



Turn to the Experts.™

i-Vu Open 5.1

Installation and Start-up Guide





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What is i-Vu Open v5.1?

i-Vu Open is a web-based building automation system that can be accessed from anywhere in the world through Internet Explorer, without the need for special software on the workstation. Through Internet Explorer, you can access all building management functions such as:

- Adjust setpoints and other control parameters
- Set and change schedules
- Graphically trend important building conditions
- View and acknowledge alarms
- Run preconfigured and custom reports on energy usage, occupant overrides, and much more

In addition, i-Vu Open Plus supports:

- Third party integration
- Advanced custom reporting
- Tenant Override Billing
- Web Services (XML/SOAP)
- Controllers attached to the i-Vu Open Link

i-Vu Open 5.1 systems consist of:

- i-Vu Open web server
- i-Vu Open Routers and/or i-Vu Open Links
- Controllers associated with each i-Vu Open Router or i-Vu Open Link or with the USB Open Adapter

NOTE i-Vu Open allows a maximum of 750 controllers, 60 per router or the USB Open Adapter.

i-Vu Open design tools

Develop and configure graphics and a system database for your i-Vu Open system using the following i-Vu Open design tools.

Use...	To...
ViewBuilder	Create or edit graphics

For the Installer only:

Use...	To...
ApplicationBuilder	Build or edit control programs (.equipment files) and graphics for programmable controllers
Alarm Pop-up	Receive a message on any networked computer that is running the i-Vu Open Alarm Notification Client application
Virtual BACview	View and change property values and the controller's real time clock
BBMD Configuration Tool	Configure BACnet/IP Broadcast Management Devices (BBMDs) NOTE If your system has multiple routers that reside on different IP subnets, you must set up one router on each IP subnet as a BACnet/IP Broadcast Management Device (BBMD).
BACScope	Capture BACnet traffic on a variety of media types. It is intended for use in situations where Carrier Control Systems Support needs a network capture to troubleshoot communications.
Test & Balance	<ul style="list-style-type: none"> • Calibrate airflow in a VAV or VVT Zone controller • Calibrate the static pressure in a VVT Bypass controller • Commission air terminals • Override reheat and terminal fans NOTE Use Test & Balance to manipulate the controllers associated with an air source, but not the air source itself, or heating and cooling equipment such as chillers and boilers.
Snap	Build custom control programs using individual blocks of programming code called microblocks
AppLoader	Use to download .clipping files to restore factory defaults and check Module Status (Modstat) via the RNET port

Before starting i-Vu Open and your system

CAUTION! The following steps **MUST** be completed prior to powering up the i-Vu Open web server.

Step 1: Install tools and have documentation ready

- 1 Insert the **Tech Tools DVD** into your PC and wait until the Installation screen appears. If this screen does not appear, open **My Computer** and double-click **Tech Tools**.
- 2 Click the utilities you wish to install.
NOTE Some utilities such as the BBMD tool and BACscope are not installed on the hard drive, but run directly from the DVD. The documentation is also not copied to the hard drive. It is recommended that you copy the **Tech Tools DVD** to a folder on your hard drive. This ensures that the documentation and utilities will be available when you need them.
- 3 Print the **i-Vu Open Owner's Guide**.
- 4 Follow the rest of this document to set up your entire system.

Step 2: Install i-Vu Open routers

If you haven't already, download *i-Vu Open Router* or *i-Vu Open Link Installation Guide* from the *Carrier Control Systems Support Site* <http://www.hvacpartners.com/>.

You need the instructions in that document for the following:

- Mounting and wiring the router
- Wiring the ports for communication and setting DIP switches
- Setting up IP addressing, including BACnet/IP Broadcast Management Devices (BBMDs)
NOTE If your system has multiple routers that reside on different IP subnets, you must set up one router on each IP subnet as a BACnet/IP Broadcast Management Device (BBMD's).
- Configuring BACnet device instance and network number using **Hyperterminal** connected to the Rnet or S2 port

Step 3: Get your BACnet system ready

- 1 Create a list of all of the routers and controllers at your job site, showing their BACnet Device ID's, IP addresses (where applicable), BACnet network numbers, and the physical location of all devices.
- 2 Verify that every router has a unique address because duplicates will not be discovered correctly.
- 3 Routers and controllers that have never been configured with a schedule default to occupied 24/7 when discovered. To set schedules in i-Vu Open, see *Create and modify an i-Vu Open schedule* (page 25) or consult the i-Vu Open Help files for more information.

Step 4: Set up a computer and browser to view i-Vu Open

i-Vu Open is designed for use with Microsoft Windows Operating Systems and Internet Explorer 6, 7, and 8. No other software is supported.

Browser settings	Where to change setting
Accept First-party and Third-party cookies.*	Tools > Internet Options > Privacy tab >Advanced button
Automatically check for newer versions of stored pages.*	Tools > Internet Options > General tab > Browsing history > Settings button
Load ActiveX Control*	Tools > Internet Options > Security > Custom Level > ActiveX controls (enable all of the following settings) <ul style="list-style-type: none"> • Download signed ActiveX controls > Prompt • Download unsigned ActiveX controls > Disable • Run ActiveX controls and plug-ins > Enable • Script ActiveX controls marked safe for scripting > Enable
Disable the Image Toolbar (IE6).	Tools > Internet Options > Advanced tab > Multimedia section
Select Play animations in web pages.	Tools > Internet Options > Advanced tab > Multimedia section
Do not save passwords if the computer is used by multiple operators.	Tools > Internet Options > Content tab > AutoComplete > Settings button
Disable all the options on the Explorer Bar.	View > Explorer Bar
Disable browser's pop-up blockers.	Tools > Pop-up Blocker > Turn Off Pop-Up Blocker
Disable external toolbar pop-up blockers.	Varies
Hide the browser's toolbars.	View > Toolbars
Maximize the browser window.	
Computer settings	
Set the monitor's screen resolution to a minimum of 1024 x 768 with 24- or 32-bit color quality.	Start > Control Panel > Display > Settings tab

Browser settings

Where to change setting

Disable navigation sounds.

Start > Control Panel > Sounds and Audio Devices > Sounds tab



* i-Vu Open cannot function without this setting.

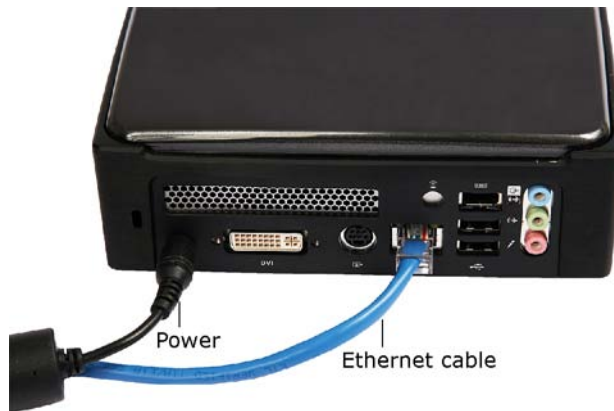
Starting up your i-Vu Open web server

Connect and power up your i-Vu Open web server

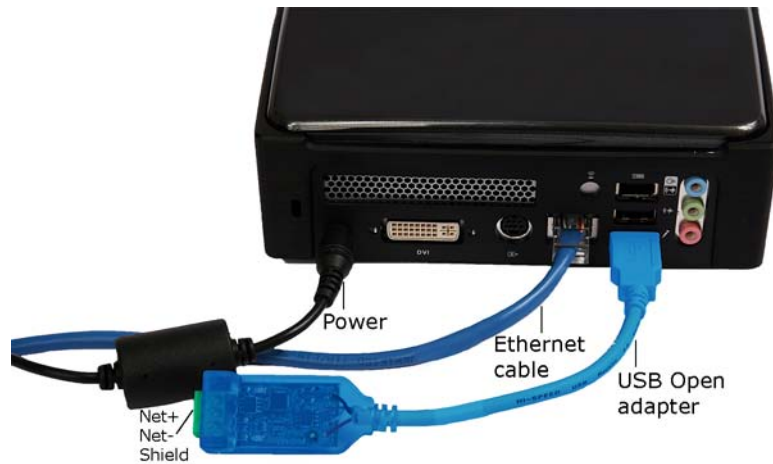
CAUTION!

- Mount your i-Vu Open web server in an air conditioned space to avoid damage.
- Do NOT open the i-Vu Open web server! Opening the web server voids your warranty.

- 1 Plug the power cable into the back of the i-Vu Open web server and into an electrical outlet.
NOTE We highly recommended using a UL Certified power surge/RFI suppression device.
- 2 Connect an Ethernet cable from the laptop computer's network port, or the customer's LAN, to the Ethernet jack on the back of the i-Vu Open web server.



- 3 If you are using the USB Open Adapter to connect to an MS/TP network, plug the adapter into the USB port and connect to your network.



- 4 Press the **On/Off** Button to turn on the i-Vu Open web server.



Configure i-Vu Open IP addresses

i-Vu Open is set by default to automatically obtain all the necessary IP addresses using DHCP. Once initial start-up of i-Vu Open is complete, you can connect it to the building LAN, if one exists. Use the **Management Tool (Main Menu > System Options > General tab > Management Tool button)** to set the IP address of i-Vu Open to a static address. If you wish to connect your own computer to the building LAN, you must also set the computer's IP address to a setting provided by the customer.

NOTES:

- If you need to assign your own IP addresses, see *Configure i-Vu Open using static IP addresses* (page 40).
- If you are having problems with a DHCP Server that will not assign two IP addresses to one network card or MAC address, see *If DHCP will not assign two IP addresses* (page 40).
- If using a loopback address, refer to *Using a loopback address* (page 41) for important details.


Set up login and passwords for an additional user

Add new operators and assign an appropriate role to them. It is suggested that the main system user have the role of **Administrator**.

NOTES

- Use the chart below or the Help files to become familiar with the viewing and editing capabilities of each role.
- Be sure to record the user name and password in the i-Vu Open **Owner's Guide**.
- You cannot leave the password blank for Tenant Billing Applications. (i-Vu Open Plus only)
- Optimal number of simultaneous users:
 - 2 in i-Vu Open Standard
 - 10 in i-Vu Open Plus
- We highly recommended that only one user at a time commission the system.

To add or edit operators, passwords, and roles

- 1 Click **Main Menu** , then select **System Options**.
- 2 Click **Operators** tab.
- 3 Click **Add** to enter a new operator, or, select an operator to edit his settings.
- 4 Enter information as needed. The required fields are **Name**, **Login Name**, and **Roles**. See table below.
- 5 Click **OK** or **Apply**.

Field	Notes
Login Name	Must be unique within the system.
Force User to Change Password at login?	Forces the operator to change his password immediately after his next login. NOTE You can combine the use of this field and the Change Password field to create a temporary password that the operator must change after his next login.
Starting Location	Set the starting location for each individual operator by choosing the specific area or controller in the navigation tree and the starting page from the drop-down menu.
Roles	See table below.

