Honeywell Niagara IRM

SYSTEM ENGINEERING GUIDE

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Date	Description
October, 2021	- First version
April, 2022	 Sylk Actuator on page 300. Terminal Assignment View on page 146. Onboard IO Package on page 141. Reset Overrides on page 169. Configuring IP Settings for Multiple Controllers on page 123. Configuring Bluetooth for Multiple Devices on page 225. Global Balancing Object on page 370.
July, 2022	 Rename Bacnet Objects on page 393. Replacing Defective Controller on page 414. Configure IP Address Of Computer on page 416.
September, 2022	 Updated master-slave vs client-server details in Modbus Engineering on page 323. Updated the global balancing point description table, Global Balancing Points on page 354.
October, 2022	- Updated the Best Practices and Troubleshooting Tips section, Best Practices and Troubleshooting Tips on page 386.
November, 2022	- Unitary (24V) controllers are added.
January, 2023	- Updated the naming convention of the Unitary and IRM N4 controllers across the - document.
April, 2023	- Merged the Centraline and HBS versions into a Honeywell-branded document.

DOCUMENT HISTORY

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CHAPTER

ABOUT THE SYSTEM ENGINEERING GUIDE

This user guide describes the configuration and management of the VAV and FCU controllers connected to a BACnet[™] RJ45 (IP), T1L (IP), or MSTP network via a EAGLEHAWK or HAWK-8000 controller. Configuration and management are performed using the IRM engineering tool based on the CentraLine-N4 framework. The Engineering Tool can be used to program the controller to support various applications such as setting up the controllers for usage in BACnet[™] RJ45 (IP), T1L (IP), or MSTP network, creating applications for the controllers, synchronizing applications between project and controllers, adjusting terminal layout deviations, cloning applications, firmware download etc.

- **Note:** In this guide, the Merlin NX is referred to as an IRM NX controller in a few sections. Details of features and configuration provided in this guide are applicable to IRMNX Compact VAV controllers, IRM N4 controllers, and IP/MSTP VAV controllers. However, few features might not be supported by VAV or IRM N4 controllers.
- **Note:** It is recommended to carefully, read, understand, and consider the Notes and Important provided to address the differences in supported features per controller model.

The user guide covers the following topics:

- Chapter 1: About the System Engineering Guide This section describes the engineering tool's essential information, specific operation details, and system overview of the IRM controller.
- Chapter 2: Introduction This section describes the engineering tool's essential information, specific operation details, and system architecture of the IRM Controller.
- Chapter 3: Overview of the Engineering Tool This section describes the properties of BACnet device, components of control manager, and procedure to configure periodic program, event program, and On board IO.
- Chapter 4: Configure IRM NX controllers This section describes the steps to configure the IRM NX controller, IP settings, linking of controller IO points to the BACnet points, and terminal assignment view.
- Chapter 5: Engineer the Controllers (Engineering Modes) This section describes steps to setup controller with or without using serial number, common operations of IRM program, Bluetooth configuration, On board IO migration, and alarms configuration.
- Chapter 6: Sylk Device Programming The IRM controllers support the Sylk bus. The Sylk devices and Sylk parameters are part of the engineering tool palette. This section describes step by step process to program the Sylk device.

- Chapter 7: Modbus Engineering This section describes the Modbus Interface rules, as well as the procedure for configuring Modbus device settings and verifying communication
- Chapter 8: Other Operations This section describes other operations such as firmware download, bulk operation, creating controller backup, and commissioning.
- Chapter 9: Pre-Engineered Templates and Balancing This section describes procedure to configure the Flow Balancing View and Global Balancing Object. Also describes steps to deploy the Global VAV Template.
- Chapter 10: Troubleshooting This section describes the procedure for resolving the problem, specifically when working on an engineering tool, as well as best practices for designing a controller. This section also includes workarounds, a diagnosis report, and a system status check.

Applicable Technical Literature

Document Title	Reference	
IP/ MSTP VAV Technical Literature (Centraline)		
Merlin NX IP VAV Product Datasheet	EN0Z-1073-GE51	
Merlin NX MSTP VAV Product Datasheet	EN0Z-1072-GE51	
Merlin NX IP and MSTP VAV Installation Instructions	EN1Z-1076-GE51	
Merlin NX IP and MSTP VAV Mounting Instructions	EN1Z-1074-GE51	
Merlin NX Compact VAV Product Datasheet	EN0Z-1061-GE51	
Merlin NX Compact VAV Installation Instructions	EN1Z-1061-GE51	
Merlin NX Compact VAV Mounting Instructions	MU1Z-1061-GE51	
IP/ MSTP VAV Technical Literature (HBS)		
IP Product Datasheet	EN0B-0301-IE10	
MSTP Product Datasheet	EN0B-0300-IE10	
Mounting Instructions	MU1B-0300-IE10	
Installation Instructions	EN1B-0301-IE10	
IRM Migration Guide	EN2B-0428-IE67	
Compact VAV Controller Product Datasheet	EN0B-0078-IE10	
Compact VAV Mounting Instructions	MU1B-0590-GE5	
Compact VAV Installation Instructions	EN1B-0591-GE51	
Other Supported Technical Literature		
Honeywell Unitary Controller 24V - Datasheet	31-00571	
Honeywell Unitary Controller 24V - Mounting Instructions	31-00572	
Honeywell Unitary Controller 24V - Installation Instructions	31-00614	

Table 1 Applicable Technical Literature

Table 1 Applicable Technical Literature

Document Title	Reference
IRM Function Blocks User Guide	EN2B-0415-GE51
Global VAV Balancing Tool User Guide	EN2B-0041-IE10
Honeywell Connect Mobile User Guide	31-00472
NIAGARA IRM Application Guide	EN2B-0416-GE51
NIAGARA Hardening Guide	EN2Z-0985-GE51
MERLIN N4 Product Data	EN0Z-1035-GE51
MERLIN N4 Installation Instructions	EN1Z-1035-GE51
EAGLEHAWK NX Product Data	EN0Z-1039-GE51
EAGLEHAWK NX Installation & Commissioning Instructions	EN1Z-1039-GE51
EAGLEHAWK NX Panel Bus Driver User Guide	EN2Z-1043-GE51
EAGLEHAWK NX Onboard IO Driver User Guide	EN2Z-1044-GE51

IRM related technical literature can be downloaded at buildings.honeywell.com.

System Requirements

Compatibility	CentraLine-N4.9.xx.xxx and higher.	
Firmware	Refer to the latest release notes for the updated firmware details.	
	Download the latest firmware from buildings.honeywell.com.	
Engineering Tools	Refer to the latest release notes for the updated IRM engineering tool details.	
	Download the latest IRM Engineering Tool from buildings.honeywell.com.	
Migration Tool	spyderToIrmNxMigrator-wb.jar	

Table 2 Supported Controller Models

Controller Model	Description
IRM N4 Controller (Centraline)	
CLMERL4N	
CLMERL6N	IRM N4 Controller with large housing.
CLMERL8N	
CLMERS4N	- IRM N4 Controller with small housing.
CLMERS5N	
IRM N4 Controller (HBS)	·
CPO - RL4N	
CPO - RL5N	
CPO - RL6N	- IRM N4 Controller with large housing.
CPO - RL8N	
CPO - RS3N	
CPO - RS4N	IRM N4 Controller with small housing.
CPO - RS5N	
Compact VAV Controller (Centra	line)
CLMEVA423B24N	IRM compact VAV controller with an integrated actuator.
CLMEV423B24N	Replacement IRM compact VAV controller without an integrated actuator.
Compact VAV Controller (HBS)	
CPO - VA423B24N	IRM compact VAV controller with an integrated actuator.
CPO - V423B24N	Replacement IRM compact VAV controller without an integrated actuator.
IP VAV Controller (Centraline)	
CLMEVA75I24NM	IP VAV controller
CLMEVA00IB4NM	IP VAV controller with Bluetooth (without UIO and SSR support).
CLMEVA75IB24NM	IP VAV controller with Bluetooth.
IP VAV Controller (HBS)	
CPO - VA75I24NM	IP VAV controller
CPO - VAOOIB4NM	IP VAV controller with Bluetooth (without UIO and SSR support).
CPO - VA75IB24NM	IP VAV controller with Bluetooth.
MSTP VAV Controller (Centraline	2)
CLMEVA75M24NM	MSTP VAV controller
CLMEVA00MB24NM	MSTP VAV controller with Bluetooth support (without UIO and SSR support).
CLMEVA75MB24NM	MSTP VAV controller with Bluetooth support.

Table 2 Supported Controller Models

Controller Model	Description					
MSTP VAV Controller (HBS)						
CPO - VA75M24NM	MSTP VAV controller					
CPO - VAOOMB24NM	MSTP VAV controller with Bluetooth support (without UIO and SSR support).					
CPO - VA75MB24NM	MSTP VAV controller with Bluetooth support.					
Unitary Controller						
UN-RS0844ES24NMC / D	Honowyoll Unitary ID controllors with small housing					
UN-RS0844ESB24NMC / D	The sweet of the structure is with small housing.					
UN-RS0844MS24NMC / D	Honeywell Unitary MSTP controllers with small housing.					
UN-RS0844MSB24NMC / D						
UN-RS0844TS24NMC / D	Honeywell Unitary T1L controllers with small housing.					
UN-RS0844TSB24NMC / D						
UN-RL1644ES24NMC / D	Honowell Unitary ID controllers with Jargo housing					
UN-RL1644ESB24NMC / D	Honeyweit Officary in controllers with large housing.					
UN-RL1644MS24NMC / D	Heneverell Unitery MSTD controllers with large housing					
UN-RL1644MSB24NMC / D	Honeywell Unitary MSTP controllers with large housing.					
UN-RL1644TS24NMC / D	Honeywell Unitary T1L controllers with large housing.					
UN-RL1644TSB24NMC / D						

Engineering Recommendations

For successful and seamless engineering, follow the below recommendations.

Table 3 IRM NX Engineering Specifications

Specification	Description										
	Daisy chain topology										
	The recommendation is no more than 100 controllers per BACnet IP port.										
	In the daisy connection, it is recommended to add 15 proxy points and 20 ref in or ref out to each BACnet IP controller.										
	To optimize the Niagara station performance, the tool uses the Niagara BACnet worker pool to manage communication between controllers and synchronize user changes.										
	A station with more proxy points (than recommended) will have a very busy BACnet worker pool. When the worker pool is busy, there will be a delay in processing the messages sent to the controller and thus impacting tool performance. As a result, some of the tool features will not function correctly. For example, delays in synchronizing live changes or probable failures in synchronizing user changes with the controller.										
	When there are failures, the user needs to redo the tool operation or perform a full application teach to synchronize the changes										
	Daisy Chain Topology										
Recommended number of BACnet IP controllers	Supervisor/ Web Browser #1 #1 #2 #3 #3 #4 #4 #4 #4										
	Figure 1. Daisy Chain Topology										
	Note: Engineering on 100 controllers in a daisy chain is only possible in swap out mode.										
	Ring network topology The maximum number of controllars that can be connected in the ring network										
	topology is 40 with 1 switch. The switch manages the connection of the loop.										
	For optimal performance and bus traffic, it is recommended to limit the number of controllers upto 40.										
Ring Topology (40 controllers recommended)											
	Supervisor / #1 #2 #3 Web Browser #1 #2 #3 Image: Image: I										
	Figure 2. Ring Topology										

Table 3 IRM NX Engineering Specifications (Continued)

Specification	Description							
Recommended	• 40 controllers per BACnet MSTP bus.							
number of BACnet MSTP controllers	It is recommended to add 15 proxy points and 20 ref in or ref out to each BACnet MSTP controller.							
	Compact VAV: 344 KB							
Available Momeny	• IRM N4: 344 KB							
Available Memory	• IP/ MSTP VAV: 2 MB							
	• Unitary: 2 MB							
	BACnet MSTP							
	• Supported Baud Rate: 9600, 19200, 38400 (default), 57600, and 76800.							
Baud rate	• Modbus							
	 Supported Baud Rate: 1200, 2400, 4800, 9600, 14400, 19200 (default), 38400, and 57600. 							
	 Maximum 32 folders overall (IRM CVAV/FCU controller). Maximum 100 folders overall (IRM IP/MSTP VAV controller). Maximum 100 folders overall (Unitary IP/MSTP/T1L controller). 							
	• TRM controllers allows to add total of 150 function blocks per folder with four folders reserved by default.							
Maximum function blocks usage	 Note: It is recommended to add 100 function blocks per folder for optimum performance. Each folder used by the program consumes 8 KB of memory. Maximum 2000 function blocks (IRM CVAV/FCU controller). Maximum 6000 function blocks (IRM IP/MSTP VAV controller). 							
	Maximum 6000 function blocks (Unitary IP/MSTP/T1L controller).							
	Sylk device configuration limited by Sylk power usage.							
	Note: The WmConfigHvacA function block can be placed not more than three times onto the wiresheet. It can only be configured as a Sylk wall module once. Instead of using the Sylk wall module, the function block can also be configured as a wired or external wall module (a Modbus wall module). This limitation applies to both IrmFolder and IrmSubFolder.							
	Maximum 8 Modbus devices.							
Modbus	• Maximum 155 read or write data points for all the Modbus devices per IRM CVAV, IP/MSTP VAV, and Unitary IP/MSTP/T1L controller.							
	Maximum number of high priority registers per controller is 6.							
	The maximum number of wall modules depends on the following factors:							
Maximum Sylk wall	Sylk bus power consumption.							
modules	Number of parameters used.							
	 Total config file size. The IRM NX tool has an inbuilt resource calculator to calculate the amount of Sylk wall modules. 							

Table 3 IRM NX Engineering Specifications (Continued)

Specification	Description								
BACnet device discovery over BLE	 IP Fo Sh MS Fo Sh 	Controllers Limitation: r IP controllers, the entered Instance Id range between two instance ids ould not exceed 30. STP Controllers Limitation: r MSTP controllers, the entered Instance Id range between two instance ids							
Controller gateway	Note:	If more than 30 IP or MSTP controllers are discovered, the HCM will connect to a random group of 30 controllers							
	Note:	It is recommended to use BACnet Instance Range search for BACnet devic discovery using Bluetooth gateway.							

Security Best Practices

The purpose of this section is to provide information to those involved in the installation and maintenance of a product or system so that they can understand the requirements for configuring and managing the security of the product or system.

- Use the latest version of the engineering tool and firmware.
- CentraLine-N4 installation files, configuration files (including station backup), certificates, and licenses are included in the disaster recovery plan.
- The PC running CentraLine-N4 should be protected from unauthorized physical access wherever feasible.
- The Ethernet network (and any other networks to which the PC is connected) is protected, for example, using firewalls and intrusion detection systems.
- The PC is running the latest version of the Windows operating system, with all updates and service packs.
- The PC has anti-virus software.
- Appropriate user accounts are created on the PC, and file access is restricted to only authorized users.
- The CentraLine-N4 is configured to use HTTPS (Hypertext Transfer Protocol Secure) with a certificate from a trusted Certificate Authority.
- Make sure the CentraLine-N4 is configured to backup data regularly to a secure location as per your company's backup policy.
- Ensure that complete commissioning is carried out in a closed local area network without connecting to the internet to avoid unauthorized detection of BACnet message packets.
- Use encrypted communication between the engineering tool and the controller.

For additional information refer following documents:

- NX General Security Best Practices (EN0Z-1040GE51)
- Niagara 4 Hardening Guide EN2Z-0985GE51

CHAPTER



The IRM engineering tools provide flexible and fully programmable control, resulting in real benefits such as lower energy costs while driving new levels of functionality and performance.

Basic Concepts

Configuration	Description				
	There are three way of engineering IRM NX controller:				
	• Add Controller Setup with Service Pin: Use this procedure when you do not have the controller's serial number.				
Engineer the Controllers	• Controller Setup using Serial Number: Use this procedure when you have the controller's serial number.				
(Engineering Modes)	• Discover Online Controller: In this method, the devices are discovered on the BACnet network in the first stage and used simultaneously for application engineering. Online engineering is recommended when undertaking engineering directly with devices already installed on the BACnet network.				
	Synchronization status check allows monitoring the running project and status of the connected IRM NX controllers by the control manager (online engineering only). Any modification detected in the controller, project, or both can be synchronized by applying the following actions.				
Synchronization Status	Teach to controller				
	Learn from controller				
	Clear project (as required)				
	Clear controller (as required)				
Tuning Policies.	Defines rules for evaluating both write requests, which is to writable proxy points, and the acceptable "freshness" of reading requests that result from polling. It includes standard tuning policy properties and additional properties related to client-side usage of the BACnet subscribe cov service.				

Table 4 Engineering Configurations

Table 4 Engineering Configurations (Continued)

Configuration	Description				
	IP setting operation is provided to ease the IP configuration for multiple IP VAV controllers from a single window. This feature allows users to perform many of the following functions.				
Configure MSTP VAV	Batch update of IP configuration.				
Controllers	Auto-increment of IP addresses.				
	Visual indication of modifications to IP addresses.				
	Reporting of errors in IP configuration.				
	Offline and online IP configuration.				
	Bluetooth configuration allows configuring the Bluetooth enabled IP/ MSTP VAV controller in a batch. This feature enables users to perform the following operations.				
Bluetooth	Configure the Bluetooth property of the IP/ MSTP VAV controller.				
Configuration	Enable or disable Bluetooth function.				
	Setting a Bluetooth passcode.				
	• Setting Bluetooth passcode validity to enable mobile balancing application to connect to the devices over Bluetooth.				
New Controller Configuration	All new IRM NX controllers are assigned with default factory device ID = 4194302. However, if multiple controllers have the same device ID, they cannot talk via the BACnet protocol (Who is? - I am broadcast messages). The new controllers on the MSTP bus will not be visible after discovery. When working with multiple controllers, you must also set a unique device ID to each controller.				
Flow Balancing View	A variable air volume (VAV) system allows a single IRM NX controller to provide the appropriate amount of cooling to multiple zones with different cooling loads. The VAV regulates the air volume to the zone by opening or closing the damper. This damper is controlled by a floating motor installed on an integrated actuator of the IRM NX controller. The flow balancing tool can be configured with various parameters and indicators to optimize the calibrations used to balance the airflow.				
Modbus Engineering	The IRM NX VAV controller is conditionally compliant with the "regular" Modbus device standard. The controller features a removable 2-wire with shield, non-isolated, RS-485 interface suitable for Modbus communication (terminal 16, 17, and 18).				
Terminal Assignment View	This function enables you to assign or swap (UIO to BO terminals and vice versa the IO terminals of the controller without modifying the Onboard IO configuration.				
Application Details	Using the details from the flash memory exceeded function block and IRM folder section, the user can verify the property sheet and re-configure the respective function block, IRM folders, or subfolders to the defined limit.				
Custom Sensor Configuration Details	If the sensor does not meet any standard characteristics of the available sensors, you can select the type as a custom sensor and set its characteristics. There are three types of custom sensors: current, voltage, and resistive.				
Day Light Savings settings	The daylight savings setting is a part of the control manager and enables the user to configure the daylight setting, if required.				

Table 4 Engineering Configurations (Continued)

Configuration	Description
Global Balancing Object	The global balancing object is a component of the engineering tool. It allows you to configure the balancing object based on the project requirements and generates the controller's balancing data report.
Alarms	Provides the notification classes for establishing alarming.
Irm Controller Diagnostics	The IRM NX controller diagnostics monitor the control engine's activity, BACnet, Modbus trace, and Sylk trace.
Master Sync	The master sync function is based on multiple devices that must have the same application type. This is called a master sync group. The master sync group is established via the clone application function, which clones the application of one selected device (template) to multiple devices.
Clone Application	This function enables you to clone the device application based on a selectable template (device) to selectable devices. As result, all devices will receive the same application type which is the basis of a master sync group.
Split Application	This function enables you to split the unique application of the master sync group into a new application and keep the existing application. For the new application, you can enter a different project program name. A new project application type is issued automatically by the software. The new application can then be cloned to form the new master sync group.
Controller Firmware Download	This function enables you to update the firmware in the controller via download.
Sylk Device Programming	Sylk enabled sensors and actuators save I/O on the controller and are faster and cheaper to install since only two wires are needed, and the bus is polarity insensitive.
Reference Datapoints Usage	The reference datapoint is used to set up communication between BACnet controllers using reference input and reference output points. This data communication is achieved through the use of reference input and reference output points, which are assigned to physical or value BACnet points.
Create a Backup Controller and Application	This function enables you to create a controller or application backup.
Reset to Factory Default	This function enables you to reset controller.

System Architecture of IP VAV Controller

The following schematic shows a BACnet IP based system connected to two IP VAV controllers. The system is engineered using the engineering tool based on the CentraLine-N4 workbench.



Fig. 3 System Architecture of IP VAV Controller

System Architecture of MSTP VAV Controller

The following schematic shows a BACnet MSTP based system containing a HAWK-8000 controller as a router and MSTP VAV controllers. The system is engineered using the engineering tool based on the CentraLine-N4 workbench.





System Architecture of Unitary Controller

The following schematic shows a BACnet[™] RJ45 (IP), T1L (IP), or MSTP based system containing a Honeywell Advanced Plant controller as a router and Honeywell Unitary T1L (IP), RJ45 (IP), and MSTP controllers. The system is engineered using the engineering tool based on the Centraline-N4 workbench.



Fig. 5 System Architecture of Unitary Controller

Control Palette

The "honIrmControl" palette is used for creating the application, which includes all necessary components such as logic function blocks and physical points for BACnet devices, IRM programs, and folders.



Fig. 6 Control Logic Palette

Overview of the Engineering Tool (IRM)

The engineering tools provide flexible and freely programmable control, resulting in tangible benefits such as lower energy costs while driving new levels of functionality and efficiency.

Site engineers can use smart engineering and commissioning procedures to configure multiple flexible applications.

Bacnet Network Property Sheet

This component is the base container for all BACnet components (devices and proxy points). It resides under the station's Drivers container. Its default view is the "Hon Bacnet Device Manager".

In addition to devices and proxy points, this component contains the station's BACnet communications protocol stack (Bacnet Comm), and a Local Bacnet Device, which configures the station's representation as a BACnet device. For more details about properties of Bacnet Network, refer to Bacnet Device Property Sheet on page 56.

Steps to open Bacnet Network property sheet:

Step 1. Right click on **Bacnet network > Views > AX Property Sheet.**

	Τ)	C500)) : Station (TC500) : Config	: Drivers : Bacne	tNetwork				
- 1	lav			BacnetNetwork	BacnetNetwork	VAV_TR42Stg108	IRM Program	🗸 Control Manager	旦 Bac
tŧ	C	×	My Network	Property Sheet					
		-	Drivers	BacnetNetwork	(Bacnet Network)				
			NiagaraNetwork	Status	{ok}				
			 BacnetNetwork 	Enabled 📔	🔵 tru	ie 🗸			
			Local Device	Fault Cause					
			▶ 旦 Bacnet Comm	🕨 🖵 Health	Ok [04	-Feb-22 5:27 PM EST]			
			Monitor	Alarm Source	ce Info Alarm	Source Info			
			Tuning Policies	Monitor	Ping M	lonitor			
			X Default Policy	🕨 🎦 History Poli	cies Histor	y Network Ext			
			IrmTuningPolicy	▶ 旦 Bacnet Com	im Bacne	t Stack			
			O IrmConfig	Local Device	e Local	Bacnet Device [device:	100]		
			C TCThermostatConfig	X Tuning Poli	cies Bacne	t Tuning Policy Map			
				IrmConfig	Irm Co	onfig			
				TCThermos	tatConfig TCTh	ermostat Config			
				uploadOnSt	tart 🔵 tru	ie 🗸			
			WED-VA423D24N	TC500-IP	Bache	tDevice {TC500\$2dIP}			
			WEB-VA751BWA24NM	▶ 🖀 МуТС500	Bache	tDevice {MyTC500}			
			WEB-VA75MB24NM	WEB-VA4238	324N Bacne	tDevice {WEB\$2dVA423	B24N}		
			IrmBacnetDevice	WEB-VA7518	3WA24NM Bacne	tDevice {WEB\$2dVA751	BWA24NM}		
			VAV_TR42Stg108	WEB-VA75M	B24NM Bacne	tDevice {WEB\$2dVA75M	IB24NM}		
			Alarm Source Info	🕨 🔒 IrmBacnetD	evice Bacne	tDevice {IrmBacnetDev	/ice}		
			Points	AV2_TR42_	Stg108 Bacne	tDevice {VAV_TR42S	tg108}		
			Virtual						
			Alarms						
<			•				~	🤇 Refresh 📃 🗉	Save

Fig. 7 Bacnet Network Property Sheet

Bacnet Network Tuning Policies Property Sheet

This component is a container for one or more BACnet tuning policy.

When using the BACnet driver you can create multiple tuning policies and assign specific tuning policies to BACnet proxy points as needed based on the Bacnet Comm > Network port used (IP Port, Ethernet Port, Mstp Port). For more details on configuring Tuning policies, refer to Tuning Policies on page 231.

Step to open Bacnet Network Tuning Policies property sheet:

Step 1. Right click on **Tuning Policies > AX Property Sheet.**

 Nav Nav May Network Drivers Drivers BacnetNetwork BacnetNetwork CoalDevice BacnetNetwork CoalDevice BacnetNetwork CoalDevice BacnetNetwork CoalDevice C	(TC500) : Station (TC500) : Config	: Drivers : BacnetNetwork : TuningPolicies
Image: Property Sheet	✓ Nav	😁 BacnetNetwork 💢 Tuning Policies 🖀 VAV_TR42_Stg108 🔤 IRM Program 🗸 Control Manager 🖳 Bac
 Imconfig TCThermostatConfig TC500-IP MyTC500 WEB-VA423B24N WEB-VA751BWA24NM WEB-VA751BWA24NM WEB-VA75MB24NM ImmBacnetDevice VAV_TR42_Stg108 Q Alarm Source Infc Points 	No Image: Solution of the second	Property Sheet X Tuning Policies (Bacnet Tuning Policy Map) X Default Policy Bacnet Tuning Policy X IrmTuningPolicy Bacnet Tuning Policy
 IrmBacnetDevice VAV_TR42_Stg108 Alarm Source Infc Points 	 IrmTuningPolicy IrmConfig TCThermostatConfig TC500-IP WEB-VA423B24N WEB-VA423B24N WEB-VA751BWA24NM WEB-VA75MB24NM 	
Virtual Alarms	 IrmBacnetDevice VAV_TR42_Stg108 Alarm Source Infc Points Virtual Alarms 	C Defrach

Fig. 8 Bacnet Network Tuning Policies Property Sheet

Bacnet Network Irm Bacnet Device Manager View

. .

The engineering tool has several views to assist with programming the controllers. The figures below are navigating within the CentraLine workbench from the top down.

Most of the items seen in the figure and table below can also be used from the Irm Program view. The actions will perform the same for either view. There are additional options to select from the Irm Bacnet Device Manager view which can be used for multiple controllers. The Irm program view can be used for individual controllers.

The Irm Bacnet device manager view is used for the IRM NX controllers.

Step to open Bacnet Network Irm Bacnet Device Manager property sheet:

Step 1. Right click on **BacnetNetwork**, select **Views > Irm Bacnet Device Manager** view.

0	Bacr	netNet			
	-	Local	Views	► <u>\</u>	<u>V</u> enom Bacnet Device Manager
÷	旦	Bacne	Actions	• 1	Venom <u>B</u> alance Bacnet Network View
₽	Ļ	Monit	New	• I	<u>H</u> oneywell Time Sync
₽	X	Tuning		- I	BACnet <u>F</u> F Batch Operations
₽	0	IrmCo	Edit Tags	_	Spyder Batch Operations
-	e	WEB-V	Make Template	1	Irm Bacnet Device Manager
	₽	O A	Cut		Ho <u>n</u> Bacnet Network View
	•	ΨP	Сору	I	Hon Bacnet <u>D</u> evice Manager
			Pasto	I	Bacnet <u>L</u> ink Manager
			Pasto Special	,	AX Bacnet Device Manager
	1			-	 Bacnet Device Manager
			Duplicate		ASC Patch Operations
			Delete	_ '	
			Find		Point view widget
		Ч В		- 1	A <u>X</u> Property Sheet
			Link Mark	1	<u>W</u> ire Sheet
				I	Propert <u>y</u> Sheet
				1	Tag Manager
			Relation Mark	-	Enhanced Wire Sheet
			Relate From		– Category Sheet
		- P - L			category sheet

Fig. 9 Irm Bacnet Device Manager view

The Irm Bacnet Device Manager view allows you to perform batch operations on multiple controllers.

												1	Irm Bacnet Device Manager
Database													
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev Se	erial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync Passy

New Folder 💽 New 🖋 Edit 🚔 Disc	over 🔳 Cancel 🛞 Add	i ≽ Match 🕒 TSynch	A DeviceID 🙀 MAC	Config 🛞 IP Config	🚯 BLE Config 🔂 Swap Ou	t 🕅 Swap In
Set as Source → Set as Target Set as None >>	Master Sync Split-off A	pplication /* Clone Applicat	ion 📑 Clear Project	X Clear Controller	1, Update All BACnet Objects	J Generate Balancing Report
E Teach to Controller	1 Learn from Controller	Jownload BLE Firmware	📕 Download Firmware	📕 Teach Balancing Obj	ject 🏦 Learn Balancing Obje	t 🖉 Rename Bacnet Objects

Fig. 10 Irm Bacnet Device Manager view

The following table shows the options indicated on the Irm Bacnet Device Manager and the IRM Program views.

Options	Descriptions
New Folder	To create new device folder.
New	To create/add new device.
Edit	To edit device.
magnetic Discover	To discover devices.
(+) Add	To add device from discovered pane.
>> Match	To match device in database with discovered device.
(TSynch	To synchronize device time with PC time. For more details, refer to Synchronizing Controller Time on page 54.
MAC Config	To update MAC Address configurations; enable or disable auto MAC feature. For more details refer to Controller MAC Address Configuration on page 133.
ইইন IP Config	To change ethernet settings; set IP Address type (DHCP/Static). For more details refer to IP Configuration on page 117.
BLE Config	Bluetooth port configuration; generate passcode for balancing. For more details refer to Bluetooth Configuration on page 222.

Table 5 Description of Irm Bacnet Device Manager and IRM Program Views

Options	Descriptions
Swap Out	To makes application backup and swaps application out of RAM. For more details refer to Swap on page 187.
Swap In	To restore the saved application to RAM. For more details refer to Swap on page 187.
Set as Source	To makes the selected device a source for a group of devices (targets). For more details refer to Master Sync on page 208.
→ Set as Target	To makes the selected devices a target for a group of devices. For more details refer to Master Sync on page 208.
Set as None	To removes device from being a source or target (remove from group).
» Master Sync	To force the application (or changes) to a group of target devices. For more details refer to Master Sync on page 208.
Split-off Application	To split off application from a Master Sync group. For more details refer to Split Application on page 214.
Clone Application	To copy the application from one device to one or more device. For more details refer to Clone Application on page 210.
Clear Project	To deletes the application from the project of the selected devices. For more details refer to Clear Project on page 183.
X Clear Controller	To delete the application from the selected devices. For more details refer to Clear Controller on page 181.
1 Update All BACnet Objects	To updates all BACnet Object values from the controller to the application. For more details refer to Update All Bacnet Object Values from Controller to Application on page 204.
E Generate Balancing Report	To create a balancing report from online controller values or wire sheet values. For more details refer to Generating Balancing Report on page 375.
E Teach to Controller	To download the application changes in the project to the devices. For more details refer to Teach To Controller on page 172.
Application Full Teach to Controller	To downloads the whole application to the devices. For more details refer to Teach Full Application To Controller on page 174.

Table 5 Description of Irm Bacnet Device Manager and IRM Program Views

Options	Descriptions
1 Learn from Controller	To uploads the current application from the devices in the project. For more details refer to Learn from Controller on page 177.
Jownload BLE Firmware	To downloads Bluetooth firmware to the device(s). For more details refer to Download Bluetooth Firmware on page 403.
Jownload Firmware	To downloads controller firmware to the device(s). For more details refer to Controller Firmware Download on page 340.
L Teach Balancing Object	To downloads the balancing object values from the station's balancing object to the device. For more details refer to Teach Balancing Values to Controller on page 373.
1 Learn Balancing Object	To uploads the balancing object values from the device to the station's balancing object. For more details refer to Learn Balancing Object from Controller on page 373.

Table 5 Description of Irm Bacnet Device Manager and IRM Program Views

Controller View

The view below may or may not be seen depending on the controller you are working with and if a template was used.

Step to open Controller view:

- Step 1. Navigate to Config > Drivers > Bacnet Network.
- Step 2. Expand **BacnetNetwork**, right click on a **controller > Views**.





Table 6 Controller View Options

Components	Description
Schematic	Represent the VAV Controller status and Setpoint controls.
AX Property Sheet	This is default property sheet view for the HAWK-N4.
Flow Balancing View	The flow balancing tool can be configured with various parameters and indicators to optimize the calibrations used to balance the airflow. For more details, refer to Flow Balancing View on page 359.
Application Config View	This contains the configuration details for various parameters in application.
Terminal Assignment View	The Terminal Assignment View allows the user to assign or swap the controller's IO terminals without opening the Onboard IO configuration. This feature allows users to change the IO terminal assignment even if the device is swapped out. For more details, refer to Terminal Assignment View on page 146.

Controller Point View

This is the default view for the Points extension (or Points folder) under any BacnetDevice, and works similarly to the way other point managers work, which support online point discovery.

Step to open controller Irm Bacnet Point Manager view:

- Step 1. Navigate to **Config > Drivers > Bacnet Network.**
- Step 2. Expand BacnetNetwork > Controller, right click on a Points > Views> Irm Bacnet Point Manager.



Fig. 12 Controller Point View

 Table 7 Irm Bacnet Point Manager Description

Component	Description
Irm Bacnet Point Manager	The Irm Bacnet Point Manager allow to discover and add BACnet points when the controller is online. The default view for the BACnet points extension is the IRM Bacnet Point Manager.
	 To sort objects click on any column header. To group like type objects together, sort by Object ID (BACnet object type).
	 To select other properties (apart from Present_Value) as a candidate to proxy, click the plus (+) icon to expand the object.
	For more details about configuring Irm Bacnet Point Manager, refer to below ORD in the Niagara help. module://docBacnet/doc/ControllerConfiguration- C76D113B.html

Controller IP Settings

IP Settings allows configure IP setting and network time server for multiple IP/ MSTP VAV controller from a single window. For more details about configuring controller IP Settings, refer to Configure MSTP VAV Controllers on page 125.

Step to open controller IP Settings property sheet:

- Step 1. Navigate to **Config > Drivers > Bacnet Network.**
- Step 2. Expand BacnetNetwork > Controller > right-click IP Settings > Views> AX Property Sheet.

	-2	Property Sheet
Nv Network		IP Settings (I P Settings)
	- H	IP Configuration I P Configuration
BacnetNetwork		Status {ok}
Local Device		Fault Cause
Bacnet Comm		IP Interface Ethernet
Monitor	- 1	Configuration Sync Status Configuration Out Of Sync
X Tuning Policies	- 1	
IrmConfig		
💌 💼 WEB-VA423B24N		Enabled
Alarm Source Info		Status {ok}
Points		Fault Cause
Virtual		IP Address 192.168.0.2
Alarms		Subnet Mask 255.255.0
Schedules		Default Gateway 192.168.0.1
		Network Time Server Network Time Server Configuration
Config		Master Sync Enabled 🛛 🚽 🗸
IP Settings	11.	Status {ok}
BI E Configuration		📔 Fault Cause
IRM Program		Configuration Sync Status Configuration Out Of Sync
		Address
- CondotManage		_

Fig. 13 IP Settings Property Sheet

Controller BLE Configuration

The Bluetooth configuration allows to configure bluetooth setting for IP/ MSTP VAV controllers. This feature allows enabling or disabling the Bluetooth functionality and setting up a Bluetooth password.

For more details about configuring controller BLE Configuration, refer to Bluetooth Configuration on page 222.

Step to open controller BLE Configuration property sheet:

Step 1. Expand BacnetNetwork > Controller > right-click BLE Configuration > Views> AX Property Sheet.

	, ⁷	Property Sheet
Nv Network		BLE Configuration (BLE Configuration)
		{ok}
BacnetNetwork		Fault Cause
Local Device	- 1	Configuration Sync Status Configuration Out Of Sync
目 Bacnet Comm	- 1	Bluetooth Status
Monitor	- 1	Bluetooth Passcode (8 digit number) 00000000
X Tuning Policies	- 1	Bluetooth Passcode Validity BLE Passcode Validity
IrmConfig	- 1	Start Data 05-Apr-2022
WEB-VA423B24N		
Alarm Source Info	-11	End Date
Points	-11	
Virtual	-11	
Alarms	-11	
Schedules	-11	
Trend Logs	-11	
Config	-11	
🕨 证 IP Settings	.11	
BLE Configuration		
🔻 🌇 IRM Program	11	
🕨 🗸 Control Manager	11	

Fig. 14 Controller BLE Configuration

The following are the actions you can perform from BLE Configuration.

Actions	Description
Write BLE Configuration To Device	To send the Bluetooth configuration modifications to the controller.
Read BLE Configuration From Device	To read the Bluetooth configuration from the controller.
Generate Passcode	To set a passcode for the connected Bluetooth controller, which helps you to authenticate the correct controller.

IRM Program



Fig. 15 IRM Program Folder

Following are the available components in IRM Program.

	~		-	
Table	9	IRM	Program	Folder

Components	Description
Control Manager	To configure controller or application property.
Periodic Program	To create a control strategy program running cyclically on a fixed time base.
Event Program	To create a event-driven control strategy running during event program executed.
Onboard IO	To configure hardware configuration of the application with the physical points.
Alarms	To configure the extension for BACnet event notifications (alarms) sent to the station by that device.
Irm Program View

Step to open Irm Program View:

Step 1. Expand BacnetNetwork > Controller > right-click IRM Program > Views.

٢	🕐 BacnetNetwork						
	₽	,	Loca	al Device			
	₽	Ē	Baci	net Comm			
	₽	P	Mor	nitor			
	₽	X	Tun	ing Policies			
	₽	0	lrm(Config			
	Ŧ		WEE	3-VA423B241	Views	•	Irm Wiresheet
		₽	0	Alarm Sour	Actions	•	Sylk Parameter Summary
		₽	θ	Points	Now		Sylk <u>D</u> evice Summary
		₽	0	Virtual	11ew		AX Property Sheet
		₽	0	Alarms	Edit Tags		Property Sheet
		₽		Schedules	Make Template		Top Managar
		►	0	Trend Logs			Tag manager
		₽	۲	Config	Cut		A <u>X</u> Slot Sheet
		₽	Ţ	IP Settings	Сору		<u>R</u> elation Sheet
	🕨 阳 BLE Config		BLE Config	Paste		New View	
		-	R	IRM Progra	Paste Special		
	 Contro Dup Period 		🗸 Contro	Duplicato		<u>G</u> uide Help	
			Period			<u>B</u> ajadoc Help	
			₽	Event	Delete		Spy <u>L</u> ocal
			₽	🔄 On boa	Find		Spy Remote
				-			

Fig. 16 Irm Program View

The following are the views available in the IRM Program.

Table 10 IRM Program View

Components	Description
Irm Wiresheet	The Irm Wiresheet is the location where the Control Manager, Periodic and event program objects, as well as the Onboard IO and Alarms are programmed.
Sylk Parameter Summary	Provides a summary of the Sylk parameters which are programmed.
Sylk Device Summary	Provides a summary of every Sylk device which is programmed.

Irm Program Actions

Step to open Irm Program actions:

Step 1. Expand **BacnetNetwork > Controller >** right-click **IRM Program > Actions**.

₽	X	TuningF	Policies	Views >	
₽	0	IrmConf	ig	Actions	Reset Overrides
		WEB-VA4	423B24N	New	<u>P</u> ing
			ini Souro		Teach To Controller
	1	O Virt	ual	Edit Tags	Teach Full Application To Controller
	÷	O Ala	rms	Make Template	 Learn From Controller
	₽	Sch	edules	Cut	<u>C</u> heck Hw Compatibility
	₽	O Tree	nd Logs	Conv	Check Application Compatibility
	₽	🕀 Cor	nfig	Copy	Clear Controller
	₽	📄 IP S	Settings	Paste Occatel	– Clear Project
	•	BLE BLE	Configu	Paste Special	Take Snanshot
	Ψ.	RM IRM	l Program	Duplicate	
		▶ ✓	Control	Delete	Restore S <u>n</u> apshot
) R	Periodio	Find	S <u>w</u> ap
		► 🖻	Event p		Set Controller Password
			On boar	Link Mark	Reset Tool Password
) [e	Alarms		Ping Sylk <u>D</u> evices
					<u>V</u> alidate Sylk Devices
				Relation Mark	Toggle Parameter Default Action Visibility
					Update All Bacnet Object Values From Controller To Application
				Relate To	Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 17 Irm Program actions

Following are the actions you can perform in IRM Program.

Table 11 IRM Program Actions

Actions	Description
Reset Overrides	This action is used to clear the overrides on all the function blocks.
Ping	To verify the connectivity between engineering tool and controller.
Teach To Controller	Download application changes in the project to the device(s); select to 'overwrite BACnet objects in' device OR application.
Teach Full Application To Controller	Downloads the whole application to the device(s); select to 'overwrite BACnet objects in' device OR application
Learn from Controller	Uploads the current application from the device(s) in the project.
Check Hw Compatibility	Compares the hardware used in the controller and the hardware defined for in the application can be verified. Any differences are indicated on the Hw compatibility job log.

Actions	Description
Check Application Compatibility	Compares the application to determine if it is compatible with the hardware chosen
Clear Controller	Deletes the application from the controller.
Clear Project	Deletes the application from the selected device(s).
Take Snapshot	Allows for a backup and restore with the current status of an application.
Restore Snapshot	Allows for user to restore from a previous snapshot.
Swap	A swapped device is frozen and saved to a project repository on the PC hard drive.
Set Controller Password	Allows user to set a password in the controller.
Reset Tool Password	Allows user to reset the password in the controller.
Ping Sylk Devices	Verifies and displays the Sylk device status based on the device connected to the network at the configured address.
Validate Sylk Device	Verifies and displays the Sylk device status based on the device connected to the network at the configured address.
Toggle Parameter Default Action Visibility	To hide or show parameter default action.
Update All Bacnet Object Values from Controller to Application	Verifies and displays the Sylk device status based on the device connected to the network at the configured address.
Replace Text A Block and Ws Text Blocks with Irm Ws Text Block	Convert any TextA Function Block to the IRMWsTextBlock Function Block.

Table 11 IRM Program Actions (Continued)

Control Manager View

The figures below show the areas which may need to be configured, depending on the controller model. After adding a new controller into the database, you can edit the controller model.

Open the Control Manager view:

Step 1. Expand the controller, expand **IRM Program**, and double-click on **Control Manager**.

Property Sheet	
✓ Control Manager (Irm Control Manager)	
Author	
Description	
📔 Device Model Name	VA75IBWB24NM
Application Type	
Application Details	Application Details
Function Block Family	
Function Block Version	2.0.0.0
📔 Number Of Folders	4
📔 Number Of Function Blocks	0
📔 Number Of Links	0
📔 Number Of Out Save Enabled Properties	0
Memory Usage	DDC Memory: 2% of 2.00 MB ¥ Function Block Name/IRM Folder Name/Annotation/ 0 B Consumed ¥
Flash Memory Exceeded FBs & IRM Folders	Flash Memory Exceeded FBs & IRM Folde
📔 Controller Hardware Features	
📔 Hardware Compatibility	No
Controller Connection	Bacnet 🗸
Teaching Mode	On Demand
Measurement Type	SI-Metric 🔹
📔 Air Flow Unit	Cubic Feet Per Minute 🗸
Drop Of Bacnet Output	Create Ref Output
Drop Of Bacnet Value	Create Ref Input
📔 Is Synchronized	No
📔 Synchronization Status	Unknown
📔 Last Program Change	null
📔 Last Commissioned	null
🗎 Modbus Baudrate	Baud19200 👻
🗎 Modbus Parity	Even 💌
🗎 Modbus Stop Bits	1 *
🕨 证 Sylk Details	Sylk Details
🕨 证 Custom Sensor Config Details	Custom Sensor Config Details
🕨 证 Day Light Savings	Daylight Saving Settings
_	ApplicationType General application
Application Details Config	ApplicationFeature Air Balance Supported Reheat Valve Override Supported Peripheral Heat Valve Override Supported Supported Parallel fan
Global Balancing Object	Global Balancing Object
	C Refresh Save

Fig. 18 Control Manager View

The following are the properties you can configure in the Control Manager.

Task	Description
Device Model Name	Select device model from the drop-down list.
Controller Connection	Set the controller connection from the drop-down list.OfflineBacnet
Teaching Mode	 Set the teach mode from the drop-down list. Immediate: Changes are written to the controller automatically and immediately. On Demand: Changes are written to the controller manually and explicitly when the Teach to Controller operation is performed. Note: For both teaching modes, only the changes are written to the controller; hence the process is very fast.
Measurement Type	 Set engineering units from the drop-down list. SI-metric: To set measuring unit as SI-Metric, select Measurement Type as SI-Metric and Air Flow Unit as Cubic Meter Per Hour or Liter Per Second. Imperial: To set measuring unit as Imperial, select Measurement Type as Imperial and Air Flow Unit as Cubic Meter Per Hour.
Air Flow Unit	Set airflow units from the drop-down list.
Drop of Bacnet Output	 Set the type of reference point, reference input, or output is created when dropping a Bacnet output from another device. Create Ref Output: Allows you to specify Bacnet output as Ref output that are shared with another controller. Create Ref Input: Allows you to specify Bacnet output as Bacnet output as Pacific and the second with another controller.
Drop of Bacnet Value	 Set the type of reference point, reference input, or output is created when dropping a Bacnet value point from another device. Create Ref Output: Allows you to specify Bacnet value as Ref output that are shared with another controller. Create Ref Input: Allows you to specify Bacnet value as Ref input that are shared with another controller.
Custom Sensor Config Details	If the sensor does not meet any standard characteristics of the available sensors, you can select the type as a custom sensor and set its characteristics.
Custom Sensor 1: Enable	Select true to enable the selected custom sensor configuration

Table 12 Control Manager Task Description

Task	Description
Custom Sensor Config Data: Sensor Name	Enter the name of the sensor.
Custom Sensor Config Data: Sensor Type	Select sensor input (current, voltage, and resistive) from the sensor type drop-down menu.
Custom Sensor Config Data: Specification Unit	Select the specification unit option from the drop-down menu depends upon the data type selected while configuring the details on the add window.
Day Light Savings	Configure the daylight setting.
Day Light Savings: Enable	Set true to enable the day light saving feature.
Day Light Savings: Start Month	Set the start month (January - December).
Day Light Savings Stop Month	Set the end month (January - December).
Day Light Savings: Start Day	Set the start week (Week Day 1 - Week Day 31).
Day Light Savings: Stop Day	Set the end week (Week Day 1 - Week Day 31).
Day Light Savings: Start Time	Set the start time in hours (0 - 23).
Day Light Savings: End Time	Set the end time in hours (0 - 23).
Day Light Savings: Off Set Minutes	Set the off set time in minutes (0 - 240).
Application Details	Choose VAV Zone Terminal Single Duct Application from drop-down.
Туре	Note: Must click save before you can choose the features required.
Application Details Config: Application Feature	Select the application feature.
	Map the balancing objects with Bacnet Objects.
Global Balancing Object	Note: Global balancing object are within the firmware of the IP/MSTP controller only. If creating a custom application or using a migrated venom application, links will need to be made from the global balancing object to the application to use the Honeywell global balancing tool.

