Integration Guide:

Lutron Vive

with EcoStruxure™ Building Operation

Integrating BACnet Lighting Control

Schneider Electric

In Brief

This integration and application have been developed as an example of integrating Lutron Vive Lighting system into the EcoStruxure Building Operation system via BACnet IP. This document should be used by engineers and technicians who need to understand the software configuration of the application for deploying a BACnet integration with Lutron Vive Lighting system.

Digital Buildings Lab

Digital Building Labs are based in the Schneider Electric Andover Research & Development Center located in Andover. MA. USA, they are funded by the Digital Energy Division. There are two labs under the Digital Buildings umbrella; a Solution Lab and an Interoperability Lab. The role of the Interoperability Lab is to provide tested building blocks that can be used alone or in the Solution Lab. The Solution Lab provides validated solutions for the Building segment markets using tested building blocks from the Interoperability Lab.

Digital Building lab personnel test, validate, and document integrated solutions that meet the needs of Schneider Electric customers. These solutions target specific vertical applications within a variety of markets. Our goal is to facilitate the integration process by recommending network architectures and proposing components. We also provide examples of integration procedures, relevant data points, and best practices for implementation.

Integration Guides for Buildings

Integration Guides describe integrated building solutions designed to meet the needs of Schneider Electric customers. They provide systems integrators with the information they need to determine if a solution makes sense for an application. Digital Building Solution Lab personnel evaluate each solution to confirm that it provides the features and functionality as described. Integration Guides are like TVDA documents (Tested, Validated and Documented Architecture), which are also produced by Digital Building Labs personnel. TVDA solutions, however, are fully tested and validated within the Solution Lab.

Who do I contact for assistance with this solution?

Schneider Electric provides branch and channel partners with planning and implementation assistance for Digital Building Lab solutions. To request help, send an email to Product Support specifying the solution name and the type of assistance you require. Product Support will relay your request to the appropriate support team.

For support inquiries, contact your local **Customer Care Center.** Visit schneider-electric.com and select the "Support" tab then select your country of origin.

Access Customer Care directly from the **"mySchneider"** mobile app; download it now onto Apple or Android devices.

About this Document

This document aims to provide a guide for integrators who require integrating the Lutron Vive Lighting Control system via BACnet IP into the EcoStruxure Building Operation.
This solution provides guidance and recommendations on achieving the integration and covers:

- Network Architecture
- Best Practices
- Troubleshooting Tips
- Step-by-step Procedures

Content pertains specifically to the following:

- EcoStruxure Building Operation Automation Server and Enterprise Server v1.8.x; v1.9.x; v2.x
- Lutron Vive Lighting Control Solution

Revision History

Date	Author	Revision	Description
08.09.2017	**NC**	**1.00**	**Intial release**
08.16.2017	**MJB**	**1.01**	**Update with feedback from Lutron Sales Engineers**
04.15.2019	**SL**	**2.00**	**Update to include Lutron Vive BTL Certification**

Disclaimer

This document does not attempt to describe the proposed solution in its entirety. Users are solely responsible for compliance with national and international safety laws and regulations. Users are also responsible for the provision and maintenance of system cybersecurity. Solution functionality depends on specific versions of software and hardware as described and may change as products are upgraded. Performance measurements do not guarantee future performance. This document does not replace any specific product documentation.

Table of Contents

1. Introduction

As energy demands and its costs increase, building managers remain under constant pressure to reduce usage. Reduction of energy is now considered its own energy source. Because lighting and lighting control has improved drastically in just the last five years, introducing a lighting control strategy is one of the simplest solutions to maximize energy efficiency. For new construction, such lighting strategies are chosen before construction begins.

But for pre-existing buildings, installing the latest technology can be difficult and costly. Upgrading an outdated system is not as straightforward as with a brand-new building. Fishing wires through walls and ceilings requires excess labor and, in some cases, implementing a new system requires drastic changes to the integrity of the building. This level of construction is not only costly, but also interferes with the daily activity of the building. Data from the U.S Energy Information Administration shows that cooling, lighting, and ventilation account for 62% of the electricity used in a typical office building. Of that, 39% is attributed the office lighting system, the largest consumer of electricity in an office building.
Having an integrated light and building management system optimizes energy usage and minimizes cost.

To provide a solution, Schneider Electric has partnered with Lutron to produce the simplest, yet most comprehensive solution to reach your specific needs, for both new and existing buildings. Integrating your EcoStruxure Building Operation with a Vive system in your facility presents the ideal solution to most efficiently manage the energy of your facility.

1.1 Vive Lighting Control

Vive offers a wireless solution that enables current buildings to integrate the very best in modern lighting control. The solution allows you to control a single room, a whole floor, or an entire building with the option to add more later. Vive fills the current gap in the lighting control industry by allowing you to quickly add a modern lighting control system that is easily integrated to your core Building Management System.

Vive offers a multi-strategy approach to accommodate any budget, any building, and any performance need – for today and for the future of your facility.

1.2 Vive - Building Operation Integration

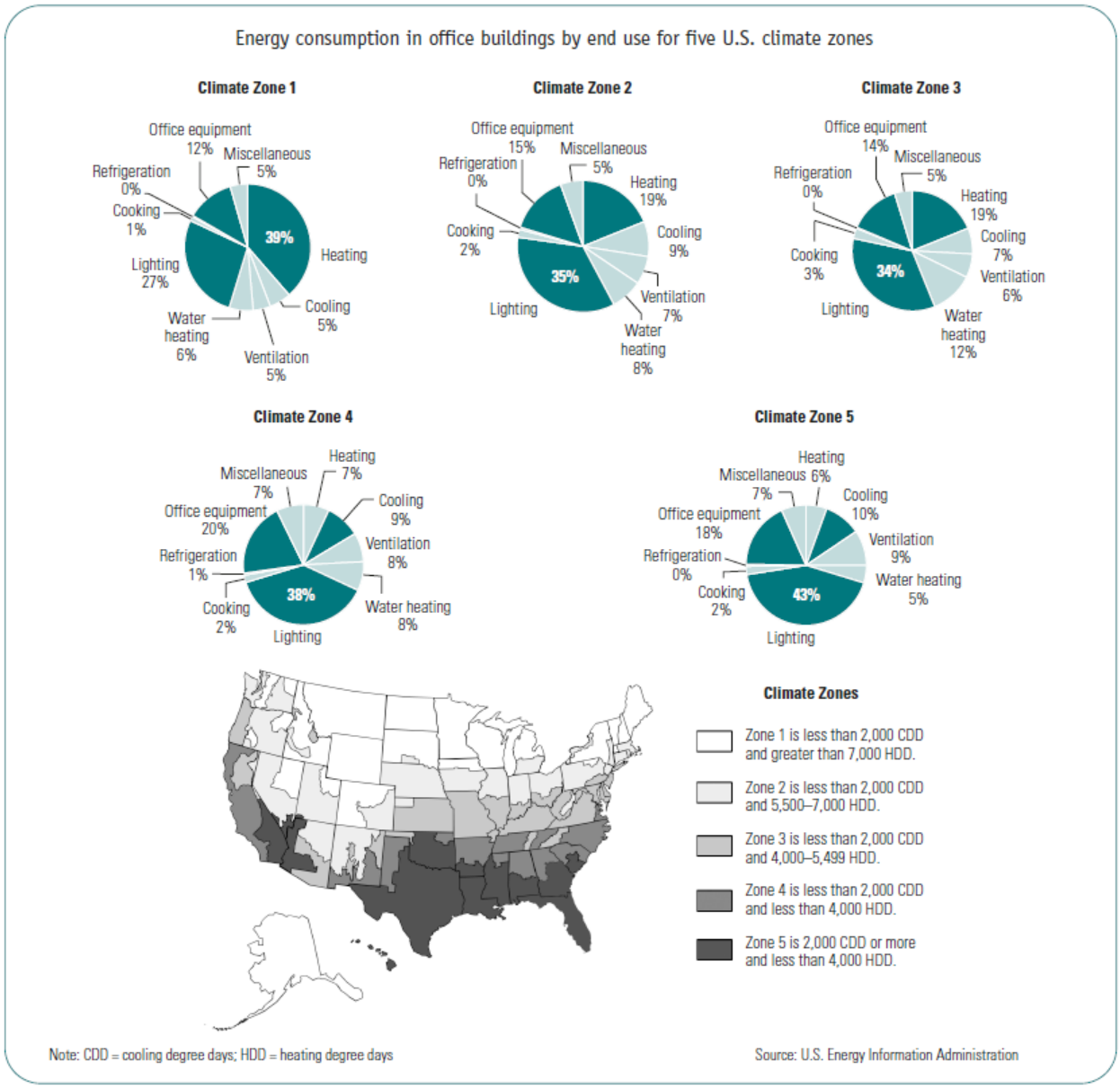
While Vive alone improves the efficiency of lighting, integrating Vive into your BMS optimizes performance across all areas of your facility.

