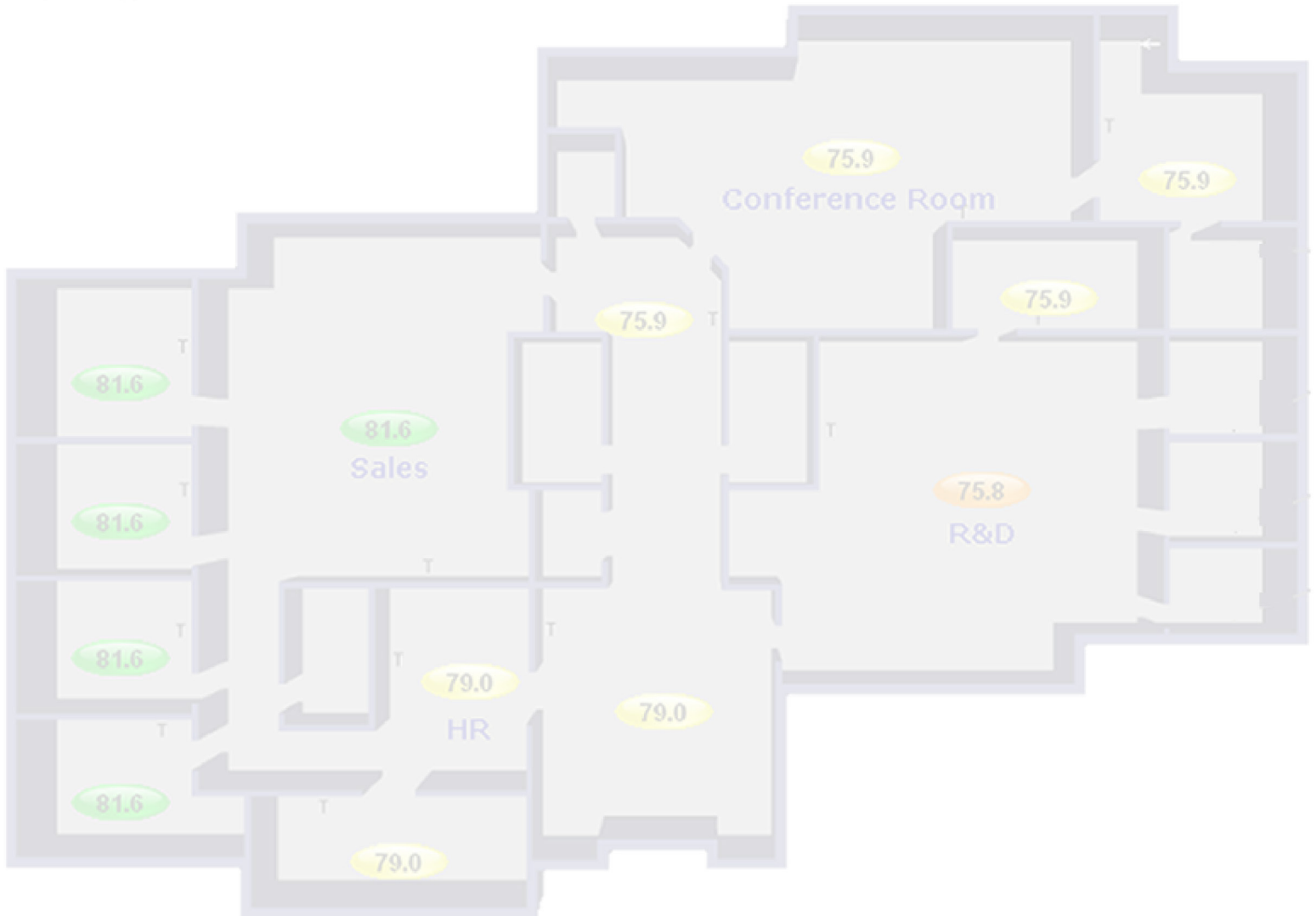# SiteBuilder v8.0

Help

⚠ Verify that you have the most current version of this document from **www.hvacpartners.com**, the **Carrier Partner Community** website, or your local Carrier office.

Important changes are listed in **Document revision history** at the end of this document.

Contents

What is SiteBuilder?

SiteBuilder creates the database that the i-Vu® Pro Server application uses to communicate with controllers in the field.

SiteBuilder uses a tree interface to display the system hierarchy. The **Geographic** tree represents the areas, controlled zones, and mechanical equipment in a system. The **Network** tree represents the communication network of routers and controllers with the i-Vu® Pro Server application.

After you create a database in SiteBuilder, you should use the i-Vu® Pro application to automatically discover Open, XT, or TruVu™ controllers and/or a system with a single CCN Gateway. However, you must use SiteBuilder to build a system with multiple CCN Gateways.

Multiple CCN Gateways

1 *Create a database* (page 3).

2 *Build a Network tree for a CCN system.* (page 12)

Building a complete system in SiteBuilder includes the following detailed steps:

1 *Creating a database* (page 3)

2 *Building a Geographic tree* (page 7)

3 *Building a Network tree* (page 11)

4 *Assigning equipment to controllers* (page 63)

5 *Testing a system* (page 64)

What's new in SiteBuilder v8.0

Feature	Improvement
Improved security settings	To increase security, the i-Vu® Pro application defaults to the following settings: • If your system is set to use TLS, the i-Vu® Pro application automatically uses TLS 1.3. • The i-Vu® Pro application requires SOAP applications to run over HTTPS. • The i-Vu® Pro application allows only add-ons that have been approved by Carrier. **NOTE** If needed, you can *override these defaults* (page 74) in SiteBuilder; however, doing so will lessen the security of your system.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Select MS/TP port	i-Vu® XT or TruVu™ router only—On the **Add BACnet Network** dialog, when adding an MS/TP network, you can now select the physical port that the network will use.

IPv6 addressing	BACnet/IPv6 is a new Media Type when adding a BACnet Network. You can use IPv6 addresses to:
	
	    ○ Automatically configure the IPv6 addresses by entering the Device Instance
	    ○ Add BACnet/IPv6 networks
	    ○ Add Hierarchical Systems
	
	• Restrict connections to an IPv6 address

New i-Vu® XT or TruVu™ icons	New icons in the navigation trees for i-Vu® XT or TruVu™ routers, devices, drivers, and equipment.
BACnet/SC (page 54)	Added support for BACnet/SC

Creating a system database

PREREQUISITE For any database type except Apache Derby, you must install and set up the database application before creating your system database. An Apache Derby database is installed with your i-Vu® Pro system.

Follow the procedures below to create your system database.

To create a new SiteBuilder database

After you create a database in SiteBuilder, you should use the i-Vu® Pro application to automatically discover Open, XT, or TruVu™ controllers and/or a system with a single CCN Gateway.   However, you must use SiteBuilder to build a system with multiple CCN Gateways.

1   Click **File** > **New**.

2   Enter appropriate values in each of the **New Database** fields. See table below.

3   Click **Next**.

4   Do one of the following:

○   If you selected a MySQL, PostgreSQL, or SQL Server® **Database Type**, enter the **Database Connect Strings**, **Login** and **Database User** info. See table below. Then click **Next**.

○   If you selected an Apache Derby, go to step 5.

5   Make language selections. See table below.

6   Click **Next**.

7   Click **File** > **Close**.

8   If you have multiple CCN Gateways, use SiteBuilder to build a Network tree for them. See *To build a Network tree for a CCN system* (page 12).

9   For BACnet, or single CCN Gateway systems, use the i-Vu® Pro interface to populate your database. You do not need to set up the information in SiteBuilder.

a)   Launch the i-Vu Pro Server. Wait for it to finish opening the database.

b)   Browse to **http://localhost** to open the i-Vu® Pro interface.

c)   Use the login and password you set up in SiteBuilder.

d)   Find your devices and networks and upload the files. See i-Vu® Pro Help for details.

Field	Notes
System Name	Enter the name for this system that will be displayed at the top of the i-Vu® Pro navigation tree.
System Directory Name	The name of the folder that contains all the system files: **i-Vu_Pro_x.x\webroot**\<system_directory_name> This name is automatically generated from the **System Name**, but it can be edited. The **System Directory Name** must have: • less than 80 characters • only alphanumeric characters, dashes, and underscores • no spaces
Administrator Login Name, Password, and **Confirm Password**	Type a Login Name and Password (8-character minimum) for the Administrator operator. ⚠️ **CAUTION** To increase the security of your system, do not use "Administrator" as the **Login Name**. **NOTE** You can change the password requirements in the i-Vu® Pro interface. See "Advanced password policy" in i-Vu® Pro Help.
Database Type	Select the type of database your system will use. **NOTE** If you select **Derby**, SiteBuilder automatically creates the necessary files and folder structures under the **i-Vu_Pro_x.x** folder. Do not move or rename system files or folders.
Make this the default system for iVu	Select this box to open this system when you start the i-Vu® Pro application.
Starting Base Network Number **Starting Base Device Instance Number**	SiteBuilder automatically assigns sequential numbers to BACnet networks and devices as you add them to the database. Choose starting numbers that will generate unique network and device instance numbers across all systems that this system will communicate with.
Server BACnet Device Instance	Must be unique to the BACnet network. Unique Server Device IDs are important if you are running multiple copies of the i-Vu® Pro application on the same network.
Languages	Select all languages that you want your system to support.
System	Select the language that you want to use for: • The default language for new operators • Alarms sent to the database • State text and object names downloaded to the field • The default language for the i-Vu® Pro login page. **NOTE** You can select a different language on the login page. All other information is displayed in the operator's language.

For MySQL, PostgreSQL, or SQL Server® Database Types

Database Connect Strings:

Server	Type one of the following: • `localhost` if the i-Vu® Pro application and the database are on the same machine • The name or IP address of the machine that the database is on if different than the i-Vu® Pro application
Port	Do one of the following: • Type the appropriate default port number from the list below. • Type the port number that the database uses for communication if different than the database default. Default ports are: MySQL 3306 PostgreSQL 5432 SQL Server 1433
Instance	The name that you gave the i-Vu® Pro database in the database application.

Database User:

Login	The user login that you set up in the database application.
Password	The password that you set up in the database application.

NOTE To change **Database Connect Strings** for an existing system, select the **Modify database** connection parameters in the **File** > **Open** dialog box, then click **Next**.

To assign system properties

1 Double-click New System 🏢 on the **Geographic** tree.

2 Enter values in the **System** dialog box. See table below.

3 Optional: Click **Notes**, then type in the notes field.

4 Click **OK**.

General tab	
Name	The name displayed on the **Geographic** or **Network** tree.
Reference Name	A permanent name for a tree item that allows the item to be referenced from graphics, Properties pages, external spreadsheets, etc. A reference name consists of lowercase letters, numbers, hyphens, and underscores (no spaces), and it cannot begin with a number. In the system hierarchy, a reference name must be unique among its siblings, unless it is a global reference name that begins with a # sign.

General tab

Base Network Number **Base BACnet Device Instance**	SiteBuilder automatically assigns sequential numbers to BACnet networks and devices as you add them to the database. Choose starting numbers that will generate unique network and device instance numbers across all systems that this system will communicate with.
Server BACnet Device Instance	ID for the i-Vu® Pro server. Must be unique to the BACnet network.
BACnet Alarm Recipient Instance	ID for the server that receives alarms. Typically, the i-Vu® Pro server receives alarms, so enter the same ID as the **Server BACnet Device Instance**.
Views	You may *attach a graphic file* (page 9) now or later.

Advanced tab

Enable Network Address Translation (NAT)	Check this field if either of the following statements is true for your system:

- The server that receives alarms goes through a NAT router (firewall) to get to the Internet

- One or more devices in the database are behind a NAT router.

To enter the **Network Number** and **IP Address**, click the link that best describes your system in To build a Network tree.

Notes tab	These notes can also be seen on the i-Vu® Pro **Properties** page.

Building a Geographic tree

The **Geographic** tree represents the areas, controlled zones, and mechanical equipment in a system.

You can copy, replicate, and move areas and equipment. See *Productivity tools* (page 65).

To add an area

An area is a logical group of areas or mechanical equipment.

1   Right-click the system ⬛ or an area ⬛ on the **Geographic** tree that will be the parent of the new area.

2   Select **Add Area**.

3   Enter values in the **Area** dialog box.

4   Attach graphic (.view) files now or later.

5   Optional: Click **Notes**, then type in the notes field.
    A notes icon (▤) on the tree indicates where you added notes.

6   Click **OK**.

To add BACnet equipment

A piece of equipment represents a mechanical device that provides heating, ventilating, air conditioning, or other service to a building.

1   Right-click the area ⬛ where you want to add the equipment.

    NOTE You may add BACnet equipment at the system level ⬛.

2   Select **Add BACnet Equipment**.

3   Enter values in the **BACnet Equipment** dialog box. See table below.

4   Optional: Click **Notes**, then type in the notes field.
    A notes icon (▤) on the tree indicates where you added notes.

    NOTE These notes can also be viewed and changed from the i-Vu® Pro Properties page and Equipment Checkout tool.

5   Click **OK**.

Field	Notes
Name	The name displayed on the **Geographic** or **Network** tree.
Reference Name	A permanent name for a tree item that allows the item to be referenced from graphics, Properties pages, external spreadsheets, etc. A reference name consists of lowercase letters, numbers, hyphens, and underscores (no spaces), and it cannot begin with a number. In the system hierarchy, a reference name must be unique among its siblings, unless it is a global reference name that begins with a # sign.
Object Instance	SiteBuilder automatically assigns this unique number when you assign a piece of equipment to a controller.
Control Program	Select an existing control program from the list of control programs in the **i-Vu_Pro_x.x\webroot**<system_name>**\programs** folder. If the equipment's control program is not yet in the **programs** folder, type its name in this field. This equipment is called phantom equipment and has a grayed out icon ![icon]. You can add points to this equipment. To convert phantom equipment to working equipment, put its control program in the **programs** folder, select the phantom equipment in SiteBuilder, then select **Edit** > **Reload Control Program**.
Require operator to record any changes to equipment	To provides support for 21 CFR 11, you can check this field to require a i-Vu® Pro operator to record a reason for changing an equipment property. You can also set this option in the i-Vu® Pro interface. See "Recording reasons for edits" in i-Vu® Pro Help.
Views	You may attach graphic files now or later. See the topic below for details.

To add CCN equipment

NOTE You can use the i-Vu® Pro application to add a control program, in place of the following procedure.

1 Right-click the area ![icon] where you want to add the equipment.

   NOTE You may add CCN equipment at the system level ![icon].

2 Select **Add CCN Equipment**.

3 Enter values in the **CCN Equipment** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field.
A notes icon (![icon]) on the tree indicates where you added notes.

   NOTE These notes can also be viewed and changed from the i-Vu® Pro Properties page and Equipment Checkout tool.

5 Click **OK**.

6 You must assign the equipment to the CCN Bridge that controls it. See *Assigning equipment to controllers* (page 63).

Field	Notes
Name	The name displayed on the **Geographic** or **Network** tree.
Reference Name	A permanent name for a tree item that allows the item to be referenced from graphics, Properties pages, external spreadsheets, etc. A reference name consists of lowercase letters, numbers, hyphens, and underscores (no spaces), and it cannot begin with a number. In the system hierarchy, a reference name must be unique among its siblings, unless it is a global reference name that begins with a # sign.
Associate with CCN Controller	Select the correct **Bus** and **Element** number from the drop-down list
Object Instance	SiteBuilder automatically assigns this unique number when you assign a piece of equipment to a controller.
Control Program	Select an existing control program from the list of control programs in the **I-Vu_Pro_x.x\webroot**<system_name>**\programs** folder.
	If the equipment's control program is not yet in the **programs** folder, type its name in this field. This equipment is called phantom equipment and has a grayed out icon . You can add points to this equipment. To convert phantom equipment to working equipment, put its control program in the **programs** folder, select the phantom equipment in SiteBuilder, then select **Edit** > **Reload Control Program**. Reloading updates all instances of a control program throughout the system and marks the controller(s) for an All Content download.
Require operator to record any changes to equipment	To provides support for 21 CFR 11, you can check this field to require a i-Vu® Pro operator to record a reason for changing an equipment property. You can also set this option in the i-Vu® Pro interface. See "Recording reasons for edits" in i-Vu® Pro Help.
Views	You may attach graphic files now or later. See the topic below for details.

To attach graphic files to an area or a piece of equipment

You can attach one or more graphics to an area or piece of equipment in SiteBuilder. For example, you can assign a floorplan and a lighting plan to the same area. Or, you can attach an equipment graphic, an engineering shop drawing, and an as-built document to a single piece of equipment.

See ViewBuilder Help to learn how to create graphics (.view files). All .view files must be stored in the **I-Vu_Pro_x.x\webroot**<system_name>**\views\graphics** folder.

To attach a graphic:

1 Double-click an area or piece of equipment on the **Geographic** tree.

2 Select a file in the **Available Views** list.

NOTE A Graphics page is marked (lvl5); a custom WAP Properties page is marked (wap).

3 Click the Attach button .

4 Optional: To edit the graphic's properties that were defined in ViewBuilder, double-click the file in the **Attached Views** list or click . For a description of each field, see *Managing attached views* (page 10).

5 Click **OK**.

NOTES

- To assign graphics that have not yet been created, click the New View button ![+].