 Table 12 Control Manager Task Description (Continued)

Control Manager Actions

Steps to open Control Manager actions:

- Step 1. Navigate to **Config > Drivers > Bacnet Network**.
- Step 2. Expand BacnetNetwork > Controller > IRM Program > right-click Control Manager > Actions.



Fig. 19 Control Manager actions

Following are the actions you can perform on Control Manager.

Table 13 Control Manager actions

Action	Description
Reset Live Updates	If the wiresheet doesn't appear to display the latest data, perform a Reset Live Updates.

Application Details

The Application Details allows you to create a version for the application.

Steps to open Application Details property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Applications Details > Views> AX property.

	Property Sheet
My Network	Application Details (Application Details)
	Application Name VAV_ISF1_HX_FX_IM
IP Settings	Application Version Application Version
BLE Configuration	Major Version 2 [0 - 255]
Rename Bacnet Objects	Minor Version 22 [0 - 255]
🔻 🆓 IrmProgram	Build Version 0 [0-255]
🔻 🗸 Control Manager	Patch Version 0 [0-255]
Application Details	
Flash Memory Exceeded FBs & IRM Folde	ers
Sylk Details	
Custom Sensor Config Details	
Day Light Savings	
Global Balancing Object	

Fig. 20 Application Details Property Sheet

The following are the actions you can perform on Application Details.

Table 14	Control	Manager	actions
----------	---------	---------	---------

Action	Description
Application Name	Enter the name of the application.
Application Version	
Major Version	Enter the major value between 0 and 255.
Minor Version	Enter the minor value between 0 and 255.
Build Version	Enter the build value between 0 and 255.
Patch Version	Enter the patch value between 0 and 255.

After configuring application details, perform Teach To Controller.

Flash Memory Exceeded FBs & IRM Folders

The Flash Memory Exceeded FBs & IRM Folder list the details of the Function block, Irm folders, or subfolders configuration that exceed the defined memory limit (900 bytes).

Steps to open Flash Memory Exceeded FBs & IRM Folders property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Flash Memory Exceeded FBs & IRM Folders > Views> AX property.

For more details about Flash Memory Exceeded FBs & IRM Folders, refer to the Flash Memory Exceeded FBs & Irm Folder on page 72.

63	Property Sheet	
🕥 My Network	Flash Memory Exce	eeded FBs & IRM Folders (Flash Memory Exceeded FBs & IRM Folders)
 IP Settings BLE Configuration Rename Bacnet Objects Im Program ✓ Control Manager 	Description	Function Block Name/IRM Folder Name/Annotation/SubFolder Count/ Composite Flash Memory Exceeded Function Blocks and IRM Folders
Application Details Flash Memory Exceeded FBs & IRM Folders		
 Sylk Details Custom Sensor Config Details 		
 Day Light Savings Global Balancing Object 		



Sylk Details

After configuring the Sylk devices on the wire sheet, you may check the power consumption, Sylk proxy file size, and host Sylk config file size of the configured Sylk devices.

Steps to open Sylk Details property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Sylk Details > Views> AX property.

For more details about the Sylk Details, refer to the Sylk Details on page 73.

	Property Sheet	
Ny Network	📮 📓 Sylk Details (Sylk Details)	
	Total Sylk Power Consumption	95.00 %
IP Settings	Is Sylk Configuration Downloaded	🔵 true
BLE Configuration	Host Sylk Config File Size	315 [0-8192]
🕨 🍙 Rename Bacnet Objects	Sylk Proxy File Size	2589 [0-8184]
IrmProgram		
🔻 🗸 Control Manager		
Application Details		
Flash Memory Exceeded FBs & IRM Folders		
Sylk Details		
Custom Sensor Config Details		
Day Light Savings		
Global Balancing Object		



The following are the actions you can perform on Sylk Details property sheet.

Table 15	Sylk Details	Actions
----------	--------------	----------------

Action	Description
Total Sylk Power Consumption	Perform this option in case the wiresheet does not show the updated values. The accumulated Sylk power will be displayed here.
	The flag is indicating whether Sylk configuration has downloaded to controller or not.
Is Sylk Configuration	• True: When the Sylk configuration needs to download.
	• False: When the modified Sylk configuration needs to be downloaded.
Host Sylk Config File Size	The total file size of the Sylk configuration.
Sylk Proxy File Size	Only shows proxy file size, which has to be downloaded to the controller.

Custom Sensor Config View

If the sensor does not meet any standard characteristics of the available sensors, you can select the type as a custom sensor and set its characteristics.

Steps to open Custom Sensor Config Details property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Custom Sensor Config Details > Views> AX property.

For more details about configuring the Custom Sensor Config Details, refer to the Custom Sensor Configuration Details on page 74.

E	Property Sheet							
Ny Network	Custom Sensor Config Details	(Custom Sensor Config Details)						
	💌 📔 Custom Sensor1 Custom Sensor Config Component							
IP Settings	Enable	🕒 true 🔍						
BLE Configuration	Vigitation Sensor Config Data Custom Sensor Config							
Rename Bacnet Objects	Sensor Name	C02_0-2000ppm						
🔻 🗞 IrmProgram	Sensor Index	101						
V Control Manager	Sensor Type	Resistive 👻						
Application Details	Specification Unit	concentration ()						
Flash Memory Exceeded FBs & IRM Folders								
Sylk Details	Linearization							
Custom Sensor Config Details	Sensor Low Limit	0.00 ppm [0.00 - 2000.00]						
Day Light Savings	Sensor High Limit	2000.00 ppm [0.00-2000.00]						
Global Balancing Object	Sensor Reading Outs	side Limit Value Is Invalid Outside High And Low Limit 🗸						
Periodic program	Offset	0.00						
Event program								
In board IO	1							
Alarms								
D Apps	Validation Text							
les	1							
BLE Firmware	1							
🕽 config	Custom Sensor2 Custo	om Sensor Config Component						
) firmware	Custom Sensor3 Custo	om Sensor Config Component						

Fig. 23 Custom Sensor Config Details Property Sheet

The following are the actions you can perform on Custom Sensor Config Details property sheet.

٦	Table 16	Custom	Sensor	Config	Det	ail	s Property Sheet	

Name	Description					
Enable	Select true to enable the selected custom sensor configuration.					
Sensor Name	Enter the name of the sensor.					
Sensor Type	Select sensor input (current, voltage, and resistive) from the sensor type drop-down menu.					
Sub Type	Select a sensor type from the sub-type drop-down menu.					
Specification Unit	The specification unit option in the drop-down menu depends upon the data type selected while configuring the details on the add window.					
Linearization	The linearization field, where the linearization points are provided to define the characteristics of the sensor. The tabular conversion dialog window is displayed.					
Sonsorlow	Set the lower limit the of the sensor as per project requirement.					
Limit	Note: The configured lower limit should not be below than the sensor's manufacturer low limit.					

Name	Description
Sensor High Limit	Set the high limit the of the sensor as per project requirement. Note: The configured high limit should not be exceed than the sensor's manufacturer high limit.
Sensor Reading Output Limits	 Select the value for sensor reading output limits from the respective drop-down menus. Value Is Invalid Outside High And Low Limit: when output crosses the limit, the output becomes invalid. Clamp Value To High And Low Limits: when output crosses the high limit or low limit, and the output is clamped to a low or high limit; it doesn't become invalid. Continue Linearization Without Clamp: when the user wants to continue sensor reading outside the high limit.
Offset	Offset is the precision limit of the curve.
Validation Text	This field verifies the configuration of the custom sensor. If any of the fields are not configured, it will display a message.

Table 16 Custom Sensor Config Details Property Sheet

Day Light Savings View

The daylight saving setting is a part of the control manager, and it enables when Day Light Saving comes into effect.

Steps to open Day Light Savings View property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Day Light Savings View > Views> AX property.

For more details about configuring the Day Light Savings View, refer to the Day Light Savings settings on page 78.



Fig. 24 Day Light Savings View Property Sheet

The following are the actions you can perform on Day Light Saving property sheet. **Table 17 Day Light Saving Property Sheet**

Task	Description
Enable	Select true to enable the day light saving feature.
Start Month	Select the start month of day light saving (January - December).
End Month	Select the end month of day light saving (January - December).
Start Day	Select the start week of day light saving (Week Day 1 - Week Day 31).
End Day	Select the end week of day light saving (Week Day 1 - Week Day 31).
Start Time	Set the start time of day light saving in hours (0 - 23).
End Time	Set the end time of day light saving in hours (0 - 23).
Off Set Minutes	Set the off set time for day light saving in minutes (0 - 240).

Global Balancing Object

The Global balancing objects are part of the engineering tool. The application allows you to configure the balancing object according to the project requirements and generates a balancing data report.

Steps to open Global Balancing Object property sheet:

Step 1. Expand BacnetNetwork > Controller > IRM Program > Control Manager > right-click Global Balancing Object > Views> AX property.

For more details about configuring the Global Balancing Object, refer to the Global Balancing Object on page 370.

			P	Pro	operty Sheet		
) M	y Ne	twork		Ì (Global Balancing	Object (Global B	alancing Object)
		-		⊧ I	🗎 Device Balano	ce State	ID: 600_Value: 0.0(NotBalanced)
	₽	Schedules		▶ [🗎 K Factor		ID: 601_Value: 0.0
	₽	C Trend Logs		⊧ I	🗎 Damper Type	2	ID: 602_Value: 0.0(Floating)
	₽	Config		▶ [🗎 Damper Cont	trol Type	ID: 603_Value: 0.0(Direct)
	₽	🗞 IRM Program		⊧ I	📔 Drive Time		ID: 604_Value: 0.0 s
٣	Î	WEB-VA75MB24NM		⊧ [🗎 Duct Area		ID: 606_Value: 0.0
	₽	Alarm Source Info		⊧ [🗎 Measured Ma	x Flow	ID: 607_Value: 0.0
	₽	Points		⊧ [🗎 Measured Mir	n Flow	ID: 608_Value: 0.0
	₽	🕲 Virtual		⊧ [🗎 Set Point Max	Flow	ID: 609_Value: 0.0
	₽	Alarms		⊧ I	🗎 Set Point Min	Flow	ID: 610_Value: 0.0
	₽	Schedules	2	⊧ I	🗎 Device Zeroe	d State	ID: 611_Value: 0.0(notZeroed)
		Trend Logs		⊧ I	🗎 Temperature	Compensation	ID: 612_Value: 0.0(Enable)
		Config	2	▶ [🗎 Balancing Me	thod	ID: 613_Value: 0.0(DoublePoints)
	ĺ.	BLE Configuration	2	⊧ I	📔 Set Point Sinរ្	gle Flow	ID: 614_Value: 0.0
	Ĺ		2	⊧ [🗎 Measured Sin	gle Flow	ID: 615_Value: 0.0
	Ť		2	⊧ I	🗎 Corrected K F	actor	ID: 616_Value: 0.0
		Control Manager	1	▶ [🗎 Current Sens	ed Air Flow	ID: 618_Value: 0.0
		Application Details		⊧ [🗎 Damper Manı	ual Position	ID: 620_Value: 0.0 %
		Flash Memory Exceeded FBs & IRM		⊧ I	🗎 Damper Manı	ual Flow	ID: 621_Value: 0.0
		Sylk Details	2	⊧ I	🗎 Balancing Tyj	pe	ID: 622_Value: 0.0(Balanced_Done)
		Custom Sensor Config Details	2	⊧ I	🗎 Damper Posit	tion	ID: 623_Value: 0.0 %
_		Day Light Savings	2	⊧ [🗎 Clear Balance	2	ID: 624_Value: 0.0(False)
		Global Balancing Object		⊧ I	🗎 Sensed Max F	low	ID: 626_Value: 0.0
		Periodic program	2	⊧I	🗎 Sensed Min F	low	ID: 627_Value: 0.0
		Event program		⊧ [🗎 Sensed Single	e Flow	ID: 629_Value: 0.0
		In board IO		⊧ I	🗎 Setpoint Tole	erance	ID: 630_Value: 0.0
		Alarms		▶ [Sync Direction	n	ID: 631_Value: 0.0
x.				▶ [🗎 Zero Process	Status	ID: 632_Value: 0.0
				▶ [🗎 Sync Status		ID: 633_Value: 0.0
			1	▶ [Action Elapse	d Time	ID: 634_Value: 0.0 s

Fig. 25 Global Balancing Object Property Sheet

The following are the available balancing points in Global Balancing Object property sheet.

Balancing Point Name	Object ID	Point Type	Object Mapping	Description
Device Balance State	600	N/A	No	Indicates whether or not the device is balanced. After balancing is complete, the controller sets this value.
K Factor	601	BACnet numeric value	Yes	Flow pickup factor, as determined by the field engineer. This parameter can be ignored if the Manufacturer K factor is used. The controller's default value is 0.813.
Damper Type	602	N/A	No	The input cannot be changed by the user. Floating is the default setting.
Damper Control Type	603	BACnet Enum value	Yes	Direct "CW" or Reverse "CCW" floating actuator configuration.
Drive Time	604	BACnet numeric value	Yes	Drive time for a floating actuator.
Duct Area	606	BACnet numeric value	Yes	Area of the VAV box duct.
Measured Max Flow	607	N/A	No	When performing maximum balancing, the maximum flow is measured.
Measured Min Flow	608	N/A	No	When performing min balancing, the minimum flow is measured.
Set Point Max Flow	609	BACnet numeric value	Yes	Setpoint for maximum flow in a VAV box.
Set Point Min Flow	610	BACnet numeric value	Yes	Setpoint for the minimum flow in a VAV box.
Device Zeroed State	611	N/A	No	VAV Box zero balancing state.
Temperature Compensatio n	612	N/A	No	The input cannot be changed by the user.

Table 18 Global Balancing Object Description

Balancing Object Point Object Description Point Name ID Type Mapping Method of balancing: Setpoint balancing, K factor balancing or Min-Max balancing. Balancing 613 N/A No In the IO terminal view, the user Method can obtain the same status for the Air flow sensor function block. All the fields are Read-only. Setpoint used by user when Set Point performing setpoint or K factor 614 N/A No balancing. Single Flow All the fields are Read-only. Measured air flow entered by user Measured when performing setpoint, K factor 615 N/A No Single Flow balancing. All the fields are Read-only. Corrected K factor for flow Corrected K 616 N/A No setpoint balancing. Factor All the fields are Read-only. Current Current sensed air flow. Sensed Air 618 N/A No All the fields are Read-only. Flow Damper Manual position entered by user 620 N/A Manual No to move the damper. Position All the fields are Read-only. Manual flow entered by user to Damper 621 N/A No move the damper. Manual Flow All the fields are Read-only. Indicates balancing type Balancing 622 N/A No performed. Type All the fields are Read-only. Current damper position when Damper 623 N/A performing balancing. No Position All the fields are Read-only. Clear balancing command. Clear Balance 624 N/A No All the fields are Read-only. Maximum sensed flow when Sensed Max 626 N/A No performing balancing. Flow All the fields are Read-only. Minimum sensed flow when Sensed Min 627 N/A No performing balancing. Flow

Table 18 Global Balancing Object Description (Continued)

Flow

Sensed Single

629

N/A

No

All the fields are Read-only. Sensed flow when performing

All the fields are Read-only.

setpoint or K factor balancing.

Balancing Object Point Object Description Point Name ID Type Mapping Tolerance set by user when Setpoint 630 N/A No performing balancing. Tolerance All the fields are Read-only. Sync direction 0 % or 100 % when Sync synchronizing the damper before 631 N/A No Direction balancing. All the fields are Read-only. Zero Process Zero balancing process status. 632 N/A No Status All the fields are Read-only. Damper sync status. 633 N/A No Sync Status All the fields are Read-only. Action elapsed time. Action 634 N/A No Elapsed Time All the fields are Read-only. BACnet Manufacturer 635 Manufacturer K factor. numeric Yes K Factor value BACnet Offset value calculated after K Factor 636 numeric Optional performing setpoint or K factor Offset value balancing. BACnet Pressure offset value calculated Pressure 637 Optional numeric Offset after performing zero balancing. value BACnet Override point used to command Reheat Ovrd 638 numeric Yes reheat valve when performing value water balancing. BACnet Reheat Eff Effective status read point to 639 numeric Optional Pos display in balancing tool. value BACnet Override point used to command Periphheat 640 numeric Yes peripheral valve when performing Ovrd value water balancing. BACnet Periphheat Effective status read point to 641 numeric Optional Eff Pos display in balancing tool. value BACnet Vav Fan Spd Command point to override the 642 Yes numeric Ovrd fan start or stop or fan speed. value VAV system type used by controller to enable reheat. Vav Sys Type 643 N/A No peripheral heat or fan override options. All the fields are Read-only.

Table 18 Global Balancing Object Description (Continued)

Synchronizing Controller Time

This feature sends a synchronization message from the Supervisor station to selected BACnet devices on the network. This resets the time of host controllers to the same time.

Open Synchronizing Controller Time property sheet:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select the controller from the device list and click **TSynch**.

Database											2 objects
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Sync 🛱
🖀 WEB-VA423B24N	device:2006	{ok}	1001	27	VA423B24N	2.0.1.14	0000aa0240000904	IrmControl 2.0.0.0	IRM Program		Project is en
WEB-VA75MB24NM	device:1001	{ok}	1001	1	VA75MB24NM	1.0.1.32	0000abc28000035f	IrmControl 2.0.0.0	IRM Program		Controller a

🔝 New Folder 🔒 New 🖋 Edit 🚔 Discover 🔳 Cancel 📀 Add >> Match 💽 TSynch 🛕 DeviceID 😂 MAC Config	*
🗘 Set as Source 🚽 Set as Target 📋 Set as None 📎 Master Sync 🗳 Split-off Application 🧨 Clone Application 🕅 Clone Application	
🛃 Teach to Controller 📕 Application Full Teach to Controller 🏦 Learn from Controller 🛃 Download BLE Firmware	-

Fig. 26 Database Pane

Step 3. Click **Yes** to confirm.

Database											2 objects
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Sync 🛱
WEB-VA423B24N	device:2006	{ok}	1001	27	VA423B24N	2.0.1.14	0000aa0240000904	IrmControl 2.0.0.0	IRM Program		Project is em
WEB-VA75MB24NM	device:1001	{ok}	1001	1	VA75MB24NM	1.0.1.32	0000abc28000035f	IrmControl 2.0.0.0	IRM Program		Controller a
Synchronize Time × Send current time to network? Yes No											
🔯 New Folder 🔒 New 🖍 Edit 🚔 Discover 🔳 Cancel 📀 Add >> Match 💽 TSynch 🛕 DeviceID 😂 MAC Config											
Set as Source	🛇 Set as Source 🚽 Set as Target 📄 Set as None 📎 Master Sync 🗳 Split-off Application 🌈 Clone Application 😭 Clear Project 🗶 Clear										
<u>_</u>	Teach to Co	ntroller		Applicatio	n Full Teach to	o Controller	1 Learn from C	ontroller 📕	Download BLE Firm	vare 📕 Downloa	d Firmw
4											E.

Fig. 27 Dialogue Box

As per the supervisor's workbench, the controller's time is updated.

Teach and Learn Operation Guidelines

Synchronization can be performed in two ways:

- **Teaching to Controller:** Downloads the application modification from the project to the controller.
- Learning from Controller: Uploads the changes from the controller to the project.

When in teaching mode, application changes of the project can be written to the controller in two ways:

- **Immediate:** Changes are written to the controller automatically and immediately.
- **On demand:** Changes are written to the controller manually and explicitly when the Teach to Controller operation is performed.

) Teaching Mode	On Demand 🗸
📔 Measurement Type	Immediate
🗎 Air Flow Unit	On Demand te 🗸



The explicit usage of the teaching and learning actions and the time when an action is used depends on the application status in the project and the connected controller, and the result you want to achieve.

Important: When working on the application, the control manager detects every modification and is indicated graphically by a yellow warning symbol that replaces the original symbols at the modified item on the wire sheet and in the tree.

This feature is applicable when the Teaching mode is set to On demand. If the teaching mode is set to Immediate, the changes are not indicated graphically in the workbench since they are written instantly to the controller.

Important: If the cut-paste or copy-paste action is performed on multiple functional blocks in the Immediate mode, the modification causes the project to go in Out of Sync. In that scenario, you need to perform teach to controller. Whenever moving or copying multiple function blocks from one folder to another, it is advised to be in On demand mode.

Recommendations for an empty controller (factory delivery, cleared, no application) or controller have a history (engineered with application). Make sure to ask the following questions before performing engineering on the controller.

- Do you want to keep the application in the controller or the project?
- Do you want to change the application in the project and teach it to the controller?
- Do you want to learn an application from the controller to the project?
- *Important:* If you want to keep the application in the project, learn the controller application. Clear the controller histories before performing learn from controller operation; it will prevent the destruction of the application in the project.
 - **Note:** If there are too many changes in the project or the controller, learn and teach operation does not work. The engineering tool displays appropriate messages which describe the status and how to proceed.

CHAPTER

3 OVERVIEW OF THE ENGINEERING TOOL

This chapter describes the BACnet device's properties and the control manager's components. Additionally describes the procedure to configure and perform synchronization check on the periodic program, event program, and On board IO in the engineering tool.

Bacnet Device Property Sheet

Steps to configure Bacnet Device property:

Step 1. Double-click the IRM in the Nav tree.

Property Sheet	
💣 Spyder Model 5 or Spyder Mo	del 7 (Irm Bacnet Device)
Status	{fault}
📔 Enabled	🔵 true 🔍
📔 Fault Cause	Invalid Device Object ID
🕨 🖵 Health	Fail [null]
Alarm Source Info	Alarm Source Info
	Network Number: 0
🗎 Address	MAC Address: null
	MAC Address Style: Unknown 👻
Points	Bacnet Point Device Ext
🕨 🕲 Virtual	Bacnet Virtual Gateway
Alarms	Bacnet Alarm Device Ext
🕨 💷 Schedules	Bacnet Schedule Device Ext
Trend Logs	Bacnet History Device Ext
🕨 🕀 Config	device:-1 config
Enumeration List	Extensible Enum List
📔 Use Cov	🛑 false 🔍
📔 Use Cov Property	🛑 false 🔍
Max Cov Subscriptions	max
Cov Subscriptions	0
📔 Character Set	Iso10646_UTF8
lcon	local: module://honIrmConfig/res/deviceIcons/normalStateSwapp
IP Settings	I P Settings
BLE Configuration	BLE Configuration

Fig. 29 IRM device property sheet

Property	Description					
Status	This field is read-only and displays the physical status of the port (OK or fault).					
Enabled	Allows the user to enable or disable the IRM NX controller.					
Fault Cause	Indicates why a system object (network, device, component, extension, etc.) is not working properly {in fault}. This property is empty unless a fault exists.					
Health	 Reports the status of the network, device, or component. This advisory information includes a time stamp and helps you recognize and troubleshoot problems, but it provides no direct management controls. Down: Displays network's health (true or false). Alarm: Contains a set of properties for configuring and routing alarms when this component is the alarm source. Last OK Time: Displays the network's last ok time. Last Fail Time: Displays the network's last fail time. Last Fail Cause: Displays the network's last fail cause. 					
Alarm Source Info	This container slot is available on all network and child device components. The slot's properties populate the alarm record when the network or device does not respond to a monitor ping. This ping is configured at the network level. Each parent and a child device object has its alarm source info slot with identical (but independently maintained) properties.					
Address	Specifies the data link layer MAC address of the device. Network Number: 0 Address MAC Address: MAC Address Style: Unknown					
	Fig. 31 Address Property For the IP devices, the address is an IP address: 0xBAC0 or 47808. For the MSTP devices, it is an 8-bit address (0 - 254) unique on its RS-485 trunk.					
Points	The BACnet point device ext (points folder in the Nav tree) is the BACnet implementation of the pointdeviceext, a frozen container under every BacnetDevice. Its primary view is the Bacnet Point Manager. BACnet proxy points are similar to other driver proxy points.					
Virtual	A virtual gateway is a component located under the station's component space and provides access to the station's virtual component space.					

Table 19 IRM device Properties Details

Property	Description							
	Each BACnet device has an alarms device extension. This extension applies to BACnet event notifications (alarms) sent to the station by that device.							
	 Alarms Bacnet Alarm Device Ext 							
	Alarm Class Default Alarm Class							
Alarms	Last Received Time null							
	Niagara Process Id 0 [0 - 2147483647]							
	Fig. 32 Alarms Property To view the alarm properties, expand BacnetNetwork > Sypder Model 5 or Sypder							
	Model / Device > double-click on the Alarms in the Nav tree.							
Schedules	A device's schedules extension is the parent container for imported schedules components with a ScheduleImportExt (the schedule imports events from the remote station). The imported schedule is read-only. By default, the schedules extension contains a Retry Trigger.							
	Fig. 33 Schedule Property							
	 Retry Trigger: Appears in the Nav tree but not in any manager view. The Retry Trigger is unique because it requires no linking of its output for operation. If the schedule import descriptor fails, the Retry Trigger defines show frequently to attempt the import again (the default value is every 15 minutes). This continues until successful execution occurs. Subscribe Window: Sets up a period of time during which the subscription is possible. Skip Write On Error: Configures what happens when an error occurs, true skips a site abatement of the subscription is possible. 							

Property	Description						
Trend Logs	This component is a frozen device extension under every BACnet device and the container for "Bacnet History Import" components. The default view is the Bacnet History Import Manager , used to import data from trend log objects in the device into the station as histories. The directory under the BacnetNetwork > BacnetDevice node in the Nav tree serves as the container for BACnet history objects, which you import from a device into a station. A BACnet device must contain trend log objects (and/or trend log multiple objects) to use histories. A discover command determines this. The trend logs extension has no practical application if it finds no such objects. This component also has a Retry Trigger for automatic usage as needed by default. The default view of this component is the Bacnet History Device Ext.						
	Trand Logo Bacnat History Davisa	14					
	Griend Logs Bachet History Device B						
	Retry Trigger 15 minutes (Sun Mon Tue We	d Thu Fri Sa					
	Interval	00000h 15m 00s 🗮 [1ms-+inf]					
	Trigger Mode Interval - Time Of Day	Start Time 12:00:00 AM IST End Time 11:59:59 PM IST					
	Days Of Wee	k 🕑 Sun 🕑 Mon 🕑 Tue 🕑 Wed 🕩 Thu 🕑 Fri 🕑 Sat					
	□ Last Trigger 02-Jan-2022 01:57 PM	IST					
	Mext Trigger	.51					
	Eig 3/ Tr	and Logs Property					
	Fig. 34 11	end Logs Property					
Config	Contains a BACnet object, representing matrix contains a BACnet object.	mal					
	Uatabase Revision -1						
	Fig. 35 Config Property						

Property	Description								
	Contains the list of the BACnet properties that can be exported to configure the data exchange. The list provides access to each property's configuration facets.								
	To check the Enum list, expand the Bacnet Network and double-click on Bacnet								
	In the BACnet device property sheet, you can check the Enumeration List								
	Enumeration List Extensible Enum List								
	🗎 Error Class Facets range=bacnet:BacnetErrorClass 📎 🕓 🗸								
	📔 Error Code Facets range=bacnet:BacnetErrorCode 📎 🕓 🗸								
	Abort Reason Facets range=bacnet:BacnetAbortReason 📎 🕑 🔹								
	Device Status Facets range=bacnet:BacnetDeviceStatus 📎 🕚 🔹								
	🗎 Engineering Units Facets range=bacnet:BacnetEngineeringUnits 📎 🕚 🔹								
	📔 Event State Facets range=bacnet:BacnetEventState 📎 🕓 🗸								
Enumeration	🗎 Event Type Facets range=bacnet:BacnetEventType 📎 🕚 🔻								
List	📔 Life Safety Mode Facets 🛛 range=bacnet:BacnetLifeSafetyMode 📎 🕚 🔻								
	📔 Life Safety Operation Facets 🛛 range=bacnet:BacnetLifeSafetyOperation 📎 🕓 🝷								
	📔 Life Safety State Facets 🛛 range=bacnet:BacnetLifeSafetyState 📎 🕓 🔹								
	Maintenance Facets range=bacnet:BacnetMaintenance 📎 🕓 🔹								
	🕥 Object Type Facets range=bacnet:BacnetObjectType 📎 🕓 🔹								
	Program Error Facets range=bacnet:BacnetProgramError 📎 🕚 🔹								
	Property Id Facets range=bacnet:BacnetPropertyIdentifier 📎 🕓 👻								
	Reliability Facets range=bacnet:BacnetReliability >> 🕚 🔹								
	Teject Reason Facets range=bacnet:BacnetRejectReason 📎 🕚 🔹								
	Silenced State Facets range=bacnet:BacnetSilencedState 📎 🕚 🔹								
	Vt Class Facets range=bacnet:BacnetVtClass 📎 🕓 🗸								
	Fig. 36 Enumeration List								
Use Cov	 Enables and disables a device's support for COV (change of value) as a way to monitor proxy point values. True triggers the driver to attempt the necessary updates (proxy subscriptions) to the value of each point. If the subscription attempt succeeds, the read status property of the point's BacnetProxyExt displays the change of value. If the subscription attempt fails, the driver uses normal polling, and the read status property shows as polled. When true, individual proxy points under the device may use COV subscriptions depending on their assigned tuning policy. When false, the driver ignores any proxy subscription updates. How to find: 								
	Manager Add window.								

Property	Description
Use Cov Property	If enabled, and the assigned proxy points are under a BACnet device that supports confirmed COV notifications, the driver attempts any necessary updates (proxy subscriptions). If disabled (false), the driver ignores this property. How to find:
	• Expand Config > Drivers >Bacnet network >Tuning Policies > Default Policy.
Max Cov Subscription	Specifies the maximum number of change of value (COV) subscriptions that the database attempts to use with this device. This restriction prevents the station from consuming all of the available subscription space in the device. Applies only if use Cov is true.
Cov Subscription	Reports number of active change of value (COV) client subscriptions to the device.
Chana atau Cat	Defines the character set supported.
Character Set	Location: Expand the Bacnet network > Bacnet device.
IP Setting	IP setting comprises IP Configuration and Network Time Server. The IP configuration operation allows to configure IP for multiple IP VAV and Unitary controllers from a single window. This feature enables you to perform a variety of productivity operations such as batch IP configuration updates, auto-increment of IP addresses, visual indication of IP address changes, user errors in IP configuration, and offline and online IP configuration. This configuration interface is used for any wired IP connections made via one of the controller's Ethernet Switch primary or secondary connectors. The Network Time Server allows you to configure the Network Time Server address.
	For more details refer, to Configure MSTP VAV Controllers on page 125.
BLE Configuration	BLE configuration enables batch configuration of IP controllers. This feature allows you to perform operations such as enabling or disabling the BLE function. and setting the password. For more details, refer to Bluetooth Configuration on page 222.

Control Manager

The control manager allows you to configure properties according to the controller model. You can edit the controller model after adding a new controller into the database.

Steps to open the Control Manager:

- Step 1. In the Nav tree, expand the **IRM Program** folder.
- Step 2. Double-click the **Control Manager** icon.

Property Sheet	
✓ Control Manager (Irm Control Manager)	
🗎 Author	Building_01
Description	Configure Building 01
📔 Device Model Name	VA423B24N v
Application Type	qft.ib6
Application Details	Application Details
Function Block Family	IrmControl
Function Block Version	2.0.0.0
📔 Number Of Folders	6
Number Of Function Blocks	4
🗎 Number Of Links	0
📔 Memory Usage	DDC Memory: Enction Block Name/IRM Folder Name/Annotation/
Elash Momony Evrooded ERs & IPM Folders	SubFolder Count/Composite Flash Memory Usage:
Controller Hardware Features	
Hardware Compatibility	No
Controller Connection	Bacnet
Teaching Mode	On Demand
	Si-Metric
	Cubic Feet Per Minute
Drop Of Pacpat Output	
Drop of Bachet Value	
Communication Status	Offline
Is Synchronized	No
Synchronization Status	Unknown
Last Program Change	24-Aug-2021 07:35 PM 151
Last Commissioned	ndli
Modbus Baudrate	Baud 19200 V
Modbus Parity	Even 🗸
🗎 Modbus Stop Bits	
Sylk Details	Sylk Details
Custom Sensor Config Details	Custom Sensor Config Details
Day Light Savings	Daylight Saving Settings
	ApplicationType General application
Application Details Config	ApplicationFeature Fan Override Supported Series Fan Parallel fan Parallel fan Parallel fan
Global Balancing Object	Global Balancing Object

Fig. 37 Control Manager property sheet

Table 20 IRM Control Manager Property

Name	Description		
Author of the application	Name of the controller or building.		
Description	Description of the controller or building.		
Device Model Name	Select device model from the drop-down list.		

Name	Description						
Application Type	Read-only. Type of application.						
	Read-only. Displays the application name and version details.						
	 Application Details 		Application Details				
	Application Name						
	 Application Version Application Version 						
Application Details	Major Version 🛛	0	[0 - 255]				
	Minor Version 🛛	0	[0-255]				
	🗎 Build Version 🛛	0	[0-255]				
	Patch Version	0	[0-255]				
		Fig. 38 App	lication Details				
Function Block Family	Read-only. Displays the na	me of the f	unction block family.				
Function Block Version	Read-only. Displays the function block version.						
	Read-only. Displays the number of folders.						
Number of Folders	Maximum 32 Irm folders overall (IRM CVAV/FCU controller).						
	Maximum 100 Irm folders overall (IP/MSTP VAV controller).						
Number of Function blocks	Read-only. Displays the number of function blocks.						
Number of Links.	Read-only. Displays the nu	mber of lir	ıks.				
Memory usage	Read-only. Shows the device's memory usage, application, and parameters in percentage and graphically.						
Flash Memory Exceeded FBs & IRM Folders	The Flash Memory Exceeded FBs & Irm Folder list the details of the Function block, Irm folders, or subfolders configuration.						
Controller Hardware features	Read-only. Displays the I/O configuration (online available in online mode).						
Hardware Compatibility	Read-only. Indicates whether the terminal layout of the application is compatible with the hardware layout of the physical controller.						
	Allows selecting the connection type among network:						
Controller Connection	• Offline						
	• Bacnet						

Name	Description			
	Use the drop-down list to set the teach mode between On demand and Immediate, refer to Teach and Learn Operation Guidelines on page 55.			
	 Immediate: Changes are written to the controller automatically and immediately. 			
	 On Demand: Changes are written to the controller manually and explicitly when the Teach to Controller operation is performed. 			
Teaching Mode	On Demand Immediate On Demand			
	Fig. 39 Configuring Teaching Mode			
	Note: For both teaching modes, only the changes are written to the controller; hence the process is very fast.			
	Use the drop-down list to set engineering units.			
	• SI-metric : To set measuring unit as SI-Metric, select Measurement Type as SI-Metric and Air Flow Unit as Cubic Meter Per Hour or Liter Per Second.			
Maasuramant Typa	• Imperial: To set measuring unit as Imperial, select Measurement Type as Imperial and Air Flow Unit as Cubic Meter Per Hour.			
Measurement Type	SI-Metric 🗸			
	SI-Metric			
	Imperial			
	Fig. 40 Measurement Type			
	Use the drop-down list to set airflow units.			
	Cubic Feet Per Minute 🔍			
Air Flow Unit	Cubic Feet Per Minute			
	Cubic Meter Per Hour Liter Per Second			
	Fig. 41 Air Flow Unit			

Name	Description			
	Defines which type of reference point, reference input, or output is created when dropping a Bacnet output from another device.			
	Create Ref Output			
Drop of Bacnet Output	Create Ref Input			
	Fig. 42 Drop of Bacnet Output			
	• Create Ref Output: Allows you to specify Bacnet output as Ref output that are shared with another controller.			
	• Create Ref Input: Allows you to specify Bacnet output as Ref input that are shared with another controller.			
	Defines which type of reference point, reference input, or output is created when dropping a Bacnet value point from another device.			
	Create Ref Input 🗸			
	Create Ref Output			
Drop of Bacnet Value	Create Ref Input			
	Fig. 43 Drop of Bacnet Value			
	• Create Ref Output: Allows you to specify Bacnet value as Ref output that are shared with another controller.			
	• Create Ref Input: Allows you to specify Bacnet value as Ref input that are shared with another controller.			
Is Synchronized	Read-only. Indicates whether the project and the controller are synchronized (yes) or not (no).			
	Displays the controller's or project's current synchronization status. The engineering tool has the following available status:			
	• Unknown: This status is displayed under the following circumstances:			
	• When the device is not connected to the internet.			
Synchronization status	• When full teach is triggered, the controller is swapped in until the full teach is completed.			
	• In Sync: This status is displayed when there is no difference between the station and the controller.			
	• Out Of Sync: This status is read-only and displayed when a modification in the project differs from the controller or vice versa.			

Name	Description		
	Controller differs from Project: This status is read-only and displayed when some changes happen in controllers, simulated by having two stations having the same controller.		
	 From station 1, perform full teach to the controller and mark the controller In Sync, stop station 1 and start station 2. 		
	 From station 2, teach another application to the same controller. Stop station 2 and reopen station 1 and check the sync status. 		
	 Project has modifications: This status is displayed when a station is modified. 		
	• Project is empty: This status is displayed when the clear project operation is performed from the IRM Bacnet Device Manager view (only for swapped In) or from IRM Program.		
	• Controller is empty: This status is displayed when the clear project and clear controller operation is performed from the IRM Bacnet Device Manager view (only for swapped In) or from the IRM Program.		
	• Controller and Project empty: This status is displayed when the clear project and clear controller operation is performed from the IRM Bacnet Device Manager view (only for swapped In) or from the IRM Program.		
	• BACnet Object configuration changed: This status is displayed when the BACnet points in the application is modified.		
	• Project modified and BACnet Object config. changed in controller : This status is displayed when the project is modified and BACnet changes occur in the controller.		
Last program change	Read-only. Displays the date of the last program change.		
Last Commissioned	Read-only. Displays the date of the last commissioning.		
Modbus Baud Rate	Modbus devices must have an identical baud rate, an identical parity, and an identical number of stop bits, refer to Modbus Engineering on page 323.		
Modbus Parity	Modbus devices may have a configurable parity. For more details, refer to Modbus Engineering on page 323.		
	If Modbus Parity = None, select Modbus Stop Bits = "2". If Modbus Parity = Even or Odd, select Modbus Stop Bits = "1". For more details, refer to Modbus Engineering on page 323.		
Modbus Stop Bits	Modbus Parity Even Modbus Stop Bits 1 Sylk Details 1 Custom Sensor Config Details 2		
	Fig. 44 Modbus Stop Bits		
Sylk Details	Displays Sylk Device usage details. For more details, refer to Sylk Details on page 73.		
Custom Sensor Configuration	If the sensor does not meet any standard characteristics of the available sensors, you can select the type as a custom sensor and set its characteristics, for more details refer to Custom Sensor Configuration Details on page 74.		

Name	Description
Daylight Saving	This feature is integrated when the daylight setting is enabled, refer to Day Light Savings settings on page 78.
Name Daylight Saving Application Details Config	Description This feature is integrated when the daylight setting is enabled, refer to Day Light Savings settings on page 78. The "Application Details Config" allows you to configure the legacy VAV templates which uses standard BACnet object based of VAV balancing procedure. Using "Application Type" and "Application Feature" you can set up the VAV balancing using standard BACnet object. Application Details Config Correl application Application Details Config Fig. 45 Application Details Config Note: Only the "VAVZone Terminal Single Duct Application Remaining" application type is available for balancing; all other application type options under "Application Type" are non - functional. It's there for future developments. Note: It recommended not to use Application Details Config when you use Global balancing tool or VAV balancing mobile app for balancing Global balancing objects. Example: In the below example the "VAV Zone Terminal Single Duct Application" is selected without peripheral reheat valve override so in the balancing view peripheral valve override option is hidden. Application Details Config Application" is hidden. Application Details Config Application" is hidden. Application Type Application Type It recommended not to use Application Details Config when you use Global balancing tool or VAV balancing mobile app for balancing view peripheral valve override option is hidden. Application Details Config Appl
	Measured Flow cfm Set Start K Factor Balancing Start Maximum Balancing Start Minimum Balancing
	Maximum Flow Setpoint 800 cfm Set Set mode to auto Minimum Flow Setpoint 300 cfm Set
	Valve override Re-heat Valve Override NaN % Override Auto
	Fig. 46 VAV Balancing View

Description Name In the below example the "VAV Zone Terminal Single Duct Application" is • selected with "Peripheral reheat valve override" and "Reheat valve Override" so in the balancing view both the features are displayed. ApplicationType VAV Zone Terminal Single Duct Application ApplicationFeature Air Balance Supported Valve Override Supported Peripheral Heat Valve Override Supported Supported Supported Parallel fan Application Details Config \gg × Flow balancing parameters Flow balancing status Device Mode Auto s Set Actuator Travel Time 90 Damper Position 100.000 % Sensed Flow K Factor 904.00 Set Flow Pressure 8 inches, round Inlet Diameter Flow balancing actions Start Zero Balancing ft² Set Inlet Area Start K Factor Balancing Start Maximum Balancing cfm Set Measured Flow Start Minimum Balancing Maximum Flow Setpoint 800 cfm Set Set mode to auto Reset to factory defaults Minimum Flow Setpoint 300 cfm Set Fig. 47 Application Details Config

Memory Usage

The memory (RAM) of the controllers varies based on the memory utilized by the device, application, and parameters.

Controller	Maximum Memory
CVAV/FCU controller	344 KB
IP/MSTP VAV controller	2 MB
Unitary	2 MB

You can use the memory usage parameters to check the memory consumption of the current application. This is an approximate calculation of the application in the tool but not a real-time consumption within the controller.

To check the memory usage of IRM Bacnet device.

Step 1. Expand the **Bacnet Network > Irm Bacnet device > IRM Program** and doubleclick on **Control Manager.**

In the control manager property sheet, you can check the memory usage of the BACnet device



Fig. 48 Memory Usage parameters

The memory usage parameters also displays the application or client data's memory (Function Block Name, Irm Folder Name, Annotation, Subfolder Count, Composite Flash Memory) for the whole application. Under client data, you can see the distribution of client data memory usage.

- **Memory Usage:** Memory utilized by the application folders.
- Function Block Name/Annotation/Composite Flash Memory Usage: Memory utilized by the function block folders.

The sum of memory utilized by the Irm folder client data and a Irm function block client data is sent to the controller.

Note: Teach time can vary based on the Client Data memory usage, irrespective of the memory usage.

The memory usage can be viewed on the property sheets of the different levels:

To check the memory usage of the IRM program:

Step 1. Expand the Bacnet Network > Irm Bacnet Device > right-click IRM Program > Views > AX property Sheet.

In the IRM program property sheet, you can get the sum of memory utilized by applications, irmfolders, and functional blocks

Ρ	roperty Sheet			
æ	IRM Program (Irm Program)			
	Execution	0		
	Memory Usage	DDC Memory: Function Block Name	1% of 40.0 KE /IRM Folder Name/Annotation/ 0% of 900 B	³ ∓
4	<u> </u>	SubFolder Count/Co	mposite Flash Memory Usage:	
	Sub Folder Count	0		
	🗎 Function Block Count	0		

Fig. 49 Irm Program AX property sheet

To check the memory usage of the periodic program:

Step 1. Expand the Bacnet Network > Irm Bacnet Device > IRM Program > right-click Period program > Views > AX property Sheet.

In the periodic program property sheet, you can get the sum of memory utilized by applications, irmfolders, and functional blocks.

P	rope	erty Sheet				
6	Per	riodic program	(Irm Fold	er)		
		Execution		0		
				DDC Memory:		1% of 8.00 KB
		Memory Usag	e	Function Block Name SubFolder Count/Co	e/IRM Folder Name/Annotation/ mposite Flash Memory Usage:	0% of 900 B ∓
	Û,	Sub Folder Co	ount	0		
	Ģ	Function Bloc	k Count	0		

Fig. 50 Periodic Program Property Sheet

To check the memory usage of the IRM folder:

Step 1. Expand the Bacnet Network > Irm Bacnet Device > IRM Program > Period program > right-click IrmFolder > Views > AX property Sheet. In the memory usage property sheet, you can get the sum of memory utilized by applications, irmfolders, irmsubfolders, and functional blocks.

Property Sneet		
👩 IrmFolder (Irm Folder)		
Execution	1	
	DDC Memory:	2% of 16.0 KB
Memory Usage	Function Block Name/IRM Folder N SubFolder Count/Composite Flash	lame/Annotation/ 0% of 900 B Memory Usage: ●
) Sub Folder Count	2	
Function Block Count	2	
🕨 🫕 Aia	Aia	
🕨 🫕 PidA	Pid A	
🕨 💽 IrmFolder	Irm Folder (Folder)	
IrmSubFolder	Irm Sub Folder	
IrmSubFolder1	Irm Sub Folder	

Fig. 51 Irmfolder Property Sheet

Each controller model has a different maximum memory capacity

Sub Folder Count: This field is read-only and displays the number of sub-folder configured per Irmfolder.

Function Block Count: This field is read-only and displays the number of function blocks configured per Irmfolder.

Note: To optimize memory usage, keep the number of folders as low as possible and the number of function blocks per folder as high as possible.

The calculated memory consumption will be indicated graphically and as a percentage in the traffic light symbol as follows:

Green	> 80 %
Green	> 80 %

- Yellow < 80 %
- Red > 90 %

To check the memory usage of the functional block:

Step 1. Expand the **Bacnet Network > Irm Bacnet Device > IRM Program > Period program >** right-click **functional block > Views > AX property Sheet.** In the memory usage property sheet, you can get the sum of memory utilized by applications functional block.

Ŧ	▲	Aia	Aia		
		Execution		1	
		📔 Function Block Name	Annotation/Composite Flash Memory Usage	0	B [0 - 900]

Fig. 52 Function Block AX Property Sheet

Flash Memory Exceeded FBs & Irm Folder

Folder details.