	Guest		Standard User		Power User		Admin		Installer	
	Accessible	Editable	Accessible	Editable	Accessible	Editable	Accessible	Editable	Accessible	Editable
Installer > Discovery - Find Routers and Devices, Arrange User View									✓	✓
Navigation menu - Change display names							✓	✓	✓	✓
System Options > My Settings (change password)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Operators, General, Security, Update							✓	✓	✓	✓
Lock or Force a point					✓	✓	✓	✓	✓	✓
Global Modify/Global Copy			✓	✓	✓	✓	✓	✓	✓	✓
Graphics - Change setpoints	✓		✓	✓	✓	✓	✓	✓	✓	✓
Properties > Equipment, Alarm Sources, Trend Sources, Network Points	✓		✓		✓	✓	✓	✓	✓	✓
Equipment Checkout, BACnet Points									✓	✓
Schedules > View, Reports	✓		✓		✓	✓	✓	✓	✓	✓
Configure			✓	✓	✓	✓	✓	✓	✓	✓
Schedule Groups			✓	✓	✓	✓	✓	✓	✓	✓
Alarms > View, Reports	✓		✓		✓	✓	✓	✓	✓	✓
Actions, Enable/Disable, Category					✓	✓	✓	✓	✓	✓
Trends > Enabled Points	✓		✓		✓	✓	✓	✓	✓	✓
New > View, Configure, Enable/Disable					✓	✓	✓	✓	✓	✓
Reports > Alarms, Schedules, Equipment	✓		✓		✓	✓	✓	✓	✓	✓
New					✓	✓	✓	✓	✓	✓
Security							✓	✓	✓	✓
Commissioning									✓	✓
TABLES										
Setpoints, Time Schedule Data	✓		✓	✓	✓	✓	✓	✓	✓	✓
Status Display, Maintenance, User Config			✓		✓	✓	✓	✓	✓	✓
Service Config			✓		✓		✓	✓	✓	✓
Right-click menu in tree - Configure, System Setup, System Options							✓	✓	✓	✓
Right-click menu in tree - Reload Equip, Reset Defaults, Copy Properties, Copy Path									✓	✓
Tenant Billing							✓	✓	✓	✓

Access the startup screen

NOTES

- Use only the i-Vu Open interface to navigate through i-Vu Open; do not use the browser's navigation buttons.
- Disable all popup blockers. **Internet Explorer > Tools > Popup Blocker**, Google, and Yahoo Toolbars, etc.

- 1 Start Internet Explorer and type **http://ivu** into your browser to reach the startup screen. If i-Vu Open's startup screen does not appear, see *Troubleshooting* (page 38).
- 2 Accept the terms of the License Agreement and click **Next**.
- 3 Fill in all required fields:

Create Installer Account

- **Login Name** - not case sensitive, accepts spaces and special characters
- **Password** - set as desired

System Settings

Network Name

- Controls the name used to access your system from the Internet or network (LAN)
- Is case sensitive and should not contain special characters or spaces
- If you change the network name from "ivu", make note of the change in the i-Vu Open Owner's Guide

System Name

- Enter your organization/building name; this becomes the top level in the navigation tree.
- This can also be changed later in **Discovery > Setup > Arrange User View**.

Regional Settings


- **Timezone, Date** - select appropriate options
- **Time** - enter the correct time! i-Vu Open will **not** automatically read the time from your computer.

Regional Settings		
Timezone:	USA	(GMT -05:00) Eastern
Date:	mm/dd/yy	09 / 23 / 2009
Time:	12-hour clock	01 : 24 : 08 AM

- 4 Click **Next**.
- 5 Review entries. Click **Submit**. Wait for your system to launch. It will take a minute. If you get an error, type `http://<your system name>` in your browser and hit return. Click **Next**.

Setting up and configuring your system

- 1 Click **Installer** view > **Discovery** page > **Setup** tab to:
 - Search the network to populate the system with routers and controllers (page 11)
 - Upload control programs, drivers, graphics and BACview files (page 11)
 - Build, edit, and arrange the navigation tree for the **User** view (page 13)
 - Perform downloads to individual or multi-selected controllers (page 31)

- 1 Click **Main Menu**  and select **System Options** to:
 - Change user's login information, alarm, and navigation tree preferences on the **My Settings** tab.
 - Set operator passwords and levels of access (roles) on the **Operators** tab.
 - Download weekly logs, change server settings, access the **Management Tool**, set time units, and enable alarm popup on the **General** tab.
 - Choose advanced password and operator control on the **Security** tab.
 - Apply software patches on the **Update** tab.
 - Download updated control programs, graphics, drivers, and BACview files, on the **Update Library (page 36)** tab.
 - Update scheduled DST dates on the **Daylight Saving** tab.
 - Install plug-ins such as Tenant Billing (i-Vu Open Plus only) on the **Web Applications** tab.

NOTES

- Some users will not see all of the **System Options** tabs, depending on their assigned roles.
- Consult the i-Vu Open Help files for more details on the **System Options** tabs.

Discover and upload routers and controllers

- 1 Go to **Discovery** page > **Setup** tab.
- 2 Click **Find Routers**. When complete, a check mark under **Scan Results** indicates a successful discovery.

NOTES

- If an error message appears, click on the message to view an explanation.
 - To upload the routers' drivers and BACview files without uploading controllers, select one or more routers on the **Setup** tab (Shft-click or enable **Select all**) and click **Upload**.
 - The network number and device ID are auto-generated for the USB Open Adapter.
- 3 Once routers are discovered, select a router in the left hand navigation tree. A new page appears for discovering your controllers.
 - 4 Click **Find Controllers**. i-Vu Open populates your system with all of the controllers on the selected router's network.


NOTE Do not select more than one router. i-Vu Open can only find controllers on one network at a time.

- 5 Select one or more controller (Shft-click or enable **Select all**) and click **Upload** to simultaneously upload drivers, BACview files, and control programs to i-Vu Open.

NOTES

- This process is time consuming, especially for multiple controllers. While importing, you may want to create the navigation tree for the **User** view. See *Create navigation tree*. (page 13)
- The MAC address shows to the left of the controller name in the **Installer** navigation tree only. The programmable controllers show multiple equipment listings with the same MAC address, based on any specific control programs that you might have downloaded from ApplicationBuilder or Snap.
- To view the driver name after uploading, select the router in the left-hand navigation tree and click **Properties** page > **Advanced** tab or right-click the uploaded controller in the left hand navigation tree and select **Driver Properties** or **Module Status**.

TIPS

- Click the **i** symbol  in the upper left corner to display the discovery status.
- Status messages are color coded as follows:
 - Red - reports an error
 - Blue - requires action
 - Green - indicates an upload or download is in process

Change network and device addressing

i-Vu Open automatically assigns **Network** numbers and the **Device ID**. Do **not** change these addresses unless absolutely necessary!

NOTE If you have more than 99 routers, you must set your own addresses.

To change an address:

- 1 On the **Discovery** page > **Advanced** tab, select the system or router level in the navigation tree.
- 2 Disable auto-addressing by clicking the **Auto** checkbox.

NOTE This box is only editable when the router has been successfully uploaded.

- 3 Enter the desired number.

You can change the addressing in these fields:

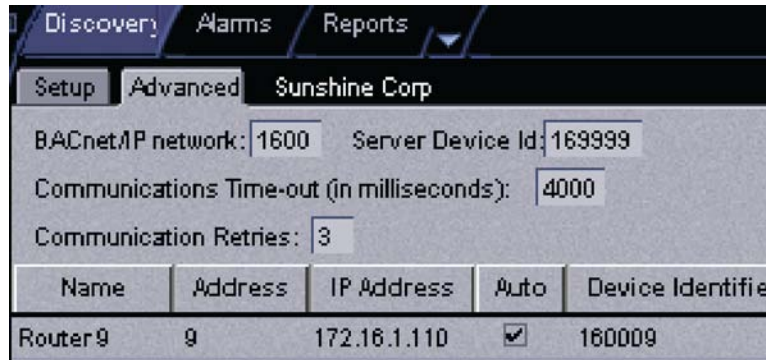
System level:

- **BACnet/IP Network** - default is 1600 (The maximum number allowed is 65,534)

NOTE Typically, you should not need to change this.

- **Server Device Id** - address of the i-Vu Open web server (default is 169999)
- **Communications Time-out (In milliseconds)** - increase this value only if downloads to controllers or routers fail with communication time-out errors.

- **Communication Retries** (default is 3)



Router level:

- **Router to MS/TP network**
- **Device Identifier**

USB Network

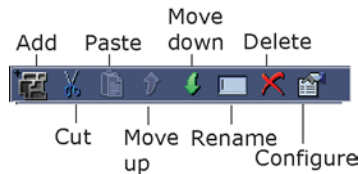
- **Baud Rate** - recommended rate is 76,800
- **Router to MS/TP network**


- 4 Click **OK**.

Create navigation tree for the user's view

The navigation tree is a hierarchical representation of the areas or locations at your site and the mechanical equipment in your system.

- 1 Go to **Discovery** page > **Setup** tab.
- 2 Use the **Arrange User View** toolbar to add, delete, rename, or move items in your tree. You can also select a system or controller in the tree and right-click to build or change it.



- 3 Right-click on your system name at the top of the tree and select **Add Area** (or click  in the toolbar above the navigation tree). Type in the name of an area, location, or building that contains mechanical equipment.

- 4 Repeat the above until all required areas have been added to the navigation tree. The following is an example:



- 5 To move one or more controllers to a specific area, select it in the navigation tree, (use Ctrl+click, Shift+click, or both to select multiple controllers) and:
- Use the **Move Up** or **Move Down** arrows in the toolbar
 - Use **Move Up** or **Move Down** arrows in right-click menu
 - Drag and drop

NOTE A user with the **Administrator** role can change the display name in the **User** view by selecting the item in the navigation tree and double-clicking, or right-click and select **Configure**. The Installer must make all other changes.

Configure controllers, set up Linkage, and perform Test and Balance

Refer to your individual controller's *Installation and Start-up Guide* for detailed explanations and procedures on configuration, sequence of operation, and Linkage.

Commission equipment

Follow the process below to commission system equipment.

Step 1: Checkout input and output, alarms, trends, and network points

NOTE Only individuals with the **Installer Role** have access to all of these screens.

- 1 On the navigation tree, select the piece of equipment you want to checkout.
- 2 Click the **Properties** tab.

- 3 View and change properties on the **Equipment, IO Points, Alarm Sources, Trend Sources, Network Points,** and **Bacnet Points** tabs. See detailed property descriptions below.
- 4 After completing the equipment checkout, click the **Equipment Checkout** tab.
- 5 Select the **Checked Out** checkbox.
- 6 Optional: Type notes.

NOTES

- Notes typed in this field appear in the **Equipment Checkout** report for this piece of equipment.
 - Notes remain in this field until an operator deletes them.
- 7 Optional: Click the **Reports** drop-down arrow button, then select and run each of the following reports to verify your work:
 - **Alarms > Alarm Sources**
 - **Equipment > Point List**
 - **Equipment > Trend Usage**
 - **Equipment > Network IO**

Property descriptions

IO Points

Field	Notes																								
Name	Click the name to display the microblock popup. NOTE A red name indicates a fault condition where the point may be misconfigured. Example No input/output number or a nonexistent input/output number																								
Type	Type of Input or Output point																								
Value	Present value of this point																								
Offset	Allows for fine calibration of the present value of an analog point																								
Polarity	Determines the point’s binary normal polarity in the control program NOTE Polarity is not the hardware normally open/normally closed position.																								
Locked	Select the checkbox to lock the present value at the value you specify.																								
Exp:Num	Expander numbers and input or output numbers associated with where the point wires, such as a sensor wire, are physically connected to a controller																								
I/O Type	Selects the bank of physical inputs or outputs on the controller.																								
Sensor	Selects how the physical input is mapped to the engineering units. min/max used with the sensor type of linear to scale the input to engineering units. NOTE Field is ignored for sensor types other than linear. Example: AI <table style="margin-left: 20px;"> <tr> <td>linear sensor type</td> <td></td> <td></td> <td></td> </tr> <tr> <td>min</td> <td></td> <td>-10</td> <td></td> </tr> <tr> <td>max</td> <td></td> <td>50</td> <td></td> </tr> <tr> <td>when input reads</td> <td>100%</td> <td>the value is</td> <td>50</td> </tr> <tr> <td></td> <td>50%</td> <td></td> <td>20</td> </tr> <tr> <td></td> <td>0%</td> <td></td> <td>-10</td> </tr> </table>	linear sensor type				min		-10		max		50		when input reads	100%	the value is	50		50%		20		0%		-10
linear sensor type																									
min		-10																							
max		50																							
when input reads	100%	the value is	50																						
	50%		20																						
	0%		-10																						

