

**Assign to:** allows you to associate an enteliWEB user with one or more alarms. By assigning alarms to users you can implement a workflow for delegating alarms. Each user should create an "assigned to me" filter.

**Notes** allows you to add comments about one or more alarms. Anyone who views the alarm will see the notes.



### *Trend Log*

The trend log pane displays a plot from the trend log object that is trending the monitored object. The trend log pane is hidden when there is no trend log to display.

### *History*

The History pane displays a list of the recent activity for a selected alarm.

 indicates that an operator acknowledge message is associated with the activity.

### *Related Items*

The Related Items pane lists all the links to associated objects, dashboards and graphics that pertain to the monitored object for a selected alarm.

### *Page Selection and Refresh*

The Page Selection and Refresh area allows you to step through the alarm list from page to page, and to refresh the alarm list either on your command or by enabling enteliWEB to refresh it periodically.

Refresh means to update the Alarm List page with the active alarms that match your text search and filter settings, from the list of active alarms that enteliWEB knows about.

Otherwise, unless enteliWEB is set to refresh the Alarm List page automatically, the alarm list is not updated when new active alarms are annunciated.

When enteliWEB is set to refresh the Alarm List page automatically, it does so approximately every 20 seconds.

When you select an alarm from the alarm list, the automatic refresh function is deactivated.

## **Managing Filters**

You manage filters to keep them current with your changing alarm management needs.

The Manage Filters dialog is provided for managing filters.

The following tasks are involved with managing filters:

- Changing filter settings
- Displaying a checkbox on the Quickbar that can be used to apply the filter
- Disabling alarm annunciations for alarm notifications that match the filter, for the user who created the filter
- Setting the subscriber list of users who will be emailed an alarm notification about alarms that match the filter

Not all users can set the subscriber list. See following sections about the limitations.

### *Managing Filters by a Non-administrative User*

A non-administrative user for alarms is a user who is a member of a group with access to the Alarms section of the left pane navigation tree. A non-administrative user does not have Manage Alarms permission.

A non-administrative user is limited to managing the filters that he or she created. A non-administrative user can't manage a filter on the Quickbar that has been subscribed for the user by an administrative user. Filters that have been created by other users are not displayed in the Manage Filters dialog for a non-administrative user, with one exception. When a non-administrative user is subscribed to email for a filter created by another user, that filter is listed in the Manage Filter dialog. However, the non-administrative user can't change the filter.

A non-administrative user can perform all of the following tasks for a filter that he or she created.

- Create a filter
- Delete a filter
- Change filter settings for filter
- Display a checkbox on the Quickbar that can be used to apply a filter
- Disable alarm annunciations for alarm notifications that match filter
- Subscribe to be emailed an alarm notification about alarms that match filter
- View but not change or delete settings for a filter that an administrative user has subscribed for the non-administrative user

See [Permissions and Alarm Management](#) for other aspects of user permissions and alarms.

## Alarm Notifications

An alarm notification alerts the user that an notification has been received by enteliWEB, that is, a transition has occurred in the state of a monitored object.

enteliWEB provides the following methods for annunciating the alarm notification to the user:

- Notification History Window
- Notification Popup
- Notification Sound
- Notification Status Indicator
- Email
- Alarm Graphic

Each of these methods is described in the following sections.

## Notification History Window

The notification history window displays information about the recent notifications in chronological order.

The notification history window presents, in tabular format, one row that contains the following information, for each notification:

- Color indicator corresponding to the associated alarm group
- Status icon
- Name and link to monitored object
- Alarm notification message text
- Link to acknowledge the alarm, for alarms that require acknowledgment.
- Link to the system dashboard that contains the monitored object
- Link to alarm graphic

When the notification history window is pinned, it remains visible and persists when the user moves from page to page in enteliWEB. When it is not pinned, the notification history window closes when it loses user focus.

The user can clear the notification history window at any time by dismissing the notifications.

### *Behavior of Notification History Window When it is Pinned*

When the notification history window is pinned it remains active and open at all times. A user may or may not be present when new notifications are received and he or she will not see the annunciation. Therefore, a new alarm notification is identified with a shaded background until it is cleared by the user.

## Notification Popup

An popup is a temporary display in the lower right corner of the page that provides summary information to alert the user about one or more new alarm notifications. The user can choose to ignore the popup or to click on it to deal with the alarm immediately.

The notification popup is enabled or disabled in the user settings, by the administrator.

The notification popup can be disabled for certain alarms when an alarm list filter has Exclude from Alarm Notification selected.

## Notification Sound

An alarm notification can be annunciated by sound at the user's workstation. You choose the sounds by adding the sound files to the enteliWEB server and assigning them to alarm groups. A different sound can be played for each alarm group.

The notification sound is enabled or disabled in the user settings, by the administrator.

The notification sound can be disabled for certain alarms when an alarm list filter has Exclude from Alarm Notification selected.

### Notification Status Indicator

The notification status indicator is displayed to allow the user to open the notification history window. When the notification status indicator is clicked, the notification history window opens.

The notification status indicator is presented in the following formats



Two new notifications are listed in the notification history window. The number corresponds to the number of notifications that have occurred since the last time that the user opened the notification history window.



No new notifications are listed in the notification history window.

The notification status indicator is not displayed when the user has dismissed all notifications from the notification history window.

The notification status indicator is enabled or disabled in the user settings, by the administrator.

The notification status indicator can be disabled for certain alarms when an alarm list filter has Exclude from Alarm Notification selected.

### Emailing Notifications

By subscribing to email in an filter, a user can receive an email message for every alarm notification that matches the filter. The email is sent to the address that is specified in the user settings. See [Managing Filters](#) for information about subscribing to alarm notification by email.

Email notification is not enabled and disabled by the Alarm Notification setting in the user settings. See [Permissions and Alarm Management](#) for information about user permissions and email notifications.

A user's email address is specified in the user settings email address.

### Server Not Responding Error

The client computer you are using polls the enteliWEB server periodically to request new alarm notifications to display. When the server does not respond as expected, an error message is displayed in the notification history window similar to following:

A screenshot of an error message displayed in a notification history window. The message is contained within a light blue rectangular box. On the left, there is a button labeled 'Dismiss All' in a grey box. To its right, the text 'Error receiving alarms!' is displayed in red, followed by 'Last Refresh 3 mins ago' in black.

## Permissions and Alarm Management

To allow a user to work with alarms, he or she must be a member of a group with the correct permissions.

Three types of permissions must be taken into account: Administrative permissions, User Interface permissions and BACnet permissions.

### Administrative Permissions

For a user to be able to manage all filters for all users, he or she must be a member of a group with the Manage Alarms permission. See [Managing Filters](#) for information about managing filters.

In the Administrative Permissions section of the group permissions page, configure as follows:

 Manage Alarms

### User Interface Permissions

For a user to be able to manage alarms on the alarm list page, he or she must be a member of a group with Alarms permissions for the user interface.

In the User Interface Permissions section of the group permissions page for the group you want to have access to alarms, configure as follows to allow access to the Alarms section of the left pane navigation tree. Without this permission, the Alarms section is not included of the left pane navigation tree.

  Alarms

### BACnet Permissions

To view the a particular source for alarms, the user must be a member of a group with permission to access that source. For example, to view alarms from a certain site, permission to view that site is required.

### Permissions and Notifications

Notifications, including email, are not annunciated to a user in the following situations:

- User is not a member of a group that has permission for the site.
- User is a member of a group that has permission for the site but user is not a member of a group that has permission for the device.
- User is a member of a group that has permission for the site and for the device but user is not a member of a group that has at least Read permission for the monitored object.

## Alerts

An alert notifies the user about a status change that enteliWEB has detected that originates from a specialized internal system or that originates from an application module that has been added to enteliWEB.

enteliWEB supports the following types of alerts.

### Energy Management Alert

An Energy Management alert monitors the data that the energy management system is importing from an area or a meter. An Energy Management notification is generated when an anomaly is detected in the imported data or when the imported data is significantly different from the target data.

### System Alert

A system alert monitors one of several specialized internal systems that are critical to enteliWEB operation. A system alert notification is generated when an alert detects a problem in the system or connection it is monitoring.

System alerts are created by enteliWEB. You can't change a system alert rule and you can't add alerts to a system alert rule.

System alerts are associated with the Critical event class. When alarm list filters are set to filter only on Critical, then both the alarms and the alerts that are associated with Critical are listed or included in an email. To include only alerts, the filter needs to exclude all sites.

enteliWEB supports the following types of system alerts.

#### *CopperCube Alert*

A CopperCube alert monitors one connection between enteliWEB and a CopperCube. enteliWEB uses the built-in alert rule named CopperCube Offline Detection. enteliWEB creates a separate alert for each connection between enteliWEB and a CopperCube. A CopperCube alert generates an alert notification when the connection fails and when the connection is restored.

A CopperCube alert can't be created or deleted by a user.

#### *Device Offline Detection*

A Device Offline Detection alert detects when a device goes offline. A Device Offline Detection alert is generated for a device when the BACnet Server can no longer communicate with the device.

### *Historian Alert*

A Historian alert monitors the connection between enteliWEB and one or more Historian servers. enteliWEB uses the built-in alert rule named Historian Offline Detection. enteliWEB creates a separate alert for each site that has a Historian server. A Historian alert generates an alert notification when the connection develops a fault or an alarm condition.

A Historian alert can't be created or deleted by a user.

### *Service Alert*

A service alert monitors an enteliWEB service such as the connection service and the report generation engine service. enteliWEB uses the built-in alert rule named Service Monitor. enteliWEB creates a separate alert for each service. A service alert generates an alert notification when the service develops a fault or an alarm condition.

A service alert can't be created or deleted by a user.

## **Application Module Alert**

An application module alert originates from an application that has been developed using the enteliWEB API. An application generates an alert notification based its detection algorithms.





## Chapter 9 – Active Alarm List Details and Tasks

This chapter covers the alarm list page in detail by describing its components and its filtering capabilities. This chapter describes the wide range of tasks that are available to manage alarms and events.

### Information in an Active Alarm Listing

monitored object	event enrollment object
notification class (priority)	assigned to
status icon alarm notification	ack flag date and time
status icon alarm notification	ack flag date and time
status icon alarm notification	ack flag date and time

The following paragraphs describe the information items that are shown in the preceding Organization of Information in an Active Alarm Listing illustration.

#### Monitored Object

monitored object is the name of the object that is in alarm or fault. Also a link to the object page. When you hover the mouse cursor over the monitored object name then its complete object and property reference is displayed.

Click monitored object to open the object page for the monitored object.