The Flash Memory Exceeded FBs & Irm Folder list the details of the Function block, Irm folders, or subfolders configuration that exceed the defined memory limit (900 bytes).

To check the flash memory details of Irm Bacnet Device:

Step 1.Expand BacnetNetwork > Controller > IRM Program > Control Manager >
Flash Memory Exceeded FBs & IRM Folders.In the description you can check the Flash Memory Exceeded FBs & Irm

 Flash Memory Exceeded FBs & IRM Folders Flash Memory Exceeded FBs & IRM Folde...
 Function Block Name/IRM Folder Name/Annotation/SubFolder Count/ Composite Flash Memory Exceeded Function Blocks and IRM Folders
 Description

Fig. 53 Flash Memory Exceeded FBs

Using the details from Flash Memory Exceeded FBs & Irm Folder section, you can verify the property sheet and re-configure the respective function block, Irm folders, or subfolders to meet the design limit.

Property Sheet					
B IrmFolder (Irm Folder)					
Execution	1				
	DDC Memory:		1% of 8.00 KE	3	
54	Function Block Name/IRM Folder Name/Annotation/ SubFolder Count/Composite Flash Memory Usage:		0% of 900 B	ŧ	
Memory Usage				Used	Allocated
			Application:	40 B	4.00 KB
			Parameter:	40 B	4.00 KB
🗎 Sub Folder Count	0				
Function Block Count	0				

Fig. 54 Irm Folder
Sylk Details

You can check the Sylk device power consumption, Sylk proxy file size, and host Sylk config file size of the configured Sylk device after configuring the Sylk devices on the wire sheet. Navigate to Sylk details under the control manage to view the details.

To check the Sylk details of Irm Bacnet Device:

Expand BacnetNetwork > Controller > IRM Program > Control Manager > Sylk Details.

~	Sylk Details Sylk D	Sylk Details					
	Total Sylk Power Consumption	25.00	96				
	📔 Is Sylk Configuration Downloaded	e false					
	Host Sylk Config File Size	592	[0-8192]				
	📔 Sylk Proxy File Size	1145	[0-8184]				

Fig. 55 Sylk Details

In the Sylk details, you can check the total Sylk power consumption, host Sylk config file size, Sylk proxy file size, and the Sylk configuration downloaded status.

Custom Sensor Configuration Details

If the sensor you want use is not available in the predefined list, you can configure a custom sensor and use in the logic.

Note: Users can configure up to ten custom sensor configurations in the engineering tool.

Custom sensor can be configured for these 3 types: current, voltage, and resistive

- **Resistive Input:** A resistive input point is an analog point which configures an UI to read resistance from 0 to 300,000 ohms.
- **Voltage Input:** A voltage input point is an analog point that configures an UI to read a voltage signal from 0 to 10.3 Volt.
- **Current Input:** A current input point is an analog point that configures an UI to read resistance from 0 to 20 mA.

Note: The note below is only applicable to IRM compact VAV controller.

To perform the current sensor type connection in the custom sensor configuration, connect an external 500 Ohm resistor to convert current to volt to measure 0 (2) to 20 mA, which works without hardware change.



0 (4) ... to 20 mA (via external 499 Ω / 0.25 % resistor).

Fig. 56 Current Sensor Type Connection

The following table describes the configuration properties and their definitions. **Table 22 Custom Sensor Property**

Name	Description				
Enable	Select true to enable the selected custom sensor configuration.				
Sensor Name	Configure the name for the custom sensor. Once the custom sensor is configured, user can identify the custom sensor using this name when configuration Analog Input.				
Sensor Type	Select sensor input (current, voltage, and resistive) from the sensor type drop-down menu.				
Specification Unit	The specification unit option in the drop-down menu depends upon the data type selected while configuring the details on the add window. This is the sensor manufacture specified unit				
Linearization	The linearization field, where the linearization points are provided to define the characteristics of the sensor. The tabular conversion dialog window is displayed.				
Sonsorlow	Set the lower limit the of the sensor as per project requirement.				
Limit	Note: The configured lower limit should not be below than the sensor's manufacturer low limit.				

Name	Description				
Sensor High Limit	Set the high limit the of the sensor as per project requirement. Note: The configured high limit should not be exceed than the sensor's manufacturer high limit.				
	This is used to configure the sensor output behavior based on the low and high limits and what should happen when the value falls outside of the limits				
Sensor Reading	 Value Is Invalid Outside High And Low Limit: when output crosses the limit, the output becomes invalid. 				
Outside Limits	• Clamp Value To High And Low Limits: when output crosses the high limit or low limit, and the output is clamped to a low or high limit; it doesn't become invalid.				
	• Continue Linearization Without Clamp: when the user wants to continue sensor reading outside the high limit.				
Offset	Offset value to add on top of value measured by the sensor. This field is used to correct the sensor reading errors				
Validation Text	Used to report the errors in the custom sensor configuration, to enable user to correct the errors				

Table 22 Custom Sensor Property (Continued)

Steps to configure Custom Sensor:

Step 1. Navigate to **IRM Bacnet Device > IRM Program** and expand the **Control Manager** details.

Step 2. Select the **Custom Sensor Details** and configure the fields.

- Q	Custom Sensor1 Custom Sensor C	Config Component
	📔 Enable 📃	true 🗸
	🕤 证 Custom Sensor Config Data 🛛 Cus	tom Sensor Config
	油 Sensor Name	
	📔 Sensor Index	101
	📔 Sensor Type	Current 👻
	Specification Unit	electric current (A) 🔹 ampere (A) 😴 🐨
	Linearization	💉 D
	📔 Sensor Low Limit	-inf
	📔 Sensor High Limit	+inf
	📔 Sensor Reading Outside Limit	Value Is Invalid Outside High And Low Limit 🔹
	0ffset	0.00
	Cu	stom sensor name Empty.

Fig. 57 Custom Sensor Details

- Step 3. Select **Sensor Type** as current, resistive, or voltage.
- Step 4. Enter the **Sensor Name**.
- Step 5. Select the **Specification Unit** from the drop-down list.

Step 6. Click on the edit icon 🖋 next to the **Linearization** field.



Fig. 58 Tabular Conversion Dialog Box

Step 7. Click **Add.**Update the sensor source and target values as per the manufactures sensor specification sheet.

Tabular Conversion Dialog X									
Description: CustomResistive									
Source	Result	•	(+) Add						
0.0	-276	-	Nesort						
1	-205		Delete All						
2	-139	1	👕 Import						
3	-64	1	Export						
4	-41	1							
5	-8	1							
6	17	1							
	Ok	Cancel	L						



Step 8. Enter the low and high limit sensor values in the **Sensor Low Limit** (sensor value at 0 mA) and **Sensor High Limit** (sensor value at 20 mA) fields respectively, as per sensor data sheet.

Similarly, enter a value for the sensor resistance and sensor voltage.

- Step 9. Select the **Sensor Reading Output Limits** from the drop-down menu.
 - Value is invalid outside High Limit option: If the output exceeds the limit, the output is becomes invalid.
 - **Clamp Value as High and Low Limit option:** If the output crosses the high or low limit, it is locked to the low or high limit and remains valid.
 - **Continue Linearization Without Clamp option:** If the user wants to continue the sensor reading outside the high limit.

Step 10. Enter the **Offset** value.

Step 11. Click Save after entering the required details.

If any field is not configured, the **Validation Text** will display the error message.

Custom Sensor Config Details Custom	Sensor Config Details				
💌 🗑 Custom Sensor1 🦳 Custom Sensor C	onfig Component				
🗎 Enable 📃 🔵	true 💌				
🔻 证 Custom Sensor Config Data 🛛 Cus	tom Sensor Config				
🕥 Sensor Name	Sensor01				
Sensor Index	101				
Sensor Type	Current				
Specification Unit	electric current (A) 🔹 ampere (A) 🔹 🕑 👻				
📔 Linearization	<i>. ∎</i>				
📔 Sensor Low Limit	30.00 A [20.00-60.00]				
🕥 Sensor High Limit	70.00 A [20.00-60.00]				
Sensor Reading Outside Limit	Clamp Value To High And Low Limits				
Offset	2.12				
Validation Text					

Fig. 60 Custom Sensor Config Details

Once the custom sensor is configured, you can use these custom sensor configurations into the UI terminals of the controller. All the custom sensor configurations are available under characteristic in the UI terminal.

To use the custom sensor:

Step 1. Open the **UI terminal** and select custom sensor from the **Characteristic** dropdown list.



Fig. 61 UI Terminal

Day Light Savings settings

The daylight saving setting is a part of the control manager, and it enables when it comes into effect.

Steps to configure Day Light Savings settings:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program >** expand the **Control Manager**.
- Step 2. Double-click Day Light Saving and set Enable field to "true".



Fig. 62 Day Light Saving configuration

- Step 3. Configure the following parameters of Day Light Savings:
 - Start Month: January December
 - End Month: January December
 - Start Day: Week Day 1 Week Day 31
 - End Day: Week Day 1 Week Day 31
 - Start Time: hr [0 23]
 - End Time: hr [0 23]
 - Off Set Minutes: min [0 240]

Clear the daylight savings check box and download it to the controller for the controller to stop using daylight savings.

Periodic Program

Periodic program creates the control strategy running cyclically on a fixed time base. All the function blocks in the root folder and its subfolders are processed. The periodic program is executed every 500 ms within the controller.

	-7	Property Sheet		
Ny Network		Periodic program (Irm Fol	der)	
		Execution	0	
🔻 🗞 IRM Program	 IRM Program 		DDC Memory:	1% of 8.00 KB
🕨 🗸 Control Manager	_	🗎 Memory Usage	Function Block Name/IRM Folder Name/Annotation/ 0% of 900 B	
🕨 💽 Periodic program			SubFolder Count/Co	mposite Flash Memory Usage:
Event program	- 1	📲 Sub Folder Count	0	
 Image: Control of the second se		Function Block Count	0]
Alarms				

Fig. 63 Periodic Program property sheet

Steps to configure Periodic Program:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program** > Doubleclick on the **Periodic Program** in the tree and select the wire sheet view.
- Step 2. Open the **honIrmControl** palette.
- Step 3. Add control items from the palette to the wire sheet via drag and drop and / or copy / paste.
- Step 4. Create or change the control logic by adding, deleting, moving icons, or adding and deleting connections.



Fig. 64 Periodic program wire sheet

Note: Irmfolders support a maximum of five levels of nesting. The sixth level would be the component in the ord.



Fig. 65 IRM Folders

Note: A Periodic Program can have up to five nested folders. If the maximum folder nesting level is exceeded, the engineering tool validates it. If an application with more than five nested folders fails the validation, the teach will fail with the controller error DDC ERR NESTING LEVEL EXCEEDED.

Periodic Program Synchronization Check

The control manager detects any modifications on the periodic program wire sheet function blocks. You can perform add, delete, move, connection deleted or added modifications. As a result of the modification, a yellow "warning" symbol is displayed on the modified function block, indicating the application is in out of sync stat.

Add	
Add	2
Out	- {null}
No Of Inputs	- {null}
In A	- {null}
In B	- {null}
In C	- {null}
In D	- {null}
In E	- {null}
In F	- {null}
In G	- {null}

Fig. 66 Warning

The application synchronization status depends on the teach mode configuration (On demand or Immediate). After synchronization, the warning symbol is removed from the function block, indicating the synchronized state. Synchronization happens immediately in the "Immediate" mode. For more details, refer Control Manager on page 62.

Event Program

The Event program creates an event-driven control strategy. All the function blocks in the root folder and its subfolders are processed.

The event program is executed:

- When the time interval of 1000 ms has elapsed.
- When a Binary Input value is changed in On board IO folder.
- If the value of any Modbus read register changes.

When the service pin is pressed.

Steps to configure Event program:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program** > Doubleclick on the **Event Program** in the tree and select the wire sheet view.
- Step 2. Open the **honIrmControl** palette.
- Step 3. Add control items from the palette to the wire sheet via drag and drop or copy and paste.
- Step 4. Create or change the control logic by adding, deleting, moving icons, or adding and deleting connections.



Fig. 67 Wire sheet

Note: A Event Program can have up to five nested folders. If the maximum folder nesting level is exceeded, the engineering tool validates it. If an application with more than five nested folders fails the validation, the teach will fail with the controller error DDC ERR NESTING LEVEL EXCEEDED.

Event Program Synchronization Check

The control manager detects any modifications on the event program wire sheet function blocks. You can perform add, delete, move, connection deleted or added modifications.

As a result of the modification, a yellow "warning" symbol is displayed on the modified function block, indicating the application is in out of sync state.



Fig. 68 Synchronization Check

The application synchronization status depends on the teach mode configuration (On demand or Immediate). After synchronization, the warning symbol is removed from the function block, indicating the synchronized state. Synchronization happens immediately in the "Immediate" mode. For more details, refer Control Manager on page 62.

Onboard IO

Onboard IO shows the hardware configuration of the application. The hardware details displayed in Onboard IO can differ from the actual hardware layout of the physical controller. For proper operation, the project hardware properties does not have to match completely with the physical controller hardware.

But, if the difference is too much, the control manager will show incompatibilities, and the engineering tool will tell you what to do for synchronization.



Fig. 69 On board IO

Steps to use Onboard IO components:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program** > Doubleclick on the **Onboard IO** in the tree and select the wire sheet view.
- Step 2. Open the honIrmControl palette and add the single physical terminals to the wire sheet via drag and drop or copy / paste.



- Step 3. Create or change the control logic by adding, deleting, moving icons, or adding and deleting connections.
- **Note:** When discovering points on the Bacnet Network via Irm Bacnet Device Manager, the hardware I/O points of the IRM NX controllers are not detected or visible by default. To expose hardware I/O points on the Bacnet Network, refer to the Onboard IO Links from hardware to BACnet on page 141.

Onboard IO Synchronization Check

Any modifications on the onboard IO wire sheet are detected by the control manager. You can perform add, delete, move, connection deleted or added modifications.

As a result of the modification, a yellow "warning" symbol is displayed on the modified function block, indicating the application is in out of sync state.



Fig. 71 Synchronization Check

The application synchronization status depends on the teach mode configuration (On demand or Immediate). After synchronization, the warning symbol is removed from the function block, indicating the synchronized state. Synchronization happens immediately in the "Immediate" mode. For more details, refer Control Manager on page 62.

Reference Datapoints Usage

The reference datapoint is used to set up communication between BACnet controllers using reference input and reference output points.

When more than one BACnet controller is present in the control and monitoring system, the devices communicate with one another using the BACnet MSTP protocol. This allows one controller to read values from other controllers while also setting values on other controllers.

This data communication is achieved through the use of reference input and reference output points, which are assigned to physical or value BACnet points.

- The device instance, object instance, and object ID of the physical and value Bacnet points are manually entered for manual creation and mapping.
- The device instance, object instance, and object ID of the physical and value Bacnet points are automatically performed for automatic creation via drag and drop.
- **Note:** The engineering tool reference input and output function is a proprietary Honeywell Bacnet function.



Fig. 72 Manual Mapping of Reference Input Point with Physical Point



Fig. 73 Manual Mapping of Reference Output Point with Physical Point



* Physical input always creates reference input

Fig. 74 Automatic Mapping of Physical Input Point with Reference input



** Resulting reference point type is selectable

Fig. 75 Automatic Mapping of Physical Input Point with Reference input and output

Example

There are two controllers (BACnet device A and BACnet device B) in two different rooms on the BACnet MSTP bus. Controller BACnet device A has an outside air temperature sensor connected. The outside air temperature value sensed by controller BACnet device A should be provided to controller BACnet device B.

A third-party Bacnet MSTP wall module connected to an IRM NX controller should process values coming from the wall module.

Read or Write Directions

Reading a value: A reference input point (target) is used for reading a value from a physical or value Bacnet point (source).

Writing a value: A reference output point (source) is used for writing a value to a physical or value point (target).

COV and Polling

- If COV reporting is possible, the reference point's controller subscribes to the mapped physical or value point.
- If COV reporting is not possible, the mapped physical or value point is polled.

There are two ways for applying reference points in the application:

- Manual creation and mapping of reference points to Bacnet points (A).
- Automatic creation and mapping of reference points via drag and drop of Bacnet points (B).

Manual Reference Point Creation and Mapping

Reference input point (target): Manually creating and mapping the reference input point (target) to the physical or value Bacnet point is used to establish the reference input Bacnet point connection (source).

Reference output point (source): Manual mapping of the reference output point (source) to the physical or value Bacnet point is used to establish the reference output connection (target).

In both cases, the following device and object information from the Bacnet source or target points must be entered during the mapping:

- Device Instance (ID)
- Object type (Bacnet point type) = object ID
- Object Instance = object ID

Automatic Reference Point Creation and Mapping (A)

Reference points are created and mapped automatically by dragging and dropping physical or value Bacnet points onto the wire sheet.

The corresponding device and object information is included with the corresponding Bacnet point and does not need to be entered manually.

Client-Server Configurations: A client-server configuration with one client controller connected to multiple server controllers or third-party Bacnet devices is a typical application scenario for using reference points. The client implements the main control logic, writes values to server controllers or third-party Bacnet devices, and receives values from server controllers or third-party Bacnet devices.

Example:

The client controller:

- Reads the window contact status [EffWindow] from the server controller via RefIn.
- Reads the room temperature [ExtWmRmTemp] from the external Bacnet Wall Module via RefIn.
- Writes the occupancy status [EffOccMd] to an external Bacnet Wall Module via RefOut.

The server controller:

• Reads the fan output status [FanStage] of the staged fan (slow, medium, high) from the client controller via RefIn.



Fig. 76 Client-Server Configuration Using Reference Points

Manual Mapping of Reference Points (A)

Example:

Two IRM NX controllers and a wall module are on the MSTP bus in the client-server configuration:

- CLME-RL6N (client)
- CLME-RS5N (server)
- External Bacnet wall module

The CLME-RL6N client controller:

- Reads the window contact status [EffWindow] from the server controller via RefIn.
- Reads the room temperature [ExtWmRmTemp] from the Bacnet Wall Module via RefIn.
- Writes the occupancy status [EffOccMd] to an external Bacnet Wall Module via RefOut.

The CLME-RS5N server controller:

 Reads the fan output status [FanStage] of the staged fan (slow, medium, high) from the client controller via RefIn.

Reference Inputs

Based on the example above, the reference input functions of the CLME-RL6N client controller are described in the following.

The CLME-RL6N client controller:

- Reads the window contact status [EffWindow] from the server controller via RefIn.
- Reads the room temperature [ExtWmRmTemp] from the Bacnet Wall Module via RefIn.
- **Note:** The device IDs of the CLME-RL6N client and CLME-RS5N server controllers. In the below image, "5003" and "5001" (displayed in the discovered and database pane).

Database							
Name	Device ID	Status	Netwk	MAC Addr	Vendor	Model	Fir
💣 WEB-RS5N	device:5001	{ok}	10	23	Honeywell	RS5N	
WEB-RL6N	device:5003	{stale}	20	53	Honeywell	RS6N	

Fig. 77 Discovered view

Note: The read function of the CLME-RS5N server controller is described using the automatic creation via drag and drop, see Automatic Creation and Mapping of Reference Points (B) on page 98.

Steps to create reference input operation:

Step 1. In the Nav tree, expand the bacnet network and browse to the points directory of the CLME-RS5N server controller.



Fig. 78 Points

- Step 2. Double-click the points directory. This action opens Hon Bacnet Point Manage view.
- Step 3. Click **Discover**. This action discovers all the offline points.

IRM Offline Discovery					
Discovered					
Object Name	Object ID	Property ID	Index	Value	Description
🗄 🕔 HwCngOvrWtrTemp	analoginput:3	presentValue			Periodic program/IRMN_H_0001/0100_HvacMd/HwCngOvrWtrTemp
🗉 🕔 ExtOATemp	analogInput:10	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/ExtOATemp
🗄 🕔 HwRmHum	analogInput:9	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/HwRmHum
🗉 🕔 HwRmTemp	analogInput:4	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/HwRmTemp
🗄 🔘 HwRmCO2	analoginput:8	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/HwRmCO2
⊞ 🕔 Clg01Level	analogOutput:1	presentValue			Periodic program/IRMN_H_0001/0800_Clg01_FCU_Wtr/Clg01Level
🗄 🕔 Clg02Level	analogOutput:2	presentValue			Periodic program/IRMN_H_0001/0850_Clg02_FCU_FanOnly/Clg02Level
🗉 🕔 Htg01Level	analogOutput:3	presentValue			Periodic program/IRMN_H_0001/0900_Htg01_FCU_Wtr/Htg01Level
🗉 🔘 Htg02Level	analogOutput:4	presentValue			Periodic program/IRMN_H_0001/0950_Htg02_FCU_EHtg/Htg02Level
🗉 🕔 CngOvr01Level	analogOutput:5	presentValue			Periodic program/IRMN_H_0001/0980_ChgOvr01_FCUClg01Htg01/CngOvr01Leve
🗉 🕔 Fan Speed	analogOutput:7	presentValue			Periodic program/IRMN_H_0001/1025_Fan_Window_RmTemp_FanSel/FanSpeed
🗉 🕔 ExtCngOvrWtrTemp	analogValue:1	presentValue			Periodic program/IRMN_H_0001/0100_HvacMd/ExtCngOvrWtrTemp
	analogValue:9	presentValue			Periodic program/IRMN H 0001/0200 WM PID RmTemp/ExtWmFanSpeed

Fig. 79 Irm offline Discover

Discovered					
Object Name	Object ID	Property ID	Index	Value	Description
🗄 Fan Stage	multiStateOutput:1	presentValue			Periodic program/IRMN_H_0001/1025_Fan_Window_RmTemp_FanSel/FanStage
🗉 ExtOccSchedule	multiStateValue:1	presentValue			Periodic program/IRMN_H_0001/0001_Occupancy/ExtOccSchedule
🗄 🕒 EffOccMd	multiStateValue:17	presentValue			Periodic program/IRMN_H_0001/0001_Occupancy/EffOccMd
🗄 🕒 ExtOccSensor	multiStateValue:2	presentValue			Periodic program/IRMN_H_0001/0001_Occupancy/ExtOccSensor
🗄 HwOccSensor	multiStateValue:18	presentValue			Periodic program/IRMN_H_0001/0001_Occupancy/HwOccSensor
🗉 EffOccSensor	multiStateValue:3	presentValue			Periodic program/IRMN_H_0001/0001_Occupancy/EffOccSensor
🗉 🕕 ExtCngOvrWtrMedium	multiStateValue:4	presentValue			Periodic program/IRMN_H_0001/0100_HvacMd/ExtCngOvrWtrMedium
🗄 🕒 ExtPlantHvacMd	multiStateValue:5	presentValue			Periodic program/IRMN_H_0001/0100_HvacMd/ExtPlantHvacMd
🗉 🕒 ExtWmHvacMd	multiStateValue:6	presentValue			Periodic program/IRMN_H_0001/0100_HvacMd/ExtWmHvacMd
🗉 ExtWmReset	multiStateValue:9	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/ExtWmReset
🗉 🕕 ExtWindow	multiStateValue:7	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/ExtWindow
🗉 🕕 HwWindow	multiStateValue:19	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/HwWindow
🗄 🧿 EffWindow	multiStateValue:8	presentValue			Periodic program/IRMN_H_0001/0150_Sensors_WmReset/EffWindow
🗉 🕒 ExtWmOccCmd	multiStateValue:11	presentValue			Periodic program/IRMN_H_0001/0200_WM_PID_RmTemp/ExtWmOccCmd

Step 4. Sort the discovered points by clicking on the **Object Name** column.

Fig. 80 Discovered Pane

Derindia nagram/IDMN H 0001/0200 WM DID DmTemn/EvtWmFanStage

Step 5. In the point list, scroll to the 'EffWindow' Bacnet point. The Object ID, in this case 'multiStateValue:8'.

multiStateValue-12 presentValue

- Step 6. In the Nav tree, expand to the CLME-RL6N client controller.
- Step 7. Expand the **IRM Program** and double-click **Periodic Program** to add the reference input point.

• Nav			Wire Sheet
e o e	×	My Network	
	1	 WEB-RL6N WEB-RS6N Alarm Source Info Points Virtual Alarms Alarms Schedules Trend Logs Config IRM Program 	IRMN_H_0001 Im Folder Execution
		Control manager Periodic program Event program	
		On board IO	

Fig. 81 Periodic program folder

Step 8. Go to the honIrmControl palette, expand **BacnetObjects**, and drag and drop the **RefIn** to the wire sheet.

F C FytiWmFan Stage

	Periodic program		
	Event program		
	On board IO		Refin
	· 🖪		T CH
Palette			
r 🗙 🔊 👗 h	onIrmControl		
PhysicalPoints		1.	
BacnetObjects			
BacnetNumer	icInput		
B BacnetBoolea	nInput	C	
BacnetNumer	icOutput		
B BacnetBoolea	nOutput		
BacnetEnumC	Dutput		
BacnetNumer	icValue		
B BacnetBoolea	nValue		
BachetEnum			
	uc		
Refin			

Fig. 82 Periodic program wire sheet

Step 9. In the Name dialog box, change the name to EffWindow, and then click **OK**.



Fig. 83 Name dialog box

The EffWindow RefIn is added to the wire sheet.



Fig. 84 wire sheet

Step 10. Double-click the symbol to display the property sheet for the EffWindow Refln.

P	roperty Sheet	
	EffWindow (Ref In)	
	Execution	2
	- Out	- {null}
	💻 Status Flags	- {null}
	Units	No Units
Þ	Device Instance	4194303
Þ	🗘 Object Type	Analoginput
Þ	Dbject Instance	0
Þ	C Property Id	PresentValue
Þ	C Poll Rate	10 min
Þ	🛱 Initial Value	0.0
Þ	Bacnet Object Instance	1

Fig. 85 EffWindow Refin property sheet

Step 11. On the property sheet, expand device instance, object type, and object instance.

Property Sheet	
🚯 EffWindow (Ref In)	
Execution	2
— Out	- {null}
Status Flags	- {null}
Units	No Units
🔻 🗱 Device Instance	4194303
隌 Master Sync Enabled	🔵 true 🔽
Device Instance	4194303 [0-4194302]
🔻 🗱 Object Type	AnalogInput
🀚 Master Sync Enabled	🔵 true 🔽
Dbject Type	AnalogInput -
Object Instance	0
Master Sync Enabled	🔵 true 🔽
Object Instance	0 [0-4194302]
🕨 🗱 Property Id	PresentValue
🕨 🗱 Poll Rate	10 min
🕨 🎝 Initial Value	0.0
Bacnet Object Instance	2

Fig. 86 EffWindow RefIn property sheet

- Step 12. Enter in the values for the wall module and the EffWindow multistate value point as shown below.
 - **Device Instance**: device ID = 5001
 - **Object Type**: object ID = MultistateValue
 - Object Instance: object ID = 8

Pro	operty Sheet			
	EffWindow (Ref In)			
	Execution	2		
	- Out	- {null}		
	Status Flags	- {null}		
	Units	No Units		
Ŧ	🔅 Device Instance	4194303		
	Master Sync Enabled	🔵 true	*	
	Device Instance	5601	[0-4194302]	
Ŧ	🔅 Object Type	AnalogInput		
	Master Sync Enabled	🔵 true	•	
	Object Type	Multistate	Value 🗸	
Ŧ	🔅 Object Instance	0		
	Master Sync Enabled	🔵 true	•	
) Object Instance	0	[0 4194302]	
Þ.	🗘 Property Id	PresentValue	1	
Þ.	🔅 Poll Rate	10 min		
۶.	🏠 Initial Value	0.0		
Þ	Bacnet Object Instance	1		

Fig. 87 EffWindow RefIn property sheet

Step 13. Click Save.

The reference input in the CLME-RL6N client controller is mapped to the multistate value point EffWindow in the CLME-RS5N controller which provides the window contact status.

- Step 14. Apply the procedure in the same way for:
 - Reading the room temperature by mapping a reference input from the client controller to the analog value [ExtWmRmTemp] of the external Bacnet wall module.
 - Reading the fan stage by mapping a reference input from the CLME-RS5N server controller to the multistate output [FanStage] of the CLME-RL6N client controller.
- Step 15. For writing the occupancy status from the client controller to the external Bacnet wall module, please, see Reference Outputs on page 94 below.

Alternatively, you can use the "Automatic Reference Point Creation and Mapping (A) on page 87" method described in the section. Automatic Creation and Mapping of Reference Points (B) on page 98. This section uses fan stage reading as an example.

Step 16. If desired, you can change the setting for client sync or other settings.

Reference Outputs

In the following procedure, the reference output of the CLME-RL6N client controller is described below.

• The CLME-RL6N client controller writes the occupancy status [EffOccMd] to an external Bacnet wall module via RefOut.

Example:

Two IRM NX controllers and a wall module are on the MSTP bus in the client-server configuration:

- CLME-RL6N (client)
- CLME-RS5N (server)
- External Bacnet wall module

Steps to create reference output functions:

Note: The device ID of the external Bacnet wall module is 5008 (displayed in the Discovered and Database pane).

Database					
Name	Device ID	Netwk	MAC Addr	Vendor	Model
💣 WEB-RS5N	device:5001	10	23	Honeywell	R\$5N
💣 WEB-RL6N	device:5003	20	53	Honeywell	R\$6N
💼 Ex BacnetWmodule	device:5008	50	75	Honeywell	TR120

Fig. 88 Controller and external Bacnet wall module

- Step 1. In the Nav tree, expand the Bacnet network and browse to the points directory of the wall module.
- Step 2. Double-click the points directory and click **Discover** to discover the points.
- Step 3. Sort the discovered points by clicking on the **Object Name** column.
- Step 4. In the point list, scroll to the "EffOccMd" Bacnet point.

Note: The Object ID, in this case, for example, 'multiStateValue:13'.

- Step 5. In the Nav tree, expand to the CLME-RL6N client controller.
- Step 6. Expand the **IRM Program** and double-click the **Periodic Program** to add the reference output point.



Step 7. In the honIrmControl palette, expand **BacnetObjects**, and drag and drop the **RefOut** to the wire sheet.



Fig. 90 Periodic program wire sheet

Step 8. Change the name to "EffOccMd" in the Name dialog box, and then click **OK**.



Fig. 91 Name dialog box

Step 9. The EffOccMd RefOut is added to the wire sheet.



Fig. 92 wire sheet

Step 10. Double-click the symbol to display the property sheet for the reference output.

Pi	roperty Sheet	
	EffOccMd (Ref Out)	
	Execution	3
	💻 Status Flags	- {null}
	— In	- {null} ¥
Þ	Device Instance	4194303
Þ	🗘 Object Type	AnalogOutput
Þ	Object Instance	0
Þ	🌣 Property Id	PresentValue
Þ	Deriority	10
Þ	Send Time Interval	10 min
Þ	🔅 Send On Delta	0.5
Þ	🗱 Initial Value	0.0
Þ	Decnet Object Instance	1

Fig. 93 EffOccMd RefOut property sheet

Step 11. On the property sheet, expand device instance, object type, and object instance.

* 1	🗘 Device Instance	4194303	
	Master Sync Enabled	🔵 true 🔍	
	Device Instance	4194303	[0-4194302]
	Object Type	AnalogCutput	
	Master Sync Enabled	🔵 true 🤝	
	Object Type	AnalogOutput	
-	Object Instance	0	
	Master Sync Enabled	🔵 true 🔍	
	Object Instance	0	[0-4194302]

Fig. 94 EffOccMd RefOut property sheet

- Step 12. Enter the values of the external bacnet wall module and the EffOccMd multistate value point as shown in steps 1 and 4.
 - Device Instance: device ID = 5008
 - **Object Type**: object ID = multistateValue
 - Object Instance: object ID = 13

Step 13. Click Save.

The reference input in the CLME-RL6N client controller is mapped to the multistate value point EffOccMd in the wall module.

Step 14. If desired, you can change the setting for client sync.

Client-Server Synchronization

- If client Sync Enabled is set to true, this property will be synchronized between the client and the server whenever a client sync operation is performed.
- If the flag on the source device is set to false, this parameter will not be synchronized to all target devices.

Automatic Creation and Mapping of Reference Points (B)

The engineering tool automatically creates reference points when Bacnet points are copied onto the wire sheet. Therefore, you do not have to enter the values for device instance, object type, an object instance of the target controller, and point manually since they automatically come with the Bacnet point.

This automatic creation is always executed whenever a Bacnet point is copied onto the wire sheet of a different controller or an external Bacnet device. In the drop result, the type of reference point, input or output, is to be created are defined in the control manager as described in the drop settings.

Property Sheet	
✓ Control Manager (Irm Control Mana	ager)
Author	Name
Description	IRMN_H_0001 1.0.1.5
Application Type	y4t.dbm
Function Block Family	IrmControl
Function Block Version	0.8.0.0
Number Of Folders	18
Number Of Function Blocks	759
📔 Number Of Links	1004
Memory Usage	44% of 344 KB ▼
Controller Hardware Features	
Hardware Compatibility	No
Controller Connection	Bacnet
Teaching Mode	On Demand
Measurement Type	SI-Metric 🔍
Drop Of Bacnet Output	Create Ref Output
🗎 Drop Of Bacnet Value	Create Ref Input
Communication Status	Offline
Is Synchronized	No No
Synchronization Status	Unknown
📔 Last Program Change	22-May-2019 11:50 AM EDT
Last Commissioned	30-Apr-2019 01:09 AM EDT

Fig. 95 Irm Control Manager property sheet

In the control manager, the result for drop of a Bacnet output and a Bacnet value point can be selected. For both point types, either a reference output or a reference input can be selected as a drop result.

Drop Of Bacnet Output	Create Ref Output
Drop Of Bacnet Value	Create Ref Output
Communication Status	Create Ref Input
Communication Status	- onme

Fig. 96 Create Ref Output

Note: Another controller cannot override the input points. Hence, a reference input is always created when dropping an input onto the wire sheet, and a drop setting for inputs in the control manager is not provided.

Example: Two IRM NX controller and a wall module are on the MSTP bus in the client-server configuration:

- CLME-RL6N (client)
- CLME-RS5N (server)
- External Bacnet wall module

The CLME-RL6N client controller:

- Reads the window contact status [EffWindow] from the server controller via RefIn.
- Reads the room temperature [ExtWmRmTemp] from the Bacnet wall module via RefIn.
- Writes the occupancy status [EffOccMd] to an external Bacnet wall module via RefOut.

The CLME-RS5N server controller:

• Reads the fan output status [FanStage] of the staged fan (slow, medium, high) from the client controller via RefIn.

Based on the example above, the reference input function of the CLME-RS5N server controller is described.

Steps to create and Map of Reference Points:

- Step 1. In the Nav tree, expand the Bacnet network and browse to the points folder of the CLME-RL6N client controller.
- Step 2. Double-click the points folder and discover the points by clicking discover on the bottom.

Nav	20,	Bacnet Discover Points				
r Nav		Bacnet Discover Points covered two costs and the points two costs and the po	Object ID analoginput:2 analoginput:3 analoginput:4 analoginput:6 analoginput:9 analoginput:9	Property ID presentValue presentValue presentValue presentValue presentValue presentValue	index	Value 1.00 +inf 0.00 1.00 0.00 999.00
 IRM Program RS5N 		Clg02Level	analogOutput:1	presentValue		0.00
Alarm Source Info Onits	± (Htg01Level	analogOutput:3 analogOutput:4	presentValue presentValue		0.00
Virtual Alarms	E C	CngOvr01Level	analogOutput:5	presentValue		0.00

Fig. 97 Bacnet Discover Points

Step 3. Sort the discovered points by clicking on the **Object Name** column.

Step 4. In the point list, scroll to the 'FanStage' Bacnet point.

📀 🥕 Bacnet Discover Points				
Discovered				
Object Name	Object ID	Property ID	Index	Value
🗉 📧 ExtWmRmHum	analogValue:11	presentValue		nan
🕀 ExtWmRmTemp	analogValue:10	presentValue		nan
🕀 🔃 ExtWmRmTempSetpt	analogValue:8	presentValue		nan
🕀 🚺 FanCause	analogValue:33	presentValue		48.00
🕀 💽 Fan Speed	analogOutput:7	presentValue		0.00
🗉 🤒 Fan Stage	multiStateOutput:1	presentValue		1
🗄 🏮 Fan Stage 🗄 🏮 High	multiStateOutput:1 notificationClass:1	presentValue notificationClass		1
Image: State	multiStateOutput:1 notificationClass:1 analogValue:28	presentValue notificationClass presentValue		1 1 69.00
FanStage G High G Htg01Cause Mtg01Level	multiStateOutput:1 notificationClass:1 analogValue:28 analogOutput:3	presentValue notificationClass presentValue presentValue		1 1 69.00 0.00
Image: Stage	multiStateOutput:1 notificationClass:1 analogValue:28 analogOutput:3 analogValue:29	presentValue notificationClass presentValue presentValue presentValue		1 1 69.00 0.00 69.00
Image: Stage	multiStateOutput:1 notificationClass:1 analogValue:28 analogOutput:3 analogValue:29 analogOutput:4	presentValue notificationClass presentValue presentValue presentValue presentValue		1 1 69.00 0.00 69.00 0.00
Image: Stage	multiStateOutput:1 notificationClass:1 analogValue:28 analogOutput:3 analogOutput:4 analogOutput:3	presentValue notificationClass presentValue presentValue presentValue presentValue		1 1 69.00 0.00 69.00 0.00 +inf

Fig. 98 FanStage Bacnet Point



Name	Туре	Enabl	ed Object ID	Property ID	Index	Tuning Policy Name	Data Type	Read
FanStage	Enum Writable	false	multiStateOutput:1	Present Value	-1	IrmTuningPolicy	Unsigned	unsubscribed
🚡 Name	1	FanStag	e					
Туре	1	Enum Wr	itable 🔽					
Enabled		🔵 false						
Dbject ID	1	Multi S	tate Output	1				
Property	ID	Present	Value					
Index		-1						
Tuning P	olicy Name	IrmTuni	ngPolicy 🗸					
Data Type	e I	Unsigne	d		7	-B		
Read	1	unsubsc	rib <mark>e</mark> d		Ā	-B J		
Write		writabl	e		Ž	• B •••		
Device Fa	icets	>>	• •					
Facets		>>	• •					
Conversi	on [Defau	lt	-				
0								

Fig. 99 Add dialog box

Step 6. Click **OK** in the Add dialog box. The point will be added to the Database and the Points folder.

G FanStage	0 {disabled fault stale} @d	ef multiStateOutpu	t:1 Present Value	-1	unsubscribed	Writable
Name	Out	Object ID	Property ID	Index	Read	Write
Database						
⊞ 🙃 EffOccMd		multiStateValue:17	presentValue		Periodico	roeram/IRMN H 0001/0001 Occupancy/EffOccM
🗄 🚺 ExtOccs	Schedule	multiStateValue:1	presentValue		Periodic p	rogram/IRMN_H_0001/0001_Occupancy/ExtOccS
🕀 🌔 Fan Sta	ge	multiStateOutput:1	presentValue		Periodic p	rogram/IRMN_H_0001/1025_Fan_Window_RmT
🖽 🚯 Fan Cau	ise	analogValue:33	presentValue		Periodic p	rogram/IRMN_H_0001/1050_Fan_Outputs/FanC
🗄 🕔 CngOvi	r01Cause	analogValue:30	presentValue		Periodic p	rogram/IRMN_H_0001/0980_ChgOvr01_FCUClg0
🕀 🕔 Htg02C	ause	analogValue:29	presentValue		Periodic p	rogram/IRMN_H_0001/0950_Htg02_FCU_EHtg/H
🕀 🕔 Htg01C	ause	analogValue:28	presentValue		Periodic p	rogram/IRMN_H_0001/0900_Htg01_FCU_Wtr/Ht
E 🕔 Clg02C	ause	analogValue:27	presentValue		Periodicp	rogram/IRMN_H_0001/0850_Clg02_FCU_FanOnl

Fig. 100 Database

- Step 7. In the Nav tree, browse to the CLME-RS5N server controller.
- Step 8. Expand the IRM Program directory and double-click Control Manager.
- Step 9. Select Create Ref Input for Drop of Bacnet Output property.
- **Note: Drop of Bacnet Output** property is mandatory for outputs and value points, but not necessary for input points.



Fig. 101 IRM Program Folder

Step 10. Double-click the control manager folder, **Periodic Program** or **Event Program**, to which you want to add the FanStage Bacnet point.



Fig. 102 wire sheet

- Step 11. Navigate to the points directory of the CLME-RL6N client controller and copy the FanStage bacnet point to the wire sheet of the CLME-RS5N server controller.
- Step 12. In the Name dialog box, click **OK**.

A reference input point with the name of the FanStage, is created.

FanStage_RefOut Ref Out	
Execution	4
Status Flags	- {null}
In	- {null}
	23

Fig. 103 FanStage RefOut function block

Step 13. Double-click the symbol of the reference input point to display the FanStage RefOut property sheet.

Pr	operty Sheet			
	FanStage_RefOut (Ref Out)			
	Execution	4		
	💻 Status Flags	- {null}		
	— In	- {null}	Ŧ	
w	Device Instance	-1		
	Master Sync Enabled	🔵 true 🗾 🚽		
	Device Instance	-1	[0-4194302]	
w	🔅 Object Type	MultistateOutput		
	Master Sync Enabled	🔵 true 🔍		
	Object Type	MultistateOut	put 👻	
w	Object Instance	1		
	Master Sync Enabled	🔵 true 🗸 🗸		
	Dbject Instance	1	[0-4194302]	
	C Property Id	PresentValue		
Þ	C Priority	10		
Þ	Send Time Interval	10 min		
•	Send On Delta	0.5		
Þ	🔅 Initial Value	0.0		
Þ	Bacnet Object Instance	2		

Fig. 104 FanStage RefOut property sheet

In the property sheet, you can see that the reference input is already mapped to the Bacnet multistate output point indicated by the values for device instance, object type, and object instance.

Step 14. If desired, you can change the setting for client sync.

Client-Server Synchronization

• If client Sync Enabled is set to true, this property will be synchronized between the client and the server whenever a client sync operation is performed.

If the flag on the source device is set to false, this parameter will not be synchronized to all target devices.

CHAPTER CONFIGURE IRM NX CONTROLLERS

This chapter describes the steps to configure the new IRM NX controller, controller MAC address assignment, IP settings, linking of controller IO points to the BACnet points, and terminal assignment view.

Configure Air Flow Measurement Units

Before starting the application in the engineering tool, it is important to define the correct air flow measurement type.

Steps to configure air flow measurement units:

- Step 1. In the Nav tree, go to **BacnetNetwork > Irm Bacnet Device >** expand **IRM Pro**gram folder.
- Step 2. Double click on the Control Manager.
- Step 3. Select the desired **Measurement Type** and **Air Flow Unit** from the drop-down list.

Property Sheet				
✓ Control Manager (Irm Control Manager)				
Author				
Description				
Device Model Name	VA75IB24NM -			
Application Type	xod_s3i			
Application Details	Application Details			
Function Block Family	IrmControl			
Function Block Version	2.0.0.0			
Number Of Folders	5			
Number Of Function Blocks	5			
📔 Number Of Links	0			
📔 Number Of Out Save Enabled Properties	0			
Memory Usage	DDC Memory: 2% of 2.00 MB Function Block Name/IRM Folder Name/Annotation/ 0 B Consumed SubFolder Count/Composite Flash Memory Usage:			
Flash Memory Exceeded FBs & IRM Folders	Flash Memory Exceeded FBs & IRM Folde			
Controller Hardware Features				
📔 Hardware Compatibility	No			
Controller Connection	Bacnet 🗸			
📔 Teaching Mode	Immediate 🗸			
📔 Measurement Type	Imperial 🗸			
隌 Air Flow Unit	Cubic Feet Per Minute 🗸			
📔 Drop Of Bacnet Output	Cubic Feet Per Minute			
Drop Of Bacnet Value	Cubic Meter Per Hour			
is Synchronized				

Fig. 105 Measurement Types

- For **SI-Metric** set **Air Flow Unit** as "Cubic Meter Per Hour or Liter Per Second.
- For Imperial set Air Flow Unit as "Cubic Feet Per Minute".

New Controller Configuration

Configure Irm Config

Before engineering a IRM NX controller on a BACnet Network, you must configure the IrmConfig settings as per requirement.

Steps to configure Irm Config:

- Expand the BACnet Network folder. Step 1.
- Step 2. Double-click the IrmConfig folder in the BACnet Network to display the property sheet.

Property Sheet		
😋 IrmConfig (Irm Config)		
📔 Id Range Min	1000	[0-4194302]
📔 Id Range Max	9999	[0-4194302]
Teach Modified Controller	🛑 Deny 🗸 🗸	
📔 Inconsistent Program Check	🔵 true 🕞	
Last Selected Teach Option	Overwrite BACnet o	bject values in Device 🗸 🗸
📔 Swap In Heap Memory Usage Limit	70.00 %[(0.00 - 100.00]
🎴 Auto Swap Enable	🛑 false 🔍 🗸	

Fig. 106 Irm Config Property Sheet

Configure the IrmConfig properties. Step 3.

Table 23 IrmConfig Property Sheet

Property	Value	Details	
ld Range Min	0 - 4194302 1000 (default)	Set the minimum Id value assigned to a device during discovery.	
ld Range Max	0 - 4194302 9999 (default)	Set the maximum Id value assigned to a device during discovery.	
Teach Modified	Deny (default)	• Deny (Default value) : Do not allow overwriting an existing application in the controller. While trying to teach a different application to a controller an error message is generated which requires to clear the controller.	
Controller	Allow	• Allow : Allows the unconditional overwriting of an existing application.	
		Note: Do not change this setting.	

Table 23 IrmConfig Property Sheet (Continued)

Property	Value	Details	
Inconsistent Program Check	True (default) False	If the inconsistent program check property is true, the engineering tool checks the application for inconsistencies and displays a message. If you move or copy the applicatio to an external location, such as changing the palette at the external location and then including it again, inconsistenc may occur. Note: Copying-pasting parts of an application of another controller from an external location does not general	
		inconsistencies.	
	Overwrite BACnet object values in Application (default)	This option displays the last teach option used while performing or full teach application to the controller.	
Last Selected Teach Option		 Overwrite BACnet objects values in Device: This option overwrites BACnet object values and directly teaches application in the controller. 	
		• Overwrite BACnet object values in Application : This option first performs an update for all BACnet object values from controller to the application. It then performs a teach application operation in the controller.	
		You can configure the heap memory limit for the controller or supervisor station with this option.	
Swap In Heap Memory Usage Limit	0 - 100 % 70 % (default)	• While working on the HAWK-8000 controller, the memory utilization should not exceed 70 %.	
		• While working on the supervisor station, the memory utilization should not exceed 90 % to 95 % .	
Auto Swap Enable	True False (default)	Using this feature, a swap-in device can be swapped-out automatically if the user forgets to do so. This allows to optimize the station memory usage.	