- You can also perform this task in the i-Vu® Pro interface. See "To attach a graphic in the i-Vu® Pro interface" in i-Vu® Pro Help.

Managing attached views

Double-click an area or a piece of equipment to open the properties dialog box.

Click this button...	To...
![→]	**Attach view** Select a file in the **Available** list, then click the Attach button.
![←]	**Remove view** Select a file in the **Attached** list, then click the Remove button. **NOTE** If you remove a file, then decide to reattach it, SiteBuilder will not remember any property changes.
![+]	**Type a new view name** Type a name for a graphic that will be added to the system later.
![pencil]	**Edit the attached view's properties** You can edit the view's navigation properties that were defined in ViewBuilder.

	Display Name	If you attach more than one graphic to the tree item, change **Default** to the name you want to appear in the i-Vu® Pro **Graphics** button drop-down list.
	Is the Default view	If you attach more than one graphic to the tree item, check this field to display this graphic the first time you go to that item's **Graphics** page. **NOTES** • You can designate only one default graphic per tree item. If you check this field, SiteBuilder unchecks it for any other graphic assigned to that tree item. • The default graphic is bolded in the **Attached Views** list.
	Action	Indicates which i-Vu® Pro button will display the file.
	Category	Select **None** if you want to select the graphic from the **Graphics** button drop-down list. To add a new category to this list, see "Graphics pages" in i-Vu® Pro Help.
	Instance	The name that you enter in ViewBuilder when creating a link to the graphic. See "Adding links" in ViewBuilder Help.
	Included in download	Equipment graphics only. Select to have the .view file included in an **All Content** download so that it can be uploaded by Field Assistant. The graphic will have ![↓] beside it in the **Attached Views** list.

![refresh]	**Refresh view files** Click the Refresh button to have SiteBuilder refresh a graphic that was edited after it was attached.

NOTE You can attach and remove views and edit many of the above properties in the i-Vu® Pro interface. See "To attach a graphic" in i-Vu® Pro Help.

Building a Network tree

The **Network** tree represents the communication network of routers and controllers with the i-Vu® Pro server. You can build a **Network** tree for a single building (one site) or for several facilities in different locations (multiple sites).

Contact the network administrator

Before you build a Network tree, obtain IP addresses for the following devices from the facility network administrator:

- The i-Vu® Pro server
- Each BACnet router/CCN device manager
- IP and NAT routers that affect your BACnet or CCN network

You must also ask the network administrator to open, or in the case of NAT routers port forward, the following ports:

- TCP 80 between the i-Vu® Pro server and its clients
- UDP 47808 between the i-Vu® Pro server and its BACnet routers
- UDP 50005 between the i-Vu® Pro server and its CCN device managers
- BACnet/SC only: Open a TCP port (as configured on the BACnet/SC Hub) between i-Vu® Pro, the BACnet/SC Hub, and connecting routers.

NOTE   If you have to build your Network tree before you have the actual IP addresses, enter temporary addresses, then change them to the actual addresses later.

Setting up geographically separate areas

Areas in different geographical locations, such as different campuses, can be part of the same site if they are on the same wide area network (WAN) and are set up for the same time zone in SiteBuilder.

If your system contains areas with different time zones, you must add at least one site on the **Network** tree for each time zone.

NOTE   When using more than one site for a shared BACnet/IP network, the network numbers must be the same. SiteBuilder will automatically assign different network numbers, but you must manually change them to the same number. Each device's IP address must be unique.

Setting up multiple CCN Gateways

You must set up a separate site for each CCN Gateway that you have in your system. You can only have one Gateway per site.

NOTE   When using more than one site for a shared BACnet/IP network, the network numbers must be the same. SiteBuilder will automatically assign different network numbers, but you must manually change them to the same number. Each device's IP address must be unique.

To build a Network tree for a CCN system with a single or multiple Gateways

If your CCN system has...	You must...
A single CCN Gateway	Use the i-Vu® Pro application to find and download the Gateway and system
An i-Vu® Integrator	Add it in SiteBuilder, even if it is the only CCN Gateway. See "*To add an i-Vu® Integrator* (page 19)" in SiteBuilder Help.
Multiple CCN Gateways without a NAT router	**1** In the SiteBuilder Network tree, add one site with one BACnet/IP network for each Gateway. **2** In the i-Vu® Pro interface, discover all the Gateways, Bridges, and controllers. **NOTES** • You must have the Multi-CCN license for this feature to work. • Supports up to 50 CCN Gateways in one system • Every Gateway must be Bus 0. • Every BACnet/IP Network Number must be the same.
Multiple CCN Gateways with a NAT router	**1** In SiteBuilder, configure the NAT information. **2** In the Network tree, add one site with one BACnet/IP network per Gateway. **3** Add one CCN Gateway and all its Bridges to each site you set up. **4** In the i-Vu® Pro application, discover the rest of your controllers under the Bridges. **NOTES** • You must have the Multi-CCN license for this feature to work. • Supports up to 50 CCN Gateways in one system • Every Gateway must be Bus 0. • Every BACnet/IP Network Number must be the same.

CCN Gateways and Bridges can be any of the following:

- i-Vu® Link
- i-Vu® CCN Router
- i-Vu® Integrator
- Carrier® ChillerVu™

NOTE   For your i-Vu® Open system, use the i-Vu® Pro application to find your i-Vu® Open routers and controllers. You do not need to set up the information in SiteBuilder.

See *To Build a Network tree* (page 13) for selecting the specific instructions that apply to your network architecture.

To build a Network tree

Click the network below that resembles your system for instructions on how to build the SiteBuilder Network tree. If you are not sure which network to build, ask your network administrator.

NOTE If communications between the i-Vu® Pro server and any BACnet router pass through a NAT router (firewall) anywhere in the system, you must enable Network Address Translation (NAT) in SiteBuilder. Click the appropriate link below for instructions.

Legend

B C Browser Client	R IP Router	I Internet	H BACnet/SC Hub
S System Server	**R** BACnet Router	H Hub	**M** Cell Modem
S C Server/Client	**C** Controller	N A T IP NAT Router	
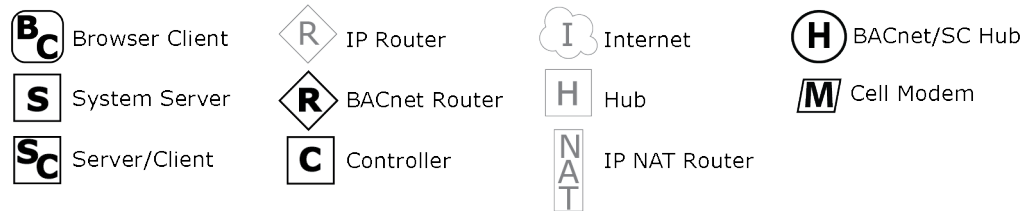
NOTE The term "BACnet routers" includes Carrier Open routers and CCN Device Managers.

1 *Simple network* (page 15)
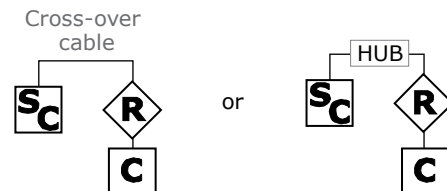
2 *Server and BACnet routers on the same IP network* (page 20)
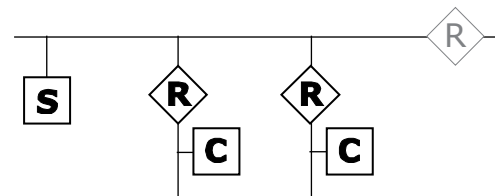
3 *BACnet routers separated by an IP router* (page 26)
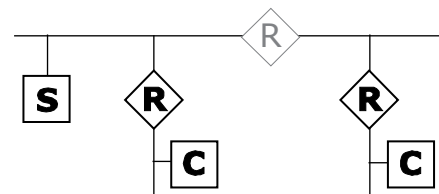
4	*Server on an IP subnet without a BACnet router (no BBMD)* (page 30)	
5	Entire BACnet network behind a NAT router	
6	BACnet router behind a NAT router	
7	Server behind a NAT router	
8	Server and BACnet router behind different NAT routers	
9	*BACnet/SC Network* (page 54)	
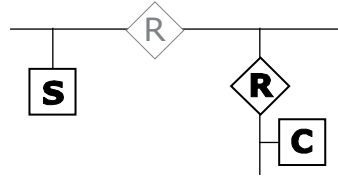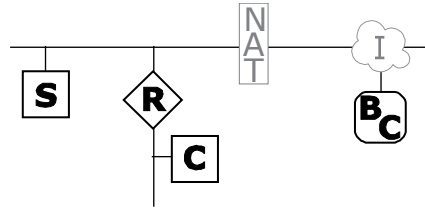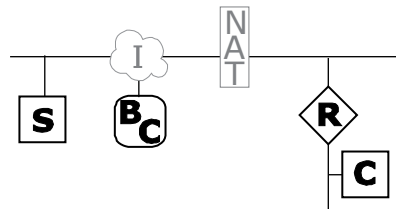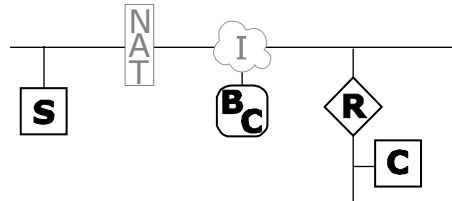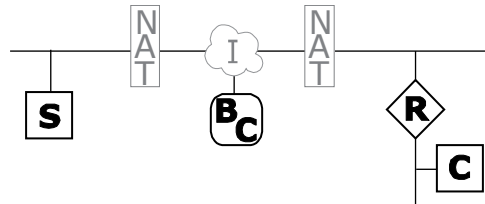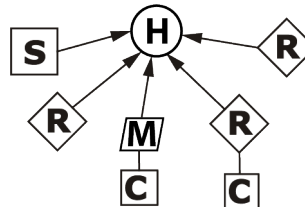
Simple network

In this simple network, the server/client computer is connected to a BACnet router with a cross-over cable or hub.

To add a site

1   On the **Network** tree, right-click the system 🏢.

2   Select **Add Site**.

3   Enter values in the **Site** dialog box. See table below.

4   Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5   Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver.
	Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables.
	Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued.
	You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.

Field	Notes
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site ⬛.

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP or BACnet/IPv6 network ⬛.

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following: • Use the default number based on SiteBuilder's next sequential Device Instance number • Enter a specific number. i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to: (IP network number x 100) + the router's rotary switch address EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015. **NOTE** To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.

Address tab	Select **Use Default IP Address**, then type the **Address (Dial Setting On Device)**.

CCN tab	
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable. Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.

Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.

Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

To add a BACnet/ARCNET or MS/TP network

1 On the **Network** tree, right-click the device router ▬▬▬.

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

4 If you are adding an MS/TP network to the i-Vu® XT or TruVu™ router, select the physical port that the MS/TP network will use.

5 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

6 Click **OK**.

NOTE   Another method to select the port when adding an MS/TP network to the i-Vu® XT or TruVu™ router, is to double-click the router, and on the **Networks** tab, select the port that the MS/TP network will use.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	Do one of the following: • Use the default number • Enter a specific number i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate this network number. The number you enter in SiteBuilder must match the autogenerated number in controller setup pages. The number is: 1600 (the default IP network number) + the router's rotary switch address, and ending with the port identifier number (0 for Port S1 or 3 for the Port S2). **EXAMPLE** If the IP network number is 1600 and the rotary switch address is 15 and this is an MS/TP network, the **Network Number** is 16153.
Media Type	Select **ARCNET** or **MS/TP**.
Port	i-Vu® XT or TruVu™ router only—Select the physical port that the MS/TP network will use.

NOTE   When wiring an MS/TP network to a router port, you must set the port's baud rate using one of the following methods:

• Open router—Using the router's Local Access port and PuTTY. See "To set a port's baud rate using PuTTY" in the router's *Installation and Start-up Guide*.

• i-Vu® XT or TruVu™ router with a drv_fwex driver—In the i-Vu® Pro interface on the driver's **BACnet Router Properties** page or in the controller setup pages on the **Ports** tab.

• i-Vu® XT or TruVu™ router with a drv_gen5 driver—In the i-Vu® Pro interface, in the **Driver** or the in the Service Port controller setup pages, on the **Configuration** > **Port S1** or **Port S2** page.

To add a controller

1 Right-click the network ![icon] that the controller is attached to.

2 Select **Add BACnet Device**.

3 Enter values in the **BACnet Device** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field.
A notes icon (![icon]) on the tree indicates where you added notes.

5 Click **OK**.

Field or Tab	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Address	Type the rotary dial address of the controller.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	Use the default number unless you use a naming convention for your devices. A device instance number must be unique throughout an entire BACnet system.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

To add an i-Vu® Integrator

The i-Vu® Pro application cannot discover an i-Vu® Integrator, even if it is your only Gateway. You must manually add it using the following procedure.

1 Right-click the BACnet/IP network ![icon].

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Enter a **Name**, which is displayed on the **Network** tree.

5 Optional: Edit the **Reference Name**.

NOTE   Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.

6 Do one of the following in the **Controller** field. If you have:

○ A controller that is not listed in the droplist, browse to the controller's driver.

○ An i-Vu® Integrator using a Modbus driver (drv_ivu_ccn2_x-xx-xxx), select **i-Vu Integrator** and then proceed to step 8.

○ An   i-Vu® Integrator using a LonWorks (drv_ivu_ccn2lon_x-xx-xxx) or GE Lighting driver (drv_ivu_ccn2gel_x-xx-xxx), you must:

a. Browse to and select your driver.

   b. In the **Custom Driver** dialog box, select **i-Vu Integrator - Custom**.

   c. Click **OK**.

7 Fill in the **Device Instance**, if you are not using the default.

NOTE Use the default number unless you use a naming convention for your devices. A Device Instance number must be unique throughout an entire BACnet system.

8 If you have a file for a BACview® or touchscreen device, do one of the following:

   ○ Select a **.bacview** or **.touch** file from the drop-down list.

   ○ Type the complete file name for a **.KPD** or **.S37** file. Include the extension. This field is case sensitive.

9 On the **Address** tab, select **Use Default IP Address**, then type the **Address (Dial Setting On Device)**.

10 On the **CCN** tab, check **This device is a CCN Gateway**, if applicable, and then enter **Gateway IP Address**, **Element Number**, and **Baud Rate**.

11 Click **OK**.

12 Entries on the **Notes** tab appear on the i-Vu® Pro **Properties** page.

Troubleshooting a simple network

- On the i-Vu® Pro **Connections** page, do not type the IP address unless the i-Vu® Pro server has dual NICs (Network Interface Cards).

- Use this calculator to verify that the devices are on the same subnet.

Server and BACnet routers on the same IP network

In this example, the server and BACnet routers are on the same IP network.

System Server
IP address: 172.18.64.100
Subnet mask: 255.255.255.0
Default gateway: 172.18.64.1

IP Router
(Default Gateway)
IP address: 172.18.64.1

S

R

C Controller

R

C Controller

BACnet Router 1
IP address: 172.18.64.38
Subnet mask: 255.255.255.0
Default gateway: 172.18.64.1

BACnet Router 2
IP address: 172.18.64.39
Subnet mask: 255.255.255.0
Default gateway: 172.18.64.1

To add a site

1 On the **Network** tree, right-click the system .

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP or BACnet/IPv6 network 🖥️.

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

5 Repeat steps 1 through 4 for the second router. See tables below.

6 Add networks and controllers as needed under each BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.

General tab

Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following:

- Use the default number based on SiteBuilder's next sequential Device Instance number
- Enter a specific number.

i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to:
(IP network number x 100) + the router's rotary switch address
EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015.
NOTE To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.

Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example Router**
Use Default IP Address	Select if the i-Vu® Pro system is on a dedicated IP network, then type the **Address (Dial Setting On Device)**. **NOTE** The router's IP Address DIP switch must be set to **Assigned**.	
Specify a custom or DHCP IP Address	Select if the i-Vu® Pro system is on a non-dedicated IP network, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's IP address that you got from the network administrator. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	172.18.64.38
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.255.0
Default Gateway Address	Type the BACnet router's default gateway address that you got from the network administrator.	172.18.1.1

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example Router**
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system even though this kind of network cannot use BBMDs.	
Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).	
CCN tab		
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable. Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.	
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.	
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.	

To add a BACnet/ARCNET or MS/TP network

1 On the **Network** tree, right-click the device router ▭▭▭.

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

4 If you are adding an MS/TP network to the i-Vu® XT or TruVu™ router, select the physical port that the MS/TP network will use.

5 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

6 Click **OK**.

NOTE   Another method to select the port when adding an MS/TP network to the i-Vu® XT or TruVu™ router, is to double-click the router, and on the **Networks** tab, select the port that the MS/TP network will use.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	Do one of the following: • Use the default number • Enter a specific number i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate this network number. The number you enter in SiteBuilder must match the autogenerated number in controller setup pages. The number is: 1600 (the default IP network number) + the router's rotary switch address, and ending with the port identifier number (0 for Port S1 or 3 for the Port S2). **EXAMPLE** If the IP network number is 1600 and the rotary switch address is 15 and this is an MS/TP network, the **Network Number** is 16153.
Media Type	Select **ARCNET** or **MS/TP**.
Port	i-Vu® XT or TruVu™ router only—Select the physical port that the MS/TP network will use.