#### Event Enrollment Object

event enrollment object is the icon and name of the EV object that is associated with the monitored object. Also a link to the EV object page. When you hover the mouse cursor over the event enrollment object name then its complete object reference is displayed.

If no event enrollment object is displayed then the alarm was generated intrinsically by the monitored object.

#### Assigned To


assigned to is an optional item that indicates the enteliWEB user who is associated with the alarm.

#### Notification Class (priority)

Notification class (priority) displays the name of the class or category and priority number that are included in the notification. When the event is from the BACnet module, the name of the class is the local name of the EVC object given on the controller where it resides, regardless of its object instance.

### Status Icon

status icon provides a visual indication of the status of the monitored object, as reported by the corresponding alarm notification. The possible status icons are as follows:

 when the alarm state is not In Fault and is not Normal


 when the alarm state is In Fault

 when the alarm state is Normal

### Alarm Notification

Alarm notification is the text message that is included in the corresponding alarm notification. The most recent alarm notification is listed first

### Ack Flag

ack flag  is displayed when the corresponding alarm notification needs to be acknowledged. When no ack flag is displayed then that alarm notification does not require notification.

### Date and Time

date and time displays the date and time when the controller generated the alarm notification. This date and time is the local information from the controller. When the controller time is ahead of the enteliWEB server time, then the controller time is displayed in parentheses to indicate that it is in the future. For example, (Apr 23, 2013 4:38 PM)

When you hover your mouse cursor over date and time, a popup displays full date and time information.

## Filter Dialog

### Alarm Group

Alarm Group specifies one or more alarm group names. When an alarm that is of an event class or of a BACnet priority that matches one of the alarm groups, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Alternatively, when exclude is selected then the alarms that don't match any of the specified alarm groups are listed in the Alarm List page.

### Notification Class

Notification Class specifies one or more class or category names from a list of all classes or categories that enteliWEB is aware of, for all the modules that enteliWEB is aware of.

When an alarm is of a class or category that matches one of those that you specified, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Alternatively, when exclude is selected then the alarms that don't match any of the specified event classes are listed in the Alarm List page.

## Alarm State

Alarm State specifies one or more alarm states that are specified in all EVC objects that enteliWEB has found on the network. When an alarm that is of an alarm state that matches one of the alarm states, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Alternatively, when exclude is selected then the alarms that don't match any of the specified alarm states are listed in the Alarm List page.

## Assigned To

Assigned To specifies one or more enteliWEB users to which an alarm has been assigned. When an assigned alarm matches one of the users, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

When Assigned To is blank, then the alarm's assigned to status is not considered.

Alternatively, when exclude is selected then the alarms that aren't assigned to any of the users that are specified in the Assigned To field are listed in the Alarm List page.


## Alarm Flags


Alarm Flags specifies one or more of the alarm flags that can be added to an alarm: Nuisance, Needs Repair, Important, Under Repair. When an alarm matches one of the flags that you specify in the Alarm Flags field, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Alternatively, when exclude is selected then the alarms that are not flagged or are flagged with a flag that is not specified in the Alarm Flags field are listed in the Alarm List page.

## Ack Flags

Ack Flags specifies the acknowledged status of the alarms you want to be displayed on the Alarm List page. When an alarm matches the flag that you selected in the Ack Flags field, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Select *Acknowledged* to list only the alarms in which the most recent alarm notification does not require an acknowledgement. That is, it doesn't display .

Select *Acknowledgement Required* to list only the alarms in which the most recent alarm notification requires an acknowledgement. That is, it displays .

When neither Ack Flag is selected, then the alarm's acknowledged status is not considered.

### Alarm Text

Alarm Text specifies a text phrase or fragment in the alarm text portion of the notification for the alarms you want to be displayed on the Alarm List page. When alarm text matches the text that you specify in the Alarm Text field, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

The filter performs the alarm text matching as case-independent.

### Priority

Priority specifies a range of numbers representing priority of a notification. A notification with priority in the range that you specify is listed in the Alarm List page. Notifications with priority that is outside the range are not listed.

When the notification originates from a BACnet device, priority is the BACnet priority.

#### *Start*

Set the field labelled Start to lowest number in the range.

When the Start field is blank, then the filter assumes it is set to 0.

#### *End*

Set the field labelled End to the highest number in the range.

When the End field is blank, then the filter assumes it is set to 255

### Date/Time

An alarm with an alarm notification that was time-stamped in the time range that you specify is listed in the Alarm List page. Alarm notification that are time-stamped outside the time range are not listed.

Date/Time allows you to specify one of the following time ranges:

#### *Today*

Matches active alarms with an alarm notification that was time-stamped at or after 12:00 am of the current day. The current day is that of the enteliWEB server's date and time.

#### *Last 7 Days (This Week)*

Matches active alarms with an alarm notification that was time-stamped at or after 12:00 am of the day that was seven days ago. For example, today being Monday March 11, then Last 7 Days matches alarm notifications that were time-stamped at or after 12:00 am on Tuesday March 5. The seven days is with respect to the enteliWEB server's date and time.

### *Date Range*

Matches active alarms with an alarm notification that was time-stamped in the date and time range you specify. You can use any combination of the four Date Range fields to specify the exact the time range you want. Start date must be earlier than or the same as End date, when you are using both date fields.



The date and time that are considered by the Date/Time filter is the date and time when the controller generated and time-stamped the alarm notification. The time stamp is local date and time information from the controller. It is not the enteliWEB server's date and time when the alarm notification was received.

### **Alert**

Alert specifies one or more sources for alerts that are present on the enteliWEB server. When an application module that has been implemented with the enteliWEB API uses the alarm management system, then its name is specified as a source for alerts.

When an alert that is from a source that matches one of the specified sources, then that alert is listed in the Alarm List page. Alerts that do not match are not listed.

### **Object**

Object specifies some text that you want to match with object information related to an alert, such as the object name, the object type or the object reference. The matching is case-insensitive.

For information about how to specify the object, see [Object](#) as used in the advanced filter for alarms.

## **Advanced Filter**

### **Site**

Site specifies one or more site names. When an alarm is from any of the specified sites, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

When one or more sites are specified in the Site field, then the source that you selected in the Alarms section of the left navigation pane is superseded or overridden by these sites, in the filter.

When the Site field is blank then the site that you have selected in the Alarms section of the left navigation pane is used.

### Device Range

Device Range specifies a range of device addresses. When an alarm is from any of the devices with an address in the range of device addresses, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

The device address you enter in the field labeled Start must be less than or equal to the device address you enter in the field labeled End.

When the Device Range fields are blank then an alarm that is from any of the devices from the source or sources is listed in the Alarm List page.

### System

System specifies one or more system names. When an alarm is from any of the objects that are associated with a system, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

When one or more systems are specified in the System field, then the source that you selected in the Alarms section of the left navigation pane is superseded or overridden by these systems, in the filter.

### Object

Object specifies some text that you want to match with object information such as the object name, the object type or the object reference. The matching is case-insensitive.

When an alarm is from a matching object, then that alarm is listed in the Alarm List page. Alarms that do not match are not listed.

Some examples:

- AI or ai selects the alarms that have ai in their name or in their object type abbreviation
- AV2 selects the alarms from all AV objects with instances that starts with AV2, such as AV2, AV21, AV232 on so on.
- temperature selects the alarms from objects that have temperature in their name
- 5600:AV3 selects the alarms from AV objects on device 5600 with instances that starts with AV3

You can enter multiple items that are comma-separated in the Object field. When multiple items are entered, an alarm that matches one or more item is listed.

## Filter Attributes

The filter attributes described in the following sections are displayed in the Manage Alarms dialog.

### Add to Quickbar

Select Add to Quickbar when you want the filter to be accessible from the quickbar.

To remove the filter from the quickbar, clear this attribute from the filter.

### Subscribe to Email

The Subscribe to Email setting is available to a user who is not a member of a group with Manage Alarms permission.

Select Subscribe to Email when you want alarm notifications that match the filter to be emailed to you. The email messages are sent to the address you specify in your user information settings.

When you select this attribute, then the alarm notifications that match the filter are emailed to you regardless of which if any filter is currently in effect on the Alarm Lists page.

To stop receiving email, clear this attribute from the filter.

### Exclude from Alarm Notification

Select Exclude from Alarm Notification when you don't want alarm annunciations for alarm notifications that match the filter.

When you select this attribute, then you don't see these annunciations regardless of which if any filter is currently in effect on the Alarm Lists page.

To resume the annunciations, clear this attribute from the filter.

## Alarm Details

The alarm details information you enter for an alarm are saved by enteliWEB. Then when the same alarm occurs again and is listed on the alarms list, the alarm details from the previous occurrence of that alarm are displayed.

### Alarm Flags

An alarm flag is an attribute that you can assign to one or more selected alarms. Typically an alarm flag is used to mark a critical alarm or to assist you to implement a workflow for managing certain types of alarms.

Alarm flags have no inherent meaning to enteliWEB. They do, however, provide additional options that you can use in a filter.

The following alarm flags are built-in to enteliWEB:

- Nuisance
- Important
- Needs Repair
- Under Repair

### Assign To

Assign To specifies an enteliWEB user that you can assign one or more selected alarms to. By assigning an alarm to a user, you can implement a workflow for managing certain types of alarms.

### Notes

Notes allows you to add comments about one or more selected alarms.

Notes are included in the email message for this alarm.

## Tasks - Alarm List

### Selecting the Source for Alarms in Alarms List

1. In the left navigation pane in the Alarms section, navigate the tree view to locate the source you want to list the alarms for.
2. Select the source. The Alarm List page opens to display the alarms from the selected source.


### Sorting the Alarm List

To sort by monitored object, click the column with Monitored Object heading.

To sort by date and time of most recent alarm notification, click the column with Date heading.

To sort by alarm group priority, click column with ! heading.

### Refreshing the Alarm List

Click  at the bottom of the page to refresh the alarm list immediately.

Select Auto Refresh at the bottom of the page to cause the alarm list to be refreshed automatically.

When you select an alarm from the alarm list, the auto refresh function is deactivated.



### Viewing Details about the Monitored Object

Click the monitored object name. The monitored object name is in bold type on the top line of the alarm entry in the alarm list. The corresponding object page opens.



## Tasks - Acknowledging Alarms

### Acknowledging an Alarm





1. Select the alarm you want to acknowledge. Only an alarm that displays  can be acknowledged.
2. Click Acknowledge in the Flags, Notes and Assign To pane,  
Or  
Select Acknowledge from the Command list,  
Or  
Click 
3. The Acknowledge Message dialog opens. Enter a brief message to describe your acknowledge action. The acknowledge message is optional, it can remain blank. Click Acknowledge to save the message and to confirm the acknowledge action. See Verifying that an Alarm Acknowledgment is Confirmed.