Resource Recommendations

While performing application teach to IRM NX controllers from HAWK-8000, EAGLEHAWK or Advanced plant controller following two factors impact the performance.

- CPU of the HAWK-8000 or EAGLEHAWK.
- Available heap memory of HAWK-8000 or EAGLEHAWK.

To check the available CPU and heap memory usage of HAWK-8000 or EAGLEHAWK, check to the station resource monitor



Fig. 107 Station Resource Monitor View

CPU Load Recommendation





Fig. 108 CPU Load Recommendation

Memory Load Recommendation

It is advised not to load more than 50 % of the HAWK-8000 or EAGLEHAWK heap.used memory.



Fig. 109 Memory Load Recommendation

Important: Before initiating the batch operation, disable all the configured points, histories, and alarms. Disabling points, histories and alarms will help reduce the load on the BACnet network and help commission the application faster. After the batch operation completes, enable all the configured points, histories, and alarms.

Based on the available memory, select the controllers. If more than 50 % of the memory space is utilized, perform the batch operation in slots. For example, select ten devices or (determine the number of devices based on the load). Perform the batch teach to the controller (refer to Teach to Multiple Controllers on page 173), then swap out. Similarly, select the next ten devices and perform the same steps.
Configure IP VAV Controllers

Using the engineering tool, you can discover and configure the IP VAV controllers on the CentraLine-N4 workbench.

- **Note:** It is recommended that you use the EAGLEHAWK or HAWK-8000 controller as an IP router to host and run a station while commissioning the IP VAV controller.
- **Note:** When commissioning the IRM NX controller via a third-party router (non-CentraLine branded HAWK), the user must ensure that the HAWK is licensed with the DR-SPYDERTOOL option.

IP VAV Controller System Architecture



Fig. 110 IP VAV Controller System Architecture

Prerequisites

- Step 1. Connect to the HAWK-8000 or EAGLEHAWK controller with the CentraLine-N4 Supervisor via ethernet cable.
- Step 2. Connect the IP VAV controllers to the HAWK-8000 or EAGLEHAWK controller via BACnet IP network.

Steps to setup IP VAV controller

Follow the steps below to configure the IP VAV controller.

- 1. Configure the BACnet Network
- 2. Configure the IP Port in CentraLine-N4 Workbench
- 3. Commission the station
- 4. Transfer the station to a HAWK-8000 or EAGLEHAWK controller

Configure the BACnet Network

Steps to configure the BACnet Network:

- Step 1. Open CentraLine-N4 workbench and connect the platform to the localhost.
- Step 2. Create a station using the **New Station Wizard**.
- Step 3. Select the **CIPer50.ntpl** as station template.

0\Webs\sta	tions\Su	pervi:
Vendor	Version	Description
Honeywell	1.0	Web Ports
Honeywell	1.0	Web Ports - I
Tridium	1.5	
Tridium	1.3	
Tridium	1.7	
		Þ
xt ./	Finish	X Cancel
	0\Webs\sta Vendor Honeywell Tridium Tridium	0\Webs\stations\Su Vendor Version Honeywell 1.0 Tridium 1.5 Tridium 1.3 Tridium 1.7

Fig. 111 New Station Wizard

- Step 4. Enter the desired station name.
- Step 5. Start and connect to the station.
- Step 6. Expand the **Station** > **Config**, and double-click on **Drivers**.

Step 7. Click **New**, select **BacnetNetwork** from the drop-down list, and click **OK**. This adds the Bacnet Network under Nav tree.





Step 8. Expand **BacnetNetwork**.



Fig. 113 Expand BacnetNetwork

Configure the IP Port in CentraLine-N4 Workbench

Configure the Ip Port in the CentraLine-N4 workbench to access the IP VAV controllers via a HAWK-8000 or a EAGLEHAWK controller.

Steps to configure the IP Port:

- Step 1. Expand Bacnet Comm > Network > double-click on Ip Port.
- Step 2. Select **Ip Port**, right-click **Action**, and select **Enable**.
- Step 3. Expand the **Ip Port**, select **Link**, right-click **Actions**, and select **Query for Adapters**.

Property Sheet	
Network (Bacnet Network	Layer)
🕨 뒡 Router Table	Bacnet Router Table
💌 🏣 Ip Port	NetworkPort: id=1 net=1 enabled max=2
📔 Network Number	1
🔻 🗎 Link	B/IP (169 254.1.67:0xBAC0) Standard
🕞 🖊 Views	Dell Giga Ethernet
Actions	▶ <u>D</u> ump
New	<u>R</u> ead Broadcast Distribution Table
	<u>W</u> rite Broadcast Distribution Table
Edit Tags	Query For Adapters

Fig. 114 Performing query for adapters.

Step 4. Select the Bacnet ethernet adapter from the drop-down list. Make sure the station and the Bacnet ethernet adapter are on the same subnet on the computer.

Property Sheet				
Network (Bacnet Network L	ayer)			
🕨 证 Router Table	Bacn	et Router Tal	ble	
💌 证 Ip Port	Netw	/orkPort: id=1	1 net=1 enabled max=2	<u></u>
🗎 Network Number	1			
🔻 🖬 Link	B/IP (169.254.1	.67:0xBAC0) S	Standard	_
🗎 Adapter		Dell Giga Ether	rnet 🗸	
📔 Ip Address		none		_
🗎 Udp Port		Dell Giga Ethe	rnet	
📔 Ip Device Type		Intel(R) Wirele	ess-AC 9560 160MHz	
Bbmd Address		null		
Registration Lifeti	ime	+00000h 15	m 00s	
🕨 证 Broadcast Distrib	ution Table	BDT: 0 entrie	2S	
🕨 🍞 Foreign Device Ta	ble	Foreign Devi	ice Table	
) Bbmd Debug		🛑 false	-	
🗎 Status	{ok}			
Fault Cause				
Poll Service	BacnetMultiPo	oll		
hax Devices	max			
🗎 Enabled	🔵 true 🚽 🗸			
Port Id	1			
Port Info	Annex J IP			
🗎 Routing Enabled	🔵 t	rue 🗸		
🗎 Maintain Routing Enable	ed 🛛 🔴 f	alse 🗸		
🗎 Minimum Router Update	e Time 500		ms	
📔 Router Discovery Timeo	ut 500	0	ms	
📔 Termination Time Value	120		s	

Fig. 115 Ip Port Configuration

Step 5. Click Save.

Step 6. Go to **Local Device** property, check the **Character Set.** Make sure the character set of the Bacnet Network is Iso10646_UTF8.

Ð	Character Set	Iso10646_UTF8 -
▶ Q	Enumeration List	Extensible Enum List
⊧ Q	Export Table	ExportTable:0

Fig. 116 Local Device property

Important: All the IRM NX controller support the UTF-8 format. When configuring the device name using the device object, the tool should write the data in UTF-8 format.

Step 7. Click Save.

Note: If any configuration settings change during operation, you must restart the IP router (HAWK-8000 or EAGLEHAWK controller).

Commission the Station

Steps to Commission the station:

Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.

Step 2. Click on **Discover**. All of the online IP VAV controllers displayed.

📀 🥕 Bacnet Discover	Devices								Suc	cess 🚿	×
Discovered											4 objects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank			t‡
WEB -VA75MB24NM	device:5006	22	15	Honeywell International Inc.	VA75MB24NM	12	00000c7fcde1e7ce				
WEB -VA75MB24NM	device:5003	22	20	Honeywell International Inc.	VA75MB24NM	135	00000c7fd0e77e2a				
WEB -VA75MB24NM	device:5005	22	5	Honeywell International Inc.	VA75MB24NM	127	00000c7fc239730f				
WEB -VA75MB24NM	device:5002	22	12	Honeywell International Inc.	VA75MB24NM	127	00000c7ff34e8a15				
New Folder New Folder Discover Cancel O Add Match O Tsynch DeviceID O MAC Confi) 2onfi ^				
Set as Source	→] Set a	as Targe	t 🗌 Se	t as None 🛛 🚿 Master S	ync 🌖 Sp	lit-off A	pplication 🌈	Clone Application	Clear Pro	oject	×
1	Teach to Co	ntroller	📕 Apr	lication Full Teach to Con	troller 🙏	Learn fr	om Controller	📕 Download BLE	Firmware	Down	load I 🗸

Fig. 117 Irm Bacnet Device Manager view

Step 3. Select all controllers and click **Add**. You will need to configure each highlighted controller within the Add view.

Add								×
Name	Туре	Device ID	Netwk	MAC Addr	Enabled	Use Cov	Use Cov Property	Max Cov Subsc
WEB -VA75MB24NM4	Irm Bacnet Device	device:5006	22	15	true	false	false	max
WEB -VA75MB24NM5	Irm Bacnet Device	device:5003	22	20	true	false	false	max
WEB -VA75MB24NM6	Irm Bacnet Device	device:5005	22	5	true	false	false	max
WEB -VA75MB24NM7	Irm Bacnet Device	device:5002	22	12	true	false	false	max
🗎 Name	WEB -VA75	IB24NM4	_					
📄 Туре	Irm Bacne	et Device 🗸						
Device ID	device		5006					
📄 Netwk	22	[0 - 65	535]					
🗎 MAC Addr	15							
📄 Enabled	🔵 true	-						
📄 Use Cov	false	-						
📔 Use Cov Property	🔴 false	-						
📔 Max Cov Subscriptic	ons max							
4								•
			ОК	Cancel				

Fig. 118 Add view

Step 4. Enter the following details:

- Name: Rename the device name.
- **Type**: Select the device type from the drop-down list.
- Device ID: Enter the device ID.
- Network address: Enter the network address.
- MAC Address: Enter the MAC address.
- **Enabled**: Select true or false from the drop-down.
- **Use Cov**: Select true or false from the drop-down. Refer to the Tuning Policies on page 231.
- **Use Cov property**: Select true or false from the drop-down.
- Keep Max Cov Subscriptions as max.
- Step 5. Perform the desired engineering operations in the controller.
- **Note:** Perform a Swap Out operation on all the controllers before transferring the local database to a HAWK-8000 or EAGLEHAWK station. Swap Out saves RAM space and reduces processor load and bus traffic. The state of a swapped-out device is frozen and saved to a project repository on the PC disk. The swapped-out device is indicated by a proxy that inherits and shows the minimum information about the device.
- *Important:* For seamless performance, it is strongly recommended to Swap Out the HAWK-8000 or EAGLEHAWK controller after finishing the engineering in online or offline mode in the station.
 - Step 6. Go to the **Irm Bacnet Device Manager** view, select the controllers from the database, and click **Swap Out.** This action displays the Swap Out dialog box. For more details refer to the Swap on page 187.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No.	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
WEB -VA75MB24NM	device:5002	{ok}	22	12	VA75MB24NM	1.0.0.03	00000c7ff34e8a15	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM1	device:5006	{unackedAlarm}	22	15	VA75MB24NM	1.0.0.03	00000c7fcde1e7ce	IrmControl 2.0.0.0	IRM Program		Controller is empty	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM2	device:5003	{ok}	22	20	VA75MB24NM	1.0.0.03	00000c7fd0e77e2a	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM3	device:5005	{ok}	22	5	VA75MB24NM	1.0.0.03	00000c7fc239730f	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
	Nev	v Folder	New	💉 Edit	n Discove	r 🔳 Cano	el 🕀 Add	≽ Match) TSynch 🛕 Dev	riceID 🚔 MAC Co	nfig 🛛 🖗 IP Cor	nfig 🛛 🚯 BLE C	onfig 🔂 Swa	ap Out 💮 Swa	ip In	
💭 Set a	s Source	→] Set as Targ	et 🗌	Set as No	ne 📎 Ma	ter Sync	Split-off Applic	ation 🌈 Clo	ne Application	Clear Project	🗶 Clear Controlle	r 🏦 Update /	All BACnet Object	ts 📕 Generate	Balancin	g Report
	, I, Tea	ch to Controlle	r I	Applicatio	n Full Teach to	Controller	1, Learn from C	ontroller 📕	Download BLE Firm	ware 📕 Downlo	ad Firmware	, Teach Balancin	g Object 🔥	Learn Balancing O	bject	
	_						_					_				
								F	ia 119 F)atahasa '	View					
				_	~			•	19.110 1	utubust	TIC II					
		S	tep	1.	Clic	k Yes.										
					4 9	wap Out								×		
					0	Thisact	ion will back	up IRM prog	ram of all the s	elected contro	llers.No chan	ges will be m	ade to the c	ontroller.		
					Ċ	Do you	want to cont	inue?				-				
									Ver	Ne						
									163	NO						
								Fig.	120 Swa	p Out Dia	log Box					
		S	tep	8.	Sav	ve the	station									
Impo	ortant	t: It si	is r tatio	econ on.	nmen	ded to	keep a	station	backup	after mal	king any	' chang	e in the	e contro	ller d	or
		S	tep	9.	Go win	to the dow.	Platfor	m and	run Stat	ion Copi	er. This	opens	the sta	tion cop	oier	

Step 10. Select the saved station from localhost section and click **Copy** to the computer. This action copies saved station from localhost of CentraLine-N4 workbench to the computer.

Transfer the station to a HAWK-8000 or EAGLEHAWK controller

Steps to transfer the station to a HAWK-8000 or EAGLEHAWK controller:

- Step 1. Open the HAWK-8000 or EAGLEHAWK platform and select **Station Copier**. This opens station copier window.
- Step 2. Select the saved station from the computer section and click **Copy** to the localhost. This action copies the saved station from the computer to the localhost of the HAWK-8000 or EAGLEHAWK controller.

Keep all the IRM NX controllers in the swapped-out mode in the HAWK-8000 and EAGLEHAWK controller station to ensure seamless performance.

IP Settings

IP setting comprises IP Configuration on page 117 and Network Time Server on page 120.

Property Sheet

📔 IP Settings (I P Settings)	
IP Configuration	I P Configuration
Network Time Server	Network Time Server Configuration

Fig. 121 IP Settings

•

IP Setting feature is supported by following controllers:

- VA75I24NM
- VA00IB24NM
- VA75IBWA24NM
- VA75IBWB24NM
- VA75I24NS
- VA75IB24NS
- VA75IBWA24NS
- VA75IBWB24NS

- UN-RS0844ES24NM
- UN-RS0844ESB24NM
- UN-RS0844TS24NM
- UN-RS0844TSB24NM
- UN-RL1644ES24NM
- UN-RL1644ESB24NM
- UN-RL1644TS24NM
- UN-RL1644TSB24NM

When you add IRM device into Bacnet Network, the IP Setting option is hidden by default.

Steps to activate the IP Setting:

- Step 1. Navigate to the **IRM Program >** double-click **Control Manger**. This open Control manager property sheet.
- Step 2. In **Device Model Name**, select the **IP Setting** supported model from the dropdown list.



- Step 3. Click Save.
- Step 4. Right-click **IRM device** and select **Refresh Tree Node**. This activates the IP Setting feature.

IP Configuration

IP Config operation is provided to ease IP configuration for multiple IP VAVs from a single window. This feature allows users to perform many productivity operations like a batch update of IP configuration, auto-increment of IP addresses, visual indication of modifications to IP addresses, user errors in IP configuration, offline and online IP configuration.

Whenever a factory default or new controller is discovered on a station, it searches for the available IP address on the DCHP server or local Ethernet IP address.

For the factory out controller, the DHCP mode is enabled.

- On power-up, for the first 15 seconds, the controller will search for a DHCP server to acquire an IP address.
- If a DHCP server (switch) is not found, the controller will switch to Auto IP mode, in which it follows linklocal addressing for address resolution.
- It will acquire an IP address in the range 169.254.1.0 169.254.254.254.254. The controller will use the last two characters of its serial number as the last octet for starting address search. For example, if the serial number ends with 36 (Conversion HexToDec = 54), the IP address is set to 169.254.1.54).
- If the controller has link-local addressing, the controller will periodically (every 1 minute) search for the DHCP server. If a server is found, the controller will acquire a new IP address from the server and start using it immediately.
- **Note:** If a controller has the Link-Local Addressing, it will periodically search for the DHCP server (every 1 minute). If the server is found, the controller acquires the new IP address from the server and starts using it immediately.

Steps to check IP Settings details:

Step 1. Navigate to the **BacnetNetwork > IRM device (IP controller) > IP Settings**.



Fig. 123 IP Controller

Step 2. Double-click **IP Settings**. This action opens the IP Settings property sheet view.

Property Sheet			
IP Settings (I P Settings)			
💌 🎬 IP Configuration (I P Configuration	on)		
📔 Status	{ok}		
Fault Cause			
IP Interface	Ethernet		
Configuration Sync Status	Configuration I	n Sync	
	IP Address Type	DHCP	
		Enabled	true
_		Configuration Status	{ok}
IP Address Configuration	IPv4 Settings	Fault Cause	
	in ve occuriga	IP Address	169.254.1.56
		Subnet Mask	255.255.0.0
		Default Gateway	0.0.0.0
Network Time Server Network	rk Time Servei	r Configuration	

Fig. 124 IP Settings property sheet

Table 24 IP Settin	ngs Property	Description
--------------------	--------------	-------------

Properties	Description							
Status	Read-only. Display the status of the IP Configuration.							
Fault Cause	Read-only. When the IP configuration enters a fault state, this function displays the fault cause information.							
IP Interface	Read-only. Displays the supported interface. The current engineering tool version supports Ethernet only.							
Configuration Sync Status	 Read-only. Displays the following configuration sync status. Configuration Insync Configuration modified Configuration OutOfSync 							
Ethernet								
IP Address Type	Allows you to set the IP Addres DHCP IP Address Type (Def the controller from the DHCF IP Address Ty Ethernet IPv4 Settings	ess type as DHCP or Static. ault): Displays available IP address for server. pe DHCP Enabled Status {ok} Fault Cause IP Address 192.168.0.2 Subnet Mask 255.255.0 Default Gateway 192.168.0.1						
	Fig. 125 DHP IP Address Type							

Properties	Description								
	Static IP Address Type: Displays IP address for the controller when								
	connected to the local ethernet port.								
	IP Address Type Static IP Address Type Static Enabled Status Fault Cause IP Address IP Address 192.168.0.2 Subnet Mask 255.255.255.0 Default Gateway 192.168.0.1								
	Allows you to configure the following settings:								
	Enter IP Address								
	Enter Subnet Mask address								
	Enter Default Gateway								
IPv4 Settings	 When configuring an IP address, the engineering tool checks the following validation conditions: For IP address, subnet mask, and default gateway, the Octet cannot be zero. For IP address, subnet mask, and default gateway, the first Octet cannot begin with 0. The address should be properly formatted, and the Octet value for IP address, subnet Mask, and default gateway should be between 1 and 255. The IP address and default gateway must not be the same. All of the bits in the IP address's host address cannot be 0. All of the bits in the IP address's host address cannot be 1. The default gateway does not belong to the same network segment as the IP address's network address cannot be 0. All of the bits in the IP address's network address cannot be 0. The default gateway does not belong to the same network segment as the IP address and subnet mask. Invalid subnet mask, the subnet mask has to be contiguous. All of the bits in the IP address's network address cannot be 0. IP addresses are not unique (IP Address validation within the network). The first octet of IP addresses should be between 1 and 223 characters (Class D IP address is not accepted). 								

Table 24 IP Settings Property Description (Continued)

If the controller is connected via ethernet cable, you can change the IP address of the controller.

Step 3. Navigate to **BacnetNetwork > IRM device** (IP controller) > double-click **IP Settings.** This action opens the IP Settings property sheet view.

Step 4. Click **Save**.

Write and Read IP configuration

Write IP Configuration to Controller

This feature sends modified IP configuration details to controller.

Steps to Write IP Configuration to Controller:

Step 1. Right-click on IP Configuration, select Action and click Write IP Configuration to Controller.



Fig. 127 Write IP Configuration To Controller

Read IP Configuration from Controller

If the user wants to read the IP Configuration from the controller platform, use Read IP Settings from Controller.

This feature retrieves IP configuration information from the controller platform and updates the information in the engineering tool's IP configuration.

Steps to Read IP Configuration from Controller:

Step 1. Right-click on IP Configuration, select Action and click Read IP Settings from Controller.



Fig. 128 Read IP Settings from Controller

Network Time Server



Fig. 129 Network Time Server

Allows you to add the Network Time Server address. You can enter the supported IP address (example: 129.6.15.28) or server URL link (time.googel.com).

Write NTS Configuration to Controller

This feature sends modified Network Time Server (NTS) details to controller.

Steps to Write NTS Configuration to Controller:

Step 1. Right-click on Network Time Server, select Action and click Write NTS Configuration to Controller.

Property Sheet			
IP Settings (I P Settings)			
IP Configuration	P Configuration		
🕨 📔 Network Time Server 🛛 N	etwork Tin Viewe		
	views		
	Actions	- +	Write NTS Configuration to Controller
	New	Þ	<u>Read NTS Configuration from Controller</u>

Fig. 130 Write NTS Configuration to Controller

Read NTS Configuration from Controller

This feature retrieves Network Time Server (NTS) information from the controller platform and updates the information in the engineering tool's Network Time Server configuration.

Steps to Read NTS Configuration from Controller:

Step 1. Right-click on **Network Time Server**, select **Action** and click **Read NTS Configuration from Controller.**

Property Sheet			
IP Settings (I P Settings)			
IP Configuration	I P Configuration		
🕨 阳 Network Time Server	Network Til Views	· ·· ·	
	Actions	· · · ·	Write NTS Configuration to Controller
	New	•	Read NTS Configuration from Controller

Fig. 131 Read NTS Configuration from Controller.

Write and Read IP Setting to Controller

Write IP Settings to Controller

After you've configured the IP Settings, use Write IP Setting to Controller to save the changes to the controller. This action sends the IP configuration and Network Time Server changes from the station to the controller platform.

Steps to Write IP Settings to Controller:

Step 1. Right-click on **IP Settings,** select **Action** and click **Write IP Settings To Controller.**



Fig. 132 Write IP settings to Controller

Read IP Settings from Controller

This feature collects the IP configuration details of the controller as well as the controller's Network Time Server (NTS) details from the controller platform and updates the IP Setting in the engineering tool.

Steps to Read IP Settings from Controller:

Step 1. Right-click on IP Settings, select Action and click Read IP Settings from Controller.

Property Sheet		
📔 IP Settings (I P Setti	(an)	1
IP Configuration	Views 🕨	
Network Time Set	Actions •	Write IP Settings to Controller
	New	<u>R</u> ead IP Settings from Controller

Fig. 133 Read IP Settings from Controller.

Configuring IP Settings for Multiple Controllers

The engineering tool allows you to configure IP settings on multiple controllers in a batch process.

Steps to configuring IP Settings for Multiple Controller:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the IP controllers from the device list.

Note: Selecting the Bacnet IRM device from the device list will inactive the IP Config option.

Step 3. Click IP Config.

 Image: New Folder
 Im

Fig. 134 Database

Step 4. This displays the IP Config batch window, which consists of Ethernet and Network Time Server settings.

Device Name	Model	Name	Device II)	Netwk	Status	IP Address Type	IP Address	Subnet Mask	Default Gateway	Network Time Serv
VAV_ISF1_HX_FX_IM	VA75IB	WA24NM	device:10	00	1	Online	Static	192.168.0.1	255.255.255.0	192.168.0.1	
VAV_ISF1_HX_FX_SI	VA75IB	WA24NM	device:-1		1	Offline	Static	192.168.0.2	255.255.255.0	192.168.0.1	
Device Name		VAV_ISH	T1_HX_FX	IM							
Device ID Device		Device				1000					
Netwk	_	1						_			
		IP Addres	s Type St	atic	-						
		IP Addres	s 19	2.1	68.0.1						
Ethernet		Subnet M	ask 25	5.2	55.255	.0					
		Default Ga	ateway 19	2.1	68.0.1						
Network Time S	erver										
		NOTE: P	ease not	e th	at on c	lick of 'O	K' the IP settings	will be upd	ated to selecte	d controllers afte	r validations.

Fig. 135 IP Configuration

- **Note:** All the listed devices belong to one network in the IP Config window, which is determined while selecting the first device from the Irm Device Manager view.
 - Step 5. Set the IP Address type as DHCP or Static (default IP address type) for all the listed IP VAV controllers from the IP Config batch window.
 - For Static IP address type: Any change in the ethernet or network time server setting will update the respective column in the device list.
 - For DHCP address type: If the DHCP IP address type is selected, the IP address, subnet mask, and default gateway will be auto-updated.

Note: After changing the IP Address type to DHCP, the static IP Address configuration data for all IP VAV controllers will not be deleted. Change the IP Address type to Static if you want to go back to using static IP addresses.

Device Name M	Model Name	Device I	D Netwk	Status	IP Address Type	IP Address	Subnet Mask	Default Gateway	Network Time Serve
mRacnatDavice2	A75104/4244	M devices 1		Offline	DHCD	auto	auto	auto	495949494999
InibaciletDevice2 v	AT SIDWAZ4	im device		onune	DHCP	aures	auto	3010	43554542452XXXXXX
rmBacnetDevice6 V	A75IBWA241	IM device:-1	1	Offline	DHCP	auto	auto	auto	43534342432xcxcxcz
rmBacnetDevice3 V	A75IBWA24	M device:-1	1	Offline	DHCP	auto	auto	auto	43534342432xcxcxcz
IrmBacnetDevice4 V	A75IBWA24M	M device:-1	1	Offline	DHCP	auto	auto	auto	43534342432xcxcxcz
IrmBacnetDevice5 VA75IBWA24M		A24NM device:-1	1	Offline	DHCP	auto	auto	auto	43534342432xcxcxcz
Device Name IrmBa		BacnetDev	ice2						
Device ID	Der	vice		-1					
Netwk	1								
	IP A	ddress Type	DHCP						
Ethernat	IP A	ddress							
culemet	Sub	net Mask							
	Def	ult Gateway							
Network Time S	server 43	34342432x	CXCXCZ						
	NO	E. Plassa n	ote that o	n click o	f 'OK' the IP setti	ngs will be u	indated to sele	ected controllers	after validations

Fig. 136 IP Configuration

Step 6. Click **OK**.

Now, the engineering tool performs two operations:

- Starts validating details of all the listed IRM NX controllers to determine if they are correct.
- Starts updating the device level component for selected controllers.
- **Note:** The engineering tool generates an error report if any invalid configuration is discovered.

Device Name	Field Name	Error Details
rmBacnetDevice2	Subnet Mask	Address should be in proper format and the value of Octet should be in between 0 to 255 for Subnet Mas
rmBacnetDevice6	Subnet Mask	Address should be in proper format and the value of Octet should be in between 0 to 255 for Subnet Mas
rmBacnetDevice3	Subnet Mask	Address should be in proper format and the value of Octet should be in between 0 to 255 for Subnet Mas
rmBacnetDevice4	Subnet Mask	Address should be in proper format and the value of Octet should be in between 0 to 255 for Subnet Mas
rmBacnetDevice5	Subnet Mask	Address should be in proper format and the value of Octet should be in between 0 to 255 for Subnet Mas

Fig. 137 Error Report

If the devices are online, perform the write IP configuration to controller. If the devices are offline, perform a write to device level component.

Important:

Configure MSTP VAV Controllers

Using the engineering tool, you can discover and configure the MSTP VAV controllers on the CentraLine-N4 workbench.

- **Note:** It is recommended that you use the EAGLEHAWK or HAWK-8000 controller as an MSTP router to host and run a station while commissioning the MSTP VAV controller.
- **Note:** When commissioning the IRM NX controller via a third-party router (non-CentraLine branded HAWK), the user must ensure that the HAWK is licensed with the DR-SPYDERTOOL option.

BACnet MSTP Baud Rate

The following are the supported baud rates for the IRM NX MSTP controllers.

- 9600
- 19200 (default)
- 38400
- 57600
- 76800

After the IRM MSTP controller are powered up and connected to the BACnet MSTP bus, the baud rate of each IRM MSTP controller is automatically set by the defined baud rate of the BACnet MSTP EAGLEHAWK.

Note: Setting or changing the baud rate of a single IRM NX controller is not possible.

When changing the Baud Rate of the BACnet MSTP bus of a running station, any connected IRM must be power-cycled to apply the modified baud rate.

Important: Application teach fails for baud rate 115200.

MSTP VAV Controller System Architecture



MSTP VAV Controller

MSTP VAV Controller

Fig. 138 MSTP VAV Controller System Architecture

Prerequisites

- Step 1. Connect the HAWK-8000 or EAGLEHAWK controller with the CentraLine-N4 Supervisor via ethernet cable.
- Step 2. Connect the MSTP VAV controllers to the HAWK-8000 or EAGLEHAWK controller in BACnet the MSTP network connection.

Steps to Configure MSTP VAV Controller

Follow the below steps to configure the MSTP VAV controller.

- 1. Configure the BACnet Network
- 2. Configure the MstpPort in CentraLine-N4 Workbench
- 3. Commission the station
- 4. Transfer the station to HAWK-8000 or EAGLEHAWK controller

Configure the BACnet Network

Steps to configure the BACnet Network:

- Step 1. Open the CentraLine-N4 workbench and connect the platform to the localhost.
- Step 2. Create a station using the **New Station Wizard**.
- Step 3. Select the **CIPer50.ntpl** as station template.

New Station Wizard			×
Station Wizard			
Station Name SupervisorStation			
Station Directory			
C:\Users\ \Niagara4.1	LO\Webs\sta	tions\Su	pervi:
Station Templates Name	Vendor	Version	Description
CIPer50.ntpl	Honeywell	1.0	Web Ports
CIPer50_PLV.ntpl	Honeywell	1.0	Web Ports - I
NewControllerStation.ntpl	Tridium	1.5	
NewJACEProvisioningStation.ntpl	Tridium	1.3	
NewSupervisorStationLinux.ntpl	Tridium	1.7	-
			Þ
Back	ext 🗸	Finish	X Cancel

Fig. 139 New Station Wizard

- Step 4. Enter the desired station name.
- Step 5. Start and connect to the station.
- Step 6. Expand the Station > Config, and double-click on Drivers.
- Step 7. Click **New**, select **BacnetNetwork** from the drop-down, and click **OK**. This adds the Bacnet Network.



Fig. 140 BacnetNetwork Selection

Step 8. Expand BacnetNetwork.



Fig. 141 Expand BacnetNetwork

Configure the MstpPort in CentraLine-N4 Workbench

Configure the MstpPort in the CentraLine-N4 workbench to access the MSTP VAV controllers via a HAWK-8000 or a EAGLEHAWK controller.

Steps to configure the MstpPort on CentraLine-N4 Workbench:

- Step 1. Navigate to **Palette**, click on open palette, and type "BACnet" in the filter.
- Step 2. Select the bacnet module from the search result and click **OK**. This adds a bacnet module to the Palette.

Open Palette	×	
Select one or more palet	tes to open, or just start typing:	Browse
Module	Description	킛
BACnetFFTN4	Firmware Download Tool	
bacnet	Niagara BACnet Driver	
bacnetAws	Niagara BACnet AWS Driver	
bacnetOws	Niagara BACnet OWS Driver	
bacnetUtil	Niagara BACnet Utilities	
•		
	OK Cancel	

Fig. 142 Open Palette window

Step 3. Expand the NetworkPorts folder, select MstpPort, and drag it under Drivers > BacnetNetwork > Bacnet Comm > Network. This adds a MstpPort under Network property.

 BacnetNetwork 						
Local Device						
I Bacnet Comm						
Client						
Server						
Transport						
Network						
Monitor						
X Tuning Policies						
- Palette						
🖿 🗙 🖄 🎽 bacnet						
BacnetNetwork						
AlarmService						
BacnetDeviceFolder						
BacnetDevice						
BacnetTuningPolicy						
 NetworkPorts 						
IpPort						
EthernetPort						
MstpPort						
Points						

Fig. 143 Add MstpPort

Step 4. Navigate to Drivers > BacnetNetwork > Bacnet Comm > double-click Network and expand property sheet on the Mstp Port.

Step 5. Expand **Link** and enter the following details:

- Network Number: Any number less then or equal to 65535 (for example, 56). •
- Port Name: RS485_1 (RS485_1 is only supported on the EAGLEHAWK, COM_1 is • supported on the HAWK-8000).
- Baud Rate: Baud_38400 (see also Tuning Policies on page 231). •
- Enabled: true.

	MstpPort		NetworkPort: id:	=3 net=-1 disabled max= <i>:</i>				
	📔 Network Number	65						
Ŧ	🗎 Link	MAC 0 on	n COM1 at Baud _9600					
	隌 Port Name		RS485_1					
) Baud Rate		Baud _38400	•				
	Mstp Address		0	[0-127]				
	Max Master		127	[0-127]				
	Max Info Fram	es	20	[1-100]				
	🗎 Support Exten	ded Frames	🛑 false 🗸 🗸					
	🗎 Status	{ok}						
	🗎 Fault Cause							
₽	 Poll Service 	BacnetMu	ltiPoll					
	Max Devices	max						
	📔 Enabled	🔵 true	-					
	Port Id	3						
	Port Info	MS/TP						

Fig. 144 MstpPort Properties

Step 6. Click Save.

Step 7. Go to the **Local Device** property and check the **Character Set**. Make sure the character set of the BACnet Network is Iso10646_UTF8.

📔 Character Set	Iso10646_UTF8	
Enumeration List	Extensible Enum List	
Export Table	ExportTable:0	

Fig. 145 Local Device Property

- *Important:* The IRM NX controllers support the UTF-8 format. When configuring the device name with the device object, the tool should write the data in UTF-8 format. Before changing the controller name, ensure that the BACnet network is configured for character set UTF-8, or else the VAV balancing app or tool will not display the controller on the discovery page.
 - Step 8. Click **Save**. This saves the MstpPort configuration on the station.
 - **Note:** If any configuration settings change during operation, you must restart the MSTP router.

Commission the station

Steps to commission the station:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Click the **Discover** option in the **Irm Bacnet Device Manager** view. This action will discover all of the IP VAV controllers communicating online.

Bacnet Discover	Devices								Success	≫	×
Discovered										4 o	bjects
evice Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank			Ę
WEB -VA75MB24NM	device:5006	22	15	Honeywell International Inc.	VA75MB24NM	12	00000c7fcde1e7ce				
WEB -VA75MB24NM	device:5003	22	20	Honeywell International Inc.	VA75MB24NM	135	00000c7fd0e77e2a				
WEB -VA75MB24NM	device:5005	22	5	Honeywell International Inc.	VA75MB24NM	127	00000c7fc239730f				
WEB -VA75MB24NM	device:5002	22	12	Honeywell International Inc.	VA75MB24NM	127	00000c7ff34e8a15				
	New Folder	Ð	New	Edit H Discover	Cancel	(+) Add	I >> Match	C TSynch	DeviceID GMA	AC Co	nfi.

Fig. 146 Irm Bacnet Device Manager view

Step 3. Select all the controllers and click **Add**. This opens the Add property.

Add								×
Name Ty	ype	Device ID	Netwk	MAC Addr	Enabled	Use Cov	Use Cov Property	Max Cov Subsc
WEB -VA75MB24NM4	n Bacnet Device	device:5006	22	15	true	false	false	max
WEB -VA75MB24NM5	n Bacnet Device	device:5003	22	20	true	false	false	max
WEB -VA75MB24NM6 Im	n Bacnet Device	device:5005	22	5	true	false	false	max
WEB -VA75MB24NM7 Irr	n Bacnet Device	device:5002	22	12	true	false	false	max
 Name Type Device ID Netwk MAC Addr Enabled Use Cov Use Cov Property Max Cov Subscription 	WEB-VA75M Irm Bacnet device 22 15 true false false max	B24NM4 t Device t [0-65	5006 535]					
								- F
			ОК	Cancel				

Fig. 147 Add property

Step 4. Enter the following details:

- Name: Rename the device name.
- **Type:** Select the device type from the drop-down list.
- **Device ID**: Enter the device ID.
- Network addres: Enter the network address.
- MAC Address: Enter the MAC address.
- **Enabled**: Select true or false from the drop-down.
- **Use Cov**: Select true or false from the drop-down. Refer to the Tuning Policies on page 231.
- **Use Cov property**: Select true or false from the drop-down.
- Keep Max Cov Subscriptions as max.
- Step 5. Perform the desired engineering operations in the controller.
- **Note:** Perform a Swap Out operation on all the controllers before transferring the local database to a HAWK-8000 or EAGLEHAWK station. Swap Out saves RAM space and reduces processor load and bus traffic. The state of a swapped-out device is frozen and saved to a project repository on the PC disk. The swapped-out device is indicated by a proxy that inherits and shows the minimum information about the device.
- *Important:* For seamless performance, it is strongly recommended to Swap Out the IRM NX controllers in HAWK-8000 or EAGLEHAWK controller after finishing the engineering in online or offline mode in the station.

Step 6. Go to the **IrmBacnetDeviceManager** view, select the controllers from the database, and click **Swap Out.** This action displays the Swap Out dialog box. For more details, refer to the Swap on page 187.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
WEB -VA75MB24NM	device:5002	{ok}	22	12	VA75MB24NM	1.0.0.03	00000c7ff34e8a15	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM1	device:5006	{unackedAlarm}	22	15	VA75MB24NM	1.0.0.03	00000c7fcde1e7ce	IrmControl 2.0.0.0	IRM Program		Controller is empty	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM2	device:5003	{ok}	22	20	VA75MB24NM	1.0.0.03	00000c7fd0e77e2a	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM3	device:5005	{ok}	22	5	VA75MB24NM	1.0.0.03	00000c7fc239730f	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
Image: New Folder Im							g Report									
	📕 Teac	h to Controller	1	Applicatio	n Full Teach to	Controller	1 Learn from C	Controller 📕	Download BLE Firm	ware 🛃 Downloa	ad Firmware	Teach Balancin	g Object 👖 I	earn Balancing O.	bject	
		C+		7	Clie	Vec.		F	ig. 148 D	atabase '	View					
		51	.ep	1.		K Tes.										

4 Svi	vap Out X
?	This action will backup IRM program of all the selected controllers.No changes will be made to the controller. Do you want to continue?
	Yes No

Fig. 149 Swap Out Dialog Box

- Step 8. Save the station.
- **Important:** It is recommended to keep a station backup after making any changes.
 - Step 9. Go to the **Platform** and click on **Station Copier**. This opens the station copier window.
 - Step 10. Select the station from the localhost section and click **Copy** to the computer. This action copies the saved station from the localhost of the CentraLine-N4 workbench to the computer.

Transfer the station to HAWK-8000 or EAGLEHAWK controller

Steps to transfer the station to a HAWK-8000 or EAGLEHAWK controller:

- Step 1. Open the HAWK-8000 or EAGLEHAWK platform and select the **Station Copier**. This opens the station copier window.
- Step 2. Select the saved station from the "station on this computer" section and click **Copy**. This action copies the station from the "station on this computer" section to the "station on local host" section of the HAWK-8000 or EAGLEHAWK controller.
- *Important:* Keep all the IRM NX controllers in the swapped-out mode in the HAWK-8000 and EAGLEHAWK controller station to ensure seamless performance.

Controller MAC Address Configuration

Automatic MAC Address Configuration

When new devices are connected to the network, the Auto MAC functionality allows the controller to automatically assign the MAC address. On factory default controllers, the Auto MAC function is enabled by default.

Important: Auto MAC feature is only supported for MSTP controllers and not applicable for IP controllers.

The Device ID for factory default controllers is 4194302. On every power cycle, these controllers will activate the Auto MAC feature and may obtain a new MAC address. The Auto MAC option can be enabled or disabled to eliminate network connectivity issues caused by MAC address conflicts on an existing bus.

Disabling the Auto MAC option allows you to do the following:

- The controller's MAC address will be locked and can only be changed manually.
- It is the responsibility of the user to avoid any possible an address conflict.
- If the Auto MAC feature is disabled, assign that controller a unique MAC address.
- **Note:** If the controller is restored to its factory default, the Auto MAC capability is activated for that controller.

Update MAC Address Configuration from Station

You can enable or disable the Auto MAC feature for all the controllers in the station with the Update MAC Address Configuration option.

Steps to Update MAC Address Configuration:

Step 1. Navigate to the BacnetNetwork > IrmConfig>Actions> Update MAC Address Configuration.



Fig. 150 Update MAC Address Configuration

Step 2. This opens the confirmation message box.



Fig. 151 Message box

- Step 3. Click **Yes.** This opens Update MAC Address Configuration option.
- Step 4. Enter the **Max Master** value.



Fig. 152 Max Master value





Fig. 153 To enable or disable Auto MAC option.

Click OK.

Auto MAC Configuration for multiple Controllers

You can enable or disable the Auto MAC feature for single or multiple controllers from the IrmBacnet Device Manager view.

Steps to Auto MAC Configuration for multiple Controllers:

Step 1. Navigate to the Irm Bacnet Device Manager view and click on MAC Config. This opens the confirmation message box.



🗎 Auto Min MAC

auto Max MAC



Cancel

1

ок

30

[1-127]

[1-127]

Step 3. Enter the **Max Master** value.

Vpdate MAC Address C	onfigurations		×
MAC Address Configu	ration		
Max Master	35	[1-127]	
🗎 Auto MAC	🔵 Enabled 🚽		
Auto Min MAC	1	[1 - 127]	
) Auto Max MAC	30	[1-127]	
ОК	Cancel		

Fig. 157 Max Master value



MAC Address Configu	iration	
🗎 Max Master	35	[1-127]
🗎 Auto MAC	Enabled	•
🗎 Auto Min MAC	1	[1-127]
Auto Max MAC	30	[1-127]

Fig. 158 To enable or disable Auto MAC option

Click OK.

Automatic MAC Address

In contrast to other controllers, the IRM MSTP controllers feature automatic MAC addressing.

The following properties are writable and can be changed:

- Max Master
- Min MAC
- Max MAC
- MAC address.

Table 25 Default Values

Default Max Master	Default MinMAC	Default MaxMAC	Default Baudrate
64	1	60	38400

The property Max Master specifies the highest allowable address for client nodes. Max Master is set to 64 by default, which means that it can support up to 62 BACnet MSTP VAV controllers, one supervisor, and one BACnet client (tool) per BACnet MSTP network.

Note: When the dip switches are set to all-ON or all-OFF, the controller will run in Auto MAC mode. Do not attempt to program a MAC address outside of Min MAC and Max MAC (0 to 60).

If any of the following events occur, the permanent MAC address changes automatically:

- If the controller's MAC address is set to 0xFF (255), it will attempt to find a new address. Auto MAC will be automatically triggered after controller powered on.
- When devices with the same MAC address cause a network conflict.
- A reset to factory delivery is performed if the service pin is pressed and the controller is switched on (while the service pin is still pressed). Auto MAC is triggered, and the controller tries to find a new address.
- **Note:** The particular MAC addresses 0 and 64 are designated for Auto MAC addressing. Depending on the real performance needs and connection speed, connecting fewer BACnet MSTP devices per network is recommended.

It is recommended to connect 40 BACnet MSTP VAV controllers, with one supervisor, and one BACnet client (tool) per BACnet MSTP network with a Max Master of 64.

Setting the MSTP MAC Address

On an MSTP network segment, each device's MSTP MAC address must be set to a unique value in the range of 1 to 64. The MAC address of the MSTP VAV BACnet controller is set using seven DIP switches.

Note: DIP settings of all-ON or all-OFF (MAC address = 0) activate the Auto MAC mode in the controller and prevent the dip switches from being utilized for MAC addressing.



Fig. 159 MSTP MAC Address Details

Steps to set the MAC address:

- Step 1. Identify an available MAC address on the BACnet MSTP network to assign the MSTP VAV controller.
- Step 2. Locate the DIP switch bank on the MSTP VAV for addressing.
- Step 3. Power off the BACnet MSTP and set the DIP switches for the desired MAC address.
- Step 4. Determine the MAC address using the table below. For example, if DIP switches 1, 3, 5, and 7 are on, the MAC address would be 85(1 + 4 + 16 + 64 = 85).

Ta	ble	26	DIP	switc	hes
----	-----	----	-----	-------	-----

DIP	1	2	3	4	5	6	7
VALUE	1	2	4	8	16	32	64



Fig. 160 Calculating the MAC address

Manually Changing MAC Addresses

You might want to change the MAC addresses in some cases. Assume a network is connected to a small number of controllers. In this case, the controller's Auto MAC feature may cause significant gaps in the assigned MAC addresses.

Example: The bandwidth will not be optimized if addresses 2, 7, 23, and 31 are used. This type of MSTP network is not optimal for bandwidth utilization. To improve the network, manually adjust the MAC addresses of the controllers in workbench. Make sure that each controller should have a unique MAC address. For more details refer to MAC Address Configuration on page 139.

Important: After you've changed all of the controllers' desired MAC addresses, it's an advisable to set the controllers' Max Master to the highest MAC address (Max MAC) among all of them. As a result, the MSTP bus works properly.

MSTP functionality will be unaffected if the Max Master option is not set to the Maximum MAC value, however MSTP performance may suffer.

Swapping MAC Addresses

The user can swap the MAC address of a controller (A) with controller (B).

Address	Network Number:	20		
	MAC Address:	32		
	MAC Address Style:	MSTP/Other 🗸		

Fig. 161 Assign MAC address

Steps to swap the MAC address:

- Step 1. Reassign an available MAC address in the range of 1 to 126 to controller B, thereby blocking the required MAC address.
- Step 2. Assign the reserved MAC address (old address of controller B) to controller A.
- Step 3. Assign the next desired MAC address to controller B (optional step).
- Step 4. The previous procedures can be repeated to assign required MAC addresses to other controllers.
- Step 5. Change the Max Master setting to the controller with the highest MAC address (Max MAC).

MAC Address Configuration

The MAC address and Max Master setting of the IRM NX controller can be changed using the engineering tool.

Steps to configure MAC address:



Fig. 162 Controller property sheet

Step 2. In Address property, change the **MAC Address**.

	Network Number:	20	_	
Address	MAC Address:	32		
	MAC Address Style:	MSTP/Other 🗸		

Fig. 163 Assign MAC address

- **Note:** In the BACnet MSTP network, the MAC addresses for the individual IRM NX controllers are not assigned in sequential order.
- **Note:** The assigned MAC address for the individual IRM NX controllers in the BACnet MSTP network are not assigned in sequential order. The min MAC to max MAC is available as the proprietary properties id 1028 (min MAC) and 1029 (maxMAC) under the device object. The MAC Address "O" is reserved for the router/plant controller by default.
 - Step 3. Click Save.