Vive + Building Operation Integration	
Single interface control	View your entire facility with a single pane of glass
Direct hub connection	Control the Vive hub within Building Operation to configure devices
Graphical status display	Monitor and control a space with a simple graphic of your facility
Multiple-device control	Control lighting from your workstation, webstation, and personal device
Alarm triggering	Attach light functions to alarms within Building Operation
Permission scalability	Assign lighting control privileges to a full range of users
Space utilization reporting	View the occupancy of a room throughout the day
Energy savings & reporting	Learn ways to save energy and create a more productive building

Vive system	
Occupancy/vacancy sensing	Turn lights on when people occupy a space and off when they leave
Daylight harvesting	Dim facility lights when daylight is available to light the space
Scheduling	Program changes in light levels
Demand response	Automatically shed lighting loads during peak electricity usage times
Plug load control	Turn off loads automatically after occupants leave a space
High-end trim	Set the maximum light level in each space
Personal dimming	Give occupants the ability to adjust the light level
HVAC integration	Integrate lighting system with the HVAC controls via BACnet

2. Market Overview

Most buildings need artificial light to augment any natural light that enters. It is important that the lighting system installed in the building provide a range of options of monitoring and controlling strategies required by today's efficiency standards. For building managers trying to maximize efficiency, understanding how to reduce lighting usage becomes more important than knowing when to turn lights on. By measuring power usage, managers obtain the information they need to effectively control the quantity and quality of energy being used. Each building is unique – understanding the particular needs and challenges of your facility is the first step to optimize energy efficiency.



HVAC and lighting are universally the largest consumers of energy in a building. By creating an efficiency strategy with both demands in mind, via occupancy sensing, scheduling, and loadshedding, a building manager both simplifies and optimizes their building efficiency.

2.1 Target Customers and Applications

This solution is best-suited for customer applications for small to mid-size facilities.
Types of facilities this solution is suited for include:

- K-12 schools
- Non-process manufacturing facilities
- Office complexes
- Retail space
- College campus
- Healthcare outpatient facilities

2.2 Use Case Examples

The following are examples of how integrating a Building Management System with Lighting control provides tangible benefits:

- Improve building oversight with local visualization of real-time lighting control, HVAC systems views, and a more comprehensive reporting of energy consumption.
- Improve energy management of the overall facility by collecting and analyzing data on the energy consumption of all consumable utilities in the building or campus for a more complete view of utility costs.
- Maximize space utilization to help identify which spaces are being occupied at what time of day, frequency, and for how long. Expanding this to reduce energy consumption in unoccupied spaces by lowering lighting levels and changing HVAC setpoints during vacant periods throughout the day.
- Share occupancy sensors between lighting and HVAC systems to provide better accuracy of space occupancy. Shared occupancy can then control both HVAC and Lighting systems.
- Enhance load shed demand response by incorporating the lighting system into your BMS strategy to better enable greater load reduction and consumption management.
- Maximize efficiency of retail spaces. Set the lighting levels to 50% during cleaning and restocking,100% when customers are in the store and perhaps 80% for a demand response event.

3. Solution Overview

The Vive Lighting Control System targets commercial building retrofits and can be easily integrated into the Building Operation system via one or more BACnet IP Vive hubs. The Vive system uses a hub to wirelessly connect to each device. The devices can then be configured and controlled from a simple browser interface. All the devices are grouped together in the browser interface to control a room/area.

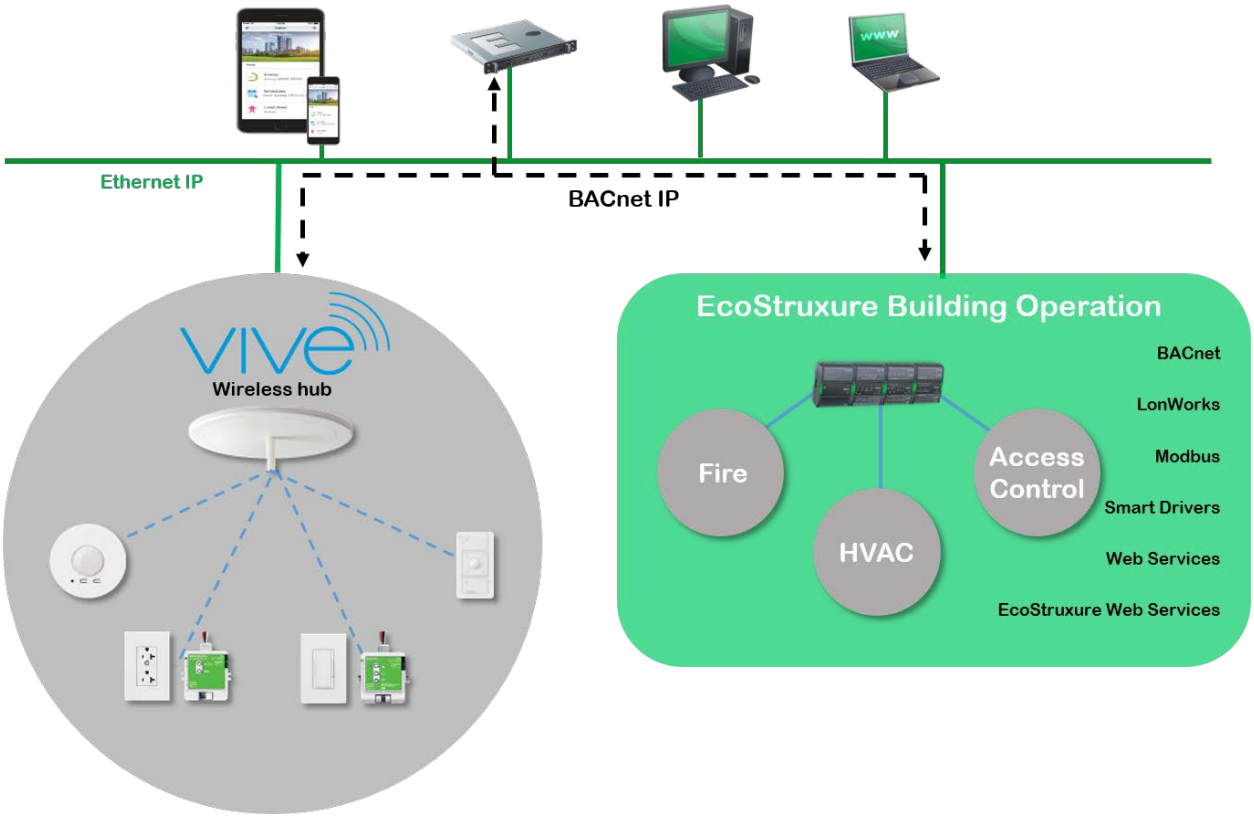
While the hub is required for full system integration, the Vive lights and controllers operate autonomously, and will remain functioning even if the hub loses functionality.

Each hub handles up to 700 wireless devices and covers approximately 10,000 ft^2. A hub can be connected to the corporate network via either an RJ45 Cat 5/6 Ethernet connection or via a Wi-Fi connection. The Wi-Fi connection can be configured to be silent to SSID requests, so that it remains hidden from other wireless users.

When designing the initial system, the Integrator will work with Lutron to determine the required number of fixtures per controller, wireless switches, and occupancy sensors. When designing a system for a multi-floor building, Lutron will help determine the ideal hub location for each floor, and if more than one hub per floor is required. The Integrator and Lutron will identify specific obstruction issues such as walls, elevator shafts, concrete, and metal in order to optimize wireless capabilities.

3.1 How it works

The Enterprise or Automation Server is configured to use a BACnet IP Interface to communicate with the Vive hub. Once the Vive hub is configured for all the room/areas and has included all lighting controllers, dimmer switches, and occupancy sensors, it can connect to the BACnet Interface. The user will need to set the BACnet Device ID and Network number to be used by the Vive hub.

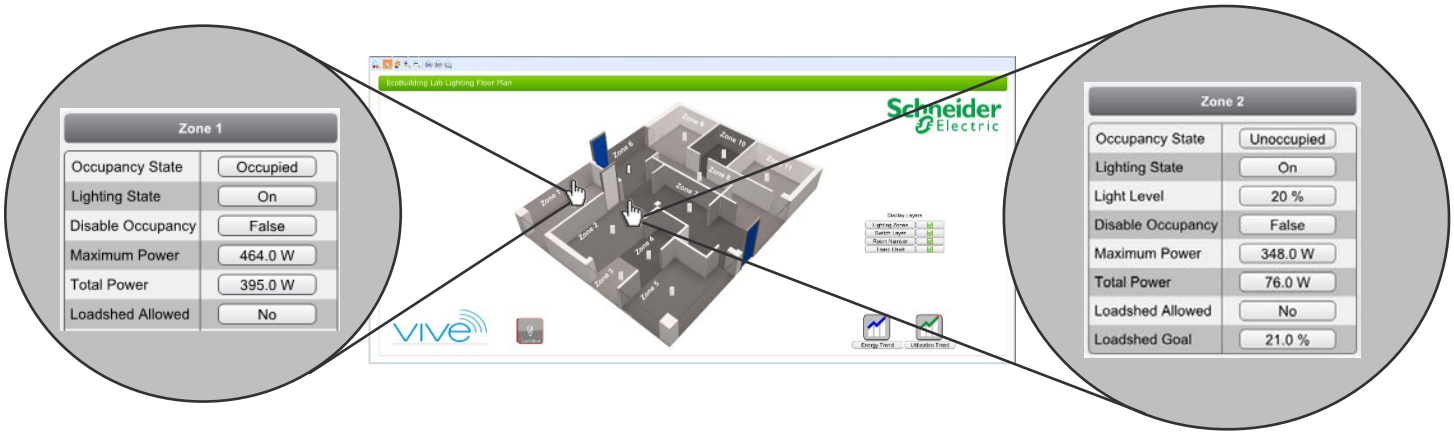


Once the BACnet IP Interface is enabled on the Vive hub, the Vive lighting control system appears as a BACnet device within the Building Operation. Each hub appears as a BACnet IP and each room/area appears as a BACnet device.