You can also [acknowledge alarms from the notification history window](#).


### Verifying that an Alarm Acknowledgment is Confirmed

You can verify that the acknowledgment is confirmed by the device as follows:


#### OK Result

-  is displayed at the top of the page.
- A notification stating "Acknowledgment confirmed by device ..." is received from the device and listed in the notification history. When the alarm you selected to acknowledge displayed multiple  prior to being acknowledged, then there will be a separate notification for each .
- Refresh and review the alarm list:
  - When the acknowledgment means that the alarm is no longer active, then the alarm is removed from the alarm list.
  - When the alarm remains active after the acknowledgment, then the alarm remains on the alarm list but the  is removed.
- The confirmation is recorded in the History pane.

#### Error Result

When acknowledgement failed, then the error banner  is displayed at the top of the page.

### Acknowledging Multiple Alarms

1. Identify the alarms you want to acknowledge by selecting the corresponding checkboxes. Only alarms that display  can be acknowledged.
2. Click Acknowledge in the Flags, Notes and Assign To pane,  
Or  
Select Acknowledge from the Command list.
3. The Acknowledge dialog opens. Enter a brief message to describe your acknowledge action. The acknowledge message is optional, it can remain blank. The message is recorded for all alarms that are acknowledged.
4. Click Acknowledge to save the message and to confirm the acknowledge action.  
See [Verifying that an Alarm Acknowledgment is Confirmed](#).

### Acknowledging All Alarms

1. Select Acknowledge All from the Command list.
2. The Acknowledge dialog opens. The title bar displays the number of alarms that will be acknowledged. Enter a brief message to describe your acknowledge action. The acknowledge message is optional, it can remain blank. The message is recorded for all alarms that are acknowledged.
3. Click Acknowledge to save the message and to confirm the acknowledge action.  
See [Verifying that an Alarm Acknowledgment is Confirmed](#).

## Tasks - Alarm Details

### Adding an Alarm Flag to an Alarm

1. Select the alarm you want to add the flag to. The alarm details are displayed.
2. Select the flag or flags that you want to add to the alarm.
3. Click Save. See [Saving Alarm Details](#) to understand how the result of the save operation is displayed.

### Assigning an Alarm to a User


1. Select the alarm you want to assign. The alarm details are displayed.
2. Select the user you want to assign the alarm to, from the Assign to list of users.
3. Click Save. See [Saving Alarm Details](#) to understand how the result of the save operation is displayed.


### Adding a Note to an Alarm

1. Select the alarm you want to add the note to. The alarm details are displayed.
2. Enter the text into the Notes field.  
Click Save. See [Saving Alarm Details](#) to understand how the result of the save operation is displayed.

## Saving Alarm Details

The result of the save operation is indicated by a banner at the top of the alarm page.

When the save is successful, then the confirmation banner  is displayed at the top of the page. Also, Observe the History pane.

When the save is not successful, then the error banner  is displayed at the top of the page.

## Tasks – Search

When multiple filters are activated, then the alarm list displays only the active alarms that meet the filter settings of all of the activated filters. That is, search, filter and quickbar are logically ANDed.

### Searching the Alarm List

1. In the Search field, enter the characters that you want to search for in the listed active alarms.
2. Press Enter. The alarm list is updated to list the active alarms that match the active filters.


### Clearing a Search


1. Delete the characters in the Search field.
2. Press Enter. The alarm list is updated to list all active alarms, or, when a filter is active, to list the active alarms that match the filter.

## Tasks – Filters

When multiple filters are activated, then the alarm list displays only the active alarms that meet the filter settings of all of the activated filters. That is, search, filter and quickbar are logically ANDed.



### Creating and Applying a Filter

1. Click  Filter The Filter dialog opens.
2. Select the filter settings you want, in the Filter dialog. See [Filter Dialog](#) for a description of the filter settings.
3. Click Apply. The alarm list is updated to display only the alarms that match the active filters.

To indicate that the listed alarms is a filtered view, the  Filter button changes to  Filtered....

4. To save the filter, see [Saving a Filter](#) for procedure.  
To cancel or reset the filter, see [Resetting or Canceling a Filter](#) for procedure.

## Creating and Applying an Advanced Filter

1. Click  Filter. The Filter dialog opens.
2. Select the filter settings you want, in the Filter dialog. See [Filter Dialog](#) for a description of the filter settings.
3. Click  Advanced Filter Scope. The advanced filter dialog opens.
4. Select the advanced filter settings you want, in the Advanced Filter Scope dialog. See [Advanced Filter](#) for a description of the advanced filter settings.
5. Click Apply. The alarm list is updated to display only the alarms that match the active filters. The alarm source you chose in the left navigation pane is ignored and overridden when you choose items in the advanced filter.


To indicate that the listed alarms is a filtered view, the  Filter button changes to  **Filtered....**

5. To save the filter, see [Saving a Filter](#) for procedure.  
To cancel or reset the filter, see [Resetting or Canceling a Filter](#) for procedure.


## Saving a Filter

1. Create a filter. See [Creating and Applying a Filter](#) or [Creating and Applying an Advanced Filter](#) for procedure.
2. Click Save. The Save Filter dialog opens.
3. Enter a name for the filter, in the Name field.
4. Click Save to save the filter. When you open the Manage Filters dialog, this filter is listed under your username.


To cancel or reset the filter, see [Resetting or Canceling a Filter](#) for procedure.

To select the filter attributes you want to be in effect for this filter, click  Manage Filters and select the attributes. See [Filter Attributes](#) for information about the filter attributes.



## Changing a Saved Filter

1. Click  Manage Filters. The Manage Filters dialog opens.
2. Select the filter you want to change from the list of filters under your username.
3. Change the filter settings and attributes and click Apply.


## Resetting or Canceling a Filter

1. Click  **Filtered....** The Filter dialog opens.
2. Click Reset Filters to remove all the settings from the Filter dialog and the Advanced Filter Scope dialog. The alarm list is updated to display all active alarms or to list the active alarms that match the active filters on the quickbar. The Filter dialog remains open.

The  **Filtered...** button changes to  Filter.



3. Click Cancel to remove all the settings from the Filter dialog and the Advanced Filter Scope dialog, and to close the Filter dialog. The alarm list is updated to display all active alarms or to list the active alarms that match the active filters on the quickbar. The  **Filtered...** button changes to  **Filter**

## Deleting a Saved Filter

1. Click  **Manage Filters**. The Manage Filters dialog opens.
2. Select the filter you want to delete, from the list of filters that are listed under your username, and click Delete.
3. The filter is deleted from your list of filters and it is removed from the quickbar.

## Tasks – Quickbar

### Adding a Filter to the Quickbar

1. Click  **Manage Filters**. The Manage Filters dialog opens.
2. Select the filter you want to add to the quickbar, from the list of filters that are listed under your username.
3. Select Add to Quickbar to display this filter on the quickbar.
4. Click Apply.  is displayed for the filter in the Quickbar column of the Manage Filters dialog.
5. Close the Manage Filters dialog. The filter is on the quickbar.



### Activating a Filter on the Quickbar

Select the adjacent checkbox to activate the filter. An activated filter is highlighted as

 **Critical**

The alarm list is updated to display only the alarms that match the active filters.

### Removing a Filter from the Quickbar


1. Click  **Manage Filters**. The Manage Filters dialog opens.
2. Select the filter you want to remove from the quickbar, from the list of filters that are listed under your username.
3. Clear the check mark from Add to Quickbar to remove this filter from the quickbar.
4. Click Apply.  is no longer displayed for the filter in the Quickbar column of the Manage Filters dialog.
5. Close the Manage Filters dialog. The filter is no longer on the quickbar.

## Tasks – Saving to File


### Printing the Alarm List

See following procedure.

### Saving Alarm List to PDF File

1. Create and apply the filter for the alarm notifications that you want to capture in the PDF file.
2. Click . The PDF file is saved to your browser's download destination. Now you can print the document.



### Saving Alarm List to CSV File

1. Create and apply the filter for the alarm notifications that you want to capture in the CSV file.
2. Click . The CSV file is saved to your browser's download destination.

## Tasks – Email for Non-administrative Users


A non-administrative user is a user who is a member of a group with access to the Alarms section of the left pane navigation tree but who does not have Manage Alarms permission.

### Emailing Alarm Notifications to Yourself

1. Click  Manage Filters. The Manage Filters dialog opens.
2. Select the filter you want to receive email notifications for, from the list of filters that are listed under your username.
3. Select Subscribe to Email to have the alarm notifications that match the filter sent to you by email. The email is sent to the address that is specified in your personal user settings.
4. Click Apply to save the filter.  is displayed for the filter in the Subscription column.


## Tasks – Notifications

### Disabling Annunciation of Alarm Notifications

1. Click  Manage Filters. The Manage Filters dialog opens.
2. Select the filter you want to disable alarm notifications for, from the list of filters that are listed under your username.
3. Select Exclude from Alarm Notification to disable the following annunciations for the alarm notifications that match the filter.
  - Popup notification
  - Sound notification
  - Alarm notification indicator

- Alarm graphics
4. Click Apply. ✓ is displayed for the filter in the Exclude Notifications column.

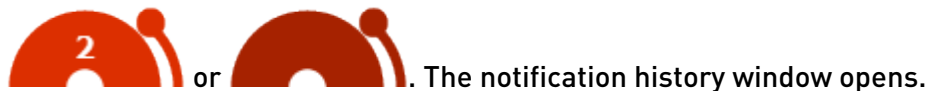
## Enabling Annunciation of Alarm Notifications

1. Click  Manage Filters. The Manage Filters dialog opens.
2. Select the filter you want to enable alarm notifications for, from the list of filters that are listed under your username.
3. Clear Exclude from Alarm Notification to enable annunciations for the alarm notifications that match the filter.
4. Click Apply. ✓ is no longer displayed for the filter in the Exclude Notifications column.

You will now receive alarm annunciations about alarm notifications that match the filter.

## Showing and Hiding the Notification History Window

To show the notification history window, click the alarm notification indicator:



To hide the notification history window, click the alarm notification indicator. To hide the notification history window, it must not be pinned.

## Pinning and Unpinning the Notification History Window

The notification history window can be pinned to remain visible and persist as the user moves from page to page in enteliWEB. When it is not pinned, the notification history window closes when it loses user focus.


To pin the notification history window, click .

To unpin the notification history window, click .

## Viewing Alarm Notification Details in Notification History Window

1. Open the notification history window. See [Showing and Hiding the Notification History Window](#) for procedure.
2. Click the color square that is associated with the alarm notification you want to view the details for. The details popup window opens.