If the new address is the highest address on the MSTP network, make the following changes to the maxMaster setting:

Step 4.	Expand the	Config or	Device O	bject view.
---------	------------	-----------	----------	-------------

Config device:1000 device	config
Device Object RS5N [device:1000]]
Poll Frequency	Normal
🗎 Status	{ok}
📔 Fault Cause	
Dbject Id	device 1000
Object Name	RS5N
📄 Object Type	Device
📔 System Status	Operational
Vendor Name	Honeywell
Vendor Identifier	17
Model Name	RS5N
Firmware Revision	0.0.4.4
Application Software Version	IRM Application
Protocol Version	1
Protocol Revision	14
Protocol Services Supported	1100011111001011111010000010101011101001 Ŧ
Protocol Object Types Supporte	ed 1111110010100011000100000000000000000
Max A P D U Length Accepted	480
Segmentation Supported	Segmented Both
📄 Apdu Timeout	6000
Number Of A P D U Retries	2
Device Address Binding	0
Database Revision	4294967295
utcOffset	-60
📄 timeOfDeviceRestart	1970-01-01-Thu_00:00:01.00 ¥
lastRestartReason	Coldstart
maxMaster	127

Fig. 164 Device Object area

Step 5. Enter the highest MAC address of all network controllers in the maxMaster field.

📔 maxMaster	32		
maxInfoFrames	10		
No location		⊖ Refresh	E Save

Fig. 165 maxMaster address

- Step 6. Click Save.
- Step 7. In all network controllers, enter the same **maxMaster** value.
- **Note:** If the Max Master Setting on the controller is not working. Before attempting to establish the maxMaster configuration, the user must first clear the alarm and ensure that the device is operational.

Onboard IO Package

Onboard IO Links from hardware to BACnet

When discovering data points on the Bacnet network via the Irm Bacnet device manager, the I/O hardware points of the IRM NX controllers are not detected and visible by default.

To expose hardware, I/O points on the Bacnet network must be prepared individually to make them discoverable. This is performed by adding a Bacnet function block, for example, a Bacnet numeric input, to the periodic or event-driven program and link it to the hardware I/O point function block you want to expose on the Bacnet network.

Steps to link controller hardware points:

Step 1. Navigate to the **BacnetNetwork > IRM Bacnet Device > IRM Program >** double-click on the **On board IO** in the tree.



Fig. 166 On board IO

Step 2. On the wire sheet, identify the I/O hardware point you want to expose to the Bacnet network and note its type and name, for example, an analog output with the name "AO4 – HwAoFanSpeedCtl".

AO4 - HwAoFanSpeedCtl Bacnet Numeric Output	¢
Execution	5
Present Value	- {null}
Out	- {null}
Status Flags	- {null}
Event State	Normal
In15	- {null}

Fig. 167 Wire sheet

Step 3. Right-click the I/O hardware datapoint on the **On board IO** wire sheet, then click **Link Mark** in the context menu.

AO4 - Hw	Views	•
Execution Present Val	Actions	Þ
Status Flag Event State	Edit Tags	
1015	Make Template	
	Cut	Ctrl+X
	Сору	Ctrl+C
	Paste	Ctrl+V
	Paste Special	
	Duplicate	Ctrl+D
	Delete	Delete
	Find	
	Link Mark	

Fig. 168 On board IO Wire sheet

- Step 4. Double-click **Periodic Program** in the nav tree and select the wire sheet view.
- Step 5. Add a '**Bacnet Numeric Input**' Bacnet function block from the honIrmControl palette to the wire sheet.
- Step 6. Change the default name to the name of the hardware I/O point you want to expose, for example, 'AO4 HwAoFanSpeedCtl'.



Fig. 169 Change the Default Name

Step 7. Click **OK**. The Bacnet Numeric Input is added to the wire sheet.



Fig. 170 Wire sheet

Step 8. Right-click the **Bacnet Numeric** Input, and click **Link Mark From < numeric** input> or **Link Mark To < numeric input>** in the context menu.

	P: Characteristic	c Direct 010 Volt	
	Index	<u>V</u> iews	•
- 6	AO4 - HwAc Ao Terminal	<u>A</u> ctions	•
C	Execution In Out	<u>E</u> dit Tags	
	P: Characteris Index	<u>M</u> ake Template	
	AO5 - ConW	C <u>u</u> t	Ctrl+X
	Ao Terminal Execution	<u>С</u> ору	Ctrl+C
	In Out	<u>P</u> aste	Ctrl+V
	Index #	Pa <u>s</u> te Special	
		<u>D</u> uplicate	Ctrl+D
	AO6 - NotU: Ao Terminal	Delete	Delete
	Execution In Out	<u>F</u> ind	
	P: Characteris Index	<u>L</u> ink Mark	
		Link From "AO4 - <u>H</u> wAoFanSpeedCtl"	
-		Link <u>T</u> o "AO4 - HwAoFanSpeedCtl"	
		Relation Mark	

Fig. 171 Link Mark

Composite View

The composite view is an interface that allows you to virtually link control points, function blocks, and folders that contain control logic. When you create a composite, you create slots of child components in the parent component that link the configuration and run the control logic.

This interface allows you to group the application using the IrmFolder and IrmSubfolder. That contains control logic that is virtually configured with control points, function blocks, and folders present in different folders.

Important: Whenever configuring more than 32 Irm folders, it is recommended to divide your application and add logic in their folders statically. Use IrmSubFolders to configure items or folders for major applications and minor grouping. It will help to better memory management for the unitary controller.

Steps to perform Composite operation:

- Step 1. Add **Irmfolder** from palette to the **Periodic program** or **Event program** wire sheet.
- Step 2. Double-click the **Irmfolder** and drag the function block to Irmfolders wire sheet.
- Step 3. Right-click on the function block and select **Composite.**



Fig. 172 Function block

Step 4. Add the input and output slots in the composite editor and click **OK**.



Fig. 173 Composite Editor
Step 5. Drag and drop the **Const1 Numeric** function block to **Irmfolder** wire sheet, add value to the **Const1 Numeric**, and click **Save**.

Property Sheet			
N Addin (Const1	Numeric)		
Execution	2		
— Out	0.00 {ok}		
🔻 🏠 Value	50.00		
Master S	ync Enabled	🔵 true	
Value		50.00	

Fig. 174 Property sheet

Step 6. Connect the output slot of **Const1 Numeric** to the input slots of **IrmFolder**.

6	
	Instantion III
	Irm Folder
E	Execution 1
•	Out 50.00 {ok}
1	nA 50.00 {ok}
1	nB 50.00 {ok}

Fig. 175 Irm Folder wire sheet

If the maximum number of IrmFolders is used in the wire sheet, you can add IrmSubFolders.

- **Note:** IrmSubFolder cannot be added directly into the Periodic program or Event program. IrmSubFolder can only be added inside IrmFolder.
 - Step 7. Double-click on configured **IrmFolder** and drag and drop the **IrmSubFolders** function block to wire sheet. After adding the IrmSubFolders function block, configure the Const1Numeric function block.



Fig. 176 honIrmControl Palette





Fig. 177 IrmSubFolders

Note: Character renaming of IrmFolder and IrmSubFolder is restricted to up to 20 characters.

Terminal Assignment View

The Terminal Assignment View allows users to assign or swap IO terminals without opening the On board IO configuration. It also allows changing the IO terminal assignment even if the device is swapped.

- **Note:** Any changes to the online controller terminal assignment view led to a change in sync status of the IP/MSTP, Compact VAV, or Unitary to project has modifications in both swap-out and swap-in mode.
- **Note:** When the controller is in the swap-in state and the teach mode is set to Immediate any changes to the terminal assignment view are instantly taught to the controller and the project status is in-sync.



Fig 178. IP/MSTP Controller Terminal Assignment View







Fig. 180 Unitary Controller Terminal Assignment View

Configure Terminal Assignment View

Steps to assign the physical points in terminal assignment view:

Step 1. Navigate to the **honIrmControl** palette and copy the physical point from the palette to the **Onboard IO** wiresheet. Refer to the **Onboard IO** on page 83 section for more details.



Fig. 181 Adding Physical point to Onboard IO wire sheet.

- Step 2. Navigate to the Station > Config > Drivers > BACnetNetwork > IRM device.
- Step 3. Right-click on the **IRM device > Views >** select **Terminal Assignment View**.

 Config Services Drivers NiagaraNetwork 		
BacnetNetwork	Views 🕨	AX Property Sheet
Bacnet Comm	Actions >	<u>F</u> low Balancing View
Monitor	New 🕨	Terminal Assignment View
X Tuning Policies		<u>P</u> oint View Widget
IrmConfig	Edit Tags	<u>E</u> asy Binding
🕨 🧰 Spyder Model 5 or Spyder Mod	Make Template	<u>W</u> ire Sheet
Apps Files	Cut	Property <u>S</u> heet

Fig. 182 Terminal Assignment View Option

This action displays the Terminal Assignment view of a selected controller.

Station (Test) : Config : Drivers : Bac	netNetwork : IrmBacnetDevice1	🖍 Terminal Assignment View 👻
✓ Control Manager 💣 IrmBacnetDevice1 📑	IrmBacnetDevice1	×
Control Manager immBacnetDevice1	ImBacnetDevice1	Power 24V ↓ 1 V0 2 ~ 3 AC 4 SRIN 5 DO SR1 6 C 7 SR2 8 Unassigned ▼ SR3 9 Unassigned ▼ C 10
Unassigned • Unassigned •	27 106 28 C 29 107 30 C 31 20V 00T 0 OT	SR5 12 C 13 SVLK WM114 WM215 ↓

Fig. 183 Terminal assignment view zoom options

- Step 4. You can perform the zoom operations as explained below:
 - **Zoom-in**: Click on the Zoom-in () icon (the view size will increase by 10 % each time you click the Zoom-in icon).
 - **Zoom-out**: Click on the Zoom-out (Q) icon (the view size will decrease by 10 % each time you click the Zoom-out icon).
 - **Reset Zoom**: Click on the Reset Zoom (Q) icon to set the view to the default size (100 %).
 - **Custom Zoom**: Enter a value in the Custom Zoom field (100 %) to view the controller (by default, the view size will be 100 %, you can customize the size by entering the value in the Custom Zoom field).

Step 5. Assign the pins to the required terminal pins.



Fig. 184 Assigning UIO or BO Points

The physical points configured in the On board IO wire sheet are displayed in the terminal pin drop-down in the Terminal Assignment view.

- Step 6. Click **Save**. The terminal pins are configured with the respective physical points.
- Step 7. Check the On board IO wire sheet to verify the changes.



Fig. 185 Onboard IO wire sheet

Change Terminal Assignments

Example: In the image below, the user has changed the SSR 2 physical point in the terminal to the UIO 2 physical point and clicked save. After clicking save, the UIO 2 and SSR 2 physical points will switch the terminal position between UIO and BO. The change is successful because both UIO 2 and SSR 2 physical points have the same In-Type characteristic (physical point function block property).



UIO Terminal BO Ter

BO Terminal



Steps to change the terminal in Terminal Assignment View:

- Step 1. Open Terminal Assignment View.
- Step 2. Select any previously configured terminal and modify the physical point from the drop-down list.
- Step 3. Click **Save.**

After performing the change, check the physical point properties in the Onboard IO wire sheet. The pin and pin characteristics of the changed physical point are updated.



Fig. 187 Onboard IO wire sheet

Note: If you perform a swap between unsupported In-Type characteristics UIO or BO terminal, the configured UIO or BO terminal changes to unassigned.

Example: In the below image, if you swap between UIO_1 terminal with SSR_1 terminal and click save.



Fig. 188 Change between UIO_1 terminal with SSR_1 terminal

A message will pop up for confirmation of swapping for unsupported characteristics.



Fig. 189 Confirmation of swapping

Click yes, the UIO_1 terminal changes to the SSR_1 terminal, and the SSR_1 terminal will be changed to unassigned.



Fig. 190 Unassigned Terminal

After performing the change, check the physical point properties in the onboard IO wire sheet. The pin and pin characteristics of the changed physical point are updated.

Note: The physical points with the fault cause will not appear in the terminal assignment view dropdown list.

	UIO_1 V
UIO_6	Unassigned
Uio Terminal	SSR_1
Out - [fault,null]	SSR_2
Out Cause - {null}	SSR_3
In Type - {null}	SSR_4
In Characteristic - {null}	SSR_5
In Reset - {null}	UIO_1
Pin UIO-6	UIO_2
P: In Type Par Analoginput	UIO_3
P: In Characteristic Par 0-10 mAmi	UIO_4
	UIO_5
	UIO_7

For example, UIO_6 has a fault cause in the AO terminal and it will not be shown in the UIO terminal drop-down list.

Fig. 191 Fault state in the UIO terminal

Note: If the In-Type, In Characteristic, or both properties of UIO physical points are linked to any function block, the UIO physical points will not appear in the Terminal Assignment View drop-down list.

For example, UIO_7 has a link to In-type, and it will not be shown in the BO terminal dropdown list.



Fig. 192 In-Type property of UIO terminal

Modify the Terminals in Swap-Out Condition

You can modify the assigned terminal in the terminal assignment view when the controller is in the swapped-out state. After making changes in the terminal assignment view, save the changes. When the controller is swapped-in, you can verify the changes in the onboard IO wire sheet.

Important: Only the physical points with the same In-Type characteristic can switch between UIO and BO terminals or vice versa.

Steps to modify the terminals in the swapped out condition:

- Step 1. Open **Terminal Assignment View** and modify the required terminals. Refer to the Change Terminal Assignments on page 152.
- Step 2. Click **Save**.

When the controller is swapped-in, you can see the changes in the Onboard IO wire sheet.

Note: The unassigned terminals will not appear in the terminal assignment view.

CHAPTER

5 ENGINEER THE CONTROLLERS (ENGINEERING MODES)

Add Controller Setup with Service Pin

Use this procedure when you do not have the controller's serial number.

Steps to setup controller without using serial number:

Step 1. Double-click the **BacnetNetwork** folder in the Nav tree, select the **Irm Bacnet Device Manager** view, and click **New**.



Fig. 193 Irm Bacnet Device Manager View

Step 2. In the New dialog box, select **Irm Bacnet Device** from the drop-down list and click **OK**.



Fig. 194 New Window

Step 3. This opens the device property sheet.

If require you make the following changes:

- Name: Rename the device.
- **Type**: Change the device type.
- Network address: Enter the network address.
- MAC Address: Enter the MAC address.

- **Enabled**: Select the required option from the drop-down, true (default) or false.
- **Use Cov**: Select the required option from the drop-down, true or false (default).
- **Use Cov Property**: Select the required option from the drop-down, true or false (default).
- Keep Max Cov Subscriptions as max.

New								×
Name	Туре	Device ID	Netwk	MAC Addr	Enabled	Use Cov	Use Cov Property	Max Cov Subscript
📟 Spyder Model 5 or: I	rm Bacnet Device	device:-1	0	null	true	false	false	max
Name 📄	Spyder	Model 5 o	r Spyde	r Model				
📄 Туре	Irm Bac	net Devic	e -					
ì Device ID	device		1					
📄 Netwk	0	[() - 65535]					
MAC Addr	null							
Enabled	🔵 true	-						
Use Cov	🛑 false	-						
📔 Use Cov Property	🛑 false	-						
📔 Max Cov Subscrip	tions max							
4								- F
			OF	(Can	icel			

Fig. 195 Irm Bacnet Device Property Sheet

Step 4. Click **OK.**

The IRM is created and added to the database.

Discovered																		0 0	objects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rai	nk										tt.
Database																		1	objects
Name			Device ID	Status	Netwk	MAC Add	r Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status	(U
💣 Spyder Mod	lel 5 or Spyde	r Model 7	device:1	{stale}	0	null					IRM Program		Unknown	null	None	Un Known	Enabled	Swapped In	
	🖸 Ne	w Folde	er 📑 N	lew _	🖻 Edit	💏 Dis	cover	Cancel	(+) Add	>> Match	TSynch	🛕 DeviceID 🛛 🚱	MAC Config	P Config	BLE Config	Swap Out	Swap	In	
C Set as	Source	→] Set	t as Target	S	et as No	ne 🚿	Master S	ync 🌖 Spl	it-off Appl	ication	/* Clone Applicatio	n 📄 Clear Proje	ct X Clear Co	ontroller 🦺 🕻	Jpdate All BACne	t Objects 📕	Generate B	alancing Repo	ort

🛃 Teach to Controller 🛃 Application Full Teach to Controller 🛓 Learn from Controller 🛓 Download BLE Firmware 🛃 Download Firmware

Fig. 196 Database Pane

Step 5. Expand the IRM and configure the **IRM Program**.



Fig. 197 IRM Program

- Step 6. Visit the site and connect to the Bacnet network to get online.
- Step 7. Go to the **Irm Bacnet Device Manager** view and click **Discover**. All the devices communicating will be discovered.

Discovered																		1
Device Name	Device ID	Netwk	MAC Addr	Vendor		Mo	odel	Objects	Serial No	Service I	Pin Rank							
WEB-VA00IB24NM	device:1000	1	169.254.1.68:0xBAC0	Honeywell	Internation	alinc. VA	00IB24NM	12	00008a828000014	43								
Database																		1
Name		Device	ID Status		Netwk	MAC Addr	Model	Firmware R	ev Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swa
📸 Spyder Model 5 or	Spyder Model 7	device:	1 {down,alarm,una	ickedAlarm}	0	null					IRM Program		Unknown	null	None	Un Known	Enabled	Swa
4																		
	🖸 New I	Folder	New 🖋	Edit	Discover	r 🔳 C	Cancel	(+) Add	>> Match	🕒 TSyn	ch 📐 DeviceID	🖓 MAC Config	🔅 IP Config	BLE Config	Swap Out	swap In		

Fig. 198 Database Pane

- Step 8. Press the service pin to match an offline IRM NX controllers with a online IRM NX controller. Perform the same procedure for all devices that need to be matched. This action will discover and list the devices in the discovered section as per service pin rank.
- **Note:** In the service pin rank column, the service pin action is indicated by consecutive numbers depending on when the service pin was pressed on the device.

Discovered									
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank	
WEB-VA00IB24NM	device:1011	1	169.254.1.67:0xBAC0	Honeywell International Inc.	VA00IB24NM	12	00008a8280000143	1	

Fig. 199 Service Pin Rank

Step 9. In the **Discovered** view, select the online device, and in the **Database** view, select the offline device.

Discovered																	1 0
Device Name	Device ID	Netwk	MAC Addr	Vendor		Model	Objects	Serial No	Service P	'in Rank							
WEB-VA00IB24NM	device:1000	1	169.254.1.68:0xBAC0	Honeywell I	nternational Inc.	VA00IB24NM	12	00008a828000014	13								
Database																	1
Name		Device	ID Status		Netwk MAC A	ddr Model	Firmware	Rev Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swa
💼 Spyder Model 5 or	Spyder Model 7	device	:1 {down,alarm,una	ackedAlarm}	0 null					IRM Program		Unknown	null	None	Un Known	Enabled	Swap
<																	
	🖸 New	Folder	New 💉	Edit	Discover	Cancel	(+) Add	>> Match	() TSyno	ch 🛕 DeviceID	MAC Config	🖗 IP Config	BLE Config	Swap Out	t 💮 Swap In		
Set as	Source -	→] Set a:	a Target Set	as None	≫ Master Sy	nc 🔚 Sp	lit-off Ap	plication 🦯	Clone App	lication 📑 Clea	ar Project 🗙 Cle	ar Controller	1, Update All BA	Cnet Objects	📕 Generate Bala	incing Repo	rt
	L Teach	to Con	troller 🔄 🛃 Appl	ication Full	Teach to Cont	roller 1	Learn fro	om Controller	J. Downl	oad BLE Firmware	📕 Download Firm	nware 📕 Tea	ch Balancing Obj	ect 🔔 Learn	Balancing Object		

Fig. 200 Discovered Pane

Step 10. Click Match.

.

Step 12.

The properties of the online BACnet device are matched to the offline BACnet device in the database pane. The properties of the following devices are updated:

- Name
 Firmware Revision
- Irm Sync Status
- Type
 Serial Number

Device ID

- Irm Family
- Irm Last Change
- Irm Master Sync
- Status Irm Program Name
 - Model Irm Application Type
- Step 11. If desired, you can change the name, device id, network number, and MAC address, and enable Use Cov by selecting "true" from the drop-down list.

Click OK. Match \times Name Device ID Netwk MAC Addr Enabled Use Cov Use Cov Proc Туре Spyder Model 5 or Spyder Model 7 Irm Bacnet Device device:1000 1 169.254.1.68:0xBAC0 true false false 📄 Name Spyder Model 5 or Spyder Model Cannot edit Туре Device ID device - 1000 📄 Netwk [0-65535] 1 📄 MAC Addr 169.254.1.68:0xBAC0 📄 Enabled true --📄 Use Cov false -Use Cov Property false Max Cov Subscriptions max OK Cancel

Fig. 201 Irm Bacnet device Property

Discovered																1 objects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank								tê.
WEB-VA00IB24NM	device:1000	1	169.254.1.68:0xBAC0	Honeywell Internation	nal Inc. VA00IB24NM	1 12	00008a82800001	143								
Database																1 objects
Name		Devio	e ID Status	Netwk	MAC Addr Model	Firmware	Rev Serial No	Irm Family Irm Pro	gram Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Sta 🛱
💣 Spyder Model 5 or	r Spyder Model	7 device	:1000 {unackedAlarm}	1	169.254.1.68 VA00IB2	1.0.1.29	00008a828	80 IrmControl 2.(IRM Prog	gram		Controller and Pro	e null	None	Default Password	Enabled	Swapped In
4																•
	• New	Folder	New 🖋	Edit 👘 Discove	er 🔳 Cancel	(+) Add	>> Match	C TSynch	DeviceID	MAC Config	🔅 IP Config	🛞 BLE Config	Swap Ou	t 🗍 Swap In		
C Set as	s Source	→] Set a	s Target Set	as None 📎 Ma:	ster Sync 🌒 S	plit-off App	olication	/* Clone Application	Cle	ar Project 🗙 Cle	ar Controller	1 Update All BA	Cnet Objects	📕 Generate Bal	ancing Rep	ort
	📕 Teac	h to Cor	troller 📕 App	lication Full Teach to	Controller 1	Learn fro	m Controller	L Download BL	E Firmware	📕 Download Fire	mware 📕 Tea	ich Balancing Obj	ject 1 Learn	Balancing Object	:	
								Fig. 20)2 Da	atabase	View					

- Step 13. Perform the hardware compatibility check to ensure that the application is appropriately designed to run seamlessly in the created device. To perform hardware compatibility, refer to Check Hw Compatibility on page 179.
- Step 14. Click **Teach Full Application to Controller**. If you want to match a BACnet device to a new IRM controller, or if you want to clear all previous configurations from the IRM controller and download the new configuration.

Or

Click Teach to Controller.

If you want to modify an existing program in the IRM controller.

Note: If a large application is created in the controller, it is recommended to perform Teach Full Application To Controller.

A notification message will appear. If there are any application inconsistencies between the offline and online devices, the control manager will indicate the relevant synchronization status.

To resolve any inconsistencies, synchronize the applications by performing any of the following actions:

•

Clear Project

٠

- Clear Controller
- Teach To Controller
- Check Application Compatibility

Learn from Controller

Controller Setup using Serial Number

Before working on this procedure, make sure you have the device name, serial number, and device id of the controller, which needs to be matched.

Steps to setup controller using serial number:

- Step 1. Expand the **BacnetNetwork** in the Nav tree.
- Step 2. Right-click the IrmConfig > Action > click Add Serial Number.



Fig. 203 Add Serial Number

Step 3. Enter the **Device Name, Serial No** and **Device Id**. If a barcode scanner is available, use a barcode scanner to get the barcode data, copy and paste the data in the respective field.

Add Serial Number		×
📔 Service Pin Device		
Device Name		
) Serial No		
Device Id	-1	
	OK Cancel	



Or

Enter the data manually:

- Enter 0000 in the **serial number** field. The serial number is case-sensitive and should match the serial number printed on the product label.
- Enter the correct **device name** and **device id** as per the online IRM NX controller you wish to configure. For example,

Add Serial Number		×
📔 Service Pin Device		
) 📔 Device Name	Spyder Model 5 or Spyder Model 7	
) 📔 Serial No	8A8280000146	
) Device Id	2	
	OK Cancel	

Fig. 205 Service Pin Device

Step 4. Click **OK.** The device gets added to the **IrmConfig** property sheet.



Fig. 206 IrmConfig Property Sheet

Repeat the steps 2 to setp 4 to add all the controllers to the IrmConfig property sheet.

Step 5. Go to the **Irm Bacnet Device Manager** view and click **Discover**. All of the offline devices will display in discovery view.

Discovered								
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank
🖀 Spyder Model 5 or Spyder Model 7	device:1	0	null	Honeywell	VA00IB24NM	???	8A8280000146	1
🖀 Spyder Model 5 or Spyder Model 7	device:2	0	null	Honeywell	VA00IB24NM	???	8A8280000147	2

Fig. 207 Discover Pane



Name		Туре			Device ID	Netwk	MAC Add	r Enabled	Use Cov	Use Cov Property	
📸 Spyder Model 5 or Spyder M	Iodel 7	Irm Bad	net De	vice	device:1001	0	null	true	false	false	
Name	Spyde	er Mode	15	or S	pyder Mode	1					
Туре	Canno	t edit									
Device ID	devi	e		-	1001						
Netwk	0			[0-6	5535]						
MAC Addr	null										
Enabled	🔵 tri	Je									
Use Cov	🔵 fa	lse									
Use Cov Property	🔵 fa	lse									
Max Cov Subscriptions	max										

Fig. 208 Device Property Sheet

If desired, you can change the **Name, Device ID, Network number,** and **MAC Address**, and enable **Use Cov** by selecting "true" from the drop-down list.

Step 7. Click **OK.** This adds an offline controller to the **Database**.

Discovered								
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank
🖀 Spyder Model 5 or Spyder Model 7	device:1	0	null	Honeywell	VA00IB24NM	???	8A8280000146	1
🖀 Spyder Model 5 or Spyder Model 7	device:2	0	null	Honeywell	VA00IB24NM	777	8A8280000147	2

	ew Folder 🔒 Ne	w 🖉 Edit	Discover 📃 Ca	ncel 💮 Add	>> Match	(TSynch	A DeviceID	MAC Config	🔅 IP Confi	g 🚯 BLE Config	Swap Ou	t 🖾 Swap In
Set as Source	→] Set as Target	Set as None	🚿 Master Sync	Split-off Appli	cation (Clone Applicatio	n 📑 Clea	r Project 🛛 🗙 Cl	ear Controller	1 Update All BACn	et Objects	📕 Generate Balancing Rep
_ <u>↓</u>	each to Controller	📕 Application Fu	ll Teach to Controller	1 Learn from	Controller	📕 Download Bl	.E Firmware	📕 Download Fi	rmware 📕	Teach Balancing Object	: 1 Learn	Balancing Object

Fig. 209 Discover Pane and Database Pane

Step 8. Expand the device and create the **IRM Program** by adding control strategy, hardware layout, and alarm settings (optional).



Fig. 210 Offline Device Add under Bacnet Network

Visit the site, go online by connecting to the Bacnet network.

Step 9. Go to the **Irm Bacnet Device Manager** view and click **Discover**. In the discovered view, all the offline devices will be displayed.

Success 📎 🗙
21 objects
Service Pin 🛱
1cc72
f3a51
f3a4d
0

Fig. 211 To Discover the Controllers

The engineering tool discovers the controllers having the same serial numbers issued offline.

Or

Press the service pin to match an offline IRM NX controller with a online IRM NX controller. Perform the same procedure for all devices that need to be matched. This action will discover and list the devices in the discovered section as per service pin rank.

- **Note:** In the service pin rank column, the service pin action is indicated by consecutive numbers depending on when the service pin was pressed on the device.
 - Step 10. Select the online device in the **Discovered** section and the offline device in the **Database** section.

🕗 🥕 Ba	acnet Discove	er Devices										Succ	ess ≫	×
Discove	ered												21 0	bjects
Device Na	me	Device ID	Netwk	MAC Add	Ir	Ven	ndor		Model	Objec	ts Serial N	lo	Service	Pin 🛱
Spyder	Model 7	device:3004	212	8		Hor	neywell Inter	national Inc.	VA00IB24NM	9	0000088	04001cc72		^
🖀 Spyder I	Model 7	device:2103	21	3		Hor	neywell Inter	national Inc.	VA00IB24NM	73	00000c	0400f3a51		
🖀 Spyder	Model 7	device:2008	212	10		Hor	neywell Inter	national Inc.	VA00IB24NM	91				
🖀 Spyder	Model 7	device:2105	21	4		Hor	neywell Inter	national Inc.	VA00IB24NM	8	00000c	0400f3a4d		
< l									1					+
Databa	se												1	objects
Name	Device ID	Status			Netwk	MAC Ad	dr Model	Firmware R	Rev Serial No		Irm Family	Irm Progr	am Nam	e In t≇
🖀 RL6N	device: -1	{down,ala	rm,unack	edAlarm}	0	null	VA00IB24NI	ч	00000c04	00f3a51		IRM Progra	m	

4					►
New Folder	🕞 New 💉 Edit	Discover Cancel	🕀 Add 🎽 Mate	ch 🕒 TSync	h 📐 DeviceID
Set as Source	\rightarrow Set as Target \Box S	Set as None 🛛 🚿 Master S	Sync 🌒 Split-off Ap	plication d	Clone Application
X Clear Controller	Teach to Controller	Application Full Teach to	o Controller 1 Lean	Activat rn from Controlli	e Windows erge to all Download Firm

Fig. 212 Irm Bacnet Device Manager View

Step 11. Click Match.

The online device properties are matched to the offline Bacnet device indicated in the Database section. Following device properties are updated:

- Name
- Type
- Device ID
- Status
- Model
- Firmware Revision
- Serial Number

- Irm Family
- Irm Program Name
- Irm Application Type
- Irm Sync Status
- Irm Last Change
- Irm Master Sync
- Step 12. If desired, you can change the name, device id, network number, and MAC address, and enable Use Cov by selecting "true" from the drop-down list.
- Step 13. Click OK.

🔿 🥕 Ba	acnet Discove	r Devices											Succe	ess)	> [×
Discove	ered													2	21 obje	ects
Device Na	me	Device ID	Netwk	MAC Addr		Vendo	or		Mod	lel	Objects	Serial N	o	Servi	ice Pin	₽
Spyder	Model 7	device:3004	212	8		Honey	well Inter	national Inc.	VAO	0IB24NM	9	0000088	04001cc72			^
🖀 Spyder	Model 7	device:2103	21	3		Honey	well Inter	national Inc.	VA0	0IB24NM	73	000000c	0400f3a51			
🖀 Spyder	Model 7	device:2008	212	10		Honey	/well Inter	national Inc.	VAO	0IB24NM	91					
Spyder	Model 7	device:2105	21	4		Honey	well Inter	national Inc.	VAO	0IB24NM	8	000000c	0400f3a4d			
<	1		1	1					1		}				÷	Ť
Databa	se														1 ob	jects
Name	Device ID	Status			Netwk	MAC Addr	Model	Firmware F	Rev	Serial No	Ir	m Family	Irm Progr	am Na	ame	In R
🖀 RL6N	device:2103	{unackedA	larm}		21	3	VA00IB24NM	2.0.0.79	(000000c0400f	3a51 In	mControl 2	(IRM Progra	m		

<					Þ
New Folder	New Kedit	main Discover	(+) Add	Match 🕒 TS	ynch 🛕 DeviceID
C Set as Source	→ Set as Target	Set as None 📎 Master	Sync 🌒 Split	t-off Application	/* Clone Application
X Clear Controller	Iteach to Controller	Application Full Teach	to Controller	Act	ivate Windows roller and to a Window Firm

Fig. 213 Discover and Database view

- Step 14. Perform the hardware compatibility check to ensure that the application is appropriately designed to run seamlessly in the created device. To perform hardware compatibility, refer to Check Hw Compatibility on page 179.
- Step 15. Click **Teach Full Application to Controller**. If you want to match a BACnet device to a new IRM controller, or if you want to clear all previous configurations from the controller and download the new configuration.

Or

Click Teach to Controller.

If you want to modify an existing program in the controller.

Note: If a large application is created in the controller, it is recommended to perform Teach Full Application To Controller.

A notification message will appear. If there are any application inconsistencies between the offline and online devices, the control manager will indicate the relevant synchronization status.

To resolve any inconsistencies, synchronize the applications by performing any of the following actions:

- Clear Project
 - Clear Controller
- Learn from Controller
- Check Application Compatibility
- Teach To Controller

Discover Online Controller

Use this method when the controller is online.

Steps to discover online controller:

- Connect to the Bacnet Network. Step 1.
- Navigate to the Irm Bacnet Device Manager view and click Discover. All the Step 2. available controllers in the Bacnet Network are discovered.

Discovered								2 obj	ects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank	19
🖀 Spyder Model 5 or Spyder Model 7	device:1000	1	169.254.1.68:0xBAC0	Honeywell International Ir	c. VA00IB24NM	12	00008a8280000143		
🖀 Spyder Model 7	device:2	0	null	Honeywell	VA00IB24NM	???	8A8280000147	1	
Database								0 ob	jects
Name Device ID Status Netwk	MAC Addr	Model I	Firmware Rev Seria	l No Irm Family Irm Pr	ogram Name I	rm Applica	tion Type Irm Syn	ch Status Irm Last Change Irm Master Sync Password Status Auto Mac Swap Status	I‡

	ew Folder	New	🖋 Edit 👔	💏 Discover	Cancel	(+) Add	>> Matcl	TSynch	A DeviceID	🛞 мас	Config	🔅 IP Config	BLE Config	🕞 Swap Ou	t 🖾 Swap In	
as Source	→] Set as Ta	arget	Set as None	>> Master :	Sync 🔚 S	plit-off Appli	ication	/* Clone Applicati	ion 📑 Clea	nr Project	X Clea	ar Controller	1 Update All BACr	net Objects	📕 Generate Balar	cing Rep
	each to Contro	oller	Application Fu	ull Teach to Co	ntroller 1	Learn from	Controller	J. Download	BLE Firmware	J. Down	load Firn	nware 📕 Te	each Balancing Objec	t Learn	Balancing Object	

Fig. 214 Discovered Controller

- **Note:** In the Service Pin Rank column, the rank of the service pin is indicated by consecutive numbers depending on the sequence when the service pin was pressed on the controller. The service pin rank will not be available until the user presses the service button on the controller.
 - Step 3. Select the controller you want to add to the database and click Add.

Discovered								2 0	bjects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank	(P
🖀 Spyder Model 5 or Spyder Model 7	device:1000	1	169.254.1.68:0xBAC0	Honeywell International	il Inc. VA00IB24NM	12	00008a8280000143		
Spyder Model 7	device:2	0	null	Honeywell	VA00IB24NM	???	8A8280000147	1	
Database								01	objects
Name Device ID Status Netwk	MAC Addr	Model	Firmware Rev Seria	l No Irm Family Irm I	Program Name	Irm Applica	ition Type Irm Sy	nch Status Irm Last Change Irm Master Sync Password Status Auto Mac Swap Status	th

📧 New Folder 🕞 New 🖋 Edit 🚔 Discover 🗉 Cancel 💿 Add 🥕 Match 💿 Tsynch 🛕 DeviceID 💮 MAC Config 💮 IP Config 💮 BLE Config 🕞 BLE Config 🕞 Swap Dut 🕞 Swap Dut 🗢 Set as Source 🔄 Set as Target 📄 Set as Target 📄 Haster Sync. 🔌 Split-off Application / Clone Application 📄 Clear Project 🖹 Clear Controllier 🗼 Update All BACnet Objects 🗼 Generate Balancing Report 🛓 Teach to Controller 👌 Application Full Teach to Controller 👌 Learn from Controller 👌 Download BLE Firmware 👌 Download Firmware

Fig. 215 Adding Controller to Database



C) Set

If desired, you can change the name, device id, network number, and MAC address, and enable Use Cov by selecting "true" from the drop-down list.

Add



×

Fig. 216 Device Property Sheet

Step 5. Click **OK**. This action adds the controller to the database, and the controller properties are updated.

lame	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Nam
WEB-VA75IBWA24NM	device:1005	{ok}	1	159.99.185.186:0xBAC0	VA75IBWA24NM	1.0.1.20	00000b7fd043deb6	IrmControl 2.0.0.0	IRM Program

Fig. 217 Database view

Step 6. Verify the following properties of the added controller.

- Name
- Type
- Device ID
- Status
- Model
- Firmware Revision
- Serial Number

- Irm Family
- Irm Program Name
- Irm Application Type
- Irm Sync Status
- Irm Last Change
- Irm Master Sync
- Step 7. Add the logic or application to the controller such as adding function block to wiresheet and creating logic or application.
- Step 8. Perform the hardware compatibility check to ensure that the application is appropriately designed to run seamlessly in the created device. To perform hardware compatibility, refer to Check Hw Compatibility on page 179 and Check Application Compatibility on page 180.

Step 9. Click **Teach Full Application to Controller**. If you want to match a BACnet device to a new IRM controller, or if you want to clear all previous configurations from the controller and download the new configuration.

Or

Click Teach to Controller.

If you want to modify an existing program in the controller.

Note: If a large application is created in the controller, it is recommended to perform Teach Full Application To Controller.

A notification message will appear. If there are any application inconsistencies between the offline and online devices, the control manager will indicate the relevant synchronization status.

To resolve any inconsistencies, synchronize the applications by performing any of the following actions:

- Clear Project
- Learn from Controller
- Clear Controller
- Check Application Compatibility
- Teach To Controller

Common Operations of IRM Program

This section explains the common operations you can perform during application engineering on IRM NX controller.

<u>R</u> eset Overrides
<u>P</u> ing
<u>T</u> each To Controller
Teach <u>F</u> ull Application To Controller
Learn From Controller
<u>C</u> heck Hw Compatibility
Check Application Compatibility
Cl <u>e</u> ar Controller
Clear Pr <u>oj</u> ect
Take <u>S</u> napshot
Restore S <u>n</u> apshot
S <u>w</u> ap
Set Controller Password
Reset Tool Password
Ping Sylk <u>D</u> evices
<u>V</u> alidate Sylk Devices
Toggle Parameter Default Action Visibility
Update All Bacnet Object Values From Controller To Application
Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 218 Common operation of IRM Program

Following are the operation you can perform in IRM Program.

Table 27 Common operation of IRM Program

Operations	Descriptions
Reset Overrides	To fix override issues in the function block.
Ping	To check the connectivity between engineering tool and controller.
Teach To Controller	Downloads changes in the application of the project to the controller.
Teach Full Application To Controller	Downloads full application of the project to the controller.
Learn from Controller	Uploads current application from the controller to project.

Operations	Descriptions
Check Hw Compatibility	Checks hardware compatibility Verifies the hardware configuration defined for the controller in the application is compatible with the physical controller.
Check Application Compatibility	Validates and compiles Sylk devices and checks application compatibility.
Clear Controller	Deletes the application from the controller.
Clear Project	Deletes the application from the project.
Take Snapshot	Backup the application.
Restore Snapshot	Restore the backup application to the project
Swap	Swap In- Restores saved application to RAM Swap Out- Makes app backup and swaps application out of RAM.
Set Controller Password	Set controller Password.
Reset Tool Password	Reset the password for a controller.
Ping Sylk Devices	Sylk ping verifies and displays status based on the connected Sylk device connected to the network.
Validate Sylk Device	It is used for validating the Sylk configuration in the application.
Toggle Parameter Default Action Visibility	To hide or show parameter default action.
Update All Bacnet Object Values from Controller to Application	Synchronize the controller values with the application values.
Replace Text A Block and Ws Text Blocks with Irm Ws Text Block	Convert any TextA Function Block to the IRMWsTextBlock Function Block.

Table 27 Common operation of IRM Program (Continued)

Reset Overrides

Reset overrides fix the override issue in the function blocks. Any function block that have multiple links to the same slot can fall into override state, this is a Niagara behavior. Reset Overrides removes the multiple links from the same slot of the function blocks.

Steps to perform the Reset Overrides:

- Step 1. Expand the Station > Config > Drivers > Irm Bacnet device > IRM Program.
- Step 2. Right-click on the **IRM Program > Actions >** select **Reset Overrides**. This action will remove the override state of the function block.

•	œ	WEB-VA75IB24	NM								
	₽	Alarm So	Views 🕨								
	•	Points	Actions	<u>R</u> eset Overrides							
	1	Alarms	New	<u>P</u> ing							
	÷.	Schedule		<u>T</u> each To Controller							
	÷	Trend Lo	Edit Tags	Teach Full Application To Controller							
	₽	Config	Make Template	Learn From Controller							
	₽	P Setting	Cut	<u>C</u> heck Hw Compatibility							
	•	🗎 BLE Conf	Copy	Check Application Compatibility							
	₽	Rename	Paste	Cl <u>e</u> ar Controller							
	•	IRM Prog	Paste Special	Clear Project							
		Con	Duplicate	Take <u>S</u> napshot							
			Delete	Restore S <u>n</u> apshot							
		▶ 🗎		S <u>w</u> ap							
		• •	Find	Set Controller Password							
		E	Link Mark	Reset Tool Password							
				Ping Sylk <u>D</u> evices							
		Perio		<u>V</u> alidate Sylk Devices							
		Log Even	Relation Mark	Toggle Parameter Default Action Visibility							
				Update All Bacnet Object Values From Controller To Application							
				Replace Text A Block And Ws Text Blocks With Irm Ws Text Block							

Fig. 219 Reset Overrides

Note: In the latest tool, when adding a new link to the function block through the composite method, you will be notified by a popup message suggesting to delete either of the links if a link already exists in the slot.

N Sp	pyder Model 5 or Spyder Model 7 device (SpyderSand7)	×
Δ	Spyder Model 5 or Spyder Model 7 device (Spyder5and7) Invalid configuration! More than one link exists on slot:/Drivers/BacnetNetwork/Spyder\$20Model\$205\$20or\$20Spyder\$20Model\$207\$20device/IRM\$20Program/Periodic\$20program/IrmFolder/Pass Please delete either the composite or the other link created through LinkMark on the slot.	Thru:In.
	ОК	

Fig. 220 Confirmation Dialog Box

Note: Perform reset overrides before performing the full teach operation to avoid override issues in the function block.

Remove the Links for a Single Function Block

This procedure allows you to remove the links for a single function block by performing the reset override operation.

Steps to perform the Reset Overrides for a single function block:

Step 1. Open the function block in the wire sheet view.



	Views •	
PassThru	Actions •	<u>A</u> nnotation
Pass Thru 4 Execution	Edit Tags	<u>R</u> eset Overrides
Out -{	Make Template	

Fig. 221 Reset overrides for single function block

Remove the Links Manually

Steps to remove the link manually in the relation sheet:

- Step 1. Open the function block in the wire sheet view.
- Step 2. Right-click on the function block > Views > select Relation Sheet.



Fig. 222 Open the Relation sheet



Relation Sh	eet				
Relation Id	Slot	Dir	Туре	Other Path	Other Slot
n:dataLink	In	•	baja:Link	slot/Drivers/BacnetNetwork/SpyderS20ModelS205S20orS20SpyderS20ModelS207S20device/IRMS20Program/PeriodicS20program/BacnetNumericValue	Out
n:dataLink	In	•	baja:Link(C	Edit rs/BacnetNetwork/Spyder\$20Model\$205\$20or\$20Spyder\$20Model\$207\$20device/IRM\$20Program/Periodic\$20program/IrmFolder	In
n:dataLink	Out		baja:Link(Lags cs/BacnetNetwork/Spyder\$20Model\$205\$20or\$20Spyder\$20Model\$207\$20device/IRM\$20Program/Periodic\$20program/IrmFolder	Out
			. 1	<u>е</u> ото	





To check the connectivity between engineering tool and controller.

Steps to perform Ping:

۰.	WEB-VA75IB24	4NM							
₽	Alarm So	Views 🕨							
•	Points	Actions	<u>R</u> eset Overrides						
Ľ	Virtual	New	Ping						
ŗ.	C Atarinis		Teach To Controller						
÷	Trend Lo	Edit Tags	Teach Full Application To Controller						
•	Config	Make Template	Learn From Controller						
₽	IP Setting	Cut	<u>C</u> heck Hw Compatibility						
₽	BLE Conf	Сору	Check Application Compatibility						
₽	Rename	Paste	Cl <u>e</u> ar Controller						
•	IRM Prog	Paste Special	Clear Pr <u>oj</u> ect						
	✓ Con	Duplicate	Take <u>S</u> napshot						
		Delete	Restore S <u>n</u> apshot						
		Find	S <u>w</u> ap						
	▶ 🖬	Find	Set Controller Password						
	▶ 🗎	Link Mark	Reset Tool Password						
			Ping Sylk <u>D</u> evices						
	Perio		<u>V</u> alidate Sylk Devices						
	Ever	Relation Mark	Toggle Parameter Default Action Visibility						
			Update All Bacnet Object Values From Controller To Application						
			Replace Text A <u>B</u> lock And Ws Text Blocks With Irm Ws Text Block						

Step 1. Right-click on **IRM Program**, click **Actions > Ping**.



Fig. 224 Ping



Fig. 225 Warning Message

Teach To Controller

Teach to controller downloads the changed application of the project to the controller. This can happen in two ways:

- **Immediate**: Changes are written to the controller automatically and are effective immediately.
- **Note:** When working in "Immediate" teach mode, no messages are displayed, and no changes are graphically indicated while changing applications.
 - **On demand**: Changes are written to the controller manually and are effective after "Teach to Controller" action.

Steps to perform Teach To Controller:

Step 1. Right-click on **IRM Program > Actions >** and then click **Teach to Controller**.

Ŧ	6 N	VEB-VA75IB24	INM								
) ≬	🗘 Alarm So	Views 🕨								
) (Points	Actions	<u>R</u> eset Overrides							
		Virtual	New	<u>P</u> ing							
	-	Schedule		Teach To Controller							
		Trend Lo	Edit Tags	Teach Full Application To Controller							
	. ► (Config	Make Template	Learn From Controller							
	▶ (IP Setting	Cut	<u>C</u> heck Hw Compatibility							
	- ► [BLE Conf	Сору	Check Application Compatibility							
) (Rename	Paste	Cl <u>e</u> ar Controller							
			Paste Special	Clear Pr <u>oj</u> ect							
			Duplicate	Take <u>S</u> napshot							
			Delete	Restore S <u>n</u> apshot							
		•	Find	S <u>w</u> ap							
		- Þ 🗎		Set Controller Password							
		- Þ 🗎	Link Mark	Reset Tool Password							
		► 1		Ping Sylk <u>D</u> evices							
		Perio		<u>V</u> alidate Sylk Devices							
		 Leg Even Leg Don b 	Relation Mark	Toggle Parameter Default Action Visibility							
		Alari		Update All Bacnet Object Values From Controller To Application							
				Replace Text A Block And Ws Text Blocks With Irm Ws Text Block							



Step 2. Select **Overwrite BACnet objects values in Device** or **Overwrite BACnet object values in Application.**



Fig. 227 Teach To Controllers Dialog Box

- **Overwrite BACnet objects values in Device**: This option overwrites Bacnet object values in the controller and teaches application to the controller.
- **Overwrite BACnet object values in Application:** This option update all Bacnet object values and default values from controller to application and, then it teaches the application to the controller.
- Step 3. Click OK.

