



# BRANCH DELIVERED TRAINING MANUAL

Desigo™ CC Market Package 3.0  
for New Users

Focused on APOGEE Building Automation



**Instructor's Guide**

# Instructor Notes

## Desigo CC MP3.0 for New Users

### Site Tour

Consider planning a site tour as part of the training if some of the students would benefit from it. Some groups may not need a tour, but others, because of a lack of familiarity with HVAC equipment or Siemens controls, may find it a helpful part of the class. If a site tour is something students would be interested in or benefit from, be sure to plan in advance how much class time the tour should take.

### Who are the students?

Finding out a little about the students before class begins can be very helpful. This information will allow for adjustments to the level and detail of the materials. If there will be advanced-level students, anticipate some difficulties or questions. Some questions to work through include:

- How many students will be in the class?
- What level of knowledge do they have about HVAC, computers, and Siemens systems?
- Do they have experience in a competitor's system?
- Is the site union or non-union?
- What are students' working hours? When is lunch, and are there pre-determined break times?
- Will different trades be present during training? If so, will their interests vary?
- Will any students be wearing beepers or be on call? How would the customer like to handle situations in which students are called out of class? Is it possible to request that students not be disturbed?
- What are the customer's particular service needs?

### Pre-Training Checklist

Double-checking the following items will help the training class go smoothly. A few days before going to the site for training:

- Confirm training date and class times. Find out about lunch and break times.
- Find out where the training will be held.
- Make arrangements to relocate the training session if the designated location might be too noisy, too small, etc.
- Check to see if the customer can provide a white board or flipchart. If they cannot, bring these items yourself.
- Have enough student manuals.
- Have any other necessary materials, such as job drawings and demo equipment (if used).

- Become familiar with the customer site and database. The topic-specific notes later in these pages give suggestions on dealing with the specific customer database.
- Have any additional publications that might be useful, such as user manuals and technical documents. It might be enough to show the students where they can locate detailed information about their site and system.

### Instructor Introduction

Start the training session by introducing yourself and passing out your business cards. Possible things to mention in the introduction are:

- Experience in the controls business.
- Length of employment with Siemens.
- Previous jobsite experience on and how those jobs relate to this job. Be careful to not mention other customers by name, especially if any are the customer's competitors.
- It's possible the students will already know you. However, it is still important to introduce yourself and your skills. If there are students that you do not know or who do not know you, be sure they understand your role and responsibilities as a Siemens employee.

### Student Introductions

Ask the students to introduce themselves. Chances are the students know each other, but sometimes they may not. The introductions will help you learn more about the group. Ask them to mention things like:

- Their job titles and responsibilities.
- Their length of time with the company.
- Their length and type of experience in HVAC, with computers, and with controls.
- If they have worked with Siemens equipment or with a competitor's equipment.
- Ask additional questions to assess your students' experience and their desire to learn technical material.

### **Student Expectations**

Ask the students to turn to the Training Expectations page at the beginning of their student guides. They should write down several things they would like to get out of the training class. Discuss these expectations as a group, and write their comments on the board.

Discuss what will and what will not be covered in the training session. Use the objectives at the beginning of the training guide to talk about course content with your students.

Explain that it is possible to cover some additional topics if time allows, and that future training may be the answer to some of their continuing needs. Some topics may be too advanced, and may be better handled in a training class delivered by Customer Training in Buffalo Grove. Be prepared to give them copies of the Training Directory if you think they are interested in additional training.

Discussing expectations helps students clarify what will happen during this initial training. It also helps to understand what the students are expecting to get out of it. If there are any problems or misconceptions, now is the time to clear them up.

At the end of the training, be sure to review the list and ensure all of their expectations have been addressed.

### **Preparation Time**

Preparation for teaching this unit should take approximately 2–3 hours. The session should last approximately 6 – 8 hours. Training times will vary depending on the number of students and their level of experience with personal computers, HVAC, controls, and Siemens systems.

### **General Notes**

Consider careful preparation for this class to be your homework! Plan ahead and be prepared to discuss the elements of Desigo CC operation which are most applicable to the needs of the students. Be aware of the level at which the students will be using the system.

Before beginning this module, determine what specific points and other objects to use in the practices. Also, make sure to know the correct answers to all the practices. Go through the practices before the training session and write down the correct answers for the customer's site.

Look over the objectives for the class and the table of contents to determine the topics on which to concentrate. There may also be topics to skip over at a specific site. Be prepared to explain to the students why some topics may not be covered.

Be prepared to discuss specific aspects of the job site with the students, to relate some of your own experiences, and to ask them about their own experiences at the site.

### **While preparing for the training session, think about:**

- Which reports will be used as examples of the Report Viewer? What are typical reports at this site?
- Which graphics are available to display as examples and which are the most applicable to the students' regular work? Think about typical graphics as well as any animation to be used.
- Which points are currently being trended at the site?
- How is the system scheduled? How many schedules and calendars does the site use?

### **Concentrate on the basics:**

- Navigating the Desigo CC User Interface
- Reports: viewing, building, and scheduling
- Monitoring and commanding from graphics
- Trending (if appropriate): collection, reports, and scheduling
- Simple scheduling and overriding

### **Evaluation**

It is important to get feedback from the students about the training. By asking the students to provide their impressions of the training, you can refine your skills and work to deliver better training in the future.

The following pages contain two evaluation forms. Print enough copies to pass out to the students when the training sessions are complete. Collect the forms and use them to help make the training better. One form specifically checks on how students feel they can perform the tasks that were part of the training objectives. The other is more general in nature.



# Course Evaluation Form

## Customer Training Delivered by the Field Office

### Course: Desigo™ CC 3.0 for New Users

Your name: \_\_\_\_\_

Company name: \_\_\_\_\_

Date of training: \_\_\_\_\_

Rate how well you can now perform the following activities, which were objectives for this training class:

Activities:	Not at all	With help	With limited help	Easily
Log on to Desigo CC and exit Desigo CC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify and explain the purpose of each pane in the System Manager Window.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Locate Online Documentation related to Desigo CC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create an offline and online trend.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manually collect trend data from offline trends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Command points from a graphic, and then release to system control.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Display, run, modify, print and save a report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acknowledge, reset, and close system events via fast treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acknowledge, reset, and close system events via investigative treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Locate and open an existing graphic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Command a data point from within a graphic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create, modify, and save a Field Panel and Management Station schedule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create, modify, and save a BACnet and Management Station calendar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add a calendar to a BACnet and Management Station schedule that creates an exception.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Course Evaluation Form

Customer Training Delivered by the Field Office

**Course: Designo™ CC 3.0 for New Users**

	Poor				Excellent
Quality of instruction	1	2	3	4	5
Organization of course	1	2	3	4	5
Quality of reference materials	1	2	3	4	5
Practices and exercises	1	2	3	4	5
Discussions and applications	1	2	3	4	5
Value of this training to your job	1	2	3	4	5
Overall rating for this training	1	2	3	4	5

Please provide more information about any rating that is at 3 or below.

Additional comments:

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# Desigo CC Market Package 3.0 for New Users

(October, 2017)

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# Table of Contents

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<b>Getting Started</b>	<b>1</b>
Training Expectations	1
Course Objectives	2
<b>About Desigo™ CC</b>	<b>3</b>
Using Desigo CC	3
Building System Terminology	4
<b>Navigation</b>	<b>5</b>
Navigation	5
Launch Desigo™ CC	5
Logging into Desigo™ CC	6
Summary Bar	7
Event Lamps	7
Event List	9
Operator Menu	11
Arrange the System Manager View	12
System Browser	14
Primary and Secondary Panes	19
Textual Viewer	20
Operation and Extended Operation Tabs	21
Related Items Pane	24
Navigation Buttons and Breadcrumbs	25
Navigation Tips and Tricks	28
Navigation Exercises	35
Exiting Desigo CC	37
<b>Trending</b>	<b>38</b>
About Trending	38
Trending by COV	39
Trending by Time Interval	40
Trending in Desigo CC	41
Trending Workflow	41
Begin Trending a Point	42
Save a New Trend View Definition	43
Create an Offline Trend Object in a BACnet Field Device	44
Locate a Trend Object	46
Manually Collect Trend Data from a BACnet Trend Object	47
Delete a BACnet Trend Object from the Field Panel	49
The Trend Viewer Application	50
The Trending Button Bar	51
Modify a Trend View Definition	53
<b>Graphics</b>	<b>57</b>
About Graphics	57
Display a Graphic	57
The Graphics Button Bar	59
Command a Graphic Point	60
Release a Graphic Point	65
Graphics Tips and Tricks	68

<b>Reports</b>	<b>69</b>
Overview of Reports	69
The Reports Application	70
The Reports Button Bar	71
Open a Report	73
Run a Report	74
Reviewing a Report Snapshot	74
Viewing, Saving, and Printing a Report as a PDF	76
Modifying a Report	77
Adding Trend Charts and Graphics to a Report	80
<b>Alarm Treatment</b>	<b>83</b>
About Alarms	83
Alarm Management Interface Overview	84
Event Lamps	85
Event Details Bar	85
Event Icons	87
Fast Treatment	88
Event List	89
Multiple-Select Fast Treatment	90
Investigative Treatment	91
Assisted Treatment	92
<b>Scheduling</b>	<b>96</b>
About Scheduling	96
Scheduling Overview	96
Scheduling	97
Creating a BACnet Schedule	98
BACnet Schedule Exceptions	102
Types of BACnet Schedule Exceptions	102
Add Exceptions to a BACnet Schedule	105
Exception Precedence	107
The BACnet Calendar	108
Creating a BACnet Calendar	108
Using a BACnet Calendar as a BACnet Schedule Exception	111
Management Station Schedules	111
Management Station Schedule Exceptions	116
Add an Exception to a Management Station Schedule	118
The Management Station Calendar	120
Creating a Management Station Calendar	120
Using a Management Station Calendar as a Management Station Schedule Exception	123
Timeline View	124
<b>Wrap-Up</b>	<b>125</b>
Session Review	125
Wrap-Up Exercise	126
<b>Additional Learning Opportunities</b>	<b>128</b>
Desigo CC Training Path	128



# Getting Started

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## Training Expectations

So that your Instructor understands what you want to learn during your training session:



1. List five or more topics you would like to learn about.

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2. List three of your major job responsibilities.

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**NOTE:** Design CC operates in Windows 7 or in the Windows Server environment. To receive full benefit of this training, you should have basic personal computer and Windows skills before beginning this training unit. If you would like to acquire these skills, the Instructor can provide some training options to increase your knowledge.

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## **Course Objectives**

At the end of this course you will be able to:

1. Log on to Desigo CC and exit Desigo CC.
2. Identify and explain the purpose of each pane in the System Manager Window.
3. Navigate the Desigo CC user interface to find system objects.
4. Locate Online Documentation related to Desigo CC.
5. Create an offline and online trend.
6. Command points from a graphic, and then release commanded points to system control.
7. Display, run, modify, print, and save a Standard Report.
8. Acknowledge, reset, and close system events.
9. Create, modify, and save a Field Panel and Management Station schedule and calendar.
10. Add a calendar to a BACnet and Management Station schedule that creates an exception.

# About Desigo™ CC

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## Using Desigo CC

Desigo CC is an optimized, single point of control management station. Desigo CC uses a suite of applications to monitor and control facility operations across a variety of disciplines, networks, and protocols. Standard interfaces available in this software include:

Icon	Interface	Type of Interface
	Fire	Security & Fire Safety
	Video (Security)	Security & Fire Safety
	Ventilation	Energy & Comfort
	Air Conditioning	Energy & Comfort

Desigo CC provides a visual interface of the facility's operations. It provides operations of one or more buildings, analyzes facility performance, and makes it possible to solve many problems without leaving the management station.

Here are just a few of the tasks for which Desigo CC excels:

- Monitor and control a facility through graphics.
- Diagnose and troubleshoot problems through trending and reports.
- Schedule and modify equipment operations.
- Analyze energy efficiency by monitoring equipment operation and temperature changes.
- Use alarms to immediately identify a problem in your facility.
- Gather information and analyze the efficiency of the system through reports.
- Export trended data into Microsoft Excel spreadsheets.

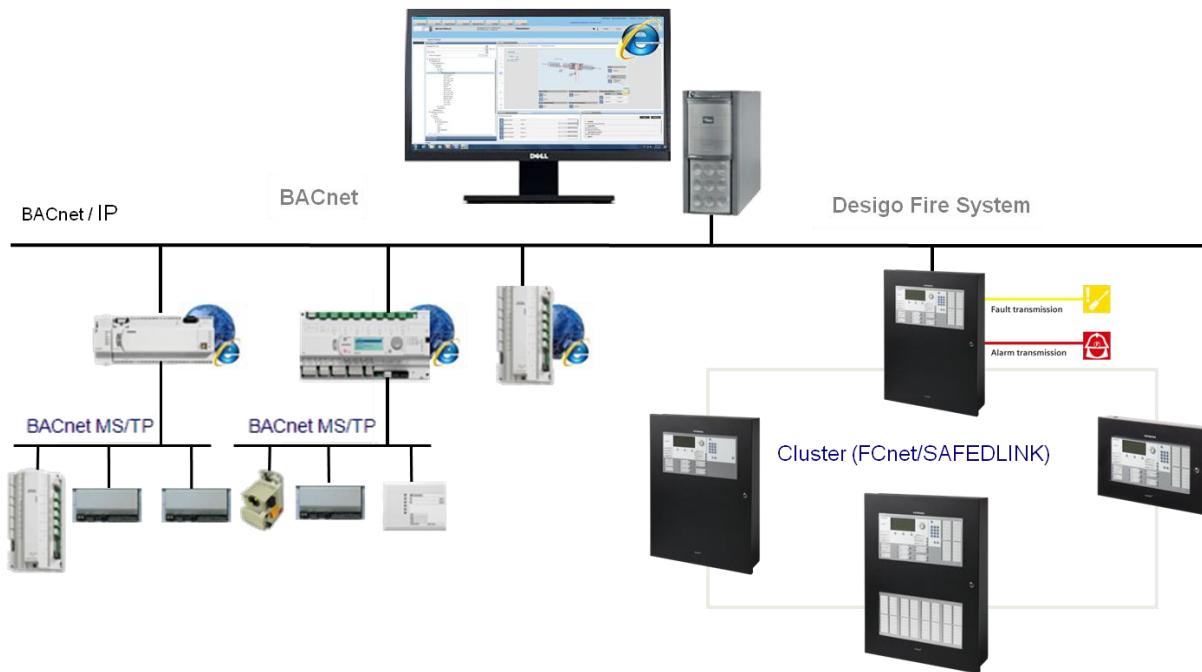
This training will not teach all of these tasks. As you become more skilled, you will learn more about advanced Desigo CC features. Many find that using Desigo CC graphics makes it easier for them to visualize what is happening in their facility.

## Building System Terminology

The Designo CC server manages the entire network. In this way, it can be thought of as being “on top of” the other devices on the “Management Level Network” (MLN). If there are Designo CC workstations at the facility in addition to the Designo CC server, they are connected to one another via the MLN.

Automation panels are connected to each other via the “Automation Level Network” (ALN). This network can be an open protocol such as BACnet or a proprietary protocol. Each protocol will have its own, individual, network connection.

Automation panels are capable of monitoring multiple field level devices. They are connected to the panels on the “Field Level Network” (FLN).



# Navigation

## Navigation

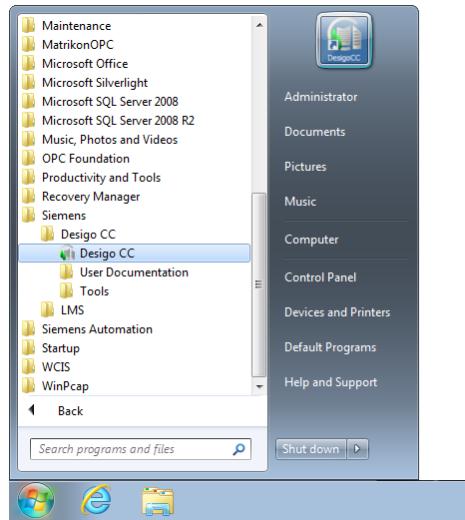
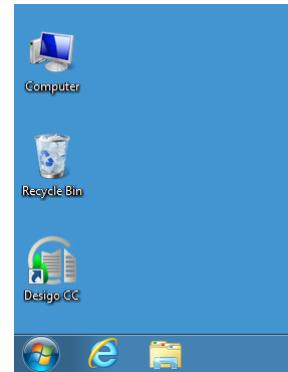
Over the next few pages, a brief overview for each part of the System Manager window is provided.

Keep in mind that when information about a selected object in the System Browser is displayed it may also automatically interact with information displayed in one or more additional panes in the System Manager window.

### Launch Desigo™ CC

When the Desigo CC workstation client is installed on a computer, a desktop icon is automatically created. This icon makes it easy to launch the client application. To launch Desigo CC from the desktop, double-click the **Desigo CC** icon, shown here.

**NOTE:** When accessed via a web browser, such as Internet Explorer, a desktop icon is not automatically created. In that case, launch Internet Explorer and then, perhaps, click a bookmark for Desigo CC.



It is possible that the desktop icon has been removed. If there is no desktop icon, the Desigo CC shortcut is located in the Windows Start Menu.

Click the Start bubble and then All Programs. Expand "Siemens" and "Desigo CC". Click the "Desigo CC" shortcut icon. This is shown here.



### **Hands on Practice:**

Launch Desigo CC.

If there is no Desigo CC icon on your desktop, work with the instructor to launch Desigo CC via the Windows Start Menu.



### **NOTE:**

During this training program, the instructor might ask that you refer to the Desigo CC screen as individual topics are being discussed. Please be respectful to the instructor and other students. Though it might be tempting to spend the entire training time clicking around in the system, it is much more beneficial to work in sync with the instructor in a collaborative environment.

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## **Logging into Desigo™ CC**

When the Desigo CC client is launched, it performs several system diagnostics. When all systems check out, the login screen will appear.

Enter your username and password. When selecting the Domain, please ask your Siemens Representative or your facility's Information Technology department.



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## Summary Bar

The Summary Bar is always on the top of the monitor and cannot be completely hidden. Desigo CC can be configured to reduce the size of the Summary Bar, but it will always be visible in some fashion. By keeping the Summary Bar always visible, Desigo CC ensures all users will always be aware of the facility's condition.

The Summary Bar enables a user to:

- View overall events when detected by the system
- Turn the audio alert on and off
- View Event Lamps
- Display the Operator menu
- Access additional documentation related to Desigo CC
- Access the User Guide (PDF)
- Access the Help window
- Exit the Desigo CC program

The following sections provide information about the items comprising the Summary Bar.

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## Event Lamps

Event Lamps provide an overview of the building automation system's current condition. Individual event lamps will blink when new system events occur in the system. Types of events include:

- Field device has gone offline and cannot be reached
- Network driver has encountered a problem
- Database back-up has begun

It is important to note that not all system events are alarms. A system event might be giving notification of a current condition without requiring interaction. For example, if a door is monitored, an event lamp might blink to show the door has been opened. This might not be an alarm condition; just a notification.

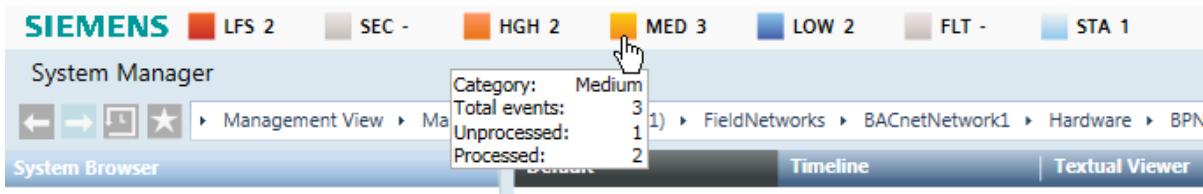
System events can be routed to different event lamps to designate their importance. These are called "categories." Each event lamp represents one category. Using this strategy, it is possible to quickly review the event lamps and know the importance of all events currently active in the system.

Depending on the setup of your Desigo CC workstation, the number of Event Lamps displayed on the summary bar can vary.



Each Event Lamp represents a different Event Category

The Event Lamps area can be collapsed in order to gain additional screen space for the Desigo CC interface. When fully collapsed, the Event Lamps are presented as squares. When the mouse is hovered over an alarm square, a pop-up will indicate the number of alarms and how many have been processed.

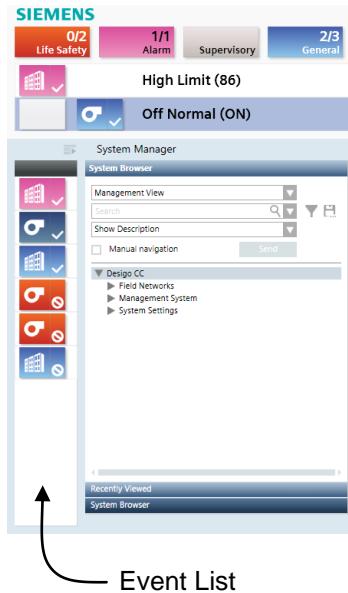


#### Open Discussion:

- Are there any active system events currently displayed in your system?
- What are they and what are their categories?

## Event List

**NOTE:** Not all Desigo CC interface profiles display the Event List. Depending on the user interface profile enabled at your workstation, the Event List might not be visible.

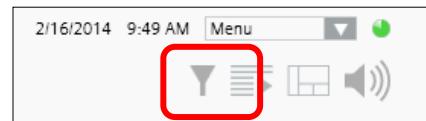


The Event List is positioned to the left of the System Manager window. Every active event in the Desigo CC workstation is listed in the Event List. They are automatically sorted from top-to-bottom in the following order:

- Unacknowledged Active Alarms
  - Highest Level
  - Lowest Level
- Acknowledged Active Alarms
  - Highest Level
  - Lowest Level

By sorting the system events in this manner, the most important unacknowledged events are always visible on the top of the list. If more events are active in the system than can be displayed in the vertical column, a scroll bar will activate to allow scrolling through the list.

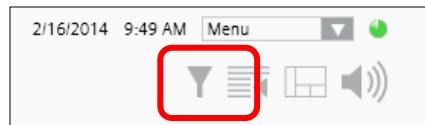
The Event List can be expanded such that it covers the entire screen. To expand the Event List, click the icon in the Summary Bar.



With the Event Expanded, all the active events and their details are displayed.

A screenshot of the expanded Event List. The top row shows status indicators for various categories: 2/2 Life Safety, 2/2 Security, 2/2 High, 1/3 Medium, 1/2 Low, and 0/1 Status. Below this is a navigation bar with icons for Building, Lock, Key, and Network, followed by "Off Normal". The main area is titled "Event List" and contains a table with columns: Cause, Source, Counter, Commands, Information, Event Status, Source Status, Date/Time, ID, and In proc. The table lists several events, each with a checkmark in the Commands column. The last few rows show events with status "Waiting for..." and "Ready to b...". The bottom right corner of the table has a red-bordered icon of a circular arrow.

To close the Event List, click the icon in the Summary Bar, which should now be pointing to the left.



**Hands-on Practice:**

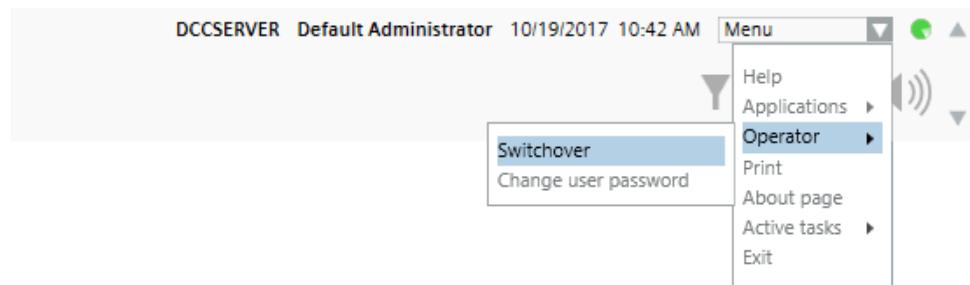
Expand the Event List. What events are currently in the system? What details are displayed in the Event List?

## Operator Menu

The **Operator Menu** is located in the right part of the Summary Bar. Depending on individual installation options, the Operator Menu may vary from the illustration below. Items that might be found in the Operator Menu can include:

- **Help**  
Selecting Help will launch the electronic help manual. This version of the manual is provided in topical segments to ease reading and locating information. The electronic Help manual can also be launched by pressing the [F1] key.
- **Applications**  
Provides ability to launch multiple instances of the System Manager.
- **Operator**  
Allows the user to perform a switch-over and to change their password.
- **About Page**  
Provides information about the specific version of Desigo CC installed as well as other system information.
- **Print**  
Opens the Print dialog box. Allows the printing of information from Desigo CC.
- **Active Tasks**  
This item will list all instances of System Manager currently active.
- **Exit**  
Closes the Desigo CC client. Though the graphical interface will close, the Desigo CC server is still running and controlling the facility.  
NOTE: There is no warning. Clicking Exit will close the GUI.

The following illustration displays the documents listed under the **User Documentation** menu option. Please note that the documentation at your site may vary based up on the installation type.



*Summary Bar – Locating the User Guide from the Operations Menu*



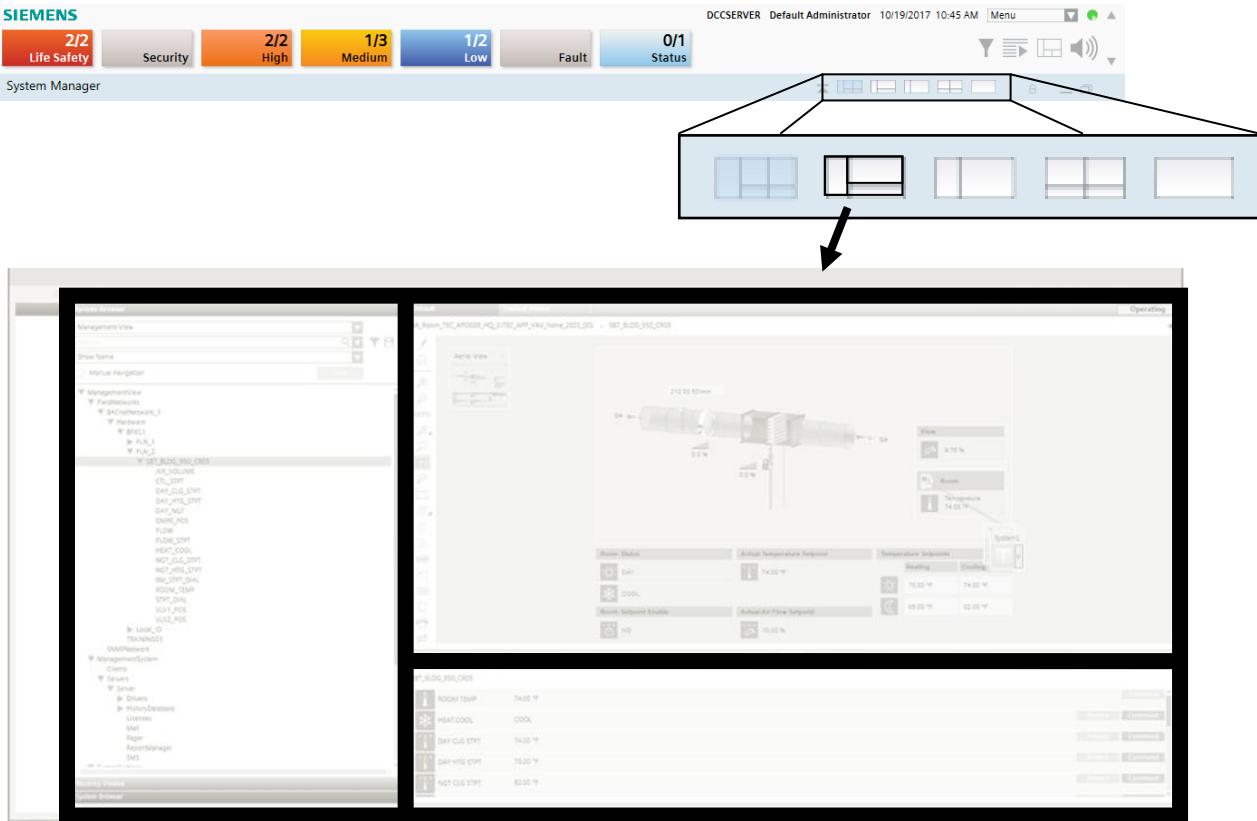
### Hands-on Practice:

Open the Desigo CC User Guide.

## Arrange the System Manager View

The System Manager is the primary interface of Desigo CC. Its layout can be quickly changed using buttons located in the upper-right corner. Using these buttons, certain panes comprising the System Manager can be hidden from view or exposed. In this way, only the key sections of the screen are displayed without potential clutter of other panes.

Following is an example of how the buttons are used to manipulate the layout of the System Manager.



Sample of the System Manager Window Displaying Three Panes



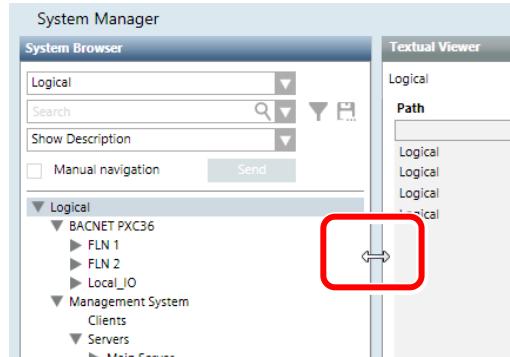
### Hands-on Practice:

Change the System Manager layout.

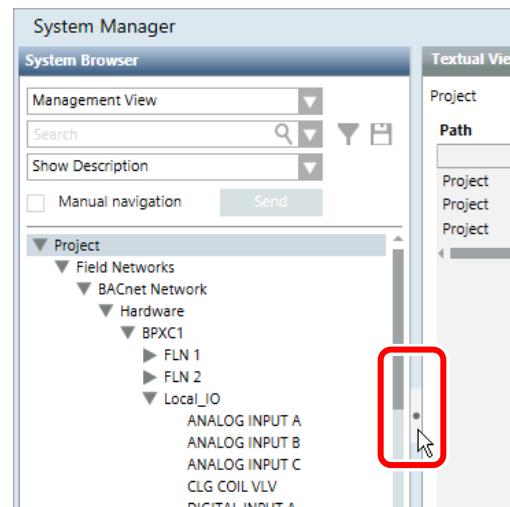
### **Manually Changing the Layout:**

In addition to the layout change buttons, it is possible to change the layout of the panes manually by dragging the splitters and clicking collapse buttons.

When the mouse pointer is moved over a splitter (the bar between two panes), the pointer will change to a double-sided arrow. This allows dragging the splitter left-and-right or up-and-down based on which splitter is being moved.



The panes can be quickly closed and opened by clicking splitter buttons. These buttons are always located in the middle of the splitter. The buttons are white. When the mouse is moved over a button, a dot appears in the middle of the button. When this dot appears, the button is active.

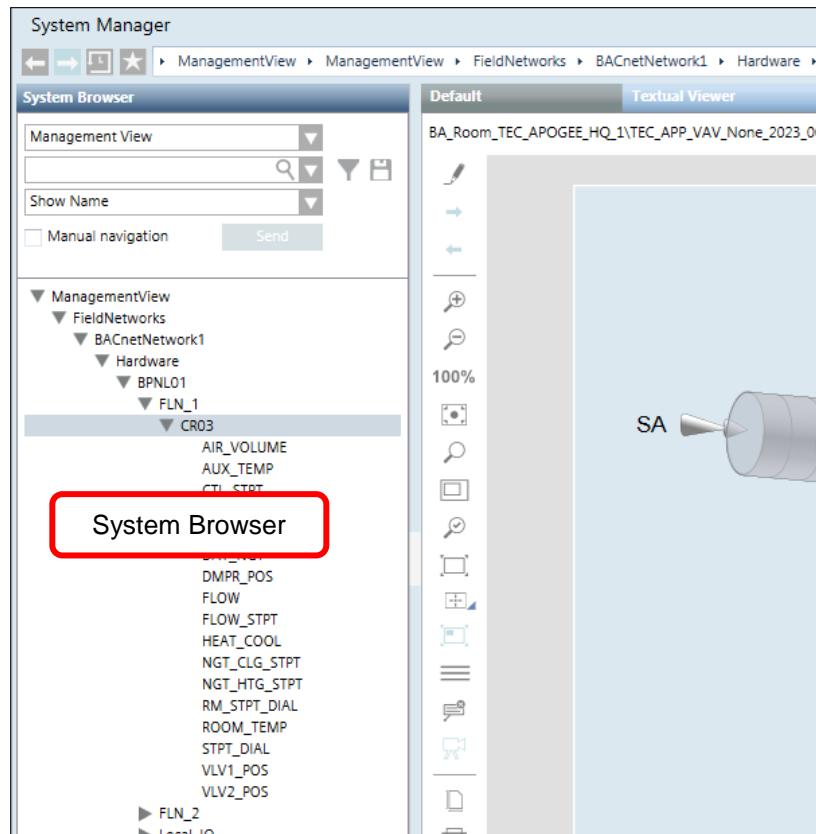


Collapsing individual panes provides more room for the remaining panes. Though the pane is collapsed, the splitter for the pane is still visible. When the collapsed pane is needed again, simply click the button to restore it.

## System Browser

The System Browser displays on the left-most side of the System Manager. It provides an access point to the Desigo CC project database and all applications. In your daily use of Desigo CC, in most cases, the System Browser is the starting point for most activities.

**NOTE:** The Desigo CC System Browser is unique to each organization. Additionally, the System Browser can be customized on a per-user basis. The System Browser at your location will most likely not display exactly as the one used in this training document. The Instructor will provide guidance on how your System Browser is structured.



## Desigo CC System Browser Views

Desigo CC is workflow-oriented. Typical workflows are based on whether the intended action is based on an application or field network object.

The System Browser displays database information in two different views:

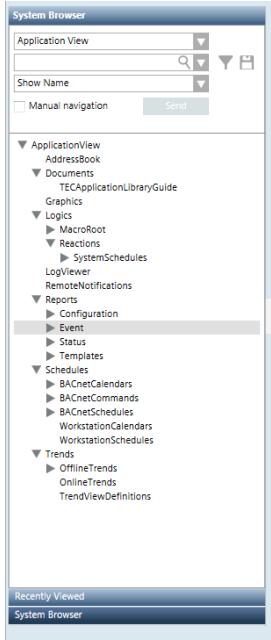
- Application View: Displays all applications in the system. For example, Trending, Graphics, Reports, etc. Additionally, the items created by the applications are listed with their respective application. For example, all reports can be found in the “Reports” folder.
- Management View: Displays the field networks connected to the Desigo CC workstation in addition to system configuration settings.

Additionally, custom views can be defined. These custom views can be assigned to groups of users. Reasons to use Custom Views include to restrict users from sensitive settings or to present users with only those parts of the facility they need for their job.

A drop-down menu on the top of the System Browser allows switching between views.



The following sections provide more detail about each of these views.

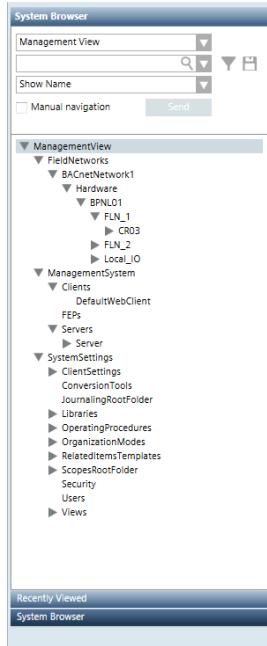


### Application View

This view focuses on system applications. The Application view contains such items as Graphics, Reports, Macros, Schedules, and Trends.