3.2 What the user sees

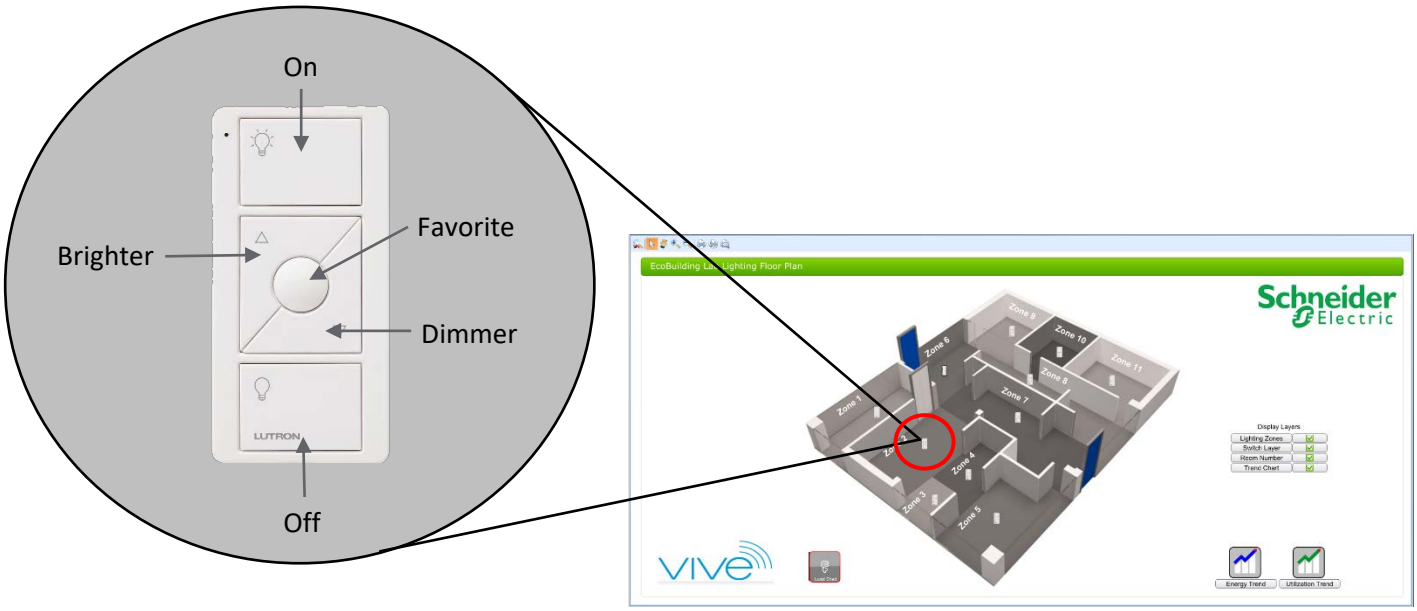
Below is a sample Building Operation graphic that provides a view of the lighting system floor plan. The different gradients within the graphic represent the light level of each room/area.

When the operator hovers the cursor over a room/area, a table appears that provides room/area-specific information such as occupancy, light state, light level, and total power. The operator can also choose to display a room/area utilization chart or energy trend chart.



Zone 1 represents a switched circuit room/area while Zone 2 represents a dimmable room/area.

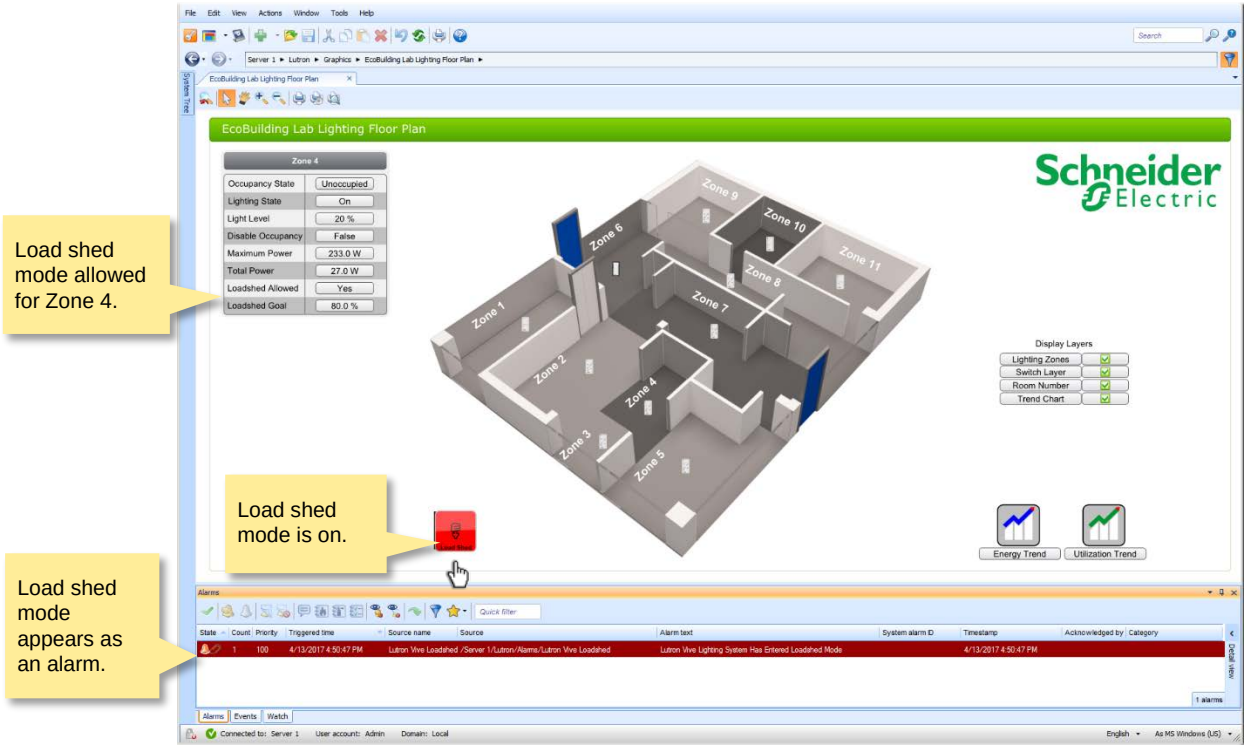
When the operator hovers the cursor over the Pico switch within the Building Operations graphic, the icon magnifies to let the operator adjust the light level. In the center of the Pico icon is a Favorite button that allows the operator to set the room/area to a predefined light level. The Favorite button within the SBO graphic component can also be configured with a binary value to execute a lighting scene such as a presentation mode or a meeting mode, where the light level is dimmed to a preset level and activates the shades to close. Note that this feature cannot be configured to work with the Favorite Button on the physical remote from Lutron Vive via BACnet.



3.3 Demand response and load shed mode

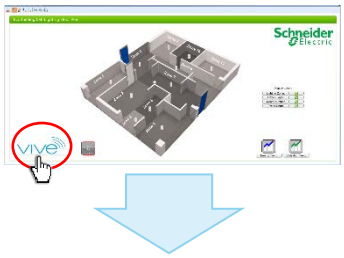
The Vive solution provides a BACnet Binary value to enable or disable load shed mode for the lighting control system in the event of a demand response. Each room/area can be enabled for load shed and can also have a load shed goal. The Vive system allows the user to override the light level locally, but the system can limit or provide a minimum load shed amount per room/area. From within a room/area, individual fixtures can be excluded from load shed mode. When load shed mode is enabled, there is a 45 second delay, then the room/area gradually dims to the target load shed.