The changes are written to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Note: Teaching full application to the controller may be required if the maximum APDU size and segmentation supported under device object properties are not updating in the controller, resulting in commissioning failures.

Teach to Multiple Controllers

Perform "Teach to Controller" operation from "Irm Bacnet Device Manager" view to teach to changes of application to the multiple controller.

Steps to perform Teach on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controllers from the device list.
- Step 3. Click **Teach to Controller.** This action opens teach to controller dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7ff	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
a vav isf1 HX FX SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gik	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

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Fig. 228 Teach to Controller Dialog Box

Step 4. Select **Overwrite BACnet objects values in Device** or **Overwrite BACnet object values in Application.**



Fig. 229 Teach to Controllers dialog box

Step 5. Click **OK**.

The changes are written to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Teach Full Application To Controller

Teach Full Application To Controller deletes all existing configurations from the controller and downloads the new configuration to controller.

Note: While performing teach full application to controller, it is recommended to keep a backup of the previous configuration.

Steps to perform Teach Full Application To Controller:

Step 1. Right-click on **IRM Program > Actions >** click **Teach Full Application to Controller** in the context menu.

🔻 💼 WEB-VA75IB24	NM									
Alarm So	Views 🕨									
Points	Actions •	<u>R</u> eset Overrides								
Virtual	Now	 Ping								
Alarms	New P	Teach To Controller								
Trend Lo	Edit Tags	– Teach Full Application To Controller								
Config	Make Template	Learn From Controller								
IP Setting	Cut	– Check Hw Compatibility								
🕨 🎦 BLE Conf	Canv	Check Application Compatibility								
🕨 证 Rename	Pasta	Clear Controller								
🔻 🌇 IRM Prog	Paste Special	 Clear Project								
V Con	Publicata	Take Snapshot								
	Duplicate	– ' Restore Snapshot								
	Delete	Swap								
	Find	Set Controller Password								
	Link Mark	Reset Tool Password								
▶ 🖬		Ping Sylk Devices								
🕨 💽 Perio		Validate Svlk Devices								
💌 🕞 Ever	Deletier Meril	Toggle Parameter Default Action Visibility								
🕨 🕞 On b	Relation Mark	Undate All Bacnet Object Values From Controller To Application								
🕨 📑 Aları		Peoplace Text A Plack And We Text Placks With Irm We Text Plack								
		Replace Text A <u>block And wa Text</u> blocks with him wa Text block								

Fig. 230 Teach Full Application To Controller

Step 2. Select **Overwrite BACnet objects values in Device** or **Overwrite BACnet values in Application**.



Fig. 231 Teach to Controllers dialog box

Step 3. Click OK.

The changes are written to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Application Full Teach to Multiple Controllers

Perform "Application Full Teach to Controller" operation from "Irm Bacnet Device Manager" view to downloads the new configuration to the multiple controller.

Steps to perform Application Full Teach on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controller from the device list.
- Step 3. Click **Application Full Teach to Controller**. This action opens **Teach To Controller** dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7ff	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6 <u>gi</u> k	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

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Fig. 232 Application Full Teach to Controller

Step 4. Select **Overwrite BACnet objects values in Device** or **Overwrite BACnet object values in Application.**

Teach to Controllers								
👕 Teach To Controller Arguments								
Teach Option	Teach Option Overwrite BACnet object values in Device							
	Overwrite BACnet object values in Device							
	Overwrite BACnet object values in Application							

Fig. 233 Teach to Controllers dialog box

Step 5. Click **OK**.

The changes are written to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Overwrite Application Teach

Overwriting an application is permitted for all the controllers on Bacnet network.



Fig. 234 Teach Modified Controller

- **Deny (Default value)**: Do not allow overwriting of an existing application in the controller. While trying to teach a different application to a controller, an error message is generated, requiring clearing the controller.
- **Allow**: Allows to overwrite an existing application.

Learn from Controller

Learn from Controller uploads the current application from the controller in the project.

Steps to perform Learn from Controller:

Step 1. Right-click on **IRM Program > Actions >** and then click Learn From Controller in the context menu.

WEB-VA75IB24NM	
Alarm So Views	
Points Actions	Reset Overrides
Virtual	Ping
New	 Teach To Controller
Edit Tags	Teach Full Application To Controller
Make Template	
	Charle Une Compatibility
Cut	<u>Cneck Hw Compatibility</u>
Сору	Check <u>Application</u> Compatibility
Paste	Cl <u>e</u> ar Controller
Paste Special	Clear Pr <u>oj</u> ect
Duplicate	Take <u>S</u> napshot
Delete	Restore S <u>n</u> apshot
► 🖬 _ Find	– S <u>w</u> ap
	_ Set Controller Password
🕨 📬 🛛 Link Mark	Reset Tool Password
🕨 🖬 🛛 Link From	Ping Sylk <u>D</u> evices
Peric Link To	<u>V</u> alidate Sylk Devices
Le Even Relation Mark	– Toggle Parameter Default Action Visibility
Relate From	Update All Bacnet Object Values From Controller To Application
Relate To	Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 235 Learn from Controller

The applications are uploaded to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Note: When Learning From Controller is completed, the project's application is deleted.

If the synchronization status is different, a message recommends either clearing the project (discard modifications) or teaching the controller (discard modifications in the controller).



Fig. 236 Warning Message

Learn from Multiple Controllers

Perform "Learn from Controller" operation from "Irm Bacnet Device Manager" view to uploads all the changes of application from multiple controller to the project.

Steps to perform Learn from multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controller from the device list.
- Step 3. Click **Learn from Controller.** This action opens the learn from the controller dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	f 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6 <u>_gi</u> k	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In
	Se Se	t as Sou	Tce -	Folder · New 쉿 Set as Target a to Controller	✓ Edit ✓ Edit ✓ Set as None ♣, Application	H Discover	Gancel r Sync Sp ontroller	③ Add >>> Lit-off Application	Match () TSync a (* Clone Appl oller J Downle	h DeviceiD incation Clear Dead BLE Firmware	응 MAC Config _ 선 Project _ X Clear Co 로 Download Firmwar	IP Config 🛛 🚯 B ntroller 🤶 Upd e 🛛 🛃 Teach Balar	LE Config ate All BACnet Ob ncing Object	Swap Out 🛛 🗍 💮 Swap Out 🖉 🗍 Swap Out 🔹 🛃 Gen 🏦 Learn Balanci	swap In erate Balan ng Object	cing Report
			St	tep 4.	Clic	k Yes		F	Fig. 237	Databa	se Pane					
									earn from Co	ontroller		×				
								?	Learn Proj	ect from select Yes No	ted Controllers!					
							Fig	. 238 L	earn fro	m Cont	roller Dia	log Box	[

The applications are uploaded to the controller, and the applications are synchronized. The successful action displays in the workbench job service.

Check Hw Compatibility

Using this option, you can check the hardware configurations and the hardware defined for the controller in the application. Any differences are indicated on the Hw compatibility job log.

Steps to perform Check Hw Compatibility:

Step 1. Right-click on IRM Program > Actions > and click Check Hw Compatibility.



Fig. 239 Check Hw Compatibility



Fig. 240 Error message

Step 2. Click **OK**, then remove the incorrect or unused terminals.

Step 3. Perform **Teach the controller**.

The successful action displays in the workbench job service.

Note: The user can view the error details by double-clicking on the job log.



Fig. 241 Job Log and Log Details

Check Application Compatibility

Check the application's compatibility for the IRM NX controller.

Steps to perform Check Application Compatibility:

Step 1. Right-click on IRM Program > Actions > and click Check Application Compatibility.



Fig. 242 Check Application Compatibility
Clear Controller

The clearing controller deletes the entire project from the controller.

Note: While clearing the controller and loading the Sylk configuration to the controller (proxy file to the controller), 20 VDC output will turn off for 30 seconds. All I/O terminals will be down for 30 seconds. It will only happen when CentraLine-N4 changes the Sylk application or deletes the application from the controller. It will not happen once the application teach completes and the controller is running.

Steps to perform Clear Controller:

Step 1. Right-click on **IRM Program > Actions >** and then click **Clear Controller** in the context menu.



Fig. 243 Clear Controller

Step 2. Click **Yes** to delete the project from the controller.



Fig. 244 Clear Controller confirmation

Clear Multiple Controllers

Use the "Clear Controller" operation from the "Irm Bacnet Device Manager" view to delete the entire project from the multiple controllers.

Steps to perform Clear multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controllers from the device list.
- Step 3. Click **Clear Controller.** This action opens the clear controller dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	f 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

 Image: New Folder
 Im

Fig. 245 Database Pane

Step 4. Click Yes.

The application is removed from all the selected controllers. Workbench job service displays the successful action.

Clear Project

The clear project operation removes all engineering programs from the project of the controller.

Steps to perform the Clear Project:

Step 1. Right-click on **IRM Program > Actions >** and then click **Clear Project** in the context menu.



Fig. 246 Clear Project

Step 2. Click Yes to clear the engineering project from the controller.



Fig. 247 Clear Project confirmation

Clear Project from Multiple Controller

Step 4.

Click Yes.

Database

Use the "Clear Project" operation from the "Irm Bacnet Device Manager" view to clear the engineering project from the multiple controllers.

Steps to perform Clear Project on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controllers from the device list.
- Step 3. Click Clear Project. This action opens the clear controller dialog box.

butubube																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IN	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7ff	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
a vav ISF1 HX FX SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

 Image: New Folder
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 Period
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Fig. 248 Database Pane



Fig. 249 Clear Controller Dialog Box

The application is removed from all the selected controllers. Workbench job service displays the successful action.

N Job Log			×
Status	Timestamp	Message	Ę
i Message	30-Aug-21 10:11 PM IST	IRM batch operation started	1
i Message	30-Aug-21 10:11 PM IST	IRM clearing project started for device : IrmBacnetDevice4	
i Message	30-Aug-21 10:11 PM IST	IRM clearing project ended for device : IrmBacnetDevice4	
i Message	30-Aug-21 10:11 PM IST	IRM clearing project ended for device : IrmBacnetDevice5	
Success	30-Aug-21 10:11 PM IST	IRM batch operation ended!	-
•		Þ	
		ок	

Fig. 250 Job Log

Take Snapshot

The Take Snapshot feature allows back up the current application's state and can be restored later.

Steps to perform Take Snapshot:

Step 1. Right-click on **IRM Program > Actions >** click **Take Snapshot** in the context menu.

Ŧ		WEB-VA75IB24	NM	
	₽	🔕 Alarm So	Views 🕨	
	₽	Points	Actions	<u>R</u> eset Overrides
	•	Virtual	New	<u>P</u> ing
	ŗ.	Schedule		Teach To Controller
	ĥ	Trend Lo	Edit Tags	Teach Full Application To Controller
		Config	Make Template	Learn From Controller
	₽	IP Setting	Cut	<u>C</u> heck Hw Compatibility
	₽	BLE Conf	Conv	Check Application Compatibility
	₽	Rename I	Paste	Clear Controller
	•	RM Prog	Pasta Special	 Clear Project
		Cont	Dunlicate	Take <u>S</u> napshot
			Delete	Restore Snapshot
				Swap
			Find	Set Controller Password
			Link Mark	Reset Tool Password
		▶ 🗎		Ping Sylk Devices
		Perio		Validate Sylk Devices
		🔻 💽 Even	Relation Mark	Toggle Parameter Default Action Visibility
		▶ Long On b	Relate From	Update All Bacnet Object Values From Controller To Application
		Lo Alarr	Relate To	Replace Text A <u>B</u> lock And Ws Text Blocks With Irm Ws Text Block

Fig. 251 Take Snapshot

The application is backed up. Workbench job service displays the successful action.

Restore Snapshot

The Restore Snapshot feature allows you to restore the backup. It allows you to restore an application if you want to discard changes.

Steps to perform Restore Snapshot:

WEB-VA75IB24NM							
🕨 🔕 Alarm So 🛛 Vi	iews 🕨						
Points A	ctions 🕨	<u>R</u> eset Overrides					
Virtual	ew	<u>P</u> ing					
C Atantis		Teach To Controller					
Trend Lo	dit Tags	Teach Full Application To Controller					
▶ 🕀 Config M	lake Template	Learn From Controller					
🕨 🎦 IP Setting		<u>C</u> heck Hw Compatibility					
BLE Conf G	opv	Check Application Compatibility					
Rename I	aste	Cl <u>e</u> ar Controller					
IRM Prog	aste Special	Clear Project					
Cont	uplicate	Take <u>S</u> napshot					
► Γ	elete	Restore S <u>n</u> apshot					
		S <u>w</u> ap					
▶ 🕞 Fi	ind	Set Controller Password					
) 🕞 📄 Li	ink Mark	Reset Tool Password					
🕨 🖬 Li		Ping Sylk <u>D</u> evices					
🕨 🖻 Perio 📘		<u>V</u> alidate Sylk Devices					
V Le Even	elation Mark	Toggle Parameter Default Action Visibility					
		Update All Bacnet Object Values From Controller To Application					
		Replace Text A Block And Ws Text Blocks With Irm Ws Text Block					

Step 1. Right-click on **IRM Program > Actions >** and click **Restore Snapshot**.

Fig. 252 Restore Snapshot

Step 2. Select the required backup file (.bog file) and click **OK**.



Fig. 253 Selecting backup file

The application is restored. Workbench job service displays the successful action.

Swap

The Swap features allows to reduce the processing load of the station.

- *Important:* It is strongly recommended to swap-out the application after finishing the engineering in online or offline mode.
 - **Note:** Synchronization does not work for swap-out devices. The devices must be swapped-in again to synchronize. You can swap single devices or multiple devices at once.:

Steps to perform Swap on a controller:

Step 1. Right-click on **IRM Program > Actions >** and click **Swap**.



Fig. 254 Swap

The device displays the minimum information when an online or offline device is swapped out. In swap-out state, the controller data is saved on the PC disk.

	7	Property Sheet	
Ny Network		👚 IRM Program (IRM Program	n Proxy)
_		Author	
WEB-VA75IB24NM		Description	
Alarm Source Info		Application Type	xad=ok5
Points		📔 Last Program Change	10-Jun-2022 07:31 PM IST
Virtual		🗎 Last Commissioned	null
Alarms			
Schedules			
Trend Logs			
Config			
IP Settings			
BLE Configuration			
🕨 ႃ Rename Bacnet Objects			
🕨 👚 IRM Program			

Fig. 255 Swap-out State

	-7	Property Sheet	
(S) My Network		👚 IRM Program (IRM Program	Proxy)
_		Author	
WEB-VA75IB24NM		Description	
Alarm Source Info		Application Type	xad=ok5
Points		📔 Last Program Change	10-Jun-2022 07:31 PM IST
Virtual		📔 Last Commissioned	null
Alarms			
Schedules			
Trend Log Views	-11		
Config	- 11		
IP Settings	- 11		
BLE Config New	- 11		
Rename B Edit Tags	- 14		
RM Programmer All			
Make Template			

To swap-in the device, right-click on **IRM Program > Actions >** and click **Swap** in the context menu.

Fig. 256 Swap-In State

After performing the swap-in on the device, all of the device's properties are displayed in the IRM Program.

Swap Out Multiple Controllers

If you want to "Swap Out" multiple controllers under Bacnet network, follow the below steps.

Steps to perform Swap Out on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select desired controllers from the device list.
- Step 3. Click Swap Out. This action displays Swap Out dialog box.

Database																2 obje
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	f 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In
	© Se	t as Sour	Teacl	Folder 💽 New Set as Target	F Edit	Discover Maste Sull Teach to 0	Cancel er Sync Sp controller	• Add >> lit-off Applicatio	Match O TSync n Clone Appl roller J Downla	h DeviceID ication Clear	응 MAC Config / 영 Project / X Clear Co 보 Download Firmwar	IP Config 🛛 🕃 B ntroller 🔔 Upd	LE Config ate All BACnet O	- Swap Out 🛛 🗍 bjects 🔄 🕹 Gen	swap In erate Balar ng Object	ncing Report
				Step 4	. (Click `	Yes.		Fig	. 257 Da	atabase	pane				
				N	Swap	Out										×
				?) Th Do	is action you wa	n will bac int to co	kup IRM htinue?	program o	of all the se	lected cont	rollers.No	changes	will be n	nade	to the controller.
										Yes	No					
									Fig. 25	58 Swap	o Out Dia	alog Bo	x			

The successful swap-out is displayed in the workbench job service.

To "Swap In" multiple controllers under Bacnet network, follow the below steps.

Steps to perform Swap In on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select the desired controllers from the device list.
- Step 3. Click **Swap In**. This action displays Swap In dialog box.

Database																		2 objects
Name		Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status	E Objecti
VAV_ISF1_H	X_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7	ff 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In	
VAV_ISF1_H	X_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In	
Image: Set as Source Image: Set as Target Image: Set as Target <t< th=""></t<>																		
										Fig	g. 259 C	atabase	e pane					
					Step 4	ŀ.	Click	Yes.										
					N	Swap	In											×

This action will restore IRM program of all the selected controllers.No changes will be made to the controller. Do you want to continue?

No

Fig. 260 Swap In dialog box

Yes

The devices are swapped in. The successful swap-in is displayed in workbench job service.

Swap Out All Controllers

If you want to "Swap Out" all the controllers under Bacnet network, follow the below steps.

Steps to perform Swap Out on all controllers:

Step 1. Expand the Bacnet network.

Step 2. Right-click on IRM Program > Actions > click Swap Out.

♥		Config	The station configuration database	e		
Services		E Files	File System accessed over Fox sessi	ion		
💌 🕙 Drivers		🏅 Spy	Diagnostics information for remote VM			
NiagaraNetwork		Hierarchy	y Hierarchy views of remote station			
BacnetNetwork BacnetNetwork		History	History database			
E Bacnet Comm E Monitor X Tuning Policie	~					
🕨 🙀 IrmConfig	Views	•				
🕨 🖀 WEB-RL6N	Actions	► <u>/</u>	Add Serial Number			
🕨 🖀 WEB-RS6N	New	, I	<u>S</u> wap Out			
Apps			Swap <u>I</u> n			

Fig. 261 Swap Out

To "Swap In" all the controllers under Bacnet network, follow the below steps.

Steps to perform Swap In on all controllers:

Step 1. Right-click on the IrmConfig folder > Actions > click Swap In.



Fig. 262 Swap In

Set Controller Password

The Set Controller Password allows you to set tool and controller passwords for secure commissioning communication.

Secure commissioning communication is introduced for IRM NX controller commissioning, beginning with controller firmware version 1.0.1.9 and engineering tool version 1.0.1.7. The controller and engineering tool version 1.0.1.7 use an invisible default password in the initial state (default factory setup).

- **Note:** Resetting the controller password means conducting a manual factory reset for every controller. The engineering tool and the IRM NX controller must share the same password to communicate.
- **Note:** When switching projects or discovering IRM controllers, the passwords may need to be reentered on one or both sides. Passwords may be set using the engineering tool's set password for function. The password can be set just for the "Tool" or the "Tool And Controller".

Set Password for	Tool
	Tool
	Tool And Controller

Fig. 263 Set Password Option

Steps to Set Password for single controller:

To set the password, right-click on BacnetNetwork > Views > Set Controller Password.

÷	.	WEB-VA75IB24	NM	
	₽	🚺 Alarm So	Views 🕨	
	₽	Points	Actions	<u>R</u> eset Overrides
		O Virtual	Naur	 Ping
	1	O Alarms	New P	Teach To Controller
	Ľ.	Schedule	Edit Tags	– Teach Full Application To Controller
	÷	Config	Make Template	Learn From Controller
	₽	IP Setting	Cut	
	₽	🗎 BLE Conf	Conv	Check Application Compatibility
	₽	🗎 Rename I	сору	Clear Controller
	•	RM Prog	Paste	Clear Project
		🔻 🗸 Cont	Paste Special	
		▶ 🖬	Duplicate	Take <u>S</u> napshot
		•	Delete	Restore S <u>n</u> apshot
				S <u>w</u> ap
		▶ 🗎	Find	Set Controller Password
			Link Mark	Reset Tool Password
				Ping Sylk <u>D</u> evices
		🕨 💽 Perio		Validate Svlk Devices
		🔻 💽 Even		Toggle Parameter Default Action Visibility
		🕨 🕞 On b	Relation Mark	
		Alarr		Update All Bacnet Object Values From Controller To Application
				Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 264 Set Controller Password

Step 2. In the Set Controller Password window, enter the **New Password, Repeat New Password**, and select the **Tool** or **Tool And Controller** option. While creating password follow the password requirement mentioned in the Hint.

Click **OK**

Set Controller Password	×
📔 Irm Init Password Args	
New Password	
📔 Repeat New Password	
Set Password for	Tool
🗎 Hint	Password requirements: - minimum length of password is 10 - minimum number of lower case characters is 1 - minimum number of upper case characters is 1 - minimum number of digits is 1
	OK Cancel

Fig. 265 Set Controller Password

Setting Password for all Controllers

If you want to set the password for all of the controllers, follow the steps below.

Steps to Set Password for all controllers:

Step 1. Expand the **BacnetNetwork.**

Step 2. Right-click on IrmConfig > Actions > click Set Controller Password.

Config	Views 🕨	
Gervices	Actions •	<u>A</u> dd Serial Number
BacnetNetwor	New 🕨	<u>S</u> wap Out
Local Devi	5-14 T	Swap <u>I</u> n
▶ 旦 Bacnet Co	Edit Tags	Set <u>C</u> ontroller Password
🕨 🖵 Monitor	Make Template	<u>R</u> eset Tool Password
X Tuning Po	Cut	Update MAC Address Configurations
🕨 📴 IrmConfig	Сору	<u>G</u> enerate Balancing Report

Fig. 266 Set Controller Password

Step 3. Click **Yes**.



Fig. 267 Change Global Controller Password dialog box

Step 4. Enter the **Old Password, New Password, Repeat New Password,** and **Set Password for** the tool or tool and controller.

Set Controller Password	×
📔 Irm Config Set Password Args	
Old Password	
📔 New Password	
🗎 Repeat New Password	
E Set Password for	Tool
🗎 Hint	 Old Password: Change password of only those devices which have currently this password. Leave empty, when set the password of only those devices which have currently no password. Password requirements: minimum length of password is 10 minimum number of lower case characters is 1 minimum number of upper case characters is 1 minimum number of digits is 1
	OK Cancel

Fig. 268 Set Controller Password

Step 5. Click **OK**.

To ensure that the password in the controller and the engineering tool is same, use **Set Password for** function to select where the password should be changed.

Note: If you are creating a password for the first time, the old password field should be empty.

Reset Tool Password

The Reset Tool Password feature allows to reset the controller password.

Steps to reset controller password:

- Step 1. Navigate to the Station > BacnetNetwork > IrmBacnetDevice > select IRM Program.
 - WEB-VA75IB24NM ы 🔘 Alarm So Views Points Actions Reset Overrides ► O Virtual Ping New ь Alarms Teach To Controller 回 Schedule Edit Tags Teach Full Application To Controller C Trend Lo Make Template Config Learn From Controller 📄 IP Settin Check Hw Compatibility Cut BLE Con Check Application Compatibility Сору 🕨 ႃ Rename Clear Controller Paste RM Prog Clear Project Paste Special ✓ Con Take Snapshot Duplicate Restore Snapshot Þ 🗎 Delete S<u>w</u>ap ы Find Set Controller Password Link Mark Þ Reset Tool Password Þ Ping Sylk <u>D</u>evices Perio Þ. Validate Sylk Devices 🗢 🕞 Ever Relation Mark **Toggle Parameter Default Action Visibility** 🕨 💽 On b Update All Bacnet Object Values From Controller To Application Alari Replace Text A Block And Ws Text Blocks With Irm Ws Text Block
- Step 2. Right-click on IRM Program > Actions > Reset Tool Password.

Fig. 269 Reset Tool Password

Step 3. Enter the **Old Password** and click **OK.**

Reset Tool Password							
📔 Irm Reset Password Args							
🗎 Old Pa	assword						
	ОК	Cancel					

Fig. 270 Reset Tool Password

Note: A controller password can only be reset by performing a factory reset. Refer to Reset to Factory Default on page 352.

Reset Password for all Controllers

If you want to reset the password for all of the controllers, follow the steps below.

Steps to reset password for all controllers:

Step 1. Navigate to **BacNetwork** and right-click on **IRMConfig > Actions > Reset Tool Password**.









Fig. 272 Reset Tool Password

Note: A controller password can only be reset by performing a factory reset. Refer to Reset to Factory Default on page 352.

Password reset use cases

The table below depicts many use cases for changing setting the controller's password.

Use Case	Firmware version ≥ 1.0.1.9	Engineering Tool ≥ 1.0.1.7	Description
User commissioning the controller for first time	New controller connected to Bacnet network. The device is discovered and added to the Irm device manager view for the first time.	The device is discovered and added to the Irm device manager view for the first time. The default password is used	The default password is used for teach / learn / ping / clear controller. For commissioning, use the default password and then input the user- defined password. Keep the user-defined password secure for future use. Without a user-defined password, it is impossible to read / learn the application logic from the controller. Set a user-defined password in the Bacnet program actions menu by selecting set controller password. Reset the user-defined password to the default password using the set controller password option in the Bacnet program actions menu.
Set common user defined password for all controller	New controller connected to Bacnet network. Default Password is set from the factory.	The device is discovered and added to the Irm device manager view for the first time. In the engineering tool and all controllers, the default password is automatically assigned.	The default password is used for teach / learn / ping / clear controller. The user can set the user-defined password in the engineering tool and all controllers. Users should use the set controller password actions menu of IrmConfig in Bacnet network. When a user-defined password is created for the first time, the Old Password field remains empty.
Change common user defined password for all controllers Existing controllers. The user previously specified the password during commissioning.		The engineering tool has the same user-defined password as all controllers. The users want to change the user- defined password in all controllers.	The existing user-defined password is used for teach /learn / ping / clear controller. Users can change the user-defined passwords in all controllers. Users should use the set controller password actions menu of IrmConfig in Bacnet network. The old and new passwords must be entered.

Table 28 Use Cases for Password Reset

Use Case	Firmware version ≥ 1.0.1.9	Engineering Tool ≥ 1.0.1.7	Description
			• The user-defined password is set by User 1.
Application modification in the controller by another user	Existing controllers. The user previously specified the password during commissioning. All the controllers have a user- defined password.	User 2 discovers the devices and add them devices into the Irm device manager.	 User 2 uses the different user- defined passwords and gets the error message (There is an error in controller communication. It could be a password mismatch in the controller and station). User 2 can not teach / learn / ping /clear the controller until the user-defined password from user 1 is set in the engineering tool. All engineering operations can be performed after entering User 1 defined password. Important: If the user-defined password is forgotten, the controller must be factory reset and re-commissioned.
Modify	Existing controllers.	Existing station.	
existing controller with the same station	The user-defined password is already set	The user-defined password is already set.	All engineering operations can be performed.
		Another station.	The user gets an error in the job log and dialog box while performing teach / ping
Modify application in existing controller with other station	Existing controllers. User-defined password is already set	The user-defined password is already set. The user-defined password does not	There is a problem with controller communication. There may be a password mismatch between the controller and the station.
		match with the password set in the controller.	the user-defined password. Set the user- defined password that will be used in the controller and the engineering tool.

Table 28 Use Cases for Password Reset (Continued)

Use Case	Firmware version ≥ 1.0.1.9	Engineering Tool ≥ 1.0.1.7	Description
Modify application with the new station	Existing controllers. The user-defined password is already set.	New station devices are discovered and added into station database. Default user password is set in the engineering tool.	The user gets an error in the job log and dialog box while performing teach / ping / learn. There is a problem with controller communication. There may be a password mismatch between the controller and the station. Solution: Reset user-defined password in the engineering tool. Default user passwords will be used in the engineering tool.
Replace the damaged controller with the new controller from the factory.	New controller Default user password is set from the factory.	Users use the same station to configure the controller again. In station, the user- defined password is set.	User cannot perform teach /learn / ping / clear controller. Solution 1: Reset the user-defined password in the engineering tool. Default user passwords will be used in the engineering tool. Then do the match between the controller in the engineering tool and the new controller added in the network. Set user-defined password again. Solution 2: Backup of the application logic using engineering tool. Delete the controller from the database within the engineering tool. Add the newly discovered device into the station database and restore the backup. Note: After replacing a damaged controller with the new controller, you can either commission the application already present in the station or replace the database device with backed-up device data. When restoring the application using the device already present in the station, please ensure you put the device in the database into the "Swapped In" mode. After swapping logic backed up in the controller, the repository will be made available in the station database. The user can commission the newly replaced device. To learn more about device swapping, refer to Swap on page 187.

Table 28 Use Cases for Password Reset (Continued)

Use Case	Firmware version ≥ 1.0.1.9	Engineering Tool ≥ 1.0.1.7	Description
User want to reset controller to factory-default	Existing controllers. User-Defined Password is set.	Existing station. A user-defined password is set.	Perform a factory reset at the controller. Reset the user-defined password in the engineering Tool. Discover and match with the controller in the engineering tool. Set the user-defined password and do the commissioning.
Copy device on the new controller in the network	New Controller added to the network. Default user password is set from the factory	Copy from the controller in the station having a user-defined password set. User matching the cloned device with a new controller added to the network.	The copy function will copy the password from the existing device. Solution: Reset the user-defined password in the engineering tool. The default user password will be used. Set the user-defined password used in the old controller.
Clone application from one controller to another controller		Clone application logic from one controller to multiple controllers or single controller in Irm device manager view	The clone operation in the Irm device manager view does not alter the password in the target controllers. Furthermore, the password will not be copied from the source controller to the target controller.

Table 28 Use Cases for Password Reset (Continued)

Password Status

The Irm Bacnet Device manager now includes a Password Status column, which allows users to quickly monitor the status and detect issues when creating a password for the IRM NX controller.

The following status will be shown in the password status column:

- **Not supported**: If the firmware version is below 1.0.2.2.
- **Default password**: If no password is entered.
- **User password:** When the password is be set or changed.
- Password mismatch: If the tool password does not match with the controller password.

Database												
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Password Status	Auto Mac	Swap Status
WEB-VA75IB24NM	device:1011	{ok}	1	169.254.1.68:0xBAC0	VA00IB24NM	1.0.1.29	00008a8280000143	IrmControl 2.0.0.0	IRM Program	Default Password	Enabled	Swapped In

Fig. 273 Password Status

Ping Sylk Devices

Perform the "Ping Sylk Devices" operation to verify and displays the status of the connected Sylk device to the network.

Note: The duration of the Sylk Device ping is two minutes.

Steps to Ping the Sylk Devices:

- Step 1. Navigate to the Station > BacnetNetwork > IrmBacnetDevice > IRM Program.
- Step 2. Right-click on IRM Program > Actions > Ping Sylk Devices.



Fig. 274 Sylk Device Ping

• If no device is connected at the set address, the "Status" displays Down; in this case, the "Fault Cause" displays No device identified, and Sylk device suspends read-write operations.

All Sylk parameters associated with the Sylk device will also be updated with the same status and fault cause.

• If the user has configured TR75 and connected TR42 at the configured address, the "Status" displays down. In this case, "Fault Cause" shows 'Incompatible device found and Sylk device stops read-write operation.



Fig. 275 Sylk Device Function Block property sheet

- If the device configured matches the device connected to the network, the "Status displays (ok), and the Sylk device resumes read-write operation.
- **Note:** The user should open the property sheet for each Sylk device and verify the Sylk device fault cause if they ping multiple Sylk devices at the same time.

Validate Sylk Device

The "Validate Sylk Device" is used for validating the Sylk configuration in the application. Also, the validation action confirms any incorrect value entered in parameters or limitations for the configured Sylk device. For more details, refer to Validate Sylk Device on page 286.

Steps to perform Validate Sylk Device:

Right-click on IRM Program > Actions > click Validate Sylk Device

	WEB-VA75IB2	4NM	
•	🚺 Alarm So	Views 🕨	
►	Points	Actions	Reset Overrides
►	😮 Virtual		 Ping
►	Alarms	New •	Looph To Controller
►	Schedule	Edit Tags	
►	Trend Lo		Teach Full Application To Controller
►	💮 Config	Make Template	<u>L</u> earn From Controller
►	IP Setting	Cut	<u>C</u> heck Hw Compatibility
►	BLE Conf	Сору	Check Application Compatibility
•	ename 📄	Paste	Cl <u>e</u> ar Controller
•	Paste Special		Clear Pr <u>oj</u> ect
	Con	Duplicate	Take <u>S</u> napshot
		Delete	Restore S <u>n</u> apshot
	• • •		S <u>w</u> ap
	▶ 🖬	Find	Set Controller Password
	De la companya de la comp	Link Mark	Reset Tool Password
	▶ 🗎	Link From	Ping Sylk <u>D</u> evices
	🕨 💽 Peri	Link To	Validate Sylk Devices
	Ever	Relation Mark	Toggle Parameter Default Action Visibility
	▶ Lon b	Polato From	Update All Bacnet Object Values From Controller To Application
	🕨 📘 🔁 Alari	Polato To	Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 276 Validate Sylk Device

Toggle Parameter Default Action Visibility

The Toggle Parameter Default Action Visibility is used to hide or show parameter default action.

Steps to perform Toggle Parameter Default Action Visibility:

- Step 1. Navigate to the Station > BacnetNetwork > IrmBacnetDevice > IRM Program.
- Step 2. Right-click on IRM Program > Actions > click Toggle Parameter Default Action Visibility.



Fig. 277 Toggle Parameter Default Action Visibility

This action open Toggle Parameter Default Action Visibility option.

N Toggle Parameter Default Action Visibility				
false				
	ОК	Cancel		

Fig. 278 Toggle Parameter Default Action Visibility options

Step 3. Set it to "false", if you want to hide the parameter default action. Or

Set it "true", if you want to show default parameter action to the user.

Update All Bacnet Object Values from Controller to Application

The "Update All Bacnet Object Values From Controller To Application" option allows the user to synchronize the values of the controller and the application. When you perform a full teach to the controller, you ensure that the controller values are not overwritten by wire sheet values that are out of sync. It will keep the controller's object values.

Steps to perform Update all Bacnet object Values From Controller To Application:

- Step 1. Navigate to the Station > BacnetNetwork > IrmBacnetDevice > select IRM Program.
- Step 2. Right-click on IRM Program > Actions > Update All Bacnet Object Values From Controller To Application.

This action opens the Update All Bacnet Objects dialog box.

•	æ	WEB-VA75IB24	NM			
	₽	Alarm So	Views 🕨			
	•	Points	Actions	<u>R</u> eset Overrides		
	•	O Virtual		 Ping		
	•	Alarms	New •	Teach To Controller		
	•	Schedule	Edit Tags			
	•	Trend Lo		Teach <u>F</u> ull Application To Controller		
	Þ	💮 Config	Make Template	Learn From Controller		
	Þ	IP Setting	Cut	<u>C</u> heck Hw Compatibility		
	•	BLE Conf	Сору	Check Application Compatibility		
	•	Rename I	Paste	Cl <u>e</u> ar Controller		
	•	IRM Prog	Paste Special	Clear Pr <u>oj</u> ect		
		Cont	Duplicate	Take <u>S</u> napshot		
			Delete	Restore Snapshot		
			Find			
				Set Controller Password		
		► Qiii	Link Mark	Reset Tool Password		
				Ping Sylk <u>D</u> evices		
		Perio		<u>V</u> alidate Sylk Devices		
		Even	Relation Mark	Toggle Parameter Default Action Visibility		
			Relate From	Update All Bacnet Object Values From Controller To Application		
		Lto Alari	Delete Te	Replace Text A Block And Ws Text Blocks With Irm Ws Text Block		
				<u>Brock and the reaction with the hock brock</u>		

Fig. 279 Update All Bacnet Object values from Controller to Application



Fig. 280 Update All Bacnet Objects

Step 3.

Update BACnet object values for multiple controllers

If you want to update Bacnet object Values for multiple controllers, follow the below procedure.

Steps to perform Update Bacnet object values for multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controllers from the device list.
 - Click **Update All Bacnet Objects**. This action displays Update All Bacnet Objects dialog box. This action opens the Update All Bacnet Objects dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gik	*VA75IBWA24NM:00000b7	ff 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In
	© Se	t as Sou	Tce Teac	Folder Rew	Edit Set as Non Application	Discover e > Masta Full Teach to G	r Sync Sp controller	Add	Match ③TSync a	h A DeviceID incation Clear oad BLE Firmware	MAC Config MAC Config Project Clear Co Download Firmwar See Pane for all the	} IP Config ② B Introller ① Upd e ④ Teach Bala	ate All BACnet Of	swap Out	erate Balan ng Object	icing Report
			3	tep 5.	N ∪	pdate All This act Do you	BACnet Ob ion will upd want to con	jects ate All Bacn tinue?	et Objects of a	Il the selected Yes No	controllers.No c	changes will be	e made to th			
							Fig. 2	82 Upc	late All	Bacnet	Objeccts	dialog	box			

Note: Update All Bacnet Object Values From Controller To Application only works if both the controller and the application are in Sync mode.

Replace Text A Block and Ws Text Blocks with Irm Ws Text Block

The "Replace Text A Block and Ws Text Blocks with Irm Ws Text Block" allows you convert any Text A function block to the IRMWsTextBlock function block that supports better graphics for application comments.

Ŧ	æ	WEB-VA75IB24	NM	
	₽	Alarm So	Views 🕨	
	•	Points	Actions	<u>R</u> eset Overrides
	1		New 🕨	Ping
	÷.			Teach To Controller
	÷	Trend Lo	Edit Tags	Teach Full Application To Controller
	₽	💮 Config	Make Template	Learn From Controller
	₽	P Setting	Cut	<u>C</u> heck Hw Compatibility
	₽	BLE Conf	Conv	Check <u>A</u> pplication Compatibility
	₽	🗎 Rename I	Posto	Clear Controller
	•	RM Prog	Paste Oscial	 Clear Project
		🔻 🗸 Cont	Paste Special	
			Duplicate	Take Shapshot
			Delete	Restore S <u>n</u> apshot
			Find	S <u>w</u> ap
		▶ 🗎		Set Controller Password
		E	Link Mark	Reset Tool Password
		- E		Ping Sylk <u>D</u> evices
		Perio		<u>V</u> alidate Sylk Devices
		 Le Even Le On b 	Relation Mark	Toggle Parameter Default Action Visibility
		Alarr	Relate From	Update All Bacnet Object Values From Controller To Application
			Relate To	Replace Text A Block And Ws Text Blocks With Irm Ws Text Block

Fig. 283 Replace Text A Block and Ws Text Blocks with Irm Ws Text Block

The IRM engineering tools supports Niagara's WsTextBlock with the object named IRMWsTextBlock.

Property Sheet		_
A IrmWsTextBlock2 (Irm Ws T	Fext Block)	
🏹 Text		
Foreground 👔	black	
📔 Background	null	
Font	Arial 12.0 -	AaBbYyZz
🗎 Border	🛑 false 🔽	
📔 Selectable	🔵 true 🔍	
) Master Sync Enabled	🔵 true 🔍	

Fig. 284 IrmWsTextBlock Property sheet

Input Name	Description						
Text	Enter the text for the label.						
Foreground Allows to set foreground color. Null indicates no foreground fill.							
Background Allows to set background color. Null indicates no backgrour							
Font	Allows to change font style.						
Border	Allows to enable the border for the label.						
Calastable	When set to true, the label on the wire sheet view can be selected.						
Selectable	When set to false, the label cannot be selected on the wire sheet view.						
Maatar Suraa	When set to true, all properties sync from master to target.						
Enabled	When set to false, all properties from the master to the target will not sync.						

Master Sync

The Master Sync function is based on a large number of devices, all of which must be running the same application. This is referred to as a master sync group. The master sync group is created by copying the application of a single device (template) to multiple devices using the Clone Application feature.

One device designated as source, while the others serve as targets. The master sync command then allows the master device's current application (changes) to be rolled out to all target devices in a single step.

The changes are only made in the project on the target devices regardless of the teaching mode set (On Demand or Immediate). They are not automatically loaded into the target controllers, meaning that a "Teach to Controller" or a "Teach Full Application to Controller" is necessary.



Fig. 285 Master Sync Group including Source and Target Devices

- **Note:** Before selecting "Set as Source" or "Set as Target," the Irm Application Type for the Source and Target devices must be identical and unique over all other controllers. Please refer to the description of "Clone Application."
- *Important:* It is recommended to use "Clone application" or "Master Sync" instead of Template service.

Applying Master Sync

This function allows rolling out the source device's application (changes) to all target devices per one step. The differences in all target device applications are synchronized with the application of the source device.

At least one device must include an application to establish a master sync group via cloning. If you haven't previously, clone the application as explained in the Clone Application on page 210.

The following procedure shows an offline engineering example with four manually-created controllers using the standard workbench new command.

Steps to apply master sync:

Step 1. Double-click on the Bacnet Network to display the devices from the database. The Irm Application Type column must show the same name for all the master and target devices receiving the same application. Otherwise, perform a Clone Application to get unique and identical names. All other devices should have a different IRM Application Type.

Database										4 objects
Name	Device ID	Status	Netwk	MAC Addr	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	10
WEB-RL6N	device:0	{ok}	0	null	IRM Program	y4t.dbm	Unknown	30-Apr-19 1:16 AM EDT	None	
WEB-RSSN	device:1	{ok}	0	null	IRM Program	y4t.dbm	Unknown	24-May-19 10:25 AM EDT	None	
WEB-RL6N1	device:-1	{stale}	0	null	IRM Program	y4t.dbm	Unknown	30-Apr-19 1:16 AM EDT	None	
WEB-RS5N1	device:1	{stale}	0	null	IRM Program	y4t.dbm	Unknown	24-May-19 10:25 AM EDT	None	

Fig. 286 Database Pane

- Step 2. Select the device you want to define as the source, and then click **Set as Source**.
- Step 3. Select the devices you want to define as the targets, and then click **Set as Target.**
- Step 4. Select the source device, and then click Master Sync.

Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	ţ,
dk1_lv1	Unknown	28-Nov-18 12:50 PM CET	Source	4
dk1_lv1	Unknown	null	Target	
dk1_lv1	Unknown	28-No v-18 12:50 PM CET	Target	
dk1_lv1	Unknown	null	Target	
dk1_lv1	Unknown	null	Target	
			Þ	
Add >> Match	() TSynch	A DeviceID		
None Naster	Sync			

Fig. 287 Master Sync

The Synchronize differences dialog box displays.

N Sy	chronize differences	х
?	Synchronize differences for this Application Type from Source to all Ta	irgets?
	Yes No	

Fig. 288 Synchronize differences dialog box

- Step 5. Confirm the message by clicking **Yes.** The differences in all the target device applications are synchronized with the project's source device application.
- Step 6. Perform a "Teach to Controller" or a "Teach Full Application to Controller" to load the changes for all the target controllers.

Clone Application

This function allows you to clone the device application to a specific device based on a template (device). As a result, all devices will be synced with the same application.

Note: The master sync group is not established even if all devices have the same application type after cloning. The cloning can be performed before or after using the Master Sync option (see Applying Master Sync on page 209).

For example, the following schematic shows a master sync group consisting of four devices with the same application. The application is cloned using device 1 as a template, and devices 2 through 4 are selected for receiving this application. They form a master group defined by application Type-A.



Fig. 289 Cloning Application

Steps to clone application:

Step 1. Select all devices to include in the clone in the Database window. One selected device's application will be utilized as a template. All others will be assigned the application type of the chosen template device.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7	ff 26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gik	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In
		- 1	E Nev	/ Folder 🔒 New	🖉 🥒 Edit	# Discover	Cancel	🕀 Add ≽	Match 🕒 TSyno	h 🛕 DeviceID	MAC Config	IP Config 🛛 🚯 B	LE Config	Swap Out	Swap In	
		-		Slave - Toront		- N. 11-11	dh ca	1.4 - 66 4 12 - 42	-	linetice Declare	Partial Malance					des Bassat
	Sec. 2	et as sou	rce	->] Set as Target	Set as Non	e // Maste	er sync J sp	ut-off Application	n Clone Appl	Lation La Clear	Project K Clear Co	Introller Upd	ate All DAChet Of	ojects 💽 Gen	erate balan	cing keport
			📕 Teac	to Controller		Full Teach to (Controller 📋	Learn from Cont	roller 📕 Downl	oad BLE Firmware	📕 Download Firmwar	re 📕 Teach Bala	ncing Object	1 Learn Balanci	ng Object	
									ia 200	Datach	ot nano					
									iy. 230	Datasin	et parie					

The following message box displays.



Fig. 291 Clone Irm Application Type Message Box

Step 2. Confirm the message by clicking **Yes.** The Select Template dialog box displays.

N Select	Templa X
RS5N	-
ОК	Cancel

Fig. 292 Select Template dialog box

- Step 3. Select the template (device) from the drop-down list box.
- Step 4. Confirm the message by clicking **OK.**

The chosen template will be applied to all devices in the database pane. The Irm application type column indicates that all devices now have the same application type in the database pane. The master sync group is established.

Database									
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Application Type-
े Dev_20024	device:20024	{ok}	1345	10.90.90.114:0xBAC0	VA75IBWA24NM	1.0.1.32	00000b7fff251355	IrmControl 2.0.0.0	r14_5qo
<mark>े</mark> Dev_20023	device:20023	{ok}	1345	10.90.90.77:0xBAC0	VA75IB24NM	1.0.1.32	00008ac2800002cf	IrmControl 2.0.0.0	r14_5qo
े Dev_20026	device:20026	{ok}	1345	10.90.90.113:0xBAC0	VA75I24NM	1.0.1.32	00000a42800007e9	IrmControl 2.0.0.0	r14_5qo

Fig. 293 Irm Application Type column

Excluding Function Block Items from Master Sync

The function block items can be disabled in both the master and target devices. Function block items can be disabled for both periodic and event programs.

In the Master Sync function, function block values can be omitted if required. When the master sync command is executed, the omitted values of the function block will be preserved and will not be affected by the upgraded application.

- When a function block value is disabled in the master device, it is retained in all target devices.
- When a function block value is disabled in a target device, just that target device is excluded from the value update



Fig. 294 Master Sync Enabled Configuration and Function Block Value Updates

Steps to disable function Block Items from Master Sync:

Step 1. Double-click the **Const2Numeric** function block.



Fig. 295 Const2Numeric property sheet

Step 2. Expand the **Value A** and **Value B**.

Step 3. Set **Master Sync Enabled** property to false.