To work with the Graphics application, simply click the “Graphics” node to launch it. There might be a list of graphics in the tree under the “Graphics” node. These are the graphics themselves. When an individual graphic is selected, the Graphics Viewer application will launch and automatically load that graphic. A similar example would be launching Microsoft Word versus launching a Word document itself. In the first case, only the application is launched; in the second case, the application is opened with the file loaded.

The Applications View is designed to provide the most common tasks performed on a daily basis. It is anticipated that the average user will use the applications to monitor and control the facility. System configuration tasks are located in the Management View.



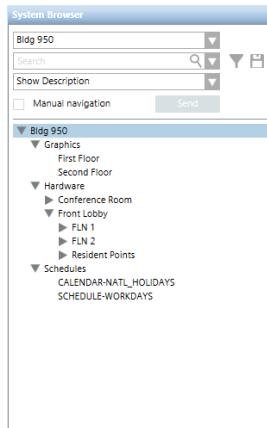
### Management View

This view provides a tree-structure hierarchy of the field networks attached to Design CC as well as access to system configuration tasks.

By default, the field devices are grouped by the networks to which they are attached. Each network displays the primary controllers and any field level devices attached to them. When a device is selected in the System Browser, all resident points are displayed in the Primary Pane along with their status and current value.

The Management View also displays configuration settings. The two sections containing configuration settings are System Settings and Management System. These sections contain configuration settings for items such as:

- Network drivers
- Remote Notification configuration
- Datapoint configuration
- User and Group security settings



### Custom Views

Custom views can be defined for multiple reasons. For example:

- Present only one building on campus for which the user is responsible. For example, a dormitory on a college campus but not the science building.
- Mix datapoints from multiple field devices into a single, easier-to-read presentation. For example, the front lobby is easier to monitor if all the points from the multiple field devices are displayed at once.
- Provide access to only specific applications as needed. For example, only view graphics but not run reports.
- Combine elements from the Application View and Management View. This way, the user will not need to use the drop-down menu.

These are only a few reasons to create and use custom views. Discuss with the instructor how your facility could use custom views.



### Hands-on Practice:

Review the Application View, Management View, and any Custom Views in your system.

What applications do you have access to?

What field equipment is listed?

Compare Custom Views between students. Are they the same?



At my facility, some good uses for custom views include:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### ***Recently Viewed***

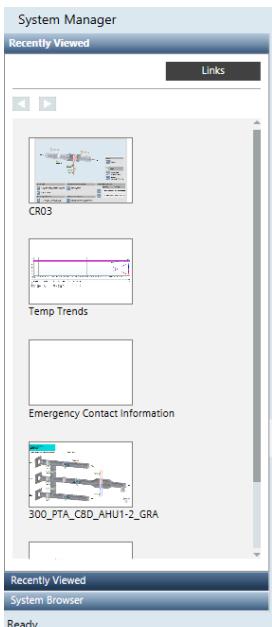
Desigo CC keeps a list of the items viewed by the user. As you move through the system from graphic to report to document, back to graphic and then to a textual view of TEC subpoints, Desigo CC records thumbnails and places them in the Recently Viewed Tab of the System Browser.

To switch between the System Browser tab and the Recently Viewed tab, click the tab names on the bottom of the pane.

The Recently Viewed tab displays up to 20 of the most recent items as thumbnails. The most recently viewed item displays at the top of the list. As new items are added to the list, the oldest items fall off the bottom of the list.

Using this selection in the System Browser allows a rapid return to the most recent items visited. To quickly navigate to a previous item, simply click on a thumbnail to return.

If your daily activities are primarily limited to 5 – 10 different screens, it might be easier to use the Recently Viewed tab as the primary System Browser display.



### ***Hands-on Practice:***

Change the System Browser pane to the Recently Viewed tab. How many thumbnails are displayed? If there are not many, why is that?

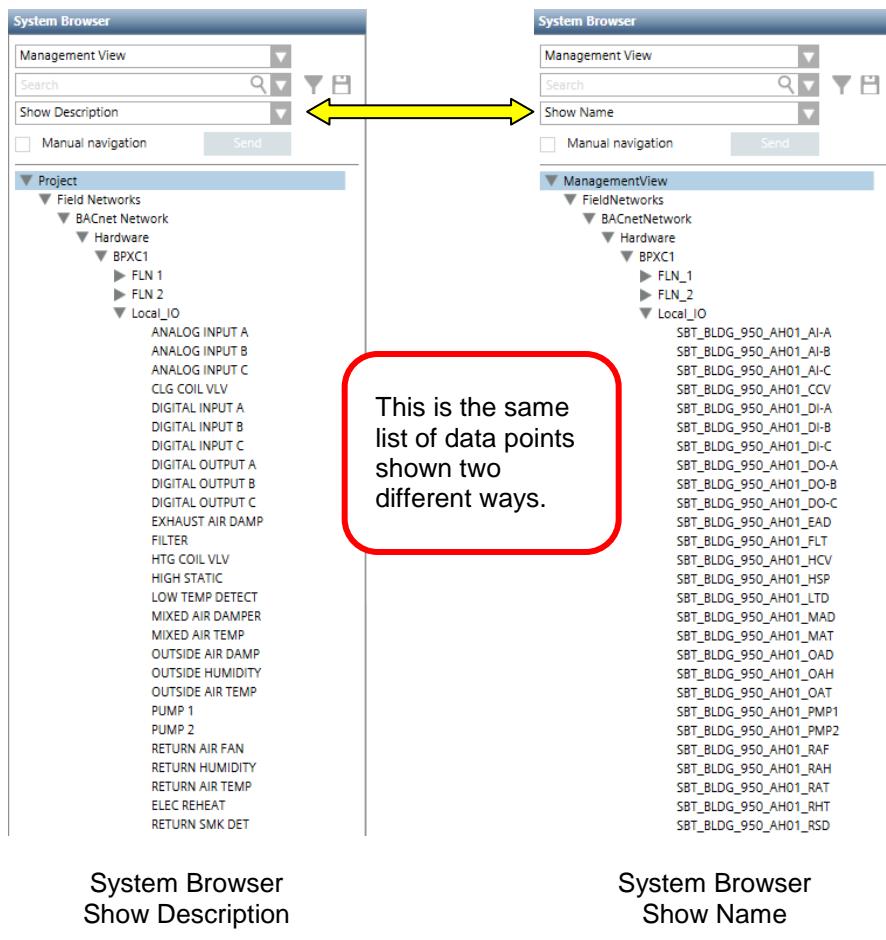
### Show Name / Show Description

Every database object in Desigo CC has a Name and Description. Typically, the Description is designed to be easier to read and understand by the Operator. Changing the display option in System Browser will change the display of all objects in all active panes.

It is important to remember that it is possible for two Desigo CC users to discuss the same database object but refer to it two different ways, depending on whether they prefer Name or Description.

The Desigo CC System Browser provides four view options for displaying the database options:

- Show Description  
Shows only the object description
- Show Description [Name]  
Shows the object description followed by its name
- Show Name  
Shows only the object name
- Show Name [Description]  
Shows the object name followed by description





### Hands-on Practice:

Switch between “Show Name” and “Show Description”.

Which do you prefer?

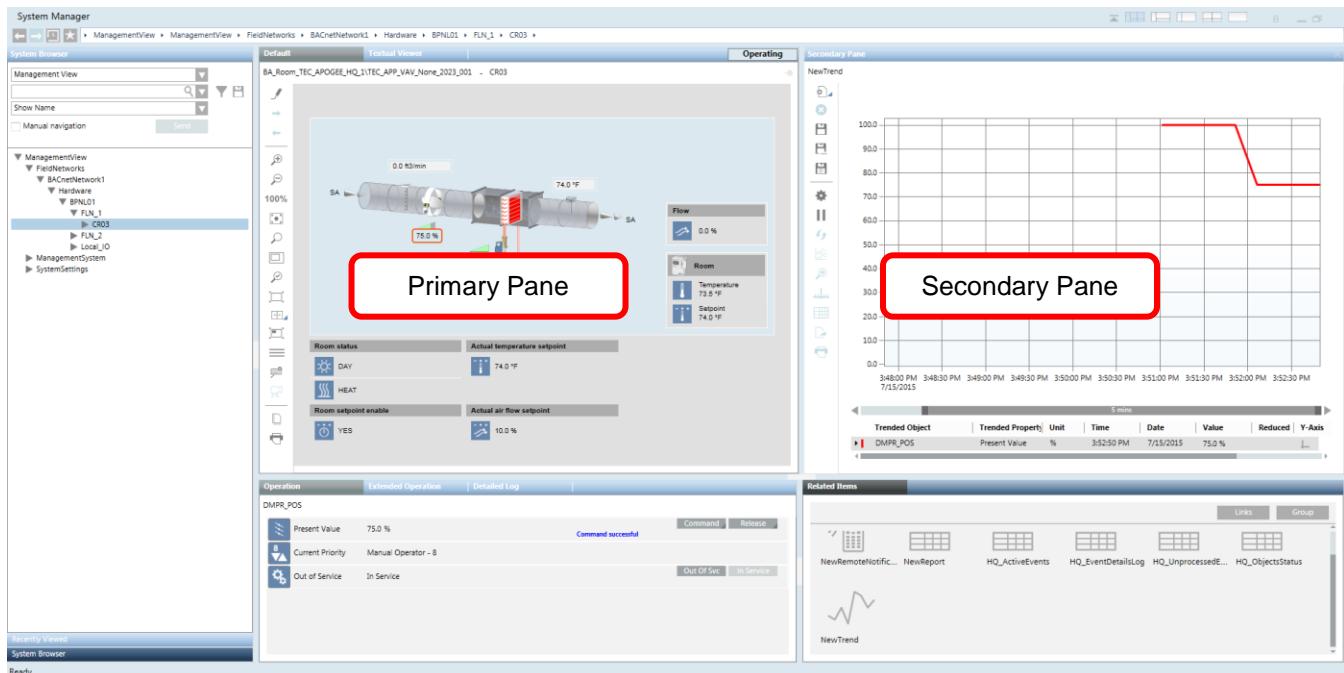
## Primary and Secondary Panes

The Primary and Secondary Panes can each run system applications to display information in various formats. The Primary and Secondary Panes are the only panes in which system applications such as Graphics, Reports, Schedules, and Trends can be viewed.

The Primary Pane is always visible. When an object is selected in the System Browser, it will be presented in the Primary Pane.

The Secondary Pane is hidden from view by default. This allows the Primary Pane to occupy the bulk of the screen most of the time. The Secondary Pane will open when items are selected from the Related Items pane or when objects are manually sent to it. These actions will be discussed later in this course.

Having both panes open at the same time makes it possible to view two pieces of data simultaneously. This could be two different video feeds, two graphics, or two completely different applications as shown below. In some cases, configuration can be performed in one pane with the result being displayed in the other.



Primary Pane and Secondary Pane in the System Manager Window



### Hands-on Practice:

Select the following items in the System Manager. What appears in the Primary Pane?

- Field Data Point \_\_\_\_\_
- BACnet Schedule \_\_\_\_\_
- Field Panel \_\_\_\_\_
- Graphic \_\_\_\_\_

### Textual Viewer

Design CC provides a view in which all the datapoint objects contained in a selected device or object are displayed in a textual, column-based format. This is called the Textual View.

The Textual Viewer is a quick and convenient method of monitoring all the objects contained in devices. For example, providing an overview of all the resident points in a field panel as shown below. The Textual Viewer can be used to quickly review the values of all the subpoints in a TEC.

The Textual Viewer can be displayed in the Primary Pane and/or the Secondary Pane.

Name	Type	Value	Image	Status
Local_IO	Group	Building Automation High		
7001_dg	Document	46.788		Normal
7001_db	Document	6.379		Normal
AHU01_MODE	Value	0.00		Normal
SBT_BLDG_950_AH01_CCV	Valve	100.00 %		Normal
SBT_BLDG_950_AH01_EAD	Value	25.00 %		Normal
SBT_BLDG_950_AH01_FLT	Detector	DIRTY		Building Automation Status
SBT_BLDG_950_AH01_HCV	Valve	0.00 %		Normal
SBT_BLDG_950_AH01_HSP	Detector	ON		Building Automation High
SBT_BLDG_950_AH01_LTD	Detector	ALARM		Building Automation High
SBT_BLDG_950_AH01_MAD	Damper	75.00 %		Normal
SBT_BLDG_950_AH01_MAT	Sensor	50.31 °F		Normal
SBT_BLDG_950_AH01_QAD	Value	25.00 %		Normal
SBT_BLDG_950_AH01_OAH	Sensor	43.06 RH		Normal
SBT_BLDG_950_AH01_OAT	Sensor	56.28 °F		Normal
SBT_BLDG_950_AH01_MP1	Command	OFF		Normal
SBT_BLDG_950_AH01_PMP2	Command	OFF		Normal

*The Textual Viewer when a field panel's Local\_IO points are selected*

In most cases, even when the object selected in the System Browser has an associated application, the Textual Viewer will still be available. To show the Textual Viewer, click the "Textual Viewer" tab on the top of the Primary Pane.

In the illustration below, the Default tab displays the TEC graphic. Some users prefer to see all the subpoints displayed in the Textual Viewer.

The screenshot shows the System Manager application window. In the top navigation bar, the path is ManagementView > ManagementView > FieldNetworks > BACnetNetwork1 > Hardware > BPNL01 > FLN\_1 > CR03. The 'Textual Viewer' tab is highlighted with a red box. The left pane is the System Browser, displaying a tree structure of objects. The object 'CR03' is selected in the tree. The right pane shows a table of properties for 'CR03'. The table has columns: Name, Type, Value, Image, and Status. The data is as follows:

Name	Type	Value	Image	Status
CR03	Device	DAY		Normal
AIR_VOLUME	Sensor	0.0 ft³/min		Normal
AUX_TEMP	Sensor	74.0 °F		Normal
CTL_STPT	Command	74.0 °F		Normal
DAY_CLG_STPT	Command	74.0 °F		Normal
DAY_HGT_STPT	Command	74.0 °F		Normal
DAY_NGT	Command	DAY		Normal
DMPR_POS	Command	100.0 %		Normal
FLOW	Command	0.0 %		Normal
FLOW_STPT	Command	10.0 %		Normal
HEAT_COOL	Command	HEAT		Normal
NGT_CLG_STPT	Command	82.0 °F		Normal
NGT_HGT_STPT	Command	65.0 °F		Normal
RM_STPT_DIAL	Sensor	74.0 °F		Normal
ROOM_TEMP	Sensor	73.5 °F		Normal
STPT_DIAL	Command	YES		Normal
VLV1_POS	Command	100.0 %		Normal
VLV2_POS	Command	0.0 %		Normal

*Displaying the Textual Viewer tab rather than the Default associate application*

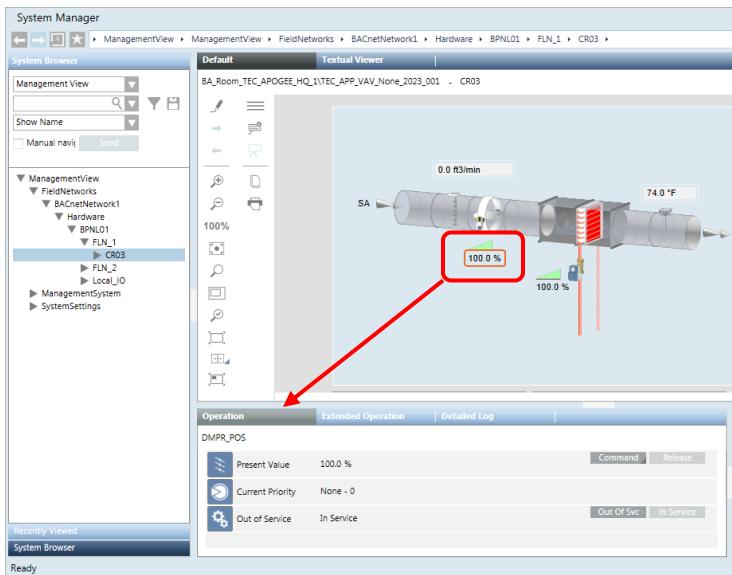
## Operation and Extended Operation Tabs

When an object is selected in the System Browser, the Desigo CC workflow is designed to present an initial amount of information in the Primary Pane. This information can be in the form of an associated application or textual view.

If more information is desired, look below the Primary Pane to the Operation and Extended Operation Tabs. For example, if a Cooling Coil Valve is selected in the System Browser, a graphic might appear displaying that object. If the present valve position is the only information desired, the inquiry might be finished. However, to find the valve's current command priority, alarm state, and out-of-service status, look into the Operation Tab to find that information. This is shown in the following image.

In even more information is desired, click the Extended Operation Tab to reveal additional information about the object.

In this way, Desigo CC presents the most important information first, allowing the user to dig into more details only as needed.



*Operation Tab in the System Manager Window*

Operation	Extended Operation
CLG COIL VLV	
Present Value	58.96 %
Summary Status	Normal
Event State	Normal
16 Current Priority	Priority - 16
Status Flags	
Out of service	In Service
Reliability	No Fault Detected
COV Increment	1.00 %
Description	CLG COIL VLV
Device Type	LAO
Object Identifier	4.194,307
Object Name	SBT.BLDG_950.AH01.CCV
Object Type	Analog Output
Priority Array	[1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16]
Relinquish Default	0.00 %
Resolution	0.00 %
Units:	%

*Extended Operation Tab*

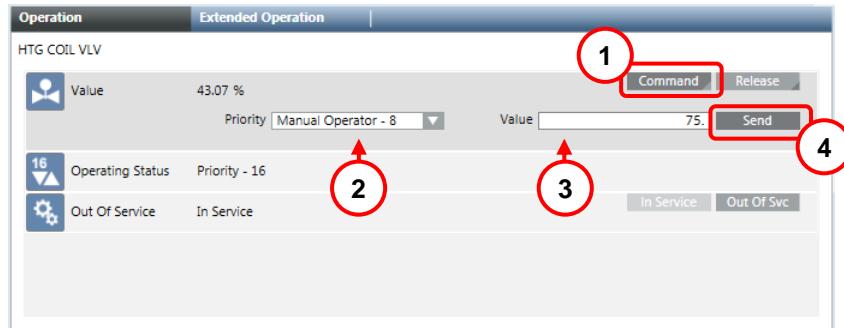
To display information about a different object, select that object in the Primary Pane. The Operation tab will automatically update.

### ***Using the Operation and Extended Operation Tabs***

One of the reasons to select a point in the Primary Pane is to access that point's properties. For example, the point's present value. Some points can be commanded to a different value or released from control so they can go back to their automated state. These tasks can be performed in the Operation and Extended Operation Tabs.

To command a datapoint:

1. Click the [Command] button.  
This will expand the field to expose the command information.
2. Select the command priority at which to send the command.
3. Select or enter the new value.  
For binary and enumerated points, a drop-down menu of acceptable values is presented. For analog points, type the new value.
4. Click the [Send] button.  
This will send the new value to the field panel at the selected priority.



To release a datapoint:

1. Click the [Release] button.  
This will expand the field to expose the release information.
2. Select the priority to release.
3. Click the [Send] button.  
This will send the release command to the field panel at the selected priority.

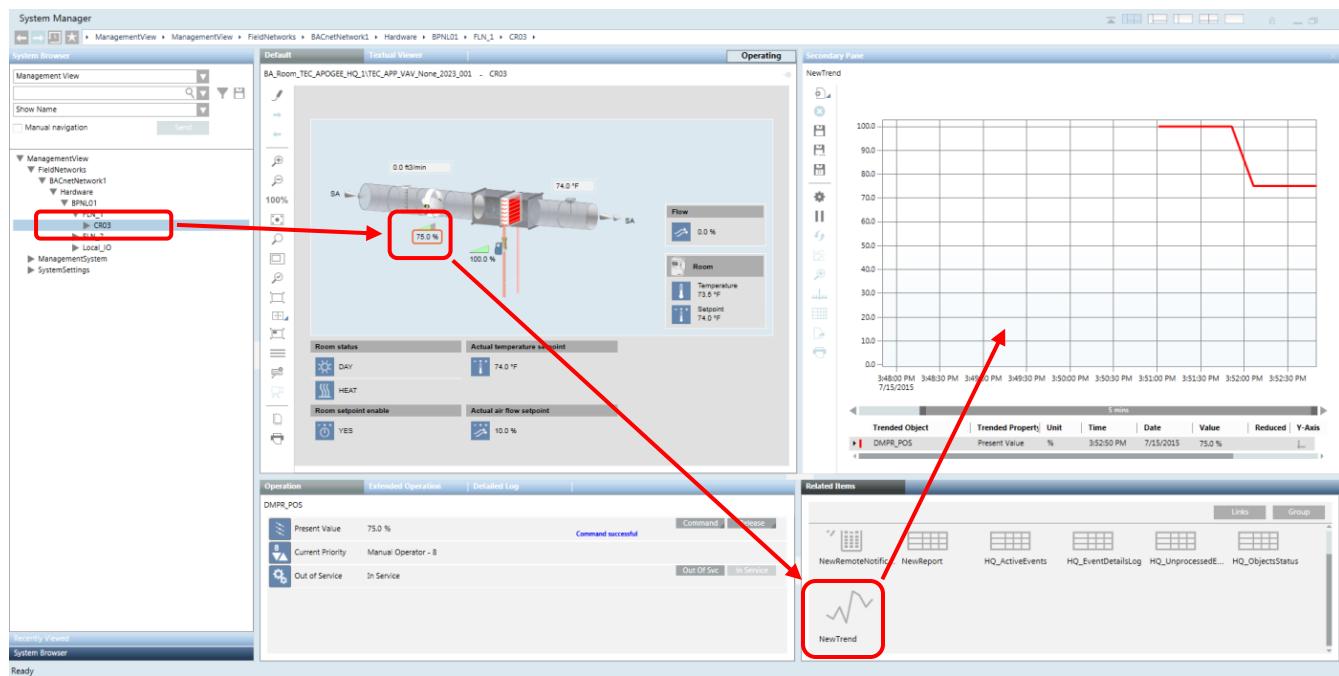


## Related Items Pane

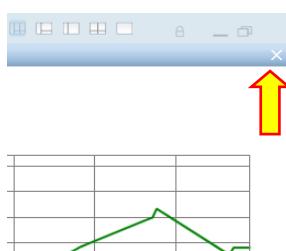
In the same way that the Operation Tab displays information about the object selected in the Primary Pane, the Related Items Pane shows system applications pertaining to the object.

For example, with the Heating Coil Valve selected in the following image, it is possible to:

- View a graphic containing the point
- Start a trend or view existing trend data for the point
- Run a report or view existing reports containing the point
- Create a Remote Notification based upon the point



When an item from the Related Items tab is selected, the Secondary Pane opens and loads that item.



When the Secondary Pane is no longer needed, close it by clicking the “X” in the upper-right corner.



### Hands-on Practice:

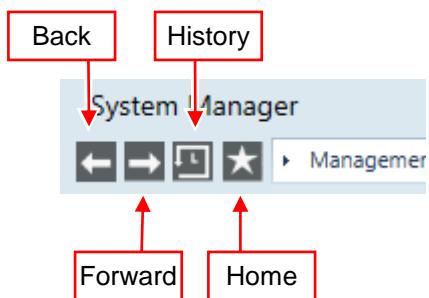
Open a graphic into the Primary Pane. Select a point on that graphic.

- What options appear in the Related Items Pane?
- When one is clicked, what happens?

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## Navigation Buttons and Breadcrumbs

Along the top of the System Browser is a group of buttons to help make navigation through the system easier.



During the course of navigating through Desigo CC, all visited screens are stored in the system history. To move back to a previous screen, use the "Back" and "Forward" buttons.

- The "Back" and "Forward" buttons allow movement forward and backward through the history of Desigo CC windows.
- The functionality is similar to using an internet browser.
- To view all history stored and the current location in relation to the stored history, click the "View History" button.



A check mark will indicate the screen currently displayed in the Primary Pane. If the check mark is not the top item, the “Forward” button will be active.

To jump straight to a screen, select it from the list.

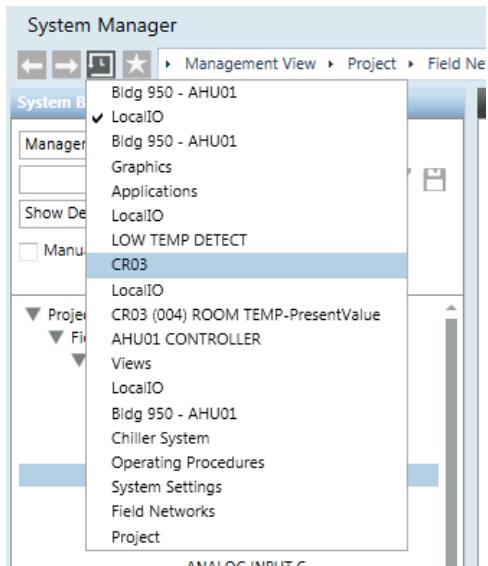
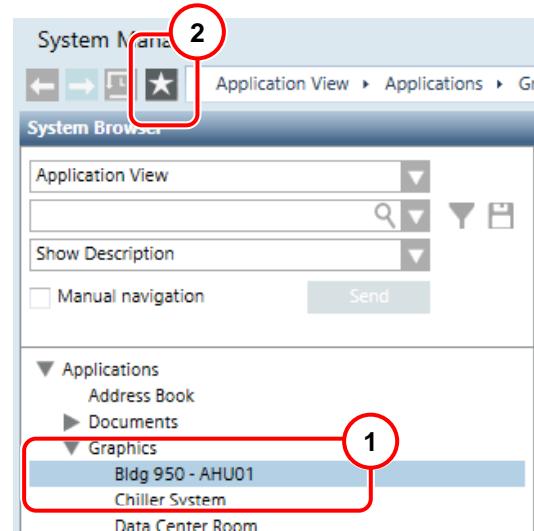
In this image, the “Local\_IO” node is currently displayed in the Primary Pane and the “CR03” node is being selected.

**NOTE:** The History begins building when the user logs into the client and is wiped clean when the user logs out. It cannot be stored from session to session.

The “Home” button allows each user to designate their preferred system object. Once set, when Desigo CC is launched the “Home” object will be the first item selected in the System Browser and loaded in the Primary Pane.

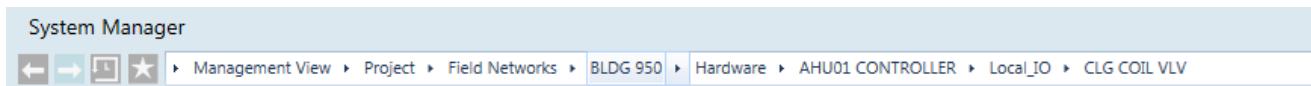
To set the home button:

1. Select an object in the System Browser such that it is displayed in the Primary Pane.
2. Click-and-hold the “Home” button for at least 2 seconds.  
The status bar – at the bottom of the screen – will indicate that the Home setting has been saved.



In addition to the System Browser, Desigo CC uses a navigation technique known as “Breadcrumbs”. Breadcrumbs display the System Browser tree steps necessary to access the currently selected object. The item on the far right will always be the object displayed in the Primary Pane.

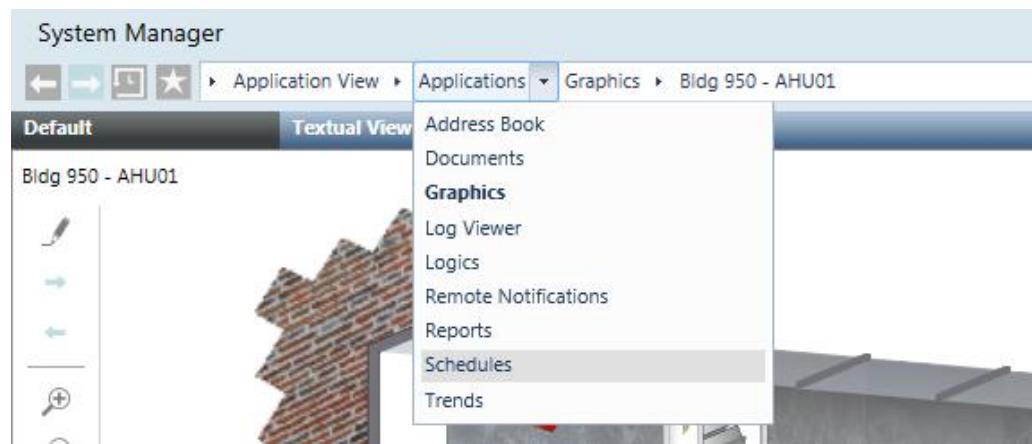
To move “upwards” in the tree, simply click one of the items in the list. The farther left the item, the ‘higher’ in the tree it is. In the following image, the Cooling Coil Valve is the active object. The “BLDG 950” item is about to be clicked, which will open it in the Primary Pane.



Breadcrumbs navigation is capable of completely replacing the System Browser. When an arrow to the right of an item is clicked, a selection menu displays all sub-items. This is similar to expanding a folder on the System Browser and seeing the items it contains. The item currently active will display in bold. In the following image, there are three graphics; the currently displayed graphic is “Bldg 950 – AHU01”.



Navigation is available at any point in the breadcrumbs. For example, if currently viewing Graphics and the Schedules application is desired, click the arrow to the right of the “Applications” item to display all applications. This is shown in the following image.



Sometimes, it is preferable to have the Primary Pane occupy the entire screen. This means collapsing the System Browser all the way to the left. After all, the entire System Browser is displayed even though only one item is currently selected; all the other items are just taking up valuable screen space. Breadcrumbs provide a much leaner method of navigation to help maximize computer screen real estate.

# Navigation Tips and Tricks

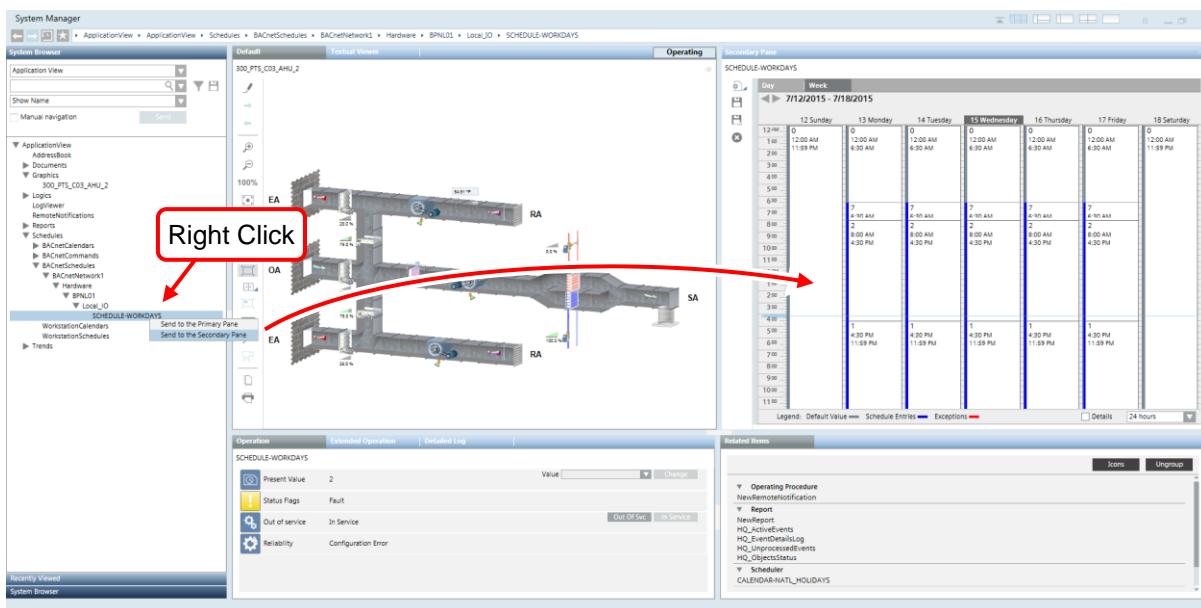
So far, Desigo CC has been presented in a relatively simple manner. This was done to present the interface and workflow in an uncomplicated way. Now that we have established an understanding of the overall interface and workflow, here are some tips and tricks that can make using Desigo CC easier, faster, and more enjoyable.

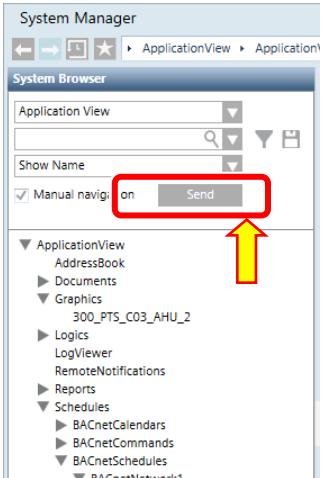
## Send to Secondary Pane

It was previously mentioned that the Secondary Pane is hidden by default and opens when an item is selected in the Related Items Pane. There is another way to open the Secondary Pane. This is the “Send to Secondary Pane” option in the System Browser.

It was discussed that left-clicking an item in the system browser will automatically send it to the Primary Pane. However, when using a right-click, a contextual menu appears providing the option to send that item to the Secondary Pane instead. Using the secondary pane makes it possible to monitor two graphics at the same time, add a video feed to the system manager, or view a trend definition and a graphic as shown below.

The Operation Pane and Related Items Pane will refresh to show information about the object displayed in the Secondary Pane. Notice in the image below that the lower panes display information about the schedule and not the graphic.





### Manual Navigation

Manual Navigation was briefly mentioned previously without much explanation why or how to use it. Selecting an item in the System Browser immediately presents it in the Primary Pane. However, it is possible to accidentally click an item in the System Browser. When this happens, the graphic, report, trend, etc. in the Primary Pane will be replaced with the accidentally-clicked object.

To avoid accidentally selecting an object, enable Manual Navigation. There are three methods for sending an object to the Primary Pane when Manual Navigation is enabled:

- Double-click the object.
- Select the object and click the [Send] button.
- Right-click the object and select "Send to Primary Pane".

### Multi-Select

Multi-select refers to the ability to individually selective multiple items in a list without selecting the entire list. Examples of multi-select include, but are not limited to:

- Displaying only room temperatures in the Textual Viewer.
- Selecting multiple points on a graphic for group commanding or releasing.

There are two ways to use multi-select:

- Selecting a range of items
  1. Select the first item
  2. Hold the [Shift] key
  3. Select the last item in the range
- Selecting non-consecutive items
  1. Select one item
  2. Hold the [Ctrl] key
  3. Select other items

### Multi-Select in the System Browser

Using multi-select in the System Browser will send the items to the Primary Pane. If Manual Navigation is enabled, It is necessary to use the [Send] button because attempting to double-click would ruin the multi-selection.

Using multi-select allows the monitoring of multiple items in the Primary Pane without the clutter of other items. For example, to evaluate the performance of dampers and valves based upon the values of multiple temperature points.

### ***Multi-Select in an Application***

Multi-select is also available when there are multiple objects displayed in the Primary or Secondary Pane. Remember that the Operation Tab allows commanding points, releasing points, and viewing point properties. If multiple datapoints are selected, it is possible to command or release them all at the same time. Additionally, the Related Items pane allows starting a new trend and creating a new report based on the selected objects.