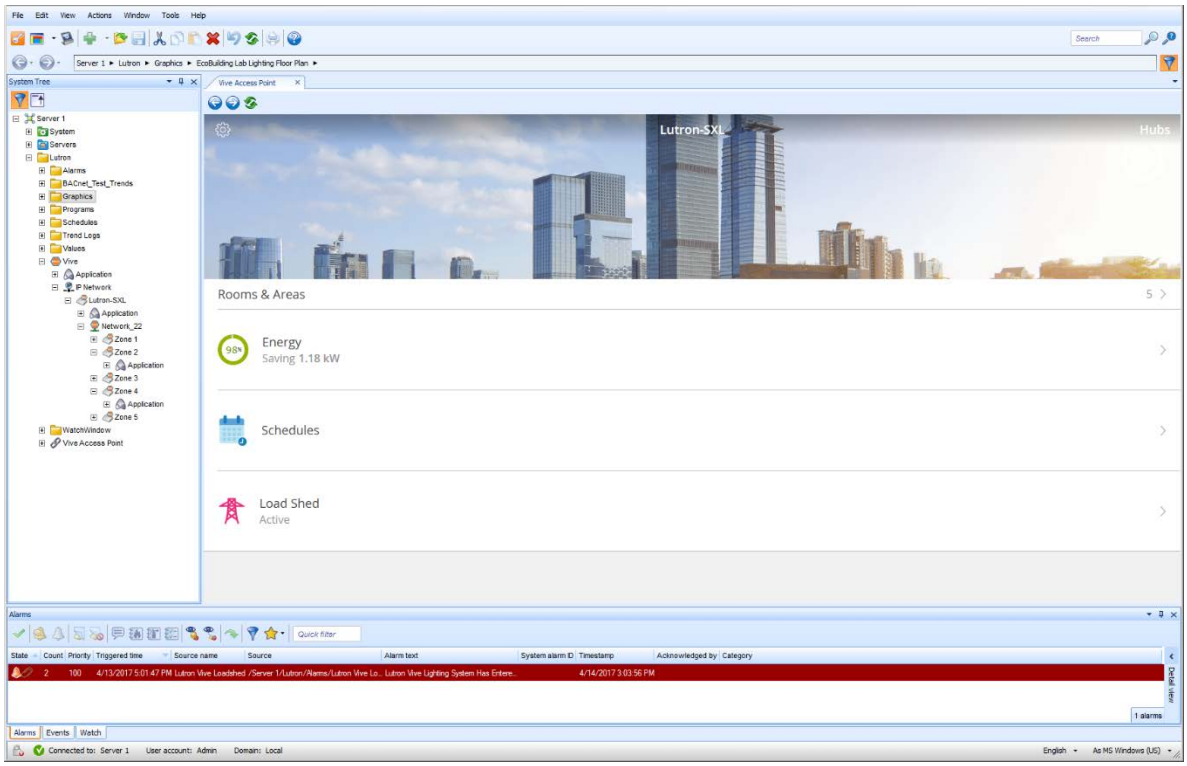
Alarming can also be easily incorporated into the integrated Vive system. The graphic below illustrates that the Building Operation treats a load shed parameter as an alarm condition.



3.4 Direct link to the Vive system

The user can create a hyperlink button within the building graphic to directly connect to the Vive hub, all while working in the Building Operation interface. This allows the user to directly access the lighting control system to configure devices, enable or disable load shed, or modify light levels. This can be accomplished by creating a hyperlink object in the Building Operation system and pointing the URL the a particular Vive Hub address.

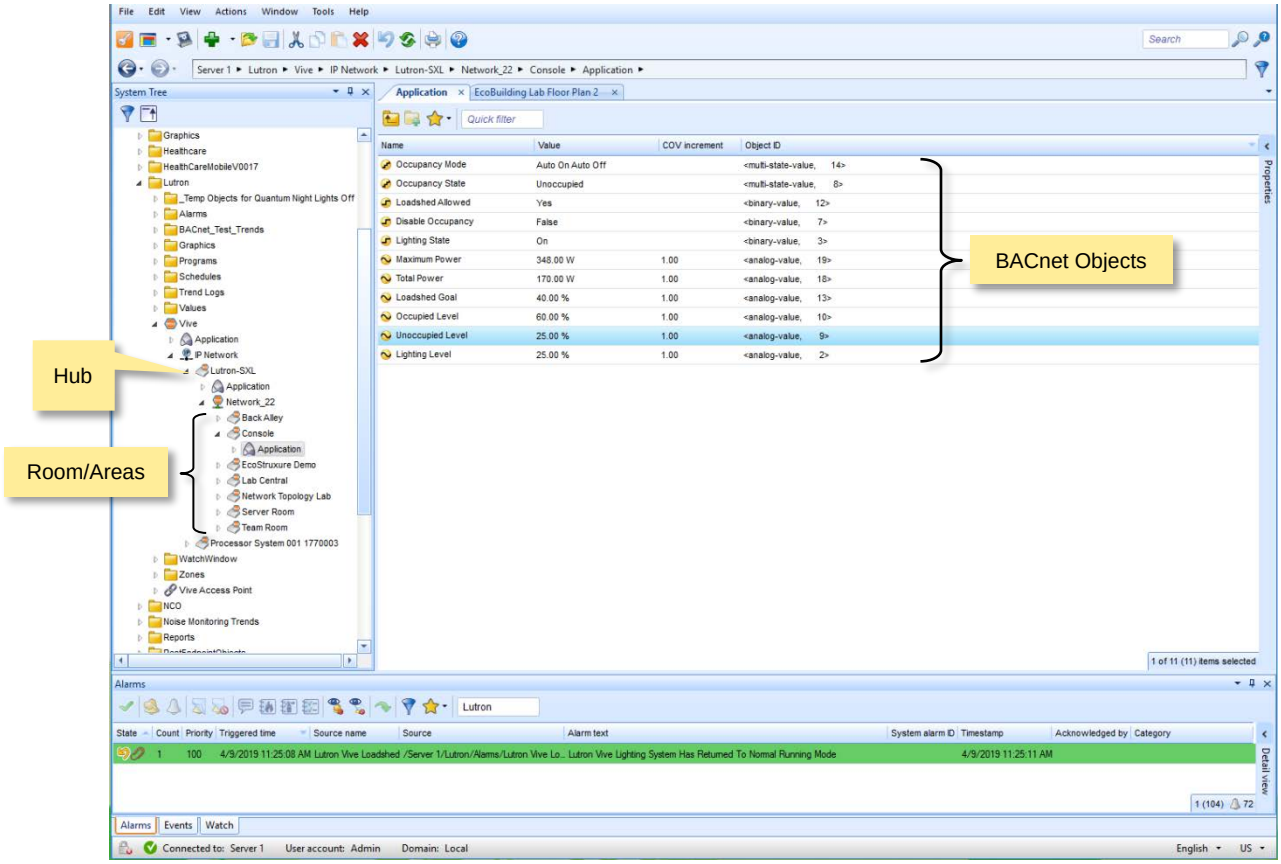




*Single sign-on is currently not supported between the two systems. A user must provide valid credentials to log on to the Vive hub.

3.5 Building Operation system tree view

The Vive hub appears in the system tree view of Workstation. Each BACnet device under the hub represents a room/area. Each room/area contains a predefined set of BACnet objects. In this example, the room/area contains 8 BACnet objects.



The chart below illustrates the number of devices in each zone in the StruxureLab example:

	Controllers	Occupancy Sensors	Pico Remotes
Zone 1	4	1	1
Zone 2	3	1	1
Zone 3	1	1	1
Zone 4	2	1	1
Zone 5	4	1	1

3.6 Required components

The following parts were used in the test configuration:

11 room/areas (8 dimmable room/areas, 3 switched room/areas)
11 occupancy sensors

EcoStruxure Building Operation parts	
SXWSWESXX00001	Enterprise Server
SXWSWWORK00002	WorkStation Software Professional
SXWASPXXX10001	AS-P Automation Server: SmartX Controller
SXWTBASW110002	Terminal Base for the AS-P - base required for each AS-P
SXWPS24VX10001	PS-24V Power Supply 24 VAC or 21-30 VDC
SXWTBPSW110001	Terminal Base Power Supply - base required for each Power Supply

Lutron Vive parts	
HJS-2-FM	Premium Vive hub, flush mount adapter, and power supply
PS-J-20W-UNV	Vive hub, external power supply
RMJS-5R-DV-B	Power Pak Relay Module (switched circuit)
FCJS-010	0-10V Control Module (dimming circuit)
PJ2-3BRL-GWH-L01	Pico wireless 3 button On/Off/Dimmer light switch
PJ2-2B-GWH-L01	Pico wireless 2 button On/Off light switch
LRF2-OKLB-P-WH	Corner mount, occupancy/vacancy sensor
LRF2-OCR2B-P-WH	Ceiling-mount, 360 field-of-view, occupancy/vacancy sensor
LRF2-DCRB-WH	Ceiling-mount daylight sensor

Note: Lutron has many other parts available for Vive Wireless Lighting solution. The above list includes the primary parts used in the test system.

3.7 Installation overview

1. Configure the Vive lighting control systems. Learn how.
2. Enable the BACnet interface on the Vive hub. Learn how.
3. Create the BACnet IP interface on the Building Operation ES or AS. Learn how.
4. Discover BACnet devices and host the Vive hub and room/areas. Learn how.
5. Modify or monitor the BACnet objects in a watch window or list view. Learn how.
6. Bind the BACnet objects to your local graphics.
7. Define alarm states, add custom text messages, add alarm attachments.
8. Incorporate lighting control into your demand response strategy.

4. Best Practices

4.1 Assign the Vive BACnet network number ID.

Each Vive hub acts as the BACnet router to its network of wireless lighting controllers. The hub's default network number ID is "1." In many cases, the BACnet IP network number ID for your BMS is also "1" and will conflict with the hub. To prevent an issue, set the Vive hub network ID to a number that will not conflict with the BACnet IP network or any other network on the site.

4.2 Use the power supply outfitted on Vive hub.

For maximum wireless range, use the power supply provided with the hub (PS-J-20W-UNV). This power supply has been designed, tested, and manufactured to minimize interference with wireless communications.

4.3 Rename the Vive room/areas completely.

To rename the room/area after the intial configuration, change the names in the Vive interface as well as in Building Operation. Renaming the room/area in both systems will preserve all bindings and maintain consistency across all systems. If you have bindings that you wish to maintain, do not perform a rehost.