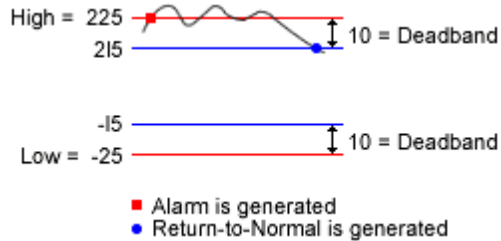
Actuator	<p>Selects how the present value in engineering units is mapped to the physical output.</p> <p>min/max used with the actuator type of linear to scale the output to engineering units</p> <p>NOTE Field is ignored for actuator types other than linear.</p> <p>Example: AI</p> <table border="0"> <tr> <td>linear sensor type</td> <td></td> <td></td> <td></td> </tr> <tr> <td>min</td> <td></td> <td>-10</td> <td></td> </tr> <tr> <td>max</td> <td></td> <td>50</td> <td></td> </tr> <tr> <td>when input reads</td> <td>50</td> <td>the value is</td> <td>100%</td> </tr> <tr> <td></td> <td>20</td> <td></td> <td>50%</td> </tr> <tr> <td></td> <td>-10</td> <td></td> <td>0%</td> </tr> </table>	linear sensor type				min		-10		max		50		when input reads	50	the value is	100%		20		50%		-10		0%
linear sensor type																									
min		-10																							
max		50																							
when input reads	50	the value is	100%																						
	20		50%																						
	-10		0%																						
Resolution	<p>Amount by which the present value will change</p> <p>Example If a physical input changes by 1, but the resolution is set at 2, then the present value remains the same. If the input changes by 2, the present value will then change by 2.</p>																								
Checked Out	Select the checkbox if equipment has been checked out.																								
Checkout Notes	Notes typed in this field appear in the Equipment Points List Report																								

Alarm Sources

Field	Notes
Name	Click the name to display the microblock popup.
Type	Type of Input or Output point.
Alarm	Shows Alarm in red if a current alarm exists.
Network Visible	Select to allow the point to be seen by i-Vu Open
Potential Alarm Source	Select to enable the point source to generate alarms.
Alarm Enabled	<p>Alarm—Select to generate an alarm when conditions exceed the limits set in the Condition column.</p> <p>Return—Select to generate a return-to-normal when the alarm condition returns to a normal state.</p> <p>Fault—Select to have an alarm generated if the alarm source is not configured correctly. For example, a misconfigured channel number produces a no sensor fault.</p>
Requires Ack	<p>Alarm—Select to require that the alarm be acknowledged.</p> <p>Return—Select to require that the return-to-normal be acknowledged.</p>
Critical	Select if the alarm is critical.
Category	You can change the alarm category assigned to the point.

Condition An alarm will be generated if conditions exceed the low or high limits set.
 The amount inside the normal range by which an alarm condition must return before a return-to-normal notification is generated.

EXAMPLE



Delay Delay time in seconds for notification after an alarm is generated.

Trend Sources

Field	Notes
Name	Click the name to display the microblock popup. NOTE A red name indicates a fault condition where the point may be misconfigured. Example No input/output number or a nonexistent input/output number.
Type	Type of BACnet point or Trend Object
Sample Interval	The time between each trend sample
COV Increment	The increment, or interval, that triggers the trend sample on Change of Value

Network points

Field	Notes
Name	Click the name to display the microblock popup. NOTE A red name indicates a condition where the point may be misconfigured.
Type	Type of network point
Value	Present value of this point Example: For a Maximum point type, Value is the maximum value of all the remote BACnet object(s) the point is communicating with
Locked	Select the checkbox to lock the present value at the value you specify.
Default Value	The value that the control program will use as the point's value when communication with the remote BACnet object(s) is lost or communication is disabled
Com Enabled	Select to enable this point's network communications. Disable this property for troubleshooting.

COV Enabled	Select to make: <ul style="list-style-type: none"> • A digital network output point write a value to the remote BACnet object(s) the point communicates with only when the value change. • An analog network output point write a value only when the value changes by the specified increment
Refresh Time (mmss)	The time interval at which the network point writes or retrieves the value to or from its remote BACnet object(s). For network output points, this time is used when COV is not enabled or when COV is enabled but fails. NOTE If COV fails and the Refresh Time is zero, the value is sent once per second.
Address	The address(es) of the remote BACnet object(s) the point communicates with
Error	The error code and error if the point cannot communicate with the remote BACnet object
Present Value	Current value of the remote BACnet object the network point is communicating with
Checked Out	Select the checkbox if equipment has been checked out.
Checkout Notes	Notes typed in this field appear in the Equipment Points List Report .

BACnet Points

Field	Notes
Name	CTRL-click the name to display the microblock popup.
Reference Name	Click the name to display the microblock popup.
Type	Type of network point.
Value	Present value of this point. Example For a Maximum point type, Value is the maximum value of all the remote BACnet object(s) the point is communicating with.
Object Name	A unique alphanumeric string that defines the BACnet object. Although the Object Name field can be edited, it is not recommended.
Object Id	Displays a BACnet object id (BACnet object type:instance number) For example, BAI:21
Network Visible	Select to allow the point to be seen by i-Vu Open.

Step 2: Check the commissioned status

- 1 In i-Vu Open, select the system.
- 2 Click the **Reports** drop-down arrow button, then select **Commissioning > Equipment Checkout**.
- 3 Run the report.

Select or create control programs for programmable controllers

- i-Vu Open uploads the driver for your programmable controller during **Discovery**. You can use ApplicationBuilder or Snap to create your control programs (.equipment files).
- The following are programmable controllers:
 - OPN-UC
 - OPN-UCXP
 - OPN-APP
 - OPN-UPC
 - CIV-OL (programmable in i-Vu Open Plus only)

ApplicationBuilder may also produce a graphic (.view file) and a sequence of operation based on the equipment options you select.

If using Snap, you must create your graphics separately in ViewBuilder. See Snap Help files for detailed instructions on creating a custom control program.

After creating your control program, load it into i-Vu Open and download it into the controller. See *Add or delete a custom control program to a controller and to i-Vu Open* (page 20).


To create your control program in ApplicationBuilder:

- 1 Start **ApplicationBuilder**. (Windows **Start** > **All Programs** > **IVu Tools**)
- 2 Click **Create Equipment** and then click **Next**.
- 3 Select your equipment type from the list and click **Next**.
- 4 Type a name for the edited equipment (i.e., Hot Water system) next to **Equipment Name**, if desired.
NOTE Your name must not exceed 21 characters.
- 5 Select options on the **Summary** tab. If applicable, edit setpoints on the **Sequence** tab.
NOTE The **Points** and **Sequence** tabs will change based on your choices on the **Summary** tab.
- 6 Click **Next**.
- 7 Save your control program files to the location of your choice.

Edit a control program in ApplicationBuilder

If the control program has already been uploaded to i-Vu Open and loaded into the programmable controller, you must save it to your computer for editing.

To save your control program, open the **Control Programs** dialog window in i-Vu Open:

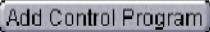
- **Method 1** From the Discovery page > Setup tab:
 1. Go to the router/area level in the navigation tree and select the programmable controller in the list.
 2. Click the **Add Control Program**  button. A dialog window appears.
 3. Select the program you wish to edit from the drop-down **Control Programs** menu.
- **Method 2** From the navigation tree: Double-click the programmable controller in the navigation tree, or, right-click and select **Configure**. A dialog window appears.

Once the **Control Programs** dialog window is open:


- 1 Click **Edit Existing** under **Control Programs**. A new dialog window appears.
- 2 Save file to a location of your choice.
- 3 Click **Close**.
- 4 Start **ApplicationBuilder**.
- 5 Select **Open Existing**.
- 6 Open the .equipment file that was generated in i-Vu Open and edit.
- 7 Save your revised control program with a different name to your computer.
- 8 Start i-Vu Open.
- 9 Follow either of the above methods to navigate to the **Control Programs** dialog window.
- 10 Click **Add New** button under **Control Programs**. A new dialog window appears.
- 11 Browse to your edited control program and click **Continue**. When message appears **File added successfully**, click **Close**.
- 12 Click **Close**.

Add or delete a custom control program to the controller and to i-Vu Open

To add a control program to a programmable controller

- 1 Select the router in the navigation tree.
- 2 Select the desired controller in the list on the **Discovery** page > **Setup** tab.
- 3 If you are adding a new control program, click the **Add Control Program**  button. A dialog window appears.
- 4 Enter a name for your control program in **Display Name** and select your controller in the **Programmable Controller** drop-down list.
NOTE If you already have the maximum number of control programs for a controller, it will not appear in the list.
- 5 If you have already added the desired control program to i-Vu Open, click the arrow next to **Control Program** and select your program.
- 6 Click **Add New** under **Control Programs**. A second dialog window will appear.
- 7 Browse to the .equipment file that you created in ApplicationBuilder or Snap and click **Continue**.
- 8 To upload a graphic, click **Add New** under **Views** and browse to your .view file.
- 9 Click **Continue**. When message appears **File added successfully**, click **Close**.
- 10 Click **Close** again.
- 11 Highlight the programmable controller in the controller list and select **Check Status**. The status of the controller should say **File Mismatch**.
- 12 Click **File Mismatch** and click the **Upload** button.

To delete a single control program in a programmable controller

- 1 Select the router in the navigation tree.
- 2 Select the desired controller/control program in the list on the **Discovery** page > **Setup** tab.
- 3 Click the **Delete** button  at the top of the list.
- 4 The message appears **Do you wish to remove a controller and all its descendants?** Click **OK**.
NOTES This deletes the control program for that controller from i-Vu Open. You must also delete it from the controller.
- 5 Highlight the programmable controller in the controller list again, and select **Check Status**. The status of the controller should say **File Mismatch**.
- 6 Click **File Mismatch** and click the **Download** button. This deletes the files from the controller.

To delete all control programs in a programmable controller

- 1 Select the router in the navigation tree.
- 2 Select the desired controller/control program in the list on the **Discovery** page > **Setup** tab.
- 3 Right-click and select **Delete Custom Programs**. Click **OK** when the following message appears **This will delete all programs in this controller. Are you sure?**
NOTE This deletes all of the files for that controller from i-Vu Open. You must also delete them from the controller.
- 4 Highlight the programmable controller in the controller list again, and select **Check Status**. The status of the controller should say **File Mismatch**.
- 5 Click **File Mismatch** and click the **Download** button. This deletes the files from the controller.