NOTE When wiring an MS/TP network to a router port, you must set the port's baud rate using one of the following methods:

• Open router—Using the router's Local Access port and PuTTY. See "To set a port's baud rate using PuTTY" in the router's *Installation and Start-up Guide*.
• i-Vu® XT or TruVu™ router with a drv_fwex driver—In the i-Vu® Pro interface on the driver's **BACnet Router Properties** page or in the controller setup pages on the **Ports** tab.
• i-Vu® XT or TruVu™ router with a drv_gen5 driver—In the i-Vu® Pro interface, in the **Driver** or the in the Service Port controller setup pages, on the **Configuration** > **Port S1** or **Port S2** page.

To add a controller

1 Right-click the network that the controller is attached to.

2 Select **Add BACnet Device**.

3 Enter values in the **BACnet Device** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field.
A notes icon () on the tree indicates where you added notes.

5 Click **OK**.

Field or Tab	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Address	Type the rotary dial address of the controller.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	Use the default number unless you use a naming convention for your devices. A device instance number must be unique throughout an entire BACnet system.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

BACnet routers separated by an IP router

To minimize network communications, IP routers do not pass on broadcasts that they receive. You can set up your BACnet network so that BACnet Broadcast Management Devices (BBMDs) can pass BACnet broadcasts across IP routers to other BBMDs.

IP Router
(Default Gateway)

System
Server   172.18.1.1   172.16.1.1
                                    R

BBMD (1)   **BBMD (2)**
172.16.5.3   172.16.5.3
  S   R   172.18.64.38   R   172.18.64.38

              C   Controller   C   Controller

BACnet Router 1   BACnet Router 2
IP address: 172.18.64.38   IP address: 172.16.5.3
Subnet mask: 255.255.0.0   Subnet mask: 255.255.0.0
Default gateway: 172.18.1.1   Default gateway: 172.16.1.1

To add a site

1   On the **Network** tree, right-click the system .

2   Select **Add Site**.

3   Enter values in the **Site** dialog box. See table below.

4   Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5   Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add BACnet routers

1 Right-click the BACnet/IP or BACnet/IPv6 network 🖥️.

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

5 Repeat steps 1 through 4 for the second router. See tables below.

6 Add networks and controllers as needed under each BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.

General tab	
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following:
	• Use the default number based on SiteBuilder's next sequential Device Instance number
	• Enter a specific number.
	i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to:
	(IP network number x 100) + the router's rotary switch address
	EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015.
	NOTE To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example Router 1**	**Example Router 2**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address		
IP Address	Type the BACnet router's IP address that you got from the network administrator. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	172.18.64.38	172.16.5.3
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.0.0	255.255.0.0
Default Gateway Address	Type the BACnet router's default gateway address that you got from the network administrator.	172.18.1.1	172.16.1.1

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example Router 1**	**Example Router 2**
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system. **EXCEPTION** If your system has more than 50 IP subnets, see *Setting up BBMDs* (page 89).		
Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).		
CCN tab			
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable. Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.		
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.		
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.		

Server on an IP subnet without a BACnet router (no BBMD)

To minimize network communications, IP routers do not pass on broadcasts that they receive. But, you can set up Carrier controllers as BACnet Broadcast Management Devices (BBMDs) to pass BACnet broadcasts across IP routers to other BBMDs.

The i-Vu® Pro server is not a BBMD. If the server is on an IP subnet without a BBMD, you must *register the server as a foreign device* (page 94) to a BBMD in the system. That BBMD will then forward BACnet broadcasts to the server. Register the server with the BBMD that will have the fastest response time. Response time is affected by distance and network complexity.

NOTE The BACnet device must be set up as a BBMD before you register the server as a foreign device.

IP Router
(Default Gateway)
172.18.1.1 ◇R 172.16.1.1

◇R BACnet Router
IP address: 172.16.5.3
Subnet mask: 255.255.0.0
Default gateway: 172.16.1.1

S

System Server
IP address: 172.18.64.37
Subnet mask: 255.255.0.0
Default gateway: 172.18.1.1

C Controller

To add a site

1 On the **Network** tree, right-click the system 🏢.

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver.
	Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.

Field	Notes
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1   On the **Network** tree, right-click the site .

2   Select **Add BACnet Network**.

3   Enter values in the **Network** dialog box. See table below.

   ⚠   Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4   Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5   Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP or BACnet/IPv6 network .

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

5 Add a network and controllers as needed under the BACnet router.

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is automatically obtained using the **Device Instance** that was set up on the controller setup pages. The **Address** fields are not displayed.
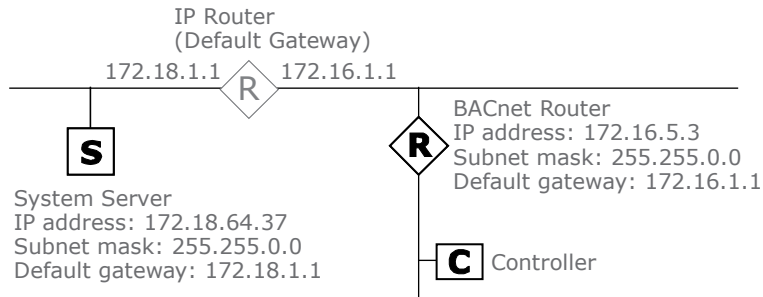
Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example router**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's IP address that you got from the network administrator. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	172.16.5.3
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.0.0
Default Gateway Address	Type the BACnet router's default gateway address that you got from the network administrator.	172.16.1.1
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system. **EXCEPTION** If your system has more than 50 IP subnets, see *Setting up BBMDs* (page 89).	
Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).	

CCN tab	
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable.
	Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

Entire BACnet network behind a NAT router

In this example, the entire BACnet system is behind a NAT router (firewall), but clients can access the network from the Internet. Small companies use this kind of network with a cable modem or DSL such as a Linksys® router.

Default Gateway
Private 192.168.0.1 — Public 179.122.12.44

Private System Server 192.168.0.3 — **S**

Private BACnet Router 192.169.0.5 — **R**

C Controller

C Browser Client — Internet

NOTES

- The client will use the server NAT router's public IP address to access the i-Vu® Pro server.

- The NAT router must be set up to port forward HTTP traffic to the i-Vu® Pro server. See *Building a Network tree* (page 11).

- An IPv6 network behind a NAT router is not supported by the i-Vu® Pro application.

To add a site

1 On the **Network** tree, right-click the system 🏢.

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP network 🖥️.

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

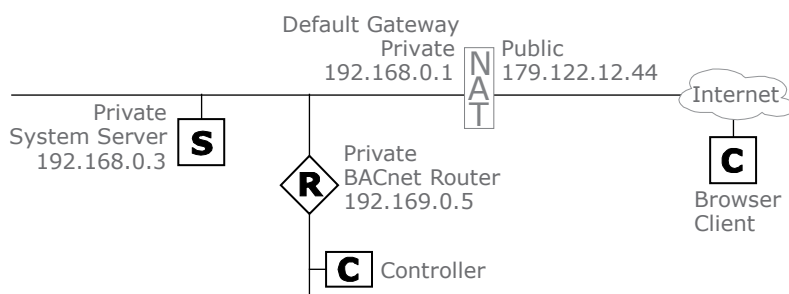**5** Add a network and controllers as needed under the BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following: • Use the default number based on SiteBuilder's next sequential Device Instance number • Enter a specific number. i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to: (IP network number x 100) + the router's rotary switch address EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015. **NOTE** To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.

General tab	
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example router**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's private IP address that you got from the network administrator. ⚠️ **CAUTION** SiteBuilder allows duplicate private IP addresses in the system, even on the same private network. So you must verify with your network administrator that the private network has no duplicate addresses. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	192.168.0.5
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.255.0
Default Gateway Address	Type the BACnet router's default gateway address that you got from the network administrator.	192.168.0.1
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system even though this kind of network cannot use BBMDs.	
Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).	

CCN tab	
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable.
	Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

BACnet router behind a NAT router

This type of network layout is not recommended because the server is not protected by a NAT router (firewall), but it is commonly used with DSL or a cable modem.
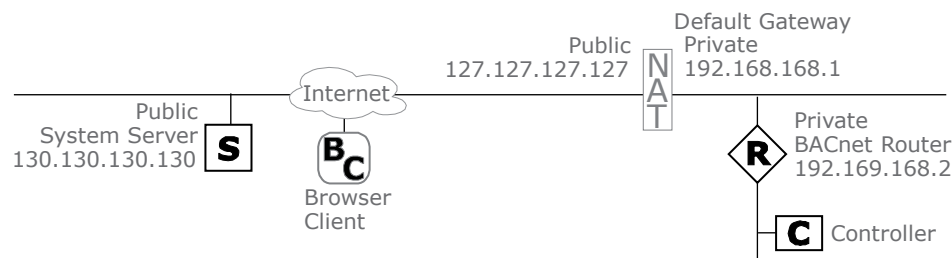
NOTES

- When using NAT routers, the controllers on different sites cannot communicate with each other.

- The BACnet router's NAT router must be set up to port forward BACnet traffic (typically UDP 47808) to the BACnet router. See *Building a Network tree* (page 11).

- An IPv6 network behind a NAT router is not supported by the i-Vu® Pro application.

To edit System Properties

1 In SiteBuilder, on the **Network** tree, double-click the system 🏢.

2 In the **System Properties** dialog box, click the **Advanced** tab.

3 Check **Enable Network Address Translation (NAT)**.

4 Type the **NAT Alarm Recipient Address** information. In most systems, the i-Vu® Pro server is the alarm recipient.

- Type the **Network Number** of the BACnet/IP network where the i-Vu® Pro server is located. You will add this network later. See "*To add a BACnet/IP network* (page 16)".

- Type the i-Vu® Pro server's public IP address in the **IP Address** field. (130.130.130.130, in the example above.)

5 Click **OK**.

To add a site

1 On the **Network** tree, right-click the system .

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

| Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Devices under this site are behind a NAT	Check this field.
Deliver alarms from this site to the server through a NAT	This field is automatically checked when you check **Devices under this site are behind a NAT**. This setting is required even though it may not make sense in this network layout.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.

Field	Notes
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router behind the NAT to be the peer caching router. The peer caching router will poll other routers behind the same NAT for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. **NOTE** If a system has multiple BACnet routers behind different NAT routers, put each router in a different site in SiteBuilder, then set the BACnet router in each site as the peer caching device. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1   Right-click the BACnet/IP network 🖥️.

2   Select **Add BACnet Device Router**.

3   Enter values in the **BACnet Device Router** dialog box. See table below.

4   Click **OK**.

5   Add a network and controllers as needed under the BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following: • Use the default number based on SiteBuilder's next sequential Device Instance number • Enter a specific number. i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to: (IP network number x 100) + the router's rotary switch address EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015. **NOTE** To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.

General tab

Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example values**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's private IP address that you got from the network administrator. ⚠ **CAUTION** SiteBuilder allows duplicate private IP addresses in the system, even on the same private network. So you must verify with your network administrator that the private network has no duplicate addresses. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	192.168.168.2
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.255.0
Default Gateway Address	Type the NAT router's private address that you got from the network administrator.	192.168.168.1
NAT Address	Type the NAT's public IP address that you got from the network administrator.	127.127.127.127
NAT CCN Port	Type the NAT's public port for the NAT address that translates to the private CCN/IP port.	
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system even though this kind of network cannot use BBMDs.	
Local access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).	

CCN tab	
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable.
	Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

If you have 2 BACnet routers behind a single NAT router

You must set up the **Network** tree as shown below. Both BACnet routers must be on the same Ethernet segment (on the same hub or switch).

Server behind a NAT router

This network layout is usually used to add a new segment to an existing BACnet network.

NOTES

- The client will use the server NAT router's public IP address to access the i-Vu® Pro server.

- The NAT router must be set up to port forward HTTP traffic to the i-Vu® Pro server. This router also must be set up to port forward BACnet traffic (typically UDP 47808) to the server. See *Building a Network tree* (page 11).

- An IPv6 network behind a NAT router is not supported by the i-Vu® Pro application.

To edit System Properties

1 In SiteBuilder, on the **Network** tree, double-click the system .

2 In the **System Properties** dialog box, click the **Advanced** tab.

3 Check **Enable Network Address Translation (NAT)**.

4 Type the **NAT Alarm Recipient Address** information. In most systems, the i-Vu® Pro server is the alarm recipient.

- Type the **Network Number** of the BACnet/IP network where the i-Vu® Pro server is located. You will add this network later. See "*To add a BACnet/IP network* (page 16)".
- Type the NAT's public IP address in the **IP Address** field. (129.129.35.3, in the example above.)

5 Click **OK**.

To add a site

1 On the **Network** tree, right-click the system .

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.
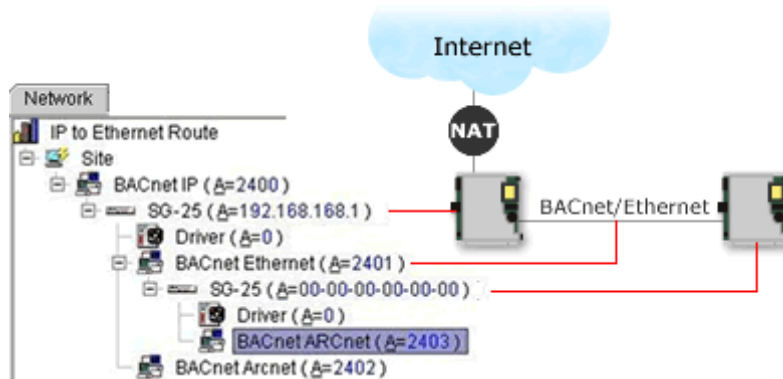
Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.

Field	Notes
Devices under this site are behind a NAT	Uncheck this field.
Deliver alarms from this site to the server through a NAT	Check this field.
Time Zones	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router behind the NAT to be the peer caching router. The peer caching router will poll other routers behind the same NAT for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. **NOTE** If a system has multiple BACnet routers behind different NAT routers, put each router in a different site in SiteBuilder, then set the BACnet router in each site as the peer caching device. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP network .

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

5 Add a network and controllers as needed under the BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.

General tab	
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following: • Use the default number based on SiteBuilder's next sequential Device Instance number • Enter a specific number. i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to: (IP network number x 100) + the router's rotary switch address EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015. **NOTE** To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example router**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's IP address that you got from the network administrator. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	190.180.155.45
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.255.0
Default Gateway Address	Type the BACnet router's default gateway address that you got from the network administrator.	129.129.35.3
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system even though this kind of network cannot use BBMDs.	

Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77).
	After the download is complete, click **Module Status** to verify the router's address.
	i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).

CCN tab	
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable.
	Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.

Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.

Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

NOTE   The client will use the public IP address to access the i-Vu® Pro server.

Server and BACnet router behind different NAT routers

This type of network layout using NAT routers (firewalls) is the most common.
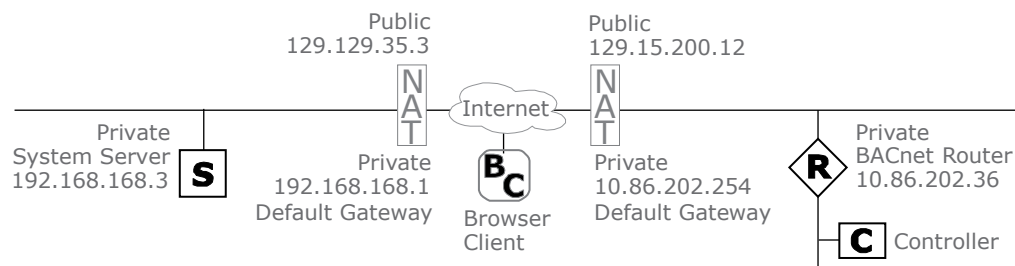
NOTES

- When using NAT routers, the controllers on different sites cannot communicate with each other.
- The client will use the server NAT router's public IP address to access the i-Vu® Pro server.

- The server NAT router must be set up to port forward HTTP traffic to the i-Vu® Pro server. This router also must be set up to port forward BACnet traffic (typically UDP 47808) to the server. See *Building a Network tree* (page 11).

- The BACnet router's NAT router must be set up to port forward BACnet traffic (typically UDP 47808) to the BACnet router. See *Building a Network tree* (page 11).

- An IPv6 network behind a NAT router is not supported by the i-Vu® Pro application.

To edit System Properties

1 In SiteBuilder, on the **Network** tree, double-click the system .

2 In the **System Properties** dialog box, click the **Advanced** tab.

3 Check **Enable Network Address Translation (NAT)**.

4 Type the **NAT Alarm Recipient Address** information. In most systems, the i-Vu® Pro server is the alarm recipient.

- Type the **Network Number** of the BACnet/IP network where the i-Vu® Pro server is located. You will add this network later. See "*To add a BACnet/IP network* (page 16)".
- Type the NAT's public IP address in the **IP Address** field. (129.129.35.3, in the example above.)

5 Click **OK**.

To add a site

1 On the **Network** tree, right-click the system .

2 Select **Add Site**.

3 Enter values in the **Site** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver. Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.