To rename the room/area while preserving the bindings, complete the following procedure:

1. Within the Lutron Vive interface, navigate to the **Room & Areas** section and select **Edit** on the top right corner. Rename the room/area and click **Done**.
2. In the Building Operation system tree, right-click the room/area, select **Device**, and select **Upload configuration**. Click **Close** once the upload is complete.
3. In the system tree, right-click the room/area, and select **Rename**. Enter the new name.

The room/area has successfully been renamed and has maintained all bindings once it appears in Vive and Building Operation with the same name.

4.4 Disable Wi-Fi or hide the SSID the initial configuration of the hub.

After completing the initial setup and configuring the wired Ethernet interface of the Vive hub, it is recommended to change the Wi-Fi name and password, hide the SSID broadcast, or disable the Wi-Fi.

> A procedure for each action is in the Vive System Programming User Guide:
> http://www.lutron.com/TechnicalDocumentLibrary/041571_Web.pdf

4.5 Design your room/areas with BACnet integration in mind.

Vive allows for only a room/area to be controlled through BACnet. An individual fixture or module cannot be controlled through the BACnet interface. Before installation, decide which specific lighting fixtures you want to be able to control via BACnet and configure your room/areas accordingly. It is very important to design areas in Vive to correlate with HVAC zones such that ocupanancy data can easily be mapped from Vive to EcoStruxure Buildings Operations. You can have multiple Viv areas per HVAC zone, but it makes it more difficult if there are multiple HVAC zones that overlap one Vive area.

4.6 Order the Vive hub with BACnet.

When purchasing the Vive equipment, choose the Premium Vive hub with BACnet (model number: HJS-2).

5. Troubleshooting

5.1 Tools

Wireshark

Wireshark™ is a free utility that can be downloaded from https://www.wireshark.org/. Wireshark is a protocol analyzer that can be used to capture the network traffic between Setra devices and an Automation Server. It is a useful tool for troubleshooting basic network connectivity issues and for measuring network load. Note that a USB/RS-485 network adapter (example: Cimetrics U+4) is needed to view messages between the Automation Server and BACnet MS/TP devices with Wireshark.

Visual Test Shell (VTS)

VTS is a Microsoft Windows® application for testing BACnet functionality and can be downloaded from http://sourceforge.net/projects/vts/files/. VTS allows a user to construct virtually all BACnet requests and direct them at a specific device on the network.

Building Operation System Logs

To access Enterprise Server log files for troubleshooting purposes:

In Software Administrator, look for logged information under *System* on the **Enterprise Server** tab.

BACnet Explorer

BACnet Explorer software tools can be used to diagnose and resolve communication problems. They enable you to monitor a BACnet network by identifying attached devices. A wide variety of BACnet Explorer tools are available, such as the CAS BACnet Explorer from Chipkin Automation Systems© found at:
http://www.chipkin.com/products/software/bacnet-software/cas-bacnet-explorer/

Building Operation System Logs

Both the Enterprise Server and the Automation Server maintain system logs which can be used for troubleshooting.

Automation Server: In Device Administrator, view logged information by clicking on the **Upgrade Log** button located in the toolbar.

Enterprise Server: In Software Administrator, look for logged information under *System* on the **Enterprise Server** tab.

5.2 Tips and Techniques

I cannot discover the Lutron Vive hub or network of devices on the 'Device Discovery' tab of my ES/AS.

Possible Cause	Solution
BACnet is not 'Enabled' on the Lutron Vive Hub	Enable the BACnet interface through the BACnet Settings window of the Vive Hub web server (see Appendix B)
The Automation Server / Enterprise Server and the Lutron Vive hub are in different ethernet broadcast domains	Configure a BBMD or foreign device registration to route BACnet traffic between the networks. *See EcoStruxure Building Operation documentation for configuring a BBMD*
The BACnet interface of the Automation/Enterprise Server was not online when Lutron Vive Hub attempted to register as a Foreign Device.	Power-cycle Lutron vive Hub after the BACnet Interface and BBMD have been configured on the Automation/Enterprise Server.
The IP address of the BACnet interface in the Automation/Enterprise Server is misconfigured	Verify/Modify the 'IP address' and 'IP Broadcast address' of the IP Network in the BACnet Interface of the Automation/Enterprise Server.

I can discover the Lutron Vive hub but its lighting room/areas are also discovered under Network 1.

Possible Cause	Solution
Lutron Vive hub BACnet settings are configured for Network Number 1	Configure the Lutron Vive hub BACnet network number to an available network that is not 1

6. Frequently Asked Questions

Where can I get more information about EcoStruxure Building Operation?

The following documents are available for download from the Exchange Extranet (login required):

EcoStruxure Building Operation Brochure:
https://ecobuilding.schneider-electric.com/smartstruxure-solution/sales-support-library/brochures

EcoStruxure Building Operation Datasheets and Installation Manuals:
https://ecobuilding.schneider-electric.com/smartstruxure-solution/technical-documentation

Automation Server and Enterprise Server PIC Statement:
https://ecobuilding.schneider-electric.com/smartstruxure-solution/technical-documentation/regulatory-compliance

Where can I get more information about using Building Operation with BACnet?

Creating and Configuring a BACnet Network with b3 BACnet Devices – Tutorial Guide is available on The Exchange Extranet (login required) at the link below:

https://ecobuildings.schneider-electric.com/BACnet Tutorial

Where can I get more information about Vive?

An overview of Vive can be found on the Lutron web site:

http://www.lutron.com/en-US/Products/Pages/WholeBuildingSystems/Vive/Overview.aspx

Is Vive BACnet BTL Certified?

Yes, Lutron Vive hub received BTL certification at firmware version 01.07

Conformance Certificate:
https://www.bacnetinternational.net/catalog/manu/lutron/BTL_Cert_30349_LutronElec_ViveWirele.pdf

Protocol Implemenation Conformance Statement (PICS)
https://www.bacnetinternational.net/catalog/manu/lutron/PICS_369996.pdf

Who do I contact at Schneider Electric for assistance with this solution?

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Access Customer Care directly from the **"mySchneider"** mobile app; download it now onto Apple or Android devices.

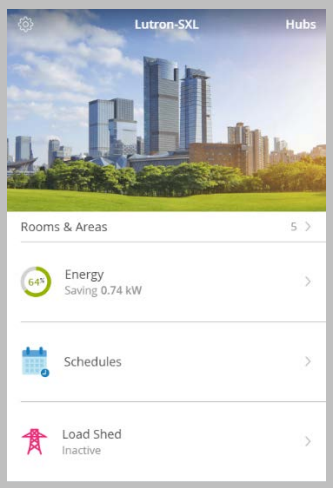
Lutron Support Community

The Lutron Support Community provides a convenient and valuable area to ask questions and share ideas, best practices, and troubleshooting tips with fellow community members and Lutron moderators about Lutron products. Anyone may browse the forum, however to post questions and respond, you must register.

Appendix A Configure the Vive lighting control system

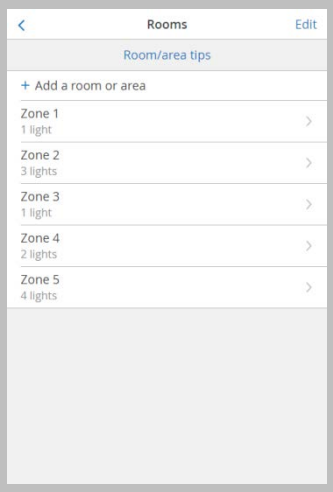
The following procedure illustrates how to create a room/area with the Vive hub. Typically, the lighting Integrator will have already defined the room/areas and assigned all devices. This procedure can be completed in either a browser or mobile device interface. Once the hub is configured and the BACnet Interface is enabled (*see Appendix B*), the Vive system can be discovered in BACnet by the Building Operation. (Link to Vive System Programming User Guide)

1



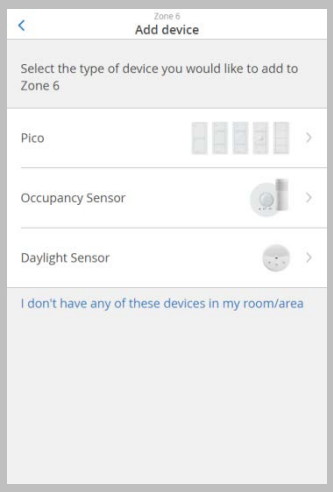
Select **Rooms & Areas**.

2



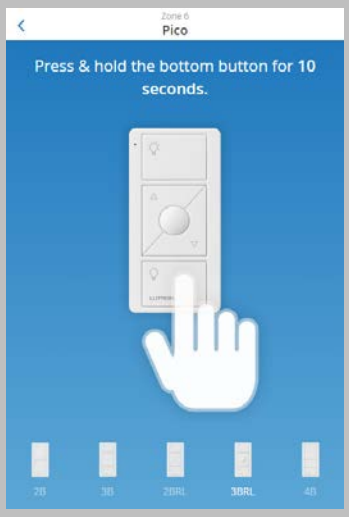
Select **+ Add a room or area** and name the room. Select **Next**.

