American Dynamics

Building Management System integration software for victor 6.0 User Manual

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A16381J8MF A

July 2023

Johnson Controls

Contents

Introduction 5
Architecture 5
Features 6
Installation 6
Hardware requirements 6
Software requirements 7
Operating Systems 7
Installing the BMS integration 7
Operation 7
Roles 7
Associations 7
Reports 8
Events 8
Maps 8
Administration functions 8
Accessing detailed hardware information 8
Auto Discovery of a BACnet device 8
Creating new BACnet devices manually 8
Viewing BACnet devices 9
Importing BACnet objects manually 9
Importing BACnet objects by Engineering Data Exchange (EDE) file 9
Editing BACnet devices or BACnet objects or BACnet Schedule objects 13
Data Update Mechanism definitions 14
Deleting BACnet devices 15
Viewing BACnet objects 15
Deleting BACnet objects 15
New BACnet actions 15
Viewing BACnet actions 15
Editing a BACnet action 15
Handling Event Notification and Alarm Acknowledge 16
Widgets on a Map 16
Widget states 17
Adding a Widget to a Map 17
Description of Widgets 18
Editing a Widget on a Map 27
Deleting BACnet Objects on a Map 27
BACnet Gateway 27
BACnet Gateway Template 28
Adding a new BACnet Gateway Template 28
Creating a Gateway device 28

Editing a Gateway device..... 28
Monitored mapping..... 28
Editing a BACnet Gateway object.....29
Managing a BACnet Gateway template..... 29
BBMD..... 29
Supported and Tested BBMD Network.....29
A new BACnet BBMD..... 30
Adding a new BACnet BBMD.....30
Editing a BACnet BBMD..... 30
Deleting the BACnet BBMD..... 30
BBMD network configuration..... 31
Configuring a BBMD network..... 31

Introduction

Architecture

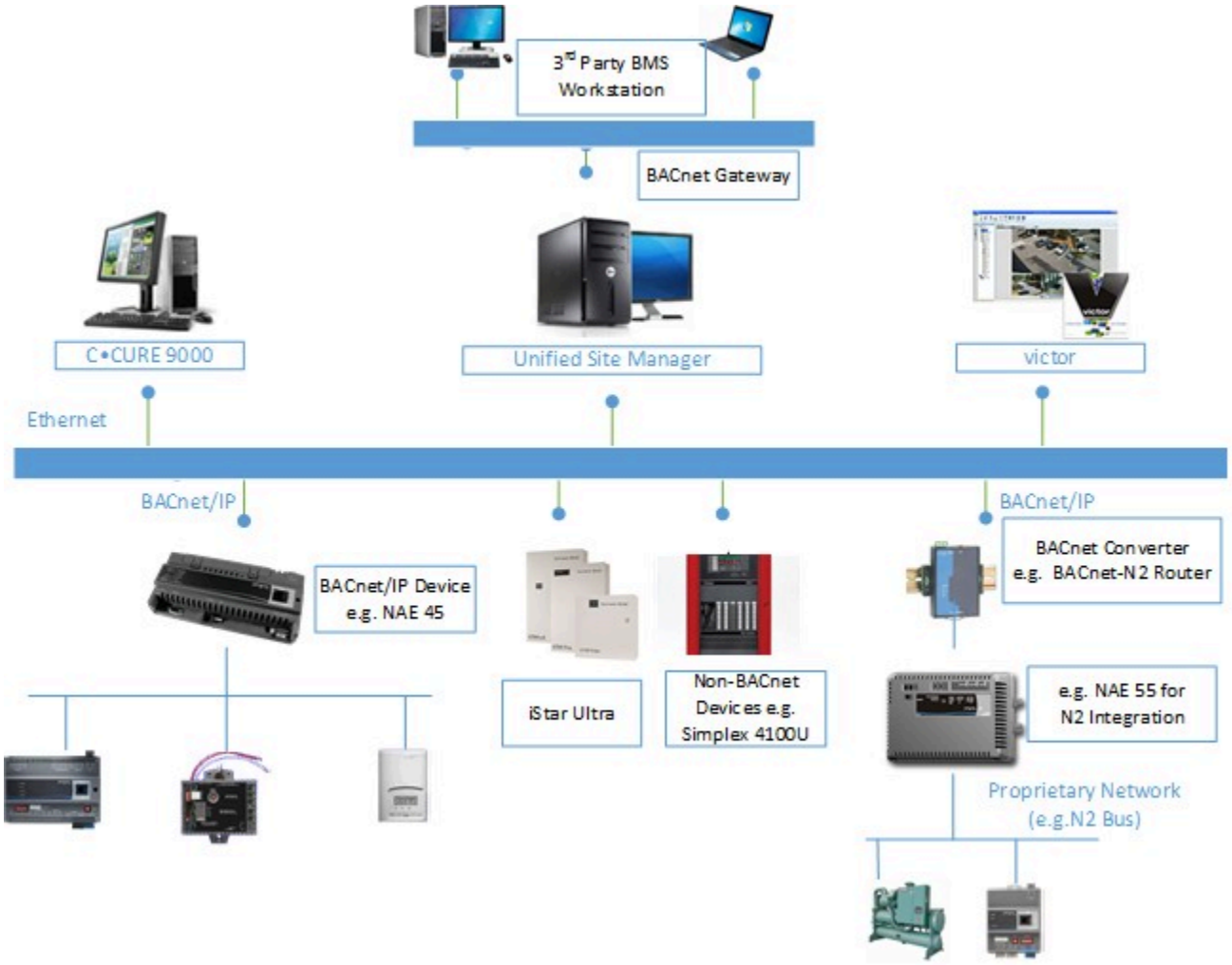
The objective of this integration is to provide the generic integration between the victor Application Server and building management devices based on BACnet protocol. If the device is based on another protocol, for example the N2, a protocol converter to BACnet such as the BACnet – N2 router is needed.

The BACnet Integration includes Device Management, Alarm and EventManagement, Trending, Scheduling and ActionManagement feature, which works as Supervisory Controller and controls BACnet Devices directly.

The BMS Integration also provides a gateway function to map victor Objects to BACnet Objects. It provides the default and customizable BACnet Gateway Templates.

In this phase, the BMS Integration partially combines configuration functions and device control. Additionally, this integration provides a gateway mechanism for wrapping objects in victor to BACnet Objects, so the third party system can monitor victor object changes through BACnet protocol if necessary.