Field	Notes
Devices under this site are behind a NAT	Select this checkbox.
Deliver alarms from this site to the server through a NAT	This field is automatically checked when you check **Devices under this site are behind a NAT**.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router behind the NAT to be the peer caching router. The peer caching router will poll other routers behind the same NAT for colors and prime variables. Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued. **NOTE** If a system has multiple BACnet routers behind different NAT routers, put each router in a different site in SiteBuilder, then set the BACnet router in each site as the peer caching device. You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Optimize download for Open PIC controllers	Check to increase download speed. The full source files are not downloaded into the PIC controllers when this is checked.
Include graphics in Open programmable controller download	Uncheck to increase download speed. If you are not changing the graphics, you may not want to include them in every download.

To add a BACnet/IP network or BACnet/IPv6 network

1 On the **Network** tree, right-click the site ![icon].

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/IP** or **BACnet/IPv6**.

To add a BACnet router

1 Right-click the BACnet/IP network .

2 Select **Add BACnet Device Router**.

3 Enter values in the **BACnet Device Router** dialog box. See table below.

4 Click **OK**.

5 Add a network and controllers as needed under the BACnet router.

General tab	
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.

General tab	
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following: • Use the default number based on SiteBuilder's next sequential Device Instance number • Enter a specific number. i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate its Device instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to: (IP network number x 100) + the router's rotary switch address EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015. **NOTE** To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.
Screen File	If you have a file for a BACview® or touchscreen device, select a **.bacview** or **.touch** file from the drop-down list.

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example router**
Specify a custom or DHCP IP Address	Select this option, then enter values in the following fields. **NOTE** Open router only—The router's IP Address DIP switch must be set to: **Assigned** if using a custom IP address **DHCP** if using a DHCP IP address	
IP Address	Type the BACnet router's private IP address that you got from the network administrator. ⚠ **CAUTION** SiteBuilder allows duplicate private IP addresses in the system, even on the same private network. So you must verify with your network administrator that the private network has no duplicate addresses. **NOTE** If the i-Vu® Pro server will use a port other than 47808 for BACnet communication, type `:<port number>` after the address. For example, 172.18.64.38:47901.	10.86.202.36
Subnet Mask	Type the BACnet router's subnet mask that you got from the network administrator.	255.255.255.0
Default Gateway Address	Type the private IP address of the router's NAT that you got from the network administrator.	10.86.202.254
NAT Address	Type the public IP address of the router's NAT that you got from the network administrator.	129.15.200.12

Address tab	See: *Setting Open device IP addresses* (page 77) or *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87)	**Example router**
NAT CCN Port	Type the NAT's public port for the NAT address that translates to the private CCN/IP port.	
Automatically Configure My BBMDs	Check this field for all BACnet routers in your system even though this kind of network cannot use BBMDs.	
Local Access Connection	Open router only—If your network administrator gave you a custom IP address (not DHCP), you must connect to the router locally and then **Download Address** before the i-Vu® Pro server can communicate with the router. See *To set a controller's custom IP address in SiteBuilder* (page 77). After the download is complete, click **Module Status** to verify the router's address. i-Vu® XT or TruVu™ router only—You cannot download the router's IP address from SiteBuilder. See *Setting i-Vu® XT or TruVu™ device IP addresses* (page 84, page 87).	
CCN tab		
This device is a CCN Gateway	Check if router is a CCN Gateway. Enter **Element Number**, and **Baud Rate**, if applicable. Leave unchecked if router is not a a CCN Gateway, enter **Gateway IP Address**, **Element Number**, and **Baud Rate**, if applicable.	
Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.	
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.	

If you have 2 BACnet routers behind a single NAT router

You must set up the **Network** tree as shown below. Both BACnet routers must be on the same Ethernet segment (on the same hub or switch).

BACnet/SC network

In this BACnet/SC network, a BACnet/SC hub must be configured. See the *BACnet/SC Hub Installation Guide*.

To add a site

1   On the **Network** tree, right-click the system .

2   Select **Add Site**.

3   Enter values in the **Site** dialog box. See table below.

4   Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5   Click **OK**.
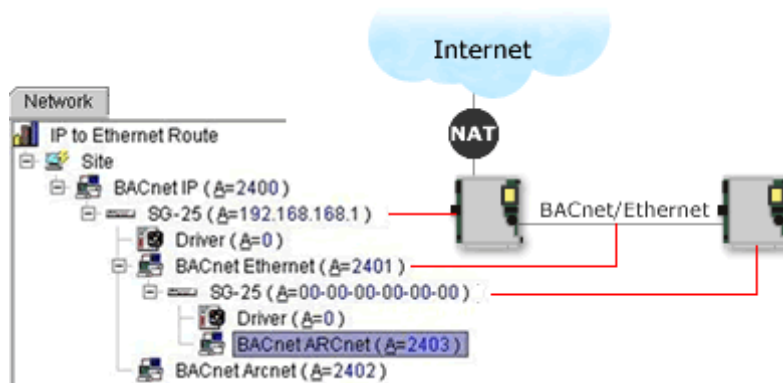
Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Site Number	SiteBuilder automatically assigns a unique site number, but if needed, you can change it to some other unique number.
Device Password	Supported only for a router with a drv_gen5 driver.
	Set this password on the **Network** tree > **Site** level to restrict access to the controller setup pages when connecting through the Service Port.
Time Zone	By default, the site is set to the same time zone as the i-Vu® Pro server. If the site is in a different time zone, select **Specify Time Zone**, and then select the zone from the drop-down list.
Peer Caching	Select **Use Peer Caching**, click the drop-down arrow, then choose the BACnet router closest to the i-Vu® Pro server to be the peer caching router. The peer caching router will poll other routers on the IP network for colors and prime variables.
	Peer caching also checks the communication status of the peer caching router and any routers for which it is caching. If any of the routers cannot communicate, a Dead Module Timeout alarm is issued.
	You can select **Do Not Use Peer Caching** to slightly reduce network bandwidth, but you will not receive Dead Module Timeout alarms for the BACnet routers.
Download Source Files	This field sets the default option for any new device that will be added to the system with a v4.x or later driver.
	If Field Assistant will be used with your i-Vu® Pro system, it needs each controller's .equipment, .touch, .bacview, and .driver/.driverx source files, plus any .view files marked to be included in download.
	• Check this field to have the i-Vu® Pro application download the source files so that Field Assistant can upload them. This option depends on the controller's available memory.
	• Uncheck this field if you know most of the controllers do not have enough memory or you want faster uploads in Field Assistant. You will need to export the files from the SiteBuilder or i-Vu® Pro application so that they can be imported into Field Assistant. To export from the SiteBuilder application, see *Miscellaneous SiteBuilder menu commands* (page 101). To export from the i-Vu® Pro application, see "Commissioning equipment using Field Assistant" in i-Vu® Pro Help.
	NOTE If you check this field but the controller does not have enough memory, the i-Vu® Pro download will fail. You can then uncheck this option on the controller's **Properties** page and download again.

To add a BACnet/SC network

1 On the **Network** tree, right-click the site .

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

⚠️ Every site with a CCN Gateway must have the same Network Number if they are on the same IP network.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	⚠️ Every site with a CCN Gateway must have the same Network Number. Click **Yes** in the dialog box stating **This network number is already in use. Only in rare cases do you want to duplicate this. Are you sure you want a duplicate network number?**. i-Vu® Open systems: Use the default number unless your BACnet administrator gives you a different number.
Media Type	Select **BACnet/SC**.
Allow IP devices that use the IP<->BACnet/SC modem	Check this box if applicable.

To add a BACnet/SC Hub

1 On the **Network** tree, right-click the BACnet/SC network .

2 Select **Add BACnet Device**.

3 Enter values in the **BACnet Device** dialog box. See table below.

4 Click **OK**.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.

Field	Notes
Address	Unique 6-byte virtual network address used to identify this device as a node on the BACnet/SC Hub. By default, it is assigned an address based on the **Device Instance** with the first three bytes being zero. A temporary random 6 byte value is assigned if a duplicate address is detected when connecting to the BACnet/SC Hub. **NOTE** This must match the value configured on the BACnet/SC Hub.
Controller	Select **Third Party Controller**.
Device Instance	Use the default number unless you use a naming convention for your devices. A device instance number must be unique throughout the entire BACnet system. When this value is changed, **Address** changes to represent its hex value. This must match the **Device Instance** in the BACnet/SC Hub's setup pages.
Screen File	Not used in a BACnet/SC Hub, leave blank.

To add a BACnet/SC router

1   On the **Network** tree, right-click the BACnet/SC network .

2   Select **Add BACnet Device Router**.

3   Enter values in the **BACnet Device Router** dialog box. See table below.

4   Click **OK**.

5   Repeat steps 1 through 4 for the second router. See tables below.

6   Add a network and controllers as needed under the BACnet router.

General tab	
Name	The name displayed on the Network tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Address	Unique 6-byte virtual network address used to identify this device as a node on the BACnet/SC Hub. By default, it is assigned an address based on the **Device Instance** with the first three bytes being zero. A temporary random 6 byte value is assigned if a duplicate address is detected when connecting to the BACnet/SC Hub.
Controller	Select the G5RE controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.

General tab	
Device Instance	This number must be unique throughout an entire BACnet system. Do one of the following:
	• Use the default number based on SiteBuilder's next sequential Device Instance number
	• Enter a specific number.
	<u>i-Vu® XT or TruVu™ router on IPv4 network</u>
	Check **Autogenerated** only if you plan to let the controller autogenerate its Device Instance. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to:
	(IP network number x 100) + the router's rotary switch address
	EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015.
	NOTE To see the **Autogenerated** checkbox, you must click **OK** in the properties dialog box, then double-click the router to reopen the properties.
	<u>i-Vu® XT or TruVu™ router on IPv6 network</u>
	The Device Instance number you enter in SiteBuilder must match the autogenerated number in the controller setup pages that you access through the Service Port. This number is equal to:
	(IP network number x 100) + the router's rotary switch address
	EXAMPLE If the IP network number is 1600 and the rotary switch address is 15, the **Device Instance** is 160015.
Screen File	If you have a file for a BACview® or touchscreen device, do one of the following:
	• Select a **.bacview** or **.touch** file from the drop-down list.
	• Type the complete file name for a **.KPD** or **.S37** file. Include the extension. This field is case sensitive.
Download Source Files	Available only with a v4.x or later driver.
	If Field Assistant will be used with your i-Vu® Pro system, it needs each controller's .equipment, .touch, .bacview, and .driver/.driverx source files, plus any .view files marked to be included in download.
	• Select this option to have the i-Vu® Pro application download the source files so that Field Assistant can upload them. This option depends on the controller's available memory.
	• Do not select this option if you know the controller does not have enough memory or you want faster uploads in Field Assistant. You will need to export the files from the SiteBuilder or i-Vu® Pro application so that they can be imported into Field Assistant. To export from the SiteBuilder application, see *Miscellaneous SiteBuilder menu commands* (page 101). To export from the i-Vu® Pro application, see "Commissioning equipment using Field Assistant" in i-Vu® Pro Help.
	NOTE If you select this field but the controller does not have enough memory, the i-Vu® Pro download will fail. You can then disable this option on the controller's **Properties** page and download again.

Networks tab	i-Vu® XT or TruVu™ router only—Shows the network number, media type, and if applicable, lets you select the router port that each network will use.
Notes tab	These notes can also be seen on i-Vu® Pro **Properties** page.

To add a BACnet/ARCNET or MS/TP network

1 On the **Network** tree, right-click the device router ▬▬.

2 Select **Add BACnet Network**.

3 Enter values in the **Network** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field. These notes can also be seen on the i-Vu® Pro **Properties** page.

5 Click **OK**.

NOTE   Another method to select the port when adding an MS/TP network to the i-Vu® XT or TruVu™ router, is to double-click the router, and on the **Networks** tab, select the port that the MS/TP network will use.

Field	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Network Number	Do one of the following: • Use the default number • Enter a specific number i-Vu® XT or TruVu™ router only—Check **Autogenerated** only if you plan to let the controller autogenerate this network number. The number you enter in SiteBuilder must match the autogenerated number in the controller setup pages. This number is equal to: ((IP network number + the router's rotary switch address) x 10) + the port identifier number The port identifier number is 0 for Port S1 or 3 for the Port S2. **EXAMPLES** • If the IP network number is 2400 and the rotary switch address is 15 and the network is on Port S1, the **Network Number** is 24150. • If the IP network number is 2400 and the rotary switch address is 103 and the network is on Port S2, the **Network Number** is 25033.
Media Type	Select **ARCNET** or **MS/TP**.
Port	i-Vu® XT or TruVu™ router only—Select the physical port that the MS/TP network will use.

NOTE When wiring an MS/TP network to a router port, you must set the port's baud rate using one of the following methods:

- Open router—Using the router's Local Access port and PuTTY. See "To set a port's baud rate using PuTTY" in the router's *Installation and Start-up Guide*.
- i-Vu® XT or TruVu™ router with a fwex driver—In the i-Vu® Pro interface on the driver's **BACnet Router Properties** page or in the controller setup pages on the **Ports** tab.
- i-Vu® XT or TruVu™ router with a gen5 driver—In the i-Vu® Pro interface, in the Driver or the in the Service Port controller setup pages, on the **Configuration** > **Port S1** or **Port S2** page.

To add a controller to the BACnet/ARCNET or MS/TP network

1 Right-click the network that the controller is attached to.

2 Select **Add BACnet Device**.

3 Enter values in the **BACnet Device** dialog box. See table below.

4 Optional: Click **Notes**, then type in the notes field.
A notes icon () on the tree indicates where you added notes.

5 Click **OK**.

Field or Tab	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Address	Type the rotary dial address of the controller.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	Use the default number unless you use a naming convention for your devices. A device instance number must be unique throughout an entire BACnet system.
Screen File	If you have a file for a BAC*view*® or touchscreen device, do one of the following: • Select a **.bacview** or **.touch** file from the drop-down list. • Type the complete file name for a **.KPD** or **.S37** file. Include the extension. This field is case sensitive.

Field or Tab	Notes
Download Source Files	Available only with a v4.x or later driver.
	If Field Assistant will be used with your i-Vu® Pro system, it needs each controller's .equipment, .touch, .bacview, and .driver/.driverx source files, plus any .view files marked to be included in download.
	• Select this option to have the i-Vu® Pro application download the source files so that Field Assistant can upload them. This option depends on the controller's available memory.
	• Do not select this option if you know the controller does not have enough memory or you want faster uploads in Field Assistant. You will need to export the files from the SiteBuilder or i-Vu® Pro application so that they can be imported into Field Assistant. To export from the SiteBuilder application, see *Miscellaneous SiteBuilder menu commands* (page 101). To export from the i-Vu® Pro application, see "Commissioning equipment using Field Assistant" in i-Vu® Pro Help.
	NOTE If you select this field but the controller does not have enough memory, the i-Vu® Pro download will fail. You can then disable this option on the controller's **Properties** page and download again.

To add an IP controller to the BACnet/SC

1   Ensure **Allow IP devices that use the IP<->BACnet/SC modem** is checked in the **Network** dialog box when adding the BACnet network.

2   Right-click the BACnet/SC network that the controller is attached to.

3   Select **Add BACnet Device**.

4   Enter values in the **BACnet Device** dialog box. See table below.

5   Optional: Click **Notes**, then type in the notes field.
A notes icon () on the tree indicates where you added notes.

6   Click **OK**.

Field or Tab	Notes
Name	The name displayed on the **Network** tree.
Reference Name	Global reference names begin with # and must be unique within the entire system. Non-global reference names (no #) must be unique among siblings.
Address	Type the rotary dial address of the controller.
Controller	Select the controller in the drop-down list. **NOTE** If the controller you are adding is not listed, browse to the controller's driver.
Device Instance	Use the default number unless you use a naming convention for your devices. A device instance number must be unique throughout an entire BACnet system.

Field or Tab	Notes
Screen File	If you have a file for a BAC*view*® or touchscreen device, do one of the following:
	• Select a **.bacview** or **.touch** file from the drop-down list.
	• Type the complete file name for a **.KPD** or **.S37** file. Include the extension. This field is case sensitive.
Download Source Files	Available only with a v4.x or later driver.
	If Field Assistant will be used with your i-Vu® Pro system, it needs each controller's .equipment, .touch, .bacview, and .driver/.driverx source files, plus any .view files marked to be included in download.
	• Select this option to have the i-Vu® Pro application download the source files so that Field Assistant can upload them. This option depends on the controller's available memory.
	• Do not select this option if you know the controller does not have enough memory or you want faster uploads in Field Assistant. You will need to export the files from the SiteBuilder or i-Vu® Pro application so that they can be imported into Field Assistant. To export from the SiteBuilder application, see *Miscellaneous SiteBuilder menu commands* (page 101). To export from the i-Vu® Pro application, see "Commissioning equipment using Field Assistant" in i-Vu® Pro Help.
	NOTE If you select this field but the controller does not have enough memory, the i-Vu® Pro download will fail. You can then disable this option on the controller's **Properties** page and download again.

Assigning equipment to controllers

Each controller on the **Network** tree may operate one or more pieces of equipment on the **Geographic** tree. Assign the equipment to the controller where you will wire its physical inputs and outputs.

To assign equipment to controllers

1   On the **Geographic** tree, select or multiple-select equipment .

2   Right-click a controller on the **Network** tree.

3   Select **Assign Equipment**.

Or, you can drag the selected equipment, then drop it onto a controller.