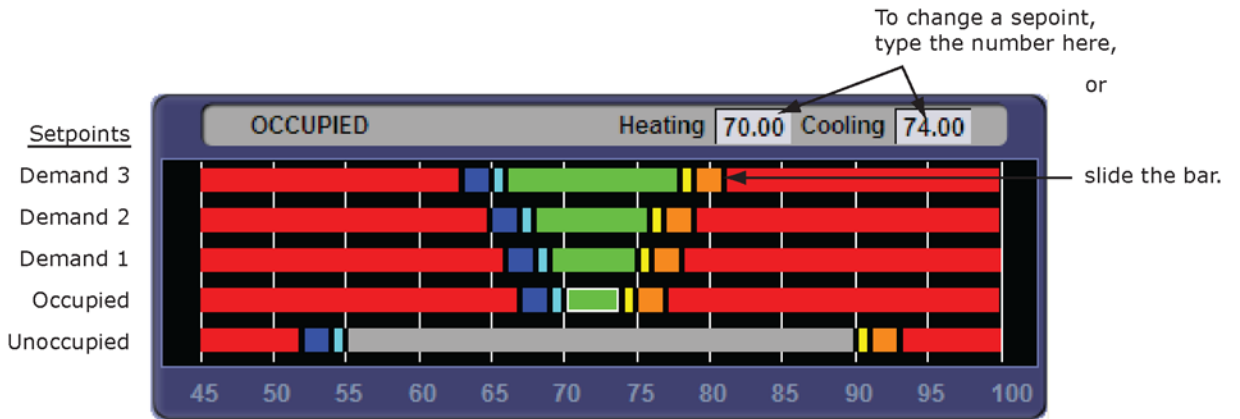
Managing setpoints

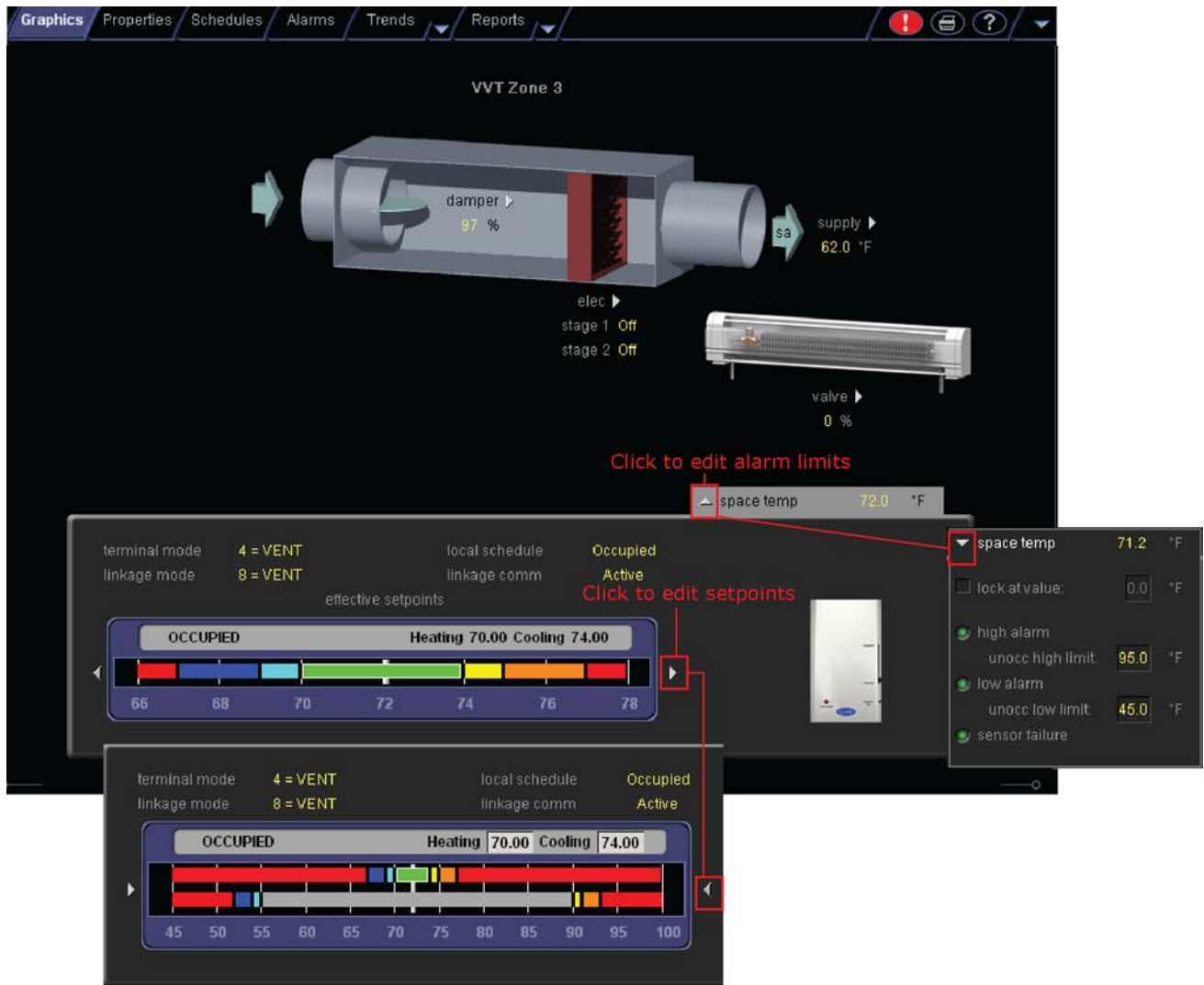
The **Setpoint** area, as shown on a standard equipment graphic, indicates the base setpoint values (Occupied High/Low, Unoccupied High/Low). i-Vu Open reads these values back periodically, typically within 10 seconds. The timing can vary based on network traffic, the number of controllers in the database, and several other variables. Setpoints that are changed in the field via another user interface are displayed in i-Vu Open as soon as they are detected.

You can, at any time, change the setpoints from i-Vu Open graphics by using the slider or by entering numeric values directly. Updated setpoints are transmitted to the controller when you **Accept** the changes. Setpoints can also be changed on the **Properties** page > **Equipment** tab > **Configuration** > **Setpoints**.

NOTE **Power User** and **Standard User** may only edit **Occupied/Unoccupied** and **Heating/Cooling** setpoints. They cannot edit **Demand** levels or more detailed setpoint parameters.

The various color bars are used to indicate adherence to or deviation from the setpoint. The current default settings for setpoint deviation can be changed by the user. Select a color band on the setpoint graph to see the current setpoints in the **Heating** and **Cooling** fields. See setpoint descriptions below.





Setpoints

- **Programmed setpoints** are set and changed by operators.
- **Effective setpoints** reflect the impact of other system conditions on the programmed setpoints, such as setpoint adjustments, and hysteresis. Effective setpoints control the equipment.

To change programmed setpoints:

- 1 Navigate to a setpoint control in one of the following places:
 - **Properties** page > **Equipment** tab > **Configuration** > **Setpoints**
 - A **Graphics** page
- 2 Make changes on a programmed setpoint bar by:
 - Clicking and dragging the segment or the gap between segments
 - Typing new values in the **Heating** and **Cooling** fields.
- 3 Click **OK**.

Optimal Start

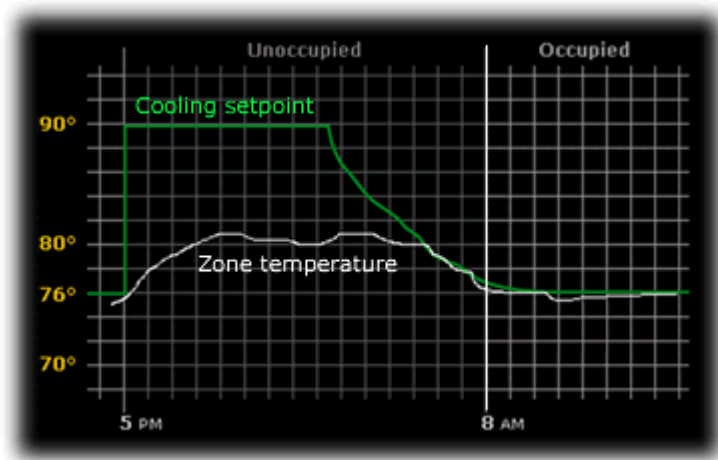
Optimal Start adjusts the effective setpoints to achieve the occupied setpoints by the time scheduled occupancy begins. The Optimal Start recovery period may begin as early as 4 hours prior to occupancy. The algorithm works by moving the unoccupied setpoints toward the occupied setpoints. The rate at which the setpoints move is based on the outside air temperature, design temperatures, and capacities.

The following conditions must be true for unoccupied free cooling to operate:

- On the **Properties** page > **Equipment** tab > **Configuration** > **Setpoints** > **Optimal Start**, the **Default Value** must be set greater than **0** and less than or equal to **4** (**0.00** disables **Optimal Start**).
- The system is unoccupied

NOTE If the Open controller does not have a valid outside air temperature, then a constant of 65° F is used. This value is not adjustable.

The actual equation that the controller uses to calculate **Optimal Start** is nonlinear. An approximation of the result is shown below.



To change Optimal Start settings:

- 1 In the navigation tree, select the equipment that you want to change.
- 2 Click **Properties** page > **Equipment** tab > **Configuration** > **Setpoints**.

Demand Control for BACnet

Demand control is only available when using an electric meter with your UC.

Occupied Setpoints

The occupied setpoints described below are the setpoints under normal operating conditions. The Demand Level 1–3 setpoints apply if demand limiting is used.

Demand limiting is a cost-saving strategy that expands the setpoints when your system reaches a defined level of energy consumption. With the expanded setpoints, the equipment works less, thereby saving energy. There are 3 demand levels at which the setpoints are expanded. By default, Demand Level 1 expands the occupied heating and cooling setpoints by 1° F, Demand Level 2 by 2° F, and Demand Level 3 by 4° F. If the occupied heating or cooling setpoint changes, the demand setpoints automatically change by the same amount.

Demand Control is a cost-saving strategy that saves energy while maintaining comfort in the following ways:

- Controlling energy use to avoid peak demand, ratchet, or time of use utility charges
- Maintaining ventilation at relaxed setpoints rather than shutting down equipment (as with load shedding or duty cycling)

Before you can use Demand Control effectively, you must:

- Obtain details regarding past energy usage and peak demand, ratchet, and time of use charges from your energy provider.
- Understand the demand profiles of the zones you are controlling.

Demand Control can be customized at the zone level. For example, you may relax the setpoints in some zones, like break rooms and closets, by a few degrees, but you may not want to relax setpoints in computer rooms at all.

To define Demand Control properties

- 1 On the navigation tree, select the electric meter.
- 2 Click **Properties**.
- 3 Expand the **Demand Level Parameters** section.
- 4 Type the **Start Time** and **End Time** to define the time period that you want demand control to be in effect for this zone.
- 5 Type kilowatts per hour (kW/hr) in the **Level** columns to define the amount of power that the demand must exceed before i-Vu Open calls for a higher demand level.

NOTE Levels are defined in the electric meter control program. You can test the Demand Levels by locking the meter to a value.

In the example below, during Period 4, defined as 12:00 (noon) to 16:00 (4:00 p.m.), if the demand exceeds 800 kW/hr, i-Vu Open will use Demand Level 1 setpoints. If the demand exceeds 1000 kW/hr, i-Vu Open will use Demand Level 2 level setpoints and so on.

Period	Start Time(hh:mm)	End Time(hh:mm)	Level 1	Level 2	Level 3
1	0:00	4:00	980	1500	1800
2	4:00	8:00	950	1400	1650
3	8:00	12:00	875	1200	1375
4	12:00	16:00	800	1000	1200
5	16:00	20:00	900	1300	1250
6	20:00	23:59	1000	1550	1800

Creating and modifying i-Vu Open schedules

HVAC equipment maintains adequate temperature for zones. Some zones, like classrooms, must maintain a comfortable temperature only while people occupy them. When a zone is no longer occupied, you can define different setpoints that require less energy to maintain. Use i-Vu Open **Schedules** for these occupied/unoccupied zones, so that equipment runs only as needed to reduce energy consumption, but not comfort.

Other zones, like computer server rooms and production floors, must maintain specific cooling and heating setpoints 24 hours a day, 7 days a week. Using schedules would have no cost-saving effect on them.

You can realize the greatest savings by using schedules. Define schedules that automatically keep occupants comfortable and equipment running efficiently.

In **User** view, you can apply a schedule to a single tree item, or to a group, by selecting specific controllers or areas in the navigation tree:

- When you apply a schedule to a single equipment, the schedule affects equipment at and below the area or equipment where the schedule was added.
- When you apply a schedule to an area, the schedule affects all pieces of equipment in that area.
- When you apply a schedule to a schedule group, the schedule affects all pieces of equipment in the group. For example, a school board meets every third Tuesday of the month and uses the lobby, main conference room, break room, and rest rooms. You can create a schedule group to control these different areas with a single schedule. See *To apply a schedule to a group of equipment* (page 27).

To view schedules

- 1 Select a navigation tree item (site, area, or equipment).
- 2 Click **Schedules** page > **View** tab.
- 3 Optional: Click an **Effective** bar to view all the schedules that contribute to the resulting schedule.

NOTES

- When multiple schedules affect a single area or piece of equipment, i-Vu Open sorts the schedules by priority—the higher the priority, the closer the schedule is to the **Effective** bar. You set a schedule's priority when you add a schedule.
- You can also view schedules on the following detailed, printable schedule reports. These reports are accessible from the **Schedules** page > **Reports** tab or from the **Reports** button drop-down menu.

This report...	allows you to...
Schedule Instances	Find every schedule with its location that is entered at and below a selected tree item. This report can help you discover newly added and conflicting schedules.
Effective Schedules	View all equipment that may be scheduled and the net result of all schedules in effect for a selected date and time.