Based on this, here are two of the countless examples of using multi-select in an application:

- With multiple Room Setpoints selected in the Primary Pane, use the Operation Tab to command them all to a common value. Likewise, they could all be simultaneously released to automatic control.
- To monitor the interconnectivity of temperatures, dampers, and valves, consider selecting the Return, Supply, and Mixed Air Temperature points along with the Heating and Cooling Coil Valves and the Outside, Exhaust, and Mixed Air Dampers. With these items selected, click the “New Trend” link in the Related Items pane to create a trend containing these eight items.

When multiple objects are selected in the Primary Pane, all “Like Properties” are displayed in the Operation Pane. Examples of “Like Properties” include Present Value, Out of Service, Event Status, and Current Priority. Only those properties common among all selected items will be displayed.

Each property will display:

- The property value if all selected items have the same value.
- An asterisk ( \* ) if the values of the selected items are not all the same.

To expose the individual property values for the individual objects, click the dog-ear in the bottom-right corner of the property icon.



In the image below:

- Pump1 and Pump2 are selected in the Textual Viewer.
- Both points are In Service and their Event State is Normal.
- Pump1 is OFF and Pump2 is ON
- They are commanded at different priorities.

The screenshot shows a BACnet textual viewer interface. At the top, there is a table of device properties:

Project:Field Networks.BACnet Netwo...	OUTSIDE AIR TEMP	Sensor	50.04 °F	Nor
Project:Field Networks.BACnet Netwo...	OUTSIDE HUMIDITY	Sensor	41.04 RH	Nor
Project:Field Networks.BACnet Netwo...	PUMP 1	Command	OFF	Nor
Project:Field Networks.BACnet Netwo...	PUMP 2	Command	ON	Nor
Project:Field Networks.BACnet Netwo...	RET FAN SPEED	Fan	40.00	Nor
Project:Field Networks.BACnet Netwo...	RETURN AIR FAN	Fan	ON	Nor
Project:Field Networks.BACnet Netwo...	RETURN AIR TEMP	Sensor	49.20 °F	Nor
Project:Field Networks.BACnet Netwo...	RETURN HUMIDITY	Sensor	60.47 RH	Nor

Below the table is an "Operation" tab, which is currently active. It contains several command buttons:

- Present Value \*
- PUMP 1 Present Value OFF
- PUMP 2 Present Value ON
- Event State Normal
- Current Priority \*
- Out of service In Service
- Priority \* No Fault Detected

Buttons for "Command" and "Release" are present for each of the three pumps. Buttons for "Ack All", "Ack Fault", "Ack Normal", and "Ack OffNormal" are also visible.

Notice that for the Present Value property, there are three [Command] and three [Release] buttons. The top button represents the multi-selection and will command/release both pumps to the same value at the same priority. The other two will command/release only the corresponding pump.

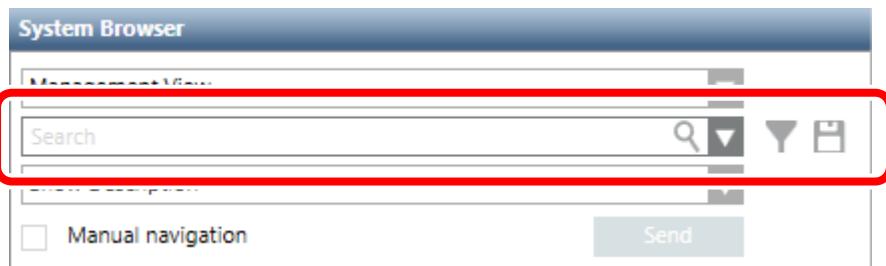
### Open Discussion:



- Why does the top Present Value property have an asterisk?

### **Searching in the System Browser**

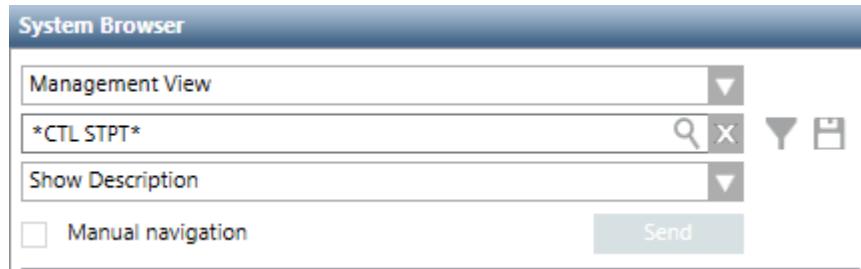
Because the System Browser is designed to provide access to every datapoint and network object at your facility, it might become very crowded. Finding a single item might become challenging. Additionally, selecting multiple items in the System Browser is considerably easier if only those items are displayed. Using the search feature, it is possible to quickly find the object or objects needed.



The Search feature uses two wildcards:

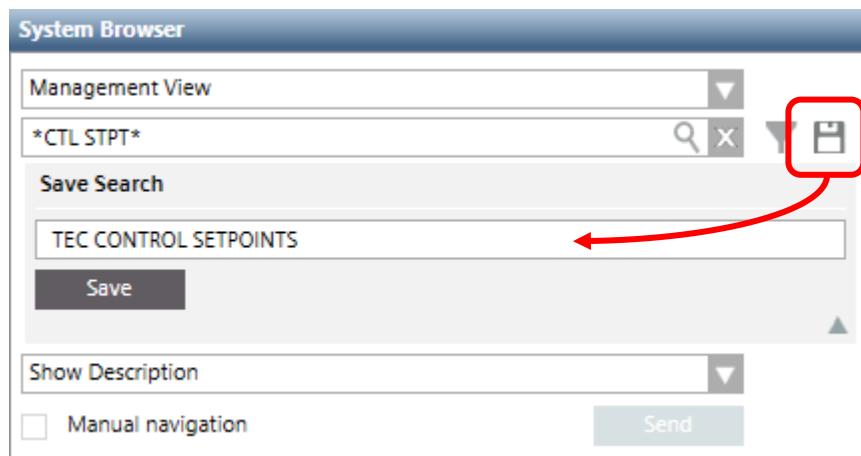
- Asterisk ( \* ) : used to replace multiple characters.
  - \*AHU01\* will return every point with "AHU01" in its name anywhere:
    - BLDG7.AHU01.<every point>
    - BLDG9.AHU01.<every point>
  - \*DAMP\* will return all dampers whether the name is spelled out or shortened:
    - BLDG7.AHU01.OUTSIDEDAMP
    - BLDG7.AHU02.MIXEDDAMPER
- Question Mark ( ? ) : used to replace a single character.
  - \*MA? Will return every Mixed Air Damper (MAD) and Mixed Air Temperature (MAT):
    - BLDG1.AHU01.MAT
    - BLDG7.AHU03.MAD
  - BLDG9?0\* will return all points for Buildings 920, 950, and 990 but not 925 or 955.
    - BLDG920.<every AHU>.<every point>

Using the Search feature, it is possible to quickly find all data points in the system of the same type. This type of search is desirable to verify their present values, take them all out of service, or perform a group command. Below is a search for the “Control Setpoint” subpoints for every TEC in the System.

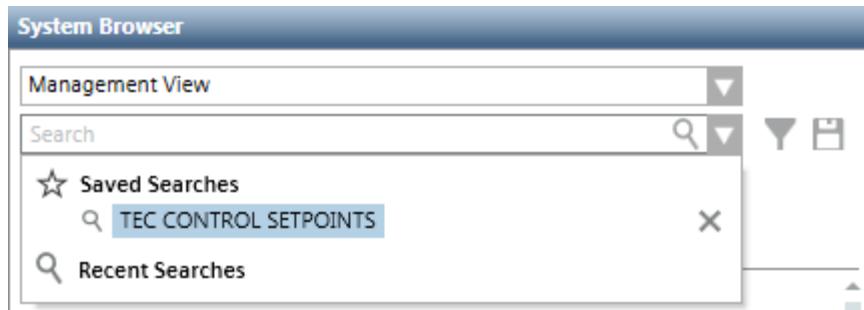


This search will narrow the System Browser to list only the Control Setpoints for all TECs in the system. From here, use multi-select and group-command all of them to the same value.

If this search will be used often, save it into the system for easy retrieval. To save a search, click the Save icon to the right of the search field. This will expand the search bar to expose the “Save Search” field. Enter a recognizable name for the search and click the [Save] button.



To retrieve a saved search, click the drop-down arrow of the search field and all saved searches will be listed. As soon as a search is clicked, it will be executed and the System Browser will display the results.



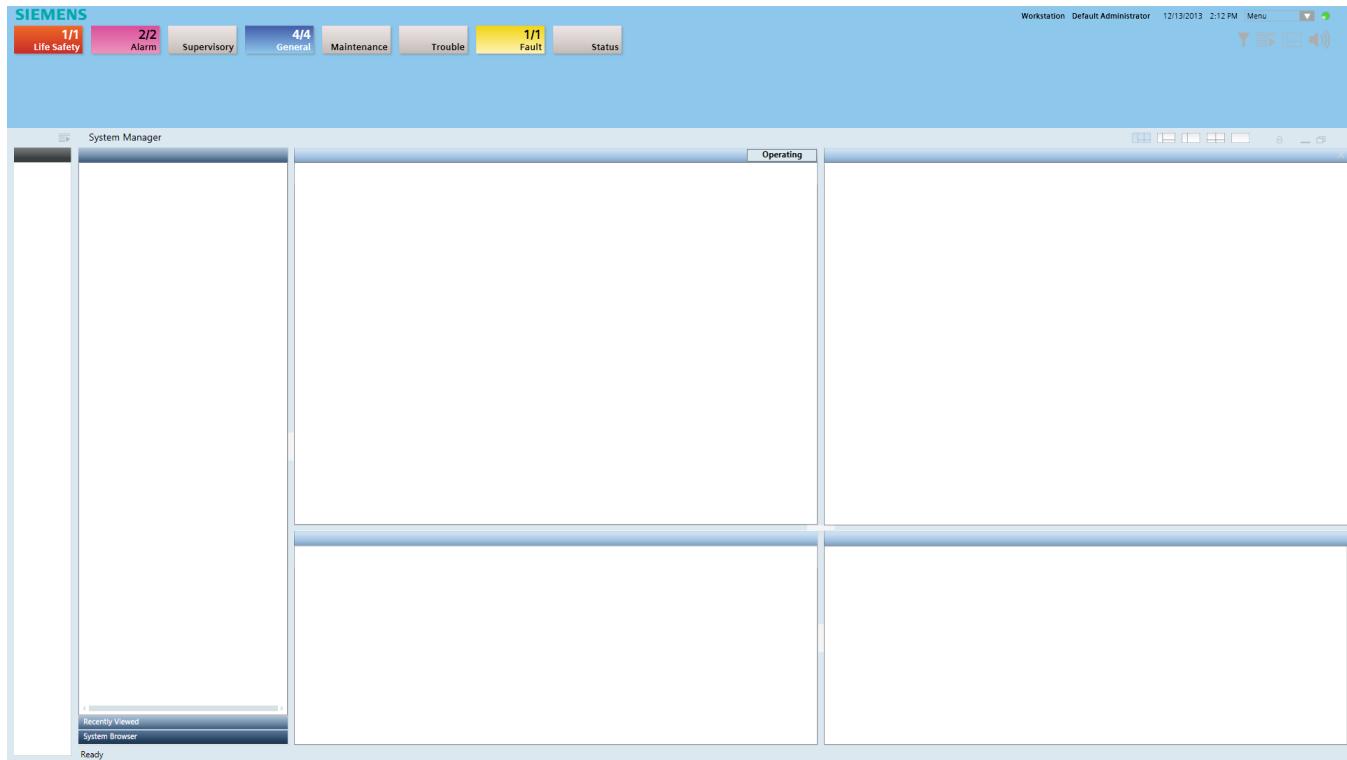
The search results are compiled every time it is run. This means when new points and objects are added to the system, the search results will automatically update accordingly. As the system expands, there is no need to redefine search criteria.

# Navigation Exercises

## Structure of System Manager Window

Write in the correct number for each part of the Desigo CC user interface illustrated below using the list provided.

1. Event List
2. Operation Pane
3. Primary Pane
4. Related Items Pane
5. Secondary Pane
6. System Browser
7. Summary Bar





### Adjusting Panes in the System Manager Window

Besides arranging a view for the System Manager window, panes can be resized or opened and closed.

1. Set the System Manager window to the default view (five pane display).
2. Make the Primary pane wider by stretching it to the left.
3. Make the Primary pane shorter by moving the bottom part up.
4. Click an object in the Related Items pane to open the Secondary pane.
5. Close the Secondary pane.
6. Move the cursor over the splitter bar that separates the Operations and Related Items panes to see a white dot (splitter button) click the dot to close the two panes.



### Locate Objects in the System Browser

1. Select an object from the list below and find it in your database.
  - Pump
  - Trend
  - Valve
  - Report
  - Supply Fan
2. Is the selected object located in the “Management” or “Application” view of the System Browser?

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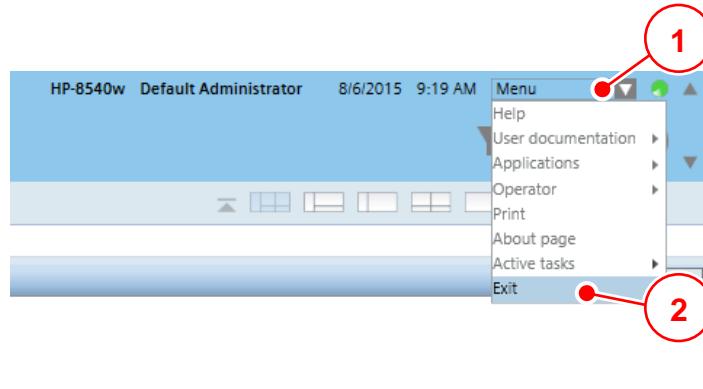
3. What appeared in the Primary pane?  
\_\_\_\_\_

## Exiting Desigo CC

If you must step away from Desigo CC, it is good practice to close the user interface. This ensures the security of the system in your absence.

To exit Desigo CC:

1. Click the Operator Menu
2. select **Exit**.



### NOTES:

- Logging off the system closes the User Interface but does not shut down the Desigo CC server. The Desigo CC system continues to control the facility in the background.
- When the Exit option is clicked, the User Interfaces closes without a confirmation warning.

### Hands-on Practice:



- Close the Desigo CC User Interface.
- Be sure to launch Desigo CC again for the next chapter.

# Trending

---

## About Trending

Trends are recurring samples of data. Samples can be taken at regular time intervals or when a value changes by a prescribed amount. Trending keeps a record of a point's value over time. Use trending to see how equipment has operated over a period of time or to monitor different value and state changes.

Some examples of when trending is used include:

- Sensitivity reading of smoke detectors, sampled every week.
- Room temperature, sampled every five minutes.
- Every time a door opens and closes.

Points can be trended in two ways:

- **Time interval**  
The smoke detectors and room temperature examples would be time-interval trends.
- **Change-of-Value (COV)**  
The door opening and closing would be an example of a COV trend.

### ***Offline Trends***

Some field devices have the ability to collect and store trend information about datapoints connected to them. For example, a Siemens field panel can trend the room temperature value from a TEC on its FLN. When the trend information is collected in a field device, Designo CC considers it an “offline trend.” Offline Trends commonly support trending based on time interval and change-of-value.

### ***Online Trends***

Designo CC has the ability to collect trend data and store it in the database directly. This type of trending is called Online Trending. Because the trend data is collected directly into the Designo CC database, Online Trends are always up-to-date and require no data uploads. Online trends automatically update in 5-second time intervals. They do not support COV trending.

### ***Trend View Definitions***

Designo CC provides the opportunity to create and save Trend View Definitions, which are capable of displaying a single trend object or a collection of trend objects. They can be used to combine online trends and offline trends into a single display. Trend View Definitions are not trend objects themselves; they display existing trend objects.

For example, if dampers and heating coils are being trended, a Trend View Definition can be used to visually display how they react when the outside air temperature changes.

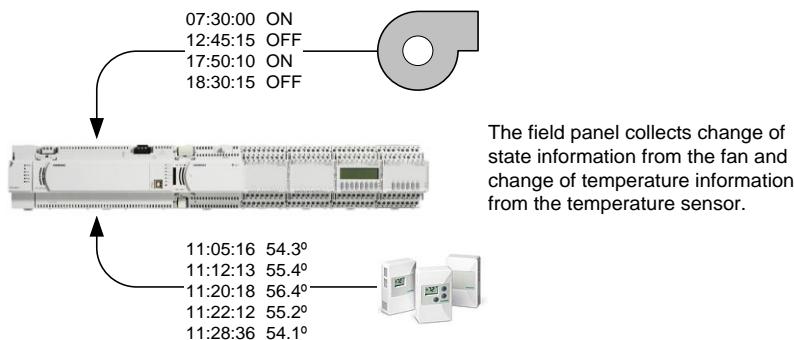
## Trending by COV

Trending by Change of Value only collects information about the point when its present value changes by a prescribed amount. Trending by COV can be as precise as needed. It can be used to capture every significant change in value for the point. This precision is configured into the trend definition.

Here are some examples of COV trending:

- A fan's ON/OFF state changes.  
Every time the fan cycles on and off, it will be recorded.
- A room's temperature changes at 1° increments.  
In this case, as the temperature fluctuates by less than one degree, no trend data is collected.
- A room's temperature changes at 0.1° increments.  
Regulated facilities (pharmaceuticals, for example) must know exactly when the temperature in a room fluctuates by even tiny amounts.

The following illustration provides two examples of trending by COV. The first shows the change in states of a fan being recorded. The second records every time the room temperature varies by more than 1°F.



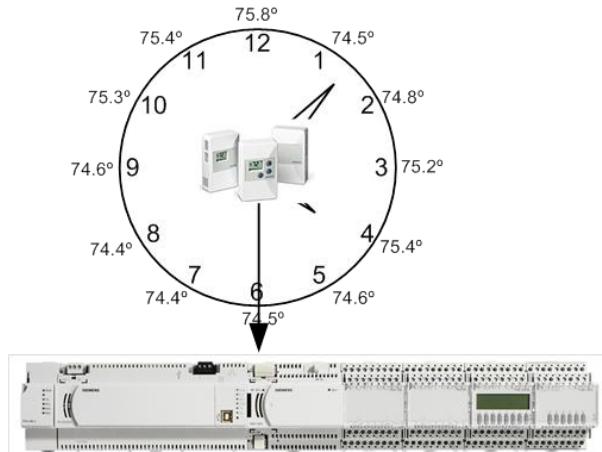
## Trending by Time Interval

Trending by time interval simply checks the present value of a point at prescribed intervals. Trending by time interval establishes an association of point value changes over time, especially when the precision and detail of the COV method is not required.

Interval-based trending should not be used for points that might experience frequent or random changes. For example, using time interval trending for a fan would miss the fact that the fan switches off and on several times per minute.

Here are some examples of Time Interval trending:

- Outside air temperature  
There is normally a predictable pattern to outside air temperature. Trending every fifteen minutes is usually enough to establish the overall weather pattern for the day.
- Room temperature  
The temperature values for a room should not change too greatly or frequently. Trending every fifteen minutes or perhaps every half hour might be sufficient.



The field panel collects temperature readings from the sensor every hour.



### Open Discussion:

- What kinds of things are trended at your facility?
- Which are trended at your facility by COV and which by time interval?

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## Trending in Designo CC

### Trended Point versus Trend Object

When a datapoint is trended, the data is stored in a “Trend Object.” It is important to understand that the Trend Object is different than the point being trended. As Designo CC monitors the trended point, it stores the information in the Trend Object. When viewing the historical trend data, the Trend Object is displayed, not the point itself.

### Trend View Definition

Viewing a trend object displays that single object’s data in a default Designo CC layout. However, it is possible to create trend view definitions with custom-defined backgrounds, axis ranges, line colors, and even multiple trend objects overlaid on the same chart. Trend view definitions can combine online and offline trend objects in the same view.

A trend view definition can contain multiple trend objects, if desired, to show how various datapoints interact. For example, this would be beneficial to verify the proper interactions of dampers and valves based on supply and return air temperatures.

---

## Trending Workflow

Like the overall Designo CC workflow, the Trending application starts by presenting the simplest data first. More complexity can be added if needed. The overall workflow is:

1. Select the point to trend
2. Click the “New Trend” link in the Related Items tab
3. Monitor the trended point.
  - If satisfied with the information, close the trend without saving the data.
  - However, to trend the point longer...
4. Save the Trend View Definition. This will automatically create an Online Trend Object.
  - If online trending is enough, move on to other workstation processes while the trend data is collected in the background.
  - However, to collect the trend data in the field device...
5. Create an offline trend object in the field device.

In the following pages, we will step through this workflow.

## Begin Trending a Point

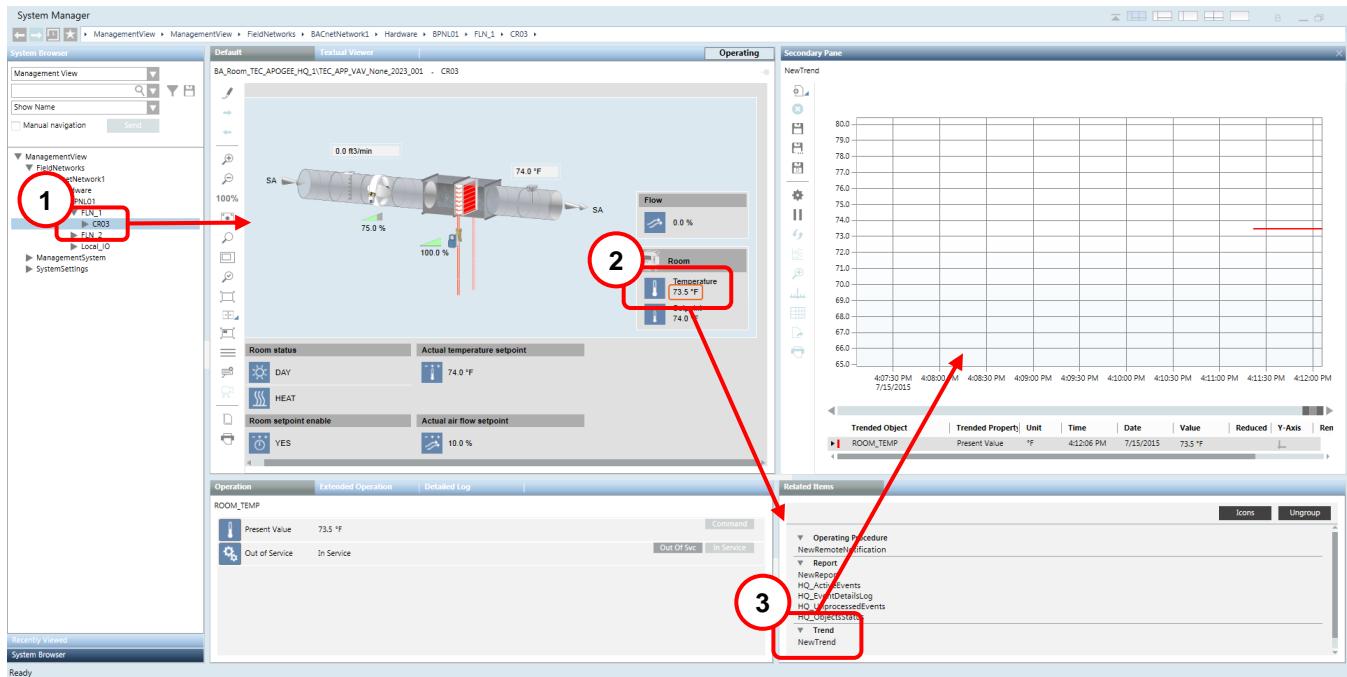
The easiest way to begin trending a point is to select the point in the System Browser or Primary Pane and click “New Trend” in the Related Items pane. This workflow is illustrated below.

1. In the System Browser, select an object or application.

2. In the Primary Pane, select the object to trend.

3. In the Related Items pane, click “New Trend”.

This will open the Secondary Pane and immediately begin trending the object.



The trend data displayed in the Secondary Pane is temporary data. This view allows the monitoring of a point for a short period of time. For example, an occupant might call indicating that it is too cold in their room or perhaps they say the temperature is fluctuating erratically. It is possible to trend the temperature until the issue has been confirmed. Once satisfied with the trend, close the Secondary Pane and discard the trend data.

To trend that datapoint for an extended period of time, create and save a trend object. An online trend object is automatically created when a new trend view definition is created.



### Hands-on Practice:

Work with the instructor to select a datapoint. Start a trend for that object.

NOTE: for a later activity, it would be best if every student trended a different point.

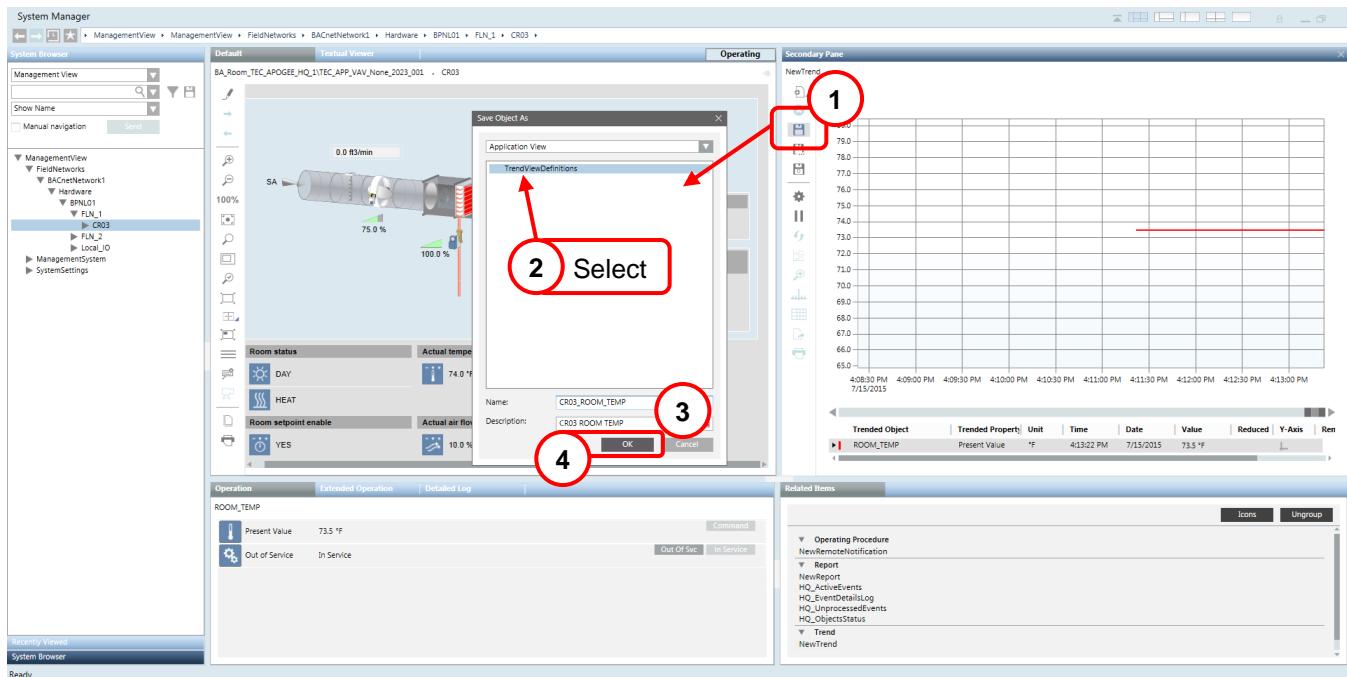
## Save a New Trend View Definition

Remember that the Trend View Definition contains information about how to display a trend object on the screen. Rather than forcing the creation of a trend object and then define a trend view definition (two-step process), Design CC automatically creates the trend object when a trend view definition is created (one-step process).

To save the new Trend View Definition:

1. Click the “Save” button in the trend viewer.  
This will open the “Save Object As” dialog box.
2. Select the folder in which to save the trend in the “Save Object As” dialog box. It is required to select a folder before proceeding.
3. Provide a name and description for the new trend.
4. Click [OK].

**NOTE:** For now, we will only save the Trend View Definition. Later, we will make changes to the formatting.



### Hands-on Practice:



- Save the trend you started on the previous page. Make sure to name the new trend different from other students.

---

## Create an Offline Trend Object in a BACnet Field Device

If a field device is capable of housing and maintaining its own trend objects, it might be advantageous to keep the trend object there rather than having Desigo CC continuously trend the data point as an online trend object.

Advantages of offline trend objects include:

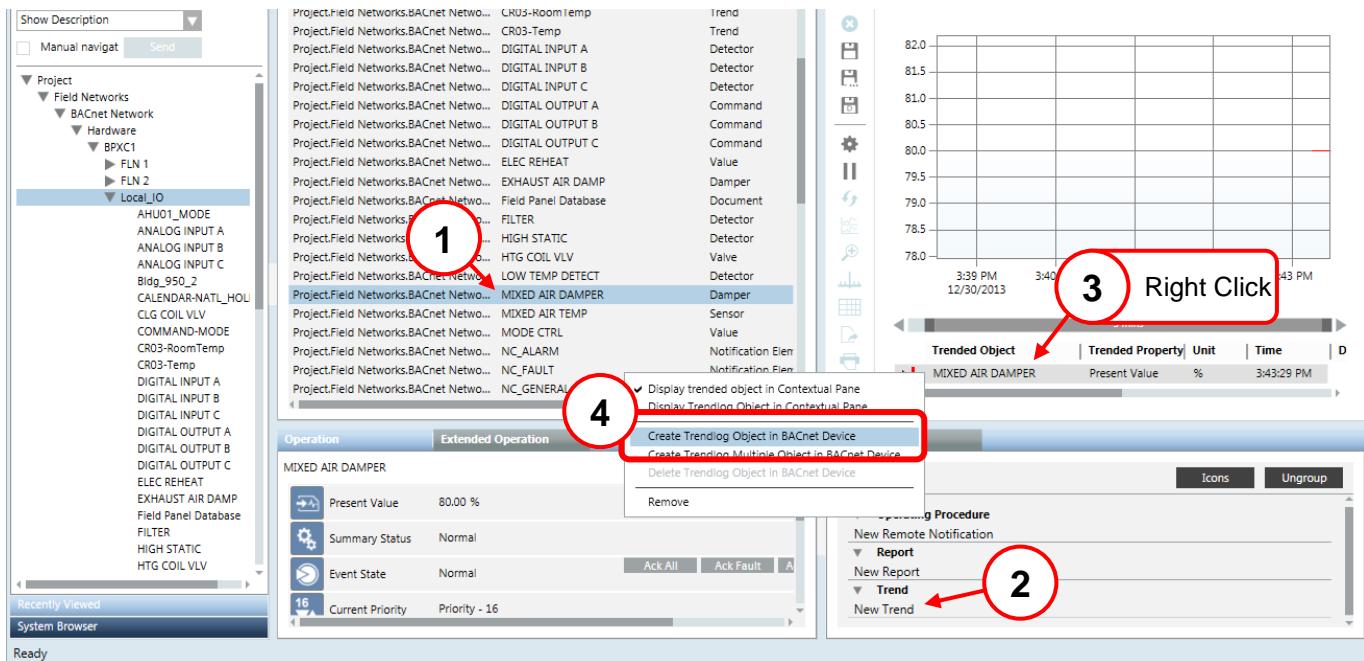
- Reduce the amount of network traffic into the Desigo CC server by putting trending responsibilities into the field devices. By scheduling data collection, it is possible to control the network traffic.
- Concerns about network connectivity for the Desigo CC server. The field device connections might be more stable and reliable.
- Offline trend objects can be defined as COV whereas online trend objects are always at 5-second intervals.
- Time-based offline trend objects can be defined at any interval to meet the specific needs.

Though the creation of the offline trend object is at the end of the trend workflow mentioned above, it is not necessary to save the trend view definition or online trend object when creating the offline trend object. To create an offline trend object, right-click the trend object in the chart legend and select “Create Trendlog Object in BACnet Device” from the pop-up menu. There are two scenarios for performing this action:

- When viewing a Trend View Definition composed entirely of online trends and it is preferred to put the trending responsibility into the field device.
- After using the “New Trend” link in the Related Items pane to start trending a data point. Now continue trending the point with an offline trend object.

The following image shows the process of creating a BACnet trend object from a newly created trend.

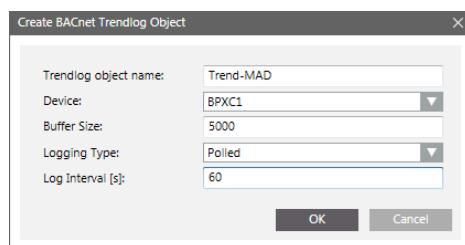
1. Select the point to trend.
2. Click “New Trend” in the Related Items pane.  
This will open the Secondary Pane and begin trending the point.
3. Right-click the trend object in the chart legend.  
A pop-up menu will appear.
4. Select “Create Trendlog Object in BACnet Device.”



After selecting to create the Trendlog object in the BACnet device, the “Create BACnet Trending Object” dialog box will appear. Using this dialog box, specify the following trend log definition values:

- Name for the trend object. This name must be unique in the device.
- Designate the device to hold the trend object.
- Specify the buffer size. This is the number of trend data samples that will be housed in the field device. If the number of actual samples exceeds this number, the field device will overwrite the older samples with newer ones.
- Define the type of trending: COV or polled. Polled is the same as time-interval.
- Define the time intervals in seconds. This field is only visible if “Polled” is selected.

Once the trend object is defined, click [OK] to create the trend object.





### Hands-on Practice: (optional)

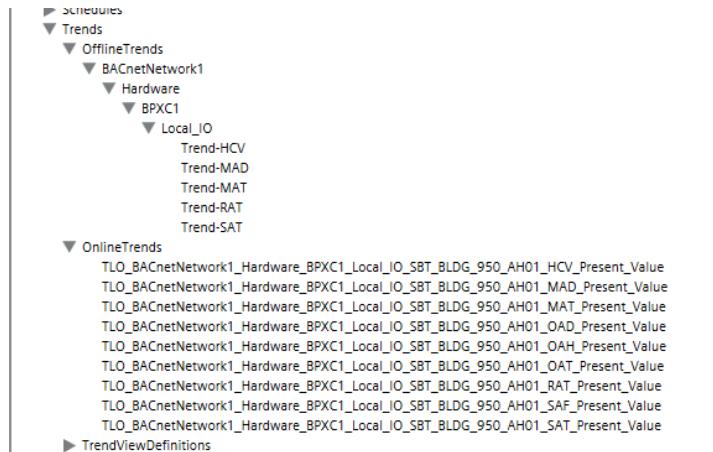
- Create a BACnet trend object in the field panel for the point you previously trended. Only perform this activity if you have permission and know it is safe to add new objects to the field panel.

## Locate a Trend Object

To view a trend object, navigate the System Browser to the Trends application and expand the Online or Offline Trends folder. Notice that the online trend objects and offline trend objects are stored in different folders under the Trends application folder. Depending on which type of trend object to view, it is necessary to navigate into the correct folder.

Because the online trend objects are stored in the Designo CC database, there are no field devices to select. All online trend log objects are listed directly under the Online trends folder.

Offline trends, on the other hand, are stored in their respective field devices. In order to locate an offline trend object, it is necessary to navigate into the field device. This is because it is possible for two field devices to have trends with the same name. Without navigating into the field device directly, it would be difficult to know which trend resides in which device.