TIP Click **View** > **Highlight** > **Not Assigned** to show unassigned equipment and phantom equipment as red text.

To unassign equipment

You cannot delete a piece of equipment from the **Network** tree; you must unassign it.

1   On the **Network** tree, right-click a piece of equipment.

2   Select **Unassign Equipment**.

Testing a system

After creating a database, you can check your work by running the system without connecting to the controllers. See "Running i-Vu_Pro_ Server" in i-Vu® Pro Help.

To run SiteBuilder concurrently with the i-Vu® Pro Server application

You can start SiteBuilder from the i-Vu® Pro Server application if they are both running on the same computer.

1 In the i-Vu_Pro_ Server application, click **Launch Concurrent SiteBuilder**.

2 Type your **Name** and **Password**.

3 Click the mode icon to change from view only mode (red) to edit mode (green).
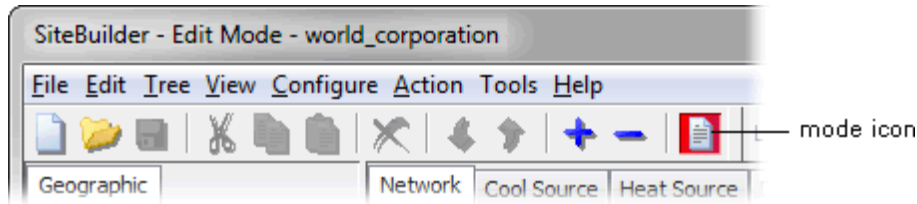
4 Close SiteBuilder after you make your changes.

NOTES

- Any changes you make while SiteBuilder is in edit mode are saved immediately. You cannot "close" SiteBuilder without saving changes.

- In view only mode, i-Vu_Pro_ Server and field communications run normally. In edit mode, the i-Vu_Pro_ Server is not affected, but field communications are disabled and operators will see question marks on i-Vu® Pro pages instead of live data. After you switch to view mode or close SiteBuilder, field communications resume automatically.

Using the Error Log

When an error occurs in the SiteBuilder database, a red triangle appears in the lower right corner of the screen indicating that a message has been written to the Error Log. The Error Log displays database errors for the current SiteBuilder session and erases the messages when you close SiteBuilder.

Click **File** > **Error Log** to view the errors or click the red triangle in the lower right corner.
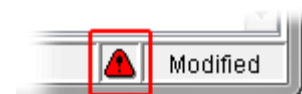
SiteBuilder productivity tools

Use the following features to work efficiently in SiteBuilder.

To copy tree items

1 Right-click the item you want to copy.

   NOTE Its children will be copied as well.

2 Select **Copy**.

3 Right-click the item that will be the new parent of the copied item.

4 Select **Paste**.

5 Double-click each pasted item to change its properties if necessary.

NOTE Use the *Library or Export/Import Clipping* (page 70) feature to copy and paste between two databases.

To replicate a tree item

The Replicate command makes copies of a tree item and all of its children. For example, if you have a building with 6 identical floors, you can build one floor, then replicate it 5 times. The Replicate command can generate the following for the item that you replicate:

• A unique name for each area or device
• A unique name and object instance number for each piece of equipment
• A unique IP address for each BACnet device router
• A unique address for each BACnet device

TIP Define all the properties of an item before you replicate it.

NOTES

• Plan carefully when replicating an item with children. When you replicate an item with children, copy_of_ is added at the beginning of the children's reference names. The cleanup required may outweigh the benefits of the replication.

• The Replicate command does not copy phantom equipment.

To replicate an item:

1 Right-click an area, a piece of equipment, or a device that you want to replicate.

2 Select **Replicate**.

3 Enter values in the **Replicate** dialog box. See table below.

4 Click **OK**.

Field	Notes
Number of Times To Replicate	The number of copies you want
Name Template, **Reference Name Template**, and **Starting Character to replace * in names**	SiteBuilder gives the first copy a unique name and reference name by replacing the * in the **Templates** with the **Starting Character**. For each additional copy, SiteBuilder increases or decreases the character. **NOTES** • The asterisk appears at the end of the name in the **Template** fields, but you may move it if needed. • Use additional asterisks to insert zeros in the numbers. For example, to replicate 15 times with a **Starting Number** of 1:

If Name Template is...	First copy's name is...	Last copy's name is...
Building 1*	Building 11	Building 115
Building **	Building 101	Building 115

💡 **TIP** See the results of your settings in the **Preview** box.

Field	Notes
Increase characters or **Decrease characters**	Increase: 1, 2, 3 or a, b, c Decrease: 9, 8, 7 or i, h, g
Specify Object Instance and **Starting Object Instance Number**	Equipment only. Check **Specify Object Instance** and enter a starting number to set sequential numbers for each copy. Uncheck **Specify Object Instance** to have SiteBuilder assign the numbers.
IP Address Template and **Starting Number**	BACnet device routers only. Enter an IP address and starting number to set a sequential IP address for each copy.
Starting Address Number	BACnet devices only. Enter a starting address number to set a sequential address for each copy.

To rearrange sibling items

1 Select the item that you want to move.

NOTE Its children will move as well.

2 Move the item using one of the following methods:

- Click [icon] or [icon] on the toolbar.
- Hold down the **Alt** key, then press the up or down arrow key.

NOTE To move an item to different parent, use the **Cut** and **Paste** commands.

To delete tree items

[warning icon] **CAUTION** You cannot undo the **Delete** command. Save the database before you delete items.

1 Right-click the item you want to delete.

2 Select **Delete**.

NOTE When you delete a control device from the **Network** tree, its corresponding equipment on the **Geographic** tree becomes unassigned.

To find items in SiteBuilder

1 Click **Edit** > **Find**.

2 Type the text you are looking for in the **Find What** field.

3 To narrow the search, check:
- **Case Sensitive** to find exact case. For example, Heat finds only Heat and Heating, but not heat or heating.
- **Match Full Text** to find exact words. For example, Heat finds Heat, but not Heating.

4 Tell SiteBuilder where to search:
- **Active Tree Only**—Check to search only the tree that is currently active. Uncheck to search all trees.
- **From Current Location**—Check to search the selected item and its children. Uncheck to search from the top of the tree.

5 Check the types of information that you want SiteBuilder to search for in the properties dialog boxes.

NOTE Check **Type** to search Control Program, Controller, or Driver names. Check **Other** to search any other properties not specifically listed.

6 Click **Find**. The **Found Items** are listed.

7 Double-click a **Found Item** to highlight the item on the tree and to open its properties dialog box.

To find assigned tree items

Use the **Find In Tree** command to show an item's assigned counterpart on the opposite tree.

1 Right-click a tree item.

2 Select **Find In Network (or Geographic) Tree**.

To locate a tree item

1 Type or paste the item's path in the **Location** field.
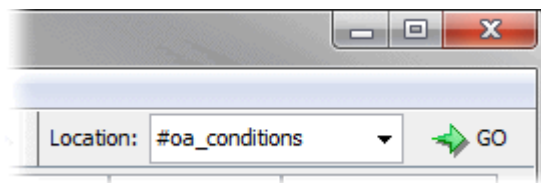
NOTE Type the global reference name (for example, `#oa_conditions`) or the relative path (for example, `geographic/world_corporation/first_floor/vav_101`).

2 Press **Enter** or click **Go**.

NOTE If the path does not match any item in the database, the text in the **Location** field turns red.

To show tree item details

To show details for the items on the **Geographic** and **Network** trees:

1 Select **View** > **Display**.

2 Check the options that you want to see.

NOTE Hold down the Alt key to see an underlined letter for each option in the **Display Options** dialog box. That letter identifies each option in the tree.
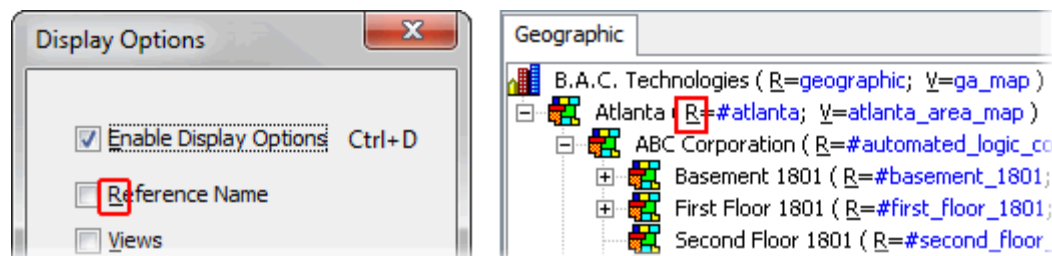
To copy a tree item's path

1 Select a tree item to view its path in the **Location** field.

2 Highlight the text in the field or triple-click it.
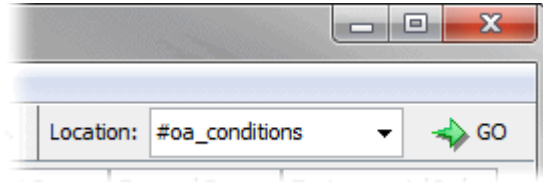
3 Press **Ctrl+C** to copy the path to the clipboard.

4 Paste this information into another application if desired.

Mouse and keyboard shortcuts

You can use typical mouse and keyboard shortcuts in SiteBuilder such as double-click, right-click, multiple-select, and the arrow keys.

Ctrl+drag Hold down the **Ctrl** key to drag and drop a copy of a selected item.

F6 Activates the opposite tree.

Using library items and clippings

SiteBuilder exports and imports items from one system to another, even if the database types are different. For example, you can export a library item or clipping from a Derby database and import it into a MySQL database.

Export/Import...	To...	Exported items
Library item (see "*To export and import library items*" page 70)	Create generic **Geographic** tree items that can be reused as building blocks for new or existing systems.	• A selected **Geographic** tree item • Reports • Alarm categories
Clipping (see "*To export and import a clipping*" page 71)	Move part or all of a system into another system for one-time integration of additions into a master system.	• One or more selected **Geographic** and **Network** tree items including attached control programs, graphics, and drivers • Trend data (optional) • Reports • Alarm categories • Location-dependent security information • Schedules and schedule group membership (including the entire schedule group and schedules, if it does not exist in the target system) • Alarm actions

To export and import library items

You can export and import items from one database type to another. For example, you can export a library item from a Derby database and import it into a MySQL database.

To export library items

1 Right-click a **Geographic** tree item that you want to export to the library.

   NOTE All children of the item will be exported as well.

2 Click **Export To Library**.

3 Click **Browse**.

4 Browse to an existing folder or create a new folder for the library you want to export.

5 Name the .library file.

6 Click **Select**.

7 Type the **Entry Name**.

8   Click **Next**.

9   Click **Finish**.

To import library items

⚠️ **CAUTIONS**

- Do not save a database if you cancel an import command before the process is complete because items will be partially imported.

- Do not cancel an import command while running SiteBuilder concurrently with i-Vu_Pro_ Server because items will be partially imported.

1   Right-click the **Geographic** tree item that will be the parent of the imported library item.

2   Select **Import From Library**.

3   Do one of the following:

- ○   Select a library item from the list.

- ○   Browse to the desired .library file, then click **Select**, then **Next**.

      NOTE   SiteBuilder generates a list of naming and numbering conflicts that were found during the import process. The **Original Value** and the **New Value** that SiteBuilder created to fix the conflict are listed beside the affected tree location name.

4   Select a **Severity Level** to filter the list of issues.

5   Select an issue from the list.

6   Click **Edit** to change the properties of that item.

7   Repeat steps 4 through 6 for each error.

      NOTE   Click **Save Messages** if you want to save the issues to a text file.

8   Click **Next**.

9   Click **Finish**.

To export and import a clipping

Clippings must be exported and imported into the same version of SiteBuilder, but they can be exported from one database type and imported into another database type. For example, you can export a clipping from a Derby database and import it into a MySQL database.

NOTE   A site can have only one BACnet/IP network. The import process will automatically merge a clipping of a BACnet/IP network into the target system's BACnet/IP network if the networks have identical reference names. If the names are different, the import will create a second BACnet/IP network under the site, and you will have to manually correct this. See step 13 of *To import a clipping* (page 72).

To export a clipping

1   Select **File** > **Clipping** > **Export**.

2   On the **Geographic** or **Network** tree, select the tree items you want to include in the clipping. Use **Ctrl+click**, **Shift+click**, or both to select multiple items.

3   Click **Add** in the **Export Clipping** dialog box. Repeat steps 2 and 3 if necessary.

   NOTE Red text in this list indicates that a corresponding device or assigned equipment is missing. Hover over the text for details.

4   Optional: Check **Include trend data** if you want historical trend data in the clipping.

   NOTE The import and export can take a long time if trend data is included.

5   Click **Export**.

6   Name and save the exported file.

7   Click **Export**.

8   Close the **Export Clipping Progress** dialog box.

To import a clipping

NOTE You can also perform this task in the i-Vu® Pro interface if the clipping does not include trend data. A clipping with trend data can be imported only in SiteBuilder running in non-concurrent mode.

1   Save your SiteBuilder database.

2   Select **File** > **Clipping** > **Import**.

3   **Browse** to and select the clipping you want to import, then click **Next**.

4   Optional: If necessary, change the location path where the clipping will be imported, then click **Next**.

5   If asked if you want to replace event templates, follow the on-screen instructions.

6   If asked if you want to overwrite components, follow the on-screen instructions.

   NOTES

   ○   SiteBuilder lists any conflicts and problems that were found during the import. The **Original Value** and the **New Value**, if any, that SiteBuilder created to fix the conflict are listed beside the affected tree location name.

   ○   You cannot cancel the import process. If the import produces unwanted results, close SiteBuilder without saving your database. Any program or graphics files that were included in the clipping will still be imported.

7   Select a **Severity Level** to filter the list of issues.

8   Select an issue from the list.

9   Click **Edit** to change the properties of that item.

10 Repeat steps 7 through 9 for each error.

   NOTE Click **Save Messages** if you want to save the issues to a text file.

11 Click **Next**.

12 Click **Finish**.

13 Do any of the following that apply.

If you imported...	Do the following in the SiteBuilder application...	Do the following in the i-Vu® Pro application...
Another site into the system	Change the new site's BACnet/IP network number to be the same as the other BACnet/IP network(s).	Download All Content to all Carrier IP routers in the system.
A second BACnet/IP network into a site	Move the items under the new network to the original BACnet/IP network, then delete the new network.	Download Parameters to any controllers that you moved.
Any controllers that use the SiteBuilder option **Automatically Configure My BBMDs**	N/A	Download BBMDs to the routers.
Any controllers that use manually configured BBMD tables	N/A	Update the routers' BBMD tables. See "*To set up BBMDs through the i-Vu® Pro interface* (page 89)" or "To set up BBMDs using the BBMD Configuration Tool" in i-Vu® Pro Help.

Advanced topics

To set up i-Vu® Pro server communication

By default, the i-Vu® Pro server uses the following TCP and UDP ports.

Port	Traffic
TCP/IP 80	HTTP server
TCP/IP 443	Secure HTTP server (HTTPS)
TCP/IP 47806	Alarm Popup alarm action
UDP/IP 47808	BACnet (used by all BACnet vendors)

Under some circumstances, a facility may require the i-Vu_Pro_ server to use a different port for HTTP traffic. Or, you may need to set up secure i-Vu_Pro_ communication using TLS.

To change server communication settings:

1   In SiteBuilder, select **Configure** > **Preferences** > **Web Server**.

2   Enter appropriate values. See table below.

Field	Notes
Restrict to IP Address	If your i-Vu_Pro_ server has multiple IP addresses and you don't want i-Vu_Pro_ pages served to all the IP addresses, type the IPv4 or IPv6 address that you want to serve pages on. Use this field only under the direction of Carrier Technical Support.
Enabled Web Server Ports	For systems with clients both on an internal network and that connect through the Internet, select **Both HTTP and HTTPS**. This allows you to configure your firewall so internal clients can use HTTP and external clients are required to use TLS.
Redirect HTTP requests to HTTPS	Check this field to have all HTTP requests automatically redirected to the more secure HTTPS. Checking this field automatically disables the field **Allow SOAP applications over HTTP** (described below).
HTTP Port	To use an HTTP port other than 80, the URL used on a client to access the i-Vu_Pro_ system must include the port. For example, for an HTTP port of 90, each client must use the URL http://<servername>:90
HTTPS Port	To use a secure port other than 443, the URL used on a client to access the i-Vu_Pro_ system must include the port. For example, to sue port 444, each client must use the URL https://<servername>:444 To use https, you must set up TLS in your browser. See "What is TLS?" in i-Vu_Pro_ Help.
Keystore Password	See "What is TLS?" in i-Vu_Pro_ Help.