Figure 1: System architecture



Features

The BMS Integration software offers the following features:

- Installation on victor remote clients
- Supports Import EDE File
- BACnet Device Automatic Discovery and manual import of BACnet Objects
- Alert configuration and Object Association for BACnet Devices and BACnet Objects
- User Role (default and user defined) for BACnet Device, BACnet Object and BACnet Action
- BACnet Device and BACnet Object status
- Multi-condition Triggers by setting Additional Status on BACnet Object Editor
- Supports BACnet/IP(Annex J) protocol:
  - Supports subscription to the change of value (COV) event notification for many properties:
  - Supports the following Objects, with most properties of the standard object types supported: Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Multi-state Input, Multi-state Output, Multi-state Value, Schedule and Device.
  - Supported Services: Who-Is, I-Am, ReadProperty, Read Property Multiple, Write Property, Write Property Multiple, Subscribe COV, Subscribe COV Property, Confirmed COV Notification, Unconfirmed COV Notification.
- Localization of GUI and Journal
- All building activities are logged in the Journal for future investigative reporting
- Acknowledge Event Notification in Alarm
- BACnet Gateway function - map victor objects to BACnet Objects
- Default and customizable BACnet Gateway Templates
- BACnet Broadcast Management Device (BBMD): Manager BBMD - BACnet IP Communication across different networks
- Supports BBMD: BACnet IP Communication across different networks
- Supports BACnet Schedule: Read and modify BACnet schedules defined in BMS
- Supports MAP Widget: Added an option to hide object name for text widget, label widget and meter widget

Features of the victor User Interface:

- BACnet Device objects displayed under Device List and Sites list
- BACnet Device and BACnet Object Reports
- Find in Journal and Find on Map for BACnet Devices and BACnet Objects. Features for victor Maps:
  - BACnet Objects animated by widgets on Maps
  - BACnet Devices and BACnet Objects available on Maps
  - BACnet Device and BACnet Object annunciation on Maps

Installation

Hardware requirements

The BMS Integration has the same hardware requirements as victor Client and victor Application Server. Therefore, if the machine can successfully run victor then it will satisfy BMS Integration requirements. BMS Integration requires approximately 50MB of available hard disk space.

Software requirements

- victor Application Server: v5.7
- victor Client: v5.7

Note: If the correct version of victor is not installed on your system, a message is displayed stating that a supported version of victor is needed.

Operating Systems

64-bit operating systems:

- Windows Server 2019
- Windows Server 2016 R2
- Windows 10 Professional
- Windows 10 Enterprise

Installing the BMS integration

Before you begin:
To install the BMS integration, complete the following steps:

Note: The installation process stops all Site Manager Services. These services must be restarted on victor Site Manager machines when the install is complete.

1. Download the BMS Integration Installation Program from the American Dynamics website.
2. Right-click Setup.exe, and then click Run as administrator.
3. The Install Wizard and the BMS Integration Welcome window appears. Click **Next**.
4. Select **I accept the terms of the license agreement**, and then click **Next**.
5. In the **Custom Setup** dialog box, click **Next**.
   If this is a server installation, you can change the authentication method in the **Database Server Credentials dialog box:**
   - Windows authentication credentials of current user – the default.
   - Server authentication using the Login ID and Password – if you previously configured an SQL server, you can create a Login ID and Password to act as authentication credentials for the SQL database.
6. To continue the installation, click **Next**.
7. In the **Ready to Install the Program** dialog box, click **Finish**.
8. Restart **Site Manager Services** after the installation is complete.

Operation

Roles

BACnet Device and BACnet Object privileges and context menu verbs are associated with victor Roles. For more information about Roles, refer to the *victor Administration Guide*.

Associations

BACnet Devices and BACnet Objects support victor's Object Association. This refers to the link between unrelated victor Objects with the intent of enabling incident building capability. For more information about Associations, refer to the *victor Administration Guide*.

Reports

BACnet Devices and BACnet Objects are included in the report selection tool and support the victor Find in Journal feature. The BMS Integration also supports BACnet Device State Change, BACnet Object State Change, and BACnet Object Value Change Activity Type in the report selection tool. For more information about Reports and the Find in Journal feature, refer to the *victor Administration Guide*.

Events

BACnet Devices and BACnet Objects support victor Events, in detecting, monitoring, and recording specific activities on the system. For further information about Events, refer to the *victor Administration Guide*.

Maps

BACnet Devices and BACnet Objects support victor Maps, Find on Map, and animated widgets feature. For more information about Maps and the Find on Map feature, refer to the *victor Administration Guide*.

Administration functions

BACnet Device and BACnet Object Editor allows configuration of communication details and associations. Configured

BACnet Devices are displayed as hardware objects in the victor Device List.

Accessing detailed hardware information

1. In the Navigation bar, click the **Show All** icon.
2. Select one of the following options:
   - • Click **BACnet Devices**.
   - • Click **BACnet Objects**.
3. Right-click the BACnet device or object, and then click **Edit**. Detailed hardware information appears.

Auto Discovery of a BACnet device

About this task:
The BMS Integration discovers BACnet Devices and its objects automatically by broadcasting WHO-IS and receiving I-AM messages through the BACnet protocol. You can choose and save the device and objects to be imported.

1. In the Navigation bar, click the **Configuration** icon, then click Auto Discovery.
2. From the left side of the Auto Discovery BACnet Devices window, select the devices to import. The selected devices will appear as a list on the right-hand side of the screen.
3. Click **Scan Selected Device**.
4. By default, all BACnet Objects will be selected. Clear any devices you do not want to import.
5. Click **Save and Close**.

Creating new BACnet devices manually

About this task:

In the case the BACnet Device is offline and cannot be discovered automatically, you can manually add the BACnet Devices.

1. In the Navigation bar, click the **New** icon.
2. Click **BACnet Devices**.
3. To deactivate the BACnet Device, clear the **Enabled** check box.
4. In the Name field, enter a name for the BACnet Device.
5. In the Description field, enter a description for the Map.
6. Enter the Device ID, IP Address, and UDP Port of the created BACnet Device.

   ⓘ **Note:** Device ID, IP Address, MAC Address are compulsory fields. The default value for Port is 47808 and default value for Network ID is 0. Update the port and network ID to the same as the device, before saving the device, or the device does not switch to online.
7. From the Associations section, click the **Add** icon.
8. To filter results, select an Association type from the left column filter. Results display in the right column
9. Select the required association from the right column, and then click **OK**.
10. If more associations are required, repeat steps 6 to 8.
11. Click **Save and Close**.

Viewing BACnet devices

About this task:
A BACnet Device can be viewed after it is imported into victor Application Server. All properties will be read-only and cannot be edited.

1. In the Navigation bar, click the **Show All** icon.
2. Click **BACnet Device**.
   All configured BACnet Devices are displayed in an Object List.