### Acknowledging an Alarm in Notification History Window

1. Open the notification history window. See [Showing and Hiding the Notification History Window](#) for procedure.
2. Click  for the alarm notification you want to acknowledge. The Acknowledge Message dialog opens.
3. Enter a brief message to describe your acknowledge action. The acknowledge message is optional, it can remain blank.  
Click Acknowledge to save the message and to confirm the acknowledge action.
4. A notification stating "Acknowledgment confirmed by device ..." is received from the device and is listed in the notification history window.



### Clearing All Notifications from the Notification History Window

1. Open the notification history window. See [Showing and Hiding the Notification History Window](#) for procedure.
2. Click Dismiss All. All notifications are removed from the window. If the window is not pinned, then it closes.

Dismiss All does not alter the alarm list. It doesn't delete active alarms. It doesn't acknowledge active alarms. Dismiss All is a convenience to the user who wants to remove the notifications from the notification history window.

### Viewing Alarm Graphic Associated with Alarm Notification

enteliWEB provides the following ways for you to open an alarm graphic.

- On the notification popup, click . The alarm graphic opens.
- On the notification in the notification history log, click . The alarm graphic opens.
- In the Related Items pane, click the item that is labeled "Graphic".



## Chapter 10 – Totalizers

This chapter covers the analog and binary totalizer objects.

### Analog Totalizer Object

The Analog Totalizer (AT) object calculates the accumulated quantity of a measured variable over time according to that measured variable's rate of change.

For example, by using an Analog Totalizer object you can determine how many liters of fluid have passed a flow-measuring station in one week

### Monitoring Parameters

The AT object page presents the following information to allow you to monitor the operation of the totalizer.

#### *Present Value*

The Value Bar displays the object's present value and the object's mode: Auto or Manual.

In Auto mode, the present value represents the accumulated quantity of the measured variable since the AT object was reset.

#### *Start Time*

Start Time displays the date and time when the AT object's accumulated value was reset to zero. Start Time indicates when the AT object started to accumulate its current value.

#### *COV Minimum Increment*

Change Of Value Minimum Increment displays the minimum amount of change in the AT object's present value that is required to cause a sample to be recorded in a trend log and to cause a COV data exchange message to be sent.

#### *Monitoring*

Monitoring lists the object and its present value that is being accumulated or totalized. This monitored object must be one of the following object types: Analog Input, Analog Output, Analog Variable or Pulse Input object.

## Binary Totalizer Object

The Binary Totalizer (BT) object accumulates the amount of time that a binary object is in its active state.

For example, by using a BT object you can totalize equipment runtime.

### Monitoring Parameters

The BT object page presents the following information to allow you to monitor the operation of the totalizer.

#### *Present Value*

The Value Bar displays the object's present value and the object's mode: Auto or Manual.

In Auto mode, the present value represents the accumulated time in hours that a binary object has been in its active state since the BT object was reset.

#### *Number of <active state name> State Changes*

Number of State Changes displays the number of times that the monitored object has transitioned to its active state since the BT object was reset. <active state name> is replaced by the name of the active state.

< active state name> is the active state of the object that is configured as Monitored Object.

#### *Since*

Since displays the date and time when the BT object was reset and the accumulated time was reset to zero.

#### *COV Minimum Increment*

Change Of Value Minimum Increment displays the minimum amount of time in hours that the monitored object has to remained in its active state to cause a sample to be recorded in a trend log and to cause a COV data exchange message to be sent.

#### *Monitoring*

Monitoring lists the object and its present value that is being accumulated or totalized. This monitored object must be one of the following object types: Binary Input, Binary Output, or Binary Value object.

## Chapter 11 - Control Loops

This chapter describes how to monitor a control loop. To learn how to configure and to tune a control loop, see the enteliWEB help for the CO object.

### Control Loop Object

For analog control applications, an analog output such as an actuator position or drive speed is modulated to make an input such as a temperature, airflow or pressure equal to its setpoint.

Analog control is accomplished with a Proportional-Integral-Derivative (PID) control loop. The BACnet standard specifies the standard Loop object for PID feedback control. Delta's software provides this function in an object called the Control Loop (CO) object.

### Monitoring Parameters

The CO object page presents the following information to allow you to monitor the operation of the control loop.

#### *Present Value*

The Value Bar displays the object's present value and the object's mode: Auto or Manual.

In Auto mode, the CO object's present value is the control loop output that is calculated according to the Input Value, Setpoint Value and the configuration of the CO object.

#### *Input Source*

Input Source displays the name of the object that provides the input value being monitored by the CO object. Typically an AI object or an AV object.

#### *Input Value*

Input Value displays the value being received from the Input Source by the CO object.

#### *Setpoint Source*

Setpoint Object displays the name of an AI or AV object that provides the setpoint being monitored by the CO object when you are using a setpoint that varies such as from a schedule or from a wall stat setpoint adjust.

When the text "Fixed" is displayed, the setpoint source is not an AI or AV object. Instead, the source is a fixed value that is configured in the CO object.

#### *Setpoint Value*

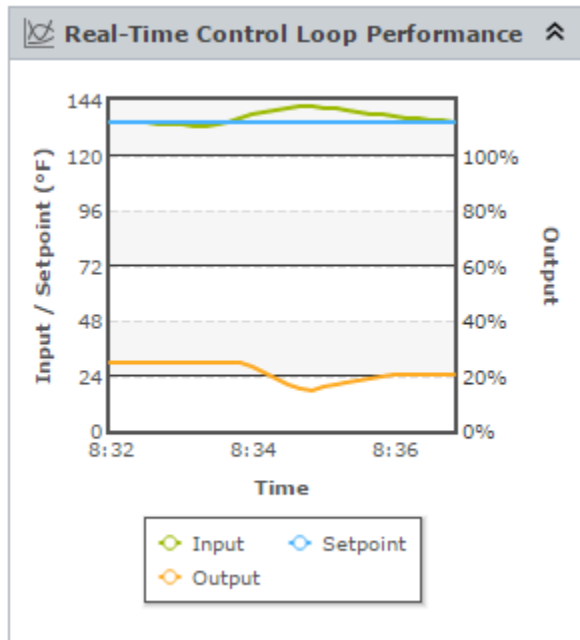
Setpoint Value displays the value being received from the Setpoint Source by the CO object or the fixed value set by the CO object.

### *COV Minimum Increment*

Change Of Value Minimum Increment displays the minimum amount of change in the CO object's present value that is required to cause a sample to be recorded in a trend log and to cause a COV data exchange message to be sent.

## Real-Time Control Loop Performance

The Real-Time Control Loop Performance graph plots input and output dynamically as they respond to the CO object control loop over time.



## Chapter 12 – Optimum Start

This chapter covers the Optimum Start object and describes how to interpret the optimum start object's operational history. To learn how to configure and to tune an optimum start object, see the enteliWEB help for the OS object.

### Optimum Start Object

Most facilities have predictable occupancy patterns. The mechanical equipment is scheduled to run during the occupied times of day. Typically, however, the equipment should be started prior to scheduled occupancy time to allow the occupied spaces to be comfortable when occupants arrive.

As an alternative to starting the equipment at a fixed time prior to occupancy, you can use the Optimum Start (OS) object. The OS object calculates the optimum time prior to occupancy to start the equipment such that the space reaches the comfort levels required when the occupants arrive. By starting the equipment at the optimum time instead of a fixed time, the startup time is minimized and therefore energy consumption is reduced.

The OS object calculates the optimum start time every day. The calculation takes into account the following information:

- The OS object's operational history over the past three days
- Outdoor temperature
- Scheduled occupancy time
- Indoor temperature
- Target indoor temperature
- Extended periods of unoccupied time, such as weekends or holidays, prior to the scheduled occupancy time

#### *OS Object Assumption About When Scheduled Occupancy Starts*

The OS object assumes that the first Off-to-On transition of the day indicates the scheduled occupancy time. After this first Off-to-On transition, the OS object ignores the other Off-to-On transitions for that day.

## Monitoring Parameters

The OS object page presents the following information to allow you to monitor the operation of optimum start.

### *Present Value*

The Value Bar displays the object's present value and the object's mode: Auto or Manual. In Auto mode, the present state is On when the OS object is actively involved in heating or cooling the building and Off when it is not active.

### *Status*

Status displays the phase of operation of the OS object, as follows:

#### *Heating Start*

The OS object is causing the space to be warmed in preparation for scheduled occupancy.

#### *Cooling Start*

The OS object is causing the space to be cooled in preparation for scheduled occupancy.

#### *Achieved*

The OS object has caused the space to reach its target temperature before the scheduled occupancy time.

#### *Off*

The OS object is not participating in temperature control of the space. In the history table, a status of Off indicates that the target temperature was met exactly at the scheduled occupancy time or that the OS object under-achieved the target temperature at the scheduled occupancy time.

#### *Fault*

The OS object is in fault.

### *Start Type*

Start Type displays Heating when the OS object is configured to warm the space during the object's active state.

Start Type displays Cooling when the OS object is configured to cool the space during the object's active state.

### *Target Temperature*

Target Temperature displays the space temperature that the OS object is expected to achieve prior to scheduled occupancy.

### *Indoor Temperature*

Indoor Temperature displays the space temperature when the OS status is Heating Start, Cooling Start or Achieved. When the OS object is inactive, Indoor Temperature is not displayed.

### *Schedule*

Schedule displays the name of the schedule object that provides the occupancy times to the OS object.

### *Schedule Next On at*

Schedule Next On at displays the time when the next scheduled occupancy period starts.

### *Time to Next Schedule On*

Time to Next Schedule On displays the time remaining in hours and minutes until the next scheduled occupancy period starts.

## History

The History section of the OS object page displays the results of the 3 most recent active periods for the OS object. The information is presented in a tabular format and a chart format.

### *History Table Example*

	On	Indoor °F	Outdoor °F	Off	Status	Target °F	Indoor °F	Rate °F/hr
▲	9/12/12 5:22 AM	59.6	0	7:00:11 AM	Off	70	66.9499	4.49996
◆	9/11/12 5:38 AM	61	0	7:00:21 AM	Off	70	69.3999	6.14625
◆	9/10/12 5:21 AM	61.55	0	6:39:06 AM	Achieved	70	70.1499	6.61387

The data in the history table are as follows:

### *On*

Date and time when the OS object transitioned to the On state at the calculated optimal start time.

### *Indoor*

Indoor temperature when the OS object transitioned to the On state.

### *Outdoor*

Outdoor temperature when the OS object transitioned to the On state. An outdoor temperature of zero indicates that outdoor influence was not included in the optimum start time calculation.

### *Off*

Date and time when the OS object transitioned to the Off state, at the scheduled occupancy time.