To print schedules

- 1 Select a navigation tree item.
- 2 Click the **Reports** button drop-down arrow.
- 3 Select **Schedules** > **Schedule Instances**.
- 4 Click **Run**, then click **PDF**.

This report...	allows you to...
Schedules	
Schedule Instances	Find every schedule with its location that is entered at and below a selected tree item. This report can help you discover newly added and conflicting schedules.
Effective Schedules	View all equipment that may be scheduled and the net result of all schedules in effect for a selected date and time.

To apply a schedule to single equipment or to all equipment in an area

Schedules in i-Vu Open are typically based on zone occupancy.

- 1 Select the equipment you want to schedule in the navigation tree.
NOTE To schedule all equipment in a specified area, select the area you want.
- 2 Click the **Schedules** page > **Configure** tab.
- 3 Click **Add**.
- 4 Select a **Priority**. (**Normal** is low priority; **Holiday** is medium; **Override** is high.)
- 5 Select a **Type**. See table below.
- 6 Type a schedule name in the **Description** field.
- 7 Enter desired values in the fields below **Description**.
- 8 Change the default time segment (shown as a colored bar) for the schedule by doing one of the following:
 - Click the segment, then type **Start** and **End** times in the fields above the segment.
 - Click and drag either end of the segment or the entire segment.
 Optional: Click **Show Advanced** below the schedule bar to add one or more separate segments to the schedule.
- 9 Click **OK**.

Type	Schedule runs
Weekly	Every week on the specified days
Date	On a single, specified date
Date Range	Between two specified dates
Date List	On multiple, specified dates
Wildcard	According to a repeating pattern (For example, the second Tuesday of every month)
Continuous	Continuously between specified times on two separate dates
Dated Weekly	Weekly between a start date and an end date (For example, the summer break in the school year)

To apply a schedule to a group of equipment

You must create a group, then add members (equipment) to the group before you can apply a schedule.

- 1 Select **Scheduling Groups** in the navigation tree.
- 2 Click **Add**.
- 3 Type a name for the new schedule group in the **Name** field.
Optional: Change the default **Reference name**.
- 4 Click **OK**.

- 5 On the tree, click the plus sign (+) next to **Scheduling Groups**.
- 6 In the navigation pane, select the group you want to add items to.
- 7 Click the **Members** button at the top of the action pane.
- 8 On the selection tree at the right, select a piece of equipment.
- 9 Click **Add**.
TIP Use the **Raise** and **Lower** buttons to reorder items in the group list. Changing the order is for your viewing convenience and does not affect the system.
- 10 Click **OK**.
- 11 Click **Schedules**, then **Configure**.

To edit or delete a schedule

- 1 Do one of the following:
 - On the navigation tree, select the tree item where the schedule was defined.
 - On the navigation tree, click **Scheduling Groups**, then select the group you want to edit the schedule for.
- 2 Click **Schedules** page > **Configure** tab.
- 3 Select the schedule you want to edit or delete.
- 4 Edit the fields you want to change or click **Delete**.
- 5 Click **OK**.

Monitoring and controlling equipment


You can monitor and control your equipment from:

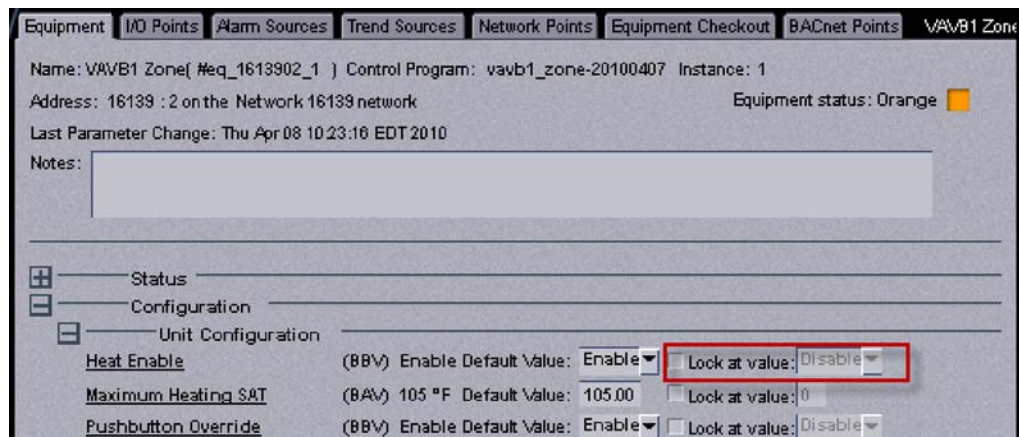
- The controller's points shown under **Properties**
- The equipment graphic (if applicable)

If the point or value has a **Lock** (BACnet) checkbox, you can lock the value to a new value that you specify. The new value is sent to the device. Locked or forced values are indicated on the graphics by a dashed yellow line.

To lock a point or value

You can lock certain editable parameters to a specified setting from the **Properties** pages:

- On the **Equipment** tab, click the plus sign  to locate the point you wish to lock.



- On the microblock popup:
 1. Click on the underlined **Name** or **Reference Name** of the point on any of the **Properties** tabs to open the microblock popup.
 2. Click **Properties** page > **Details** tab to lock a value.

Locked values are indicated by a dashed yellow line on graphics.

- 1 Select the **Lock** checkbox.
- 2 Type the value you want to send to the controller.
- 3 Click **OK** or **Apply**.

To display or change driver or set driver properties

To display driver

- 1 Right-click a controller in the navigation tree.
- 2 Select **Driver Properties** from the drop-down menu.

To change driver

- 1 Right-click a controller in the navigation tree.
- 2 Select **Driver Properties** from the drop-down menu.
- 3 Select desired options on the **Update** tab, under **Controller > Change the driver for:**.
- 4 Browse to desired driver and click **Add**.

To edit, add, or delete a control program

NOTES

- Only the **Installer** has access to the following
- You can only edit control programs created in Snap
- The following are programmable controllers:
 - OPN-UC
 - OPN-UCXP
 - OPN-APP
 - OPN-UPC
 - CIV-OL (programmable in i-Vu Open Plus only)
- To create, edit, upload, or delete a control program for programmable controllers, see *Select or create control programs for programmable controllers* (page 19) and *Add or delete a custom control program to the controller and to i-Vu Open* (page 20).

To reload a control program

- 1 In the navigation tree, select the controller.
- 2 Right-click on the controller's and select **Reload Control Program** from the drop-down menu.

To edit, add new, update, or delete an unused control program or graphic

- 1 In the navigation tree, select the controller and either double-click or right-click and select **Configure** from the drop-down menu.
- 2 Choose one of the following options:
 - **Edit Existing** - Downloads files to your PC for programmable controllers to edit in Snap or ApplicationBuilder

- **Add New** - Obtains files for i-Vu Open to add to a controller or to replace an existing control program
- **Update** - Changes the control program, view, driver, and Bacview files to use the current library version. See *Update the equipment library* (page 36) for complete instructions
- **Delete Unused** - Deletes unused control programs

Apply these changes to the controllers

- 1 On the **Discovery** page > **Setup** tab, select any controllers with a **File Mismatch** error message. You can CTRL+click to multi-select.
- 2 Right-click and select **Download Files**. You now have the updated control programs, graphics, drivers, and BACview files in your routers and controllers.

To change the control program for all controllers of one type when adding new controllers

- 1 Select **Discovery** page > **Setup** tab.
- 2 To upload one or more controller's graphics, BACview files, and control programs, select one or more controller (Shift-click or enable **Select all**) and click the **Upload** button.

To change the control program for all controllers of one type when updating the current library

See *Update the equipment library* (page 36).

Downloading system changes to controllers

If you make any of the following changes, you must download the new data from i-Vu Open to the controllers.

In i-Vu Open	<ul style="list-style-type: none"> • Change or reload a control program • Change or reload a driver • Change a schedule • Change a BACview file <p>NOTE A schedule change automatically downloads unless you clear its Automatically Download Schedules checkbox (on the Schedule page > Configure tab, under Show Advanced).</p>
---------------------	---

Any property change you make automatically downloads while i-Vu Open is communicating with controllers. If the download fails, the controller list on the **Discovery** and **Properties** page displays the errors.

To perform downloads from the Discovery page

- 1 On the **Discovery** page > **Setup** tab, select a controller.
- 2 Right-click and select **Download Files**, **Download Parameters**, or **Download Schedules** from the drop-down menu.
- 3 Select the types of download needed for that controller. See table below.

Download Type	Downloads to the controller...
Download Files	<ul style="list-style-type: none"> • All parameters • All schedules that are not set for automatic download • The control program and module driver <p>NOTE A memory download also:</p> <ul style="list-style-type: none"> ○ Synchronizes the controller's time to i-Vu Open ○ Overwrites trends in the controller <ul style="list-style-type: none"> • Restarts the controller • BBMD tables • Bacview screen files • View files
Download Parameters	All parameters
Download Schedules	All schedules that are not set for automatic download

To perform downloads from a **Properties page** or a **microblock popup**

Downloading from a **Properties** page downloads memory, parameters, and schedules for the selected equipment.

- 1 Go to a **Properties** page or microblock popup for the equipment.
- 2 Click the **Download** button below the red download message at the top of the page.

NOTE The **Download** button is visible only if a download is required.

Using Graphics, Alarms, Trends, and Reports

Consult the i-Vu Open Help files for detailed information on:

- Using **Graphics** pages
- Setting up and using **Alarms**
- Viewing and customizing **Trends**
- Running standard reports and creating custom **Reports**


System Management

Although i-Vu Open is a reliable front-end, it is prudent to perform periodic backups of the i-Vu Open database to ensure a quick recovery in case of failure. It is also wise to take advantage of periodic library upgrades to ensure that your controllers have the latest version of software. The sections below describe how to backup and restore the i-Vu Open database and how to install the library updates.

NOTE Only users with the Installer role can access the **Management Tool**.

Backup data from Management Tool

Access the **Management Tool** using one of the following methods:

- Open i-Vu, click the **Main Menu** button , then select **System Options > General tab > Management Tool**
- Launch your browser and type your system name followed by **:8080**. For ex.: <http://ivu:8080/>.

Use either of the following methods to backup your data:

Backup data to your PC

- 1 Click **PC Backup** under **Manage Server Data** to save the entire database zipped into one file to your PC.
- 2 Click **OK** when you see the message **The system will be stopped and restarted. Do you wish to proceed?** Watch **Operation Status** to see the progress.
- 3 Click the message **Save/Download Backup File to Your Local Hard drive** when it appears.
- 4 Click **Save** when asked **Do you want to save this file or find a program online to open it?**
- 5 Save this system.backup.tgz file to a convenient location on your computer.
CAUTION! Do not alter the name of this file!
- 6 Exit from **Management Tool**.

Backup data to a USB drive


- 1 Plug your USB drive into any available USB port on your i-Vu web server.
NOTE Do not use the i-Vu Open **Restore** USB drive!
- 2 You must reboot in order for the web server to find the USB drive. Click **Reboot** under **Machine Maintenance** in the **Management Tool**.
- 3 Click **OK**.
- 4 When reboot is complete, click **USB Backup** under **Manage Server Data**.
- 5 Click **OK** when you see the message **The system will be stopped and restarted. Do you wish to proceed?**
- 6 When **Operation Status** says **No Background Operations Currently Active**, remove USB drive from the i-Vu web server.
- 7 Exit from **Management Tool**.

Restore data from backup

- 1 Click **PC Restore** or **USB Restore** under **Manage Server Data** in the **Management Tool**.
 - **PC Restore** - Browse to your backup file and click **Perform Restore**.
 - **USB Restore** - Place your backup USB drive in any port on the i-Vu web server.
- 2 Restore is complete when **Operation Status** displays **No Background Operations Currently Active**.
- 3 If you wish to change the name of your i-Vu system from the default **ivu**, enter the new name in the **Name** field under **Addressing**. The restore process does not automatically reinstate your previous name.