# Manually Collect Trend Data from a BACnet Trend Object

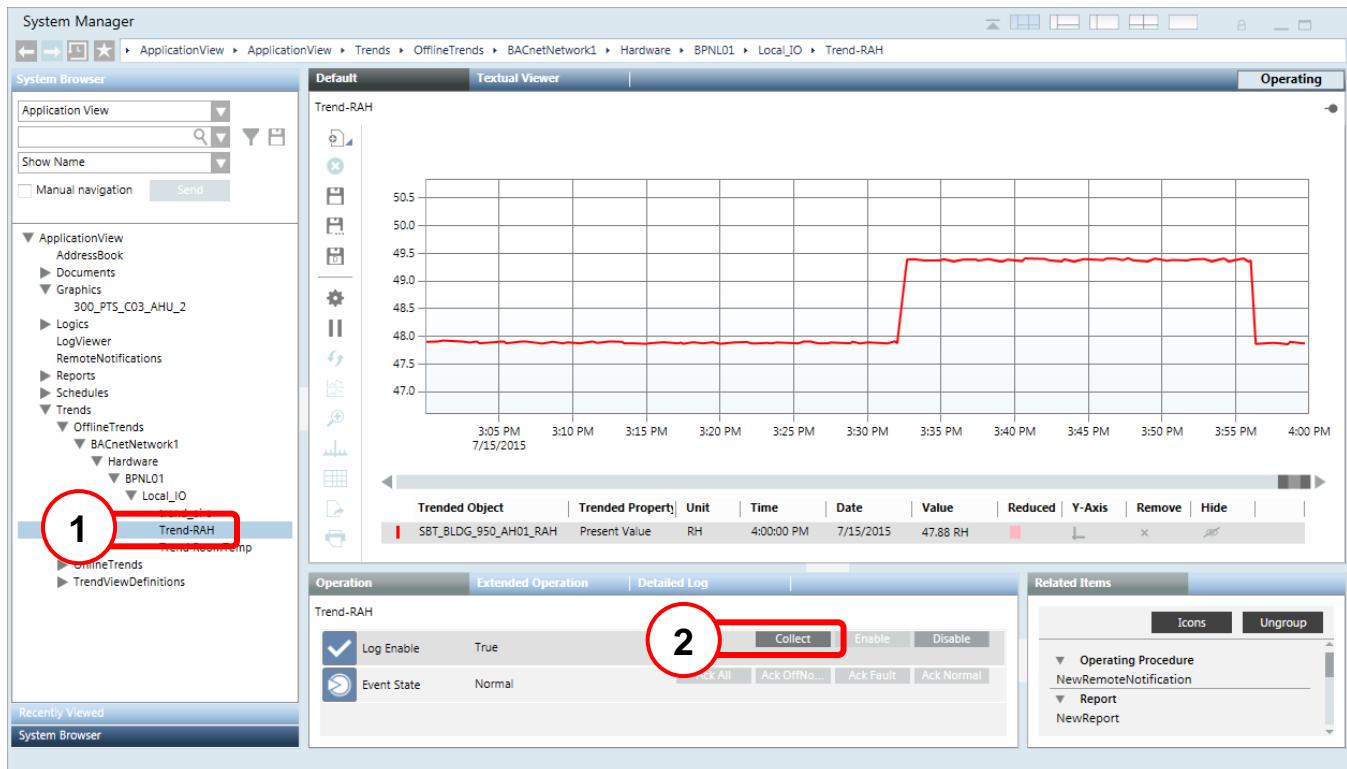
As mentioned previously, the offline trend data must be uploaded into the Desigo CC server in order to be available for the Trending application. The Trend Viewer can only display the data it has in its database.

Offline trend data can be scheduled to be collected at regular intervals. This will be discussed later in this training session. Sometimes, the most recent offline trend data is required for review. In this case, the data must be collected manually. Thanks to the Desigo CC workflow, this is a straight-forward and simple process.

## Collect a Single Offline Trend

To collect the data for a single offline trend:

1. Select the offline trend object in the System Browser.  
The trend will display in the Primary Pane, but only the data currently stored in the Desigo CC database.
2. Click the [Collect] button.  
This will upload the most recent trend data from the field device.  
The new trend data will appear in the Trend Viewer once it is uploaded.



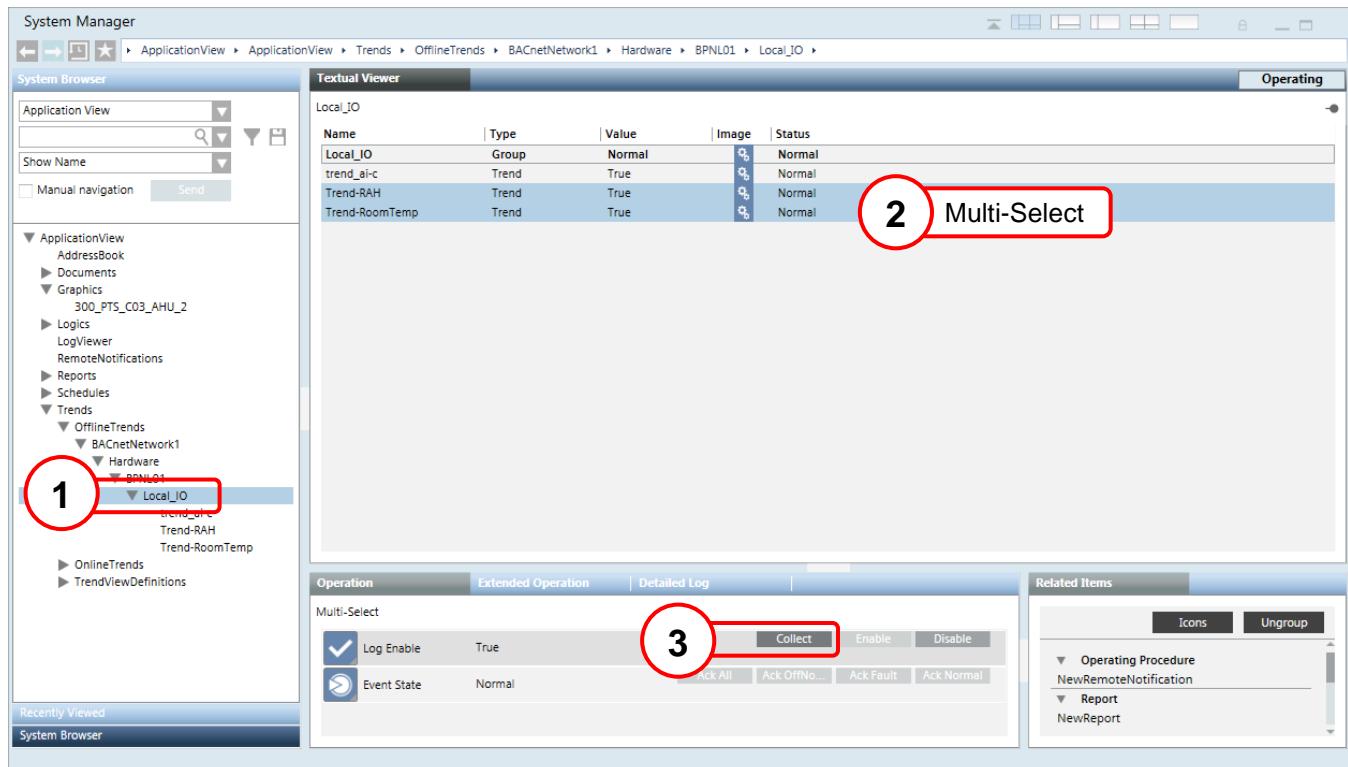
## Collect Multiple Offline Trends at the Same Time

Using the multiple-selection function, multiple offline trends can be selected and collected them at the same time. This is considerably easier than repeating the upload process for multiple offline trends.

**NOTE:** Uploading offline trends temporarily increases network traffic. Uploading multiple trends increases this traffic. It is not advised to upload all offline trends at the same time.

To upload multiple offline trends at the same time:

1. Select the “Local\_IO” node of the field device holding the trend data as shown below.  
This will display all the trend objects using the Textual Viewer in the Primary Pane.
2. In the Primary Pane, select multiple trend objects.
3. In the Operation Pane, click the [Collect] button to simultaneously collect all trend data from the trends selected in the Primary Pane.



### Hands-on Practice: (optional)

- Manually collect the data from the BACnet trend object you created.

**NOTE:** Collecting trend data temporarily increases network traffic. It might be best if students take turns collecting the trend data.

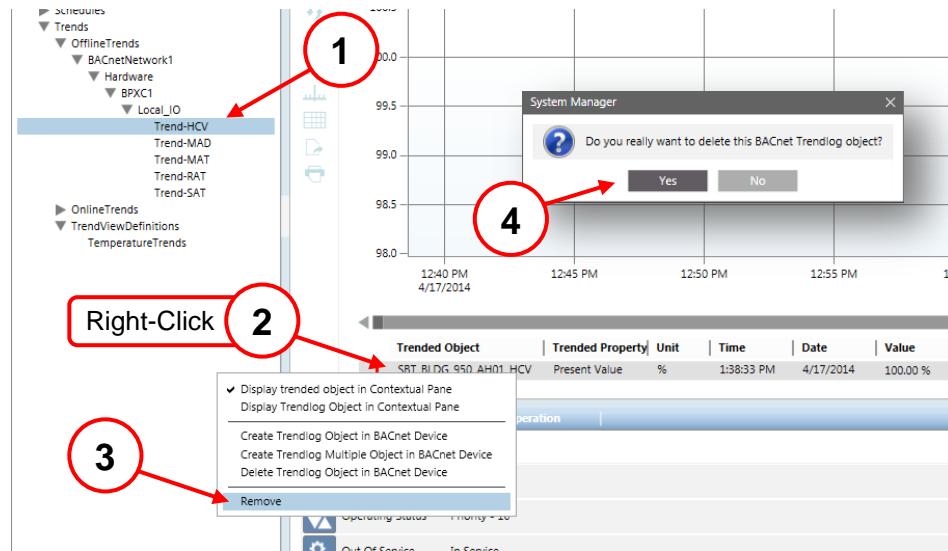


## Delete a BACnet Trend Object from the Field Panel

It is a good practice to delete BACnet trend objects when they are no longer required. This will free up space in the field panel for other trends if needed.

To delete a BACnet trend object from the field panel:

1. Select the trend object in the System Browser. This will display the trend object in the Primary Pane.
2. Right-click the trend object in the legend.
3. Select “Remove” in the pop-up menu.
4. When the confirmation box appears, click “Yes”.



### Hands-on Practice: (optional)

- If you created the BACnet trend object in the field panel, delete that trend object.

**NOTE:** Do not delete the online trend object you created. That object will be used in the following sections.



# The Trend Viewer Application

When a trend object or trend view definition is selected in the System Browser, the Trend Viewer application automatically opens in the Primary Pane. This allows the review of individual trend objects or trend view definitions.

The Trend View Application is comprised of four primary components:

1. Button Bar
2. Trend Chart
3. Time Scale
4. Legend



## The Trending Button Bar

The Trend application button bar allows interaction with the trend data and customize the trend view definition.

	<b>New</b> Create new trend view definitions.
	<b>Delete</b> Delete trend view definitions. This button is disabled when viewing individual trend objects.
	<b>Save</b> Save a new trend view definition or modifications to trend view definition.
	<b>Save as...</b> Save existing trend view definition with a new name. This provides the ability to create multiple variants of the same trend view.
	<b>Save as Default</b> Save the current trend view definition as the default. The current trend view definition will be used for all new trend views.
	<b>Toggle Properties Ribbon</b> Expose or hide the Properties Ribbon.
	<b>Pause</b> Stops the flow of incoming trend data, activating the buttons allowing interaction with the trend data. This button is replaced with the Run button when the trend is paused.
	<b>Run</b> Resumes the flow of incoming trend data, disabling the buttons allowing interaction with the trend data. This button is replaced with the Pause button when the trend is running.
	<b>Refresh</b> Updates the trend view. When the trend is paused, the only way to get new trend data is to use the Refresh button.
	<b>Compare View</b> Toggles the Comparison View in which the same trend is displayed twice. This allows comparing the current trend pattern to previous patterns in the past.
	<b>Zoom</b> Provides ability to draw a box around a section of the trend data to zoom in on that specific section.
	<b>Time Bar</b> Toggles the Time Bar on or off. The time bar is a vertical line that can be moved forwards and backwards to reveal the exact data values across multiple trend objects at exactly the same point in time.

	<b>Table View</b> Switches the display from a trend chart to a spreadsheet-like table layout.
	<b>Export</b> Exports the current trend view definition.
	<b>Print</b> Print the current trend view definition to a printer.

## Trend Chart

The trend chart space is where the trend data is displayed. It is comprised of the following components:

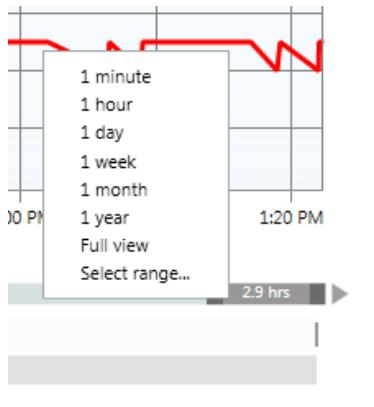
- Gridlines  
Horizontal and vertical lines
- Titles  
Placed along the top and sides of the chart
- Axis  
Maximum and minimum range of values displayed vertically
- Trend Lines  
Colors, thicknesses, line types, etc

These items will be discussed in more detail when we discuss customizing Trend View Definitions.

## Time Scale

The time scale is used to restrict the trend data to specific periods in time. This is important for identifying specific situations and the time at which they happened. The horizontal time bar can be resized to show more or less time. With the trend paused, move the time bar left or right to shift backward and forward in time, respectively.

Right-clicking on the time bar will open a contextual menu allowing the selection of predetermined time intervals or the option to define a custom range.



## Legend

By default, the legend is located on the bottom of the Trend Viewer application, under the trend chart. The legend's location is configurable. The legend lists all trend objects displayed in the chart along with their respective trend line colors, the property being trended, units of measure, most recent data collection time and date, present values, and whether they are represented on the right or left axis. Additionally, from the legend a trend object can be temporarily hidden from view or removed from the chart completely.

Trended Object	Trended Property	Unit	Time	Date	Value	Y-Axis	Remove	Hide
CR03 (004) ROOM TEMP	Present Value	°F	1:30:44 PM	12/30/2013	71.3 °F	—	×	🔗
CLG COIL VLV	Present Value	%	1:30:44 PM	12/30/2013	55.94 %	—	×	🔗
HTG COIL VLV	Present Value	%	1:30:44 PM	12/30/2013	44.06 %	—	×	🔗
SBT_BLDG_950_AH01_SAT	Present Value	°F	1:30:44 PM	12/30/2013	75.94 °F	—	×	🔗
SUPPLY SETPOINT	Present Value	°F	1:30:44 PM	12/30/2013	78.00 °F	—	×	🔗

Trend application Legend

## Modify a Trend View Definition

A trend object is a collection of raw trend data for a single data point. There might be times when multiple trend objects are desired on a trend chart. Perhaps one trend line is thickened to show importance or the background is modified based upon the method it will be printed. In order to make these changes and save them for later use, it is necessary to create trend view definitions.

As mentioned before, a trend view definition can contain one or more trend objects. Online and offline trend objects can be combined to create just about any correlation or comparison. Keep in mind, though, that the offline trend data must be collected from the field device in order to be current.

### Add More Trend Objects to a Trend View Definition

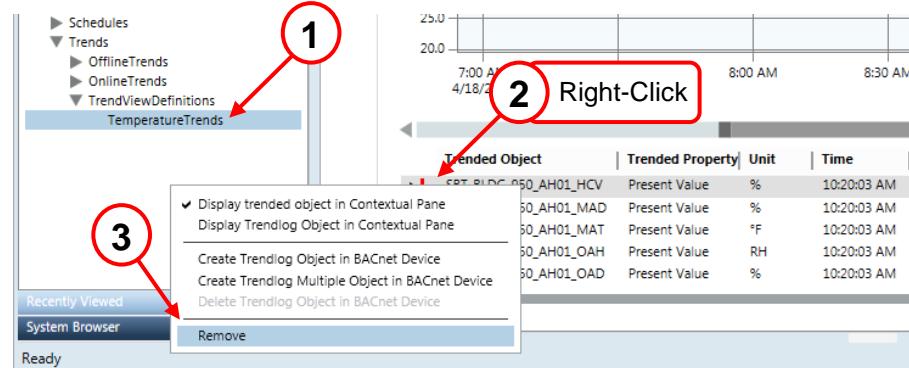
To add a trend object to an existing trend chart, drag that trend object from the System Browser and drop it anywhere on the chart. Likewise, it is possible drag a data point straight from the System Browser onto the chart to start trending that point. This works if viewing an existing trend view definition or a new trend just created. After any modifications, it is a good idea to save the modified trend view definition.

### Remove Trend Objects from a Trend View Definition

Trend View Definitions are used to display one or more trends at the same time. If a trend object is no longer needed in a Trend View, remove it from the View.

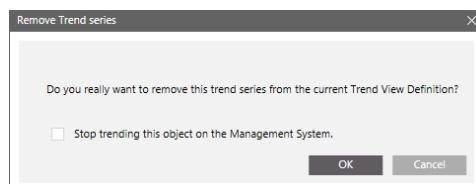
To remove a trend object from a Trend View Definition:

1. Select the Trend View Definition in the System Browser.
2. Right-click the trend object to remove.
3. Select “Remove”.



4. When presented with the confirmation:

- a. If the object is only being trended for this particular trend view definition, is a good idea to stop trending it altogether. This will reduce the amount of network traffic on the system. If this is the case, check the box to also remove the online trending object. If the trend is being used in a different trend view definition, do not check the box.
- b. Click OK.



**NOTE:** It is possible for one trend object to be displayed in multiple Trend View Definitions. Do not delete a trend object unless it is no longer used in any Trend View Definitions. At the same time, though, having a large number of unused trend objects can negatively impact the system.

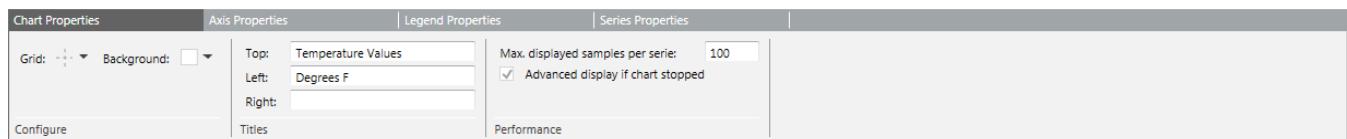
## Toggle the Properties Ribbon

To open the Properties Ribbon, click the button on the button bar.

## Trend Chart Layout Properties

The “Chart Properties” tab of the Properties Ribbon provides options to make changes to the overall trend chart.

- Trend Chart Gridlines
  - Horizontal only, horizontal and vertical, none
- Background color
- Titles for the top of the chart and the right and left sides
- Maximum number of data samples displayed
  - When trend is running, define a maximum number of trend data samples to display. Limiting this amount can help improve system performance, especially when multiple trend objects are displayed at the same time.



## Axis Properties

The “Axis Properties” tab of the Properties Ribbon provides options to the axes.

- Left and Right Axis Properties
  - Axis Title
  - Minimum and Maximum value range
  - “Autoscale” allows Desigo CC to evaluate the full range of data samples and size the axis accordingly.
- Title for the X-Axis



## Legend Properties

The “Legend Properties” tab of the Properties Ribbon designates whether the legend will be placed at the top, bottom, left, or right side of the chart.



## Series Properties

The “Series Properties” tab of the Properties Ribbon provides customization to the way each individual trend line displays on the chart.

- Stepped line or smooth line
- Solid line, dotted line, or dashed line
- Line color
- Line thickness
- Size and type of data sample marker
- Align the trend line to the right or left axis
- Show or hide the line, markers, data values, and quality icons



### Hands-on Practice:



At this point all students should have individual online trend objects.

1. Open your Trend View Definition with your trended point.
2. Drag and drop the other students’ points onto your trend.
3. Use the Chart Properties ribbon to modify the layout of your chart.
4. Be sure to save your trend regularly to avoid accidentally navigating away and losing your work.

### Open Discussion:



- What kinds of Trend View Definitions would be valuable in your daily oversight of your facility?

# Graphics

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## About Graphics

The Graphics application in Desigo CC provides a graphical interface from which it is possible to monitor and control. Graphics can display representations of entire facility systems or show pictures of actual equipment with real-time system status overlaid. A well-built graphic provides as much or as little information as is required without overwhelming the user.

A graphic contains dynamic point information that updates continuously in the graphic. Current values and conditions for the points in your facility are displayed.

Graphics also use elements such as color, flashing, and animation to indicate system changes. For example, your system can be set up so that, when equipment is running, the symbol associated with the equipment is green. When the equipment is off the symbol turns blue. Also, when the point goes into alarm the symbol or information block can change its color to red and flash to indicate an alarm condition.

Graphics are for more than just monitoring facility information, though. The Desigo CC Graphics application provides access to command the values and acknowledge alarms for points displayed on a graphic. Using the Desigo CC workflow, when a point is selected on a graphic, information about that point is displayed in the Operation Pane and actionable options are listed in the Related Items Pane.

## Display a Graphic

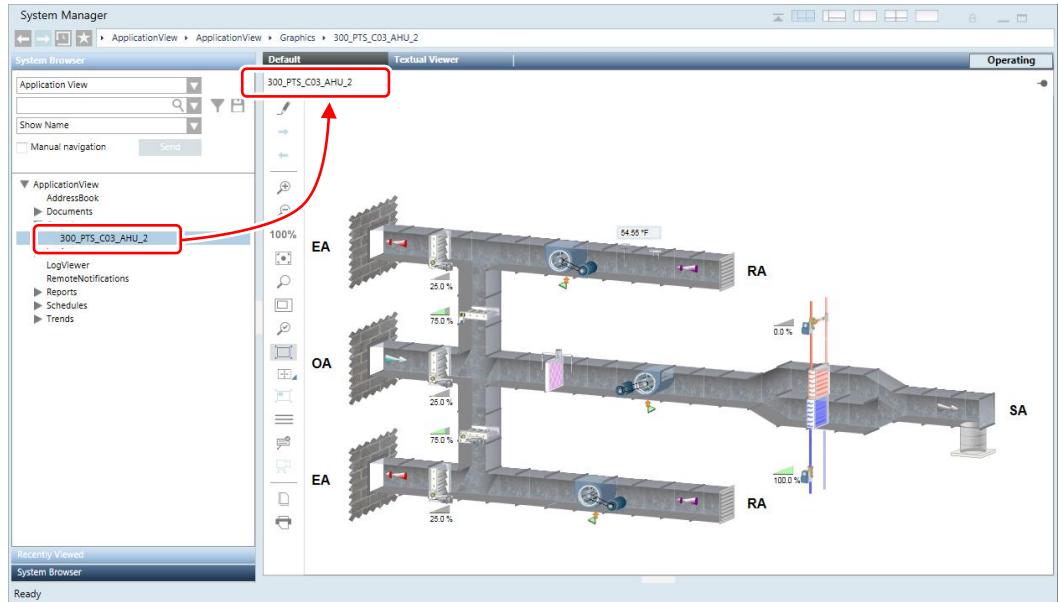
By default, there are two primary methods for opening a graphic (remember that custom views can be created which may or may not include these options):

1. Application View in the System Browser  
All graphics are listed in the Graphics folder or sub-folders. If a specific graphic is desired, it can be located here.
2. Management View in the System Browser  
By default, if a data point is selected, and that datapoint is used in a graphic, the associated graphic will appear in the Primary Pane. If there is a specific point to display, select it. If the object appears on multiple graphics, the list of all associated graphics will appear in the Related Items pane.

Selecting the graphic in the Application Pane will open it in the Primary Pane. Selecting a point will open the associated graphic and highlight the selected point with an orange rectangle. In this way, it is easy to identify the point selected.

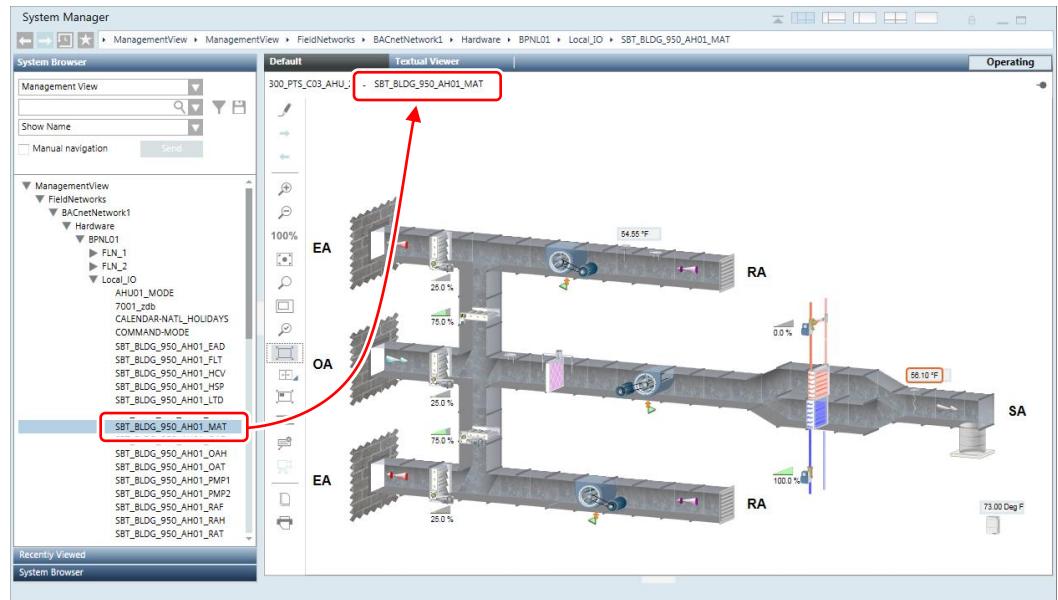
If the graphic is listed in the System Browser, selecting it will open it in the Primary Pane.

Notice in the upper-left corner of the Graphics window, the name of the graphic is displayed.



If a datapoint is selected in the System Browser, its associated graphic will open that point will be highlighted.

Notice in the upper-left corner of the Graphics window, the name of the graphic is displayed followed by the name of the selected datapoint.





### Hands-on Practice:

1. In the Application View, find a graphic and open it. Make note of a point displayed on that graphic: \_\_\_\_\_.
2. Switch to the Management View, locate that point and select it.
  - a. Did the graphic change?
  - b. Is the point highlighted with an orange circle?
  - c. Is there information about that point in the Operation Pane?

---

## The Graphics Button Bar

The Graphics application button bar is always viewable when using the Graphics Viewer and makes interacting with the Graphics application easier.

	<b>Edit</b> Toggles between the Graphics Viewer and the Graphics Editor. Application rights can restrict graphics editing.
	<b>Next Associated Graphic</b> and <b>Previous Associated Graphic</b> If the point selected on the graphic is associated with multiple graphics, these buttons will cycle through graphics, forwards and backwards, respectively. Refer to the Related Items pane to see the graphics order.
	<b>Zoom In</b> Zooms in by +20% on the active graphic with each mouse click.
	<b>Zoom Out</b> Zooms out by -20% on the active graphic with each mouse click.
100%	<b>100%</b> Displays the active graphic at 100% magnification.
	<b>Home</b> Returns the view of the displayed graphic to the state before the primary selection changed.
	<b>Zoom View</b> Displays the Zoom View and provides zoom controls on the active graphic by adjusting the slider.
	<b>Aerial View</b> Switches between Aerial View being visible or hidden in the Graphics Viewer area.
	<b>Zoom Real</b> Provides zoom control using your mouse wheel. To activate, click on the icon. To deactivate, click anywhere on the graphic.
	<b>Scale to Fit</b> Scales the elements on the graphic to fit in the viewing area of the graphic.
	<b>Point Centered Display Mode</b> Moves the selected point to the center of the graphic.

	<b>Fit to Secondary Selection</b> Only active when one or more items are selected on the graphic. Will zoom the graphic to the selected item(s).
	<b>Depth Navigation View</b> Switches between Depths Navigation View being visible or hidden in the Graphics Viewer area.
	<b>Hide / Show Status and Commands</b> Enables or disables the Status and Command pane from displaying.
	<b>Coverage Area Mode</b> Toggles display of all Coverage Areas configured in the graphic.
	<b>Page Setup</b> Displays the Page Setup view for the current graphic.
	<b>Print</b> Displays the Print dialog box to print the current graphic.

## Command a Graphic Point

We can imagine a situation in which an occupant has called indicating that the temperature in a specific space is too warm. To address this situation:

1. Find the temperature datapoint to verify the issue.
2. Command the system to temporarily decrease heating in the space.
3. Monitor the temperature in the space.
4. Release the system so it is returned to automatic control.

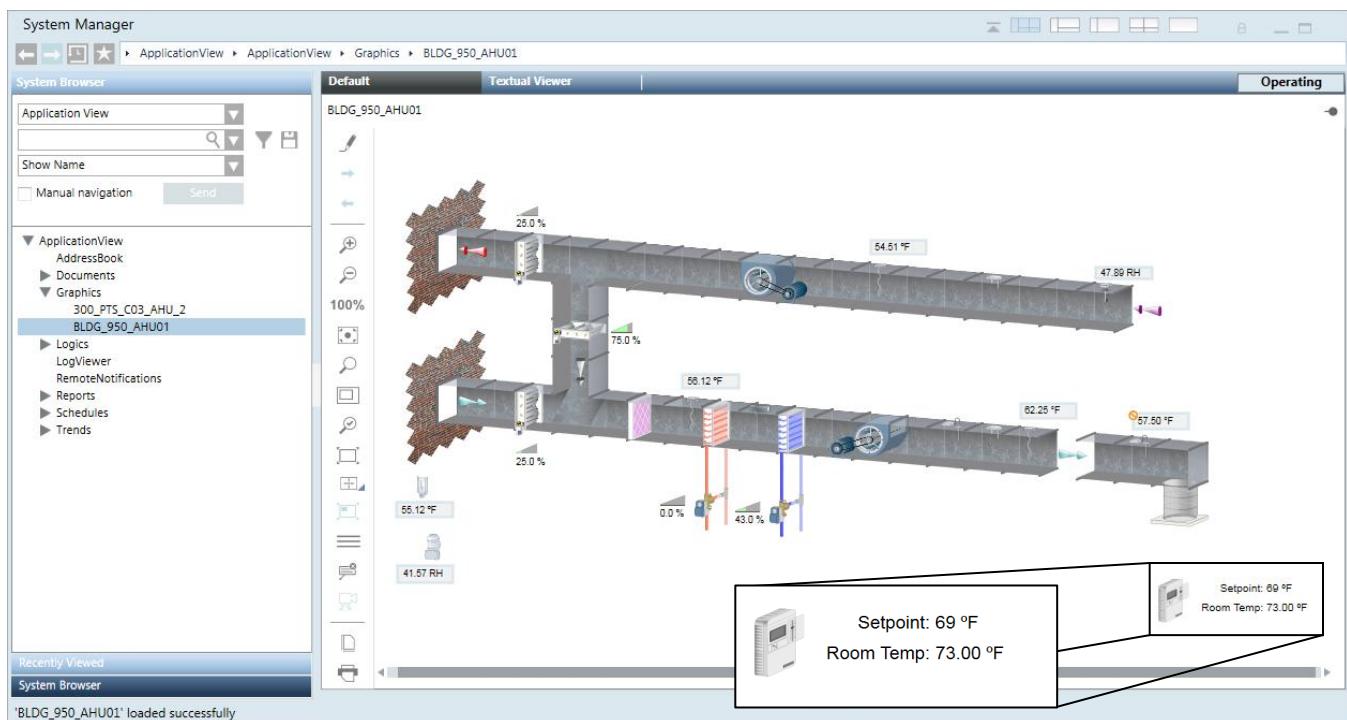
In the following pages, we will discuss how to use the Desigo CC Graphics application to complete these actions.

### Locating the Temperature Datapoint

If the specific field device housing the datapoint is known, use the System Browser to navigate directly to the datapoint in question. Using the Management View, expand the Field Network folder until the specific network and field device containing the datapoint is located.

Alternately, if the device containing the datapoint is not known but there is a graphic containing the datapoint, use the Application View to expand the Graphics folder and select the graphic.

Using the graphic, it is possible to verify the accuracy of the complaint.

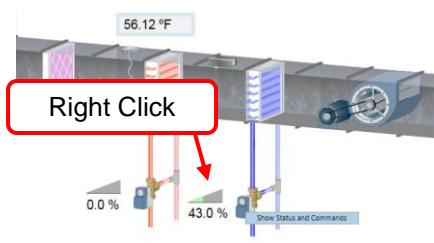


In the above image, the graphic shows that the temperature is higher than the setpoint.

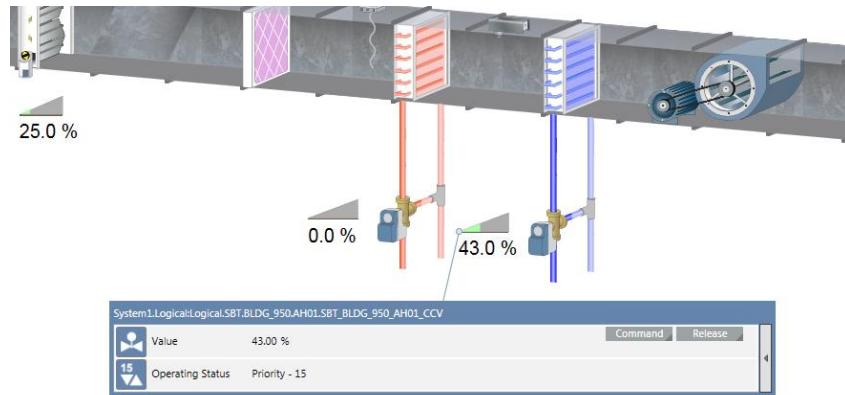
## Commanding a Point in the Graphics Application

### *How to Command a Point Directly in the Graphic*

In the above example, the temperature in the space was verified using the thermostat temperature. Because the temperature is an Input point, we cannot command it. So we will need to command the cooling coil valve in order to increase the amount of cool air blowing into the space.



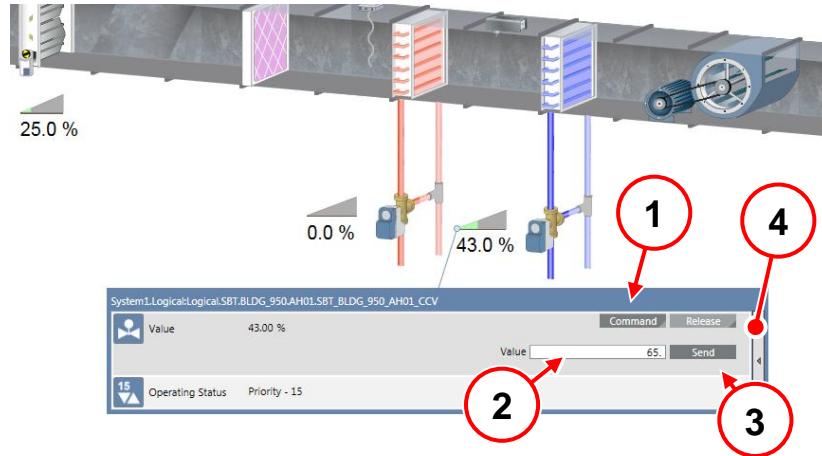
Once we have located the cooling coil valve in the graphic, right-clicking on it will present a pop-up menu with a “Status and Commands” option. Selecting “Status and Commands” will open a floating window. The options available in this window will depend upon the type of point selected. Output points, like a valve, will have the option to command their present value.



The Status and Commands window provides access to command and release a point.

To command the Cooling Coil Valve:

1. Click the [Command] button.  
This will expand the command options.
2. Enter the new value.
3. Click the [Send] button.  
This will send the new value to the field device.
4. Click the right side of the Status and Commands window to close the window.