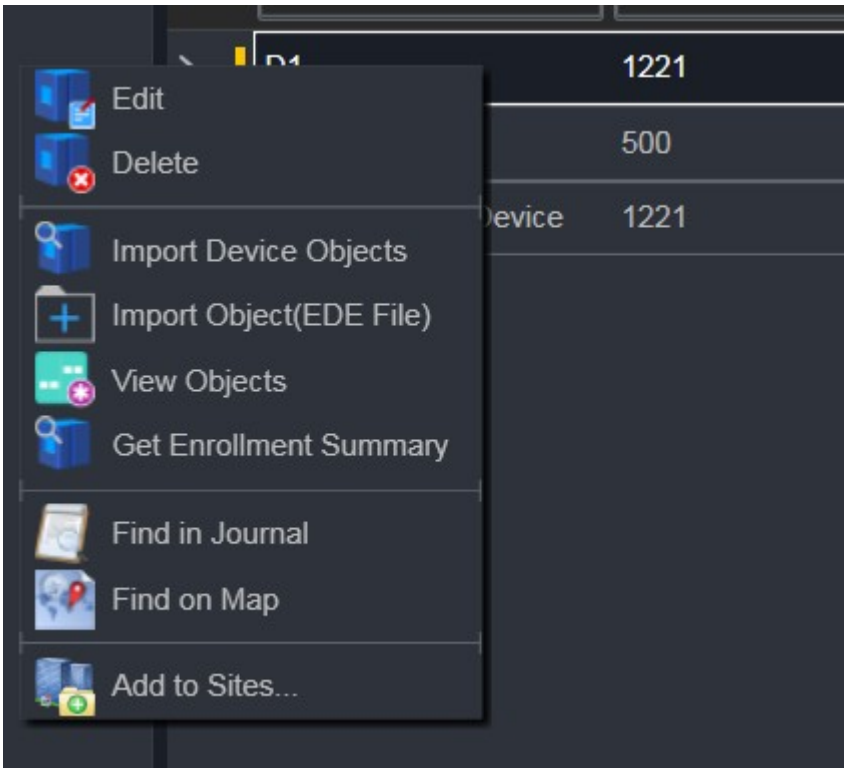
Importing BACnet objects manually

1. From the **Devices list** or the **BACnet Device Object List**, right-click the BACnet Device.
2. Click **Import Device Object**.
   The Auto Discovery BACnet Devices window opens and starts to retrieve BACnet objects in this device.
   When the retrieval of the BACnet objects is complete, all available BACnet objects are listed on the right grid. By default, all BACnet Objects are selected. Deselect the objects that you do not want to import. Objects that are listed as modified are already imported into the system.
3. Click **Save and Close**.

Importing BACnet objects by Engineering Data Exchange (EDE) file

1. To open the **Import Object (EDE File)** window, select one of the following options:
   - From the **Devices** list or the **BACnet Device Object List**, right-click the BACnet Device and then click **Import Object (EDE File)**.

Figure 2: BACnet Device list tree



- In the **BACnet Device Editor**, click the **Import Object (EDE File)** icon.

Figure 3: BACnet Device Editor window

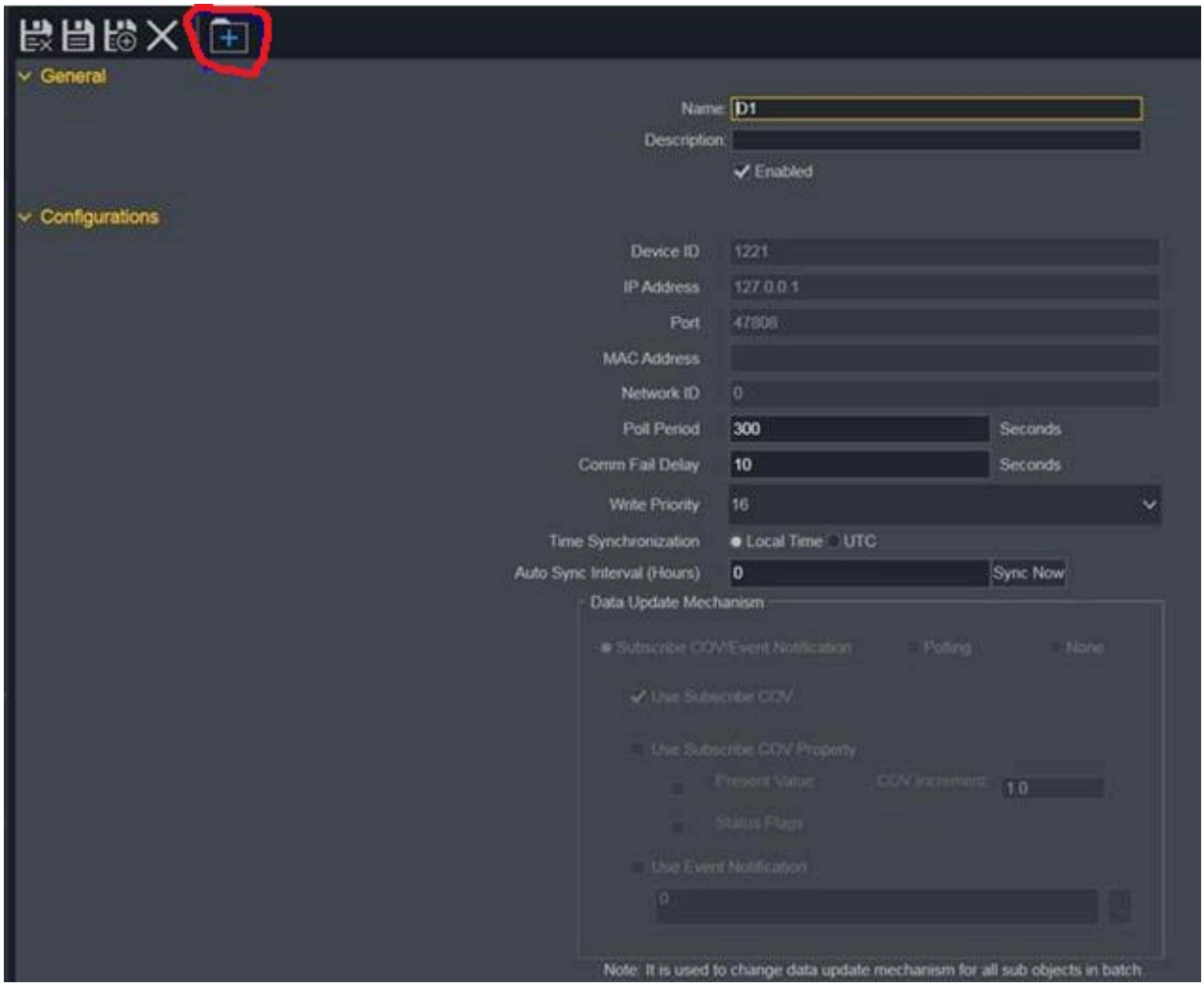
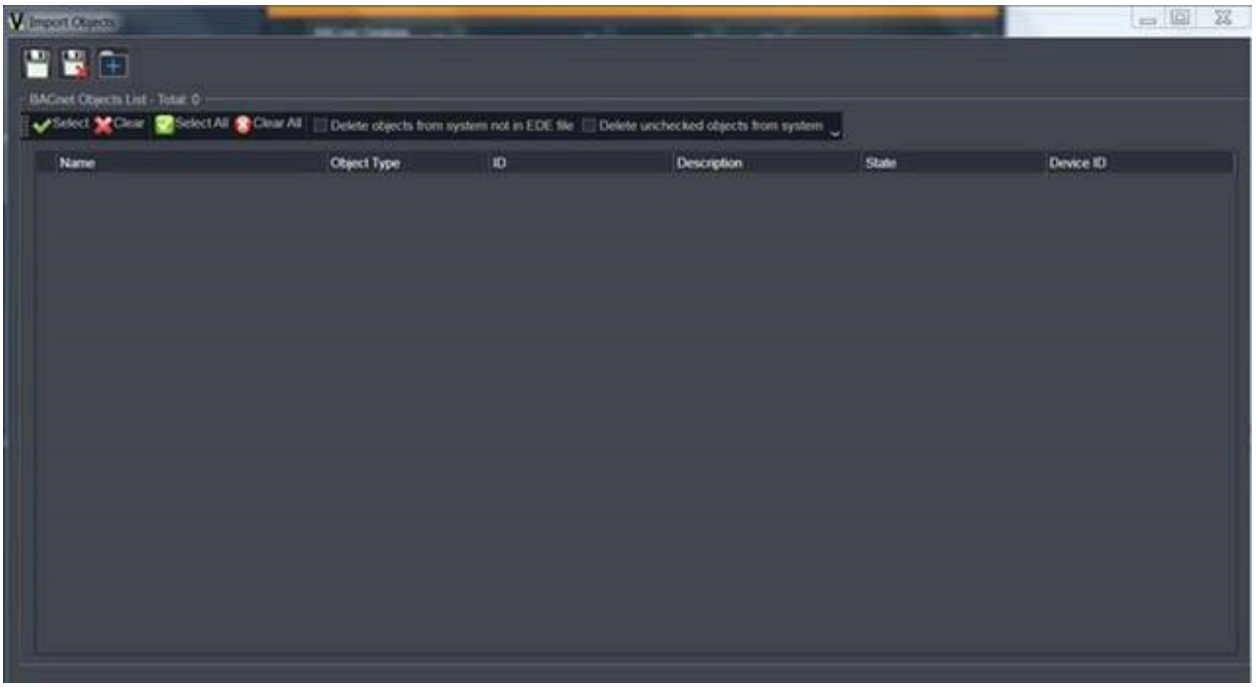