Pr	operty Sheet		
	Const2Numeric	(Const2 Num	eric)
	Execution	2	
	- Out A	27.30 {ok}	
	- Out B	0.50 {ok}	
Ψ	🗘 Value A	27.30	
	Master S	ync Enabled	🔵 true 🔍
	Value A		27.30
w	😫 Value B	0.50	
	Master S	ync Enabled	🛑 false 🔍
	Value B		0.50



Step 4. Click **Save**.

Split Application

You can split the unique application of the master sync group into a new application while retaining the current application. For the new application, you can give it a different program name. The software automatically creates a new application type. The new application can then be cloned to from the new master sync group.

This method may be used to add new features to an existing application for use in a similar context. For example, a small-sized office application can be used to create an application for a mid-sized workplace.



Fig. 297 Splitting-Off and Cloning Application

Steps to split the application from the master sync group:

Step 1. In the database pane, select the device you want to split, and then click **Split-Off Application**.

Database									
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name
WEB-RL6N	device:0	{uk}	0	null					IRM Program
WEB-RS5N	device:1	{ok}	0	null					IRM Program
				New	Folder	New	Jedit Edit	n Disco	ver Cancel

Fig. 298 Database Pane

The following message box displays.



Fig. 299 Split-off Irm Application Type Message Box

Step 2. Click **Yes** to confirm. The following dialog box displays.



Fig. 300 Name for program dialog box

- Step 3. Enter a new name for the BACnet program.
- Step 4. Confirm by clicking **OK**.

The specified program name displays in the "IRM Program Name" column in the database pane, and the new application type is displayed in the IRM application type column. You may now create a new master sync group with the device based on this split-off application type by cloning the application and setting the source and targets.

Irm Program Name	Irm Application Type
Test_Split	psi_o1q
IRM Program	ni2+goe

Fig. 301 Irm Application Type column
Batch Commissioning

Steps to perform batch commission:

Step 1. Create a station.

Note: Keep the offline controllers in Swap Out mode.

Step 2. Commission all the controllers (by default, the online controllers added in the database will be in swap-in mode).

DataDase																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Statu:
WEB -VA75MB24NM	device:5002	{ok}	22	12	VA75MB24NM	1.0.0.03	00000c7ff34e8a15	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM1	device:5006	{unackedAlarm}	22	15	VA75MB24NM	1.0.0.03	00000c7fcde1e7ce	IrmControl 2.0.0,0	IRM Program		Controller is empty	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM2	device:5003	{ok}	22	20	VA75MB24NM	1.0.0.03	00000c7fd0e77e2a	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB ·VA75MB24NM3	device:5005	{ok}	22	5	VA75MB24NM	1.0.0.03	00000c7fc239730f	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In

📧 New Folder 🗋 New 🖍 Edit 🚔 Discover 🔳 Cancel 💮 Add >> Match 🕐 TSynch 🛕 DeviceID 🖓 MAC Config 🖓 IP Config 😵 BLE Config 🕼 BLE Config

🛇 Set as Source 🚽 Set as Target 🗋 Set as None 》 Master Sync 🗳 Split-off Application 🖍 Clone Application 🕃 Clear Project 🗙 Clear Controller 🛓 Update All BACnet Objects 🛓 Generate Balancing Report

患 Teach to Controller 🔹 Application Full Teach to Controller 🏦 Learn from Controller 🔹 Download BLE Firmware 🔹 Download Firmware 🔹 Download Firmware

Fig. 302 Swapped In controllers

- Step 3. Navigate to the Irm Bacnet Device Manager view.
- Step 4. Select the first lot of online controllers from the database section. Based on the available memory the number of controllers in each lot decided.
- Step 5. Perform the **Full Teach to the Controller** or **Teach to Controller** operation on the swapped in controllers. Wait until the operation is completed.
- Note: It is recommended to perform the Full Teach to the Controller on new controllers.
- **Note:** In batch operation you can perform Full Teach to the Controller on maximum 10 controllers when the applications are in Swap In.

a Station	Periodic proj	gram 🕐 Bacne	tNetwork										[
													>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Database													17 obje
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync
VAV_TR42_Stg	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
👌 VAV_115u_Zio_Stg	device:2003	{down}	0	null	Spyder	1.00 (build 05)	true	3	0	ModelMicroBACnet2	2	14	
VAV_TR42_Stg1	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg2	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg3	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg4	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg5	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg6	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg7	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg8	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg9	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg10	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg11	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg12	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg13	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg14	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None
VAV_TR42_Stg15	device:-1	{disabled,fault}	0	null	VA423B24N	2.0.0.25	0000aa02400005de	IrmControl 2.0.0.0	IRM Program	gie=xig	Unknown	03-Jun-20 12:56 AM IST	None

				_						
<	Set as Source	→] Set as Target	Set as None	» Master Sy	nc Split-off Applicati	on Clone Application	Clear Project	1 Update All BACnet O	bjects 📕 l	mport
🗙 Clear Controller	E Teach to Co	ontroller 📕 Ap	plication Full Teach	to Controller	1 Learn from Controller	Jownload BLE Firmware	E Download Fir	mware 🔂 Swap Out	Swap In	-

Fig. 303 Database view

Step 6. Click Swap Out.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No.	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
WEB -VA75MB24NM	device:5002	{ok}	22	12	VA75MB24NM	1.0.0.03	00000c7ff34e8a15	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM1	device:5006	{unackedAlarm}	22	15	VA75MB24NM	1.0.0.03	00000c7fcde1e7ce	IrmControl 2.0.0.0	IRM Program		Controller is empty	null	None	Default Password	Enabled	Swapped In
WEB -VA75MB24NM2	device:5003	{ok}	22	20	VA75MB24NM	1.0.0.03	00000c7fd0e77e2a	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
WEB ·VA75MB24NM3	device:5005	{ok}	22	5	VA75MB24NM	1.0.0.03	00000c7fc239730f	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	In sync	null	None	Default Password	Enabled	Swapped In
	Nev	w Folder	New	🖋 Edit	# Discove	er 🔳 Cano	el 🕀 Add	≽ Match) TSynch 🛕 Dev	iceID 🙀 MAC Con	nfig 🔗 IP Cor	fig 🚯 BLE Co	onfig 🔂 Swa	ip Out 💮 Swa	ap In	
C Set as	s Source	→] Set as Targe	et 🗌	Set as No	ne 📎 Ma	ster Sync	Split-off Applic	ation 🥂 Clor	ne Application	Clear Project	🕻 Clear Controlle	1 Update A	All BACnet Object	s 📕 Generate	a Balancing	Report
	患 Teach to Controller 🔹 Application Full Teach to Controller 🖹 Learn from Controller 👘 Download BLE Firmware 🔹 Download Firmware 🔹 Teach Balancing Object 🔹 Learn Balancing Object															

Fig. 304 Swapping out

Recommendation for batch commission

Select the controllers based on the available memory. It is not recommended to load more than 50% of the available memory space. If you load more than 50% of the memory space, the controllers, then perform the batch operation in slots.

Example: Select 10 devices or (determine the number of devices based on the load). Perform the batch teach to the controller, then Swap Out. Similarly, select the next 10 devices and perform the same steps.

Rename Bacnet Objects

The Rename Bacnet Objects feature is used to customize the BACnet points by adding prefixes and suffixes. Adding prefixes or suffixes will only update the BACnet point name stored in the controller, but not the BACnet point name displayed in the application.



Note: By default Rename Bacnet Objects feature is disabled.



Steps to rename Bacnet objects:

- Step 1. Set **Enabled** option to true.
- Step 2. In the **Prefix Pattern** field, enter the prefix name.
- Step 3. In the **Suffix Pattern** field, enter the suffix name.

The prefix and suffix pattern are both in BFormat strings. To know more details on BFormat click on ⑦ icon seen in the Rename Bacnet Objects view below.

Step 4. Click Save.

Property Sheet	
📔 Rename Bacnet Obje	ects (Rename Bacnet Objects)
Enabled	true 🗸
Prefix Pattern	<pre>\$parent.name\$_</pre> ⑦
) Suffix Pattern	_%parent.parent.name%
Note 🗎	Changes to Rename Bacnet Objects configuration requires teach/full teach to controller.

Fig. 306 Rename Bacnet Objects

You can verify the updated bacnet point name in Irm Bacnet Point Manager view.

Step 5. Expand BacnetNetwork > Controller, right-click on Points > Views> Irm Bacnet Point Manager and select Offline discovery.

: Drivers : BacnetNetwork : IrmBacnetDevice : Points	1	Irm Bacnet Poin	t Manager
📀 🥕 IRM Offline Discovery		Success 📎	×
Discovered		0	objects
Object Name Object ID Property ID Index Value Description			ţ\$
Database		C	objects
Name Out Object ID Property ID Index Read Write			(U
■ New Folder New / Edit Hiscover Cancel ① Add	>> Match	🖏 Tagit	
<u>O</u> nline			
✓ Offline			

Fig. 307 Offline Point Discovery

Step 6. Click **Discover**.

IRM Offline Discovery					
Discovered					
Object Name	Object ID	Property ID	Index	Value	Description
	multiStateValue:1	presentValue			
	binaryValue:1	presentValue			
	analogValue:2	presentValue			
∃ IrmBacnetDevice_BacnetEnumValue1_BacnetNetwork	multiStateValue:2	presentValue			
	binaryValue:2	presentValue			
	analogValue:3	presentValue			

Fig. 308 Renamed Bacnet Points

Step 7. Run **Teach To Controller** or **Teach Full Application To Controller** to apply the changes to the controller.

Also, you can rename BACnet points for multiple controllers from the Irm Bacnet Device Manager view.

Steps to Rename BACnet points of multiple controllers:

- Step 1. Right click on BacnetNetwork > Views > Irm Bacnet Device Manager.
- Step 2. Select the controllers and click **Rename Bacnet Objects**.

Database														3 obje
Name De	evice ID Sta	atus	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Passv
SVAV_ISF1_HX_FX_IM dev	vice:1000 {ol	k) :	1	169.254.1.75:0xBAC0	VA75IBWA24NM	1.0.1.31	00000b7fcb992f4b	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	24-May-22 2:41 PM IST	None	Defau
VAV_ISF1_HX_FX_IM1 dev	vice:-1 {fa	ult,stale}	0	null	VA75IBWA24NM	1.0.1.31		IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Unknown	24-May-22 2:41 PM IST	None	Un Kn
VAV_ISF1_HX_FX_IM2 dev	vice:-1 {fa	ult} (0	null	VA75IBWA24NM	1.0.1.31		IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Unknown	24-May-22 2:41 PM IST	None	Un Kn
	USFI_HX_FX_M2 device:1 [fault] 0 null VA75IBWA24NM 1.0.1.31 IrmControl 2.0.0.0 IrmProgram vc6_gik Unknown 24-May-22241PMIST None Un Rename Bacnet Objects Rename Bacnet Objects Prefix Pattern Sparent.names D Note Devices Lambed Control 2.0.0.0 IrmProgram vc6_gik Unknown 24-May-22241PMIST None Un													
					ОК	Cancel								
I New Folder	IN New Folder IN New Folder Cancel O Add Match O TSynch DeviceID O MAC Config O IP Config BLE Config Swap Out Swap In as Source - Set as None Master Sync Split-off Application Clone Application Clear Project Clear Controller Update All BACnet Objects Generate Balancing Report											rt		

Fig. 309 Rename BACnet points from Irm Bacnet Device Manager View

- **Note:** The Rename Bacnet Objects feature displays default settings if you select multiple controllers. When you select a single controller, the Rename Bacnet Objects feature will display the settings that existed in the controller.
 - Step 3. Set **Enabled** option to True.
 - Step 4. In the **Prefix Pattern** field, enter the prefix name.
 - Step 5. In the Suffix Pattern field, enter the suffix name.
 That prefix pattern and suffix pattern are both in BFormat strings. To know more details on BFormat click on ⑦ icon.
 - Step 6. Click Save.
 - Step 7. Run **Teach To Controller** or **Teach Full Application To Controller** to apply the changes to the controller.

Bluetooth Configuration

Bluetooth configuration is provided to configure Bluetooth configuration for IP and MSTP controller. This feature allows you to perform operations like enabling or disabling the bluetooth function, setting Bluetooth password, Bluetooth enabling start and end time to enable mobile balancing applications to connect to the devices over Bluetooth.



Fig. 310 BLE Configuration

The Bluetooth configuration feature is supported by the following controllers.

- VA423B24N VA75IBWA24NS
- VA00IB24NM VA75MB24NM
 - VA75IBWB24NM VA00MB24NM
- VA75IB24NS
 - VA75MB24NS

When you add IrmBacnetDevice into Bacnet network, the Bluetooth setting option is hidden for non-Bluetooth enabled devices.

Steps to select the Bluetooth supported controller:

- Step 1. Navigate to the **IRM Program >** double-click **Control Manger**. This opens the Control manager property sheet.
- Step 2. In **Device Model Name**, select the Bluetooth supported model from the dropdown list.

) D	evice Model Name	VA75IBWA24NM	-
A 🗊	oplication Type	VA423B24N	*
A 🗊	oplication Details	VA75I24NM	
📄 Fi	Inction Block Family	VA00IB24NM	
Fi	Inction Block Version	VA75IB24NM	
N N	umber Of Folders	VA75IBWA24NM	
	umber Of Function Blocks	VA75IBWB24NM	
	umber Of Links	VA75I24NS	
		VA75IB24NS	
		VA75IBWA24NS	
🗎 М	emory Usage	VA75IBWB24NS	
		VA75M24NM	
		VA7610004014	

Fig. 311 Device Model Name

- Step 3. Click Save.
- Step 4. Right-click **IrmBacnetDevice** and select **Refresh Tree Node**. This activates the Bluetooth Configuration feature.

Enable Bluetooth Settings

Steps to enable Bluetooth Configuration:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice >** double-click on **Blue**tooth Configuration.
- Step 2. Set Bluetooth Status to Enabled.



Fig. 312 Bluetooth Status

Setting Bluetooth devices Passcode

The Bluetooth configuration allows you to set a passcode for the connected Bluetooth devices, which helps you to authenticate the correct device. The passcode is an eight-digit number. The default passcode is 00000000. You can set your passcode or generate a random passcode. Also, you can set the validity of the passcode.

Steps to set Bluetooth device passcode:

Step 1. Right-click **BLE Configuration > Actions > Generate Passcode.**

<u>V</u> iews	Þ	
<u>A</u> ctions	•	Write BLE Configuration To Device
New	•	Read BLE Configuration From Device
		Generate Passcode

Fig. 313 To generate passcode

Steps to set Bluetooth device passcode validity:

- Step 1. Navigate to the **BLE Configuration**, double-click **Bluetooth Configuration** to open the property sheet.
- Step 2. Under Bluetooth Passcode Validity, select the Start Date and End Date.

•	📔 Bluetooth Pass	code Validity		BLE Passcode Validity
	📔 Start Date	07-Sep-2021		
	End Date	05-Dec-2021		

Fig. 314 Bluetooth Passcode Validity

Note: The Bluetooth passcode End Date cannot be more than 90 days than the Start Date.

Step 3. Click Save.

Read and Write BLE Setting

Write BLE Configuration to Device

This feature sends all the Bluetooth configuration modifications from engineering tool to the controller.

Steps to perform Write BLE Configuration to Device:

Step 1. Right-click on **BLE Configuration**, select **Action**, and **Write BLE Configuration to Device**.

Property Sheet			
BLE Configurati	Views		
🗎 Status	VIEWS	4	(ok)
Fault Caus	Actions	♪	Write BLE Configuration To Device
Configurat 👔	New	►	<u>R</u> ead BLE Configuration From Device
🗎 Bluetooth	- lu -		<u>G</u> enerate Passcode
Bluetooth	Edit Tags		00000000
🕨 隌 Bluetooth	Make Template	l	BLE Passcode Validity

Fig. 315 Write BLE Configuration to Device

Read BLE Configuration from Device

If the user wants to read the Bluetooth configuration from the device, use read BLE configuration from device.

Steps to perform Read BLE Configuration from Device:

Step 1. Right-click on **BLE Configuration**, select **Action**, and click **Read BLE Configu**ration from Device.

Pr	operty Sheet			
	BLE Configurati	Views	Þ	{ok}
	Fault Caus	Actions	►	Write BLE Configuration To Device
	Configurat	New	•	Read BLE Configuration From Device
	🗎 Bluetooth	Edit Tags Make Template		<u>G</u> enerate Passcode
	Bluetooth			0000000
▶	Bluetooth			BLE Passcode Validity

Fig. 316 Read BLE Configuration from Device

Configuring Bluetooth for Multiple Devices

The engineering tool allows the user to perform Bluetooth configurations on multiple controllers in a batch process.

Steps to perform Bluetooth configuration on multiple controllers:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the IP or MSTP devices from the device list.
- **Note:** The BLE Config option will be inactive if any unsupported device is selected from the device list.
 - Step 3. Click on **BLE Config** and set **Generate New Passcode** to True or False.

🕗 🥕 Bacnet Discover								×									
Discovered																1	objects
Device Name	 Device ID 	Netwk	MAC Addr	Vendo	or	Model	Objects	Serial No	Service Pin Rank								1
CPO-VA75IBWA24NM	device:100	0 1	169.254.1.24	4:0xBAC0 Honey	well International Inc	va75IBWA24NM	119	00000b7ff1f58618									
						BLE Port	Configurat scode Arg erate New OK	ion s Passcode Fal	X Ise V								
Database																2	2 objects
Name	Device ID	Status	Netwk MAG	C Addr	Model F	irmware Rev Ser	ial No	Irm Family	Irm Program	Name Irm Application	Type Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status	(P
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1 169.	254.1.24:0xBAC0	VA75IBWA24NM 0.	.0.0.68 000	00b7ff1f58	518 IrmControl 2.0	0.0.0 IrmProgram	vc6_gjk	In sync	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In	
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1 169.	.254.1.24:0xBAC0	VA75IBWA24NM 0.	.0.0.68 000	00b7ff1f58	618 IrmControl 2.0	0.0.0 IrmProgram	vc6 <u>g</u> ik	Project has modification	ns 26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In	
	1	C New I	Folder	New	Edit 🛔 Discov	ver 🔳 Canco	:1 ()	Add ≽ Matc	h 🕑 TSynch	DeviceID	MAC Config 🛛 🚳 IP C	onfig 🚯 BLE Confi	g 🛗 Swap O	ut 🕞 Swap In			

© Set as Source → Set as Target □ Set as None ≫ Master Sync → Split-off Application → Clone Application →

Fig. 317 BLE Configuration

Step 4. Set **Bluetooth Status** to **Enabled**. This enables Bluetooth features for all the selected IP or MSTP devices.

Property Sheet	
BLE Configuration (BLE Configuration)	
📔 Status	{ok}
📔 Fault Cause	
Configuration Sync Status	Configuration In Sync
📔 Bluetooth Status	Enabled 🗸
🗎 Bluetooth Passcode (8 digit number)	45862011
Bluetooth Passcode Validity	BLE Passcode Validity

Fig. 318 Bluetooth Status

Step 5. Set Bluetooth Passcode and Bluetooth Passcode Validity.

💌 🗎 Bluetooth Pass	code Validity		BLE Passcode Validity
📔 Start Date	07-Sep-2021	iii	
🗎 End Date	05-Dec-2021	:::	

Fig. 319 Bluetooth Passcode Validity

Step 6. Click **Save**.

•

Onboard IO Migration

Onboard IO migration allows the user to migrate the pre-configured terminals from a selected source model to the target model. The Onboard IO migration is possible with the terminals having the same characteristics. Onboard IO Migration is a feature that the tool performs in the background when the user changes the model. The user explicitly cannot perform this action.

Note: When the user changes the device model in control manager, the engineering tool automatically reconfigures the IO configuration to best suit the target model.



Fig. 320 Onboard IO migration

As part of IO Migration, the tool first finds the same IO terminal type. If the target model does not support the same terminal type as the source or there are no free terminal on target with the same pin type, the tool tries to find its supertype. For example, a BI in the source is converted to a type in the order BI, UI, or UIO.

Steps to perform the Onboard IO migration:

Step 1. Open the Onboard IO wire sheet for a preconfigured device model (source model).

For example: Open the On board IO wire sheet for the IRM NX controller model VA75124NM that has three SSR terminals and two UIO terminals.

SSR_1 Bo Terminal	UIO_1 Uio Terminal
Execution 1	Execution 6
In - {null}	Out - {null
Out - {null}	Out Cause - {null
Pin SSR-1	In Type - {null
P: Characteristic BinaryDirect	In Characteristic - {null
	In Reset - {null
	Pin UIO-1
	P: In Type Par Analoginpu
SSR_2 Bo Terminal	P: In Characteristic Par SetPt10K
Execution 2	
In - {null}	UIO 2
Out -{null}	Uio Terminal
Pin SSR-2	Execution
P: Characteristic BinaryDirect	Out - {null
	Out Cause - {null
	In Type - {null
	In Characteristic - {null
SSR_3	In Reset - {null
Bo Terminal	Pin UIO-2
Execution 3	P: In Type Par BinaryInpu
In - {null}	P: In Characteristic Par Binary Re
Out - {null}	
Pin SSR-3	
D. Characteristic Diseas Direct	

Fig. 321 Onboard IO wire sheet

Step 2. Open the **Control Manager**, select the **Device Model Name**, and select the target model from the drop-down list.

Step 3. Click Save.

For example, select RL4N as your target model.

Property Sheet					
✓ Control Manager (Irm Control Manager)					
Author					
Description					
📔 Device Model Name	RL4N -				
Application Type	bxj_41s				
Application Details	Application Details				
Function Block Family	IrmControl				
Function Block Version	2.0.0.0				
📔 Number Of Folders	5				
📔 Number Of Function Blocks	13				
📔 Number Of Links	0				
📔 Number Of Out Save Enabled Properties	0				
🗃 Memory Usage	DDC Memory:		2% of 2.00 MB ₹		
	Function Block Name/IRM Folder Name/Annotation/ 🧧 0 B Consumed 🔻				
Flash Memory Exceeded FBs & IRM Folders	Flash Memory Exceede	d FBs & IRM Folde			
•		1			
	💭 Refresh 📃	Save			

Fig. 322 Control Manager

This action migrates the UIO or BO terminal with the same In-Type characteristics from the source model to the target model.



Fig. 323 Onboard IO wire sheet

Note: Review the IO conversions that the engineering tool performed during device model migration.

On Board IO Migration Examples

Migrating a BO terminal in VA75I24NM to RL4N model:

Scenario 1: Target has BO terminal available:

To assign BO and UIO terminals of the IRM NX controller (VA75I24NM) to the BO and UIO terminals of the RL4N controller, both the source and the target model terminals must have the same In-type characteristics. The below figure shows the migration of SSR_1 (Bo terminal) of VA75I24NM model to SSR_1 (Bo terminal) RL4N model, which have the same Binary direct characteristics for both the terminals.



Fig. 324 Onboard IO migration for same characteristics

Scenario 2: Target has BO terminal unavailable, So tool migrates the BO to a UIO with inType as BinaryOutput.

Example: The source model has the BO terminals, and the target model doesn't. In this case of migration, the source model configures with the next model, which has the same In-type characteristics. The below figure shows the migration of the UIO_2 (Bo terminal) to the SSR_2 (Uio Terminal) having the same In-type characteristics as BinaryOutput.

		SSR_2 Uio Terminal	Δ
		Out	- {null
UIO_2		Out Cause	- {nul
Bolerminal		In	- {null
In	- {null}	InType	-{nul
Out	-{null}	In Characteristic	Joul
Pin	SSR-2	In Reset	Joul
P: Characteristic	BinaryDirect	Pin	UIO-
		P: In Type Par	BinaryOutpu
		P: In Characteristi	c Par BinaryDir
			ci or orrorjo

Source Model

Target Model

Fig. 325 Assign the terminals between different physical points

Migrating terminals between different physical blocks with different In-type characteristics is not recommended if you try to migrate the target model set to unassigned.

Tuning Policies

The tuning policies configure rules for evaluating both write requests, for example, requests to write to proxy points and the acceptable freshness of reading requests resulting from polling. Tuning policies are important because they can affect the status of the driver's proxy points.

Tuning policies include standard tuning policy properties and additional properties related to client-side usage of the BACnet Subscribe Change Of Value (COV) service.

Note: The IRM NX controllers support 20 points for COV. Since there is a limitation in the CentraLine-N4 framework on the COV feature, it is recommended to configure only 20 points and the rest of the points for polling.

The IRM NX controllers have a default tuning policy that enables the COV feature. Whenever you perform a BACnet Network discovery, the IRM NX controller automatically creates the IrmTuningPolicy.

Important: You can assign the policy points to poll the important points more frequently than less important points based on the importance level. This configuration helps to optimize the bandwidth.

Default IrmTuning Policy

The IRM controllers have a default tuning policy that enables the COV feature. Whenever you perform a BACnet Network discovery, the IRM controller automatically creates the IrmTuningPolicy.

To access default IrmTuningPolicy:

Step 1. Expand BacnetNetwork > Tuning Policies or double-click IrmTuningPolicy.



Fig. 326 IrmTuning Policy

Assign Policy

Steps to assign a policy is a follows:

Step 1. Navigate to **BacnetNetwork > IrmBacnetDevice >** double-click on **Points.**



Fig. 327 Points Directory

Step 2. Click **New**, select the point type from the drop-down and then click **OK**.

Database	0 objects
Name Out Object ID Property ID Index Read Write	Ę
New Type to Add Boolean Writable Number to Add 1 [1-100] OK Cancel	
New Folder New Art Edit Biscover Cancel) Add

Fig. 328 Adding New Point

Step 3. Configure the point and assign the tuning policy from the tuning policy name drop-down.

ame	Туре	Enabled	Object ID	Property ID	Index	Tuning Policy Name	Data Type	Read
BooleanWritable	Boolean Writable	true	analoginput:	-1 Present Value	-1	defaultPolicy		Unsu
Name	BooleanWi	ritable						
Туре	Boolean W	Vritable						
Enabled	🔵 true	•						
Object ID	Analog Ir	nput		-1				
Property ID	Present V	<i>T</i> alue		•				
Index	-1							
Tuning Policy N	ame Default H	Policy	-					
Data Type	🗶 Default	Policy			₩B A-			
Read	IrmTun Unsubscri	ingPolicy Ibed			r⇒B A⊣			
Write	Read Only	!			₽₽B			
Device Facets	trueText=tru	e,falseText=f	alse ≫	<u>ь </u>				
Facets	trueText=tru	e,falseText=f	alse ≫	<u>в</u> -				
Conversion	Default		-					

Fig. 329 Tuning Policy Name

Step 4. Click **OK**. This action adds a point to the database.

To access these properties is expand **BacnetNetwork > Tuning Policies** or double-click **Default Policy**.

Pr	Property Sheet					
X	1	Гur	ning Policies (Bacnet Tuning Policy Map)			
Þ		X	Default Policy Bacnet Tuning Policy			
Ŧ		X	IrmTuningPolicy Bacnet Tuning Policy			
			📔 Min Write Time	00000h	00m 00s	≝ [0 ms-+inf]
			Max Write Time	00000h	00m 00s	≝ [0 ms-+inf]
			📔 Write On Start	🔵 false	-	
			📔 Write On Up	🔵 false	-	
			📔 Write On Enabled	🔵 false	-	
			📔 Stale Time	00000h	00m 00s	≣ [0 ms - +inf]
			Poll Frequency	Slow	-	
			Use Cov	🔵 false	-	
			📔 Use Confirmed Cov	🔵 true	-	
			Cov Subscription Lifetime	15		min
			Use Cov Property	🔵 false	•	
			Use Confirmed Cov Property	🔵 true	-	
			Cov Property Increment	1.00		
			Cov Property Subscription Lifetime	15		min
			Accept Unsolicited Cov	🔵 false	-	

Fig. 330 Bacnet Tuning Policy Property Sheet

Table 30	Tuning Policy	Property Sheet	Description
----------	----------------------	-----------------------	-------------

Property	Value	Description
Min Write Time	hours, minutes, seconds (defaults is zero)	Specifies the minimum amount of time allowed between writes to writeable points. This causes the system to write only the last value during this minimum time period, which serves to throttle rapidly changing values, improving system performance. A value of 0 disables this feature causing the system to attempt to write all values.
Max Write Time	hours, minutes, seconds (defaults is zero)	Specifies the maximum amount of time to wait before rewriting the same value to a writable point if nothing else triggers a write. Any write action resets this timer. A value of 0 disables this feature resulting in no timed rewrites.
Write On Start	true false (default)	Determines writable proxy point behavior when a station starts. Note: For critical proxy points false is recommended. Otherwise, large networks may experience write-queue overflow exceptions.
Write On Up	true false (default)	 Determines writable proxy point and parent device behavior . If true, a write occurs when the parent device transitions from down to up. If false, no write occurs.
Write On Enabled	true false (default)	 Determines writable proxy point behavior. If true, a write occurs when the point transitions from disabled to enabled. If false, no write occurs.
Stale Time	hours, minutes, seconds (defaults is zero)	 Defines the amount of time after which the data for a point in the station is considered too old to be meaningful {stale}. A non-zero value causes the point to become stale. The status will show as {stale}. If the configured time elapses without a successful read, read status {ok} is indicated. The default value of 0 disables the stale timer. Points become stale immediately when unsubscribed. Do not set a timer that is shorter than the poll cycle time. In the normal course polling, points will become stale. Instead, set this time longer than the largest poll cycle expected.
Poll Frequency	Fast Normal Slow (default)	Provides a method to associate the tuning policy with one of 3 poll rates available in the network's poll service: fast, normal, or slow rate. Applies to all proxy points.
Use Cov	true false (default)	 If set to true, the driver attempts (proxy subscriptions) using BACnet Cov subscriptions to the device. If the subscription attempt succeeds, the read status property of the point's BACnet proxy extension displays the Cov. If the subscription attempt failed, the driver uses normal polling and the read status property shows polled. If set to false, the driver ignores all the proxy subscriptions.

Table 30 Tuning Policy Property Sheet Description (Continued)

Property	Value	Description
Use Confirmed	true (default)	If set to true, the driver attempts for proxy subscriptions using BACnet confirmed Cov subscriptions to the device.
00	Taise	If disabled, the driver ignores this property.
Cov Subscription Lifetime	time in minutes (default is 15 min)	Indicates the lifetime, in minutes, for which the database subscribes for Cov notifications, then periodically subscribes again. A value of zero means an indefinite lifetime, although this is not guaranteed to persist across resets of the server device.
Use Cov	true	If Use Cov Property set to true, and assigned proxy points are under a BacnetDevice that supports the Subscribe COV service, any necessary updates (proxy subscriptions) are attempted using BACnet COV subscriptions to the device.
Property	false (default)	• If the subscription attempt succeeds, the "Read Status" property of the point's BacnetProxyExt displays "COV".
		• If the subscription attempt for a proxy point fails, normal polling is used and the "Read Status" property shows "Polled".
Use Confirmed Cov Property	true (default) false	• If Use Confirmed Cov Property is set to true and assigned proxy points are under a BacnetDevice that supports Confirmed COV notifications, any necessary updates (proxy subscriptions) are attempted using BACnet Confirmed COV subscriptions to the device.
		If Use Confirmed Cov Property set to false, it makes no difference what this property value is.
Cov Property Increment	number to two decimal places (default is 1.00)	Defines an increment for a COV property to apply to the sending of COV notifications. This property applies to numeric COV values only.
Cov Property Subscription Lifetime	15 min (default)	Configures the lifetime, in minutes, for which the software subscribes to the COV property for COV notifications. A value of 0 means an indefinite lifetime, although this is not guaranteed to persist across resets of the server device.
Accept Unsolicited Cov	true false (default)	Allows (true) or prohibits (false) Cov notifications to update a point that is being polled. False prevents the unsolicited updates.

Alarms

Each BACnet Device has an Alarms device extension. This extension applies to BACnet event notifications (alarms) sent to the station by that device.



Fig. 331 Types of Alarms

Steps to perform the alarm configuration and to use the notification class objects in BACnet points:

Step 1. Navigate to the **BacnetNetwork >IrmBacnetDevice>** double-click **Config.**

Step 2. Click **Discover** and select all the discovered notification classes 1,2,3 & 4.

Bacnet Discover Config				
Discovered				
Object Name	Object ID	Value		
Test5_VAV2	device:1003	Operational		
() Urgent	notificationClass:1	1		
High	notificationClass:2	2		
Low	notificationClass:3	3		
🕀 User Defined	notificationClass:4	4		
N_DdcCommand_0	proprietary512:0	e8 17 5a 6d 74 66 bf		

Fig. 332 Discovered Notification Classes

Step 3.

Click **OK** to add the notification to the database.

Name	Туре		Object ID	Poll Frequency	Ę
Urgent	Bacne	et Notification Class	notificationClass:1	Normal	
🕑 High	Bacne	et Notification Class	notificationClass:2	Normal	
Low	Bacne	et Notification Class	notificationClass:3	Normal	
User Defined Ba		et Notification Class	notificationClass:4	Normal	
Name Urge		Irgent			
Туре		Bacnet Notification Class 👻			
Object ID		Notification Class 🔽 1			
Poll Frequency Normal					

Fig. 333 Adding Alarm

You can change the properties of any notification class listed in the database.

Discovered						
Discovered						
Object Name		Object ID	Value			
Test5_VAV2		device:1003	Operational			
() Urgent		notificationClass:1	1			
High		notificationClass:2	2			
Low		notificationClass:3	3			
🕀 User Defined		notificationClass:4	4			
N_DdcCommand_0 proprietary512:0						
N_DdcComman	nd_0	proprietary512:0	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6	4 44 c2 c4 58 6c fc	eb f1 f0 cf 08 1
N_DdcComman	nd_0	proprietary512:0	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6	4 44 c2 c4 58 6c fc	eb f1 f0 cf 08 1
⊕N_DdcComman ≪ Database	nd_0	proprietary512:0	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6	4 44 c2 c4 58 6c fc	eb f1 f0 cf 08 1
₩_DdcComman Database Name	nd_0 Value	proprietary512:0	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6 Object ID	4 44 c2 c4 58 6c fc Object Name	eb f1 f0 cf 08 1 Description
 N_DdcCommark Database Name Device Object 	Value Test5	proprietary512:0	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6 Object ID device:1003	4 44 c2 c4 58 6c fc Object Name Test5_VAV2	eb f1 f0 cf 08 1 Description
N_DdcComman Database Name Device Object	Value Value Test5	proprietary512:0 e VAV2 [device:1003] ht [notificationClass:1	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6 Object ID device:1003 notificationClass:1	0 bject Name Test5_VAV2 Urgent	Description
N_DdcComman Database Name Device Object Urgent High	Value Value Test5 Urger High	proprietary512:0 vVV2 [device:1003] tt [notificationClass:1 [notificationClass:2]	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6 Object ID device:1003 notificationClass:1 notificationClass:2	4 44 c2 c4 58 6c fc Object Name Test5_VAV2 Urgent High	eb f1 f0 cf 08 1 Description Urgent High
N_DdcCommail Database Database Name Device Object Urgent High ⊕ Low	Value Value Test5 Urger High Low [proprietary512:0 VAV2 [device:1003] tt [notificationClass:1 notificationClass:3]	e8 17 5a 6	d 74 66 bf fd e0 45 fa 6 Object ID device:1003 notificationClass:1 notificationClass:2	4 44 c2 c4 58 6c fc Object Name Test5_VAV2 Urgent High Low	Description Urgent High Low

Fig. 334 Discover and Database pane

Step 4. Right-click on any of the notifications by going to **Views > property sheet**.

Urgent (Bacnet Notific	ation Class)
Poll Frequency	Normal 👻
Status	{ok}
Fault Cause	
Object Id	notificationClass 1
Object Name	Urgent
Object Type	Notification Class
Notification Class	1
Priority	{0,42,83}
Ack Required	111 ¥
Recipient List	0
description	Urgent

Fig. 335 Property sheet

Step 5. Right-click on **Recipient List > Action >** select add **Elements**.

i,	Bacnet Destination	
Þ	Time Range	12:00 AM - 11:59 PM
	Days Of Week	🖌 Sun 🖌 Mon 🖌 Tue 🖌 Wed 🖌 Thu 🖌 Fri 🖌 Sa
	Transitions	🖌 toOffnormal 🖌 toFault 🖌 toNormal 🔲 toAlert
	Route Acks	true
	Recipient	device:-1 ₹
	Process Identifier	0
	Issue Confirmed Notifications	🛑 false 🔍

Fig. 336 Add Elements

Step 6. Select the **Recipient** option, configure the **device ID** and click **OK**.

device:-1		
Device	<pre>device</pre>	- 1999
	device:-] Device	device:-1 2 Device v device

Fig. 337 Add device ID

This action will configure the device Id for the alarm notification.

Urgent (Bacnet Notifica	ation Class)
Poll Frequency	Normal
Status	{ok}
Fault Cause	
Object Id	notificationClass 🚽 1
Object Name	Urgent
Dbject Type	Notification Class
Notification Class	1
Priority	{0,42,83}
Ack Required	111 ¥
Recipient List	{device:1999 pld=0 conf=false times=12:0
description	Urgent

Fig. 338 Property sheet

BACnet alarms support the data types BacnetInput, BacnetOutput, Binaryinput, and Binaryoutput.

BACnet alarms do not support the enumoutput, numericvalue, booleanvalue, enumvalue, refin, and refout data types.

Alarm Synchronization Check

Modifications such as adding, deleting, copying, and pasting items on the alarms wire sheet are not allowed. You can only change the properties of the pre-defined notification class objects on the property sheet after double-clicking the notification class icon.

Property Sheet	
Urgent (Bacnet Notification Class	5)
Execution	1
Priority To Off Normal	0
Priority To Fault	42
Priority To Normal	83
Ack Required To Off Normal	true
Ack Required To Fault	true
Ack Required To Normal	true

Fig. 339 Bacnet Notification Class

CHAPTER

6

SYLK DEVICE PROGRAMMING

Sylk Devices

The Sylk devices are part of the IRM family. These devices are designed to seamlessly integrate with IRM NX controllers using the Sylk bus for communication. These devices increase the controller's ability to expand the operation, which is configured with applications that require a large amount of physical I/O. The Sylk devices are used in HVAC applications that require a programmable controller. All the devices provide flexible, universal inputs for external sensors.

The Sylk devices are programmable using IRM engineering tool wire sheets through the CentraLine-N4 workbench.

The "honIrmControl" palette supports the following Sylk devices listed below.



Fig. 340 Sylk Devices

Note: While clearing the controller and loading the Sylk configuration to the controller (Proxy file to the controller), 20 VDC output will turn off for 30 seconds. All I/O terminals will be down for 30 seconds. It will only happen when CentraLine-N4 changes the Sylk application or deletes the application from the controller. It will not happen once the application teach completes and the controller is running.

Following is the list of supported Sylk devices:

Module-TR7x	
TR75H	TR75
TR71H	TR71
Module-TR4x	
TR42	TR42H
TR42CO2	TR42HCO2
TR40	TR40H
TR40C02	TR40HCO2
Module-TR120x	
TR120	TR120H
Sensor	
Sylk sensor	C7400S Sylk Sensor (Zeleny)
Sylk Actuator	
Sylk Actuator	MS3103, MS3105, MS4103, MS4105, MS7403, MS7405, MS7503, MS7505, MS8103, MS8105 spring return. Direct Coupled Actuators (DCA) are used within Heating, Ventilating, and Air-Conditioning (HVAC) systems. They can drive a variety of quarter-turn; final control elements requiring spring return fail-safe operation.

Table 31 Sylk Devices

Sylk Parameters

 SylkParams BypassTime ControllerValue 🕨 🦂 FanCommand A HUMIDITY b HomeScreen NetworkSetpoint OccupancyOverrideCommand OccupancyStatus ROOMTEMP SensorOffset 🔜 SylkTime b -SystemCommand SystemStatus TimeField TimeOfDay ▶ ■. ValueFromWallmodule * SylkActuatorInputParam SylkActuatorOutputParam

The "honIrmControl" palette supports following the Sylk parameters listed below.

Fig. 341 Sylk Parameters

Table 32 Sylk Parameters

Parameter	Description
BypassTime	To provide the bypass time to a wall module.
C02	CO2 concentration in the space.
ControllerValue	Sylk device value sent to the controller and they are reflected in the wall module.
FanCommand	To provide commands to the fan from the wall module.
HUMIDITY	Percent humidity of the space.
HomeScreen	To configure the LED display of the wall module.
NetworkSetpoint	To provide the setpoints to a wall module.
OccupancyOverrideCommand	To override the unoccupancy mode to occupied mode.
OccupancyStatus	Occupancy status in the wall module.
ROOMTEMP	Temperature of the space.
SensorOffset	To provide the sensor offset to a wall module.
SylkTime	To configure and change the value of the Sylk module and platform time.
SystemCommand	To override the system command from the wall module.

Parameter	Description
SystemStatus	System status in the wall module.
TimeField	To configure the time format of the wall module.
TimeOfDay	Time of the day to display on the Sylk device.
ValueFromWallModule	To provide the value from the wall module to the controller.

Table 32 Sylk Parameters (Continued)

For more information regarding Sylk parameters, refer to the IRM Function Blocks User Guide - EN2B-0415-GE51.

Sylk Parameters Supported by the Sylk Devices

This section describes the Sylk parameters that are supported by Sylk devices.

Sylk Parameters Supported by TR120x

	TR120x SBus	wall modules
Parameter	TR120	TR120H
ROOMTEMP	Y	Y
HUMIDITY	Ν	Y
OccupancyOverrideCommand	Y	Y
ValueFromWallModule	Y	Y
TimeOfDay	Y	Y
SystemStatus	Y	Y
OccupancyStatus	Y	Y
ValueFromController	Y	Y
SystemCommand	Y	Y
TimeField	Y	Y
BypassTime	Y	Y
SensorOffset	Y	Y
HomeScreen	Y	Y
NetworkSetpoint	Y	Y
SylkTime	Y	Y
FanCommand	Y	Y
EnumSchedule	Y	Y

Table 33 TR120x

Sylk Parameters Supported by TR7x

_	TR7x SBus wall modules			5
Parameter	TR75H	TR75	TR71H	TR71
ROOMTEMP	Y	Y	Y	Y
HUMIDITY	Y	N	Y	Ν
OccupancyOverrideCommand	Y	Y	Y	Y
ValueFromWallModule	Y	Y	Y	Y
TimeOfDay	Y	Y	Y	Y
SystemStatus	Y	Y	Y	Y
OccupancyStatus	Y	Y	Y	Y
ValueFromController	Y	Y	Y	Y
SystemCommand	Y	Y	Y	Y
TimeField	Y	Y	Y	Y
BypassTime	Y	Y	Y	Y
SensorOffset	Y	Y	Y	Y
HomeScreen	Y	Y	Y	Y
NetworkSetpoint	Y	Y	Y	Y
SylkTime	Y	Y	Y	Y
FanCommand	Y	Y	Y	Y
EnumSchedule	Y	Y	N	Ν

Table	34	TR7x
10010	• •	

Sylk Parameters Supported by TR40x

Table 35 TR40x

Parameter	TR40x SBus wall modules			
	TR40	TR40H	TR40C02	TR40HCO2
ROOMTEMP	Y	Y	Y	Y
HUMIDITY	N	Y	Ν	Y
CO2	N	N	Y	Y

Sylk Parameters Supported by TR42x

Devenetor	TR42x SBus wall modules			
Parameter	TR42	TR42H	TR42CO2	TR42HCO2
ROOMTEMP	Y	Y	Y	Y
HUMIDITY	N	Y	N	Y
C02	N	N	Y	Y
OccupancyOverrideCommand	Y	Y	Y	Y
OccupancyStatus	Y	Y	Y	Y
BypassTime	Y	Y	Y	Y
NetworkSetpoint	Y	Y	Y	Y
FanCommand	Y	Y	Y	Y

Table 36 TR42x

Sylk Parameters Supported by C7400S

Table 37 C7400S (Zeleny)

Parameter	(Zeleny)
ROOMTEMP	Y
HUMIDITY	Y

Steps to Configure Sylk Application

Steps to configure and install the Sylk application in Sylk devices:

- Step 1. Add Sylk Device: Add Sylk device to the periodic program or event program wiresheet view.
- Step 2. Add and Map Sylk Parameters in Sylk Device: Map the required Sylk parameters with a Sylk device.
- Step 3. Configure Sylk Parameters: Configure the Sylk parameters as required.
- Step 4. Configure Sylk Device: Configure the Sylk device as required.
- Step 5. Validate Sylk Device: Verify all the Sylk device configurations in the wiresheet view.
- Step 6. Teach to Controller: Install the Sylk device application file in the Sylk device models like TR120, TR75, etc.

Add Sylk Device

Steps to add Sylk device:

- Step 1. Navigate to the Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > Irm Program and open the Wiresheet view of the Periodic program.
- Step 2. Navigate to the Palette section select **honlrmControl > SylkDevices**.



Fig. 342 honIrmControl Palette

Step 3. Select the Sylk device from the **SylkDevices** list and drag-drop it in the wiresheet view of the **Periodic program.**

You can add multiple Sylk devices by holding down Ctrl and right-clicking on them in the palette, then dragging them into the wiresheet view of **Periodic Programs**.

IRM Program		
Control Manager	Sylk Device Function B	NetworkSetpoint1 🔬
Periodic program	Execution 1	Execution 4
TD75H		Out - {null}
P AL IRISH		In - {null}
TR75	TR75 A	Sylk Device None
TR42HC02	Sylk Device Function B	
	Execution 2	
NetworkSetpoint1		NetworkSetpoint2
A NetworkSetpoint1 A NetworkSetpoint2		NetworkSetpoint2
A NetworkSetpoint1 A NetworkSetpoint2		NetworkSetpoint2 Sylk In Out Param Execution 5
Active Acti	TR42HCO2	NetworkSetpoint2 Image: Constraint of the second seco
Ad NetworkSetpoint1 Ad NetworkSetpoint2 Ag Event program Ag On board IO	TR42HCO2 Sylk Device Function B	NetworkSetpoint2 Sylk In Out Param Execution Out In
An NetworkSetpoint1 An NetworkSetpoint2 An NetworkSetpoint2 An NetworkSetpoint2 An Operation of the Network Operation An Operation of the Network Operation of the Network Operation An Operation of the Network Operation of the Ne	TR42HCO2 Sylk Device Function B Execution 3	NetworkSetpoint2 Sylk In Out Param Execution Out - [null] In Sylk Device
Ad NetworkSetpoint1 Ad NetworkSetpoint2 Ge Event program Ge On board IO Ge Alarms	TR42HCO2 Sylk Device Function B Execution 3	NetworkSetpoint2 Sylk In Out Param Execution Out - {null} In - {null} Sylk Device

Fig. 343 Wiresheet View Of Periodic Program

To view the property sheet for the Sylk device, double-click on it. You can check the power consumption and customize the Sylk device on the property sheet. You may also see if the Is configuration downloaded status is true or false.