### *Status*

OS object status at the scheduled occupancy time when the OS object transitioned to the Off state. See the Control Information, Status section, above for details about OS object status.

### Target

Target indoor temperature to be achieved by the OS object at the scheduled occupancy time.

### Indoor

Indoor temperature when the OS object transitioned to the Off state at the scheduled occupancy time.

### Rate

Heating or cooling rate, in degrees per hour, that was achieved during the OS object's On state.

### History Chart

The history chart displays in line graph format, the data in the history table. The history chart allows you to understand at a glance, the recent performance of the OS object.

The chart below plots the data from the example history table above.



### Legend

1. Temperature - the y axis is the indoor temperature
2. On - Date and time when the OS object transitioned to the On state at the calculated optimal start time.
3. Deadband - the blue shaded area indicates the deadband that surrounds the target temperature.
4. Off - Date and time when the OS object transitioned to the Off state, at the scheduled occupancy time.
5. Target Temperature - Target indoor temperature to be achieved by the OS object at the scheduled occupancy time.




## Chapter 13 – Reports

This chapter covers the tasks associated with printing the basic enteliWEB building automation system reports: Active Alarms, BAS, Trend Log, Multitrend object charts and printing an enteliWEB screen.


### Active Alarms Report

*Save Alarm List to PDF File then Print*

1. View the alarm list page.
2. Create and apply the filter for the active alarms that you want to capture in the PDF file.
3. Click . The PDF file is saved to your browser's download destination. Now you can print the document.

### BAS Report


*Save Object List to PDF File then Print*

1. View the object list page for 1 or more devices.
2. Use [Adding a Property Column](#) and [Removing a Property Column](#) to set up the object page with the columns you want to save in the PDF.
3. Use the search field to create a list of the objects that you want to capture in the PDF file. See [Filtering and Searching](#) for procedure.
4. Click . The PDF file is saved to your browser's download destination. Now you can print the document.




The PDF file contains only the columns that are displayed on the object list page.

### Printing a Trend Log Chart

1. Open the TL object for the chart you want to print.
2. Arrange the chart presentation.
3. Click  to begin. Follow your browser's print dialogs to complete.

### Printing a Multitrend Log Chart

1. Open the MT object for the chart you want to print.
2. Arrange the chart presentation.
3. Click  to begin. Follow your browser's print dialogs to complete.

## Printing an enteliWEB Screen

1. Arrange the screen to contain the information you want to print.
2. Press Ctrl+P on the keyboard. Your browser's Print dialog opens. Some browsers provide a preview of what will be printed.
3. Adjust layout and paper size to ensure that the entire screen is printed.
4. Click Print or OK to send the screen to the printer.

## Chapter 14 - Energy Management Reports

This chapter covers the reporting aspects of Energy Management . For information about concepts and how to configure Energy Management , see enteliWEB help.

### Report Features

The Energy Management Reports feature has the following capabilities:

- Run the report on operator command or automatically at a scheduled time
- Email report results as PDF
- Save report results to a file in Excel, PDF, PowerPoint or Word format
- Maintain a history of when report was run
- Save multiple report configurations and add links to report in the Reports section of the left navigation pane.

### Which Report Do I Want?

enteliWEB's Energy Management add-on includes over ten types of reports that you can use to visualize and capture a snapshot of energy and resource consumption and demand data that reside in the enteliWEB database for the areas, regions, buildings and meters that you have configured

The following table summarized the content of each report.

Report Name	Report Content						
	Consumption	Demand	Baseline	Target	Temperature	Occupied Unoccupied	Cost
<a href="#">Consumption</a>	✓	✓	✓	✓	✓		
<a href="#">Consumption by Meter</a>	✓	✓				✓	
<a href="#">Consumption by Time</a>	✓	✓				✓	
<a href="#">Consumption Comparison</a>	✓						
<a href="#">Consumption Target</a>	✓			✓			
<a href="#">Contribution Comparison</a>	✓						
<a href="#">Cost Ranking</a>	✓	✓					✓

Report Name	Report Content						
	Consumption	Demand	Baseline	Target	Temperature	Occupied Unoccupied	Cost
<a href="#">Cumulative Consumption</a>	✓						
<a href="#">Daily Average</a>		✓	✓				
<a href="#">Degree Days</a>					✓		
<a href="#">Load Duration</a>		✓	✓				
<a href="#">Single Meter Occupancy</a>	✓	✓	✓			✓	

### What is the Area/Meter List?

The Area/Meter List is area of the configuration page where you specify the meters that are to be included in the report.

A report includes data from the meters that you specify in the Area/Meter List.

### What is a Meter Group?

The concept of meter group is important to understand in the context of reports. A meter group is a mechanism that you can use for organizing the Area/Meter List for the type of report you want to generate.

When you want the data from more than one meter to be included in the report as a single entity, then the meters must be in the same group in the Area/Meter List.

The report configuration dialog allows you to create a meter group and to add areas, buildings, regions and meters to it.

Each report has a limitation as to the maximum number of i that are included in the report.

### What Meters are Included in a Report?

A report includes data from the areas, buildings, regions and meters that you specify in the Area/Meter List. But, the question is, which meters?

The answer is that each report follows its own rules as to which meters it selects from the Area/Meter List.

For a report to contain the information you want, you must configure the Area/Meter List according to those rules.

The rules for each type of report are described in the Meters Included section for each report.

## Consumption Report

The Consumption report allows you to view the energy or resource consumption, peak demand and minimum demand for 1 year for a single meter, area, building, region or meter group. The report also contains the average monthly temperatures for the selected year, when temperature data are available.

When baseline and target data are available then they are also included in the report.

The results are presented as a bar chart and in tabular format, in increments of 1 month.

### *Meters Included*

The Consumption report examines the Area/Meter List and includes the data from the meter or meters from the first item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter only is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption and demand data from up to 9 meters can be included in the report. When there are more than 9 meters in an area, building, region or meter group then the 10th and subsequent meters are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Consumption report is limited to the maximum number of meters indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Consumption, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Year - Date Configuration*

Year in the Date Configuration area specifies the year for which the consumption data are reported.

### *Year - Baseline*

Year in the Baseline area specifies the year that is consider to be the baseline data in the report.

## Consumption by Meter Report

The Consumption by Meter report allows you to view both consumption and demand data for multiple meters, areas, buildings, regions and meter groups. The data are organized by meter for a given date range.

See [Consumption by Time report](#) for similar data organized by time.

For each meter the report includes the following data:

- Total consumption
- Consumption during occupied hours
- Consumption during unoccupied hours
- Maximum, minimum and average demand

The occupied and unoccupied time periods are configured during the configuration for the report.

The consumption results are presented as a vertical bar chart and in tabular format. The demand data are presented in tabular format.

### *Meters Included*

The Consumption by Meter report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption and demand data from up to 9 meters, areas, buildings, regions or meter groups can be included in the report. The 10th and subsequent items in the Area/Meter List are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Consumption by Meter report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Consumption by Meter, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the consumption and demand is reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *From - Occupancy*

From specifies the time of day when the occupied period begins for occupied days.

### *To - Occupancy*

To specifies the time of day when the occupied period ends for occupied days.

### *Days - Occupancy*

Days specifies the day or days of the week that are considered to be occupied days for the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want to be the occupied days.

Choosing no occupied days does not work.

## Consumption by Time Report

The Consumption by Time report allows you to view both consumption and demand data for multiple meters, areas, buildings, regions and meter groups. The data are organized by time for a given date range.

See [Consumption by Meter](#) report for similar data organized by meter.

For each time period and for each meter the report includes the following data:

- Total consumption
- Consumption during occupied hours
- Consumption during unoccupied hours
- Maximum, minimum and average demand

The occupied and unoccupied time periods are configured during the configuration for the report.



The consumption results are presented as a stacked vertical-bar chart and in tabular format. The demand data are presented in tabular format.

### *Meters Included*

The Consumption by Time report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption and demand data from up to 9 meters, areas, buildings, regions or meter groups can be included in the report. The 10th and subsequent items in the Area/Meter List are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Consumption by Time report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Consumption by Time, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the consumption and demand data are reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Group by*

Group by specifies time intervals within the Date Range over which the consumption is summed to provide a data point in the report.

### *From - Occupancy*

From specifies the time of day when the occupied period begins for occupied days.

### *To - Occupancy*

To specifies the time of day when the occupied period ends for occupied days.

### *Days - Occupancy*

Days specifies the day or days of the week that are considered to be occupied days for the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want to be the occupied days.

Choosing no occupied days does not work.

## Consumption Comparison Report

The Consumption report allows you to view a comparison of the energy or resource consumption of multiple meters, areas, buildings, regions and meter groups.

For areas, buildings, regions and meter groups, the results compare the total consumptions. The consumption of the individual meters in each area, building, region and meter group are not shown in the results.

The results can be reported in year, month, week or day intervals of comparison.

The Consumption report contains consumption datapoints only. No demand, baseline or target data are included.

### *Meters Included*

The Consumption Comparison report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption data from up to 9 meters, areas, buildings, regions or meter groups can be included in the report. The 10th and subsequent items in the Area/Meter List are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Consumption Comparison report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Consumption Comparison, when you save your report.

Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the comparison is reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Group by*

Group by specifies time intervals within the Date Range over which the consumption is summed to provide a data point in the report.

## Consumption Target Report

The Consumption Target report compares cumulative consumption data to target data for multiple meters, areas, buildings, regions and meter groups, for a specified time period.

For proper results, you must enter target data for the meters you want to include in the report. The consumption results are presented as a stacked area chart and in tabular format. The target data are presented as a dashed line on the chart and in tabular format.

The Consumption Target report extrapolates the target data to match the time period you select for the report.

### *Meters Included*

The Consumption Target report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignores that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption data from up to 9 meters, areas, buildings, regions or meter groups can be included in the report. The 10th and subsequent items in the Area/Meter List are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Consumption Target report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Consumption Target, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the consumption data are reported. Select Custom when you want to specify a date range that is not covered by the other options in the list.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Group by*

Group by specifies time intervals within the Date Range over which the consumption is summed to provide a data point in the report. Group by also affects how the target data is extrapolated to allow for an accurate comparison for the time interval selected.

## Contribution Comparison Report

The Contribution Comparison report allows you compare the consumption data of multiple meters, areas, buildings, regions or meter groups as a percentage of the total consumption.

The comparison can be by year, month, week or day. The day or days of the week that are included in the report can be selected. The results are presented as a pie chart and in tabular format.

### *Meters Included*

The Contribution Comparison report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption data from up to 9 meters, areas, buildings, regions or meter groups can be included in the report. The 10th and subsequent items in the Area/Meter List are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Contribution Comparison report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Contribution Comparison, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the comparison is reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

From specifies the date when the custom date range ends.