### **How to Command a Point Using Command Objects**

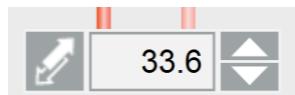
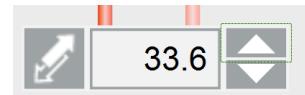
Design CC provides graphical symbols that can be used to command and release point values with a single click of the mouse. These symbols are called “Command Objects”.

Command Objects come in many styles depending on their intended usage. Below are examples of Command Objects.



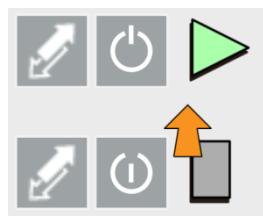
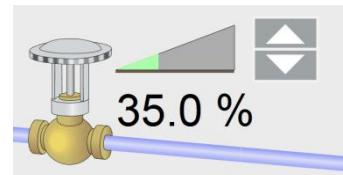
Click the displayed value and enter the desired value. Press [Enter] on the keyboard to send the command.

Click the Up or Down arrow to adjust the value.  
The amount of increment is configurable.  
The command is automatically sent. A delay can be set to ensure the point does not rapidly change values in a short amount of time as the arrows are clicked.



Clicking the white/black arrows symbol will immediately release the point to automatic control or default value.

The Command Objects can be added in “pieces” such as illustrated here. This symbol is only the Up and Down arrows. The command is automatically sent. A delay can be set to ensure the point does not rapidly change values in a short amount of time.



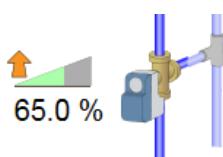
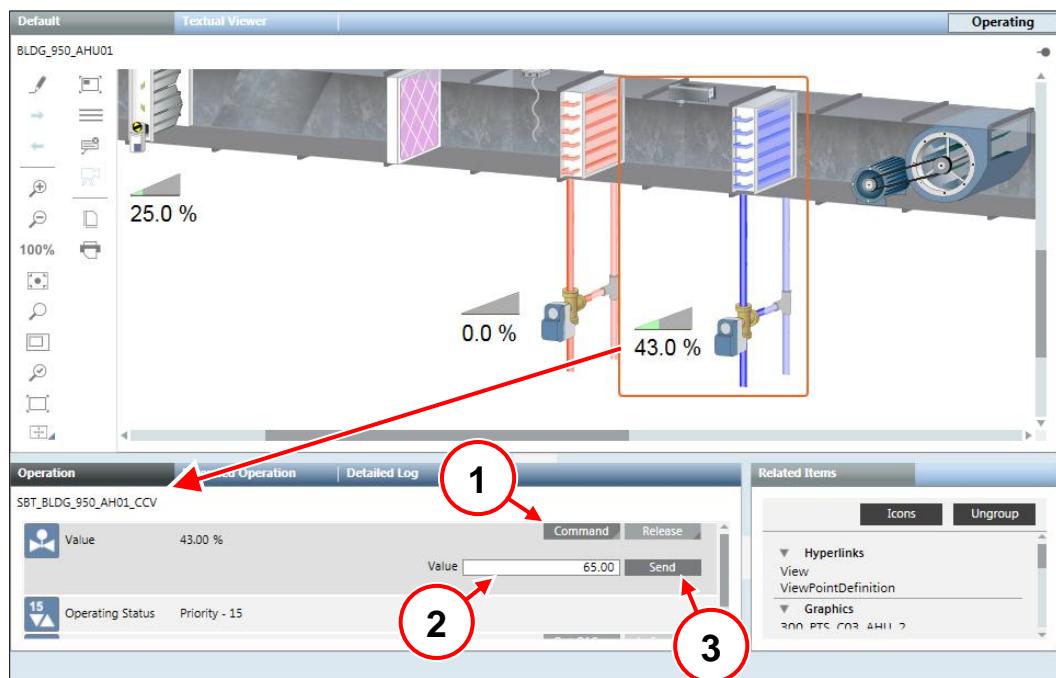
Binary points have their own Command Symbols. For example, the circle with the line: up indicates ON and down indicates OFF. The “Release” symbol in this case was added individually.

## How to Command a Point Using the Operation Pane

Remember that the Designo CC workflow is designed to show information in the Operation Pane about a datapoint or object selected in the Primary Pane. This means if the valve is selected on the graphic, information about that valve will automatically populate the Operation Pane. Because it is an output point, Designo CC will present the opportunity to command its present value.

The process of commanding a point in the Operation Pane is identical to using the Status and Command window:

1. With the point selected in the graphic, click the [Command] button.  
This will expand the command options.
2. Enter the new value.
3. Click the [Send] button.  
This will send the new value to the field device.



Notice that after commanding the point an up-arrow icon will appear beside the value. This is a visual reminder that the point has been commanded manually. When this icon appears on a graphic, investigate why that point has been manually commanded. Be careful to not release the point without understanding why it was commanded in the first place. Equipment or personal safety may be at issue.

## Release a Graphic Point

Anytime a point has been commanded to manual override, it should be released at the earliest opportunity. Of course, the entire intent of a building automation system is to allow the system to automatically control the building. Keeping points in manual override defeats this purpose and has the potential to create unsafe situations.

### ***How to Release a Point Directly in the Graphic***

Using the “Status and Commands” floating window, it is possible to release a point directly on the graphic. The steps are similar to those used to command the point:

1. Right-click the point on the graphic. This will present the pop-up menu.
2. Select “Status and Command” from the menu. This will open the Status and Commands floating window.
3. Click the [Release] button.
4. Click the right side of the Status and Commands window to close the window.

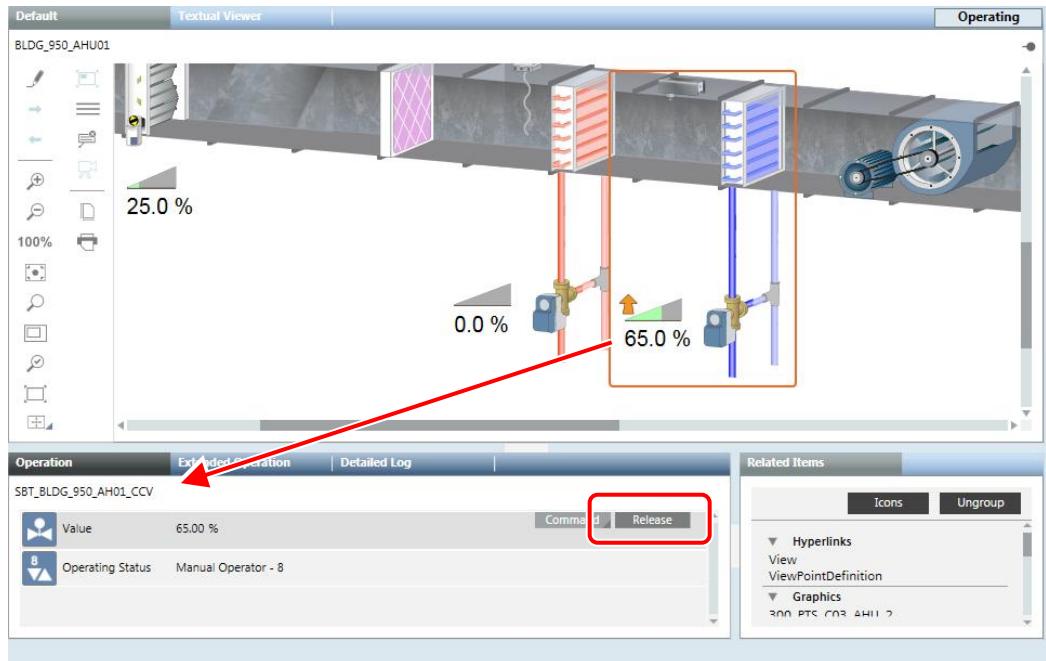


### **How to Release a Point Using the Operation Pane**

Once a point has been selected on the graphic, information about that point is displayed in the Operation Pane. Using steps similar to commanding a point, it is possible to use the Operation Pane to release a point.

The process of releasing a point in the Operation Pane is:

1. With the datapoint selected in the graphic, click the [Release] button.
2. That's it.



The Designo CC Graphics application is a very powerful tool to visualize the facility and how all the systems interact. This training session cannot provide all the information required to take full advantage of the Graphics application. If additional Graphics training is desired, please talk to the instructor about additional training opportunities available from Siemens.



### **Hands-on Practice: (Optional)**

Before performing this activity, make sure you have permission and that it is safe to command and release a datapoint in the system.

1. Open a graphic in the Primary Pane and command a datapoint using the Status and Commands Window.

**Note:** The system will allow commanding a point to the same value as its present value. For example, if a fan is on, you can command it on. This will not interrupt the functioning of the fan and will provide practice the process of commanding.

2. With that point still selected, release it in the Operation Pane.

**Note:** Make sure to release the same command priority used above to command it. Failing to release the same command priority might adversely affect the overall operation of the facility.

## Graphics Tips and Tricks

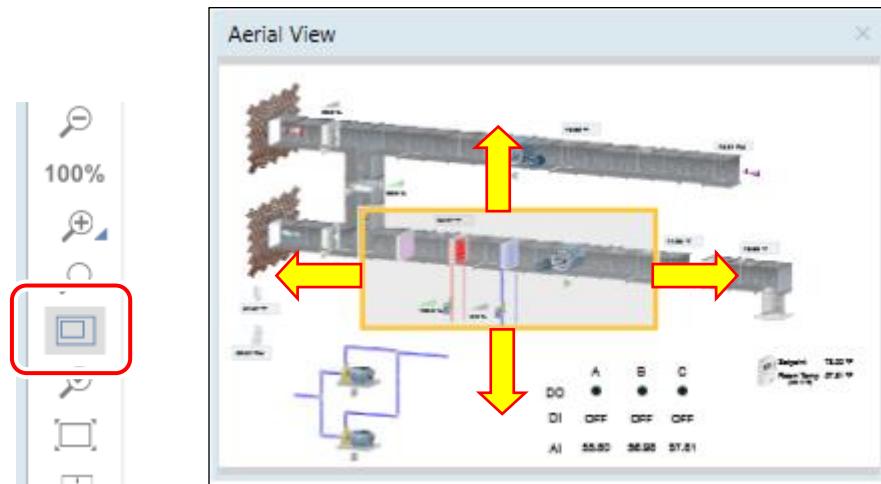
### Zooming in a Desigo CC Graphic

The Graphics button bar provides multiple methods to zoom in and out on a graphic. There is one additional method many users find easy and convenient: holding the [Ctrl] key while rolling the mouse wheel.



### Moving Around in a Desigo CC Graphic

When the Aerial View is active, grab the small yellow box and drag it around inside the thumbnail. The view of the graphic will follow the portion of the graphic displayed in the yellow box. This is a quick way to move around within a large graphic without having to manipulate the scroll bars.



# Reports

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## Overview of Reports

Desigo CC comes with standard reports designed to provide information about the operation of the facility. These reports are designed to be generic in nature; they can be modified them to meet the operational needs. Once a standard report has been modified, it is saved to the system and will be available at any time.

Reports can be run directly in the Reports application or scheduled to execute in the background at specific times. In addition to being displayed on the screen, Desigo CC reports can be routed to a printer, saved as a PDF document, and/or emailed to a recipient.

Desigo CC reports can access any information in the history database. This is more than just data points and present values. A few examples of information that can be obtained through reporting include:

- All active alarm information and alarm history
- Trend charts displaying temperature variation gathered from temperature sensors
- System activity including log-in and log-out information, identification of which user issued point commands, and network status over time

Some common standard reports include:

- Activity Log  
Showing all the system activity over a specified period of time
- Point Report  
Displaying information about designated system points
- Alarm Report  
Showing all alarms currently active in the system
- Trend Log  
Displaying one or multiple trend view definitions

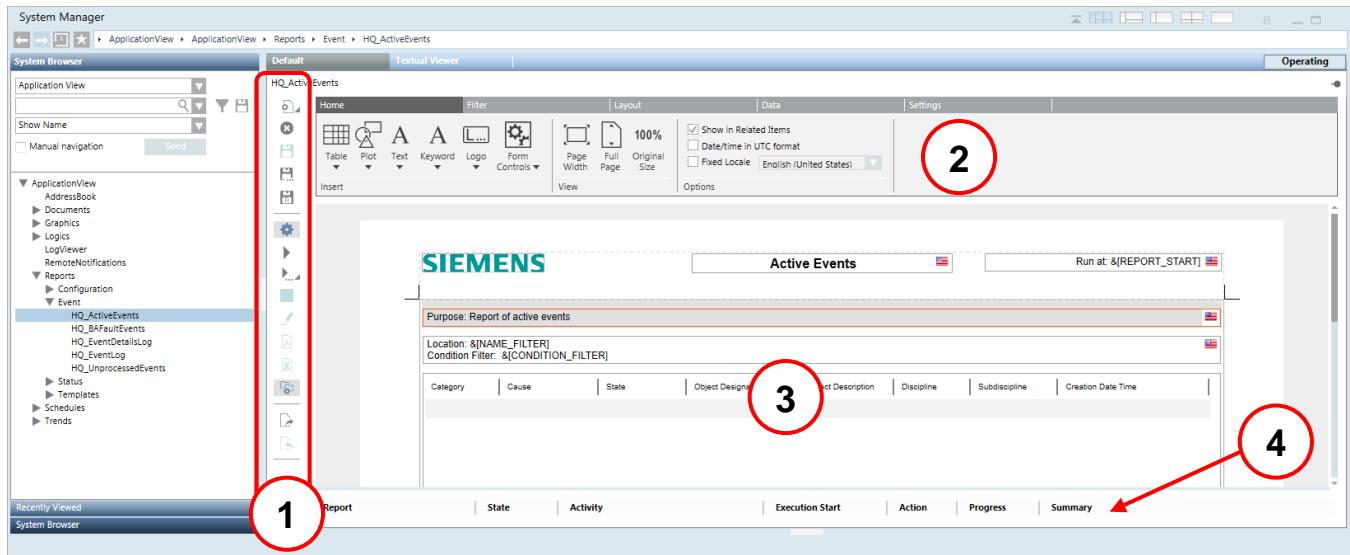
By modifying default reports – or building reports from scratch – it is possible to combine aspects from multiple reports into one report. In short, Desigo CC makes it possible to create reports providing exactly the information needed, exactly when needed, and route it to exactly where it is to be viewed.

# The Reports Application

When a report in the System Browser is selected, the Reports application automatically opens in the Primary Pane. The Reports application is used to run reports, modify existing reports, or create new reports.

The Reports application consists of the following four areas:

1. Button Bar
2. Reports Configuration Toolbar
3. Report Viewer
4. Report Management Area



Parts of the Report Application Displayed in the Primary Pane

## The Reports Button Bar

The Report Button Bar provides options to execute, save, modify, and export reports.

	<b>New</b> Create a new report definition.
	<b>Delete</b> Delete the currently displayed report.
	<b>Save</b> Save a newly created report or modifications to an existing report.
	<b>Save as...</b> Save an existing report with a new name. This provides the ability to create multiple variants of the report.
	<b>Save as Default</b> Save the current report as the default. The current report structure will be used as the starting point for all new reports. For example, saving the logo, header, and footer information.
	<b>Toggle Properties Ribbon</b> Expose or hide the Properties Ribbon.
	<b>Run</b> Runs the report and displays the results on the screen.
	<b>Run As</b> Provides a menu to select the language in which to Run the report. Only languages installed in the system are available.
	<b>Stop</b> Terminates the current execution of a report.
	<b>Edit</b> After a report has been executed, the Edit button will discard the results and put the report definition into Edit mode.
	<b>View PDF</b> After executing a report, this button outputs it to a PDF file.
	<b>View Excel</b> After executing a report, this button outputs it to Microsoft Excel.
	<b>Report Management</b> Toggles the Report Management section of the Reports application.
	<b>Export</b> Saves the report definition to the local hard drive. In this way, it is possible to back up report definitions or share between projects.
	<b>Import</b> Imports an exported report definition.



## Reports at Your Facility

Work with the instructor to identify the reports already set up at your facility. Discuss how you use these reports.



Which reports are most commonly used at your facility?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

What kinds of reports would be helpful for routine use at your facility?

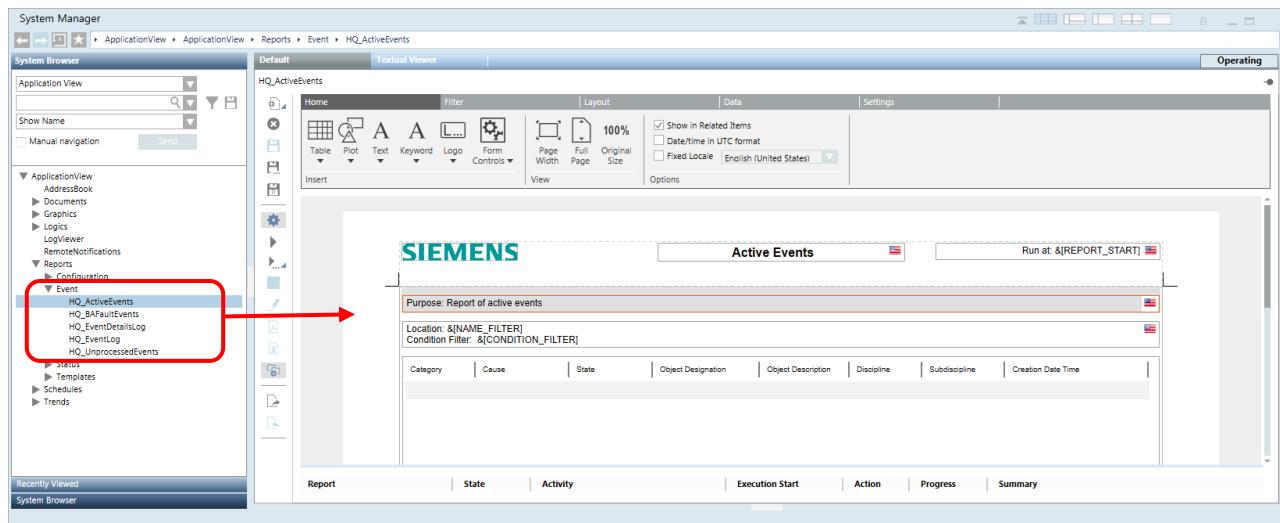
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Open a Report

One standard report installed by default is the Activity Log report. Designo CC keeps a record of all events occurring in your system, such as operator actions, alarm history, and network activities. The Activity Log queries all that system activity and provides information about the system's operation. Activities that can be displayed on the Activity Log report include:

- Alarm acknowledgment
- Object changes
- Data uploads and downloads
- Log on and exit activity

All system reports are stored in the Reports folder, which is in the Application View of the System Browser. All reports in the system will be listed in this folder. For example, selecting the Active Events report, it will open in the Primary Pane. This is shown in the following image.



Remember that opening the report does not automatically run the report. Opening the report loads the report definition. To run the report, click the "Run" button on the button bar.



### Hands-on Practice:

- Switch the System Browser to the Application View.
- Locate the Activity Log in the Reports application and select it. The Activity Log report should appear in the Primary Pane.

## Run a Report

Note when working with the Reports application, the words “Run” and “Execute” are not interchangeable. Running a report by clicking the button on the button bar creates a snapshot presented in the Reports application. This snapshot can be discarded without saving. Executing, on the other hand, uses any pre-configured output options to automatically route the completed report to PDF, email, and/or Excel.

With the report open in the Primary Pane, running the report is as simple as clicking the “Run” button on the button bar. If the report is properly configured, the data will start populating. While the report is building, the progress will be reported in the Report Management section.

When the report has completed, it will be indicated in the Report Management section.



### Hands-on Practice:

1. Click the Run button ➡ to run the Activity Log report.
2. Discuss as a group the type of information displayed in the report.
3. Earlier, you closed Desigo CC and logged back in. Is this information reported? If so, what time was it?

Report	State	Activity	Execution Start	Action	Progress	Summary
Activity Log	Succeeded	Report snapshot created successfully.	1/3/2014 3:18:39 PM	Delete	<div style="width: 100%;">Report snapshot created successfully. No warnings or errors.</div>	

## Reviewing a Report Snapshot

Once the report has been run in the Primary Pane, the sections of the report will be populated with system data, a graphic, or trend chart. Running the report in the Reports application creates a display allowing a thorough review the data. Like the Trend application, after the information has been reviewed, it is possible to exit the application without saving the data.

The Activity Log Report contains a single section containing text in columns and rows. However, reports might also include graphics and trend charts. When viewing a report snapshot:

- The text sections do not expand to show all the data at once. Rather, scroll bars will appear to allow scrolling through the data.
- The columns can be resized to make individual columns easier to read.
- Some columns can be sorted. Click the column header to sort. A column that has been sorted will have an arrow facing up or down depending whether the sort is ascending or descending.
- Graphic and Trend Chart snapshots cannot be manipulated.

System Manager

ApplicationView > ApplicationView > Reports > Event > HQ\_EventLog

Default Textual Viewer Operating

HQ\_EventLog

**SIEMENS**

**Event Log**

Run at: 7/16/2015 9:27:11 AM

Purpose: Report of events log entries

Location: \*\*\*

Condition Filter:

Time Period: Event Time is Current : 24 Hour(s) AND Event Went is Unlimited AND Transition Time is Unlimited

Event Time	Event State	Event Category	Event Cause	Event ID	Object Description	Object Designation	User Name
7/16/2015 9:01:24 AM	To alarm	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	160	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 9:01:24 AM	Alarm set to normal	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	160	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 9:01:24 AM	Alarm acknowledged	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	160	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 8:59:54 AM	To alarm	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	159	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 8:59:54 AM	Alarm set to normal	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	159	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 8:59:54 AM	Alarm acknowledged	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	159	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01
7/16/2015 8:58:24 AM	To alarm	Status	Device 7001 Backup database attempt failed: BAConet stack returned an invalid password was given.	158	AHUD01 CONTROLLER	System1.ApplicationViewAplicationView.Schedules.BA root	ork1.Hardware.BPNL01

Report state: No errors.

**View as PDF**

**Scroll the entire report**

**Scroll within the section**

Report

State: Succeeded

Activity: Report snapshot created successfully.

Execution Start: 7/16/2015 9:27:11 AM

Action: Delete

Progress: Report snapshot created successfully. No warnings or errors.

Summary: Report snapshot created successfully. No warnings or errors.

Ready

## Viewing, Saving, and Printing a Report as a PDF

After running and reviewing the report, it might be advantageous to save it as a PDF. Once the report is saved to PDF, it can be printed, emailed, posted to a network location, or stored on a thumb drive.

When the PDF button on the button bar is clicked (), the report is immediately written to PDF format and displayed in the Reports application via the built-in Adobe Reader PDF viewer.

When viewing a PDF of the report, the button bar displays four additional buttons: Save as..., Zoom in, Zoom out, and Print. Using these buttons, save the PDF to the local hard drive or print the PDF Report.

The screenshot shows the Siemens Event Log report in the Textual Viewer. The report title is "SIEMENS Event Log". The purpose is "Report of events log entries". Location is "\*.\*". Condition Filter: Time Period: 24 Hour(s), Current Period. The report table has columns: Event Time, Event State, Event Category, Event Cause, and Event ID. Three rows of data are shown:

Event Time	Event State	Event Category	Event Cause	Event ID
4/17/2014 8:17:48 AM	Alarm closed	Fault	Network not supervised (Not Supervised)	70
4/17/2014 8:17:48 AM	Alarm acknowledged	Fault	Network not supervised (Not Supervised)	70
4/17/2014 8:17:48 AM	To alarm	Fault	Network not supervised (Not Supervised)	70

Report state: No errors.

Below the report, a status bar shows: Report snapshot created successfully. 4/17/2014 10:13:40. HQ\_EventLog\_1 #1 PDF document created... 4/17/2014 10:14:42.

When finished with the PDF, close it by clicking the [Delete] button in the Report Management Area.

Execution Start	Action	Progress	Summary
5/7/2012 3:24:36 PM	Delete	[progress bar]	Report snapshot created successfully. No warnings or errors!
5/7/2012 3:26:01 PM	Delete	[progress bar]	Report snapshot created successfully. No warnings or errors!

Hands on Practice:



Click the "View PDF" button on the button bar. The report should display as if it were printed.

After reviewing the PDF, use the [Delete] button in the Report Management Area to close it. Also delete the Activity Log report you ran but leave the Activity Log report itself open in the Primary Pane.

# Modifying a Report

**Note:** When modifying a report, be sure to save the modified version with a new name. This way, the original will not be overwritten in case it's needed later.

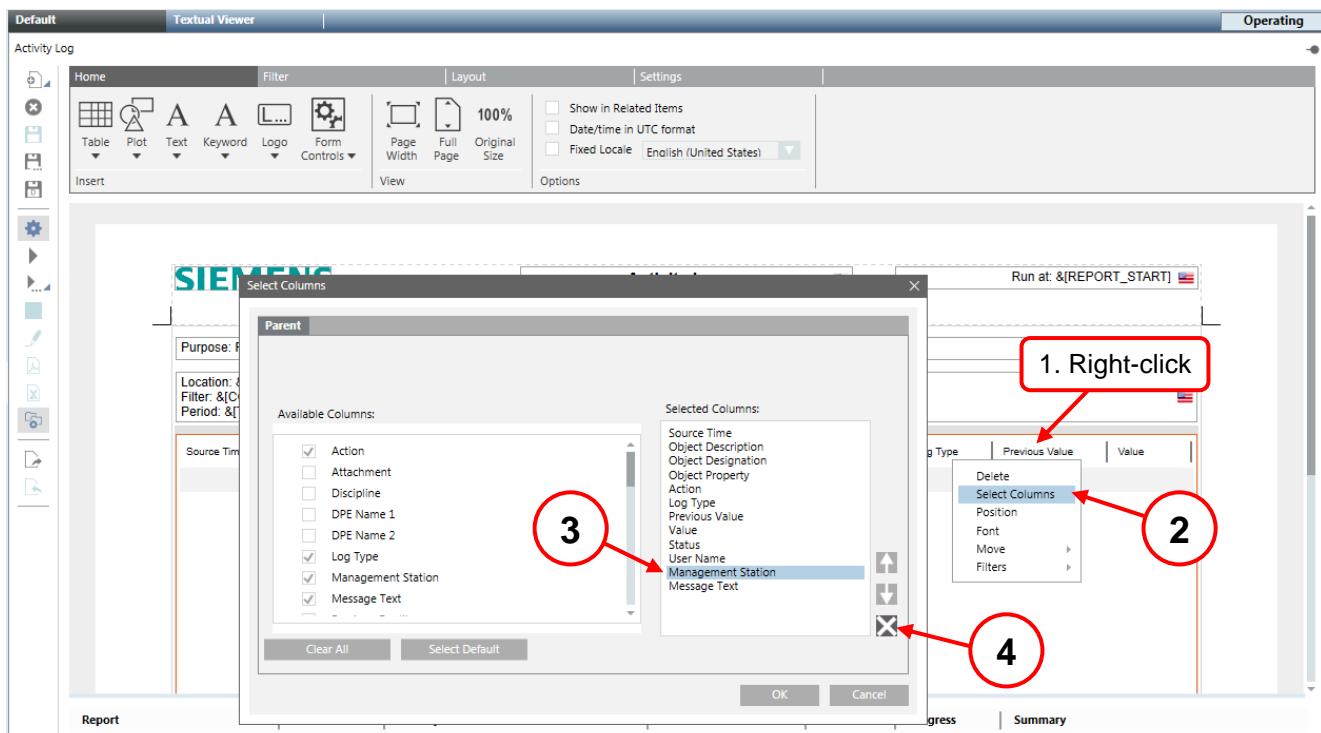
The reports that come standard with Desigo CC are designed to meet the majority of needs. These reports might meet the needs of the facility for a while. Over time, as report needs are further refined, it might be advantageous to modify the reports in order to display more targeted information or clean up aspects of the reports.

## Remove Columns from a Report

The Activity Log Report has two columns on the right named "Management Station" and "Message Text". In a situation in which there is only one management station in the system, having a column display that station's identification on every line is not needed. Removing it would provide more space for other columns.

To Remove a Column from a Report:

1. Right-click on the row of column headings. This will present a pop-up menu.
2. Click "Select Columns" in the pop-up menu. This will present the "Select Columns" dialog box.
3. Select the column to remove.
4. Click the [X] button to remove the column.



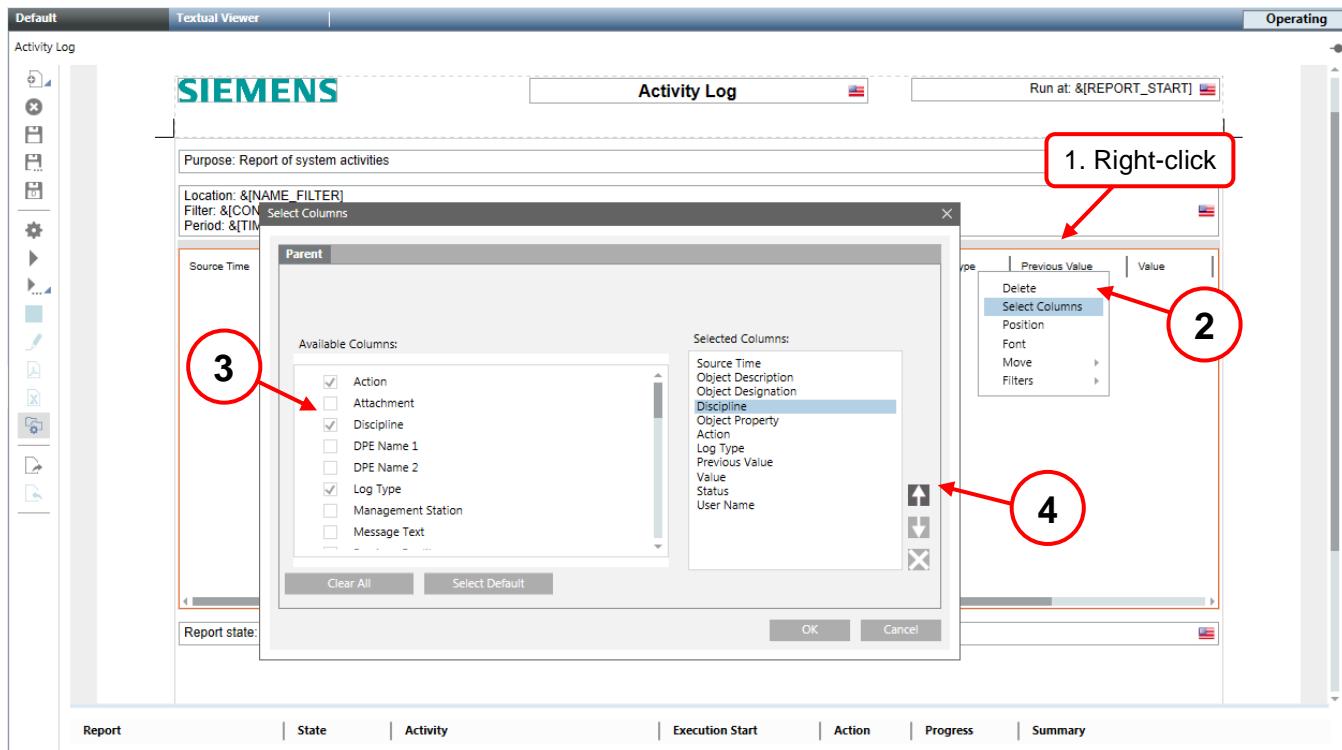
## Add Columns to a Report

Sometimes the standard report does not provide the amount of desired information. For these cases, it is possible to add columns to the report. Keep in mind that it is only possible to add columns available for the report being modified. It is not possible to create brand new columns to add.

When a facility has a mixture of multiple disciplines (Building Automation, Fire, CCTV, etc, it would be important to know which discipline is recording an activity. Adding the "Discipline" column would provide that information.

To Add a Column to a Report:

1. Right-click on the row of column headings. This will present a pop-up menu.
2. Click "Select Columns" in the pop-up menu. This will present the "Select Columns" dialog box.
3. On the right is a list of "Available Columns". Place a checkmark in the box preceding the desired column. In this example, "Discipline". When a new column is added, it is automatically added to the bottom of the list.
4. Optional: Use the [ $\uparrow$ ] and [ $\downarrow$ ] buttons to rearrange the columns, top-to-bottom representing left-to-right, respectively.





**Hands on Practice:**

**NOTE:** When performing this practice, please be careful to not make permanent changes to the original report.

1. Identify a column in the Activity Log report that is not used or unimportant at your facility. Remove that column.
2. Add the “Discipline” column to the report.
3. Run the report again to verify your work.

**NOTE:** If the report is saved, the column will be displayed every time the report is run or executed. If this is not desirable, remove the “Discipline” column.

# Adding Trend Charts and Graphics to a Report

Design CC reports can hold more than just text-based information. It is possible to add trend charts and graphics.

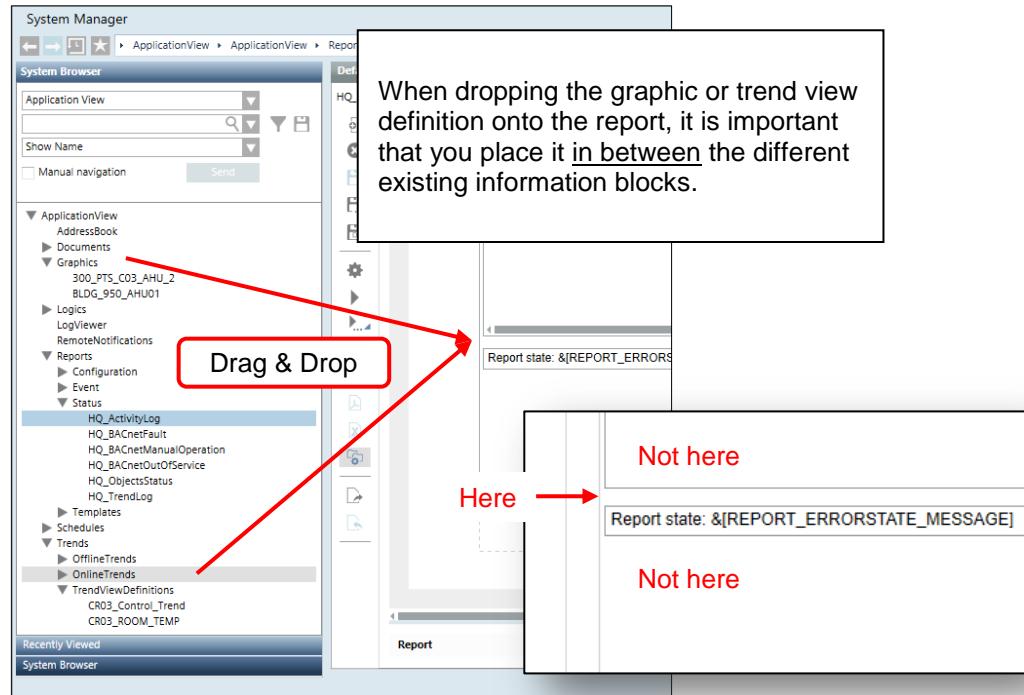
Remember that Trend View Definitions can contain multiple trend objects and can be customized multiple ways to provide specific displays. One of the reasons to create specific Trend Views is for inclusion in reports. For example, if a report is providing activity and data for the last 24 hours, it would be a good idea to limit the trend information to 24 hours. This way, they all match.