Figure 4: Import Object (EDE File) window



2. From the **Import Objects** window, select **EDE File**.
   The data displays on the BACnet Device Data Grid window.
   See the following definitions of the values that can appear in the State and In File columns:
   State:
   - New: Object is new and does not exist in the system.
   - Unchanged: Object already exists in system and there is no any change for all properties of the objects.
   - Modified: Object already exists in system but some properties of the objects are modified such as Name, Present Value etc.

   In File: If customer imports another EDE file, the system loads all objects both in victor DB and EDE file. The In File option is used to identify objects that do not exist in the newly imported file.
   - Y means the objects are loaded from EDE file.
   - N means the objects are loaded from victor DB, and these objects do not exist in the new imported EDE file.

   By selecting **Delete objects from system not in EDE file**, all the N marked objects will be deleted after they are saved.
3. You can select multiple rows or clear multiple rows.

Table 1: Import object tab options

Options	Definitions
Select	Click the **Select** button to check the selected objects.
Clear	Click the **Clear** button to uncheck the selected objects.
Select All	Click the **Select All** button to check all the objects in datagrid.
Clear All	Click the **Clear All** button to uncheck all the objects in datagrid.

Table 1: Import object tab options

Options	Definitions
Get object value from device after save	Checked by default. If there is no present value in EDE file, the BMS system sets 0 as the default value. his may cause the actual present value in the device to appear differently from the value in the system data base. BMS driver selects **Get objects value from device after save** to make sure the present value in system is the same as the device. This process may take some time depending on the objects number.
Delete objects from system not in EDE file	Select the **Delete objects from system not in EDE file** option to delete the objects that are not in the imported EDE file.
Delete unchecked objects from system	Select the **Delete unchecked objects from system** option to save the checked objects to the system and delete all other onjects in the system.

Editing BACnet devices or BACnet objects or BACnet Schedule objects

About this task:
You can use the BACnet Device and BACnet Object Editor to configure the Data Update Mechanism for a BACnet Device or BACnet Object.

1. In the Navigation bar, click the **Edit** icon.
2. Select one of the following options: BACnet Device, BACnet Object , BACnet Schedule Object.
3. Select the device or object to edit.
4. In the **Name** field, enter a name.
5. **Optional:** In the **Description** field, enter a description.
6. In the **BACnet Device Editor** or **BACnet Object Editor** or **BACnet Schedule Object Editor**, make the edits.

   ⓘ **Note:** See "Data Update Mechanism definitions " regarding the Data Update Mechanism for editing BACnet Devices or BACnet Objects or BACnet Schedule objects.

   ⓘ **Note:** Increase the poll period accordingly when the BACnet Object amount increases. Data Update Mechanism can be set for BACnet Objects when the BACnet Device is disabled. All BACnet Objects' Data Update Mechanism update here accordingly when the change is confirmed.