3



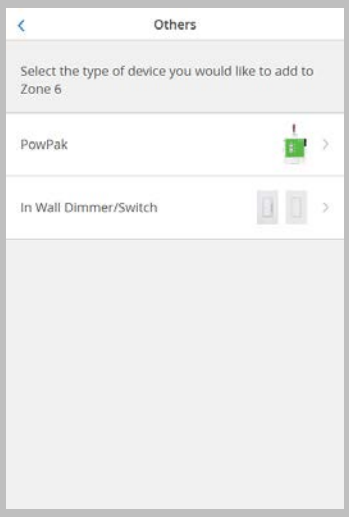
Add the device.

4



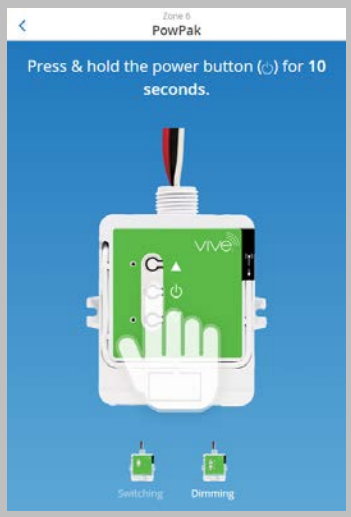
Press and hold the Pico dimmer for ten seconds. Follow the on-screen instructions to complete the Pico upload.

5



Select the next device you want to add to the room.

6

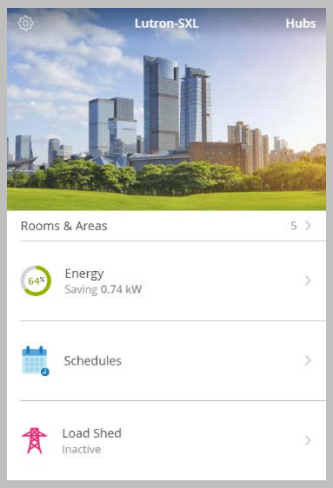


Press and hold the power button for ten seconds. Follow the on-screen instructions to complete the PowPak upload.

Appendix B Enable the BACnet interface on the Vive hub

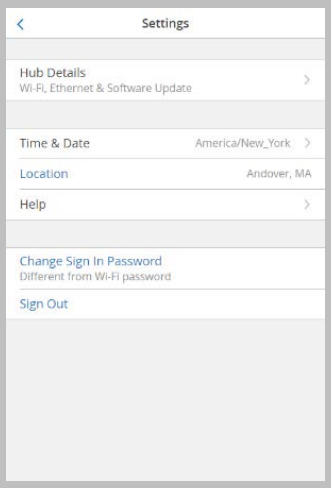
The following procedure illustrates how to configure the Vive hub and enable the BACnet IP interface:

1



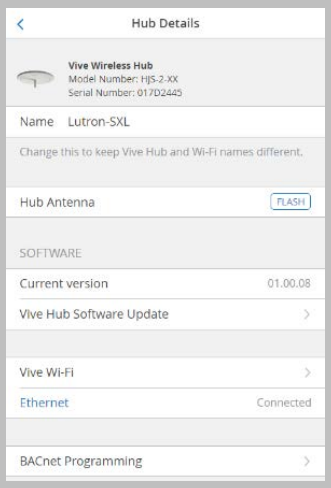
Select the **Settings** button on the top left corner.

2



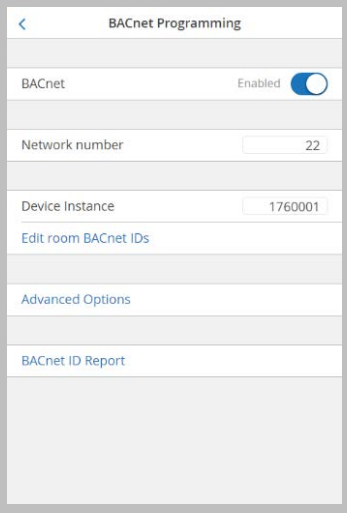
Select **Hub Details**.

3



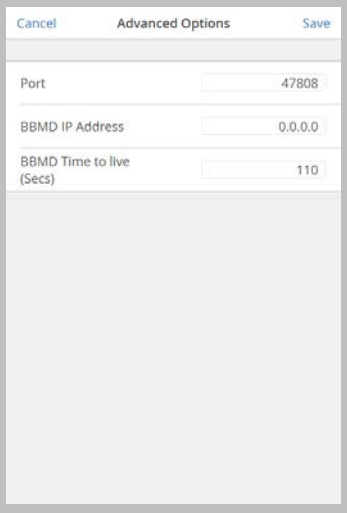
Select **BACnet Programming**.

4



Enable **BACnet**.
Define the **Network number**.
Define the **Device Instance**.
Select **Advanced Options**.

5



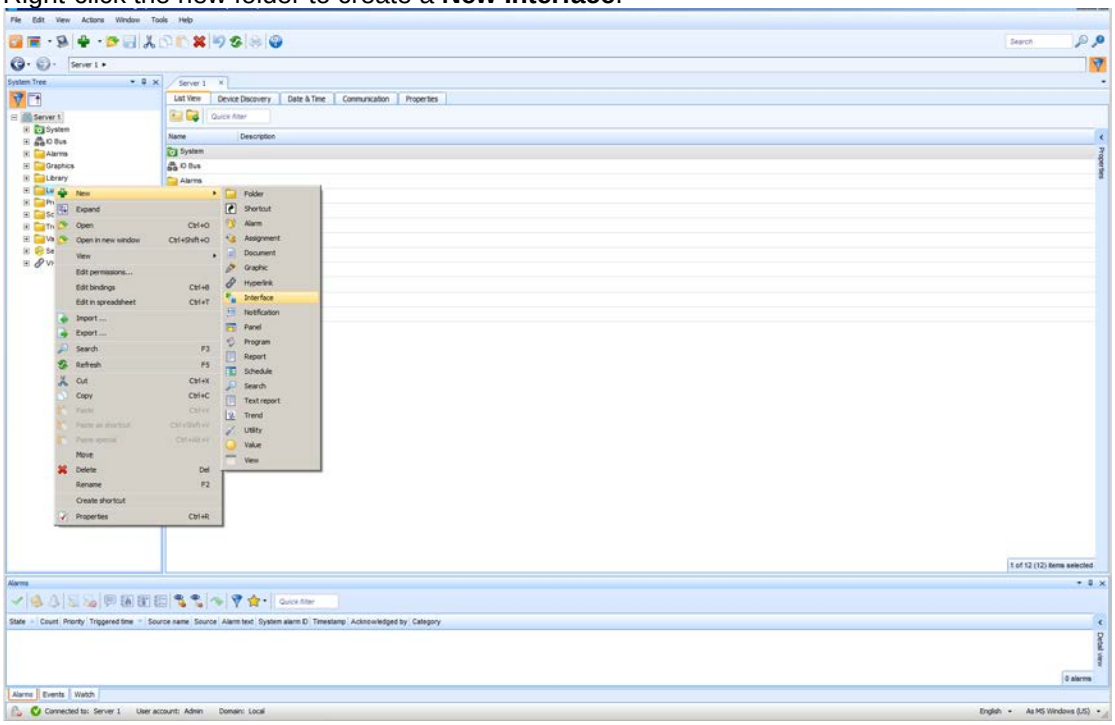
Define the **Port Number**, **BBMD IP Address**, and **BBMD time**.

Appendix C Building Operation BACnet Interface

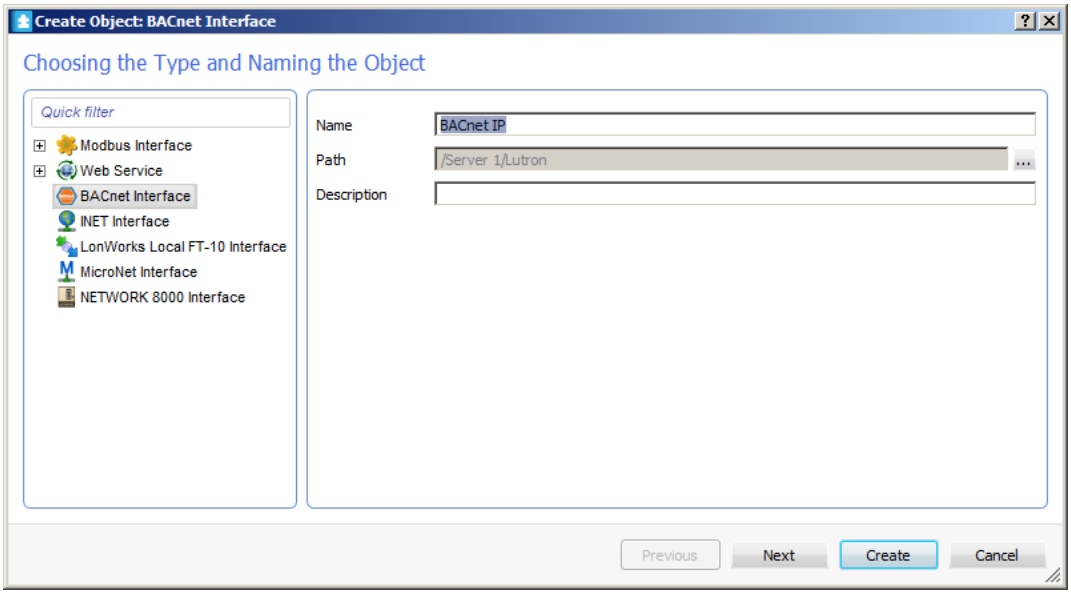
C.1 Create the BACnet IP Interface in Building Operation

The following procedure illustrates how to create a BACnet IP interface in Building Operation:

1. Log in to the Automation or Enterprise Server.
2. Right-click the server to create **New Folder**. Name the folder.
3. Right-click the new folder to create a **New Interface**.