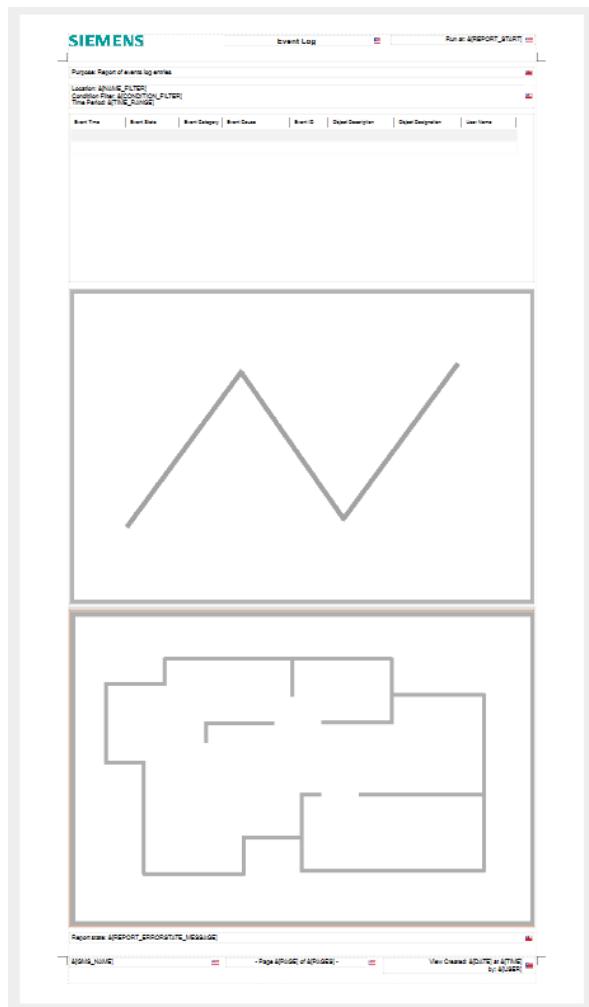
Including a graphic on a report captures the graphic with all present value data. This provides a snapshot of all information at exactly the point in time when the report was run. By including multiple graphics in a report, it is possible to have a single report that presents multiple snapshots without the need to click through multiple graphics.

## To Add a Graphic or Trend View to a Report:

The process of adding a graphic or trend view definition are the same:

- Drag the desired graphic or trend view definition from the System Browser onto the report.





When a trend view definition or graphic are added to the report definition, placeholders are inserted. Snapshots of the actual trends and graphs are not generated until the report is run.



When the report is run, Desigo CC generates snapshots of the trend view definitions and graphics in the background and places them in the report. All data is static; trends and graphics do not update in real time.

Some graphics and trend definitions can be built and formatted specifically to look good in reports.

When all the aspects of a Desigo CC report are combined, it is easy to see how the following scenario could be useful:

- A PDF report is emailed to your Inbox first thing in the morning. Or, perhaps, automatically saved to the PC Desktop or a designated Reports folder on the network.
  - All system activity from 5:00pm yesterday until current.
  - All active events in the system.
  - Trend data for important points.
  - Snapshots of the most important graphics to flip through.

A report such as this would provide a snapshot of what happened overnight and the current state of the facility in practically no time at all.

### **Creating a Snapshot Report**



Considering the scenario above:

- Is this something that would be beneficial at your facility?
- After this section, do you feel that this is something you would be able to create?

# Alarm Treatment

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## About Alarms

Many of the data points in a building automation system are configured to be alarmable. This means the system notifies the management station when the point exceeds a designated range of values. For example:

- A freezer unit might go into alarm if the temperature exceeds 32°F.
- A room's temperature might go into alarm if it drops below 65°F or exceeds 80°F.
- An emergency door might go into alarm if it is opened.

Alarms can be intrinsic to the field panel or defined within the management station. Intrinsic alarms may exist within the field device. When an intrinsic alarm is triggered, Desigo CC is the recipient of that alarm. Not all field devices support intrinsic alarms which is why Desigo CC can monitor point values to trigger alarms within the management station.

This section shows how different types of alarms are filtered and treated. Points can be alarmable according to your facility's preferences and use-specific criteria. When alarms become active in Desigo CC, an event lamp in the Summary Bar will flash to notify the user. The event lamp continues to flash until the event is either acknowledged or the point returns to its normal state.

The three methods to treat an event are:

1. **Fast**

Becomes active when an alarm is selected in the Event Detail Bar located below the Event Lamps. Allows rapid treatment or suspension.

**Multiple Fast**

If the Event List is expanded, use multiple-selection to apply fast treatment to multiple events at the same time. This sends the same command to all the selected events.

2. **Investigative**

Double-clicking an alarm icon launches a new System Manager window. This allows navigation to other applications without losing focus of the display in the primary System Manager. The Investigative Treatment window closes automatically when the event is completely processed.

3. **Assisted Treatment (if configured)**

Double-clicking the alarm icon launches a new System Manager window. The System Browser is replaced with the Operating Procedures configured for the treatment of the selected alarm.

4. **Automatic Event Treatment**

If configured, an alarm might trigger a response that automatically launches one of the above treatment options. This behavior is typically reserved for highly important alarms.

# Alarm Management Interface Overview

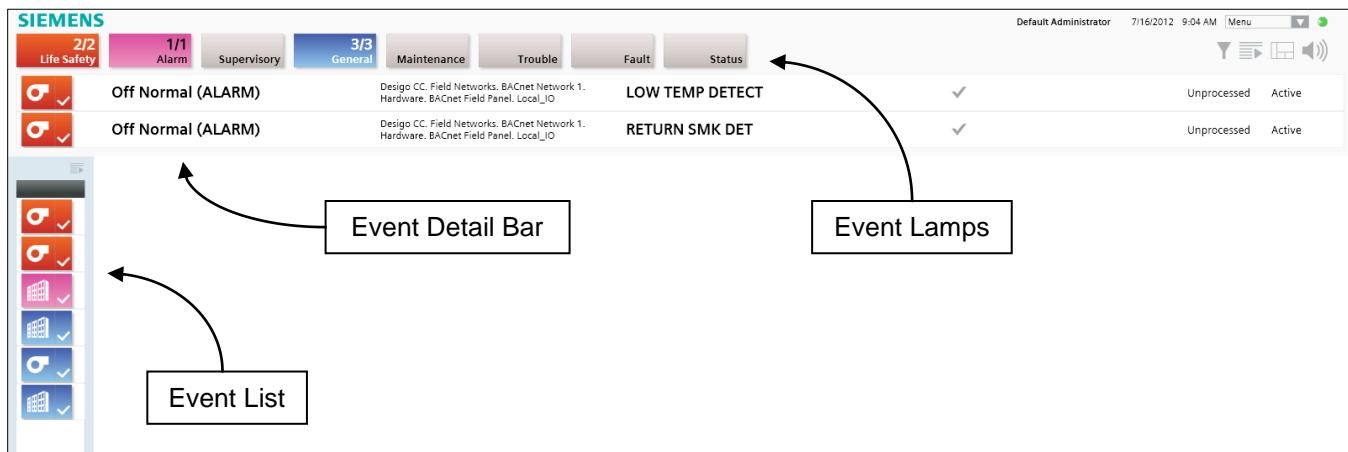
**Note:** Depending on the configuration of your facility's Desigo CC system, the Event Lamps, Summary Bar, and Event List might be displayed differently than in this training manual. To provide a variety of possibilities, this section will display multiple layouts.

As mentioned previously, the Event Lamps are along the top of the Desigo CC management station. They provide a quick overview of all current alarms in the system and their respective alarm categories. If a particular category has an active and unacknowledged alarm, that lamp will blink. Event Lamps provide a count of all alarms in each category.

The Event Detail Bar is below the Event Lamps. It provides details of active alarms including the cause, location, and a recurrence count. Depending on system configuration, it will display one or two alarms. The alarms are sorted to show the highest priority, unacknowledged alarms currently active in the system. In this way, the system always displays the highest priority alarm.

Depending on the configuration, the left of the screen might display the Event List. Every alarm currently active in the system will be displayed. The list is automatically sorted so that all unacknowledged alarms are above all acknowledged alarms. A secondary sort ensures the alarms are sorted with the highest priority above lower priorities.

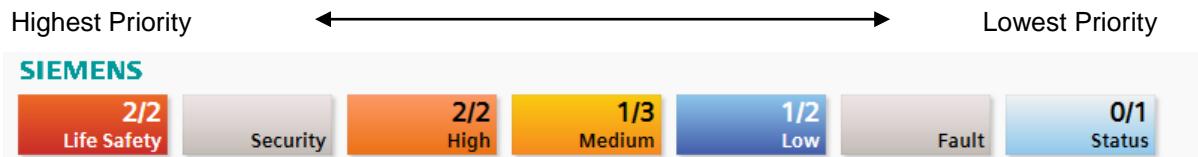
In the image below, the Event Lamps display 2 Life Safety alarms, 1 in the Alarm category, and 3 General alarms. The Summary Bar provides information about the 2 Life Safety alarms because they have the highest priority in the system. The Event list displays icons for all six alarms, sorted with most important on top.



## Event Lamps

### Interpreting Event lamps

The highest priority Event Lamps will always be on the left, descending in importance as they progress to the right.



Each Event Lamp will display the number of active alarms in the system and the number of those alarms that are unacknowledged. The first number indicates how many alarms are unacknowledged; the second number indicates the total number of alarms in that category.

In the above image, we can see:

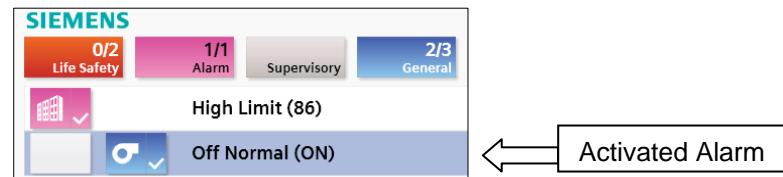
- There are a total of 10 active alarms in the system. This is the sum of all the second numbers.
  - 2 Life Safety      neither have been acknowledged
  - 2 Highs            neither have been acknowledged
  - 3 Medium          2 have been acknowledged
  - 2 Low              1 has been acknowledged
  - 1 Status            it has been acknowledged
- In total, there are 6 unacknowledged alarms in the system. This is the sum of all the first numbers.

## Event Details Bar

### Using the Event Details Bar

The Event Details Bar displays the highest priority alarms in the system. In addition to displaying them, the Event Details Bar provides the ability to investigate the issue, acknowledge the alarm, and reset the alarm once the issue is resolved.

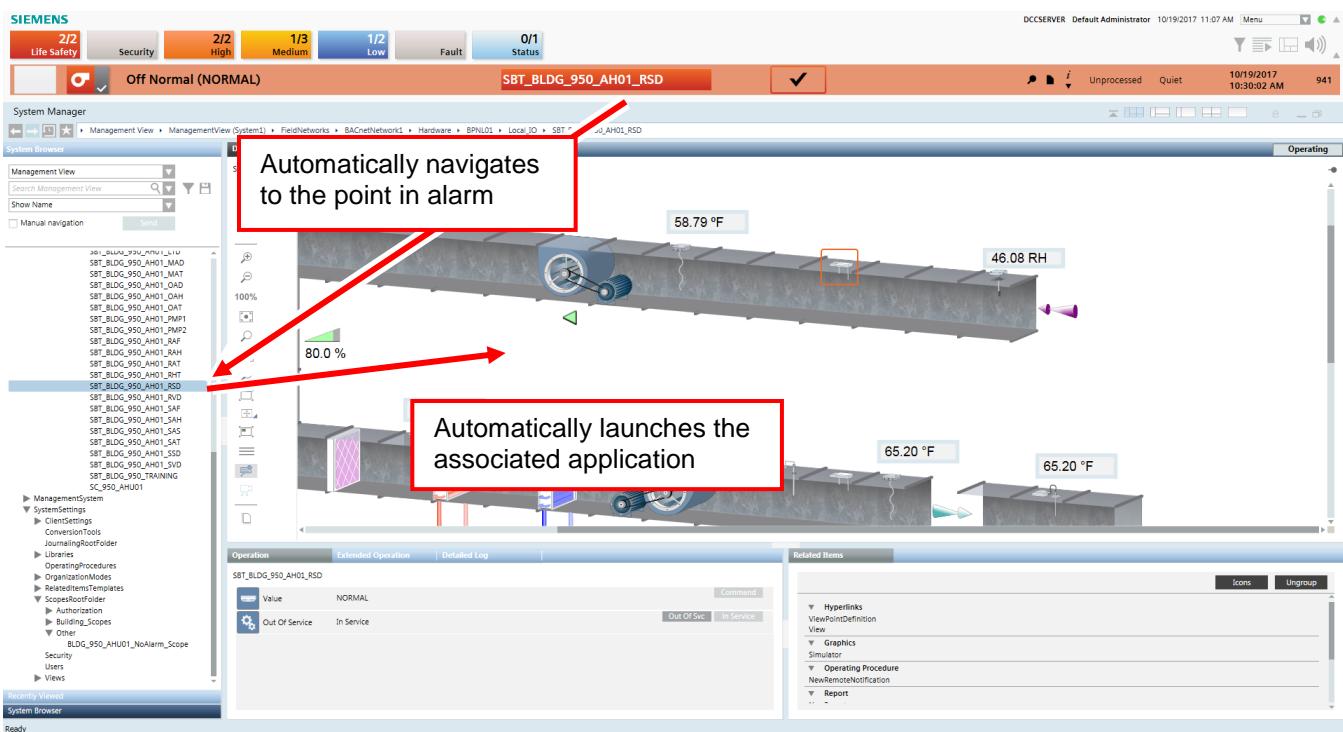
Before an alarm on the Event Summary Bar can be addressed, it must be activated. To activate an alarm, simply click on it. Activated alarms are highlighted with the color of their category (from the Event Lamps) and the alarm icon is indented.



Initially, the Summary Bar maintains a flat, clean appearance. However, when the mouse hovers over specific components, they reveal themselves to be buttons.

### Investigate the Alarm

When the mouse pointer is moved over the name of the point in alarm, it becomes a button. Additionally, the mouse pointer changes from an arrow to a hand. Clicking the button will automatically navigate the System Browser to the point. Any associated application, such as a graphic, will automatically launch.



## Event Icons

The Event Icons have been designed to provide the most amount of information possible in as little space as possible. Their color, logo, and symbols are presented in multiple combinations to represent a multitude of meanings.

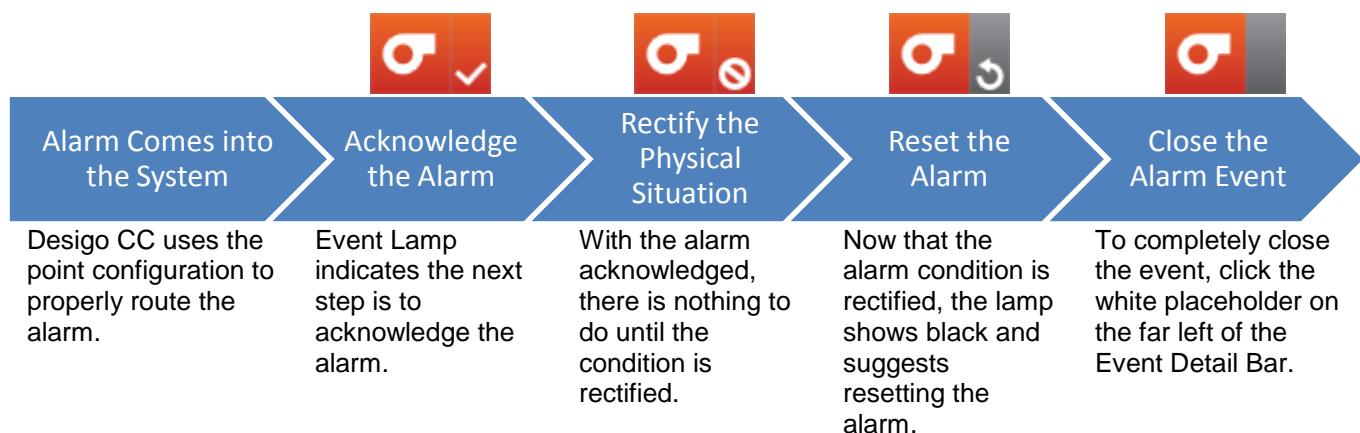
The Event Icons are divided into three primary sections. These sections provide information about:

- The current step in the alarm process
- The condition of the point that triggered the alarm
- The suggested action the operator should take in addressing the alarm
- Special Information about the alarm condition

Color indicates alarm category. Icon indicates discipline.		Upper right displays special information. Lower right provides suggested action.
		The right side will be: <ul style="list-style-type: none"><li>• The color of the category when the point is still in alarm.</li><li>• Black when the point is no longer in alarm.</li></ul>

Event Icon	Alarm Processing Status	Status of Alarmed Point	Suggested Action
	Not yet acknowledged	In alarm	Acknowledge the alarm
	Not yet acknowledged	No longer in alarm Point went into and came out of alarm before it was acknowledged.	Acknowledge the alarm
	Acknowledged	In alarm	Correct the alarm situation. There is no action to take in Desigo CC until the physical alarm condition is resolved.
	Acknowledged	No longer in alarm	Reset the alarm
	Acknowledged and Reset	No longer in alarm	Close the event
	This Event Icon shows an alarm with Assisted Treatment. The icon of the bulleted list indicates there is an Operating Procedure that must be followed when processing this alarm.		
	This Event Icon shows an alarm for an unreachable mail server. The satellite dish represents a communication service. There is no action that can be taken at this time.		

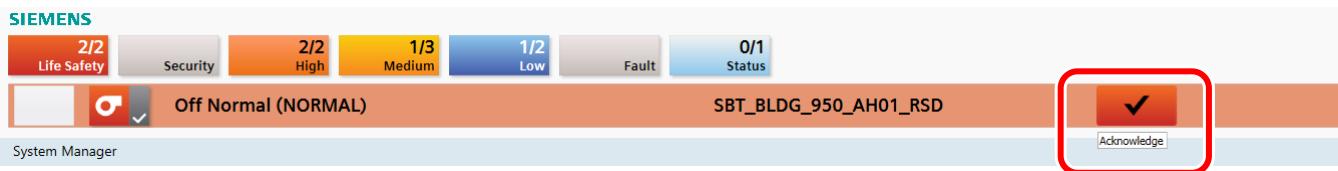
Below is a typical flow of how alarms enter the system, are treated, and are cleared out of the system.



## Fast Treatment

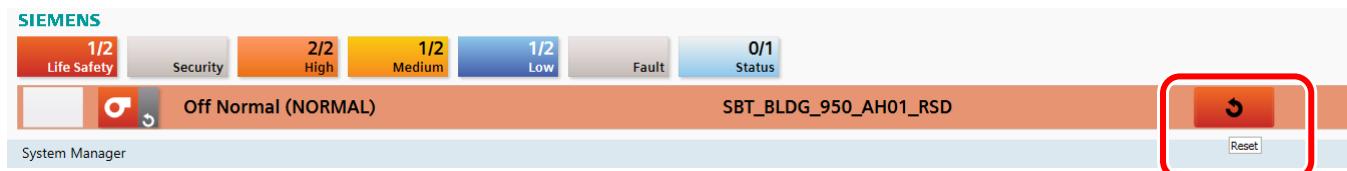
### *Acknowledge the Alarm*

The first step in alarm management is acknowledging that the alarm is in the system. To acknowledge an alarm from the Event Details Bar, click the check mark. At first, the check mark looks like a display icon but when the mouse pointer hovers over it, the button appears.



### *Reset the Alarm*

After the alarm condition has been resolved – in this case, a new filter installed – the alarm condition goes away. The following image shows that the Event Details Bar now displays the word “Clean”. Once the alarm condition is acknowledged and resolved, the check mark icon changes to the reset icon. Moving the mouse pointer to the icon activates the button. Clicking the button resets the alarm.



After resetting the alarm, close the event by clicking the white placeholder on the left.

## Event List

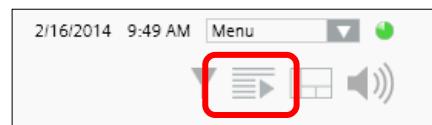
### Using the Event List

The Event List is normally displayed as a single column of icons on the left of the screen. However, as mentioned in the first chapter, it can be expanded to provide details about each of the alarms. There are two methods for expanding the Event List:

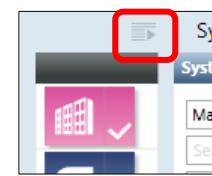
- Click the “Expand Event List” button
- Click an Event Lamp

#### Using the “Expand Event List” button

There are two Expand Event List buttons. One is on the right side of the Summary bar, near the user menu. This one is present even if the Event List is not displayed on the left of the screen.



The other is at the top of the Event List itself. This one is only present if the Event List is on the left of the screen.



Both of these buttons will expand the Event List allowing the display of detailed information about the alarms. When finished with the expanded Event List, the same buttons will collapse it back to the left.

#### Clicking an Event Lamp

When an Event Lamp with active alarms is clicked, the Event List will expand to cover the entire screen. By clicking an event lamp, a filter is automatically applied and only the alarms from that category will display. Once the Event List is expanded, use the Event Lamps to filter from one category to the next to view only the respective alarms in that category.

In the following image, the “General” Event Lamp was clicked. This expanded the Event List and filtered to display only the “General” alarms. Notice that the filter icon in the upper-right is now red to indicate there is an active filter. Also, the “Expand Event List” buttons now point to the left indicating they will collapse the Event List.

SIEMENS

0/2 Life Safety	1/1 Alarm	Supervisory	2/3 General	Maintenance	Trouble	Fault	Status	
High Limit (86)				Design CC. Field Networks. BACnet Network 1. Hardware. BACnet Field Panel. Local_IO	EE_AHU01-RAT		Unprocessed Active	
Off Normal (ON)				Design CC. Field Networks. BACnet Network 1. Hardware. BACnet Field Panel. Local_IO	HI STATIC PRESS		Unprocessed Active	
Event List - Filter By: Categories = <General>								
Cause		Location	Source	Counter	Commands	Information	Event Status	Source Status
Off Normal (ON)		Design CC. Field Networks. BACnet Network 1. Hardware. BACnet Field Panel. Local_IO	HI STATIC PRESS		✓		Unprocessed Active	
Off Normal (ON)		Design CC. Field Networks. BACnet Network 1. Hardware. BACnet Field Panel. Local_IO	DIGITAL INPUT A		✓		Unprocessed Active	
Off Normal (DIRTY)		Design CC. Field Networks. BACnet Network 1. Hardware. BACnet Field Panel. Local_IO	FILTER				Waiting for condition	Active

Investigating, acknowledging, resetting, and closing alarms with the expanded Event List works exactly the same way as with the Event Details Bar.

## Multiple-Select Fast Treatment

With the Event List expanded, it is possible to use multi-select to acknowledge and reset multiple alarms at the same time.

- Use the [Shift] key to select a range of alarms.
- Use the [Ctrl] key to select individual, non-consecutive alarms.

With the alarms selected, use the “acknowledge” and “reset” buttons to update them all simultaneously. All selected alarms will update accordingly.

To use multi-select fast treatment:

In this example, the Event List is expanded and we will acknowledge all alarms.

1. Select the top-most alarm.
2. Hold the [Shift] key on the keyboard while clicking the bottom-most alarm. This will select every alarm in the system.
3. Click the “Acknowledge” button of any alarm. Because all alarms are selected, they will all be acknowledged. In the example below, the bottom alarm’s button is clicked.

SIEMENS

1/2 Life Safety	Security	2/2 High	1/2 Medium	1/2 Low	Fault	0/1 Status			
Off Normal (NORMAL)					SBT_BLDG_950_AH01_RSD				
Event List									
Cause		Source	Counter	Commands	Information	Event Status	Source Status	Date/Time	ID
Off Normal (ON)		SBT_BLDG_950_AH01_SSD		✓	■ ■ i	Unprocessed	Quiet	10/19/2017 10:30:23 AM	941
High Limit (88.250061 °F)		SBT_BLDG_950_AH01_AI-A		✓	■ ■ i	Unprocessed	Active	10/19/2017 10:29:57 AM	943
Off Normal (ON)		SBT_BLDG_950_AH01_DI-A		✓	■ ■ i	Unprocessed	Active	10/19/2017 10:30:00 AM	940
		SBT_BLDG_950_AH01_AI-B		✓	■ ■ i	Unprocessed	Quiet	10/19/2017 10:29:58 AM	936
		SBT_BLDG_950_AH01_DI-C		✓	■ ■ i	Unprocessed	Quiet	10/19/2017 10:29:59 AM	938

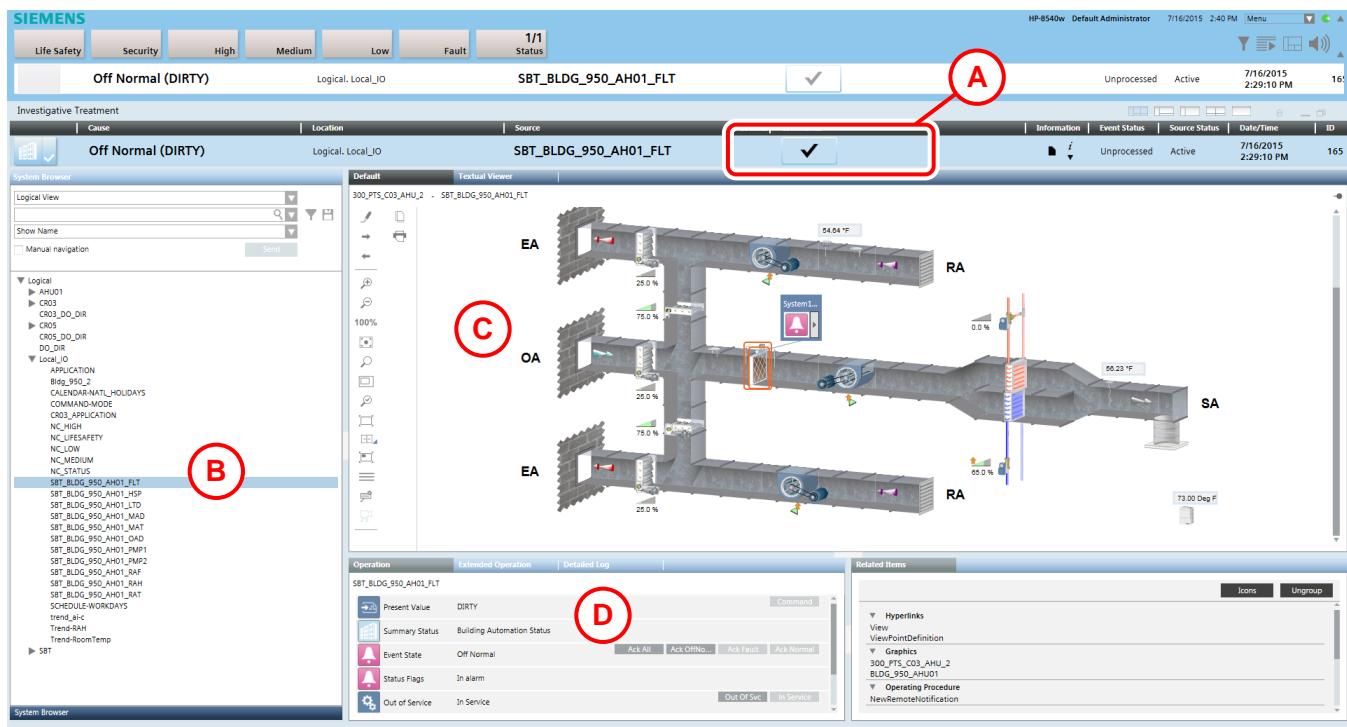
**NOTE:** sometimes not all alarms will acknowledge or reset with all other selected alarms. These alarms must be treated individually.

## Investigative Treatment

Investigative Treatment provides the opportunity to research the condition causing the alarm. When the investigative treatment process is launched, a new System Manager window appears and automatically navigates to the point causing the alarm condition and opens any associated application. Opening the second System Manager windows protects any work in the primary System Manager window.

To open the Investigate Treatment window, double-click the event icon in the Event List or in the Event Details Bar. The following image shows a dirty filter being reviewed in Investigative Treatment. Notice the following items:

- A. The alarm “acknowledge”, “reset”, or “clear” buttons are along the top.
- B. The System Browser automatically navigated to the Filter point.
- C. The corresponding graphic automatically displayed in the Primary Pane with the Filter point highlighted.
- D. Contextual information about the Filter is displayed in the Operation Pane with additional actions available in the Related Items Pane.



## Assisted Treatment

Many facilities have specific Standard Operating Procedures (SOPs) that must be taken when treating an alarm. Often, these actions are stored in a manual kept near the workstation; when an alarm occurs in the system, the operator must open the manual and find the process for treating the alarm condition.

With Designo CC, it is possible to assign Operating Procedures to points in the system. When one of these points goes into alarm, the prescribed actions are automatically presented to the operator. This way, there is no need to locate and flip through a manual. Additionally, because the procedures can be linked to specific applications such as graphics, reports, and Remote Notification, the operator does not need to locate those items in the system.

The Operating Procedures can contain preconfigured steps that include, but are not limited to:

- Viewing an interactive Graphic showing the point in alarm
- Displaying a document
- Accessing a Treatment Form for the user to print out and complete with information about the alarm and the treatment
- Routing event data to a printer
- Triggering a Remote Notification
- Printing a report containing information about the event
- Displaying a live video feed related to the point in alarm

Please note: This training manual will provide an overview of using the Assisted Treatment process but will not cover the creation of Operating Procedures used in the Assisted Treatment.

### Initiating an Assisted Treatment

If an alarm has an Operating Procedure associated with it, the alarm icon will show a bulleted list. Double-clicking the Alarm Button will launch the Assisted Treatment window. Optionally, Automatic Event Treatment might be configured to automatically launch the Assisted Treatment process.



### Interpreting the Assisted Treatment Screen

In the Assisted Treatment window, the System Browser is replaced with the preconfigured Operating Procedure steps. Additionally, only the Primary Pane is available; there is no way to expose the Operation, Related Items, or Secondary Pane.

Assisted Treatment

	Cause	Location	Source	Commands	Information	Event Status	Source Status	Date/Time	ID	Suggested Action	Category	...
	Off Normal (ALARM)	Desigo CC Field Networks, BACnetNetwork, Hardware: BPXC1_Loc_Io	RETURN SMK DET	✓		Unprocessed	Active	10/18/2013 10:41:37 AM	28	Acknowledge event	Life Safety	...

Steps

- 1. ViewGraphic ✓
- 2. HowToHandleAnEmergency ✓
- 3. EngineeringManual ✓
- 4. AlarmPrintout ✓
- 6. Event Log Report ✓
- ! 4. Check Live Video □
- 3. Automatic Printout □

Default

Unprocessed Events

**SIEMENS** Unprocessed Events Run at: 10/18/2013 10:42:11 AM

Purpose: Report of unprocessed events  
Location: System1 Management View:Desigo CC Field Networks.BACnetNetwork.Hardware.BPXC1\_Loc\_Io.RETURN SMK DET.  
Condition Filter: State = "Unprocessed" (en-US)

Category	Cause	State	Object Designation	Object Description	Discipline	Subdiscipline	Creation Date Time
Life Safety	Off Normal (ALARM)	Unprocessed	System1 Management\View:Desigo CC Field Networks.BACnetNetwork.Hardware.BPXC1_Loc_Io.SBT_BLDG_001_AH1_Io	RETURN SMK DET	Building Automation	Air Handling	10/18/2013 10:41:37 AM

Report state: No errors.

Training01 - Page 1 of 1 - View Created: 10/18/2013 at 10:42 AM

Assisted Treatment window

The Assisted Treatment operations list will display all the procedures on the left. Depending on how the procedure is configured, the steps can be:

- Mandatory: the step must be completed for the alarm to be fully processed.
- Optional: alarm can be processed and reset even if the step is not completed.
- Automatic: executed without operator intervention.
- Sequential: the steps must be completed in a top-down order.
- Non-sequential: the order in which the steps are completed does not matter.

Each procedure will display the name of the procedure and the following icons:

	<b>Step Not Yet Completed</b> This step has not yet been completed.
	<b>Automated Step</b> This step is configured to automatically execute.
	<b>Current Step</b> When a step is being executed, this arrow will appear on that step.
	<b>Completed Step</b> This step has been completed with no errors.
	<b>Successfully Completed Step</b> This step has been completed with no errors.
	<b>Unsuccessfully Completed Step</b> This step encountered errors during execution.
	<b>Mandatory Step</b> This step is required for the entire Operating Procedure to be completed.



#### Hands on Practice – Acknowledge an Event

**NOTE:** Before completing this practice, make sure to check with the Instructor to verify that you are able to perform this activity at your facility.

- Look in the Event Detail Bar displayed above the System Manager window.
- If there is an Event button you wish to acknowledge, click to select it.
- Once the alarm has been acknowledged, the system issues the message “Ack OffNormal successful” to confirm the action.

Operation	Extended Operation	Detailed Log	
<b>HIGH STATIC</b>			
 Value	ON		
 Alarm State	Off Normal	Ack All	Ack OffNo...
 Status	In alarm	Ack Fault	Ack Normal
 Out Of Service	In Service	 Out Of Svc	 In Service

- If possible, the Instructor will put some points into alarm.
- Acknowledge the events.
- Run an Event Details Log to see the alarms and acknowledgements.

# Scheduling

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## About Scheduling

Setting up schedules for equipment settings and system functions help put the “automation” in “Building Automation.” Scheduling in Desigo CC allows the creation of operating schedules for the various areas of the facility. Using the Scheduler application, it is possible to:

- Establish schedules for day-to-day equipment operation
- Override the routine operating schedules for temporary changes
- Set up exceptions for holidays and other special situations
- Create schedules that are configured to start and end on specific dates.

Desigo CC provides the opportunity to work with field equipment via the Field Panel schedules. Desigo CC also introduces management station schedules, which reside exclusively in the workstation.

- Field Panel schedules reside in the individual field panels. Desigo CC reads the schedules and provides a workspace in which to review, edit, and/or create schedules.
- Management station schedules reside in the Desigo CC server. Management station schedules are not equipment-specific and can be used to control a variety of system data points, objects, and settings.

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## Scheduling Overview

Scheduling in Desigo CC is comprised of a base schedule and a series of exceptions.

- Base schedule: The regular operating schedule for a building, facility, air handling unit, etc. It defines the daily schedules for controlling the equipment. Schedules have a beginning date and an ending date. Some schedules, however, are entered with the intention of never ending.
- Exceptions: Can be entered as individual days, date ranges or as calendar exceptions. Exceptions are used to alter the base schedule. For example, if a school has a snow day, an exception could be created to keep the school in unoccupied mode for the day.

### Scheduling at Your Facility

Discuss how regularly occurring events are scheduled at your facility. What schedules are currently running? How many different schedules might be operating at any given time?