7. Click **Save and Close**.

Data Update Mechanism definitions

Table 2: Data update mechnism definitions

Data update mechanism	Definition
Subscribe COV/ Event Notification	**Use Subscribe COV**: Update data by subscribing COV service. The subscription period default is 28800 seconds (8 hours). The BMS Integration will automatically re-subscribe before the subscription expires. You can change the subscription period by the adding following line: <add key="COVLifeTimeValue" value="28800"/> in ConnectedPro.HardwareInterface.BACnet.DriverService.exe configuration file. This file is located under Installation path: \Tyco\CrossFire \ServerComponents. **Use Subscribe COV Property**: Update **Present Value** and /or **Status Flag** by subscribing the **Present Value** and /or **Status Flag** COV Property service. For Analog object, when check Present value, user can define **COV Increment**. **Use Event Notification**: Update status by subscribing to **Use Event Notification**. To use this mechanism, **Notification Class** should be pre-configured on a **BACnet Device**, If subscribed Event Notification Class Required Ack, then BMS Integration will list ACK-Required Event Notification. The BMS Integration uses 12505 network ID to communicate, you can change 12505 by adding the following line: `<add key="LocalBACnetNetworkID" value="12505"/>` in ConnectedPro.HardwareInterface.BACnet.DriverService.exe configuration file. This file is located under installation path: \Tyco\CrossFire \ServerComponents.
Polling	Update data by polling the value and status. The polling period shares the value with the **BACnet Device**.
None	None of the above mechanisms.
Object Property Reference	This property specifies the Device Identifiers, Object Identifiers and Property Identifiers of the properties to be written with specific values at specific times on specific days.
BACnet Device	Display device name of the Schedule Objects.
Default Value	This property specifies the Device Identifiers, Object Identifiers and Property Identifiers of the properties to be written with specific values at specific times on specific days. The value must be comply with the object type in object property reference.
Effective Period	This property specifies the range of dates within which the Schedule object is active.
Weekly Schedule	This property correspond to the days Monday - Sunday, Each day consists of a list of BACnet Time Values pairs, which describe the sequence of schedule actions on one day of the week when no Exception Schedule is in effect. The value must be comply with the object type in object property reference.

Table 2: Data update mechnism definitions

Data update mechanism	Definition
Exception Schedule	Describes a sequence of schedule actions that takes precedence over the normal day's behavior on a specific day or days. The value must be comply with the object type in object property reference.
Sync button 	Click the **Sync** button: The schedule that you configure in victor synchronizes to the BACnet device. **Note:** If you click the **Save** button, not the **Sync** button, the schedule data saves only to the victor database.

Deleting BACnet devices

1. Right-click the BACnet Device, and then click **Delete**.
2. To confirm the deletion, click **Yes**.

Viewing BACnet objects

1. In the Navigation bar, click the **Show All** icon.
2. Click **BACnet Objects**. When configured BACnet objects display in the Object List.

Deleting BACnet objects

1. Right-click the **BACnet object**, then click **Delete**.
2. Click **Yes** in the dialog box to confirm deletion.

New BACnet actions

1. In the Navigation bar, click the **New** icon, then click **BACnet Actions**.
2. In the **Name** field, enter a name for the **BACnet Device**.
3. In the **Description** field, enter a description for the **BACnet Device**.
4. To Open the Object Selector Window, click ... for the BACnet Device.
5. To return tot the BACnet Action Editor, select a BACnet Device, and then click **OK**.
6. To open the Object Selector window from a BACnet device, click ....
7. Select a BACnet Object, and then click **OK**.
8. Set the Target Value of selected the BACnet Object.
9. Click **Save**.

Viewing BACnet actions

1. From the Navigation bar, click the **Show All** icon.
2. Click **BACnet Actions**. Configured BACnet Actions display in the Object List.

Editing a BACnet action

1. In the Navigation bar, click the **Edit** icon.
2. Select **BACnet Action**, and then select the action to edit.
3. Made edits as required.
4. Click **Save**.

Handling Event Notification and Alarm Acknowledge

About this task:
To enable a requirement that event notifications are acknowledged, complete the following procedure.

1. In the Navigation bar, click the **New** icon.
2. Click **Ack Required**.

   ⓘ **Note:** All Events are listed in the Event Notification in Alarm form.

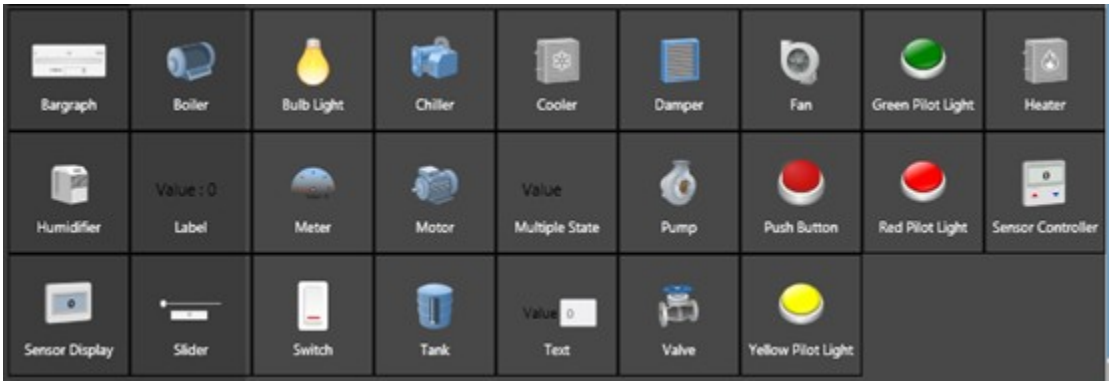
3. When an event notification displays, to acknowledge that you have read and understood the event notification, right-click the Event, and click **Acknowledge**.

Widgets on a Map

The BMS Integration supports the following widgets:

- - Fan
  - Boiler
  - Chiller
  - Cooler
  - Damper
  - Heater
  - Humidifier
  - Meter
  - Red Pilot Light
  - Yellow Pilot Light
  - Pump
  - Push Button
  - Sensor Controller
  - Sensor Display
  - Slider
  - Switch
  - Motor
  - Bargraph
  - Bulb Light
  - Green Pilot Light
  - Tank
  - Label
  - Multiple State
  - Text
  - Valve

Every widget supports: Alarm Status, Enabled, Fault Status, Object Name, and Present Value properties. After you install the BMS Integration on victor, you can select the widgets from the Icon Selector.



You can associate a victor Object with a widget. The widget is then able to display the real time value and different animations for different States such as: Alarm, Fault, and Disable. See the following table of the states and their markups.

Widget states

Table 3: Widget states

State	Markup
Disable	
Alarm	
Fault	

The priority of these states are: Disable>Alarm>Fault.

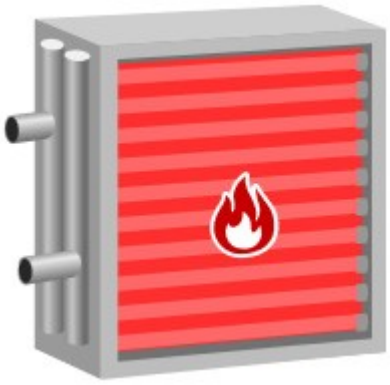
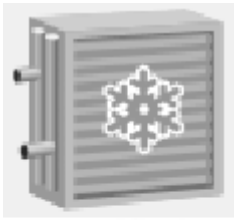
Adding a Widget to a Map

1. From the **Map Editor**, click the **Add** icon.
2. In the **Icon Selector**, click the widget you want to use.

   ⓘ **Note:** All widgets can be a binding input/value object. For best results bind a widget to an output object, such as: the Sensor Controller, Switch, Tank, Bulb Light, Push Button, Bargraph, Slider, and Text.
3. On the **Map**, position the **widget** in the appropriate location.
4. Right-click the widget, and then click **Drop on map**. The Icon Editor opens.
5. To open the Object Selector which links a BACnet Object to the widget: from the **Icon Editor**, click the **Select Object** button
6. Select the object, and then click **OK**.
7. From the **Icon Editor**, click **OK**.