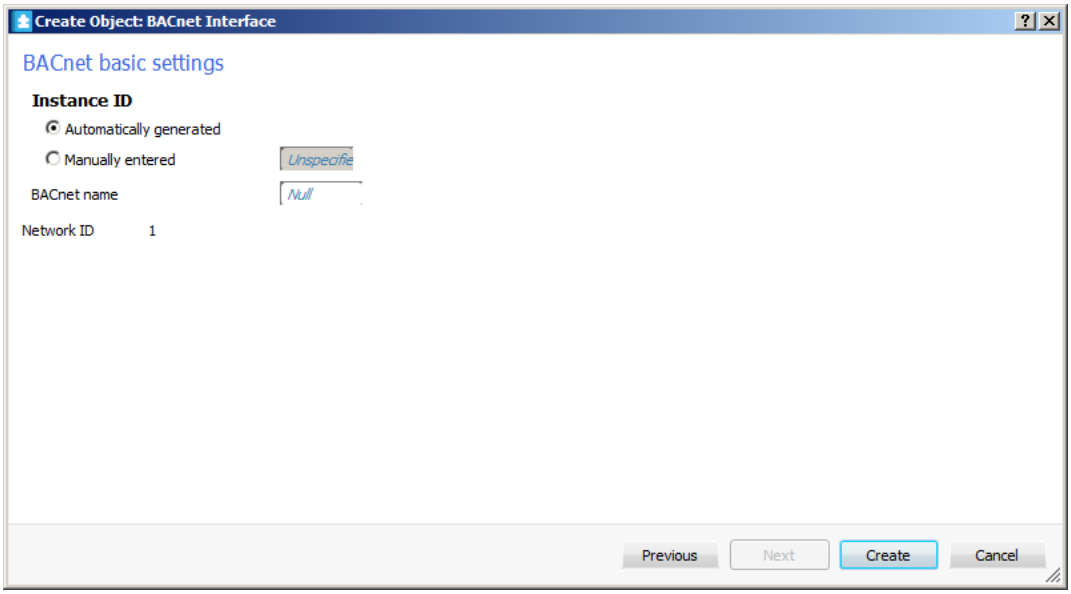


4. Select **BACnet Interface** and name the interface.

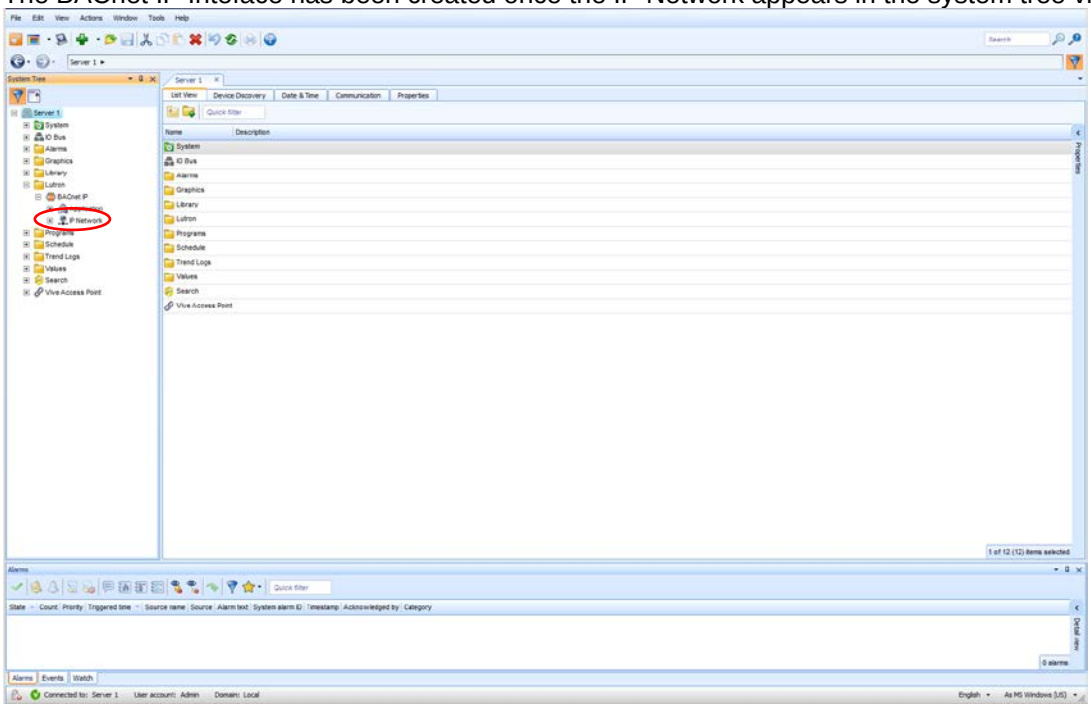


5. Select **Next**.

6. Assign the **Instance ID** to **Automatically generated** and the **Network ID** to **1**. These settings can be altered later.