Restore factory defaults

Restoring factory defaults deletes your existing data and restores your system to factory defaults. This restore process is quicker than using the **Restore CD** or **Restore USB drive**.

- 1 Access the **Management Tool** by clicking the **Main Menu** button , then selecting **System Options > General tab > Management Tool** or via your browser by typing your system name followed by :8080.
For ex.: http://ivu:8080.
- 2 Click **Factory Defaults**. This deletes all server data and resets the device to the original factory default values.
- 3 **NOTE** Executing this option will not delete configuration data under the **Addressing** and **i-Vu Port Configuration** sections of the Management Tool.
- 4 Begin setting up your system.

Restore i-Vu Open system

From Restore CD:

CAUTION! Placing the **Restore CD** in the i-Vu disk drive reformats your system and restores it to factory defaults. Library updates are lost and you must reapply them.

- 1 Remove the i-Vu Open web server from the network by disconnecting the LAN cable.
- 2 Insert the i-Vu Open 5.1 **Restore CD** into the i-Vu Open web server CD drive.
- 3 Shut down the i-Vu Open web server by pushing the On/Off button once. Wait for the blue light to turn off (could take as long as 2 minutes).
- 4 Press the On/Off button again to restart the web server. The installation begins automatically.
- 5 The **Restore CD** ejects when the installation is complete. This process takes several minutes.
NOTE Do not power off during the installation.
- 6 Wait another minute or two before accessing the new system using Internet Explorer.

From i-Vu Open Restore USB drive:

CAUTION! Placing the i-Vu Open **Restore** USB drive in an i-Vu web server USB port reformats your system and restores it to factory defaults. Library updates are lost and you must reapply them.

- 1 Insert the i-Vu Open **Restore** USB drive into any i-Vu web server USB port.
- 2 Shut down the web server by holding down the **On/Off** button for several seconds. Wait for the blue lights to stop before restarting.
- 3 Press the **On/Off** button again to restart. The restore process starts automatically and takes several minutes. The web server shuts off when finished.

NOTE Do not turn the power off during reformatting!

- 4 Wait another minute or two before accessing the new system via Internet Explorer.

Update the equipment library


i-Vu Open is equipped with a complete library. There are occasionally library (.sal file) updates, which contain the following files:

- graphic (.view)
- control program (.equipment)
- driver (.driver)
- BACview (.bacview)

Notes:

- Contact your Carrier representative for updates.
- The library update will only change default graphics. If you have edited your graphic in ViewBuilder, it will not be updated.
- Keep copies of the latest libraries in a safe place. In the event of a system restore, any updated .sal files must be reapplied.
- The last digits in the sal library name are the release date of the library.

Step 1: Upload library to i-Vu Open

- 1 Save the updated library (.sal file) to your computer.
- 2 Click the **Main Menu** button , then select **System Options > Update Library** tab.
- 3 Browse to the updated .sal file that you have saved on your computer, select the file and click **Open**.
- 4 Select **Continue**.
- 5 When process is complete, the dialog box will say **File added successfully**.
- 6 Click **Close**.

NOTE These changes are not applied to the controllers until you have completed the steps below.

Follow these steps to implement the new equipment library:

Step 2: Update the files for the routers

- 1 Select the router that you wish to update in the navigation tree.
- 2 Right-click and select **Driver Properties** in the drop-down menu. A dialog window appears.
- 3 If the database contains two or more routers, then you must check **Change for all control programs of this type** in the **Control Program** section.
- 4 Click **Update**. A message appears **Changes the driver and bacview to use the current library version. Continue?**
NOTE If more than one router exists, the additional routers will be listed below the **Update** button.
- 5 Click **OK**.
- 6 When finished, click **Close**.

Step 3: Update the files for the controllers

- 1 Double-click the controller in the navigation tree . A dialog window appears.
- 2 If you have multiple controllers of the same type, enable **Change for all control programs of this type?**.
- 3 Click **Update** under **Control Programs**. A message appears **Changes the control program, view, driver and bacview to use the current library version. Continue?**
- 4 Click **OK**. When the message **Updated to the library version xx.** appears, click **Close**.
- 5 Click **Close** again.

Step 4: Apply the update to the controllers

- 1 Go to **Discovery** page > **Setup** tab.
- 2 Select the area/router level in the navigation tree.
- 3 Select any controllers with a **File Mismatch** error message. You can CTRL+click to multi-select.
- 4 Right-click and select **Download Files**. The updated control programs, graphics, drivers, and BACview files are now in your routers and controllers.

Synchronize to system time

To update all routers and controllers to the system time:


- 1 Click **Main Menu > System Options > General** tab.
- 2 Click the **Time Sync** button to immediately synchronize all controllers.
- 3 To adjust when controllers will be automatically synchronized each day, click **Enable time synchronization of controllers daily at** and fill in time.

Troubleshooting i-Vu Open

CAUTION! Do NOT open the i-Vu Open web server! Opening the web server voids your warranty.

Manual commands

To run a manual command:

- 1 Click **Main Menu** , then select **Manual Command**.
- 2 Type the manual command in the dialog box, then click **OK**.

TIP Ctrl+M also opens the dialog box.


You must have the **Installer Role** to access the manual commands dialog box.

Command	Description
bbmd commands:	You must have the Manual Commands/Adv Network privilege to run bbmd commands.
bbmd read <IP address>	Reads the BBMD table of the controller at the given IP address. For example, to display the BBMD table in the BACnet device router at IP address 154.16.12.101, type: <code>bbmd read 154.16.12.101</code>
bbmd update <network number>	Selects BBMDs on the specified network and marks them for download. If no network is entered at the end of the command, all networks in the system are scanned. For example, if the network number is 888, type: <code>bbmd update 888</code>
bbmd view <network number>	Views the list of BBMDs that have been selected for the network number at the end of the command. Assumes the update has been run. For example: <code>bbmd view 888</code>
bbmd write <table file> <IP address>	Writes the BBMD table into the controller at the given IP address. See To set up BBMDs using i-Vu Open. For example, to write the BBMD table in dallasbbmd.bdt into the BACnet device router at IP address 154.16.12.101, type: <code>bbmd write dallasbbmd.bdt 154.16.12.101</code>
bbmd clear <IP address>	Clears the BBMD for the specified controller. For example: <code>bbmd clear 154.16.12.101</code>
bbmd dump <network> <file>	Writes to a file the BBMD from the specified controller. For example: <code>bbmd dump 888 dallasbbmd.bdt</code>

Command	Description
commstat	Gives a complete set of diagnostic information for all defined connections.
copy	Displays a global copy utility that allows you to selectively copy trend graphs, custom reports and all editable properties from the selected equipment to other equipment in the system with the same control program.
debug	Displays information for advanced technical support
go <refname or path>	Goes to the point in the system that is referenced. For example: go #oa_conditions or go vav_1/m28
logoffuser	Logs off a user (without warning the user). Type a <code>whoson</code> manual command to view the IDs of logged in operators, then type <code>logoffuser x</code> , where <code>x</code> is a the user's ID.
modstat	Displays status of the controller at the current location, including: <ul style="list-style-type: none"> • Hardware components of the device • Software components of the device • Error conditions that may exist in the device • Date and time the device is using
notify	Sends a message to all operators currently logged in to the system. For example, "The server is going to shut down in 5 minutes. Please log off." To run this command, type: <code>notify your message</code> . The message must use only alphanumeric characters.
ping	Ping to verify communication between two IP devices. You cannot ping devices on non-IP networks. To run this command type: <code>ping <hostname></code> where <code><hostname></code> is the IP address or device name. For example: ping 192.168.168.1 (will ping the IP address 4 times) or ping 192.168.168.1 -t (will ping the IP address constantly)
rebootserver	Restarts i-Vu Open server. You must have the Installer or Administrator role to run this command.
whereami	For the current location, displays the full path and gives the reference names of the action button, category, item and tab. You use these reference names when you create links in ViewBuilder.
whoson	Shows the list of users currently logged in to the i-Vu Open system, the IP addresses from where they are logged on, what kind of interface they are using (for example, lvi5 for an Internet browser on a computer), and how long it has been since they have actively interfaced with the i-Vu Open system.
zap	Restarts the selected controller.

Configure i-Vu Open using static IP addresses

NOTE If using a loopback address, refer to *Using a loopback address* (page 41) for important details.

- 1 Log into i-Vu Open. Access the **Management Tool** by clicking the **Main Menu** button , then selecting **System Options > General** tab > **Management Tool** or via your browser by typing your system name or IP address followed by :8080
For ex.: http://ivu:8080, http://<ip address>:8080 http://<networkname>:8080
- 2 Uncheck **Obtain an IP Address** and enter an **IP address**, **Subnet Mask**, and **IP Gateway** for the Server.
- 3 Enter the **DNS Address** and **Domain** name. The **Domain** field can be left blank, however this field is required if i-Vu Open will be configured to email alarms. In this case, a Fully Qualified Domain Name must be entered. See **NOTES** above.
- 4 Enter a **USB Network Address**. An internal loopback address of 127.0.0.1 may be used in this field only if the USB Open Adapter or i-Vu Open routers are used. If both the USB Open Adapter and i-Vu Open routers will be used, the loopback address should not be assigned to the **USB Network Address**. Instead, configure the **USB Network Address** with an appropriate IP address for the subnet that the i-Vu Open web server is on.
- 5 Click **Apply Changes**. If the i-Vu Open web server was connected directly to a PC when configured, applying changes in the **Management Tool** will most likely result in the PC being on a different IP subnet than i-Vu Open. In this case, a loss of connection will occur. To regain communication with i-Vu Open, the IP address of the PC must be configured to be on the same subnet as i-Vu Open.

If DHCP will not assign two IP addresses

The default IP configuration for i-Vu Open uses DHCP. i-Vu Open attempts to obtain its IP configuration information from a DHCP Server located on the same subnet. Most DHCP Servers will provide all of the information contained in the **Addressing** section of the **Management Tool**, as shown below.

However, there are some DHCP Servers that will not assign two IP addresses to one network card, or more specifically, to one MAC address.

As shown below, i-Vu Open is set for DHCP and all IP information looks valid except that the **USB Network Address** is configured for 127.0.0.1. This is called a loopback address and this IP address is not visible or accessible from the LAN. The warning in red indicates that if the i-Vu Open system is going to use both a USB Open Adapter and an i-Vu Open router, a non-loopback address must be assigned to the **USB Network Address**.

If using a loopback address, refer to *Using a loopback address* (page 41) for important details.

Addressing

Name:

Obtain an IP address automatically

i-Vu Address: . . .

Subnet Mask: . . .

IP Gateway Address: . . .

DNS Address: . . .

Domain:

USB Network Address: . . .

Warning: You must manually configure the IP address for the USB Network to a non-loopback address if that device is to communicate with other devices over an IP network.

In cases where the DHCP Server will not assign two IP addresses and the i-Vu Open system uses both the USB Open Adapter and i-Vu Open routers, DHCP will not work. You must configure i-Vu Open with static IP addresses. See *Configure i-Vu Open using a static IP address* (page 40).

Using a loopback address

You can successfully use a loopback address for the **USB Network Address** if you are using:

- USB Open Adapter
- OR**
- i-Vu Open routers

CAUTION! Do NOT use a loopback address if you are using both the USB Open Adapter and i-Vu Open routers.

i-Vu Open Discovery is affected by plugging or unplugging the USB Open Adapter when using a loopback address for the USB network. Consult the following table for details.

If the cable is...	then,
attached at startup	External Discovery will not work Internal Discovery will work
missing at startup	External Discovery works. Internal Discovery is not wanted.
plugged in after startup	External Discovery works. Internal Discovery will not work.
unplugged after startup	External Discovery will not work. Internal Discovery will work if the cable is plugged back in.