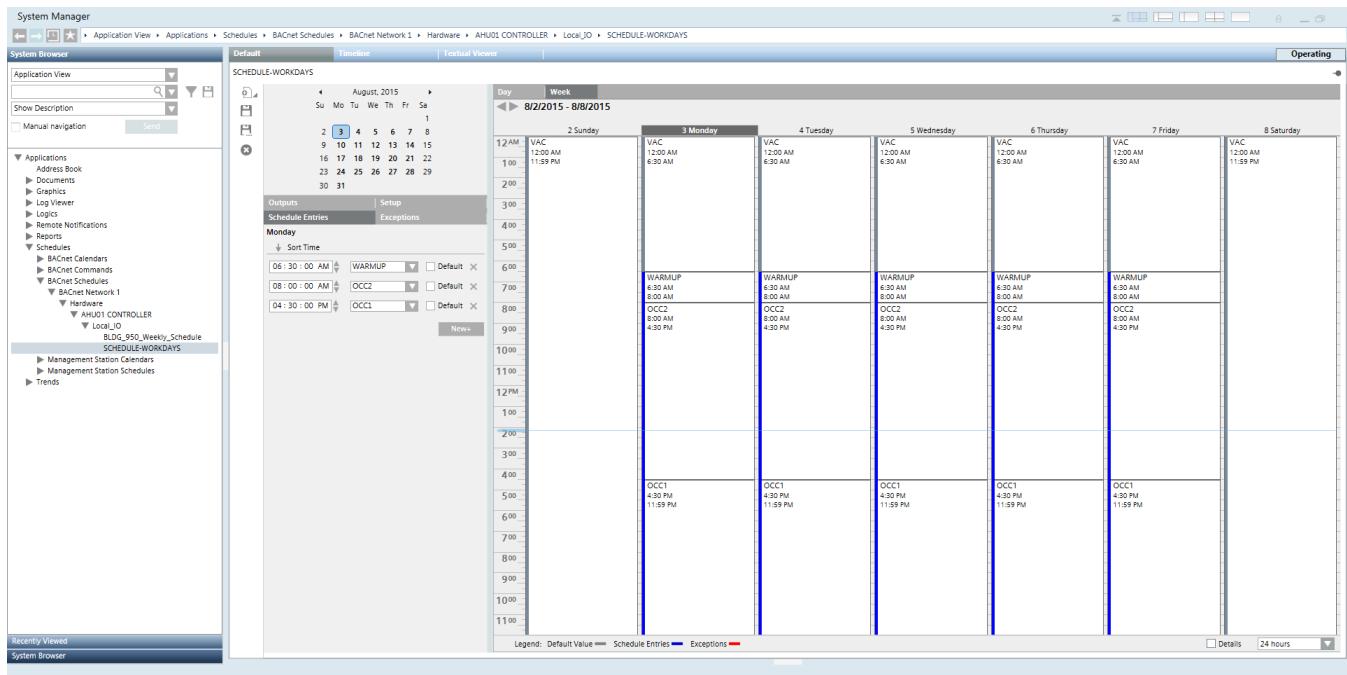


# Scheduling

Most facilities have a recurring schedule of occupied/unoccupied periods. In general, these follow “regular business hours” from 8:00am until 5:00pm. Some facilities are open and occupied on weekends and others are not.

The base schedule represents this regular schedule without any variance. Every Monday uses the same schedule; every Tuesday is the same, and so on. For example, when a restaurant lists their “Hours of Operation,” this would be their base schedule.

The following image displays a schedule for a building that is occupied from 8:00am until 4:30pm. Notice it is not occupied on weekends.



## Creating a BACnet Schedule

Each weekday of the schedule must be configured individually. At most, the following steps will need to be repeated seven times to schedule the entire week. Since Designo CC starts each day as “unoccupied”, if the facility is not occupied on a particular day, it can be left alone.

A Designo CC Schedule contains three primary components:

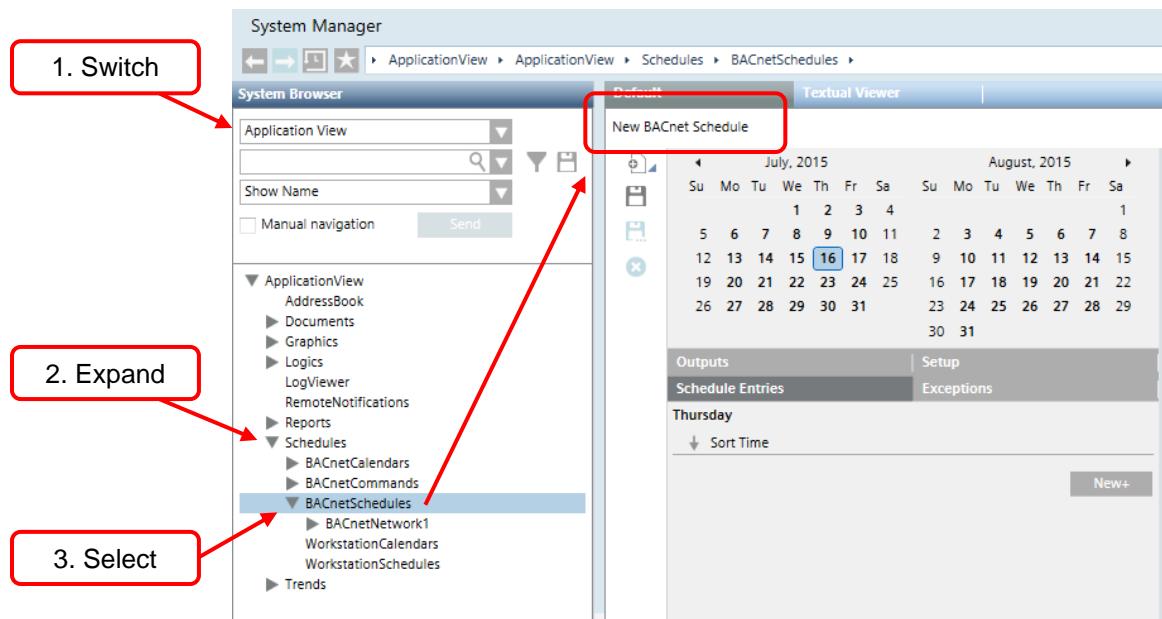
- Scheduled Entries  
These are the time-based schedule entries.
- Outputs  
This refers to the item(s) being controlled by the schedule. For example, turning on fans and lights, and setting temperature set points.
- Exceptions  
These are those special occasions that represent variants to the regular schedule. For example, national holidays and corporate holidays.

### Create the New Schedule

The first step is to open the Scheduler application and create a new schedule.

To create a new schedule:

1. In the System Browser, switch to the Application View.
2. Expand the Schedules node. This will expose the various types of schedules and calendars.
3. When “BACnet Schedules” is selected in the System Browser, a new blank BACnet schedule is created.

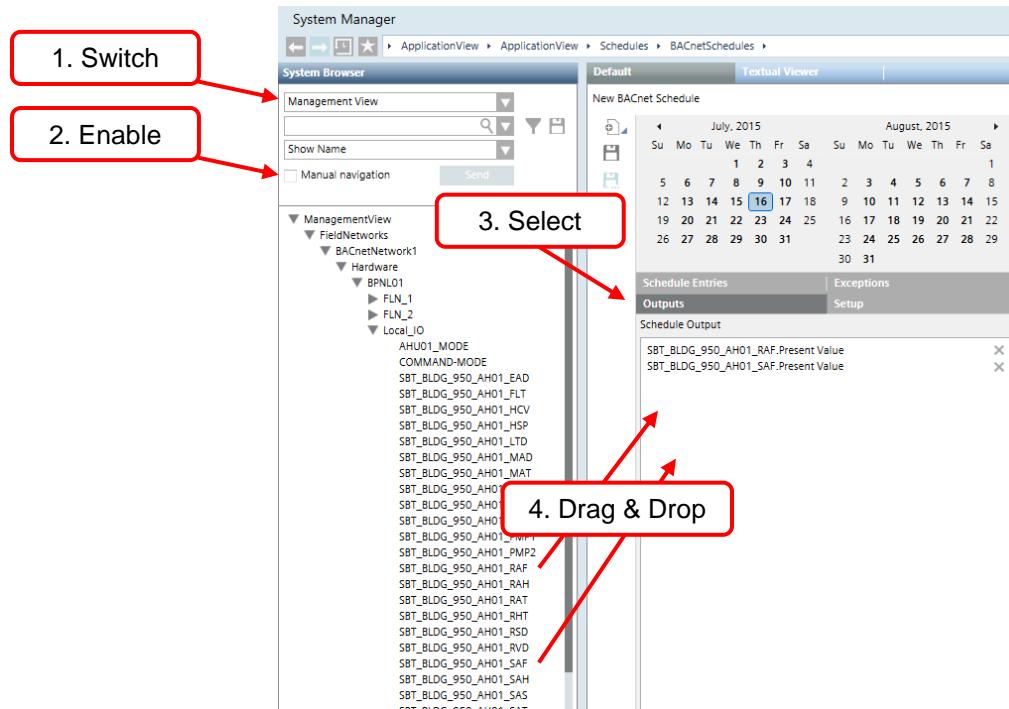


## Designate the Outputs

At the designated times, the schedule will send commands to the items listed in the “Outputs” field.

To populate the “Outputs” field:

1. Switch to the Management View, Logical View, or any custom view.
2. Select the “Outputs” tab.
3. Enable Manual Navigation to avoid accidentally selecting an object in the System Browser.
4. Drag one or more data points from the System Manager and drop them into the Outputs field.

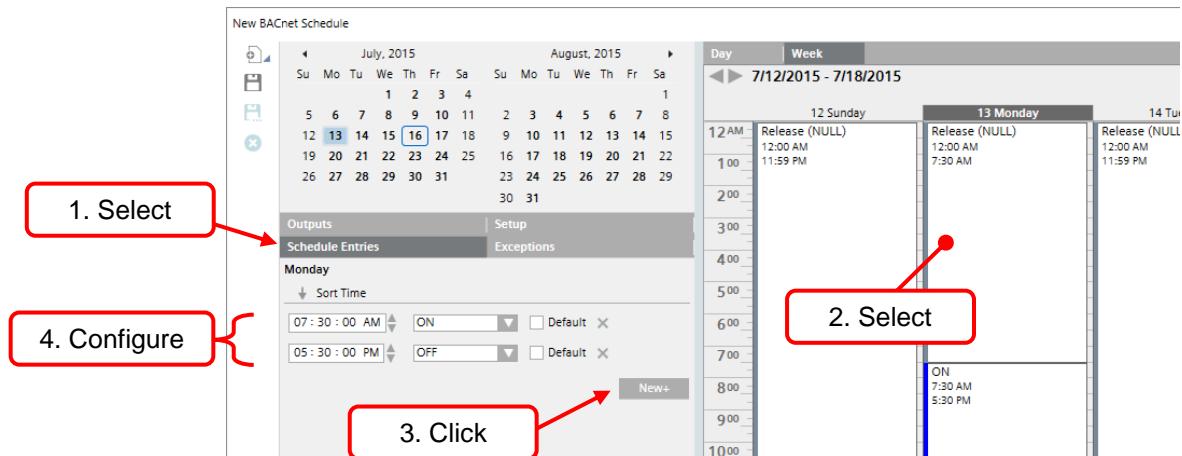


## Build the Schedule Entries

With the Outputs designated (in this case, fans), build the schedule to make the fans turn on and off at predetermined times.

To building the schedule entries:

1. Select the “Schedule Entries” tab.
2. Select a weekday in the schedule view.
3. Click the “New” button.
4. Configure the time entry and desired value or state of the Outputs.



In the image above, notice that the second entry has the “Default” option checked. This is because “OFF” is the default value. In the first entry, the “Default” box was unchecked in order to activate the drop-down menu and select “ON”.

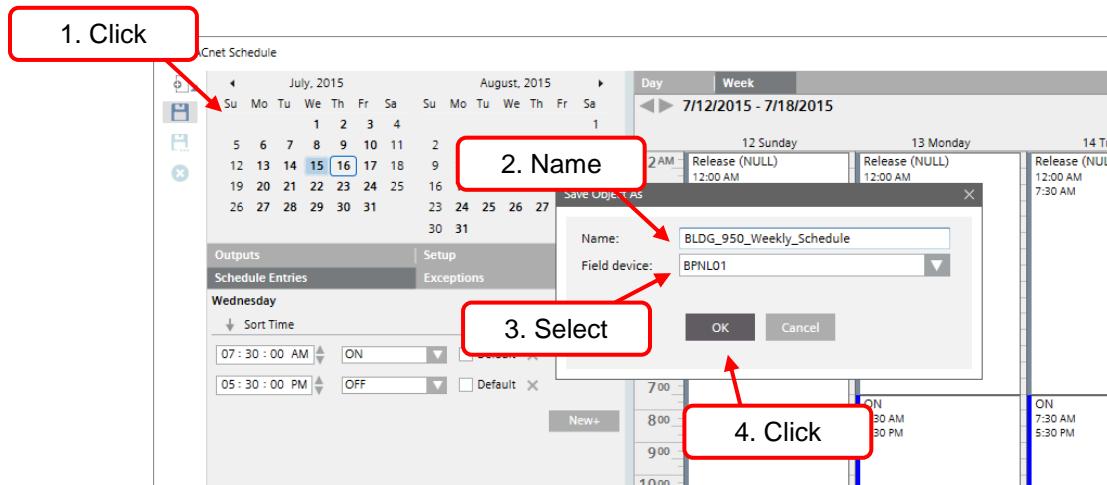
Remember that it is necessary to repeat this process for each scheduled day of the week.

## Save the Schedule

After configuring the schedule and the outputs, it is time to save the schedule. Because this is a BACnet schedule, it will reside in a BACnet field panel.

To save a BACnet schedule:

1. Click the “Save” icon on the button bar.  
The “Save Object As” box will appear.
2. Name the schedule.
3. Select the field panel from the drop-down list.
4. Click the “OK” button.



The new BACnet schedule has been successfully created, with time events commanding output points, and saved it to a BACnet field panel.



### Hands on Practice:

**NOTE:** Please be careful to not accidentally schedule a vital piece of equipment or command data points in ways that cause other devices to respond.

- Create a BACnet schedule. Name it such that you recognize it as your own.
- Consider scheduling the output so they change values within a few minutes. This will allow you to verify your work.
- By monitoring the values of the output points in the Secondary Pane, the schedule and the point values can be monitored at the same time.

---

## BACnet Schedule Exceptions

As mentioned previously, the schedule represents a normally recurring schedule of occupied/unoccupied periods. Exceptions override the regular schedule. For example:

- National holidays
- Accommodating periods of construction
- Multi-day breaks such as summer vacation

There are two aspects to a schedule exception: the date on which the exception applies and how the schedule is to be modified during that exception.

- The date is when to apply the exception. This can be a one-time occasion or a recurring series of events.
- The schedule modification defines how the equipment should behave when the exception is applied. Sometimes, the exception will keep a building unoccupied; for example, during national holidays. Other times, the exception will maintain occupancy; such as an auditorium in a high school for an evening musical performance.

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## Types of BACnet Schedule Exceptions

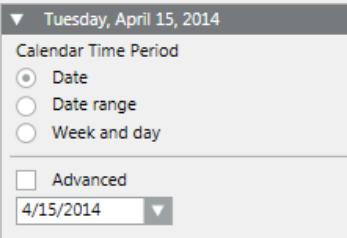
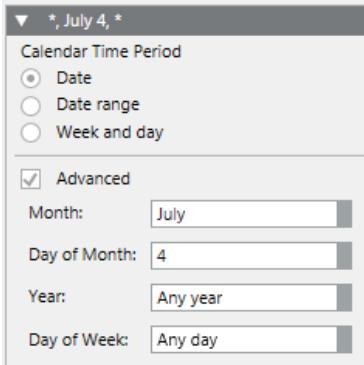
The individual exceptions can be specific dates for one-time exceptions or can contain variables for recurring exceptions. Design CC provides three methods for defining exceptions: Date, Date Range, and Week and Day.

Type	Usage	Examples
Date	Entering individual dates	National Holidays Corporate Holidays
Date Range	Spanning multiple dates	Summer Break Holiday Break Recurring date ranges
Week and Day	Events that have moving dates	Thanksgiving Memorial Day Labor Day

NOTE: In addition to these three, there is the “Calendar Exception” option. After we learn about building Calendars, we will discuss how to use one as an exception.

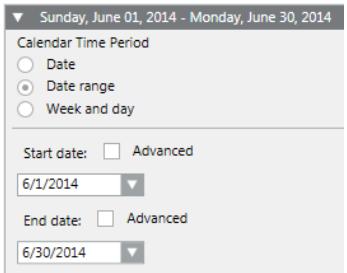
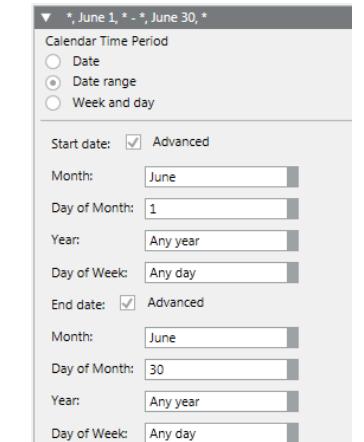
## Date

The date function is used for entering individual dates. For example, national holidays or corporate holidays.

	
Individual, one-time dates can be entered by selecting the date from the drop-down menu. This entry will be “true” only once. In this example, Tuesday, April 15, 2014 only.	Recurring events can be entered by checking the “Advanced” box and entering the information one piece at a time. In this example, July 4 of every year regardless of the day.

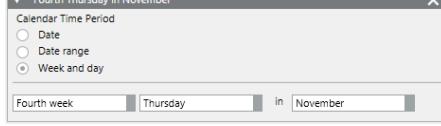
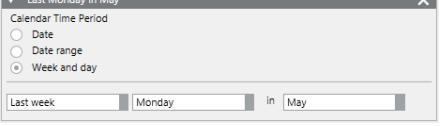
## Date Range

The date range function is used for entering spans of dates. For example, Spring Break or Holiday Break.

	
Individual, one-time date ranges can be entered by selecting the start date and end date from the drop-down menu. This entry will be “true” for only one range. In this example, June of 2014 only.	Recurring date ranges can be entered by checking the “Advanced” boxes and entering the information one piece at a time. The entire month of June every year.

## **Week and Day**

The week and day function is used to enter dates that change dates and week days but always occur during the same week of the month. For example, Thanksgiving and Memorial Day. There are no year options in the week and day calendar entry and they will repeat every year.

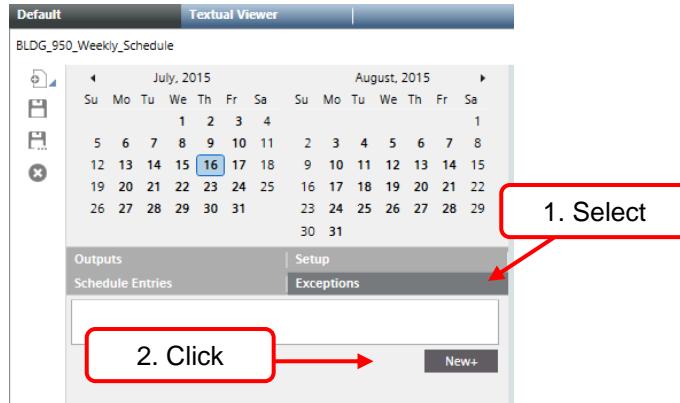
	
Thanksgiving occurs on the fourth Thursday in November and can be entered exactly as it sounds.	Depending on how the month lays out, May can have four Mondays or five. Memorial Day, however, is always the last Monday in May.

## Add Exceptions to a BACnet Schedule

### Create a New Exception

To add an exception to a schedule:

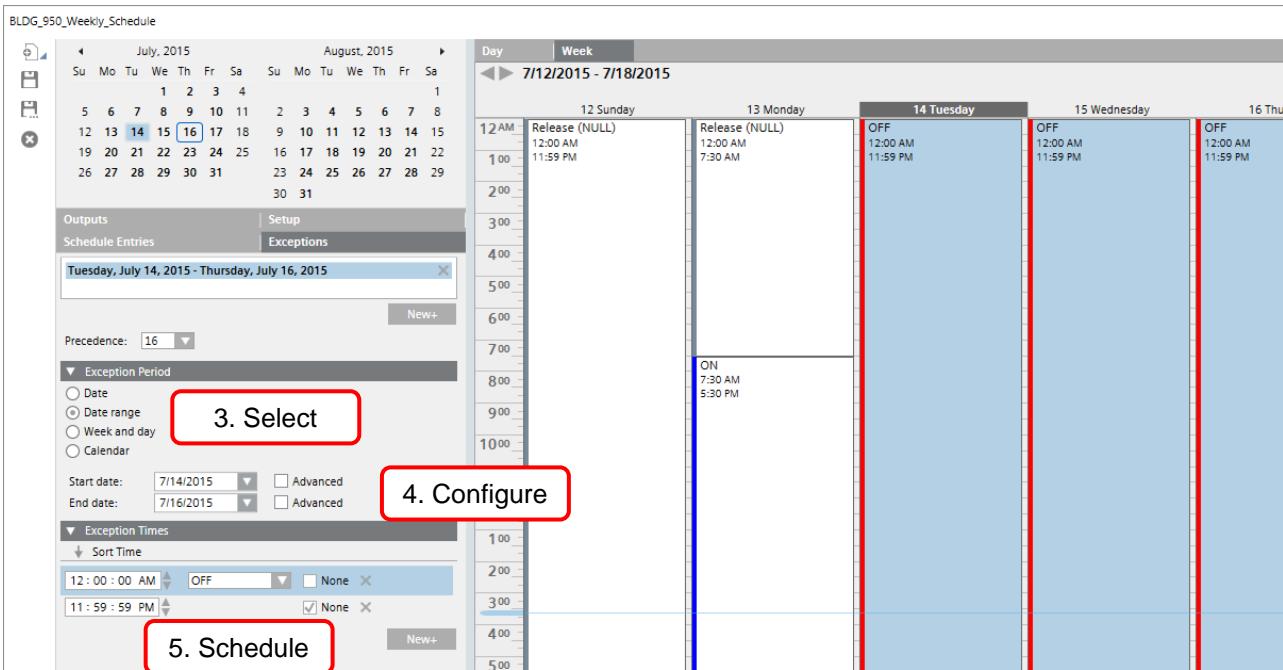
1. Select the Exceptions Tab.
2. Click the “New +” button.



3. Select the type of exception to create.
4. Configure the date, date range, or week and day for the exception.
5. Schedule how the system should behave during the exception period.

Notice that as steps 4 and 5 are completed the weekly view on the right will update. Exception days have a red bar on the left. The selected exception will be shaded blue. In the following example, the exception is a three-day date range. Notice that the three days are shaded on the right.

Don't forget to save your work regularly.



Notice that the exception periods end with the “None” box checked. This is not a minor technicality. By ending the exception with “None”, the schedule is being released to its default setting. If the exception ended with a command, that command would continue overriding the default schedule.

Here is an example:

- Fans scheduled to turn on at 7:30am.
- Maintenance is to be performed between 10:00 and 11:00am.
  - Exception commands fans OFF at 10:00am.
  - Exception commands fans back ON at 11:00am.
- The day continues.
- Fans are scheduled to turn off at 5:30. Do they?

In the above scenario, the fans would continue running for the rest of the day because the exception still has control of the fans. They were commanded ON at 11:00am and the exception overrides the regular schedule.

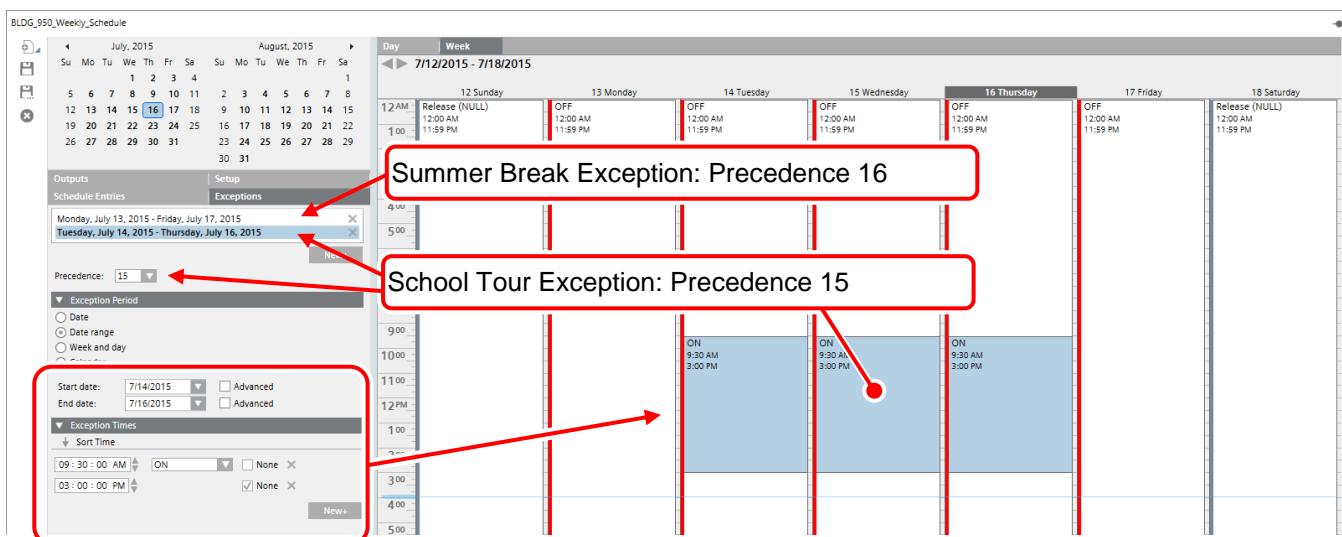
To return the schedule to default control, always end exceptions with “None”.

# Exception Precedence

Each exception has a setting named “Precedence”. If multiple exceptions occur on the same day, the Precedence setting tells Designo CC which exception is the most important. The precedence scale ranges from 1 to 16 with 1 being the highest precedent and 16 being the lowest.

For example, a high school might have a date range exception for the summer break. However, there might be school tours or orientation prior to the start of the school year. In this case, the “summer break” exception would schedule the school to unoccupied mode but the “school tour” exception would schedule the school into occupied mode for one or two days at a higher precedent.

This example is represented in the following image.



## Hands on Practice:

- Add some exceptions to your BACnet schedule.
- Do not add national holiday exceptions. We will address those in a little bit.
- Consider adding your birthday, wedding anniversary, and other personal dates of importance.
- Create two exceptions for today. Make sure they overlap. Use the Precedence setting for each exception to choose which one is implemented over the other.

## The BACnet Calendar

A Calendar is simply a list of dates. Each day, after midnight, the system evaluates the calendar to see if that date is listed. If it is, the calendar is said to be “True”. If the calendar contains a list of exceptions applied to schedule, then each day the system determines whether that day is an exception.

For example:

- At 00:00:01 on July 4, the system evaluates each calendar.
- July 4 is present in a calendar named “National Holidays”.
- “National Holidays” is referenced as an exception in “Weekly Schedule”.
- Therefore, July 4 will be an exception to the weekly schedule.

Two primary advantages to using calendars for exceptions are:

- The situation in which there are multiple schedules operating in the same field device. If all schedules reference the same calendar, updating one calendar updates all exceptions in all schedules.
- Creating specific calendars for specific reasons. This could be very useful for schools with various sports, arts, and other calendars.

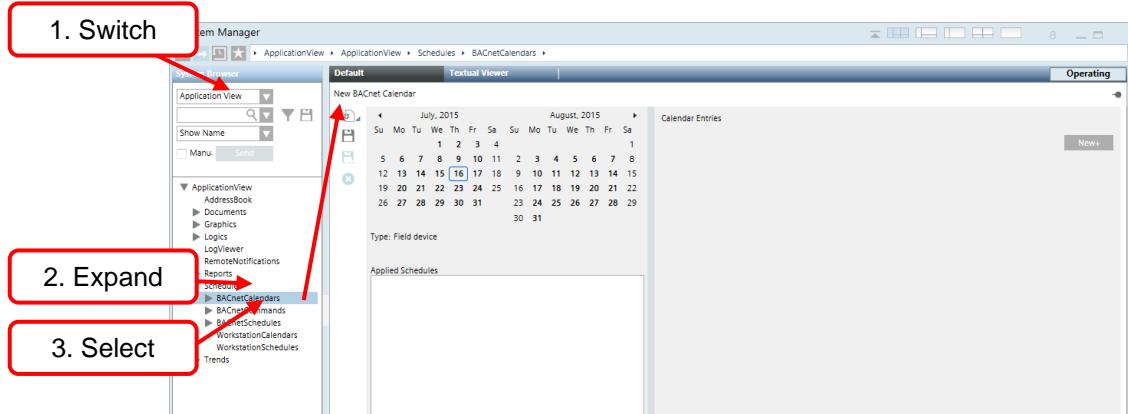
## Creating a BACnet Calendar

### Create the New Calendar

The first step is to open the Calendar application and create a new calendar.

To create a new calendar:

1. In the System Browser, switch to the Application View.
2. Expand the Schedules node. This will expose the various types of schedules and calendars.
3. When “BACnet Calendars” is selected in the System Browser, a new blank BACnet calendar is created.

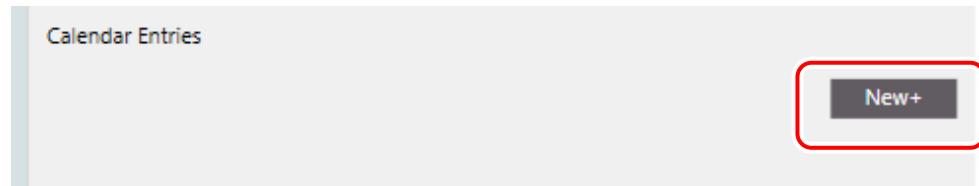


## Add Date Entries

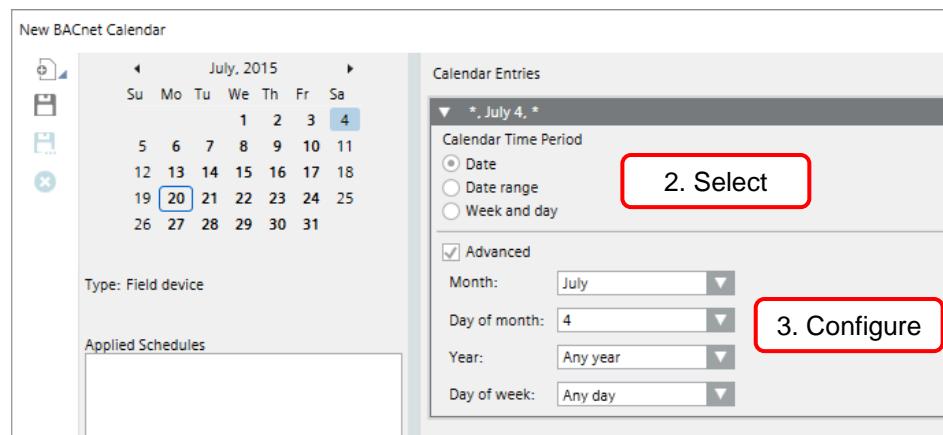
The calendar screen starts with a blank page. As entries are added, the page will start to fill with dates and date ranges.

To create date entries:

1. The first step to creating a date entry is to click the “New +” button.



2. Select the type of date entry to create.
3. Configure the entry as required.



**NOTE:** Configuring the dates in a calendar is exactly the same as configuring the Date, Date Range, and Week and Day exceptions in a Schedule.

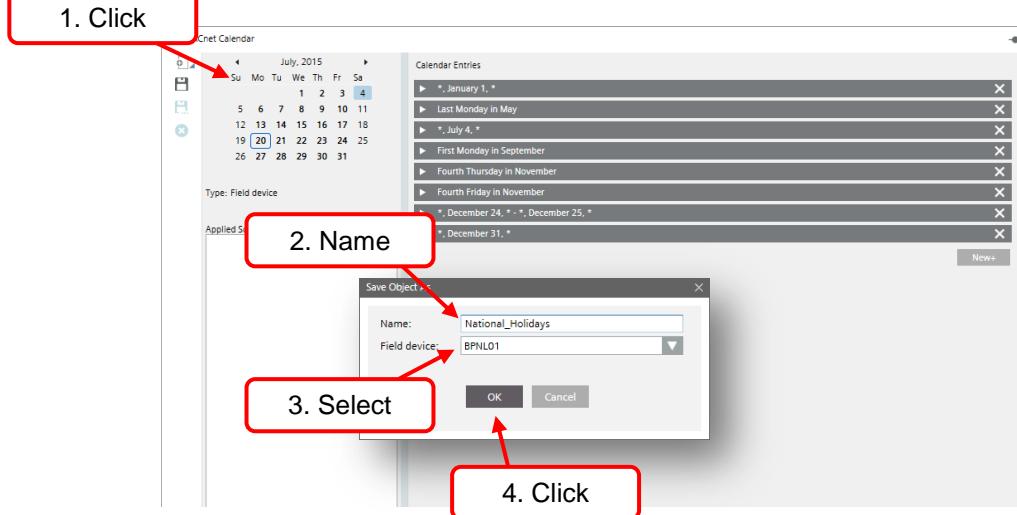
As the date entries are created, use the calendar provided to verify that they are occurring on the desired dates. This is most important when using variables such as “any day”.

## Save the Calendar

After adding and configuring all the date entries, save the calendar. Because this is a BACnet calendar, it will reside in a BACnet field panel.

To save a BACnet calendar:

1. Click the “Save” icon on the button bar.  
The “Save Object As” box will appear.
2. Name the schedule.
3. Select the field panel from the drop-down list.
4. Click the “OK” button.



The BACnet calendar has been successfully created, populated with date entries, and saved it to a BACnet field panel.



Hands on Practice:

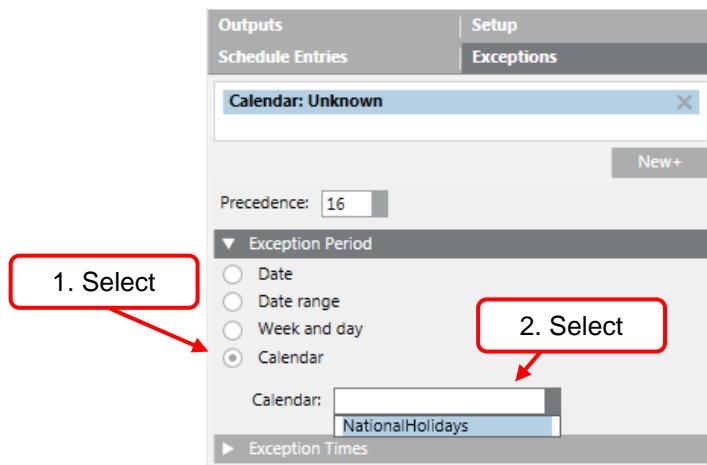
- Create a BACnet calendar. Be sure to name it different from other students.
- Add all the national holidays to the calendar.
- Your birthday should be a national holiday! Celebrate by using a date range entry to take the entire week off. ☺

---

## Using a BACnet Calendar as a BACnet Schedule Exception

To add a calendar as an exception to a schedule:

1. Select the “Calendar” option in the Exceptions tab.
2. Use the drop-down menu to select the appropriate calendar.



NOTE: Remember that BACnet schedules and calendars exist in the field device. The drop-down menu will list only those calendars residing in the same field device as the schedule.



Hands on Practice:

- Add your calendar to your schedule as an exception.

---

## Management Station Schedules

Management Station schedules (also called Workstation Schedules) reside in the Designo CC server. Because they reside in the server, management station schedules can send commands to multiple system or field devices at the same time. Additionally, workstation schedules can be used for changing the values of some system variables.