### *Days*

Days specifies which day or days of the week are included in the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want in the report.

## **Cost Ranking Report**

The Cost Ranking report allows you to view the costs associated with the consumption and demand data for multiple meters, areas, buildings, regions and meter groups, for a specified time period and in specified time intervals.

For proper results you must configure the rate schedule and rate engine for the meters you want to include in the report.

The cost results for the sum of consumption and demand costs are presented as a vertical bar chart. The cost results for consumption and demand are presented separately in tabular format.

### *Meters Included*

The Cost Ranking report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption and demand data from up to 9 meters can be included in the report. When there are more than 9 meters in an area, building, region or meter group then the 10th and subsequent items are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Cost Ranking report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Cost Ranking, when you save your report.

Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.



### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Date Range*

Date Range specifies the time period for the data over which the costs are reported. Select Custom when you want to specify a date range that is not covered by the other options in the list.

### *From - Date Configuration*

To specifies the date when the custom date range begins.

### *To - Date Configuration*

From specifies the date when the custom date range ends.

## **Cumulative Consumption Report**

The Cumulative Consumption report allows you to view the cumulative consumption for multiple meters, areas, buildings, regions and meter groups, for a specified time period and in specified time intervals.

The consumption results are presented as a stacked area chart and in tabular format.

### *Meters Included*

The Cumulative Consumption report examines the Area/Meter List and includes the data from the meter or meters from each item in the list. When it encounters an item that contains no meters, it ignored that item and moves on to the next item in the list.

When the item is a meter, then that meter is included in the report.

When the item is an area, building or region, then the child meters of that parent are included in the report.

When the item is a meter group, then the meters in that group are included in the report.

### *Limitations*

Consumption data from up to 9 meters can be included in the report. When there are more than 9 meters in an area, building, region or meter group then the 10th and subsequent items are ignored.

### Report Parameters

#### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for. The Cumulative Consumption report is limited to the maximum number of items indicated in [Limitations](#).

#### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

#### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Cumulative Consumption, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

#### *Report Title*

Report Title specifies the text that appears as the title of the report.

#### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for.

When you change Meter Type, you are forced to specify the Area/Meter List again.

#### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

#### *Group by*

Group by specifies time interval in the Date Range over which the consumption is summed to provide a data point in the report.

#### *Date Range*

Date Range specifies the time period for the data over which the consumption data are reported. Select Custom when you want to specify a date range that is not covered by the other options in the list.

#### *From - Date Configuration*

From specifies the date when the custom date range begins.

#### *To - Date Configuration*

To specifies the date when the custom date range ends.

## Daily Average Report

The Daily Average report allows you to compare the average demand for multiple meters, areas, buildings or regions, or meter groups over a 24 hour period.

The Rollup parameter allows you to set the time interval in minutes over which the demand is averaged and presented as a data point on the report.

The Baseline parameters allows you to add baseline data to the report.

The results are presented as a line chart and in tabular format.

### *Meters Included*

This report uses demand datapoints only.

When there is no groups in the Area/Meter List then the first 9 meters in the list are included in the report.

When there is 1 or more groups in the Area/Meter List then all the meters up to 9 in the first group in the list are included, then meters from the second group and so on up to a total of 9 meters are included in the report.

### *Limitations*

Demand data from up to 9 meters can be included in the report. When there are more than 9 meters in an area, building, region or meter group then the 10th and subsequent items are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for. The Daily Average report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Daily Average, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Rollup Minutes*

Rollup Minutes specifies the time interval in minutes over which the demand is averaged for each data point on the report.

### *Date Range*

Date Range specifies the time period for the data over which the average demand is reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Days*

Days specifies which day or days of the week are included in the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want in the report.

### *Period - Baseline*

Period displays the date range for the baseline data. When you specify Date Range then Period adjusts automatically to match.

### *Offset By - Baseline*

Offset By specifies the time period by which the baseline date range precedes the date range for the current data. For example, when Date Range is set to Previous Month and you want to show baseline data for the same month of the previous year, then set Offset By to 12 months. When Offset By is set to Other, the Starting Date field is displayed.

### *Starting Date - Baseline*

Starting Date field is displayed when baseline Offset By field is set to Other. Starting Date allows you to specify the exact date for the beginning of the baseline data.

## Degree Days Report

The Degree Days report allows you to calculate heating and cooling degree days for a specified date range and for a specified base temperature.

The results are presented as a line chart and in tabular format.

Degree days are a form of weather data, calculated from readings of outside air temperature. Heating degree days and cooling degree days are used extensively in calculations relating to building energy consumption.

Heating degree days are a measure of how much and for how long the outside air temperature was below the base temperature. The base temperature of a building is the temperature below which the building needs to be heated.

Cooling degree days are a measure of how much and for how long the outside air temperature was above the base temperature. The base temperature of a building is the temperature above which the building needs to be cooled.

### *Outdoor Air Temperature Sample Rate*

For best results, OAT samples should be taken at 15 minute intervals.

The OAT datapoint is imported, normalized and interpolated to 5 minute samples.

### *Meters Included*

This report requires a single outdoor air temperature datapoint. No energy meters are required or included in the report.

### *Limitations*

Only 1 area and the data from the outdoor air temperature datapoint associated with that area is used. When multiple areas each with an outdoor air temperature datapoint are configured in Selected Area/Meter list, the report is based on the one of the outdoor air temperature datapoints.

## Report Parameters

### *Selected Area/Meter List*

The Selected Area/Meter List specifies the area, building, or region to which the outdoor temperature datapoint is associated.

The Degree Days report is limited to the maximum number of outdoor temperature datapoints indicated in [Limitations](#).

### *Meter Group*

It is not necessary to create a meter group for this report because the report uses only one OAT datapoint.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Degree Days, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as the name of a site that is configured into enteliWEB.

### *Base Temperature*

Base Temperature specifies the outdoor temperature below which the building needs to be heated and above which the building needs to be cooled. The unit for Base Temperature is specified by Outdoor Temp on the Base Units Configuration page.

### *Meter Type*

No energy meters are required or included in the report. The Meter Type setting has no effect on the degree-day report.

### *Date Range*

Date Range specifies the time period for the data over which the degree days are reported. Select Custom when you want to specify a date range that is not covered by the other options in the list.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Group by*

Group by specifies time intervals within the Date Range over which the degree days are summed to provide a data point in the report.

## Load Duration Report

The Load Duration report allows you to identify loads that exceed a specified load level or load mark. This report can be used, for example, to analyze the results of load shed strategies.

The Load Duration report displays the amount of time in hours that demand was at various levels, over the specified date range .

The results are presented as a line chart and in tabular format. The specified load mark is indicated by a horizontal dashed line.

### *Meters Included*

This report uses demand datapoints only.

When there is no groups in the Area/Meter List then the first 9 meters in the list are included in the report.

When there is 1 or more groups in the Area/Meter List then all the meters up to 9 in the first group in the list are included, then meters from the second group and so on up to a total of 9 meters are included in the report.

### *Limitations*

Demand data from up to 9 meters can be included in the report. When there are more than 9 meters in an area, building, region or meter group then the 10th and subsequent items are ignored.

## Report Parameters

### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Load Duration report is limited to the maximum number of items indicated in [Limitations](#).

### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Load Duration, when you save your report. Report Name specifies the subject text of the email message when the report are sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

### *Load Step*

Load Step specifies the incremental amount of energy or resource demand for which the time is summed to provide a data point in the report. For example, to report the amount of time for every 5 kW increment in demand, set Load Step to 5. The unit of measure for Load Step is the same as for the type of energy or resource that you specified for Meter Type.

### *Load Mark*

Load Mark specifies the position of a horizontal dashed line on the report. Typically this line is interpreted as a demand load level or threshold you don't want to exceed. The unit of measure for Load Mark is the same as for the type of energy or resource that you specified for Meter Type.

### *Date Range*

Date Range specifies the time period for the data over which the demand is reported. When Custom is selected, the From and To fields are displayed.

### *From - Date Configuration*

From specifies the date when the custom date range begins.

### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Days*

Days specifies which day or days of the week are included in the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want in the report.

### *Period - Baseline*

Period displays the date range for the baseline data. When you specify Date Range then Period adjusts automatically to match.



### *Offset By - Baseline*

Offset By specifies the time period by which the baseline date range precedes the date range for the current data. For example, when Date Range is set to Previous Month and you want to show baseline data for the same month of the previous year, then set Offset By to 12 months. When Offset By is set to Other, the Starting Date field is displayed.

### *Starting Date - Baseline*

Starting Date field is displayed when baseline Offset By field is set to Other. Starting Date allows you to specify the exact date for the beginning of the baseline data.

## Single Meter Occupancy Report

The Single Meter Occupancy report allows you to view the consumption and demand data for 1 meter, area, building, region or meter group, for a specified time period and in specified time intervals.

For the meter, area, building, region or meter group, the report includes the following data:

- Total consumption
- Consumption during occupied hours
- Consumption during unoccupied hours
- Demand during occupied hours
- Demand during unoccupied hours
- Baseline during occupied hours
- Baseline during unoccupied hours

The consumption results are presented as a stacked vertical-bar chart and in tabular format.

The demand results are presented as a line chart and in tabular format.

### *Meters Included*

When there is no groups in the Area/Meter List then only the first meter in the list is included in the report.

When there is 1 or more groups in the Area/Meter List then meters in the first group in the list are included in the report.

### *Limitations*

Data from up to 9 meters can be included in the report. When there are more than 9 meters in the area, building, region or meter group then the 10th and subsequent meters are ignored.

### Report Parameters

#### *Area/Meter List*

The Area/Meter List specifies the areas, buildings, regions and meters that you want the report to include data for.

The Single Meter Occupancy report is limited to the maximum number of meters indicated in [Limitations](#).

#### *Meter Group*

Meter Group allows you to specify an empty group for the of Area/Meter List. You can then add arbitrary areas, buildings, regions and meters to that group. The report is generated by grouping the data of the items in a group.

#### *Report Name*

Report Name specifies the name of the link that appears in the Reports section of enteliWEB's left pane tree view under Single Meter Occupancy, when you save your report.

Report Name specifies the subject text of the email message when the report are sent by email.

#### *Report Title*

Report Title specifies the text that appears as the title of the report.

#### *Meter Type*

Meter Type specifies the type of energy or resource that the report includes data for. When you change Meter Type, you are forced to specify the Area/Meter List again.

#### *Site*

Site specifies the site name that you want to appear on the report for site. Site can be any arbitrary name. It does not have to be the same as a site that is configured into enteliWEB.

#### *Date Range*

Date Range specifies the time period for the data over which the data are reported. Select Custom when you want to specify a date range that is not covered by the other options in the list.