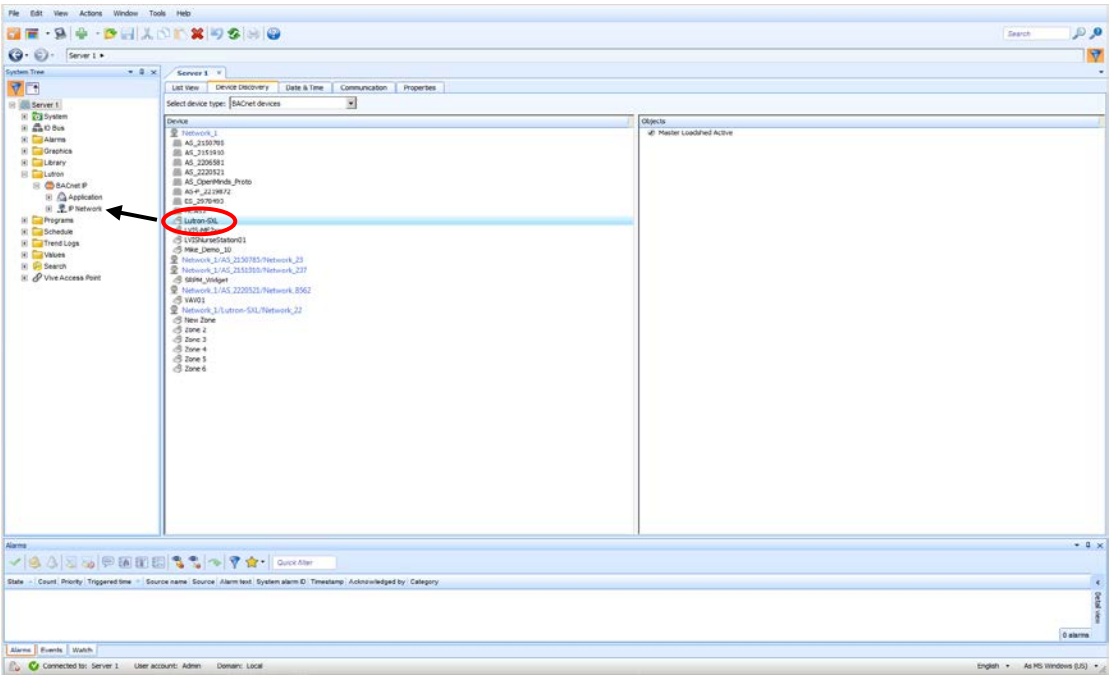


7. Select **Create**.
8. The BACnet IP Inteface has been created once the IP Network appears in the system tree view.



C.2 Discovering the Lutron Vive hub

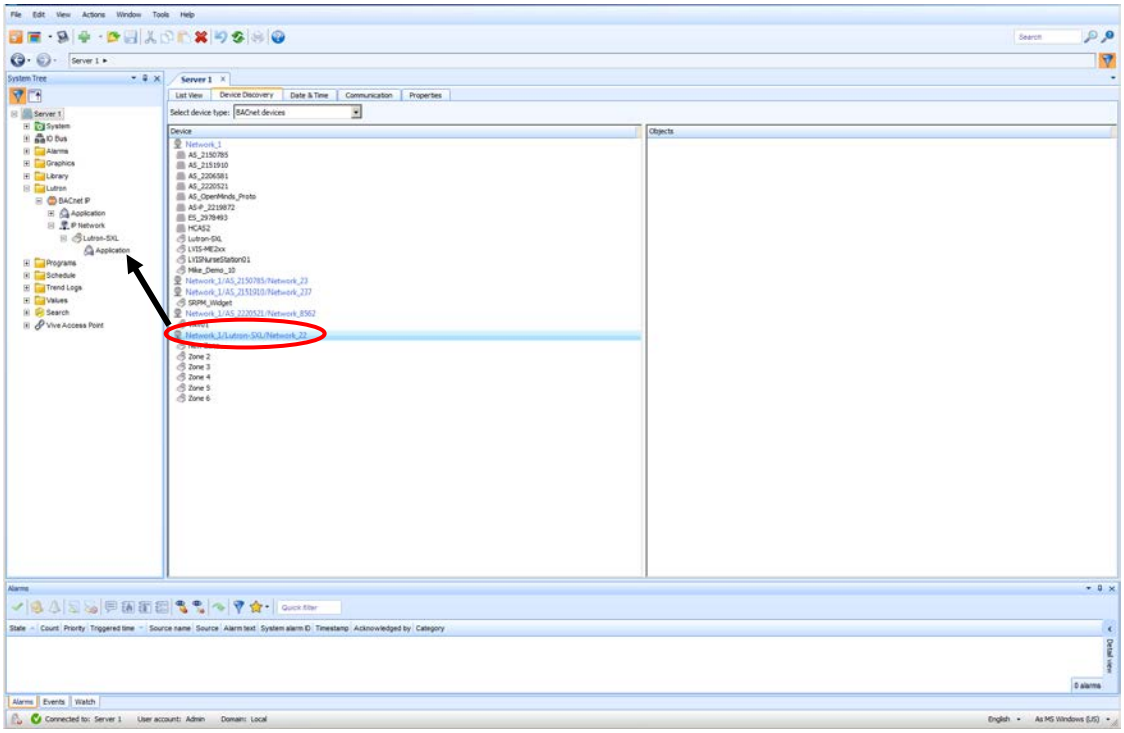
1. Select the Automation or Enterprise Server.
2. Select the **Device Discovery** tab.
3. Under **Select device type**, select **BACnet devices**.
4. From the Device Discovery window, drag and drop the Lutron Vive hub to the BACnet IP network created in C.1.



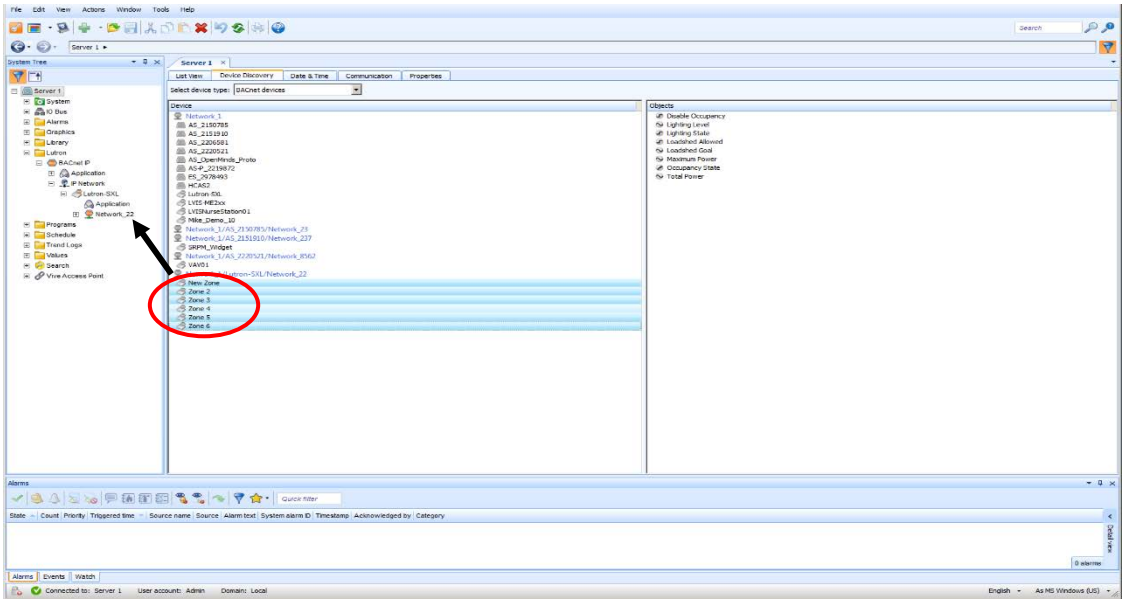
5. The discovery is complete when the hub appears under the BACnet IP network in the system tree.

C.3 Discovering the Lutron Vive Areas

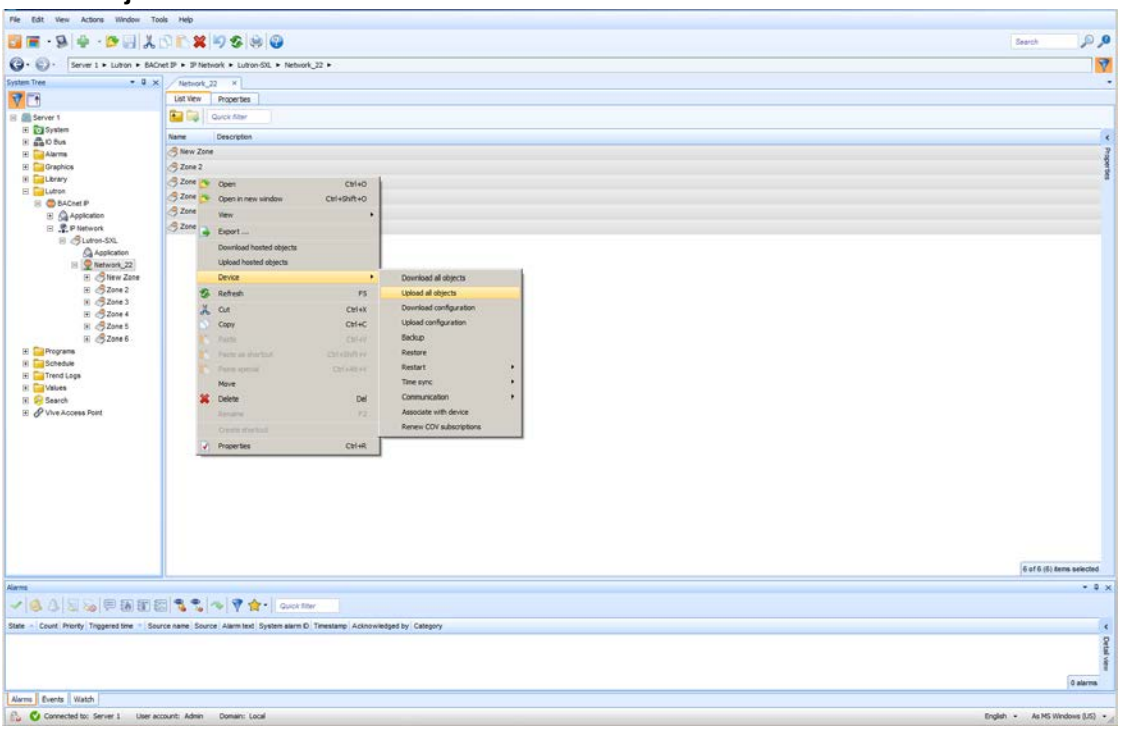
1. From the Device Discovery window, drag and drop the Network on to the Vive hub.



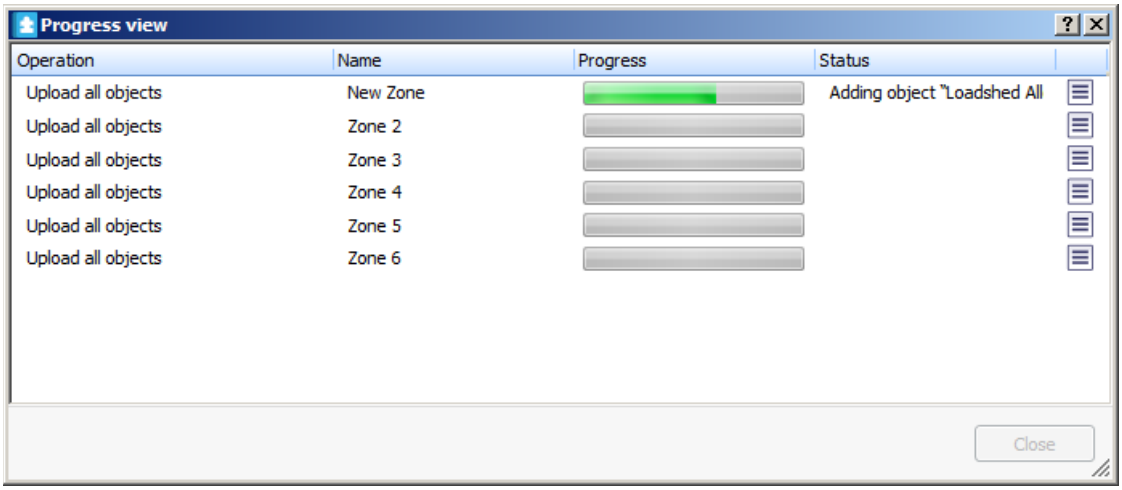
2. Drag and drop the room/areas on to the BACnet Network.



3. From the List view, select all the room/areas. Right-click to select **Device**, then **Upload all the device objects**.



4. Select **Close** after all the room/areas have finished uploading.



Appendix D EcoStruxure Building Operation versions

The following table indicates the versions of software and firmware that were used by the lab to test interoperability between EcoStruxure Building Operation and Vive; using BACnet IP Protocol:

EcoStruxure Building Operation	Vive
2.0.x 1.9.x 1.8.x 1.7.x 1.8.x	01.08.10 01.07.xx ** 01.05.02 01.03.06 01.00.08

** Note: 01.07 was the certified version from BACnet International