   ⓘ **Note:** When the BACnet Object is selected, the system assigns properties automatically, provided the widget's property name matches the object's property name. If the name does not match and the corresponding Assigned Property is empty, you need to perform manual assignment. To assign a property manually, click the cell and select the property from the drop-down list.
8. Click **Save and Close**.

Description of Widgets

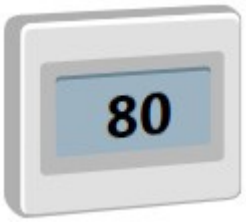
Name	Description	Properties	Options	Animation
Heater	The widget indicates heating output percent (0~100%).	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Show Present Value: True or False. True: displays the present value in view mode. False: is the default value.	The Heater is off.   The Heater is on, and the red frame size will adjust according to the heating output.
Cooler	The widget indicates cooling output percent (0~100%).	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Show Present Value: True or False. True: displays the present value in view mode. False: is the default value.	The Cooler is off.   The Cooler is on, and the blue snowflake size will adjust according to the cooling output.

Name	Description	Properties	Options	Animation
Boiler	The widget indicates boiler output percent (0~100%).	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Boiler is off.   The Boiler is on and the red flame size will adjust according to the boiler output.
Chiller	The widget indicates chiller output percent (0~100%).	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Chiller is off.  The Chiller is on. 
Humidifier	The widget indicates humidifier output (0~100%).	**Alarm Status Enabled Fault Status**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide	The Humidifier is off. 

Name	Description	Properties	Options	Animation
		Object Name **Present Value**	Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Humidifier is on. 
Fan	The widget indicates fan output percent (0~100%).	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Rotation: 0-360 Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Fan is off.  When the fan output is higher than 0, the fan rotates. The speed will adjust according to the fan output. 
Pump	The widget indicates pump output percent (0~100%).	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Rotation: 0-360 Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Pump is off.  When the pump output is higher than 0, the pump revolves. The speed will adjust according to the pump output. 

Name	Description	Properties	Options	Animation
Damper	The widget indicates damper output percent (0~100%).	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Damper is off.  When the damper output is higher than 0, the grid of damper will move. The speed will adjust according to the damper  output.
Valve	The widget indicates valve position range of 0~100%.	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Rotation: 0-360 Show Present Value: True or False. True means to display the present value in view mode. Default value is false.	The Valve is closed.  When the valve output is higher than 0, the valve will open. The valve position will adjust according to the valve output. 
Motor	The widget indicates motor on or off state, and	**Alarm Status Enabled**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink,	The Motor is off. 

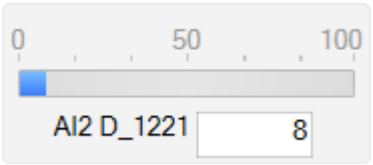
Name	Description	Properties	Options	Animation
	provides motor speed value, e.g. 1,800 rpm.	**Fault Status** **Object Name** **Present Value**	Normal, Hide Show Present Value: True or False. True: displays the present value in view mode. False: is the default value.	The Motor is on. 
Tank	The widget indicates what percent the tank is filled (1~100%).	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Large Change: click PAGE UP or PAGE DOWN to change value. Default value is 1. Maximum Valve: 100 Minimum Valve: 0 Show Present Value: True or False. True: displays the present value in view mode. False: is the default value. Click the arrow key to change value. Default value is 0.1.	The Tank is off.  The Tank is on and the scale will adjust according to the tank output. 
Meter	The widget displays an analog value.	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Maximum Value: 180 Minimum Value: 0 Show Present Value: True or False. True: Displays the Present Value and Project Name in view mode. False: is the default value.	

Name	Description	Properties	Options	Animation
Sensor Controller	The widget displays the sensor analog value together with its unit e.g. 72.9°	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Maximum Value: 100 Minimum Value: 0 Step Value: the increase or decrease of step value. Default value is 1. Unit: the unit of value.	Click the **Up** arrow to increase sensor value by one step. Click **Down** arrow to decrease sensor value by one step. 
Sensor Display	The widget displays the sensor analog value together with its unit	**Alarm Status** **Enabled** **Fault Status**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide	

Name	Description	Properties	Options	Animation
	e.g. 72.9°	**Object Name** **Present Value**	Maximum Value: 100 Minimum Value: 0 Step Value: the increase or decrease of step value. Default value is 1. Unit: the unit of value.	
Switch	The widget indicates on or off state of binary input or value. Click this widget to change the binary input or value status.	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide	The Switch is off.  The Switch is on. 

Name	Description	Properties	Options	Animation
Bulb Light	The widget indicates on or off state of binary output or value. Click this widget to change the binary input or value status.	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Rotation: 0~360	The Bulb is off.     The Bulb is on.

Name	Description	Properties	Options	Animation
Pilot Light	The widget indicates on or off state of binary output or value.	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide	The Pilot light is off. The Green pilot light is on. The Yellow pilot light is on.  The Red pilot light is on. 
Push Button	The widget indicates on or off state of binary output or value. Click this widget to change the binary input or value status.	**Alarm Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide	The Push button is off.   The Push button is on.

Name	Description	Properties	Options	Animation
Bargraph	The widget displays an analog value together with the Name. The user can change the value in the textbox.	**Alarm** **Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Maximum Value: 100 Minimum Value: 0 Unit: the unit of value. The unit, maximum, and minimum are configurable.	
Slider	The widget displays an analog value. The user can change the value by slider or input the value in the textbox directly.	**Alarm** **Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Large Change: click **PAGE UP** or **PAGE DOWN** to change value. Default value is 1. Maximum Valve: 100 Minimum Valve: 0 Small Change: click the arrow key to change value. Default value is 0.1. Unit: the unit of value. The minimum and maximum is configurable.	
Label	The widget displays a read-only analog value together with the Name.	**Alarm** **Status** **Enabled** **Fault Status** **Object Name** **Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide Unit: the unit of value. The unit and name are configurable. Show Object Name: True or False.	AI_2 D_1221 : 8

Name	Description	Properties	Options	Animation
Multiple State	The widget displays a read-only multi state value together with the Name. the Name is configurable.	**Alarm Status Enabled Fault Status Object Name Present Value**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink, Normal, Hide State Text: split with a comma	MI_2 D_1221 : off
Text	The widget displays an analog value together with	**Alarm Status Enabled**	Alarm Annunciation: Blink, Normal, Hide Fault Annunciation: Blink,	AI_2 D_1221 8

Name	Description	Properties	Options	Animation
	Unit or Name. The user can change the value in the textbox.	**Fault Status Object Name Present Value**	Normal, Hide Maximum Value: 100 Minimum Value: 0 Unit: the unit of value. The unit, name, maximum, and minimum are configurable. Show Object Name: True or False.	