#### *From - Date Configuration*

From specifies the date when the custom date range begins.

#### *To - Date Configuration*

To specifies the date when the custom date range ends.

### *Days - Date Configuration*

Days specifies which day or days of the week are included in the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want in the report.

### *Group by - Date Configuration*

Group by specifies time intervals within the Date Range over which the consumption is summed to provide a data point in the report.

### *From - Occupancy*

From specifies the time of day when the occupied period begins for occupied days.

### *To - Occupancy*

To specifies the time of day when the occupied period ends for occupied days.

### *Days - Occupancy*

Days specifies the day or days of the week that are considered to be occupied days for the report. Choose All, Weekdays or Weekends from the list or select Other to allow you to specify the exact week day or days you want to be the occupied days. Choosing no occupied days does not work.

### *Period - Baseline*

Period displays the date range for the baseline data. When you specify Date Range then Period adjusts automatically to match.

### *Offset By - Baseline*


Offset By specifies the time period by which the baseline date range precedes the date range for the current data. For example, when Date Range is set to Previous Month and you want to show baseline data for the same month of the previous year, then set Offset By to 12 months. When Offset By is set to Other, the Starting Date field is displayed.

### *Starting Date - Baseline*

Starting Date field is displayed when baseline Offset By field is set to Other. Starting Date allows you to specify the exact date for the beginning of the baseline data.

## Tasks – Energy Management Reports

### Creating a Report

1. In the Reports section of the left pane navigation tree, under Energy, click the type of report you want to create. The blank report template opens in the right pane.
2. Set Meter Type to the type of energy or resource data you want in the report.
3. If you plan to use one or more meter groups in the Selected Area/Meter List, create them now.
4. Click  to open the Area/Meter List.
5. Drag the meters, areas, buildings and regions you want for the report into the Selected Area/Meter List.

The order that items are arranged in the Selected Area/Meter List determines which meters are included in the report. On the applicable report description page, see the Meters Included section for the report type you are configuring, for information about what meters are included in the report.





Meters for which access is denied are listed in the Area/Meter List, but you are prevented from adding them to the Selected Area/Meter List.

6. Enter the Report Name, Report Title and Site information.
7. Set Date Range to a large time interval such as Year-to-Date. Set Group by to Week or longer time interval.
8. Click Run to generate the report. When the report is displayed, review it and make any changes you need to achieve your intended result.
9. Click Save to save the report and to add a link to the report in the Reports/Energy section of the left pane navigation tree.

### Creating a Degree Day Report

1. In the Reports section of the left pane navigation tree, click Degree Days. The blank report template opens in the right pane.
2. Set Meter Type to any of the types of energy that is metered. The areas, buildings and regions are enabled in the Area/Meter List.
3. Drag the one area, building and region with the one outdoor air temperature datapoint that you want for the report into the Selected Area/Meter List.
4. Enter the Report Name, Report Title and Site information.
5. Enter Date Configuration and other fields that pertain to the type of report you are configuring.
6. Click Run to generate the report. When the report is displayed, review it and make any changes you need to achieve your intended result.
7. Click Save to save the report and to add a link to the report in the Reports section of the left pane navigation tree.

## Creating a Meter Group

1. In the area titled Selected Area/Meter List, right click on the text  Area/Meter List. The  Create button is displayed.
2. Click  Create. A Meter Group folder titled  New Group is added to the Selected Area/Meter List.
3. Rename the Meter Group folder to suit your needs.

## Scheduling a Report

To schedule a report, you must be a member of a group with Manage Meters and Rate Engines permission.

1. Click Schedule. The Schedule a Report page opens.
2. See the Help for the Schedule a Report page for information about scheduling a report.

## Deleting a Report

1. In the Reports section of the left pane navigation tree, click the report you want to delete. The report opens in the right pane.
2. Click Delete. A confirmation dialog opens.
3. Click Yes to delete the report. The link to the report is removed from the Reports section of the left pane navigation tree.

## Managing Report History

enteliWEB saves a copy of the results in the Report History log, every time you run a report or when a scheduled report is run.

When a scheduled report is generated, it is not saved if the you indicated to not save it when you set up the schedule.

To view the results of previous report, click  Report History and select the report by date and time that you want to view from the list.

When you select a report from the Report History and instead of the report, you see the following text:

### Report instance Not Found

This report was generated but the files are no longer on the server.

It indicates that the report you selected was a scheduled report that was set up to not be saved.

To delete the results of a previous report, click  Report History, point to the report you want to delete from the list and click  Delete.

### Exporting a Report

1. In the Reports section of the left pane navigation tree, click the report you want to export and run it, or select the report from the report history list. The report opens in the right pane.
2. Click the button that corresponds to the format you want the exported report to be saved to, from the following formats:

 Excel


 PDF

 PowerPoint

 Word

3. Your browser downloads the report to a file in your downloads destination.

### Emailing a Report

1. Configure an email server for enteliWEB.
2. In the Reports section of the left pane navigation tree, click the report you want to send by email and run it, or select the report from the report history list. The report opens in the right pane.
3. Click  Email. The Email dialog opens.
4. Enter the email address of the recipient you want to send the report to.
5. Click OK. enteliWEB attempts to send the report by email.  
When the email is sent successfully, a dialog is displayed with the message: Email sent successfully.  
When the email is not sent successfully, a dialog is displayed with the message: Failed to send email.

### Copying a Report

1. In the Reports section of the left pane navigation tree, click the report you want to copy. The report opens in the right pane.
2. Click Copy. The Copy dialog opens.
3. Enter a unique name for the copy of the report.
4. Click OK. A link to the copy of the report is added in the Reports section of the left pane navigation tree. The copy of the report is displayed in the right pane.

## Chapter 15 – Building Automation System Reports

This chapter covers the reporting aspects of a Building Automation System.

### Report Features

The Building Automation System Reports feature has the following capabilities:

- Run the report on operator command or automatically at a scheduled time
- Email report results as PDF
- Save report results to a file in Excel, PDF, PowerPoint or Word format
- Maintain a history of when report was run
- Save multiple report configurations and add links to report in the Reports section of the left navigation pane.

### Calibration Report

The Calibration report allows you to list AI objects that are calibrated, for a given site.

An AI object is calibrated when the value of its Calibration property is not zero.

The report does not include AI objects that are not calibrated.

#### *Limitations*

The report includes Delta devices only because Calibration is a Delta proprietary object property.

The report's object filter limits the object types that you can include in this report.

### Report Parameters

#### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Calibration, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

#### *Report Title*

Report Title specifies the text that appears as the title of the report.

#### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

## Commissioning Sheets Report

The Commissioning Sheets report allows you to generate a comprehensive report for input and output objects that are not commissioned. The report includes many areas for you to make notes about the commissioning of each object.

### *Limitations*

The report includes Delta devices only because commissioning is a Delta proprietary object property.

The report's object filter limits the object types that you can include in this report.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Commissioning Sheets, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.



## Decommissioned and Fault Report

The Decommissioned and Fault report allows you to list objects that are not commissioned or are in fault, for a given site.

### *Limitations*

The report's object filter limits the object types that you can include in this report.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Decommissioned and Fault, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

## Input Points List Report

The Input Points report allows you to list AI, BI, MI and PI objects and important associated information, for a given site.

### *Limitations*

The report includes the PI object for Delta devices only as it is a Delta proprietary object type.

The report's object filter limits the object types that you can include in this report.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Input Points List, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

## Objects in Manual Report

The Objects in Manual report allows you to create a report about objects that are in permanent or timed override, that is, are in manual, for a given site.

The Objects in Manual report includes information about the objects that you specify with the Object Filter.

The Objects in Manual report includes information from the enteliWEB Log related to the objects that you specify with the object filter.

The logic applied by the report to find applicable information in the Log is as follows:

- Search the Log for records about objects that are in manual, for objects specified with the object filter. Search is restricted to the time interval specified by Date Range.
- Include information from the most recent record in the Log that shows the object being set to manual

The information from the Log records that is included in the report is the user name of the user who set the object to manual and the date and time when the object was set to manual.

Information from the Archive portion of the Log is not included in the report.

### *Limitations*

None.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Objects in Manual, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

### *Log Filter*

Date Range specifies the time interval for the records in the Log that are searched for objects being set to manual, for objects specified by the Object Filter. Information from records that occurred in the time interval is included in the report. Information about objects in manual in records that occurred outside of the time interval is not included in the report.

When Include Objects Not Modified By enteliWEB is selected, then all objects in manual, for the objects specified by the object filter, whether or not there is a record in the Log for the object being set to manual, are included in the report.

When Include Objects Not Modified By enteliWEB is not selected, then objects in manual, for the objects specified by the object filter, for which there is no record in the Log, within the specified date range, are not included in the report.

## Object Query

The Object Query report allows you to create completely custom queries for object information.

### *Limitations*

None.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Object Query, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

## Output Points List Report

The Output Points report allows you to list A0, B0, LO and M0 objects and important associated information, for a given site.

### *Limitations*

The report's object filter limits the object types that you can include in this report.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Output Points List, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Device Range*

Device Range specifies the devices, by device address range, that you want to include in the report.

### *Object Filter*

Object Filter specifies one or more filter rules that define the objects and object properties that you want to include in the report.

## **Trend Log Report**

The Trend Log report allows you to configure a chart with 1 or more plots of TL object samples, across multiple sites.

### *Limitations*

This report is limited to TL objects only.

## **Report Parameters**

### *Report Name*

Report Name specifies the name of the link that appears in the Building Automation section of enteliWEB's left pane tree view under Trend Log, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Trend Setup*

Trend Setup specifies the TL objects for the source of samples that are plotted in the chart and allows you to specify which Y axis is associated with each TL object.

### *Date Range*

Date Range specifies the time period for the TL objects samples that are plotted.

### *Sample Roll Up*

Sample Roll Up is an optional setting that allows you to specify how the TL objects samples data for the plot are rolled up or aggregated over a specified time interval. You can perform one of 3 types of aggregation calculations to arrive at the roll up value that is plotted.

### *Chart Options*

Chart Options specifies the appearance of the plots.

## Object Filter

The following object filter information applies to the object filter used by BAS reports and the advanced object filter used by the Object List.

An object filter specifies the object types, object instances, object properties and comparison operators that determines what information is included in the report or in the object list.

An object filter consists of one or more filters. When there is more than one filter specified, enteliWEB performs a logical OR of the filters when it generates the report or the object list page.

A filter is defined by the following parameters.

### *Object Type*

Object Type specifies the object types that you want to include in the report or the object list page.

For a report, the list of object types available to choose from includes only those types that are applicable to the purpose of the report.