Field	Notes
Allow a less secure TLS level	If your system is set up to use TLS, i-Vu® Pro automatically uses TLS 1.3. If a i-Vu_Pro_ client computer cannot use TLS 1.3, you can select less secure levels of TLS.
Allow SOAP applications over HTTP	By default, i-Vu® Pro requires that SOAP applications run over HTTPS. If you have an external SOAP application that must run over HTTP, you can either change the application or check this box. **NOTES** • User names and passwords are vulnerable over HTTP connections. • This field is disabled if the field **Redirect HTTP requests to HTTPS** is checked.
Allow unsigned add-ons	By default, i-Vu® Pro allows only add-ons that have been approved by Carrier. Check this box if you want to allow other unapproved add-ons in your system.
Authentication Provider	If your system has one or more i-Vu_Pro_ add-ons that provide a different user authentication mechanism such as LDAP or Active Directory, the add-on name(s) will appear in this list. Select the one you want to use from the list or leave it set on **Default** to use i-Vu_Pro_'s built-in mechanism. Depending on the add-on's capability, selecting a provider other than **Default** may affect any of the following: • Change the User Name and Password requirements in i-Vu_Pro_ • Remove operators or operator groups from the i-Vu_Pro_ interface • Display a different login page than i-Vu_Pro_'s standard login page

To disable default global reference names

SiteBuilder can create global and non-global reference names. SiteBuilder creates global reference names by default because they are easier to work with than non-global reference names. However, using non-global reference names can be more efficient for jobs with many identical areas. You can use both kinds of reference names in the same database.

Both types of reference names consist of lowercase letters, numbers, hyphens, and underscores (no spaces).

A global reference name begins with the pound sign (#) and must be unique within the entire system. A global reference name is a complete i-Vu® Pro path.

A non-global reference name must be unique only among its sibling tree items. You must specify absolute or relative paths when using non-global reference names. See "Defining i-Vu® Pro paths" in ViewBuilder Help for more information.

Follow the steps below to disable the global reference name default.

1 Select **Configure** > **Preferences**.

2 Uncheck **Make default reference names global (#refname)** on the **General** tab.

NOTE Changing this default will not affect existing reference names.

Changing a control program

If you change...	Then...	Notes
A control program's logic in the Snap application	Do one of the following in SiteBuilder to have the changes take effect: • Right-click the equipment on the **Geographic** tree, then select **Reload Control Program**. • Select **Action** > **Reload Selected**, select the control program(s) you want to reload, then click **OK**.	Reloading updates all instances of a control program throughout the system and marks the controller(s) for an All Content download in the i-Vu® Pro interface.
Only a control program's parameters in the Snap application	Same as above.	Reloading marks the controller(s) for an Only Parameters download in the i-Vu® Pro interface.
Something in the control program that does not affect logic, such as Properties page text	Right-click the equipment on SiteBuilder's **Geographic** tree, then select **Rebuild Equipment Pages**.	No download required.
A control program in the i-Vu® Pro interface but then need to restore the original values set in the Snap application	Right-click the equipment on SiteBuilder's **Geographic** tree, then select **Reset to Control Program Defaults**.	This marks the controller(s) for an Only Parameters download in the i-Vu® Pro interface.

NOTES

• You can reload a control program or select a different control program in the i-Vu® Pro interface.

• If you change a control program in the Snap application and it does not display correctly in the i-Vu® Pro interface, **Ctrl+right-click** the i-Vu® Pro action pane, and then select **Refresh**.

To change or upgrade a driver

⚠ **CAUTIONS**

• Upgrading drivers requires an All Content download to all affected controllers. Downloading to all controllers at the same time can take several hours for a large system. Communication with the controllers is suspended during an All Content download.

• An All Content download clears trend, history, and alarm data from the affected controllers. At the beginning of the download process, trends that have the Trend Historian enabled are saved to the system database.

To change or upgrade a driver:

1 Copy the new driver to **webroot**<system_name>**\drivers** folder.

2 In SiteBuilder, do one of the following:

○ Upgrade multiple drivers. Select **Action** > **Scan For New Device Drivers**, then follow the on-screen instructions.

-or-

○ Upgrade a single driver:
  a. Double-click the driver on the **Network** tree.
  b. Select the new driver from the **Driver Definition** drop-down list.
  c. Click **OK**.
  d. Select the device(s) to change in the **Change Which Devices** dialog box.
  e. Click **OK**.

NOTES

- If a driver becomes corrupt (for example, a driver page is missing in the i-Vu® Pro interface), right-click the driver on the **Network** tree, then select **Reload Driver**. Reloading updates all instances of the driver throughout the system and marks the controller(s) for an All Content download. Changes you made on the i-Vu® Pro driver pages remain in effect.

- You can also change, upgrade, or reload a driver in the i-Vu® Pro interface.

Setting Open device IP addresses

For the i-Vu® Pro server to communicate with Carrier controllers on the IP network, the i-Vu® Pro server and each controller must have the following:

- IP address (unique and static)
- Subnet mask
- Default gateway address, if your system has a default gateway (IP router)

You can use one of the following IP addressing methods for the i-Vu® Pro system.

Use...	If...
DHCP addressing (page 78) (requires v6.0 or later controller drivers)	The IP network uses a DHCP server for IP addressing

Use...	If...
Custom addressing (page 79)	The answer to any of the following questions is yes and you do not have a DHCP server.
	• Will the system share a facility's existing IP data network?
	• Will it have 199 or more Carrier IP devices, or 254 or more devices with static IP addresses?
	• Will it be connected to the Internet?
	• Will it have at least one device located on the other side of an IP router?
	• Will it have any third-party controllers?
Default addressing (page 83)	The answer to all of the above questions is no.

To set an Open device's DHCP IP address

PREREQUISITES

• A computer with a USB port

• A USB Link cable
NOTE The USB Link driver is installed with i-Vu® Pro v5.1 or later systems. Please refer to the Silicon Labs website and search "CP210x USB to UART Bridge VCP Drivers" for the most current device drivers. Install the driver before you connect the USB Link to your computer

⚠️ **CAUTION** If multiple controllers share power but polarity was not maintained when they were wired, the difference between the controller's ground and the computer's AC power ground could damage the USB Link and the controller. If you are not sure of the wiring polarity, use a USB isolator between the computer and the USB Link. Purchase a USB isolator online from a third-party manufacturer.

1 Connect the laptop to the controller or sensor using the appropriate USB Link cable(s).
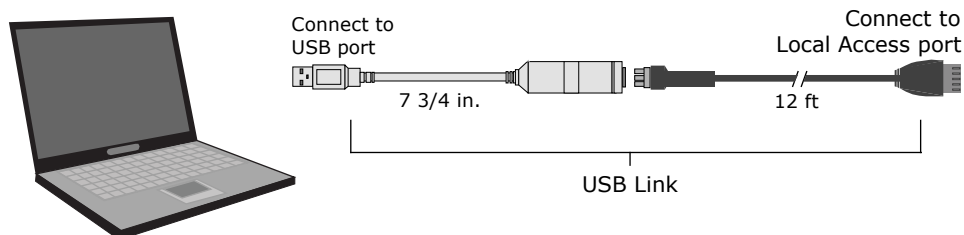
NOTE If using a USB isolator, plug the isolator into your computer's USB port, and then plug the USB Link cable into the isolator.

2 i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again.

3   In SiteBuilder, set your **Configure** > **Preferences** > **Connections** tab settings.

Field	Value
Port	The laptop's Com port number that the USB Link is connected to.
Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1

4   On the **Network** tree, double-click the controller.

5   On the **Address** tab, click **Module Status**.

6   Note the controller's **Ethernet MAC address**.

7   i-Vu® Open Router or i-Vu® Open Link only: When finished, turn off the controller's power, set its **Router Config Mode** DIP switch to **OFF** to restore normal functionality to the **Local Access** port, then turn the power on again.

8   Give the Ethernet MAC address to your DHCP network administrator and request that he reserve a static IP address for that MAC address.

9   Get from him the reserved IP address, subnet mask, and default gateway address for your router.

10   Repeat steps 1 and 2.

11   i-Vu® Open Router or i-Vu® Open Link only: Set the **DHCP/Assigned** DIP switch to **DHCP**.

12   Repeat steps 3 and 4.

13   On the **Address** tab, select **Specify a custom or DHCP IP Address**.

14   Type the **IP Address**, **Subnet Mask**, and **Default Gateway Address** that the DHCP network administrator gave you.

15   Click **Download Address**.

16   i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again.

To set the Open device's custom IP address

If your system's IP addresses are assigned by the network administrator, you can connect a laptop to a controller's Local Access Port and then use either of the following methods to set the controller's custom IP address so that the i-Vu® Pro server can communicate with it.

- *Set the custom IP address in SiteBuilder* (page 80)
- *Set the custom IP address using PuTTY* (page 81)

To set a controller's custom IP address in SiteBuilder

PREREQUISITES

- A computer with a USB port

- A USB Link cable
  NOTE The USB Link driver is installed with i-Vu® Pro v5 or later systems. Please refer to the Silicon Labs website and search "CP210x USB to UART Bridge VCP Drivers" for the most current device drivers. Install the driver before you connect the USB Link to your computer.

⚠ **CAUTION**   If multiple controllers share power but polarity was not maintained when they were wired, the difference between the controller's ground and the computer's AC power ground could damage the USB Link and the controller. If you are not sure of the wiring polarity, use a USB isolator between the computer and the USB Link. Purchase a USB isolator online from a third-party manufacturer.

1   Connect the computer to the controller using the USB Link cable(s).
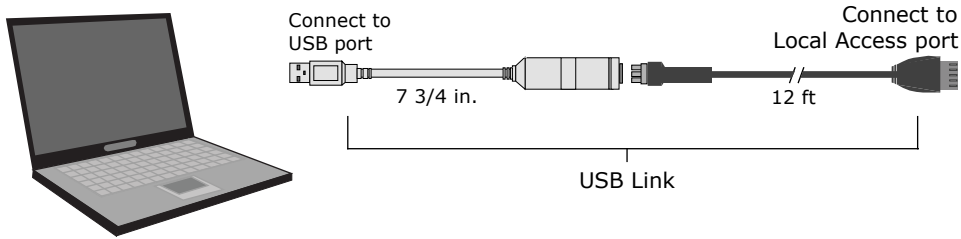
NOTE If using a USB isolator, plug the isolator into your computer's USB port, and then plug the USB Link cable into the isolator.

2   i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again. Set the router's **IP Address** DIP switch to **Assigned**.

3   In SiteBuilder, set your **Configure** > **Preferences**, **Connections** tab settings.

Field	Value
Port	The laptop's Com port number that the USB Link is connected to.
Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1

4   Click **OK**.

5   In the **Network** tree, double-click the controller.

6   On the **Address** tab, select **Specify a custom or DHCP IP Address**.

7   Type the **IP Address**, **Subnet Mask**, and **Default Gateway Address**.

8   Click **Download Address**.

9 When the download is complete, click **Module Status** in the same dialog box to verify the controller's address.

10 i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again.

## To set a controller's custom IP address using PuTTY

PREREQUISITES

- A computer with a USB port

- A USB Link cable
  NOTE The USB Link driver is installed with i-Vu® Pro v5 or later systems. Please refer to the Silicon Labs website and search "CP210x USB to UART Bridge VCP Drivers" for the most current device drivers. Install the driver before you connect the USB Link to your computer.

⚠️ **CAUTION**   If multiple controllers share power but polarity was not maintained when they were wired, the difference between the controller's ground and the computer's AC power ground could damage the USB Link and the controller. If you are not sure of the wiring polarity, use a USB isolator between the computer and the USB Link. Purchase a USB isolator online from a third-party manufacturer.

1 Download and install PuTTY from the *PuTTY website* (*http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html*).

2 Connect the laptop to the local access port of the controller, ZS sensor, or an SPT sensor using the USB Link cable(s).
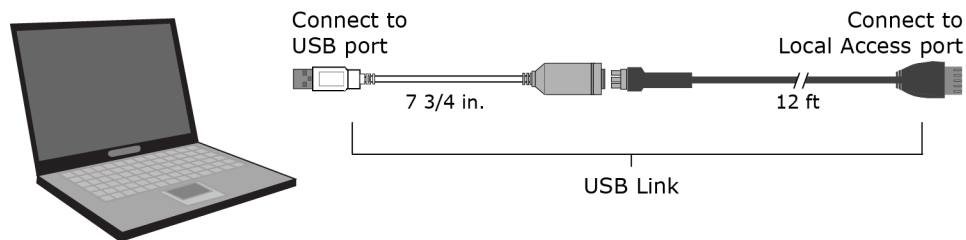
NOTE If using a USB isolator, plug the isolator into your computer's USB port, and then plug the USB Link cable into the isolator.

3 i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again. Set the router's **IP Address** DIP switch to **Assigned**.

4 Start PuTTY.

5 Under **Category** > **Connection**, select **Serial**.

6 Under **Options controlling local serial lines**, enter the following settings:

Field	Value
Serial line to connect to	Replace X with the computer's port number that the USB Link cable is connected to.
	NOTE To find the port number, select **Start** > **Control Panel** > **System** > **Device Manager** > **Ports (Com & LPT)**. The COM port number is beside **Silicon Labs CP210x USB to UART Bridge**.

	Ports (COM & LPT)
	   Communications Port (COM1)
	   ECP Printer Port (LPT1)
	   Intel(R) Active Management Technology - SOL (COM3)
	   Silicon Labs CP210x USB to UART Bridge (COM4)

Speed (baud)	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None

7   Click **Open**. A window similar to the one below appears.

```
1) Restart
2) Display Modstat
3) IP Address [192.168.1.6]
4) Subnet Mask [255.255.255.0]
5) Default Gateway [0.0.0.0]
```

8   If you changed a value, type 1, then press **Enter** to restart the controller.

9   Type the number of the address field, then press **Enter**.

10   Type the new address, then press **Enter**.

11   Type 1, then press **Enter** to restart the controller.

12   Close PuTTY.

13   i-Vu® Open Router or i-Vu® Open Link only: Turn off the router's power, set its **Router Config Mode** DIP switch to ON, then turn its power on again.

## *To remotely change a controller's custom IP address*

Steps 1 through 5 below change the IP address in the controller. Steps 6 through 10 change it in the system database. Communication with the controller will be disrupted until all steps are performed.

1 On the i-Vu® Pro Installer navigation tree, right-click a router and select **Driver Properties** > **BACnet Router Properties** page.

2 Under **IP Configuration**, check **Enable IP configuration changeover**.

> **NOTE** The field **Allow remote management of IP configuration** is for future use.

3 In the **Next** column, type the new **IP Address**, **Subnet Mask**, and **Default Gateway Address**. Type the **UDP Port** that your server is using to communicate to all controllers.

> **NOTE** You must enter values in all 4 fields, even if the values will not change.

4 Do one of the following.

Set the **Changeover timeout** field to...	The router will use the **Next** settings...
0:00	As soon as the router can communicate with the **Next Default Gateway Address**.
A specific length of time	As soon as the router can communicate with the **Next Default Gateway Address,** or when the timeout expires, whichever occurs first.

5 Click **Accept**.

6 On the **System Options** tree, select **Connections**.

7 On the **Configure** tab, select the **BACnet/IP Connection**, then click **Disconnect**.

8 On the navigation tree, go to the controller's **Properties** page.

9 Make the necessary changes in the **Address** and **Subnet mask** fields.

10 Click **Accept**.

11 On the **System Options** tree, select **Connections**.

12 On the **Configure** tab, select the **BACnet/IP Connection**, then click **Start**.

13 On the navigation tree, go to the router's **Properties** page, then click **Module Status** to verify communication.

To set the Open device's default IP address

NOTES

- If you want to use the default IP addressing but a DHCP server exists, follow the instructions in *To set a controller's custom IP address* (page 79), and enter the default addresses listed in step 2 below.

- A network using default addressing does not have a default gateway (IP router).

1 If wired for power, turn off the controller's power.

> **NOTE** The controller only reads the rotary switch positions during power up or upon reset.

2 i-Vu® Open Router or i-Vu® Open Link only: Set the **DHCP/Assigned** DIP switch to the **Assigned** position to use the following IP networking parameters.

IP address = 192.168.168.**x**
where **x** is the controller address you will set in steps 3 and 4.

Subnet mask = 255.255.255.0

Default gateway address = 192.168.168.254

3   Using the rotary switches, set the controller's address to match the **Address** in the controller's properties dialog box in SiteBuilder. Set the **Tens** (**10's**) switch to the tens digit of the address, and set the **Ones** (**1's**) switch to the ones digit.

EXAMPLE   Setting the switches as shown in the figures below produces an IP address of 192.168.168.25.
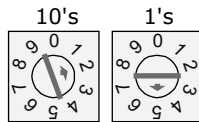
4   On SiteBuilder's **Network** tree, double-click the controller.

5   On the **Address** tab, select **Use Default IP Address**.

6   In the **Address (Dial Setting on Device)** field, type the value of **x**.

7   Click **OK**.

NOTE   The default address is an intranet address. Data packets from this address are not routable to the Internet.

Setting i-Vu® XT or TruVu™ device IPv4 addresses

See the device's *Installation and Start-up Guide* for details.

For the i-Vu® Pro server to communicate with Carrier controllers on the IP network, the i-Vu® Pro server and each controller must have the following:

*   IP address (unique on the IP network)
*   Subnet mask
*   Default gateway address, if your system has a default gateway (IP router)

Use one of the IP addressing schemes described below with the associated instructions that follow.

Use a...	If...
DHCP IP Address generated by a DHCP server	The IP network uses a DHCP server for IP addressing
Custom Static IP Address from your network administrator	You do not use a DHCP server and the answer to any of the following questions is yes. Will the i-Vu® Pro system: • Share a facility's existing IP data network? • Have 254 or more devices with static IP addresses? • Be connected to the Internet? • Have at least one device located on the other side of an IP router? • Have any third-party IP devices?