Editing a Widget on a Map

1. In the **Map Editor**, right-click the widget.
2. Select the **Edit Context** menu to enter the **Widget Editor**.
3. Make the edits and then click **OK**.

Deleting BACnet Objects on a Map

1. In the **Map Editor**, right-click the widget.
2. From the **Map Context** menu, click **Remove**.
3. Click **Yes**.

BACnet Gateway

BACnet Gateway provides a mechanism for wrapping Crossfire Objects to BACnet Objects. It also implements the BACnet Services such as Alarm and EventServices, Object Access Services, and Remote Device Management Services. If necessary, Crossfire Object changes and notifications can be monitored through BACnet protocol.

BACnet Gateway Template

The **BACnet Gateway Template** defines the mapping definition to map victor object to **BACnet Objects**. The BMS Integration provides the default **BACnet Gateway Templates** and customizable templates.

BMS Integration provides the following default Gateway templates:

- **iSTAR People Counting Gateway** template - this template maps the UserCountStatus property of Area to the present value of **BACnet Analog Input**.
- **Default Event Template** - this template maps the **ActiveStatus of Event** to present value of **BACnet Binary Input**.

Adding a new BACnet Gateway Template

About this task:
Perform the following steps to establish a **BACnet Gateway**:

1. In the Navigation bar, click the **New** icon, then click **BACnet Gateway Template**.
2. In the **Name** field, enter a name.
3. In the **Description** field, enter a description.
4. Click **Save and Close**.

Creating a Gateway device

1. In the Navigation bar, click the **New** icon, then click **BACnet Gateway Device**.
2. In the **Name** field, enter a name.
3. In the **Description** field, enter a description.
4. Click **Save and Close**. The newly created **Gateway Device** appears in the **Device List** under **BACnet Gateway** > **Devices**.

Editing a Gateway device

1. In the Navigation bar, click the **New** icon, and then click **BACnet Gateway Device**.
2. Select a Gateway device to edit.
3. Clear the **Enabled** check box.
4. Edit the device settings as required:
   - Device ID
   - MAC Address
   - Network ID
5. Select the **Enabled** check box.
6. Click **Save and Close**.

Monitored mapping

1. In the Navigation bar, click the **Devices** icon, then expand the **BACnet Gateway Devices** group.
2. Right-click the created Gateway Device, then click **Create Mapping**.
3. In the **Gateway Template Form**, select a template and click **Generate**.
4. In the **Gateway Mapping and Binding Form**, select one **Mapping Definition** and the **Binding Instances** to be mapped. Click **Generate**.
5. When you finish viewing the process results, click **OK**.

Editing a BACnet Gateway object

1. In the Navigation bar, click the **Edit** icon, and then click **BACnet Gateway Object**.
2. Select a Gateway object to edit.
3. Make edits as required.
4. Click **Save and Close**.

Managing a BACnet Gateway template

1. In the Navigation bar, click the **Show All** icon, then click **BACnet Gateway Template**.
2. Right-click the selected template, and then click **Edit**.
3. Make the edits as required.
4. Click **Save and Close**.

BBMD

The BACnet utilized broadcast messages for certain functions, when you try to discover BACnet Devices, your BACnet Devices are interconnected via IP routers then the IP routers tend to block the broadcast messages. This may cause issues for your BACnet communications. BACnet solves the IP router issue by utilizing a BACnet/IP Broadcast Management Device (BBMD). The BBMD will send any received broadcast messages as directed messages through the IP router to its partner BBMD Devices.

Supported and Tested BBMD Network

The following figure displays the Topology of first Supported and Test network of BBMD

Figure 5: Supported and tested network topology - first

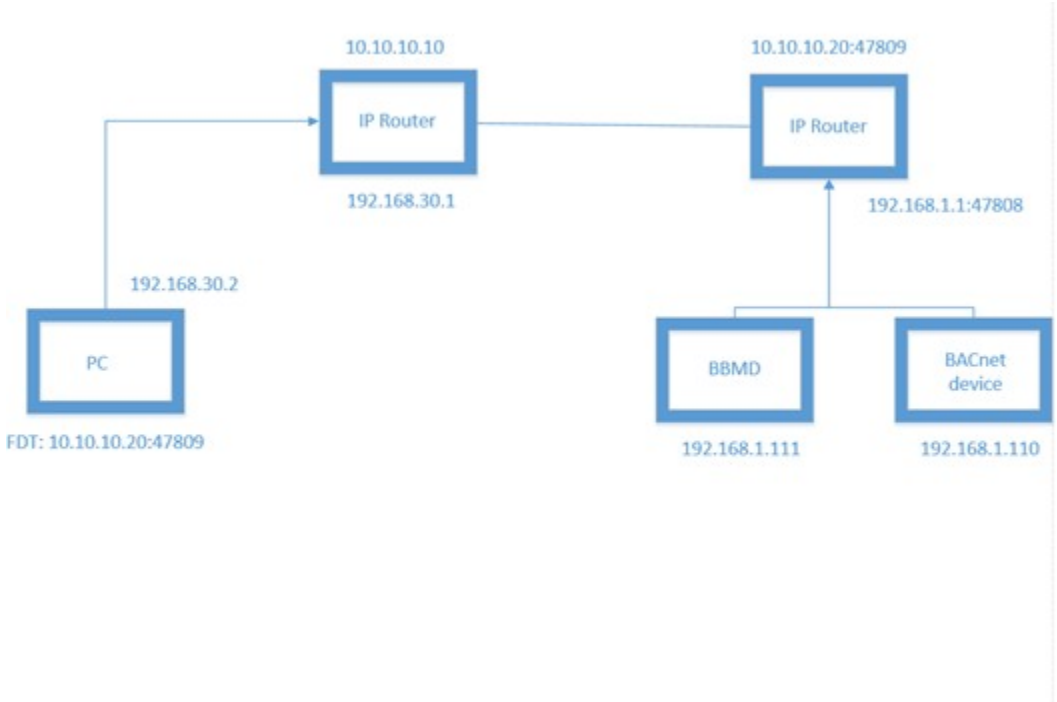
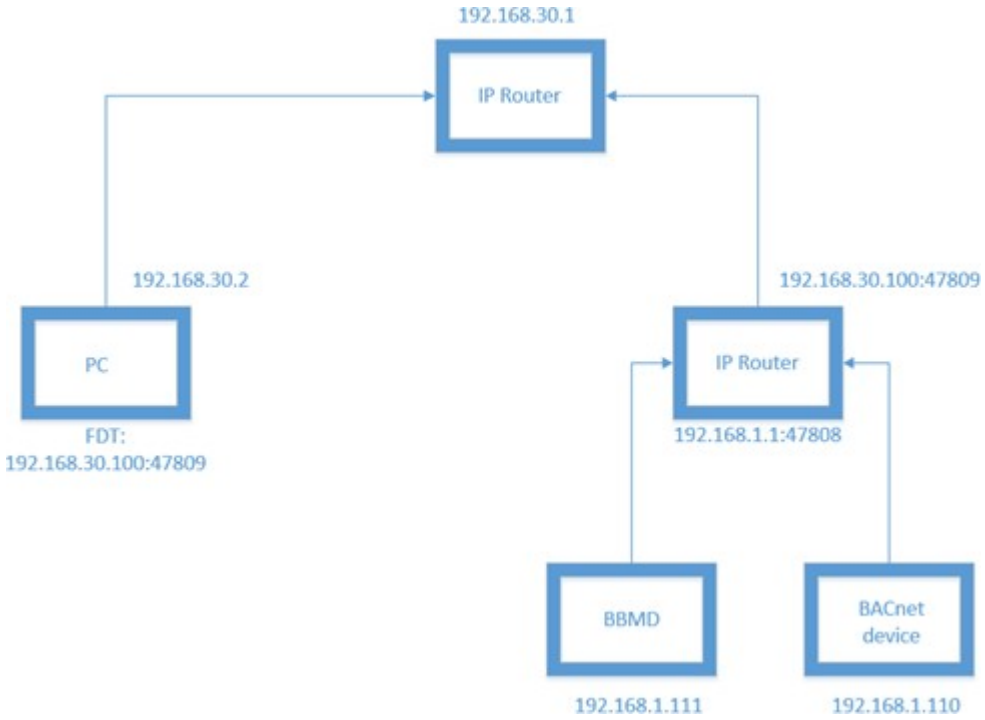