For the object list, the list of object types available to choose from includes all object types.

### *Instance Range*

Instance Range specifies one or more object instance numbers or a range of instance numbers that you want to include in the report or the object list page, for the object types you specify.

### *Property*

Property includes one or more property rules.

### *Rule*

A rule specifies the object properties and property values that must be present to include the object types and instances in the report or the object list page.

The rules engine supports the following comparison operators.

= equal

> greater than

>= greater than or equal

< less than

<= less than or equal

<> not equal

Rules can be logically ANDed or ORed.

The rules engine supports rules with the following types of arguments.

### *Numeric value*

Example: objects with COV\_Increment greater than or equal to 15

COV_Increment	▼	>=	▼	15
---------------	---	----	---	----

### *String value*

Example: objects with temperature in their object name

Object_Name	▼	=	▼	*temperature*
-------------	---	---	---	---------------

### *Date and time value*

Date format: yyyy-mm-dd example: 2017-02-14

Time format: HH:mm:ss.hh where hh is hundredths of a second, example: 07:35:15.00

Combined date and time format: yyyy-mm-ddTHH:mm:ss.hh where T is a separator character

Example: Use the EV object's time of transition. For example, searching for event transitions that occurred during a certain time frame.

Object Type: EV x

Instance Range: \*

Property:

☒ AND ☐ OR + Add Rule + Add Property

Event_Time_Stamps[1].dateTi	▼	>	▼	2015-07-25T19:00:00.00	✖
Event_Time_Stamps[1].dateTi	▼	<	▼	2015-07-25T20:00:00.00	✖

Event\_Time\_Stamps[1].dateTime

### *NULL value*

Example: output objects that don't have a control source

Technically, it should be all 16 priority array elements = NULL when there is no control source. Priority 5, 8 and 10 are the common priority levels that are used for the control source.

Object Type: AO x BO x

Instance Range: \*

Property:

☒ AND ☐ OR + Add Rule + Add Property

Priority_Array[5]	=	Null	✖
Priority_Array[8]	=	Null	✖
Priority_Array[10]	=	Null	✖

### *Don't care*

Example: objects that have the COV\_Increment property regardless of its value. That is, add a COV\_Increment column to the object list page

COV\_Increment <>

### *Group element*

Example: For object type = EV, objects that are configured for the Out of Range algorithm and with the high limit parameter greater than or equal to 5.

Event\_Parameters.out-of-range >= 5

Event\_Parameters.out-of-range.high-limit



### Union element

Example:

Object Type:

Instance Range:

Property:

☒ AND ☐ OR + Add Rule + Add Property

Advanced\_Adapter[1].mstp.ne

Advanced\_Adapter[1].mstp.network

### Union value

Example: For object type = SCH, binary schedules that are in the Off state

Present\_Value.enumerated

### Array index

Example: objects with state1 as the first entry in the State\_Text array. Not supported:  
Unspecified array index, for example, State\_Text[] = Off

State\_Text[1]

## Tasks – Building Automation System Reports

### Creating a Report

For the Trend Log report, see Creating a Trend Log Report.

1. In the Building Automation section of the left pane navigation tree, under Reports, click the type of report you want to create. The blank report template opens in the right pane.
2. Enter a Report Name.
3. Optionally, modify the Report Title.
4. Select the Site.
5. Enter a Device Range.
6. Optionally, modify or add to the Object Filter.
7. Optionally, change the Report Orientation.
8. Optionally, modify or add to the Report Format.
9. For the Objects in Manual report only, configure the Log Filter.

10. Click Run to generate the report. When the report is displayed, review it and make any changes you need to achieve your intended result.
11. Click Save to save the report and to add a link to the report in the Reports/ Building Automation section of the left pane navigation tree.

### Creating a Trend Log Report

1. In the Building Automation section of the left pane navigation tree, under Reports, click the type of report you want to create. The blank report template opens in the right pane.
2. Enter a Report Name.
3. Optionally, modify the Report Title.
4. In the Trend Setup area, select the TL objects that you want to include in the report.
5. Configure the Date Range.
6. Optionally, configure the Sample Roll Up.
7. Configure the Chart Options.
8. Optionally, change the Report Orientation.
9. Click Run to generate the report. When the report is displayed, review it and make any changes you need to achieve your intended result.
10. Click Save to save the report and to add a link to the report in the Reports/ Building Automation section of the left pane navigation tree.

## Chapter 16 – Access Control Activity Reports

This chapter covers the activity reporting aspects of an access control system.

### Report Features

The Access Control Activity Reports feature has the following capabilities:

- Run the report on operator command or automatically at a scheduled time
- Email report results as PDF
- Save report results to a file in Excel, PDF, PowerPoint or Word format
- Maintain a history of when report was run
- Save multiple report configurations and add links to report in the Reports section of the left navigation pane.

### Card Access Activity Report

The Card Access Activity report allows you to list access control events in chronological order.

Filters for card users, doors and event type allow you to narrow the report based on your specific interest.

#### *Limitations*

The report is limited to 8001 events.

### Report Parameters

#### *Report Name*

Report Name specifies the name of the link that appears in the Access Control section of enteliWEB's left pane tree view under Card Access Activity, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

#### *Report Title*

Report Title specifies the text that appears as the title of the report.

#### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

#### *Date Range*

Date Range specifies the time interval for events that you want to include in the report.

### *Card Users*

Card Users specifies a filter to allow you to narrow the report to the card users that you are interested in viewing events for.

### *Doors*

Doors specifies a filter to allow you to narrow the report to the access control doors that you are interested in viewing events for.

### *Event Types*

Event Types specifies a filter to allow you to narrow the report to the access control events that you are interested in viewing.

### *Card Number*

Card Number specifies the one card number that you are interested in viewing events for.

### *Site Code*

Site Code specifies the one site code that you are interested in viewing events for.

## Card Access Activity by Card User Report

The Card Access Activity by Card User report allows you to list access control events sorted and grouped by card user name.

Filters for card users, doors and event type allow you to narrow the report based on your specific interest.

### *Limitations*

The report is limited to 8001 events.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Access Control section of enteliWEB's left pane tree view under Card Access Activity by Card User, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Date Range*

Date Range specifies the time interval for events that you want to include in the report.

### *Card Users*

Card Users specifies a filter to allow you to narrow the report to the card users that you are interested in viewing events for.

### *Doors*

Doors specifies a filter to allow you to narrow the report to the access control doors that you are interested in viewing events for.

### *Event Types*

Event Types specifies a filter to allow you to narrow the report to the access control events that you are interested in viewing.

### *Card Number*

Card Number specifies the one card number that you are interested in viewing events for.

### *Site Code*

Site Code specifies the one site code that you are interested in viewing events for.

## **Card Access Activity by Door Report**

The Card User Activity by Door report allows you to list access control events sorted and grouped by access control door name.

Filters for card users, doors and event type allow you to narrow the report based on your specific interest.

### *Limitations*

The report is limited to 8001 events.

## **Report Parameters**

### *Report Name*

Report Name specifies the name of the link that appears in the Access Control section of enteliWEB's left pane tree view under Card Access Activity by Door, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Date Range*

Date Range specifies the time interval for events that you want to include in the report.

### *Card Users*

Card Users specifies a filter to allow you to narrow the report to the card users that you are interested in viewing events for.

### *Doors*

Doors specifies a filter to allow you to narrow the report to the access control doors that you are interested in viewing events for.

### *Event Types*

Event Types specifies a filter to allow you to narrow the report to the access control events that you are interested in viewing.

### *Card Number*

Card Number specifies the one card number that you are interested in viewing events for.

### *Site Code*

Site Code specifies the one site code that you are interested in viewing events for.

## Door Activity Report

The Door Activity report allows you to list access control events sorted and grouped by access control door name.

Filters for card users, doors and event type allow you to narrow the report based on your specific interest.

### *Limitations*

The report is limited to 8001 events.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Access Control section of enteliWEB's left pane tree view under Door Activity, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Date Range*

Date Range specifies the time interval for events that you want to include in the report.

### *Card Users*

Card Users specifies a filter to allow you to narrow the report to the card users that you are interested in viewing events for.

### *Doors*

Doors specifies a filter to allow you to narrow the report to the access control doors that you are interested in viewing events for.

### *Event Types*

Event Types specifies a filter to allow you to narrow the report to the access control events that you are interested in viewing.

### *Card Number*

Card Number specifies the one card number that you are interested in viewing events for.

### *Site Code*

Site Code specifies the one site code that you are interested in viewing events for.

## Transactions by Event Type Report

The Transactions by Event Type report allows you to list access control events sorted and grouped by event type.

Filters for card users, doors and event type allow you to narrow the report based on your specific interest.

### *Limitations*

The report is limited to 8001 events.

## Report Parameters

### *Report Name*

Report Name specifies the name of the link that appears in the Access Control section of enteliWEB's left pane tree view under Transactions by Event Type, when you save your report.

Report Name specifies the subject text of the email message when the report is sent by email.

### *Report Title*

Report Title specifies the text that appears as the title of the report.

### *Site*

Site specifies the name of the enteliWEB site that the report includes information about.

### *Date Range*

Date Range specifies the time interval for events that you want to include in the report.

### *Card Users*

Card Users specifies a filter to allow you to narrow the report to the card users that you are interested in viewing events for.

### *Doors*

Doors specifies a filter to allow you to narrow the report to the access control doors that you are interested in viewing events for.

### *Event Types*

Event Types specifies a filter to allow you to narrow the report to the access control events that you are interested in viewing.

### *Card Number*

Card Number specifies the one card number that you are interested in viewing events for.

### *Site Code*

Site Code specifies the one site code that you are interested in viewing events for.

## Tasks – Access Control Activity Reports

### Creating a Report

1. In the Access Control section of the left pane navigation tree, under Reports, click the type of report you want to create. The blank report template opens in the right pane.
2. Enter a Report Name.
3. Optionally, modify the Report Title.
4. Select the Site.
5. Enter a Date Range.
6. Optionally, modify or add to the Card Users.
7. Optionally, modify or add to the Doors.
8. Optionally, modify or add to the Event Types.
9. Optionally, modify or add to the Card Number.
10. Optionally, modify or add to the Site Code.
11. Optionally, change the Report Orientation.
12. Optionally, modify or add to the Report Format.
13. Click Run to generate the report. When the report is displayed, review it and make any changes you need to achieve your intended result.
14. Click Save to save the report and to add a link to the report in the Reports / Access Control section of the left pane navigation tree.



## Document Revision History

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1.0	May 11, 2017	J. Halliday	enteliWEB Version 4.5 <ul style="list-style-type: none"><li>added Chapter 16 Access Control Activity Reports</li></ul>



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