Use a...	If...
Default IP Address that your system creates	The answer to all of the above questions is no.

NOTE Carefully plan your addressing scheme to avoid duplicating addresses. If third-party devices are integrated into the system, make sure your addresses do not conflict with their addresses.

To set the IP address in the controller setup pages

You must define the i-Vu® XT or TruVu™ device's IP address in 2 places, in SiteBuilder and in the controller setup pages. Defining it in the controller setup pages sets the IP address in the controller. To open the controller setup pages:

1   Connect an Ethernet cable from a computer to the controller as shown below.

Connect to computer's Ethernet port

Connect to controller's Service Port
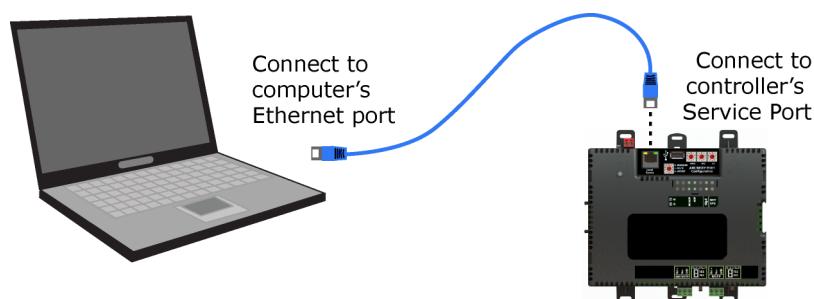
2   Turn off the computer's Wi-Fi if it is on.

3   If your computer uses a static IP address, use the following settings:

- ○   Address: 169.254.1.x, where x is 2 to 7
- ○   Subnet Mask: 255.255.255.248
- ○   Default Gateway: 169.254.1.1

4   If it uses a DHCP address, leave the address as it is.

5   Open a web browser on the computer.

6   Navigate to https://local.access or https://169.254.1.1 to see the controller setup pages.

To set a DHCP IP address

1   On the controller setup pages **Modstat** tab, find the controller's **Ethernet MAC address** and write it down.

2   On the **Ports** tab under **IP Port**, select **DHCP**.

3   Click **Save**.

4   Write down the **IP Address**.

5   Give the DHCP network administrator the IP address and Ethernet MAC address and ask him to reserve that IP address for the controller so that it always receives the same IP address from the DHCP server.

To set a custom IP address

1 Obtain the IP address, subnet mask, and default gateway address for the controller from the facility network administrator.

2 On the controller setup pages **Ports** tab under **IP Port**, select **Custom Static**.

3 Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** addresses given to you by the network administrator.

4 Click **Save**.

To set a default IP address

Default IP addressing assigns the following to the controller:

- IP address = 192.168.168.**x**
  where **x** is the setting on the rotary switches in the range from 1 to 253
- Subnet Mask = 255.255.255.0
- Default Gateway = 192.168.168.254

1 Set the controller's three rotary switches to a unique address on the network. Set the left rotary switch to the hundreds digit, the middle switch to the tens digit, and the right switch to the ones digit.
EXAMPLE The switches below are set to 125.
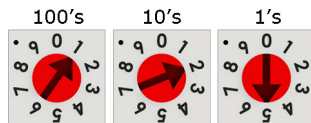
2 On the controller setup pages **Ports** tab under **IP Port**, select **Default IP Address**.

3 Click **Save**.

NOTE The default address is an intranet address. Data packets from this address are not routable to the Internet.

To remotely change an i-Vu® XT or TruVu™ device's custom IP address

Steps 1 through 5 below change the IP address in the controller. Steps 6 through 10 change it in the system database. Communication with the controller will be disrupted until all steps are performed.

1 On the i-Vu® Pro navigation tree, right-click a router and select **Driver Properties** > **BACnet Router Properties** page.

2 Under **IP Configuration**, select **Enable IP configuration changeover**.

3 In the **Next** column, type the new **IP Address**, **Subnet Mask**, and **Default Gateway Address**. Type the **UDP Port** that your server is using to communicate to all controllers.

NOTE You must enter values in all 4 fields, even if the values will not change.

4 Do one of the following.

Set the **Changeover timeout** field to...	To have the controller use the **Next** settings...
0:00	As soon as the controller can communicate with the **Next Default Gateway Address**.
A specific length of time	As soon as the controller can communicate with the **Next Default Gateway Address,** or when the timeout expires, whichever occurs first.

5   Click **Accept**.

6   On the **System Options** tree, select **Connections**.

7   On the **Configure** tab, select the **BACnet/IP Connection**, then click **Stop**.

8   On the navigation tree, go to the controller's **Properties** page.

9   Make the necessary changes in the **Address**, **Subnet mask**, and **Default Gateway** fields.

10   Click **Accept**.

11   On the   **System Options** tree, select **Connections**.

12   On the **Configure** tab, select the **BACnet/IP Connection**, then click **Start**.

13   On the navigation tree, go to the controller's **Properties** page, then click **Module Status** to verify communication with the controller.

Setting i-Vu® XT or TruVu™ device (drv_fwex driver) IPv4 addresses

See the device's *Installation and Start-up Guide* for details.

For the i-Vu® Pro server to communicate with Carrier controllers on the IP network, the i-Vu® Pro server and each controller must have the following:

- IP address (unique on the IP network)
- Subnet mask
- Default gateway address, if your system has a default gateway (IP router)

Use one of the IP addressing schemes described below with the associated instructions that follow.

Use a...	If...
DHCP IP Address generated by a DHCP server	The IP network uses a DHCP server for IP addressing
Custom Static IP Address from your network administrator	You do not use a DHCP server and the answer to any of the following questions is yes. Will the i-Vu® Pro system: • Share a facility's existing IP data network? • Have 254 or more devices with static IP addresses? • Be connected to the Internet? • Have at least one device located on the other side of an IP router? • Have any third-party IP devices?

Use a...	If...
Default IP Address that your system creates	The answer to all of the above questions is no.

NOTE Carefully plan your addressing scheme to avoid duplicating addresses. If third-party devices are integrated into the system, make sure your addresses do not conflict with their addresses.

To set the IP address in the controller setup pages

You must define the i-Vu® XT or TruVu™ device's IP address in 2 places, in SiteBuilder and in the controller setup pages. Defining it in the controller setup pages sets the IP address in the controller. See the device's *Installation and Start-up Guide* for details.

To remotely change the i-Vu® XT or TruVu™ device's custom IP address

Steps 1 through 5 below change the IP address in the controller. Steps 6 through 10 change it in the system database. Communication with the controller will be disrupted until all steps are performed.

1 On the i-Vu® Pro **Network** tree, go to the controller's **Driver** > **BACnet Router Properties** page.

2 Under **IP Configuration**, select **Enable IP configuration changeover**.

3 In the **Next** column, type the new **IP Address**, **Subnet Mask**, and **Default Gateway Address**. Type the **UDP Port** that your server is using to communicate to all controllers.

> **NOTE** You must enter values in all 4 fields, even if the values will not change.

4 Do one of the following.

Set the **Changeover timeout** field to...	To have the controller use the **Next** settings...
0:00	As soon as the controller can communicate with the **Next Default Gateway Address**.
A specific length of time	As soon as the controller can communicate with the **Next Default Gateway Address,** or when the timeout expires, whichever occurs first.

5 Click **Accept**.

6 On the **System Configuration** tree, select **Connections**.

7 On the **Configure** tab, select the **BACnet/IP Connection**, then click **Stop**.

8 On the **Network** tree, go to the controller's **Properties** page.

9 Make the necessary changes in the **Address**, **Subnet mask**, and **Default Gateway** fields.

10 Click **Accept**.

11 On the **System Configuration** tree, select **Connections**.

12 On the **Configure** tab, select the **BACnet/IP Connection**, then click **Start**.

13 On the **Network** tree, go to the controller's **Properties** page, then click **Module Status** to verify communication with the controller.

Setting i-Vu® XT or TruVu™ device (drv_gen5) IPv6 addresses

For the i-Vu® XT or TruVu™ router on an IPv6 network, all of the addressing is obtained in SiteBuilder by using the **Device Instance** that was set up on the controller setup pages.

1 Right-click the **BACnet/IPv6** network.

2 Select **Add BACnet Device Router**.

3 Enter the **Device Instance**.

NOTE This must match the number set up on the controller setup pages. See the router's *Installation and Start-up Guide* for details.

4 Click **OK**.

Setting up BACnet Broadcast Management Devices (BBMDs)

To minimize network communications, IP routers do not pass on broadcasts that they receive. If your system has controllers on different IP subnets separated by an IP router, you must set up a BACnet router on each IP subnet as a BACnet Broadcast Management Device (BBMD). A BBMD passes BACnet/IP broadcasts across the IP router to other BBMDs.
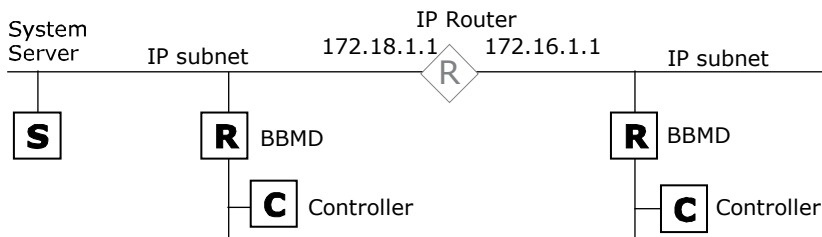
NOTE A BACnet SC router cannot be a BBMD device. Ensure that at least one of your downstream BACnet IP devices is the assigned BBMD, and is on the same subnet and the Gig E port connection for the BACnet SC router.

To set up BBMDs, use the appropriate method in the table below.

If your i-Vu® Pro system has...	Use this method
100 or less IP subnets with:* • No third-party BACnet routers • Authority from your customer to manage all Carrier and third-party BBMDs on the network • Third-party BACnet routers that support BBMD writes from the network	Let SiteBuilder automatically configure your BBMDs. **NOTE** This is not supported in a i-Vu® XT or TruVu™ router with the drv_gen5 driver
Any of the following: • More than 100 IP subnets * • Third-party BBMDs that you do not have authority to manage • Third-party BBMDs that use a non-standard port for BACnet communications • IP devices underneath a BACnet SC router	Set up custom BBMDs through the i-Vu® Pro interface or using the BBMD Configuration Tool.

* If your system has only i-Vu® XT or TruVu™ routers, this number changes from 100 to 500.

NOTE If the i-Vu® Pro server is on an IP subnet without an Carrier BACnet router, register the server as a foreign device. See *To set up the i-Vu® Pro server as a foreign device* (page 94).

To set up BBMDs in SiteBuilder

As you add each Carrier BACnet router to an IP network on the **Network** tree, check **Automatically Configure My BBMDs** on the **Address** tab. SiteBuilder automatically selects a router in each IP subnet as the BBMD and sets up BBMD tables appropriately.

To see which BACnet routers SiteBuilder assigned as BBMDs, select **View** > **Display** > **BBMD**. BBMDs show **B=assigned** on the **Network** tree.

To override SiteBuilder's BBMD selection, right-click a different BACnet router on the same IP subnet, then select **Force to BBMD**.

NOTE If you are managing 3rd party BBMDs, you must add every 3rd party device that could be a BBMD as a 3rd party device router in SiteBuilder.

To set up BBMDs through the i-Vu® Pro interface

If the BBMD controller has the drv_gen5 driver, using this feature only installs the BBMD table in the network that is set as the home network. We recommend using the Driver/controller setup pages to set up BBMD tables. For instructions, see the next section *To set up BBMDs through the i-Vu® Pro interface for i-Vu® XT or TruVu™ controllers (drv_gen5 driver)* (page 89).

**1** Make a list of the IP addresses for every controller that will function as a BBMD in your system.

⚠️ **CAUTION** Multiple BBMDs on an IP subnet disrupt BACnet communications. Define only one BBMD on either side of each IP router in your system.

2 In Notepad, type the list putting each IP address on a separate line. (Open routers support up to 100 IP addresses per .bdt file; i-Vu® XT or TruVu™ routers support up to 500.)

NOTE If you must communicate with a third-party router that does not use the BACnet/IP port 47808 (0xbac0), you must include the hexadecimal port number in the IP address. For example, `172.168.23.67:0xe78a`
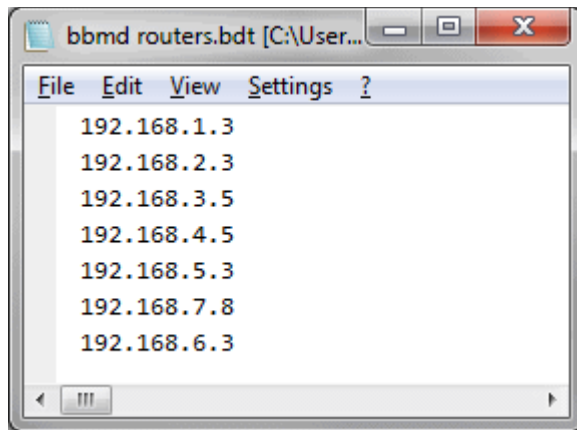
3 Save the file in the **webroot**<system_name> folder with a .bdt extension instead of .txt.

4 On the i-Vu® Pro navigation tree, select one of the Carrier controllers that will function as a BBMD.

5 To check if the controller has an existing BBMD table, click [icon] and select **Manual Command**.

6 In the manual command field, type: `bbmd read x.x.x.x`
where x.x.x.x is the IP address of the controller you are on.

7 Click **OK**.

8 If the Broadcast Distribution Table contains IP addresses that are not in your .bdt file, add them to your .bdt file.

9 Click [icon] and select **Manual Command**.

10 In the manual command field, type: `bbmd write filename.bdt x.x.x.x`
where `filename.bdt` is the .bdt file in the **webroot**<system_name> folder
and `x.x.x.x` is the IP address of the controller you are on.

11 Click **OK**.

12 Issue another bbmd read command to verify that the .bdt file was written correctly.
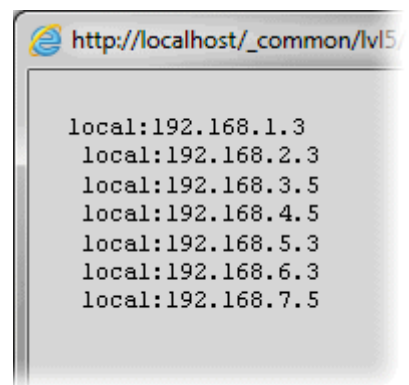
To set up BBMDs through the i-Vu® Pro interface for i-Vu® XT or TruVu™ controllers (drv_gen5 driver)

1   In the i-Vu® Pro interface, in the navigation tree, select one of the Carrier controllers with the drv_gen5 driver that will function as a BBMD.

2   Click **Driver** > **Properties** page.

3   On the **Configuration** > **Gig-E Port** tab.

4   Select the network to import a BBMD to and click **Import BBMD**.

5   Save the file to a convenient location on your computer.

6   Click the file and a confirmation message appears.

7   Repeat steps 4 to 6 for any other networks you need to import a BBMD file to.

Address formatting

- An IPv4 address with optionally space-delimited subnet mask

  `ip address:port subnetmask`

- An IPv6 address with default port

  `ip address`

- An IPv6 address with specified port

  NOTE   This is standard IPv6 notation where the address is surrounded by brackets followed by a colon and the port.

  `[ip address]:port`

- A host name address with optionally space-delimited subnet mask.

  NOTE   The host name must be within quotes

  `"host name":port subnetmask`

To set up BBMDs using the BBMD Configuration Tool

This utility is not supported for a controller with a drv_gen5 driver.

Before you begin, do the following:

- Set up the IP address, subnet mask, default gateway, and network numbers for the i-Vu® Pro server and each Carrier controller on the IP network.

- The **BBMD Configuration Tool** is available on the i-Vu® Tech Tools USB drive or go to http://www.hvacpartners.com.

1   Make a list of the IP addresses for every controller that will function as a BBMD in your system.

⚠ **CAUTION**   Multiple BBMDs on an IP subnet disrupt BACnet communications. Define only one BBMD on either side of each IP router in your system.

2   In Notepad, type the list putting each IP address on a separate line. (Open routers support up to 100 IP addresses per file; i-Vu® XT or TruVu™ routers support up to 500.)

NOTE If you must communicate with a third-party router that does not use the BACnet/IP port 47808 (0xbac0), you must include the hexadecimal port number in the IP address. For example, `172.168.23.67:0xe78a`
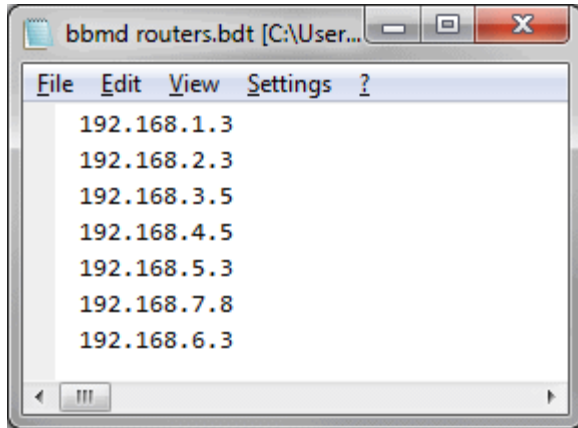
3 Save the file to your folder of choice or the **webroot**\<system_name> folder. Use a .bdt, .bbmd, or .text extension instead of .txt.