TCP/UDP Port Usage

Server Ports	
Port	Protocol/User
tcp *:80	http (Web Server)
tcp *:443	https (Web Server)
tcp *:8080	http (Management Tool)
udp *:68	DHCP Client daemon
udp *:137	nmbd (netbios/tcp requests)
udp *:138	nmbd (netbios/tcp responses)
udp *:47808	Bacnet/IP
udp *:47806	Alarm Pop-up Client

NOTE

- These ports are used by the i-Vu Open web server. i-Vu Open listens through these ports.
- SOAP uses the HTTP port.
- HTTP and HTTPS ports are user-viewable/definable via **System Options > General tab > Management Tool** or via your browser by typing your system name followed by :8080. For ex.: http://ivu:8080..
- The alarm pop-up is defined through **System Options > General** tab.
- The BACnet/IP ports have to be exposed if the connection between the i-Vu Open web server and the routers contain a firewall.
- All other ports are not configurable.

DHCP - If you can't access i-Vu Open with the Internet Explorer by PC name

Notes about i-Vu Open and DHCP addressing

i-Vu Open is configured to automatically obtain an IP address using DHCP. When i-Vu Open is powered up, it sends a request out its LAN cable to a DHCP server and asks the server to supply it with its IP configuration.

This IP configuration consists of

- an IP address
- subnet mask
- default gateway
- DNS information

If a DHCP server is not available, as in the case of connecting i-Vu Open directly to a PC, i-Vu Open will assign an internal IP address to its Network Interface Card. The PC that is directly connected to i-Vu Open will also assign itself an IP address if it is set up for DHCP. The network portion of each of these IP addresses are identical, 169.254.xxx.xxx . The remaining two octets of each IP address will be different. This ensures that communication is possible on this IP network consisting of i-Vu Open and the PC.

i-Vu Open device connected to PC with a crossover cable

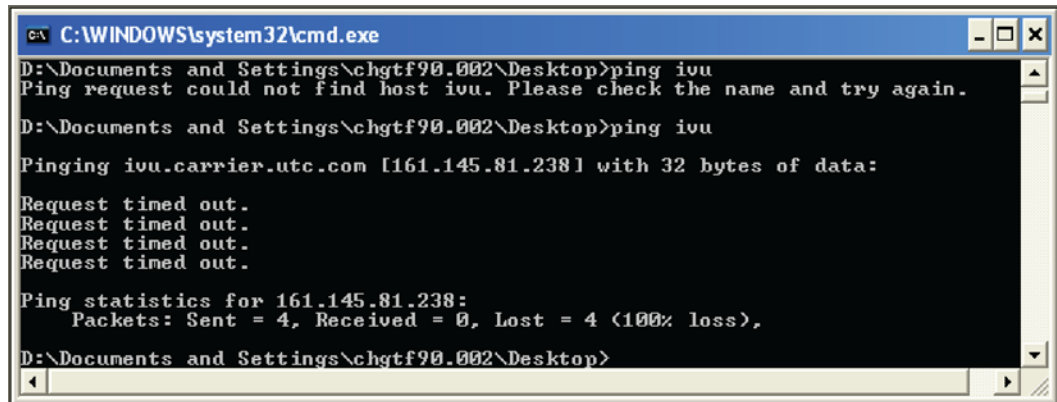
- 1 Ensure that the i-Vu Open web server is powered.
- 2 Check that a valid Ethernet connection exists. (See *Example 1* (page 44).)
- 3 Open a Command window (**Start > Run**, type "cmd" <enter>) and ping the i-Vu web server's default name. (See example 3). If four successful replies are observed, then check Internet Explorer to determine if a proxy server or automatic configuration script is being used and disable them. (See *Example 2* (page 45).)
- 4 Try accessing i-Vu Open again.
- 5 If after performing step 3, i-Vu Open still isn't accessible from Internet Explorer, or the Ping command in step 3 failed,
 - Open a Command window (**Start > Run**, type "cmd" <enter>) and type in the following commands: "nbtstat -R" <enter>
 - Type in "ipconfig /flushdns" <enter>
- 6 If i-Vu Open is still inaccessible from Internet Explorer, try pinging the i-Vu Open web server again.
- 7 If the i-Vu Open web server still does not respond to the PING command, try pinging the PC name of the PC connected to the i-Vu Open web server. If this is successful, reboot i-Vu Open, and try pinging i-Vu Open.
- 8 If it still fails the PING test, connect a monitor to the i-Vu Open web server and reboot.

At the end of the boot process, i-Vu Open will display its IP configuration. If the Server IP address displayed is something other than 169.254.xxx.xxx, i-Vu Open is not setup to use DHCP, but instead, is assigned a static IP address. In this case, to access i-Vu Open, it is necessary to configure the IP settings of the PC's Network Interface Card (NIC) to be on the same network as the i-Vu Open web server. After reconfiguring the NIC, access i-Vu Open with I.E. using the server IP address shown on the monitor.

NOTE If pinging the PC name fails, the network connection on the PC is either disabled, disconnected, or in need of repair. Call Carrier Control Systems Support for assistance.

i-Vu Open device plugged into LAN

- 1 Ensure i-Vu Open is on.
- 2 Check that a valid Ethernet connection exists. (See *Example 1* (page 44).)
- 3 Open a Command window (See *Example 3* (page 46).) and ping i-Vu Open by its default name (ivu).
 - If pinging is successful, then the problem is most likely in the PC's browser settings. Check Internet Explorer to determine if a proxy server or automatic configuration script is being used (See *Example 2* (page 45)).
 - If a proxy server is being used, you must add the name of the i-Vu Open device to the exceptions list of the proxy server. (See Example 4)
 - If an auto-configuration script is being used, adding i-Vu Open to the exceptions list is not possible. Contact the local Information Technology group for assistance.
 - If pinging fails but i-Vu Open's name is resolved to an IP address as shown below, the problem could be that pinging is disabled on the LAN.



- If this is the case, check the proxy server settings in Internet Explorer as in *Example 2* (page 45).
- If the problem isn't with the proxy server settings and pinging is enabled on the LAN, failing to ping successfully could mean that the i-Vu Open name is resolving to an incorrect IP address.

Try the following:

- 1 Open a Command window (See *Example 3* (page 46)) and type in the following commands: "nbtstat -R" <enter>.
 - 2 Type in "ipconfig /flushdns" <enter>.
 - 3 Try Pinging the i-Vu Open web server again by name.
- If successful, try accessing i-Vu Open with Internet Explorer. If not successful try accessing i-Vu in Internet Explorer by IP address, i.e. http://161.145.81.238. If this is successful, contact the local Information Technology group to resolve this issue.
 - If pinging fails with any other error than shown in the graphic above, contact the local Information Technology group to assist you. The IT group may want to know what IP address the i-Vu Open web server is actually using. To determine this, connect a monitor to the i-Vu Open DVI port in the back of the i-Vu Open web server and power down. Now power up the i-Vu Open web server and the IP configuration information will be displayed at the end of the boot process.

Example 1: Determining if a valid Ethernet connection exists

Ensure that a proper Ethernet connection is present by going to **Start> Settings> Control Panel** and double-clicking on **Network Connections**.

Under LAN or High Speed Internet, find your Network Interface Card icon and ensure that a red "X" is not displayed over the icon.

- 1 Note that in the following figure:
 - The **Local Area Connection** is enabled and connected
 - The **Wireless Connection** is enabled, but not connected
 - The two other connections are disabled

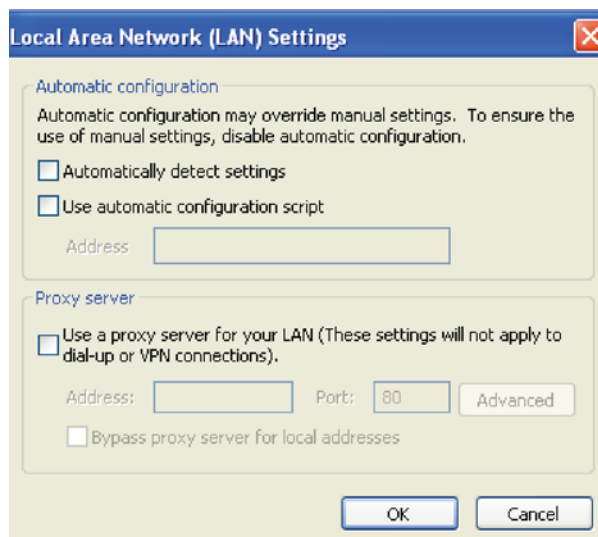
If the connection that is used for i-Vu does show a red "X", then check that the Ethernet cable is fully plugged in and that the correct type of Ethernet cable is being used, i.e. crossover or patch cable.

A live Ethernet connection must exist in order to successfully connect to the i-Vu Open web server.



Example 2: Determining if Internet Explorer is using a proxy server

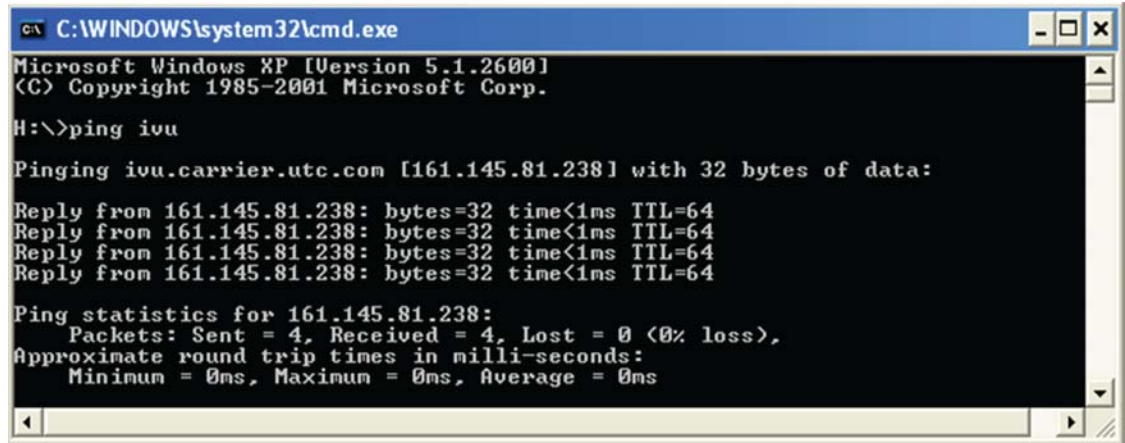
- 1 Launch Internet Explorer and go to **Tools > Internet Options > Connections** and click on the **LAN Settings** button.
- 2 Uncheck every checkbox in this popup window to disable proxy server usage, as shown below.



- 3 Exit these configuration pop-ups by clicking the **OK** buttons.
- 4 Close all instances of Internet Explorer.
- 5 Launch Internet Explorer again and try to access i-Vu Open.

Example 3: Pinging by PC name

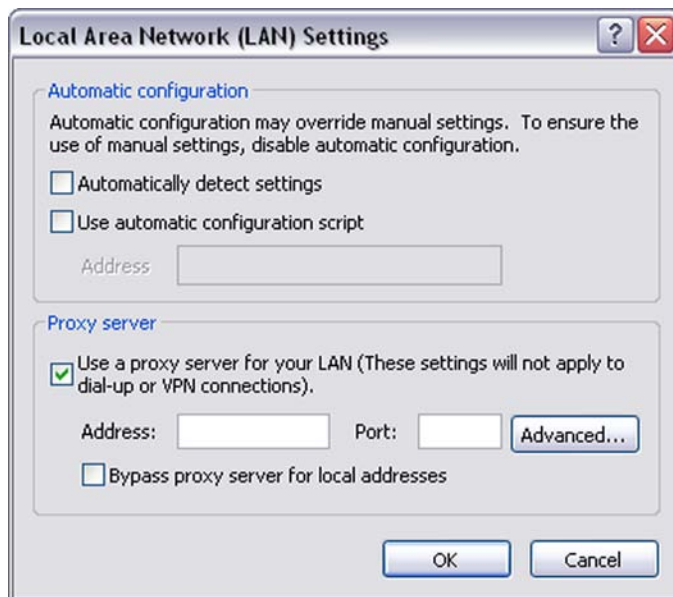
- 1 Open the window below by going to **Start > Run** and type “cmd” in the open window.
- 2 Click **OK**. A window similar to the following should open.