Figure 6: Supported and tested BBMD network - second



A new BACnet BBMD

Many BACnet/IP devices or applications support a feature entitled Foreign Device Registration (FDR). FDR allows the BACnet/IP device or application to send its broadcast messages to a BBMD. The BBMD will then forward these broadcast messages to all other BBMDs and all other FDR devices.

Perform the following steps to access the BACnet Broadcast Management Device (BBMD).

Adding a new BACnet BBMD

1. In the Navigation bar, click the **New** icon, then click **BACnet BBMD**.
2. In the **Name** field, enter a name.
3. In the **Description** field, enter a description.
4. Enter the IP address of BACnet BBMD.
5. Enter the Port.
6. Click **Save and Close**.

Editing a BACnet BBMD

1. In the Navigation bar, click the **Edit** icon, and then click **BACnet BBMD**.
2. Select a BACnet BBMD to edit.
3. Make edits as required.
4. Click **Save and Close**.

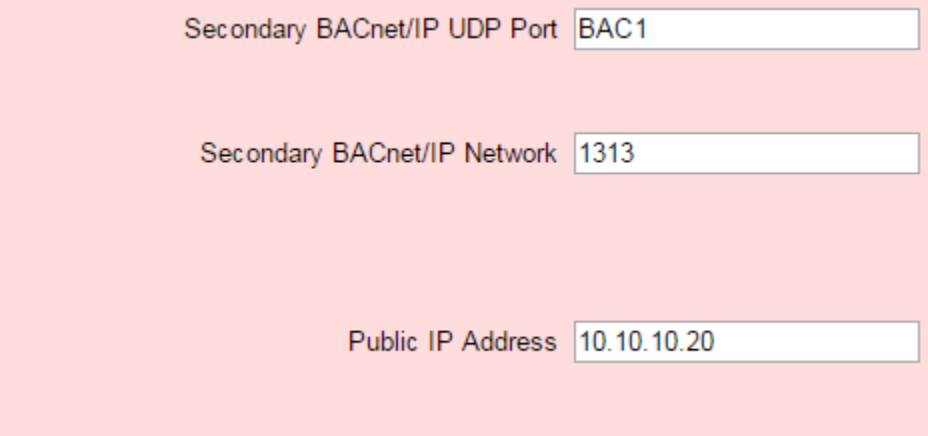
Deleting the BACnet BBMD

1. Right-click the BACnet BBMD, and then click **Delete**.
2. To confirm deletion, from the dialog box, click Yes.

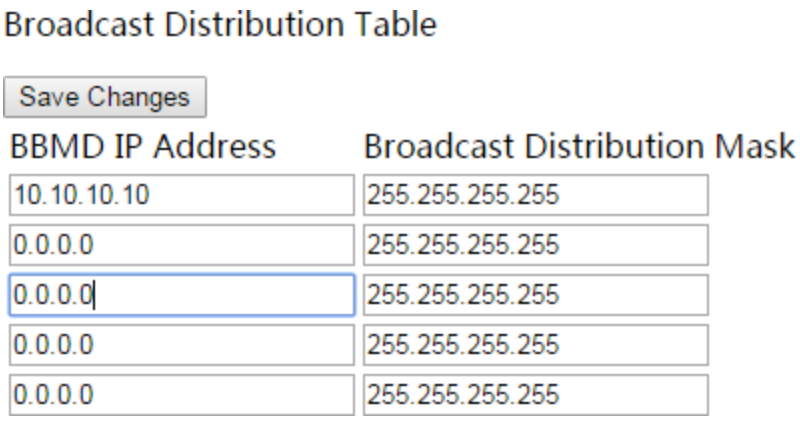
BBMD network configuration

The following configuration is an example of a Contemporary Controls BAS Router and NetGear IP Router. The BBMD device and IP Router from other vendor may have different configuration, which should follow the vendor's user guide.

The following figure shows the BBMD configuration steps.



The following figure shows the BBMD Broadcast Distribution.



Configuring a BBMD network

Before you begin:
Perform the following steps to configure a BBMD Network.

1. Configure BBMD settings
   - Set BBMD local IP address to 192.168.30.111.
2. Configure NAT IP Router 1
   - Set WAN IP address: 10.10.10.10.
   - Set LAN IP address: 192.168.30.1.
3. Configure NAT IP Router 2
   - Set WAN IP address: 10.10.10.20.
   - Set LAN IP address: 192.168.30.111.
   - Set Port forward 47809 message to 192.168.30.111.
4. Configure the BACnet device
   - Set BACnet device IP address to: 192.168.1.110.