Management Station schedules are configured and function very similarly to BACnet schedules but with some important differences:

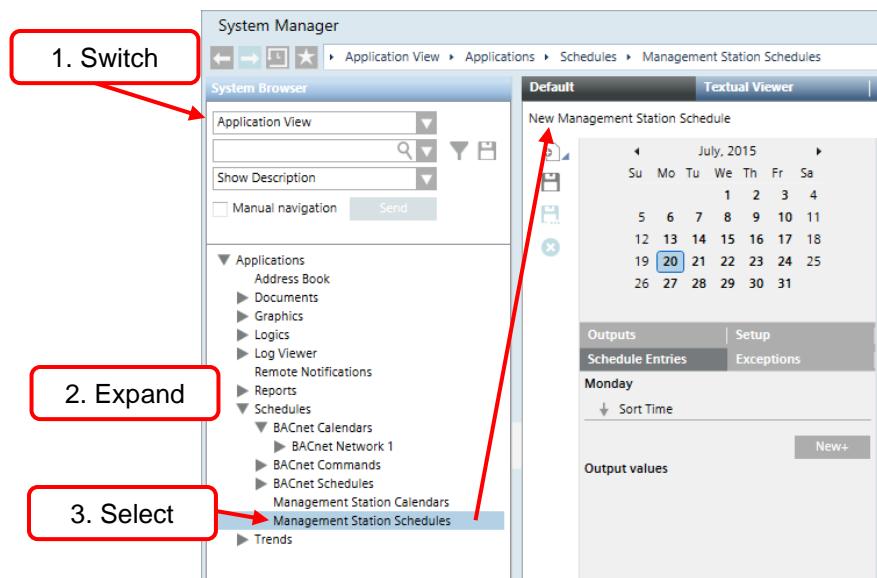
- Mixed point types  
Management Station Schedules can mix analog points with digital points.
- Binary outputs  
Management Station Schedules can only command outputs to two possible settings. For binary objects, should seem obvious. For analog objects, two specific values must be provided and only those two values will ever be used.

## Create the New Management Station Schedule

The first step is to open the Scheduler application and create a new schedule.

To create a new schedule:

1. In the System Browser, switch to the Application View.
2. Expand the Schedules node. This will expose the various types of schedules and calendars.
3. When “Management Station Schedules” is selected in the System Browser, a new blank schedule is created.

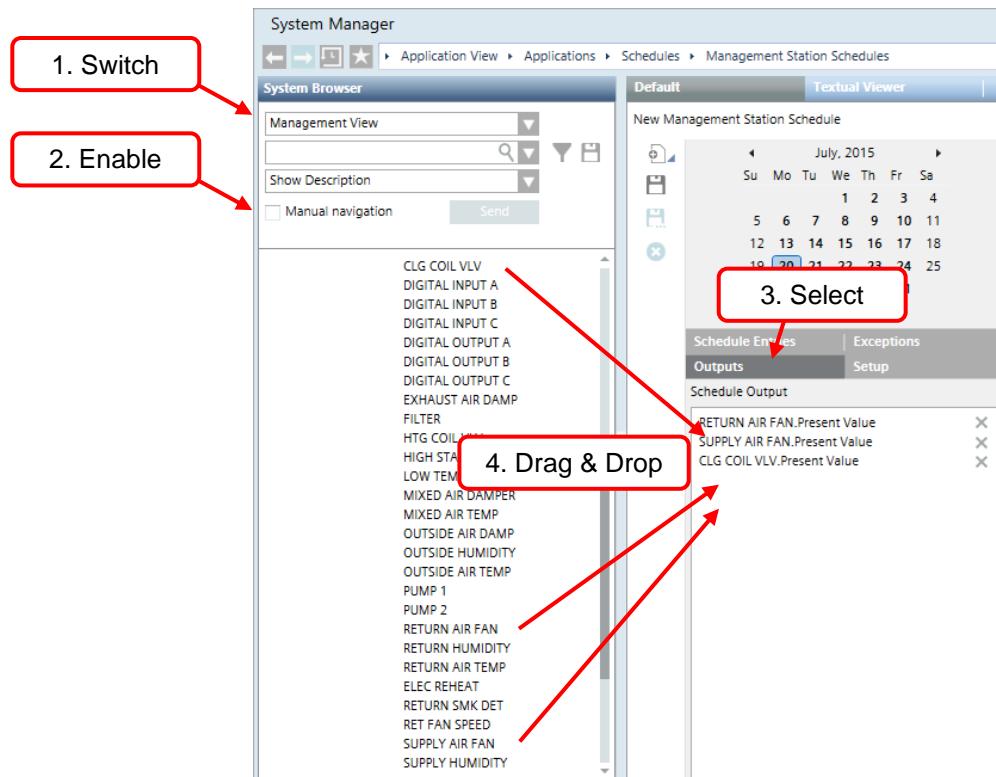


## Designate the Outputs

At the designated times, the schedule will send commands to the items listed in the “Outputs” field.

To populate the “Outputs” field:

1. Switch to the Management View, Logical View, or any custom view.
2. Enable Manual Navigation to avoid accidentally selecting an object in the System Browser.
3. Select the “Outputs” tab.
4. Drag one or more data points from the System Manager and drop them into the Outputs field.

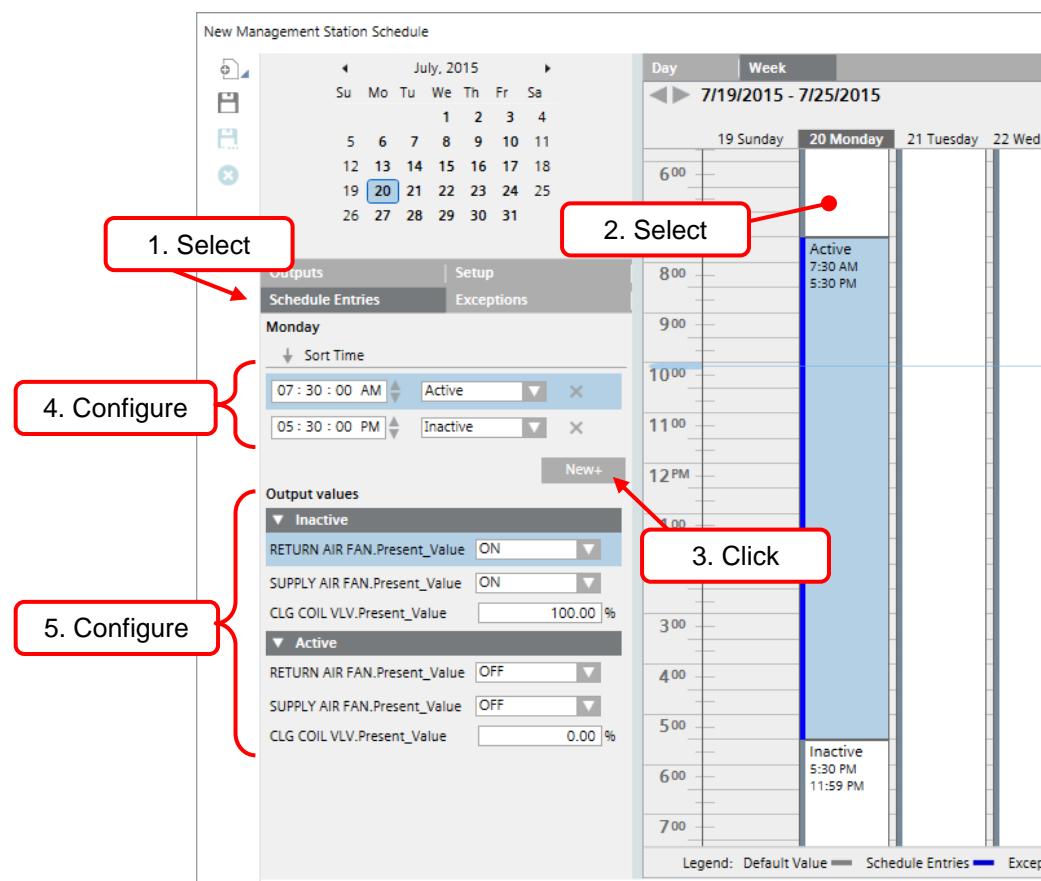


## Build the Schedule Entries

With the Outputs designated, it's time to build the schedule and define the values of the objects.

To building the schedule entries:

1. Select the "Schedule Entries" tab.
2. Select a weekday in the schedule view.
3. Click the "New" button.
4. Configure the time entry and desired state of the Outputs.
5. Configure the values of the output objects when the schedule is "Active" and when it is "Inactive".



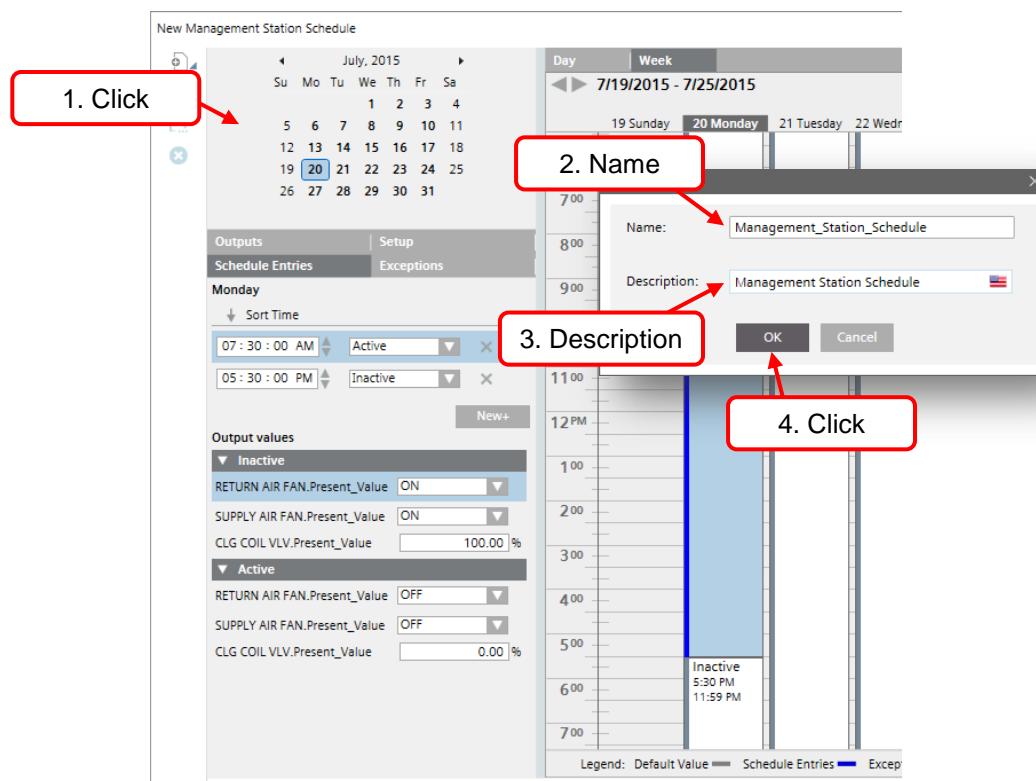
Remember that Management Station Schedules can only command the outputs to one of two states (Active or Inactive). Notice that the fans are being scheduled ON and OFF while the Cooling Coil Valve will toggle between 0% and 100% exclusively.

## Save the Schedule

After configuring the schedule and the outputs, save the schedule. Because this is a management station schedule, it will reside in the Desigo CC server database.

To save a management station schedule:

1. Click the “Save” icon on the button bar.  
The “Save Object As” box will appear.
2. Name the schedule.
3. Provide a description.
4. Click the “OK” button.



A new Management Station schedule is successfully created, with time events commanding output points, and has been saved to the Desigo CC server.



### **Hands on Practice:**

NOTE: Please be careful to not accidentally scheduling a vital piece of equipment or command data points in ways that cause other devices to respond.

- Create a Management Station schedule. Be sure to use a name different from other students.
- Consider scheduling the output so they change values within a few minutes of each other. This will allow more immediate verification of your work. For example, a schedule from 8:00 to 5:00 would take all day to verify. Consider a schedule with one-minute increments.
- By monitoring the values of the output points in the Secondary Pane, it is possible to monitor the schedule and the point values at the same time.

---

## **Management Station Schedule Exceptions**

Exceptions override the regular schedule. For example:

- National holidays
- Accommodating periods of construction
- Multi-day breaks such as summer vacation

The Management Station schedule provides only “Date” and “Calendar” exception options. Though both options are extremely flexible to meet almost every need, neither employ variables as do the BACnet schedules and calendars. This means, for example, management station exceptions do not repeat every year because the year value is hard-coded in the exception.

## Configuring the Management Station Exception

Management station schedule exceptions specify an individual date or a range of dates. Within that range, select the individual days of the week on which the exception applies. The following images provide examples of management station schedule exceptions.

The screenshot shows the 'Outputs' tab selected. Under 'Schedule Entries', there is a list box containing 'Friday, July 04, 2014 - Friday, July 04, 2014'. Below it, under 'Exceptions', is a configuration panel for an 'Exception Period'. It has a radio button for 'Date' selected. Under 'Start date:', the date is set to '7/4/2014'. Under 'End date:', the date is also set to '7/4/2014'. In the 'Days' section, the 'All Days' checkbox is checked, while 'Weekdays' and 'Weekends' are unchecked. Individual day checkboxes are checked for Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday, while Saturday is unchecked.

Single Date: July 4<sup>th</sup>

The screenshot shows the 'Outputs' tab selected. Under 'Schedule Entries', there is a list box containing 'Monday, June 30, 2014 - Friday, July 04, 2014'. Below it, under 'Exceptions', is a configuration panel for an 'Exception Period'. It has a radio button for 'Date' selected. Under 'Start date:', the date is set to '6/30/2014'. Under 'End date:', the date is set to '7/4/2014'. In the 'Days' section, the 'All Days' checkbox is checked, while 'Weekdays' and 'Weekends' are unchecked. Individual day checkboxes are checked for Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday, while Saturday is checked.

Date Range:  
Every day from 6/30/2014 – 7/4/2014

The screenshot shows the 'Outputs' tab selected. Under 'Schedule Entries', there is a list box containing 'Sunday, June 01, 2014 - Monday, June 30, 2014'. Below it, under 'Exceptions', is a configuration panel for an 'Exception Period'. It has a radio button for 'Date' selected. Under 'Start date:', the date is set to '6/1/2014'. Under 'End date:', the date is set to '6/30/2014'. In the 'Days' section, the 'All Days' checkbox is unchecked, while 'Weekdays' and 'Weekends' are checked. Individual day checkboxes are checked for Sunday, Monday, Wednesday, Thursday, and Friday, while Tuesday, Saturday, and Sunday are unchecked.

Date Range:  
Monday, Wednesday, Fridays in June

The screenshot shows the 'Outputs' tab selected. Under 'Schedule Entries', there is a list box containing 'Tuesday, July 01, 2014 - Thursday, July 31, 2014'. Below it, under 'Exceptions', is a configuration panel for an 'Exception Period'. It has a radio button for 'Date' selected. Under 'Start date:', the date is set to '7/1/2014'. Under 'End date:', the date is set to '7/31/2014'. In the 'Days' section, the 'All Days' checkbox is unchecked, while 'Weekdays' and 'Weekends' are checked. Individual day checkboxes are checked for Saturday and Sunday, while Monday through Friday are unchecked.

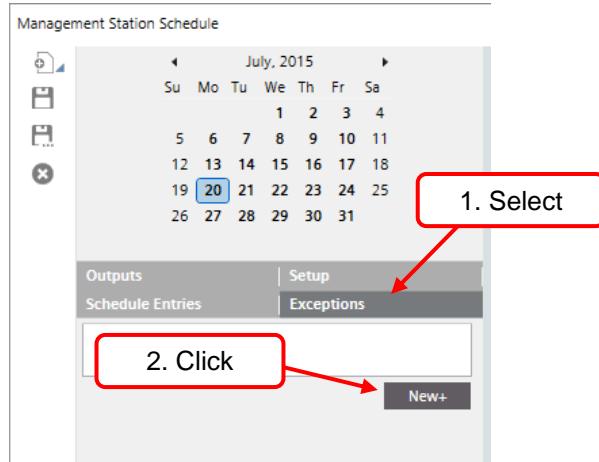
Date Range:  
July Weekends

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## Add an Exception to a Management Station Schedule

To add an exception to a schedule:

1. Select the Exceptions Tab.
2. Click the “New +” button.



3. Select the type of exception to create. Management Station Schedules provide only the Date and Calendar options.
4. Configure the date or date range for the exception.
5. Schedule the active and inactive times during the exception period.
6. Define how the output objects should behave when the exception is active.

The screenshot shows the System Manager application's 'Management Station Schedule' screen. On the left, there's a calendar for July and August 2015. The main area has a 'Day' and 'Week' tab; the 'Week' tab is selected, showing the period from July 19, 2015, to July 25, 2015. Below this is a timeline from 5:00 AM to 2:00 PM. Three blue vertical bars represent scheduled events. The first event (July 20) is labeled 'Active 7:30 AM 5:30 PM'. The second event (July 21) is labeled 'Active 7:15 AM 12:00 PM'. The third event (July 22) is also labeled 'Active 7:15 AM 12:00 PM'. A legend at the bottom indicates that blue bars represent 'Schedule Entries' and red bars represent 'Exceptions'. On the right, there's a 'Default' tab, a 'Timeline' tab, and a 'Textual Viewer' tab. The 'Timeline' tab is currently active. The 'Outputs' and 'Schedule Entries' tabs are visible in the top navigation bar. The 'Exceptions' tab is highlighted in the schedule editor. A red box encloses the 'Exceptions' section of the schedule editor. Four red callout boxes are overlaid on the interface, numbered 3 through 6, pointing to specific steps in the process:

- 3. Select**: Points to the 'Date' or 'Calendar' selection area.
- 4. Configure**: Points to the 'Exception Times' configuration area.
- 5. Schedule**: Points to the timeline view where the exception is applied.
- 6. Define**: Points to the 'Output values' definition area.

Notice that the Exception only has Output Values for "Active". This is because the exception is only ever active. When the exception's time period expires, it does not become inactive; it simply ceases to be. Control is automatically returned to the regular schedule.



#### Hands on Practice:

- Add some exceptions to your Management Station schedule.
- Do not add national holiday exceptions. We will address those in a little bit.
- Consider adding your birthday, wedding anniversary, and other personal dates of importance.

## The Management Station Calendar

A Calendar is simply a list of dates. Each day, after midnight, the system evaluates the calendar to see if that date is listed. If it is, the calendar is said to be "True". If the calendar contains a list of exceptions applied to a schedule, then each day, the system determines whether that day is an exception.

Two primary advantages to using calendars for exceptions are:

- The situation in which there are multiple schedules. If all schedules reference the same calendar, updating one calendar updates all exceptions in all schedules.
- Creating specific calendars for specific reasons. This could be very useful for schools with various sports, arts, and other calendars.

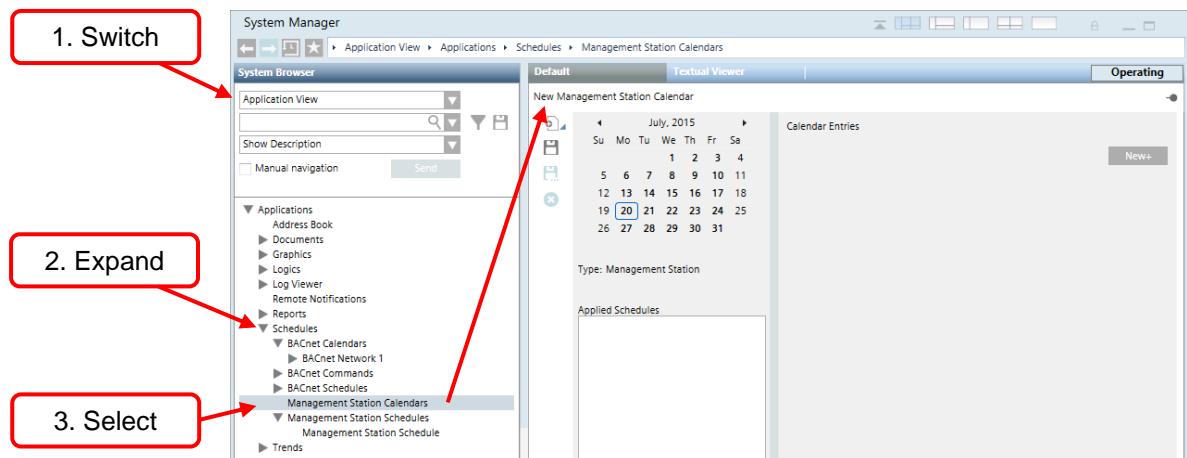
## Creating a Management Station Calendar

### Create the New Calendar

The first step is to open the Calendar application and create a new calendar.

To create a new calendar:

4. In the System Browser, switch to the Application View.
5. Expand the Schedules node. This will expose the various types of schedules and calendars.
6. Select "Management Station Calendars". A new blank Management Station calendar is created.

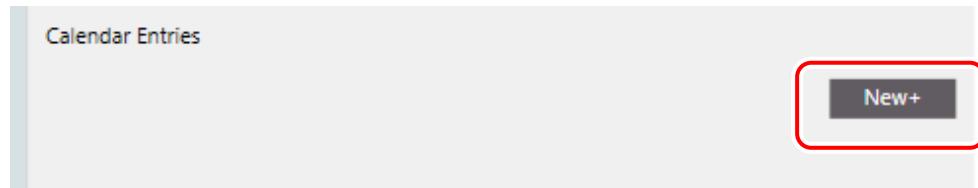


## Add Date Entries

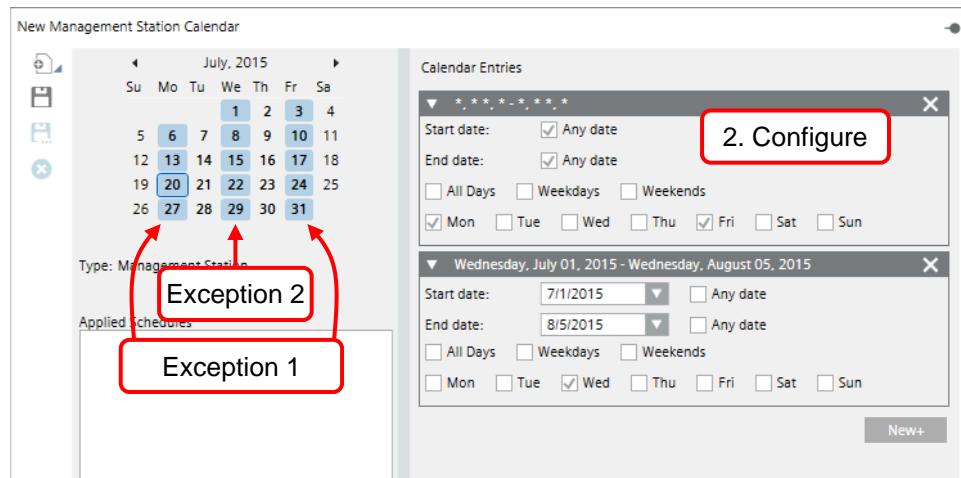
The calendar screen starts with a blank page. As entries are added, the page will start to fill with dates and date ranges.

To create date entries:

1. The first step to creating a date entry is to click the “New +” button.



2. Configure the entry as required.



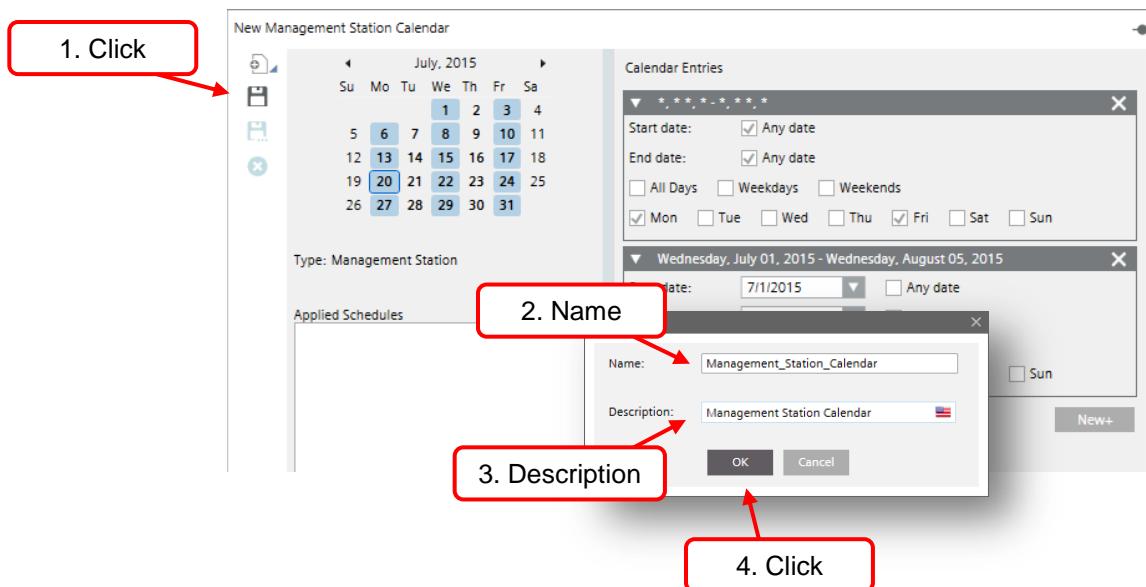
**NOTE:** Use the calendar provided to verify that calendar entries are occurring on the desired dates. As more exceptions are added, the calendar becomes more populated.

## Save the Calendar

After adding and configuring all the date entries, save the calendar. Because this is a management station calendar, it will reside in a Desigo CC server.

To save a management station calendar:

1. Click the “Save” icon on the button bar.  
The “Save Object As” box will appear.
2. Name the schedule.
3. Provide a description.
4. Click the “OK” button.



The management station calendar is successfully created, populated it with date entries, and saved to the Desigo CC server database.



### Hands on Practice:

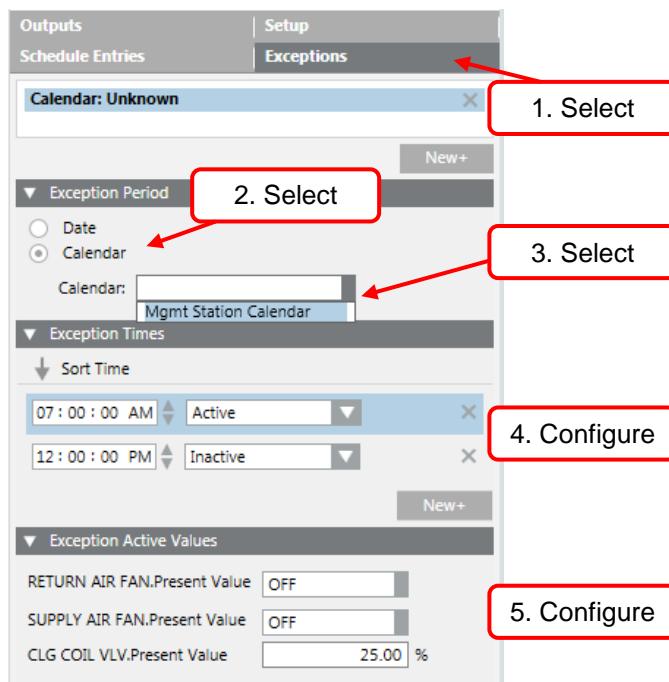
- Create a Management Station calendar. Be sure to name it different from other students.
- Add all the national holidays to the calendar.
- Don't forget to schedule the week of your birthday off!

---

## Using a Management Station Calendar as a Management Station Schedule Exception

To add a calendar as an exception to a schedule:

1. Select the Exceptions tab.
2. Select the “Calendar” option.
3. Use the drop-down menu to select the appropriate calendar.
4. Configure the times and activity status for the exception.
5. Configure the values of the output objects during the active state of the exception.



**NOTE:** The times and values will be the same for every instance this calendar exception is active. Every time this calendar exception is applied to the schedule, the same objects will be commanded to the same values at the same time. It is not possible to apply different times or values within the same calendar exception.



### Hands on Practice:

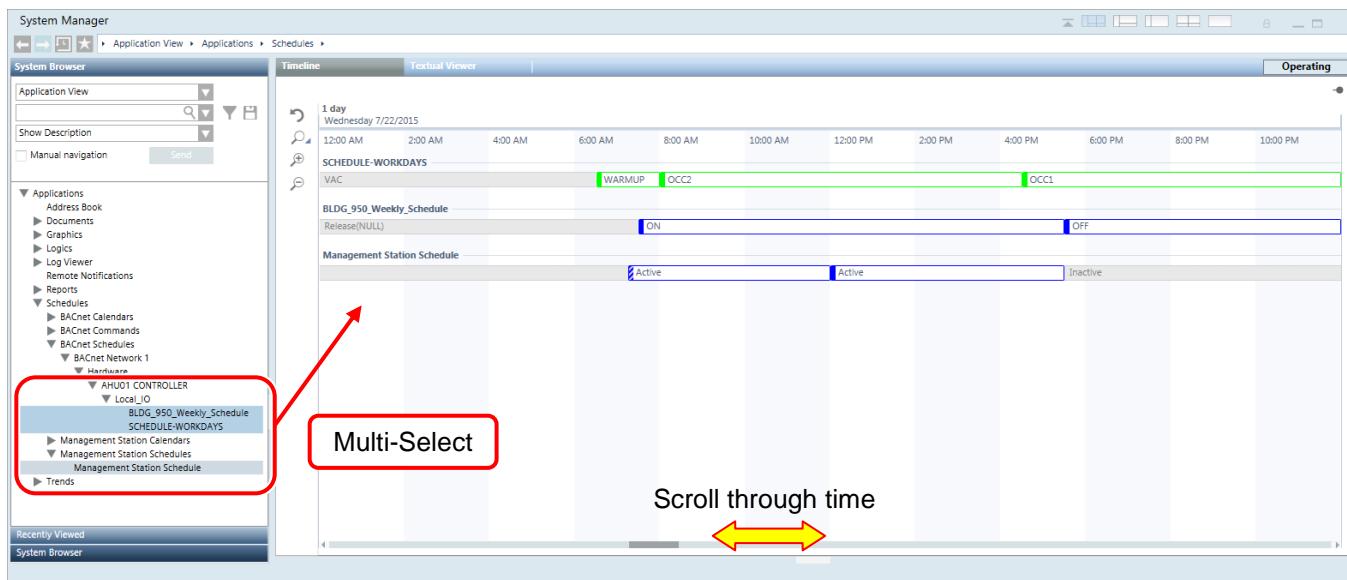
- Add your calendar to your schedule as an exception.

## Timeline View

Occasionally, it is necessary to view multiple schedules at the same time to see how they overlap: working in concert to manage the facility or inadvertently commanding equipment to conflicting schedules.

Timeline View can be used to display as many schedules as desired in a horizontal timeline. Timeline view can mix BACnet schedules and Management Station schedules on the same view. Any time multiple schedules are selected in the System Browser, the Timeline View is the default display.

In the below image, there are two BACnet schedules and one Management Station schedule displayed in Timeline view.



# Wrap-Up

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## Session Review

A lot of material has been covered in this training session. Work as a class to answer as many of these review questions as possible.

### General User Interface

1. What are the blinking lights on the top of the screen called?
2. What is the name of the icons on the left of the screen? (Not on all displays)
3. How are events sorted in Desigo CC?
4. Name all five possible panes comprising the Desigo CC user interface.
5. What methods can be used to open the secondary pane?

### Trending

1. What are the two types of trend objects?
2. What are the two different interval types for trend objects?
3. How is navigating to BACnet trend objects different than navigating to online trend objects?
4. What is the difference between a trend object and a trend view definition?

### Graphics

1. What are the two ways to open a graphic?
2. How do you access the “Status and Commands” window on a graphic?

### Reports

1. What is the difference between running a report and executing a report?
2. How can you output a report to PDF? To Excel?
3. How do you add graphics and trends to reports?

### Alarm Treatment

1. What do the numbers in the Event Lamps mean?
2. How can you quickly navigate to the point in alarm using the Event Details Bar?
3. What are the differences between Fast Treatment, Investigative Treatment, and Assisted Treatment?

### Scheduling

1. Where do BACnet schedules reside? Management Station schedules?
2. What are calendars used for?
3. What is the purpose of the exception precedence setting?
4. Name some of the differences between BACnet schedules and Management Station schedules.
5. What type of exception is in a BACnet schedule that does not exist in Management Station schedule?

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## Wrap-Up Exercise

The intentions of this wrap-up exercise is to take all the lessons discussed and apply them in a series of actions designed to mimic regular Desigo CC interactions. All of the steps to complete this exercise are documented in this training guide. However, strive to see if you can perform the steps on your own before looking them up.

1. Log into Desigo CC.
2. Review the Event Lamps. Make note of the following information:

Alarm Category	Total Number of Alarms	Number of Unacknowledged Alarms
Life Safety	_____	_____
High	_____	_____
Medium	_____	_____
Low	_____	_____
Fault	_____	_____
Status	_____	_____

3. Expand the Event List. If there are any alarms that can be acknowledged and/or close, do so now.
4. Close the Event List.
5. Switch the System Browser to the Management View.
6. Navigate to and select a datapoint in a field network. What appeared in the Primary Pane?

\_\_\_\_\_

7. Is that object referenced in any Trends or Graphics? \_\_\_\_\_
  - a. If so, open the trend or graphic in the Secondary Pane.
  - b. Close the Secondary Pane.
8. Switch the System Browser to the Applications View.

9. Navigate to and select one of the standard reports.
    - a. Run the report.
    - b. Convert it to PDF.
    - c. Save it to your desktop.
    - d. Open the PDF from the desktop.
  10. Navigate to and select an offline trend object.
    - a. Manually collect the trend data from the field panel.
    - b. Change the displayed time period to the last full day of trend data.
  11. Navigate to and open a graphic.
  12. How can you command a point while viewing a graphic?
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13. Command a point on the graphic.
14. Release the point you just commanded.
15. Navigate to the BACnet calendars.
  - a. Create a new calendar named “Parents Days”.
  - b. Create an entry: Second Sunday in May
  - c. Create another entry: Third Sunday in June
16. Apply your “Parents Day” calendar to a schedule as an exception.

# Additional Learning Opportunities

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## Desigo CC Training Path

Education Services is proud to offer our Desigo CC Training Path. From new employee to advanced user, every Desigo CC user will find a wealth of information.

### **ST 6153 APOGEE Field Panel and FLN Operations (4 days)**

Learn to monitor and control building systems locally from field panels and FLN devices using DataMate Advanced. Insight workstations are used to monitor and command FLN devices.

- **Participants:** System users who need skills to control and monitor building control systems from field panels and terminal equipment controllers.
- **Course Length:** Four days ending by noon on the fourth day.
- **Prerequisite:** Insight Workstation I (ST6203) or Accelerated APOGEE Master Operator program (ST 6909) or APOGEE with BACnet for Experienced Insight Users (ST 7104).
- **Note:** This course includes Insight FLN operations and additional FLN Device applications. The training uses both Insight and DataMate Advanced software.
- **CEUs:** 2.7 CEUs

### **ST 9203 Desigo CC Workstation Operations (3 Days)**

Learn to monitor and control your building automation system using your Desigo CC workstation.

- **Participants:** Building operators, maintenance personnel or others who need skills for day-to-day facility operations with a Desigo CC workstation.
- **Course Length:** Three days ending by 4:30 pm on the last day.
- **Prerequisite:** It is strongly recommended that participants have some PC experience in order to receive maximum benefit from the training.
- **CEUs:** 2.3 CEUs

### **ST-9253 Desigo CC Advanced Operations (3 Days)**

Learn to use the advanced features of the Desigo CC workstation.

- **Participants:** Advanced users, managers and system administrators who need to create and modify points, graphics and user accounts.
- **Course Length:** Three days ending by 4:30 pm on the last day.
- **Prerequisite:** Desigo CC Workstation Operations (ST 9203)
- **CEUs:** 2.3 CEUs

For additional information about these or other training classes, please talk with your local Siemens representative or email [educationservices@siemens.com](mailto:educationservices@siemens.com)



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