4 Open the BBMD Configuration Tool.

5 In the **IP Address or Host Name** field, type the IP address of an Carrier controller that functions as the BBMD (BACnet Broadcast Management Device) for its subnet.

6 Click the Broadcast Distribution Table **Read** button to see if the controller has an existing BBMD table. The information found is displayed in the bottom half of the window.

7 If the Broadcast Distribution Table contains IP addresses that are not in the file you created in steps 2 and 3, add them to your file.

8 Verify that the same controller IP address is still in the **IP Address or Host Name** field.

9 Click the Broadcast Distribution Table **Browse** button, then select the file that you created in steps 2 and 3.

10 Click the Broadcast Distribution Table **Write** button to send the information to the controller.

11 Click **Read** again to verify that the new file was written to the Carrier controller.

12 Repeat steps 5 through 11 for each Carrier controller that will function as a BBMD in your system.

To set up the i-Vu® Pro server as a foreign device

If the i-Vu® Pro server is on an IP subnet without an Carrier BACnet router, register the server as a foreign device to a BBMD in the system. That BBMD will then forward BACnet broadcasts to the server. Register the server with the BBMD that will have the fastest response time. Response time is affected by distance and network complexity.

1 Click ![icon] > **System Options** > **Connections**.

2 On the **Configure** tab, select **BACnet/IP Connection**.

3 If the **Status** column shows:

- ○ **Connected**, click **Disconnect**.
- ○ **Stopped** or **Design Mode**, go to step 4.

4 Type the i-Vu® Pro server's IP address in the **IP Address** field. (172.18.64.37, in the example above.)

NOTE If you have more than one network interface card, type the address that connects to the controller network.

5 Type the i-Vu® Pro server's subnet mask in the **IP Subnet Mask** field. (255.255.0.0, in the example above.)

6 Select **Force Registration** from the **Foreign Device** drop-down list.

7 Select the BBMD in the **Primary BBMD** field.

8 To have a backup in case the first BBMD fails, select another BBMD in the **Backup BBMD if primary fails** field.

9 Click ▶ next to **Tuning Parameters**.

10 Keep the 600-second default value in the **Register FD Interval** field.

NOTE If the re-registration does not occur within this time, the BBMD will delete the i-Vu® Pro server from its list.

11 Click **OK**.

12 If running i-Vu® Pro Server (not i-Vu® Pro Design Server), select the **BACnet/IP Connection**, then click **Start**.

If your system does not have any BBMDs

Follow the steps below to create pseudo BBMDs so that you can register the server.

1 In the SiteBuilder application, double-click each BACnet router and check **Automatically Configure My BBMDs** on the **Address** tab.

2 In the i-Vu® Pro application, select any location on the navigation tree.

3 Run the manual command `bbmd update` to create a blank .bdt table in every router and mark them for download.

4 Download parameters to the routers.

5 Follow the steps above to register the i-Vu® Pro server as a foreign device to one of the routers.

Upgrading the i-Vu® Pro system

To upgrade to the i-Vu® Pro v8.0 system, see the *i-Vu® Application Upgrade Guide to* v8.0.

Working with databases

A i-Vu® Pro system has 4 databases: Main, Alarms, Trends, Audit Log.

An Apache Derby database is in the **\webroot\<system>\databases** folder.

An SQL Server® Express database is in the **\webroot\<system>** folder. You can get a copy of your system by copying the system folder.

A MySQL, Oracle, PostGreSQL, or SQL Server® database is in the database management system's file structure, not in your i-Vu® Pro system folder.

Use the following SiteBuilder features to work with your databases.

Relocate	Lets you define the new location of one or more system databases.
	EXAMPLES
	• If you move the trends database to a new server, use **Relocate** to tell the i-Vu® Pro application the database's new location.
	• Use **Relocate** to move data from My SQL databases on an old database server to MySQL databases on a new server.
	NOTE Does not apply to Apache Derby or SQL Serve®r Express databases.
Migrate	Moves the 4 i-Vu® Pro databases to a new database type.
	EXAMPLE Create an Apache Derby system, move the system to the customer's server, then migrate the databases to the final database type such as MySQL.
Replicate	Makes a copy of selected databases and/or system files in a new folder under **\webroot**.
	EXAMPLE Use **Replicate** to create a backup of your PostgreSQL system. See *System maintenance* (page 98) for another way to back up your system.
Clippings	Lets you export navigation tree portions of a system, then import them into a different system. See *Using library items and clippings* (page 70).

To relocate a database

1 Open your system in SiteBuilder.

2 Click **File** > **Manage Database** > **Migrate/Replicate**.

3 Select **Relocate**, then click **Next**.

4 Choose the database you want to relocate.

5 Type the connect string(s). See *Database Connect Strings* (page 97).

6   Change the **Login** and **Password** if you are using a different user name and password, then click **Next**.

7   Verify your selection(s). If correct, click **Next**. If you want to change your selection, click **Previous**.

8   Click **Finish**.

To migrate the databases

1   Open your system in SiteBuilder.

2   Click **File** > **Manage Database** > **Migrate/Replicate**.

3   Select **Migrate**, then click **Next**.

4   Select the **Database Type** from the drop-down list, then click **Next**. If migrating to Apache Derby or SQLServer Express, go to step 8.

5   Type the connect string(s). See *Database Connect Strings* (page 97).

6   Type in the **Login** and **Password**, then click **Next**.

7   Verify your selection. If correct, click **Next**. If you want to change your selection, click **Previous**.

8   Click **Finish**.

To replicate a database

1   Open your system in SiteBuilder.

2   Click **File** > **Manage Database** > **Migrate/Replicate**.

3   Select **Replicate database**, then click **Next**.

4   In the **New System Name** field, type the name of the copy.

5   Select the **Database Type** from the drop-down list, then click **Next**.

6   Choose the databases or files that you want to replicate.

7   Click **Next**. If replicating an Apache Derby or SQLServer Express database, go to step 10.

8   Type the connect string(s). See *Database Connect Strings* (page 97).

     ⚠️ **WARNING** The **Main Database Connect String** must be different than the original system's. Using the same string will destroy the original database.

9   Type the **Login** and **Password**, then click **Next**.

10   Verify your selection(s). If correct, click **Next**. If you want to change your selection, click **Previous**.

11   Click **Finish**.

Database Connect Strings

For MySQL, Oracle, PostgreSQL, or SQL Server databases, you must enter the **Database Connect Strings**.

Database Connect Strings:	
Server	Type one of the following: • `localhost` if the i-Vu® Pro application and the database are on the same machine • The name or IP address of the machine that the database is on if different than the i-Vu® Pro application
Port	Do one of the following: • Type the appropriate default port number from the list below. • Type the port number that the database uses for communication if different than the database default. Default ports are: MySQL 3306 Oracle 1521 PostgreSQL 5432 SQLServer 1433
Instance	The name that you gave the i-Vu® Pro database in the database application. **NOTE** If the 4 i-Vu® databases do not reside under the default instance of SQL, then the instance name must be specified under the **Instance** column. The syntax for specifying the instance name of the SQL server is `<Database>;instance=<instance name>`. For example, if the SQL instance name is hvac , the syntax for the Instance field for the main database called iVu_Main would be `iVu_Main;instance=hvac`.

Database User:	
Login	The user login that you set up in the database application.
Password	The password that you set up in the database application.

NOTE To change **Database Connect Strings** for an existing system, select the **Modify database connection parameters** in the **File** > **Open** dialog box, then click **Next**.

Database Connect Strings:	
Server	Type one of the following: • `localhost` if the i-Vu® Pro application and the database are on the same machine • The name or IP address of the machine that the database is on if different than the i-Vu® Pro application
Port	Do one of the following: • Type the appropriate default port number from the list below. • Type the port number that the database uses for communication if different than the database default.

Default ports are:

MySQL	3306
Oracle	1521
PostgreSQL	5432
SQL Server	1433

Instance	The name that you gave the i-Vu® Pro database in the database application.

Database User:

Login	The user login that you set up in the database application.
Password	The password that you set up in the database application.

NOTE To change **Database Connect Strings** for an existing system, select the **Modify database** connection parameters in the **File** > **Open** dialog box, then click **Next**.

System database maintenance

You should perform the following system maintenance on a regular basis. See *To safely shut down the i-Vu® Pro application for database server maintenance* (page 100) before doing any maintenance on your database server.

To back up a system

The type of database your system uses determines the method you use to back up the system.

⚠️ **CAUTION** Do Not use SiteBuilder's Replicate feature to back up your database.

For Apache Derby or SQL Server Express

1   Shut down the SiteBuilder and i-Vu_Pro_ Server applications.

2   In the **i-Vu_Pro_x.x\webroot** folder, copy your system folder.

3   Paste the copy to a new location.

💡 **TIP** Zip the copy before transporting it over a network or to a USB drive.

For MySQL, MS SQL Server, or PostGreSQL

1   Follow the instructions above to copy your system folder in   **i-Vu_Pro_x.x\webroot.**

2   Use the database management system's backup method. See *To safely shut down the i-Vu® Pro application for database server* (page 100) maintenance before doing any maintenance on your database server.

To compact and defragment

In a new i-Vu® Pro system, the records in a database are contiguous. As records are added, deleted, and modified, the records become scattered in the database. This condition, called fragmentation, can slow down system performance and increase the database size. Compact the database to correct this situation.

The files on the server's hard drive can also become fragmented. Defragment the hard drive to correct this situation.

You should compact and defragment on a regular schedule such as once a month. But, you may need to do these more often, depending on how often the data or files change.

NOTE Compacting a database may take several minutes to several hours, depending on its size.

TIP To minimize the effects of fragmentation, you should maintain at least 20% free disk space on the server.

Compacting the database

The following databases are compacted dynamically—compacting occurs in the background when a database is open.
- MySQL
- MS SQL Server
- MS SQL Server Express
- PostGreSQL

To compact a Derby database:

1 Shut down the SiteBuilder and i-Vu® Pro Server applications.

2 Open a Windows command prompt application and type `cd c:\i-Vu_Pro_x.x`, replacing x.x with your system version number.

3 Click **Enter**.

4 Type `"Derby Compression Tool.exe" <system name>`.

5 Click **Enter**.

6 When compacting finishes, close the command window.

Defragmenting the server's hard drive

For all database types, use a defragmentation utility such as Windows Disk Defragmenter or Norton SystemWorks.

NOTE If you are using a single computer as both the i-Vu® Pro server and the client, you must defragment the disk more often than the disk of a dedicated server—especially if people access the Internet from this computer.

To minimize the database size

The larger a database is, the less responsive it may become. Deleting closed alarm incident groups, expired schedules, and expired historical trends on a regular basis will reduce the database size. You can set up your i-Vu® Pro application to automatically delete these. See "System Settings > Scheduled Tasks tab" in i-Vu® Pro Help.

To safely shut down the i-Vu® Pro application for database server maintenance

Occasionally, the database server is shut down for maintenance or backups. If this is done without shutting down the i-Vu® Pro Server first, the database may get locked and the i-Vu® Pro application may not be able to reconnect.

1   Shut down the i-Vu® Pro application.

2   Shut down the database server.

3   Perform the maintenance or repair needed on the server.

4   Restart the database server.

5   Restart the i-Vu® Pro application.

To unlock a database

1   In SiteBuilder, click **File** > **Open** and **Select Database** to open your site. The following message appears **The database appears to be in use by another application .....   Do you want to override the lock?**"

2   Click **Yes** to override the lock.

3   Log in to the site.

4   Exit SiteBuilder.

5   Start the i-Vu® Pro Service.

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Miscellaneous SiteBuilder menu commands

Menu command	Notes
File > **Open System Folder**	When you have a database open in SiteBuilder, this command opens the system folder in Windows® Explorer.
File > **All Source Files** > **Import/Export**	Use to export source files to a .zip file that can be imported into another i-Vu® Pro or Field Assistant system. Source files include: • Control programs (.equipment files only) • Drivers • Graphics (.view files only) • Touchscreen files • BACview® files • Report design files for Equipment Values or Trend Sample reports **NOTE** If import detects a difference between a database file and an import file with the same name, import does not overwrite the database file. A message lists any file differences so that you can resolve them.
Edit > **Run Global Point Count**	Select the system level on the **Geographic** tree, then select this menu command to display the number of:
	Allowed points — Points allowed by your system
	System points — These include: • Network inputs/outputs with an address whose device does not exist in the database • All microblocks that have an input/output number assigned • The following display microblocks: AI, AO, AV, BI, BO, BV, MSI, MSO, MSV **NOTES** • RS or Airflow microblocks count as 1 point. • Does not count expander numbers greater than 89.
Edit > **Run Local Point Count**	This command is like **Run Global Point Count** except that it counts points at and below the selected item.
Edit > **Run Point Count**	Select an item on the **Network** tree, then select this menu command to display the number of non-BACnet third-party points allowed by a controller and an estimate of the number of third-party points used.
Edit > **Rebuild Graphic Resources**	See "Setting up your system for non-English languages" in i-Vu® Pro Help.
Edit > **Export** (or **Import**) **Checkout Information**	See "Commissioning Equipment" in i-Vu® Pro Help.
Configure > **Preferences** > **Language**	See "Setting up your system for non-English languages" in i-Vu® Pro Help. **Current Session** affects only what you see in SiteBuilder, and is not part of the system you create.
Configure > **Preferences** > **Font**	Click the name in the **Font** column to see a different font in SiteBuilder.

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Menu command	Notes
Action > **Reload Selected**	Use this command to select which control programs and drivers you want to reload. All occurrences of the selected items are reloaded.
Action > **Compile JSP Cache**	**Compile JSP Cache** compiles the JSP pages that i-Vu® Pro uses *before* a user views them for the first time, instead of the individual pages compiling upon being viewed.
Action > **Check Database Integrity**	Use as Technical Support directs.
Tools > **Configure Tools**	Use this command if directed by Technical Support to install an added SiteBuilder feature.
Help > **Apply Update**	Use this command as directed by installation instructions for i-Vu® Pro service packs or patches.
Help > **About** > **Java VM** tab	If the system runs slowly when performing memory-intensive tasks or produces "Out of memory" errors in the i-Vu® Pro Server application or in log files, you can increase the amount of memory that the i-Vu® Pro application is permitted to use. On the **Java VM** tab, click **Memory Settings**. If your i-Vu® Pro server is a 64-bit machine with at least 6 GB RAM, change **Maximum memory** to 3000 MB. **NOTES** • The memory setting for the 64-bit machine depends on the size of the i-Vu® Pro system and what other services are running on the machine. For example, you could change the memory to 4000 MB if the database server is on a different machine. • You can also change this setting from i-Vu® Pro Server's **Help** > **About** menu command.

Mobile addressing job file for the AddressIT app

PREREQUISITE Before exporting the job file, all networks and controllers must be defined. Before importing the job file, only the networks need to be defined.

The job file can be emailed to a technician who will use AddressIT, the app for mobile addressing, to set IP addresses for controllers that do not have rotary switches or any other physical means to assign an address. After any changes, such as connecting a controller to a network, or setting the IP addresses, the technician can also email back the updated job file to be imported into SiteBuilder. For more information on mobile addressing, see the *AddressIT User Guide* found on the Carrier Partner Community website.

Follow the procedures below to import and export job files in SiteBuilder for the AddressIT app.

To export a job file

1 Navigate to **File** > **AddressIT** > **Export**.

2 Select controllers in the **Geographic** and **Network** trees and click **Add**.

   NOTE You can select an area or equipment and all controllers beneath it are included.

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3 After all controllers are added, click **Export** to save a mobile addressing .job file.

4 Email the .job file to upload it into AddressIT on a mobile device.

To import a job file

1 Navigate to **File** > **AddressIT** > **Import**.

2 Select the file you want to import.

NOTE   The following steps may appear differently, depending on the .job file. Inapplicable steps do not appear in the wizard.

3 Select controllers marked for deletion and click **Next**.

4 Select networks to add controllers to.

NOTE   You can view the controllers as a **LIST** or **TREE** on the left side of the wizard. The tree shows where the controllers were added in AddressIT. Since AddressIT does not have the network information, you need to add the controllers under the networks in order for SiteBuilder to insert the controllers in the **Network** tree.

a) Select the controller on the left side and the associated network on the right side.

b) Click **Add**.

c) Click **Next** when done.

5 Select the modified controllers within the .job file you want to import. If needed, check **Import Addresses** and **Import Names**.

NOTE   Serial numbers are always imported. If the import detects a difference in the controller's address, the message A**ddress changed** appears next to the controller's name.

6 Click **Next** and follow the prompts until the file is imported.

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Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
6/12/24	Setting up BACnet Broadcast Management Devices (BBMDs)	Updates for BACnet SC	X-TS-MM-J-MS
03/08/23	Miscellaneous SiteBuilder menu commands	Updated Compile JSP Cache	X-TS-RD-E-RD
05/04/21	Mobile Addressing job file for the AddressIT app	Added a main topic and two sub-topics on how to export and import	X-D

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