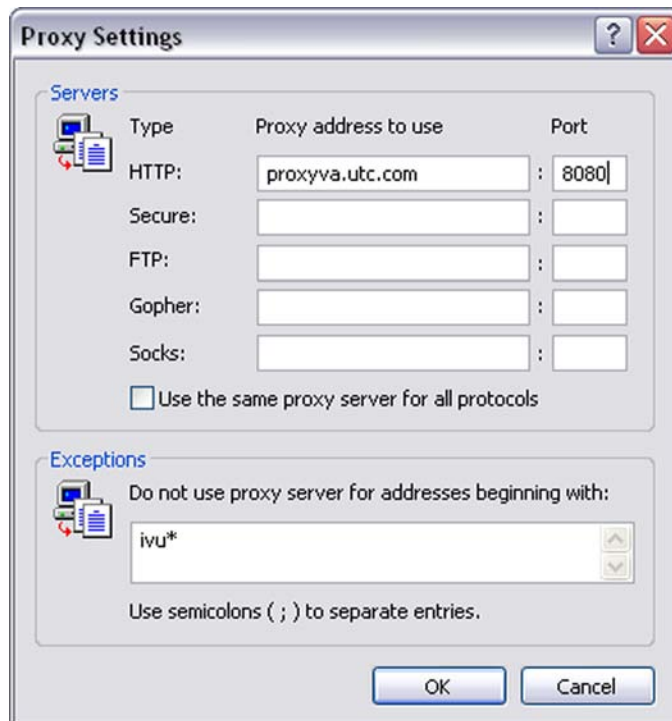
- 3 Type “ping ivu” to ping the default name of the i-Vu Open web server. If good connectivity exists, 4 replies should be received, as seen above.
- 4 Note Name and IP address.

Example 4: Adding exceptions to a proxy server in Internet Explorer

- 1 Launch Internet Explorer and select **Tools>Internet Options > Connections > LAN Settings**. Verify that the **Proxy Server** checkbox is checked.



- Click on the **Advanced** button and enter the address and port, and the name of the i-Vu Open web server followed by an asterisk in the **Exceptions** list.



- Close each pop-up by clicking **OK**.
- Close Internet Explorer and re-open it for the new settings to take effect.

DVI to VGA converter

The DVI to VGA converter allows you to plug a monitor directly into the i-Vu Open web server in the event that you have lost your system name and system IP address.

FAQ - Frequently Asked Questions

“Where do I find out the details of the capabilities of the different roles available for Login?”

Refer to **Set up login and passwords for an additional user** tab for details.

“I noticed that the back/forward buttons in the browser don't work.”

You must use the navigation inside the i-Vu Open interface.

“Can I use Firefox?”

At this time, i-Vu Open only supports the use of the Internet Explorer v6 and later web browser.

“Can I Cntrl-select Alarms to acknowledge them?”

No, you can either select a single alarm or all alarms.

“I've noticed the Navigation buttons sometimes do not work. What is wrong?”

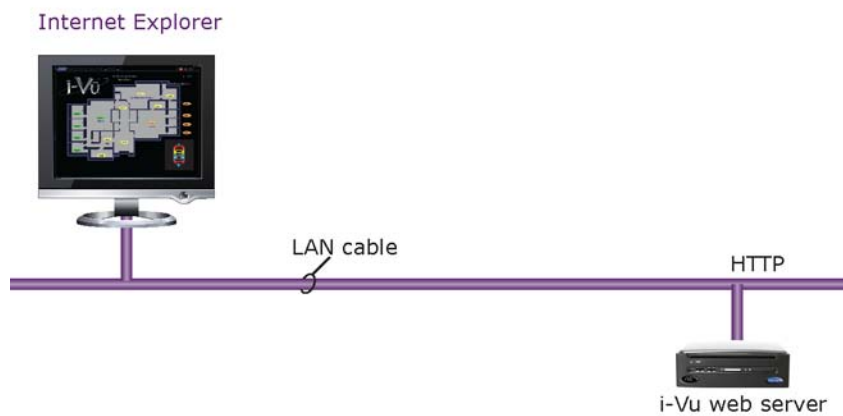
This will occur when you start editing a page or changing a value in i-Vu Open. This will require you to Accept or Cancel the action which appears at the top of the open window. Navigation is disabled until you Accept or Cancel the change.

Appendix A: i-Vu Open connection options and requirements

You can use any of the following common network configurations (see below for details):

- **Option 1** - Connect directly from a PC to the i-Vu web server
- **Option 2** - Connect to the Intranet for internal network access only
- **Option 3** - Connect to the Internet through the Intranet for both internal and external access
- **Option 4** - Connect to the Internet through a dedicated broadband account

Option 1 - Connect directly from a PC to the i-Vu Open web server

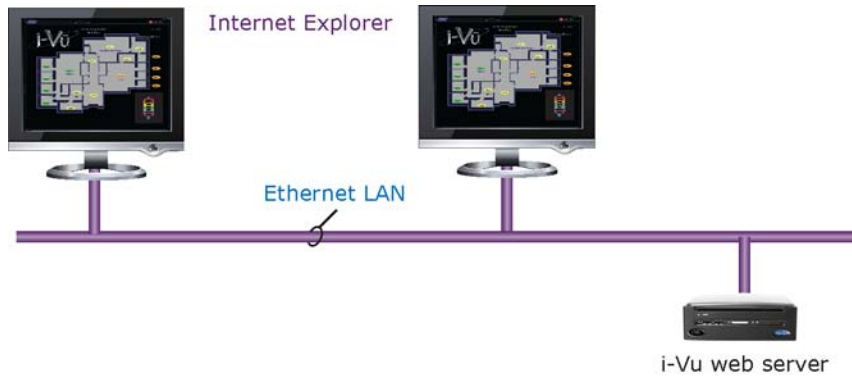


Requirements:

- Windows Based PC with Internet Explorer and available Ethernet port
- LAN Cable (either straight or crossover)

Email Options - None

Option 2 - Connect to a LAN for internal network access only



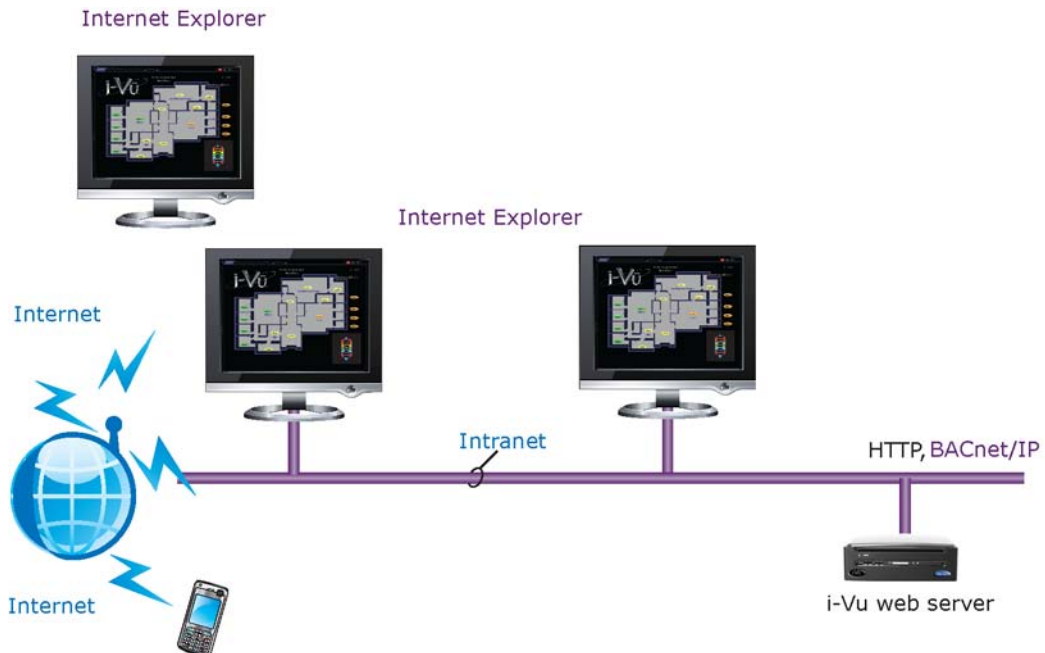
Requirements:

- Windows Based PC with Internet Explorer and Ethernet port
- Access to Ethernet LAN
- For i-Vu Open Standard and Plus systems, you need a (DHCP or static) IP address for each of the following:
 - One IP address for the i-Vu web server (required)
 - One IP address for the i-Vu web server's internal router (optional)
 - One IP address for each i-Vu Open Router (if applicable)

Email Options - Email can be sent from an Internet mail server only.

Op

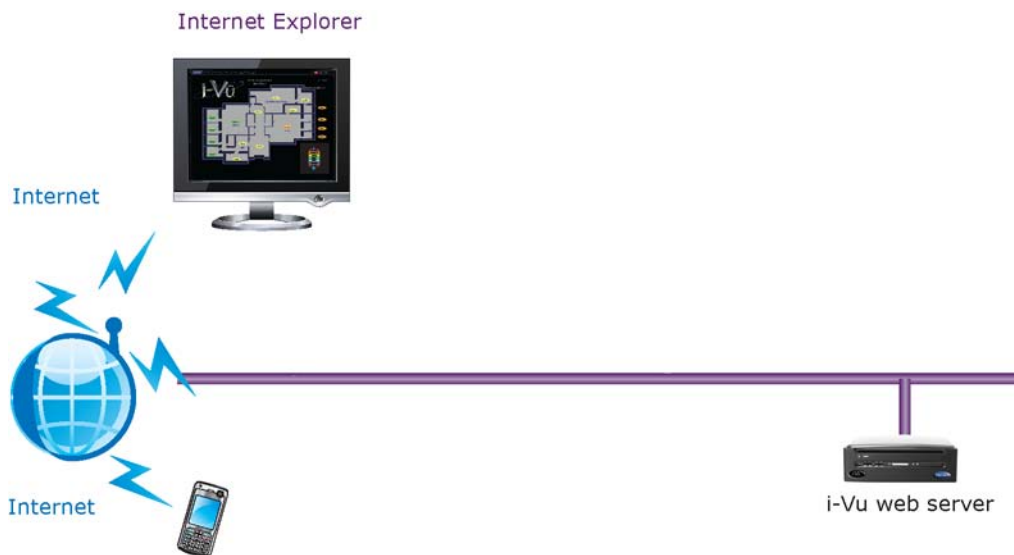
Option 3 - Connect to the Internet through an Intranet for both internal and external access



Requirements:

- Windows Based PC with Internet Explorer and Ethernet port
- Access to Ethernet LAN
- For i-Vu Open Standard and Plus systems, you need a (DHCP or static) IP address for each of the following:
 - One IP address for the i-Vu web server (required)
 - One IP address for the i-Vu web server's internal router (optional)
 - One IP address for each i-Vu Open Router (if applicable)
- Internet IP address provided by the site's IT personnel
- Open firewall port for HTTP/HTTPS traffic to the i-Vu web server's IP address (default is port 80/443 respectively)

Email Options - Email can be sent from both Internet and Intranet mail servers. To send email off of the LAN, the DNS and domain field must be properly configured in the i-Vu web server.

Option 4 - Connect to the Internet through a dedicated broadband account

- Windows Based PC with Internet Explorer and Ethernet port
- Broadband Internet connection (internet IP address provided by the Internet Service Provider)
- IP router (w/Integrated Switch if PC or i-Vu Open Routers will be used)
- For i-Vu Open Standard and Plus systems, you need a (DHCP or static) IP address for each of the following:
 - One IP address for the i-Vu web server (required)
 - One IP address for the i-Vu web server's internal router (optional)
 - One IP address for each i-Vu Open Router (if applicable)
- Open firewall port for HTTP/HTTPS traffic to the i-Vu web server's IP address (default is port 80/443 respectively)

Email Options - Email can be sent from an Internet mail server only.



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