•		TR42	T R42 Sylk Device		
		Model 🗎		Tr42	
		Address		2	•
		🗎 Status		{ok}	
		Fault Cause			
		Is Configuration Dov	vnloaded	🛑 false	
		Power Consumption	ı	13	96
		Device Name Viewab	ole By Tenant	YES 🗸	
		🗎 Language		English	-
		🗎 Language Viewable	Editable By Tenant	YES 🗸	
		🗎 Display Unit		°F 🗸	
		Unit Viewable/edital	ble by Tenant	YES 🗸	
		Home Screen Option	ıs	Temperature	-
		Occupancy Status Pa	aram	null	
	₽	Password Protection	n	Password Con	fig

Fig. 344 Total Sylk Power Consumption Data

Add and Map Sylk Parameters in Sylk Device

Once you have copied the Sylk device under the periodic program or event program, you can configure the parameters of the Sylk devices. Refer to the Sylk Parameters on page 241 section for more details on supported Sylk parameters for all the Sylk devices.

Steps to map Sylk Parameters with Sylk Device:

- Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > Irm Program and open the Wiresheet view of Periodic program.
- Step 2. Navigate to the **honIrmControl** palette, expand **Sylk** folder and select **SylkParms**.
- Step 3. Drag the Sylk parameters and drop onto the wiresheet.
- Step 4. Once all the required parameters added in the wiresheet view, map all of the parameters with the Sylk device.
- Step 5. Double-click on the Sylk parameters object. This action opens the property sheet.
- Step 6. Select the Sylk device from the sylkdevice drop-down list.

Property Sheet					
🛕 CO2 (Sylk Out Pa	iram)				
Execution				5	
Function Bloc	ck Name/Annotatio	n/Composite Flash M	lemory Usage	0	B [0 - 900]
— Out				- {null}	
📔 Sylk Device				TR40C02	
💌 🏠 Sylk Config D	ata			Ui Parameter	
🗎 Master Syl	nc Enabled 🛛 🔵 t	rue 👻			
🔻 <u> </u> co2	C 02	Param	_		
📄 sylkDe	vice	TR40C02 -			
) 🗎 status		{ok}			
📄 faultCa	ause				
📄 sendIn	iterval (seconds)	5			
🗎 catego	ry	Category			
) 📄 param	Permissions	Contractor Only	•		
enable	FD	YES			

Fig. 345 List of supported Sylk devices

Also, you can create a specific group of Sylk parameters and map them with the required Sylk device using Irmfolder.

Steps to create a specific group of parameters:

- Step 1. Navigate to the **honlrmControl** palette, add the **IrmFolder** in the wiresheet view.
- Step 2. Double-click on the IrmFolder. This opens IrmFolder wiresheet view.
- Step 3. Similarly, add the Sylk device and parameters from the palette to the **IrmFolder** wiresheet.

IrmBacnetDevice	: IRM Program	: Periodic program : IrmFolder2
Wire Sheet		
ControllerValue Sylk In Param Execution		HUMIDITY Sylk Out Param
Sylk Device	- {nutt} None	Sylk Device None
NetworkSetpoint Sylk In Out Param		Sylk In Out Para
Out In	+ - {null} - {null}	Out - {null}
Sylk Device	None	Sylk Device None
OccupancyStatus Sylk In Param		OccupancyOverrideCommand A
Execution	6	Execution 5
In Svlk Device	- {null} None	Out - {null} Svik Device None

Fig. 346 Wiresheet View

Step 4. In the Wiresheet view, right-click the **Sylk Device > Actions >** select **Attach unassigned Params.** All the unassigned parameters of the Sylk device are assigned.

TR75H Sylk Device Fi	Views	Þ	tpoint1 🛕
Execution	Actions	•	<u>A</u> nnotation
	Edit Tags		<u>V</u> alidate Sylk Device
			Attach <u>U</u> nassigned Params
	Make Template		Delete Associated Params
	Cut	Ctrl+X	- {null} - {null}
	Сору	Ctrl+C	None
	Paste	Ctrl+V	P A
	Paste Special		am <u>281</u> 6
	Duplicate	Ctrl+D	- {null} None
	Delete	Delete	

Fig. 347 Attach Unassigned Parameters

Similarly, you can also create several folders and configure them with Sylk devices. The folders can be reused by copying and pasting them into the wiresheet view.

Configure Sylk Parameters

Configure the required Sylk parameters after mapping the Sylk device with the Sylk parameters. Sylk Parameters are divided into three categories:

- **Sylk In Parameters:** These parameters act as input to the Sylk devices. For more details, refer to the Configure Sylk In Parameters on page 250.
- **Sylk Out Parameters:** These parameters capture input from various sensors and act as output for the Sylk device. For more details, refer to the Configure Sylk Out Parameters on page 255.
- **Sylk In Out Parameters:** These parameters are used as input as well as output for the Sylk device. For more details, refer to the Configure Sylk In Out Parameters on page 268.

Sylk In Parameters

Sylk In parameters are used as inputs to the Sylk devices.

Table 38 Sylk In Parameters

Properties	Description
ControllerValue	Value from the controller to the wall module.
OccupancyStatus	Occupancy status in the wall module.
SystemStatus	System status in the wall module.
TimeOfDay	Displays Time of the day on Sylk device.

Sylk Out Parameters

Sylk Out parameters capture input from various sensors and act as output for the Sylk devices.

Table 59 Sylk Out Parameters	Table	39	Sylk	Out	Para	meters
------------------------------	-------	----	------	-----	------	--------

Properties	Description
CO2	CO2 concentration in the space.
HUMIDITY	Percent humidity of the space.
OccupancyOverrideCommand	Allows you to override the occupied, unoccupied, standby mode for wall module.
ROOMTEMP	Temperature of the space.
SensorOffset	Provides the sensor offset to the wall module.
ValueFromWallModule	Provides the Sylk device value from the wall module to the controller.

Sylk In Out Parameters

Sylk In Out parameters are used as input and output for the Sylk device.

Table 40 Sylk In Out Parameters

Properties	Description			
BypassTime	Provide the bypass time to a wall module.			
FanCommand	Provide commands to the fan from the wall module.			
NetworkSetpoint	Provide the setpoints to the wall module.			
SystemCommand	Override the system command from the wall module.			
TimeField	Configure the time format of the wall module.			

Configure Sylk In Parameters

- Controller Value Parameter Configuration: The Controller Value parameter displays the value from the controller to the wall module.
- Occupancy Status Parameter Configuration: The Occupancy Status parameter displays occupancy status in the wall module.
- System Status Parameter Configuration: The System Status parameter displays the system status in the wall module.
- Time Of Day Parameter Configuration: The Time of Day parameter sets the time format for the wall module.

For more detail about Sylk In Parameters type, refer to IRM Function Blocks User Guide - EN2B-0415-GE51.

Controller Value Parameter Configuration

Property Sheet			
🛕 ControllerValue (Sylk In Param)			
Execution		16	
📔 Function Block Name/Annotation/Com	posite Flash Memory Usage	0	B [0 - 900]
— In		- {null}	:
👕 Sylk Device		TR75	
🔻 🔅 Sylk Config Data		Ui Parameter	
Master Sync Enabled 🔵 true			
ControllerValue Value From	Controller Param		
sylkDevice	TR75 -		
🗎 status	{fault}		
📄 faultCause	Parameter ControllerValue	e name Length i	3
📄 sendInterval (seconds)	Cov 🗸		
🖬 senDelta	0.50 [0.00-9999.00]		
🗃 senDeltaNote	Value in "senDelta" will only if the "sendInterva is set to "Cov"	. be honored 1"	
ategory	Category		
paramPermissions	Contractor Only 🚽		
📄 enableFD	NO		
i enumerated	NO		
enumDefinition	range={} 📎 🕒 🔹		
📔 defaultEnumValue	0 🔻		
🗎 numberOfDecimals	0 -		
SelectLabelsToShowOnScreen	Sylk Device Label Display Cor	nfig	

Fig. 348 Controller Value Property Sheet

Steps to configure Controller Value parameter:

- Step 1. **sylkDevice:** Select the Sylk device from the drop-down list.
- Step 2. **category:** Enter the category name in the field. It helps to differentiate between parameters.

Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

) paramPermissions	Tenant Read Only Contractor Only				
📄 enableFD					
allowNullValue	Tenant Read Only				
	Tenant Read Write				

Fig. 349 Parameter Permissions

- Step 4. **enableFD:** The period until the configured Sylk device is alerted of a failure at this point is defined as fail detect.
 - **YES**: If the parameter has not received an update from the BACnet network source in the fail detect time, an alarm is generated, and the current value is set to invalid.
 - **No**: False means the object retains the last value written to it until a BACnet network source changes.
- **Note:** Fail detect time depends on the configured update rate.
 - Step 5. **enumerated:** This field allows user to enable multiple states of the enum setpoint.
 - Step 6. **enumDefinition:** If the enumerated field is "Yes," the user can set multiple states of the enum setpoints.

To set the enumDefinition of the Setpoint:

i). Click on the >> button.

📔 enumDefinition range={} 📎 🕓 👻	
---------------------------------	--

Fig. 350 Enum Setpoint

ii). Set the enum definitions Ordinal, Tag, and Display as per your requirement.



Fig. 351 Enum definitions

iii). Click **OK** to save.

- **Note:** TR 71 and TR 75 are the enumerated options for the Sylk module type. To enable the enumerated option, set the parameter type to controller value, wall module value, or network setpoint.
 - Step 7. **defaultEnumValue :** This option displays the list of default enum values from the defined enum range.
 - Step 8. **selectLabelsToShowOnScreen:** This option allows the user to configure the Sylk device labels to the display in the Sylk wall module.



Occupancy Status Parameter Configuration

Ρ	rope	erty Sheet									
Δ	Occ	cupancyStatus	ipancyStatus (Sylk In Param)								
	Ð	Execution						23			
	Ð	Function Blo	ck Name/Anno	tation/Con	nposite Flas	h Memo	ory Usage	0		B [0 - 900]	
	-	In						- {null}			
	Ð	Sylk Device						TR42			
-	Q	Sylk Config D	ata					Ui Paramet	ter		
Master Sync Enabled 🔵 true 🔽											
	Cccupancy Status										
		Image: sylkDevice TR42 Image: status {ok} Image: status {ok}									
					0						
					Coccupancy	Status	Additional	Conf			
		Ccc	upancy Statu	Show Effect	ive Occuj	pancy State					
				Show Effect	ive Occu	pancy State					
			Show Occupancy Override State								
					Do Not Sho	w Occupa	ancy Or Overri	de State			

Fig. 353 Occupancy status Property Sheet

Steps to configure Occupancy Status parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **tR7XConfig:** This field allows you to choose how the override status should be presented on the LCD.
 - **Show effective occupancy status:** LCD displays the actual occupancy status considering the IRM application.
- **Show the occupancy override status:** LCD displays the occupancy override status initiated from the LCD, independent of the IRM application.
- **Do not show occupancy or override status:** LCD does not display occupancy or override, regardless of what the user initiates and the IRM application.

System Status Parameter Configuration

Property Sheet						
🛕 SystemStatus (Sylk In Param)						
Execution	24					
📔 Function Block Name/Annotation/Composite Flash Memory Usage	0	B [0 - 900]				
— In	- {null}					
📔 Sylk Device	TR75					
🔻 🗱 Sylk Config Data	Ui Parameter					
📔 Master Sync Enabled 🛛 🔵 true 🧹		_				
System Status System Status						
sylkDevice TR75						
<pre>status {ok}</pre>						
aultCause faultCause						
SendInterval (seconds) Cov						
🖬 enableFD 📃 🔍 NO						
systemStatusValues System Status Values						
Off 255 [0-255]						
Heat 2 [0-255]						
Cool 0 [0-255]						
📔 Reheat 1 [0 - 255]						

Fig. 354 System Status Property Sheet

Steps to configure System Status parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **systemStatusValues:** This option allows configuring the system values as per requirement in the defined range.

•	📄 systemStatus	Values	System Status Values
Off		255	[0 - 255]
	🗎 Heat	2	[0 - 255]
	Cool 🗎	0	[0 - 255]
	🗎 Reheat	1	[0 - 255]

Fig. 355 System Status Values

Time Of Day Parameter Configuration

Property Sheet			
🛕 TimeOfDay (Sylk In Param)			
Execution	25		
📔 Function Block Name/Annotation/Con	nposite Flash Memory Usage 0 B [0 - 900		
📔 Sylk Device	TR75		
🔻 🗱 Sylk Config Data	Ui Parameter		
Master Sync Enabled 🛛 🔵 true	×		
🔻 🤗 TimeOfDay 🛛 Time Of Da	y Param		
sylkDevice	TR75 -		
📄 status	{fault}		
🕥 faultCause	Parameter TimeOfDay name Length is 9 exc		
🕥 sendInterval (seconds)	Cov		
Category	Category		
) paramPermissions	Contractor Only 🗸		
📄 enableFD	NO NO		
SelectLabelsToShowOnScreen	Sylk Device Label Display Config		

Fig. 356 Time Of Day Property Sheet

Steps to configure Time Of Day parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **category:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

paramPermissions	Tenant Read Only 🚽
👕 enableFD	Contractor Only
	Tenant Read Only
	Tenant Read Write

Fig. 357 paramPermissions

Step 4. **selectLabelsToShowOnScreen:** This option allows you to customize the display of the Sylk device label for Sylk parameters.

•	🗎 selectLabelsToShowOr	Screen	Sylk Device Label Display Config
	🗎 Room(Top)	YES	•
	🗎 Setpoint(Top)	NO 🔵	▼
	Humidity	YES	▼
	🗎 Outside	NO 🔵	▼
	🗎 Room(Bottom)	YES	▼
	Setpoint(Bottom)	NO 🔵	
	Temperature	NO 🔵	▼
	Percentage2	YES	▼

Fig. 358 Configure Sylk Device Label Display

For more detail about Sylk In Parameters type, refer IRM Function Blocks User Guide - EN2B-0415-GE51.

Configure Sylk Out Parameters

The following are the parameters that capture input from various sensors and act as output for the Sylk device:

- Humidity Parameter Configuration: The Humidity parameter shows the percentage of humidity in the room.
- CO2 Parameter Configuration: The CO2 parameter specifies the level of CO2 concentration in the room.
- Occupancy Override Command Parameter Configuration: The Occupancy Override Command parameter allows to switch between Unoccupancy Mode to Occupied Mode.
- Room Temperature Configuration: The ROOMTEMP parameter displays the room temperature.
- Sensor Offset Parameter Configuration: The Sensor offset parameter provides the sensor offset to the wall module.
- Value From Wall Module Parameter Configuration: The Value From Wall Module parameter provides the value from the wall module to the controller.

For more detail about Sylk In Parameters type, refer IRM Function Blocks User Guide - EN2B-0415-GE51.

Humidity Parameter Configuration

Prop	perty Sheet						
🛕 н	🛕 HUMIDITY (Sylk Out Param)						
Q	Execution		8				
Q	Function Block Name/Annotatio	on/Composite Flash Memory Usage	0	B [0 - 900]			
-	Out Out		- {null}				
4	Sylk Device		TR42				
\ge ξ	Sylk Config Data		Ui Parameter				
	📔 Master Sync Enabled 🛛 🔵 t	true 🗸					
-	' 💧 HUMIDITY Hum	iidity Param					
	📔 sylkDevice	TR42					
	🗎 status	{ok}					
	🗎 faultCause						
) 👔 sendInterval (seconds)	5					
	ategory	Category					
	aramPermissions	Contractor Only 🗸					
	enableFD	YES					
	tR7XConfig	T R7 X Humidity Param Additional Co	onfig				
	tR4XConfig	T R4 X Humidity Param Additional Co	onfig				

Fig. 359 Humidity Property Sheet

Steps to Configure Humidity parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. This helps to differentiate between the parameters.

Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

paramPermissions	Contractor Only 🚽
selectSensor	Contractor Only
incrementDecrement	Tenant Read Only
	Tenant Read Write

Fig. 360 Parameter Permissions

Step 4. **tR7XConfig:** This option allows configuring additional parameters.

▼ 🗎 tR7XConfig	T R7 X Humidi	T R7 X Humidity Param Additional Config		
Number Of Decimals	s	0 -		
Default Sensor Offse	et Value	0.00	[-999.00 - 9999.00]	
Select Labels To Sho	ow On Screen	Sylk Device L	abel Display Config	

Fig. 361 T R7X Humidity Param Additional Config

- **Number of Decimals:** Enter the decimal accuracy.
- Default Sensor Offset Value: Enter the default value for sensor offset.
- Select Labels To Show On Screen: This option allows you to customize the display of the Sylk device label for Sylk parameters.

Step 5. **tR4XConfig:** This option allows configuring additional parameters.

💌 证 tR4XConfig	T R4 X Humidity	y Param Additional Config
📔 Number Of Decin	nals 0 🗸	
Default Sensor O	offset Value 0.0	[-9.0 - 9.0]

Fig. 362 T R4X Humidity Param Additional Config

- Number of Decimals: Enter the decimal accuracy.
- Default Sensor Offset Value: Enter the default value for sensor offset.

CO2 Parameter Configuration

Property Sheet						
🛕 CO2 (Sylk Out Param)						
Execution		5				
Function Block Name/Annotatio	n/Composite Flash Memory Usage	0	B [0 - 900]			
— Out		- {null}				
Sylk Device		TR40C02				
🔻 🗱 Sylk Config Data		Ui Parameter				
🃔 Master Sync Enabled 🔵 t	rue 🗸					
🔻 🖧 CO2 C O2	Param					
sylkDevice	TR40C02 🗸					
📄 status	{ok}					
📔 faultCause						
) sendInterval (seconds)	5					
Category	Category					
paramPermissions	Contractor Only 🔹					
i enableFD	YES					

Fig. 363 CO2 Property Sheet

Steps to configure CO2 parameter:

- Step 1. **sylkDevice:** Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

隌 paramPermissions	Contractor Only 🗸	
enableFD	Contractor Only	
_	Tenant Read Only	

Fig. 364 Change Parameter Permissions

Occupancy Override Command Parameter Configuration

Pı	op	erty Sheet				
▲	🛕 OccupancyOverrideCommand (Sylk Out Param)					
	Ð	Execution			26	
	Ð	Function Blo	ck Name/Annotatio	on/Composite Flash Memory Usage	0	B [0 - 900]
		Out			- {null}	
	Ð	Sylk Device			TR42	
T	Q	Sylk Config D	ata		Ui Parameter	
	Master Sync Enabled 🛛 🚽 🚽					
	Ŧ	Occupance	yOverrideCommar	nd Occupancy Override Command		
		🗎 sylkDe	vice	TR42 ×		
) 🗎 status		{fault}		
		🗎 faultCa	ause	In Sylk param OccupancyOverride	Command -	
		🗎 sendIr	nterval (seconds)	60		
		📔 enable	₽FD	NO NO		
		🕨 🗎 tR7XCo	onfig	T R7 X Occupancy Override Additiona	l Co	
		🕨 🗎 tR4XCo	onfig	T R42 Occupancy Override Additional	l Coi	

Fig. 365 Occupancy Override Command Property Sheet

Steps to configure Occupancy Override Command parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **tR7XConfig:** This option allows configuring occupancy override additional settings.

-	🔻 🏹 tR7XConfig 🛛 T R7 X O		ccupancy Override Additional Co	
	Override To Occupied	Settings	Occupied Override Details Config	
	🕨 📔 Override To Unoccupi	ed Settings	Un Occupied Override Details Config	
	Override To Standby	Settings	Standby Override Details Config	
	Occupancy Values		Occupancy Values	

Fig. 366 T R7X Occupancy Override Additional settings

Override To Occupied Settings

📔 Override To Occupied Settings	Dccupied Override Details Config	
Override Occupied State	● NO 🗸	
🕥 Override Type	Continuous Override 🗸	
📔 use Network Bypass Time Only	NO V	
📄 Note	One "Day" is a 24 hour period from the t	
📔 Min Time Days	1 [1-99]	
隌 Max Time Days	1 [1-99]	
Min Time Hours	3 [0-24]	
Max Time Hours	3 [0-24]	
📔 Min Time Minutes	0 [0 - 59]	
🃔 Max Time Minutes	0 [0 - 59]	
🗎 Bypass Time Param	null 🖿 👻	•

Fig. 367 Override to Occupied Settings

- Override Type
 - **Continuous Override:** The default setting, this setting disables the time override type options.
 - **Time Override in Hours (Bypass):** This option enables the time setting details. The minimum and maximum time can be set in hours and minutes. The default setting is min = max = 3 hours. Ensure that the maximum time is greater than the minimum time or that the minimum time is lesser than the maximum time. If either case is not true, an error message appears informing that the min value is greater than the max value. The range is from 0 to 24 hrs / 0 to 59 min.
 - Time Override in Days (Bypass): This option enables the time setting details, wherein the minimum and maximum time can be set in days. In this case, the hours and minutes options are disabled. The default setting is min = max = 1 day. The permissible range is 1 to 99 days.

📔 Override Type	Continuous Override 🗸
📄 use Network Bypass Time Only	Continuous Override
Note	Timed Override in Hours (Bypass)
Min Time Days	Timed Override in Days (Bypass)

Fig. 368 Override Type

If the range exceeds, an error message displays.

- Use Network Bypass Time Only: If this option is selected, then all other override details are disabled. The application will determine the timed override.
- **Note:** The Use Network Bypass Time only option applies to occupied override type settings. This option is not available for unoccupied and standby override type settings.
 - Override Setting

油 Min Time Days	1	[1-99]
🗎 Max Time Days	1	[1-99]
🗎 Min Time Hours	3	[0-24]
Max Time Hours	3	[0-24]
🗎 Min Time Minutes	0	[0 - 59]
🗎 Max Time Minutes	0	[0 - 59]

Fig. 369 Override Settings

Override To Unoccupied Settings

Override Unoccupied State	NO
Override Type	Continuous Override 🔹
🗎 Note	One "Day" is a 24 hour period from the t
🃔 Min Time Days	1 [1-99]
隌 Max Time Days	1 [1-99]
隌 Min Time Hours	3 [0-24]
隌 Max Time Hours	3 [0-24]
🗎 Min Time Minutes	0 [0-59]
🗎 Max Time Minutes	0 [0-59]

Fig. 370 Override to Unoccupied

• Override Type

- **Continuous Override:** The default setting, this setting disables the time override type options.
- **Time Override in Hours (Bypass):** This option enables the time setting details. The minimum time and maximum time can be set in hours and minutes. The default setting is min = max = 3 hours.Ensure that the maximum time is greater than the minimum time or that the minimum time is lesser than the maximum time. If either case is not true, an error message appears informing that the min value is greater than the max value. The range is from 0 to 24 hrs / 0 to 59 min.
- **Time Override in Days (Bypass):** This option enables the time setting details, wherein the minimum and maximum time can be set in days. In this case, the hours and minutes options are disabled. The default setting is min = max = 1 day. The permissible range is 1 to 99 days.

📔 Override Type	Continuous Override 🗸 🗸	
📄 use Network Bypass Time Only	Continuous Override	
Note	Timed Override in Hours (Bypass)	
Min Time Days	Timed Override in Days (Bypass)	

Fig. 371 Override Type

Override Settings

🗎 Min Time Days	1	[1-99]
🗎 Max Time Days	1	[1-99]
Min Time Hours	3	[0-24]
Max Time Hours	3	[0-24]
🗎 Min Time Minutes	0	[0-59]
Max Time Minutes	0	[0-59]

Fig. 372 Override Settings

Override To Standby Settings

r	Override To Standby Settings	Standby Override Details Config
	🕥 Override Standby State	● NO -
	🕥 Override Type	Continuous Override 🗸
	Note 🖌	One "Day" is a 24 hour period from the t
	📔 Min Time Days	1 [1-99]
	📔 Max Time Days	1 [1-99]
	📔 Min Time Hours	3 [0-24]
	🗎 Max Time Hours	3 [0-24]
	📔 Min Time Minutes	0 [0 - 59]
	📄 Max Time Minutes	0 [0 - 59]

Fig. 373 Override To Standby

- Override Type
 - **Continuous Override:** The default setting, this setting disables the time override type options.
 - **Time Override in Hours (Bypass):** This option enables the time setting details. The minimum and maximum time can be set in hours and minutes. The default setting is min= max= 3 hours. Ensure that the maximum time is greater than the minimum time or that the minimum time is lesser than the maximum time. If either case is not true, an error message appears informing that the min value is greater than the max value. The range is from 0 to 24 hrs / 0 to 59 min.
 - **Time Override in Days (Bypass):** This option enables the time setting details, wherein the minimum and maximum time can be set in days. In this case, the hours and minutes options are disabled. The default setting is min = max = 1 day. The permissible range is 1 to 99 days.

隌 Override Type	Continuous Override 🗸	
油 use Network Bypass Time Only	Continuous Override	
Note	Timed Override in Hours (Bypass)	
Min Time Days	Timed Override in Days (Bypass)	

Fig. 374 Override Type

Override Settings

🗎 Min Time Days	1	[1-99]
Max Time Days	1	[1-99]
🗎 Min Time Hours	3	[0-24]
Max Time Hours	3	[0-24]
Min Time Minutes	0	[0-59]
Max Time Minutes	0	[0 - 59]

Fig. 375 Override Settings

Occupancy Values

Provides options to define the different values within the mentioned ranges.

•	Occupancy Values	5	Occupancy Values
	Occupied 👔	0	[0-255]
	Unoccupied 👔	1	[0-255]
	🗎 Standby	3	[0-255]
	Bypass	2	[0-255]
	Null	255	[0-255]

Fig. 376 Occupancy Values

- **Show effective occupancy status:** LCD displays the actual occupancy status considering the IRM application.
- **Show occupancy override status:** LCD displays the occupancy override status initiated from the LCD, independent of the IRM application.
- Do not show occupancy or override status: LCD does not display occupancy or override, regardless of what the user initiates and IRM application.
- Step 3. **tR4XConfig:** This option allows configuring additional parameters.

T T TR4XConfig T	T R42 Occupancy Override Additional Co	
📔 Override Type	Timed Override in Hours (Bypass)	
Override Time (hour(s))	1 🗸	
📔 Bypass Time Param	null	

Fig. 377 tR4XConfig Additional Parameter Options

Room Temperature Configuration

Proper	ty Sheet		
	MTEMP (Sylk Out Param)		
	Execution	27	
- E	Function Block Name/Annot	tation/Composite Flash Memory Usage 0 B[0	- 900]
- (Dut	- {null}	
) 	Sylk Device	TR42	
- Ø S	Sylk Config Data	Ui Parameter	
Q	Master Sync Enabled	🔵 true 🗸	
	ROOMTEMP 1	Temperature Param	
	🗎 sylkDevice	TR42	
	🗎 status	{ok}	
	🗎 faultCause		
) sendInterval (second	s) 5	
	ategory	Category	
	paramPermissions	Contractor Only 🔹	
-	enableFD	VES VES	
	📔 temperatureUnit	°F 🗸	
	tR7XConfig	T R7 X Temp Param Additional Config	
1	🖿 🖬 tR4XConfig	T R4 X Temp Param Additional Config	

Fig. 378 RoomTemp Property Sheet

Steps to configure Room Temperature parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).



Fig. 379 Parameter Permissions

- Step 4. **TemperatureUnit:** This option allows to select temperature unit (°F or °C).
- Step 5. **tR7XConfig:** This option allows you configure additional parameters.

▼ 🗎 tR7XConfig T R7	X Temp Param Additional C	onfig
📔 Number Of Decimals	0 🗸	
Default Sensor Offset Value	0.00 [-999.0	00 - 9999.00]
🕨 🍞 Select Labels To Show On S	creen Sylk Device Label D	isplay Config

Fig. 380 tR7XConfig Additional Parameter Options

- Number of Decimals: Enter the decimal accuracy.
- Default Sensor Offset Value: Enter the default value for sensor offset.
- Select Labels To Show On Screen: This option allows you to customize the display of the Sylk device label for Sylk parameters.
- Step 6. **tR4XConfig:** This option allows you configure additional parameters.

▼ 🗎 tR4XConfig	T R4 X Temp Param Additional Config
) Number Of Decimals	0 -
) Default Sensor Offset	Value 0.0

Fig. 381 tR4XConfig Additional Parameter Options

- **Number of Decimals:** Enter the decimal accuracy.
- Default Sensor Offset Value: Enter the default value for sensor offset.

Sensor Offset Parameter Configuration

Property Shee	Property Sheet						
🛕 SensorOffset	(Sylk Out Param)						
Execution	1				25		
Function	Block Name/Annotation	/Compos	te Flash Mem	ory Usage	0	B [0 - 900	0]
📔 Sylk Devid	ce				None		
🔻 🗱 Sylk Conf	ig Data				Ui Parame	ter	
🗎 Master	r Sync Enabled 🛛 🔵 tru	Je –					
💌 📑 Senso	rOffset Senso	r Offset Pa	aram				
🗎 syl	kDevice	No	ne	•			
🗎 sta	itus	{ f	ault}				
🗎 fau	ıltCause	No	Sylk devic	e associate	ed with the	e parame	
) 🗎 ser	ndinterval (seconds)	Co	v				
🗎 cat	tegory	Ca	tegory				
) 🗎 par	ramPermissions	Co	ntractor Only	-			
) sel	ectSensor	Те	mperature	•			
) inc	rementDecrement	1	-				
🗎 def	faultValue	þ.	.00 [-9	99.00 - 9999.00	0]		
🕨 🕨 lim	nitConfig	Pa	ram Limit Cor	nfig			
) 🗎 nu	mberOfDecimals	0	-				
🕨 🍋 sel	ectLabelsToShowOnScr	een Sy	k Device Labe	el Display Co	onfig		

Fig. 382 SensorOffset Property Sheet

Steps to configure Sensor Offset parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

paramPermissions	Contractor Only 🧠
📄 selectSensor	Contractor Only
incrementDecrement	Tenant Read Only
	Tenant Read Write

Fig. 383 Parameter Permissions

Step 4. **selectSensor:** Select sensor displays the list of sensors that needs to be configured and offset. All available sensors are listed, but the selection is based on the selected model. The default selection is **Temperature.** This field is displayed only for a parameter of the category offset.

📔 selectSensor	Temperature -
incrementDecrement	Temperature
🗎 defaultValue	Humidity
📔 limitConfig	Co2

Fig. 384 Select Sensors

Following are the sensor selection available:

- Temperature
- Humidity
- CO2

- **Note:** If the value of the parameter types temperature, humidity, and CO2 from the wall module is edited and saved, the default sensor offset value of the corresponding sensor is also changed to the edited value.
 - Step 5. incrementDecrement: Depends on the number of decimal places selected.
 - If the number of decimal places is 0, then select 1, 5, 10, 100.
 - If the number of decimal places is 1, then select 0.1, 0.5, 1, 5, 10, 100.
 - If number of decimal places is 2, then select 0.01, 0.1, 0.5, 1, 5, 10, 100.
- **Note:** For the TR71x and TR75x wall modules, increments of 5 and 0.5 are available for the value from the wall module, network setpoint, and sensor offset value (Internal) parameters.
 - Step 6. **defaultValue:** Indicates the value that initially downloads to the wall module. This value must be between the low and high limits. This field displays for the following parameter types:
 - Value from the wall module.
 - Sensor offset value. By default, it is set to 0.
- **Note:** The default value has a limit of 5 characters.
 - Step 7. **limitConfig:** This option is to set the high & low limits of the parameter.

🗋 limitConfig	Param Limit Config		
뛭 Low Limit From Sylk Param	null	-	
📔 High Limit From Sylk Param	null	-	
🗎 Low Limit	0.00 [-999.00-9999.00]		
📔 High Limit	9999.00 [-999.00 - 9999.00]		

Fig. 385 Set high and Low Limits of Sylk Parameters

- **Low Limit From Sylk Param:** To select the low limit value from the other Sylk parameter of respective system device.
- **High Limit From Sylk Param:** To select the high limit value from the other Sylk parameter of respective system device.
- **Low Limit:** To set the low limit.
- High Limit: To set the high limit.
- Step 8. **numberOfDecimals:** Apply to all parameter types except Time. This value affects the incrementDecrement options.
- Step 9. **selectLabelsToShowOnScreen:** This option allows to configure the Sylk device label display for the Sylk parameter.

Value From Wall Module Parameter Configuration

P	rope	erty Sheet	
▲	Val	ueFromWallmodule (Sylk Out Para	am)
	Ð	Execution	29
	Ð	Function Block Name/Annotation/	/Composite Flash Memory Usage 0 B [0 - 900]
	-	Out	- {null}
	Ģ	Sylk Device	TR75
-	¢	Sylk Config Data	Ui Parameter
		📔 Master Sync Enabled 📃 🌔	true 👻
Г	-	■ ValueFromWallmodule Valu	e From Wall Module Param
Т		📔 sylkDevice	TR75 👻
Т		🗎 status	{fault}
Т		🗎 faultCause	Parameter ValueFromWallmodule name Length
Т) sendInterval (seconds)	60
Т		📄 category	Category
Т		paramPermissions	Contractor Only 👻
Т		📄 enableFD	NO NO
L) allowNullValue	NO V
L) enumerated	NO V
I		enumDefinition	range={} 📎 🕚 👻
Т		🗎 defaultEnumValue	0 🗸
Т		📔 numberOfDecimals	0 -
Т		incrementDecrement	1 🔹
T		🗎 defaultValue	0.00 [-999.00-9999.00]
T		IimitConfig	Param Limit Config
		SelectLabelsToShowOnScreet	en Sylk Device Label Display Config

Fig. 386 ValveFromWallModule Property Sheet

Steps to configure Value From Wall Module parameter:

- Step 1. **sylkDevice:** Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

paramPermissions	Contractor Only 🚽
📄 selectSensor	Contractor Only
incrementDecrement	Tenant Read Only
4 Increment Decrement	Tenant Read Write

Fig. 387 Change Parameter Permissions

- Step 4. **allowNullValue:** Indicate whether null values can be set for the adjustable value. If enabled, when the LCD user reaches a low or high limit, an additional button press will send the null value.
- Step 5. **enumerated:** This field allows user to enable multiple states of the enum setpoint.
- Step 6. **enumDefinition:** If the enumerated is "Yes," the user can set multiple states of the enum setpoint.

To set the enumDefinition of the Setpoint:

i). Click on the >> button.

|--|

Fig. 388 Enum Setpoint ii). Set the states Ordinal, Tag, and Display as per requirement.

Ordinal	Tag	Display	ß
0	Auto	Auto	
1	Off	Off	
2	On	On	
2		ST	

Fig. 389 Enum States

iii). Click **OK** to save.

- **Note:** The enumerated option applicable to the Sylk module type is TR 71 and TR 75. Select the parameter type as controller value, a value from wall module, or network setpoint to enable the enumerated option.
 - Step 7. **defaultEnumValue:** This option displays the list of default enum value from the defined enum range.
 - Step 8. **numberOfDecimals:** Apply to all parameter types except Time. This value affects the the incrementDecrement options.
 - Step 9. incrementDecrement: Depends on the number of decimal places selected.
 - If the number of decimal places is 0, then select 1, 5, 10, 100.
 - If the number of decimal places is 1, then select 0.1, 0.5, 1, 5, 10, 100.
 - If number of decimal places is 2, then select 0.01, 0.1, 0.5, 1, 5, 10, 100.
- **Note:** The increment of 5 and 0.5 is available for the value from wall module, network setpoint, and sensor offset Value (Internal) parameters for the TR71x and TR75x wall modules.
 - Step 10. **defaultValue:** Indicates the value that initially downloads to the wall module. This value must be between the low and high limits. This field is displayed for the following parameter types:
 - Value from wall module.
 - Sensor offset value. By default, it is set to 0.
 - Step 11. limitConfig: This option is to set the high and low limits of the parameter.
 - **Low Limit From Sylk Param:** To select the low limit value from the other Sylk parameter of the respective system device.

- **High Limit From Sylk Param:** To select the high limit value from the other Sylk parameter of the respective system device.
- Low Limit: To set the low limit.
- **High Limit:** To set the high limit.

🔻 🗎 lin	nitConfig	Param Limit C	onfig		
Ę,	Low Limit From Sylk Param	null		•	
Ę.	High Limit From Sylk Param	null		•	
	Low Limit	0.00	[-999.00 - 9999.00]		
Q.	High Limit	9999.00	[-999.00 - 9999.00]		

Fig. 390 Set High and Low Limits of Parameter

Step 12. **selectLabelsToshowOnScreen:** This option allows to configure Sylk device label display for Sylk parameter.

Configure Sylk In Out Parameters

The Sylk device uses the following parameters as input as well as output:

- Bypass Time Parameter Configuration: provide the bypass time to the wall module.
- Fan Command Parameter Configuration: provide commands to the fan from the wall module.
- Network Setpoint Parameter Configuration: provide the setpoints to the wall module.
- System Command Parameter Configuration: override the system command from the wall module.
- Time Field Parameter Configuration: To configure the time format of the wall module.

For more detail about Sylk In Parameters type, refer IRM Function Blocks User Guide - EN2B-0415-GE51.

Bypass Time Parameter Configuration

Property Sheet			
🛕 BypassTime (Sylk In Out Param)			
Execution		4	
Function Block Name/Annotati	on/Composite Flash Memory Usage	0	B [0 - 900]
- Out		- {null}	
— In		- {null}	
📔 Sylk Device		TR42	
🔻 🗱 Sylk Config Data		Ui Parameter	
📔 Master Sync Enabled 🛛 🔵	true 🗸		
🔻 🙁 BypassTime 🛛 Byp	ass Time Param		
sylkDevice	TR42 TR42		
🖬 status	{ok}		
🖬 faultCause			
sendInterval (seconds)	Cov		
📔 enableFD	NO NO		

Fig. 391 BypassTime Property Sheet

Steps to configure Bypass Time parameter:

Step 1. sylkDevice: Select the Sylk device from the drop-down list.

Fan Command Parameter Configuration

Property Sheet			
A FanCommand (Sylk In Out Param)			
Execution		7	
Function Block Name/Annotatio	on/Composite Flash Memory Usage	0	B [0 - 900]
— Out		- {null}	
— In		- {null}	
📔 Sylk Device		TR42	
🔻 🗱 Sylk Config Data		Ui Parameter	
隌 Master Sync Enabled 🔵 t	true 🗸		
💌 🍀 FanCommand 🛛 Fan	Command		
🕥 sylkDevice	TR42 -		
🗎 status	{ok}		
📔 faultCause			
) sendInterval (seconds)	Cov		
ienableFD	NO NO		
📔 fanStates	2 State (Auto / On)	•	
FanStatusValues	Fan Command Values		
tR7XConfig	T R7 X Fan Command Additional Cor	nfig	
🐚 setAsNetworkSetpoint	YES V		

Fig. 392 FanCommand Property Sheet

Steps to configure Fan Command parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **fanStates:** Enables the fan command. The valid fan States choices will be enabled if this option is checked. The three eligible fan states are 2 State, 3 State, and 5 State.

The following are the available fan state options:

- 2 State: Auto / On. The default option is On.
- **3 State:** Auto / On / Off. The default option is On.
- 5 State: Auto / Off / Low / Medium / High. The default option is Auto.

📔 fanStates	3 State (Auto / On / Off) 🔷
🗎 fanStatusValues	2 State (Auto / On)
tR7XConfig	3 State (Auto / On / Off)
📄 Default Fan State	O 5 State (Auto / Off / Low / Medium / High)

Fig. 393 Fan state Options

Step 3. **fanStateValues:** Set the fan state values for Auto / Off / On / Low / Medium / High.

•	🗎 fanStatusValu	les	Fan Command Values
	Off	0	[0 - 255]
	📄 On	1	[0-255]
	🗎 Auto	2	[0-255]
	Low	3	[0 - 255]
	i Medium	4	[0 - 255]
	🗎 High	5	[0 - 255]
	Contractions of the second sec	0 1 2 3 4 5	[0 - 255] [0 - 255] [0 - 255] [0 - 255] [0 - 255] [0 - 255]

Fig. 394 Fan State Values

- Step 4. **tR7XConfig:** Set the default state of the fan command.
- Step 5. **setASNetworkSetpoint:** This option allows you to specify whether the parameter should be configured as a network set point or as an output only parameter.
 - If you select Yes, you have access to write and read values.
 - If you select No, you can only read values from the Sylk device.
- **Note:** Set as Network setpoint is enabled by default. This option cannot be disabled by the user.
 - Only the TR71/TR75/TR42 model wall modules have the Set as Network Setpoint option.

Network Setpoint Parameter Configuration

Pı	Property Sheet						
▲	Net	tworkSetpoint(Sylk In	Out Paran	n)			
	Ę,	Execution				30	
	Ģ	Function Block Name/	Annotatio	n/Composite Flash Memory I	Usage	0	B [0 - 900]
	-	Out				- {null}	
	-	In			[- {null}	
	Ð	Sylk Device			[TR42	
Ŧ	Ø	Sylk Config Data				Ui Parameter	
		Master Sync Enable	ed 🔵 t	rue 🔻			
1	Ŧ	NetworkSetpoint	Netv	vork Setpoint Param			
		📄 sylkDevice		TR42			
) status		{fault}			
		📔 faultCause		Parameter NetworkSetpoin	nt name l	Length is	
) sendInterval (se	econds)	Cov			
		ategory 😭		Category			
		🗎 paramPermissio	ons	Contractor Only 🗸			
		🗎 enableFD		🛑 NO			
		allowNullValue		NO V			
		tR7XConfig		T R7 X N W Setpoint Addition	nal Config		
		IR4XConfig		T R42 N W Setpoint Addition	al Config		

Fig. 395 Network Setpoint Property Sheet

Steps to configure Network Setpoint parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. **categories:** Enter the category name in the field. It helps to differentiate between parameters.
- Step 3. **paramPermissions:** Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

aramPermissions	Contractor Only 🗸
🗎 selectSensor	Contractor Only
	Tenant Read Only
	Tenant Read Write

Fig. 396 Parameter Permissions

- Step 4. **allowNullValue:** Indicates whether null values can be set for the adjustable value. If enabled, when the user exceeds a low or high limit, an additional button push will deliver the null value.
- Step 5. **tR7XConfig:** This option allows you configure additional parameters.

۲	tR7XConfig	T R7 X N W Setpoint Additional Config
	Enumerated	NO
	Enum Definition	range={} 📎 🕓 👻
) Default Enum Value	0
	📔 Number Of Decimals	0 -
	Increment/Decrement	1 -
	Limit Config	Param Limit Config
	🕨 🎦 Select Labels To Show	On Screen Sylk Device Label Display Config

Fig. 397 tR7XConfig Additional Parameter Options

- **enumerated:** This field allows user to enable multiple states of the enum setpoint.
- **enumDefinition:** If the enumerated is "Yes," the user can set multiple states of the enum setpoint.
- **Note:** The enumerated option applicable to the Sylk module type is TR 71 and TR 75. Select the parameter type as controller value, a value from wall module, or network setpoint to enable the enumerated option.
 - **defaultEnumValue:** This option displays the list of default enum value from the defined enum range.
 - **numberOfDecimals:** Apply to all parameter types except Time. This value affects incrementDecrement options.
 - **incrementDecrement:** Depends on the number of decimal places selected.
 - If the number of decimal places is 0, then select 1, 5, 10, 100.
 - If the number of decimal places is 1, then select 0.1, 0.5, 1, 5, 10, 100.
 - If number of decimal places is 2, then select 0.01, 0.1, 0.5, 1, 5, 10, 100.
- **Note:** The increment of 5 and 0.5 is only available for the value from wall module, network setpoint, and sensor offset Value (Internal) parameters for the TR71x and TR75x wall modules.
 - **defaultValue:** Indicates the value that will be initially downloaded to the wall module. This value must be between the low and high limits. This field is displayed for the following parameter types:
 - Value from wall module.
 - Sensor offset value. By default, it is set to 0.
 - limitConfig: This option allows to set the high and low limits of the parameter.
 - **Low Limit From Sylk Param:** To select the low limit value from the other Sylk parameter of the respective system device.
 - **High Limit From Sylk Param:** To select the high limit value from the other Sylk parameter of the respective system device.
 - Low Limit: To set the low limit.
 - **High Limit:** To set the high limit.

📔 limitConfig	Param Limit Config		
📔 Low Limit From Sylk Param	null	-	
📔 High Limit From Sylk Param	null	-	
📄 Low Limit	0.00 [-999.00-9999.00]		
📔 High Limit	9999.00 [-999.00 - 9999.00]		

Fig. 398 To set high and low limits of parameter

- **selectLabelsToshowOnScreen:** This option allows to configure Sylk device label display for Sylk parameter.
- Step 6. **tR4XConfig:** This option allows you configure additional param options.

•	🗎 tR4XConfig	T R42 N W Setpoint Additional Config
	📔 Display Type	Numerical 👻
) Setpoint Type	Absolute 🗸
	📔 Number Of Decimals	0 -
	📔 Wiresheet Unit	°F 🚽
	Increment/Decrement	1 -
	🗎 Low Limit	50.00
	📔 High Limit	149.00

Fig. 399 tR4XConfig

•

System Command Parameter Configuration

Property Sheet			
A SystemCommand (Sylk In Out Param)			
Execution	3	1	
📔 Function Block Name/Annotation/Composite Flash M	emory Usage 0	I	B [0 - 900]
— Out	-	{null}	
— In	-	{null}	
📔 Sylk Device	TI	R75	
🔻 🗱 Sylk Config Data	Ui	Parameter	
🎦 Master Sync Enabled 🔵 true 🤜			
SystemCommand System Command			
sylkDevice TR75			
status {ok}			
aultCause faultCause			
sendInterval (seconds) 60			
enableFD NO			
systemCommands Off / Heat (Heat Only))	-	
defaultSystemCommand Off	•		
SystemCommandValues System Command	Values		
📄 setAsNetworkSetpoint 🛛 🔍 🤟			

Fig. 400 System Command Property Sheet

Steps to configure Network Setpoint parameter:

- Step 1. sylkDevice: Select the Sylk device from the drop-down list.
- Step 2. systemCommands: Indicate an option to enable or disable the tenants commanding the system.

The following are the five valid system command options available:

- Off / Heat (Heat only) •
- Off / Cool (Cool only)
- Off / Heat / Cool (No auto changeover) •
- Off / Auto / Heat / Cool (Auto changeover) •
- Off / Auto / Heat / Cool / Emergency Heat (Heat Pump) •

📔 systemCommands	Off / Auto / Heat / Cool / EmergencyHeat (Heat Pump)	•
📔 defaultSystemCommand	Off / Heat (Heat Only)	
🗎 systemCommandValues	Off / Cool (Cool Only)	
🗎 setAsNetworkSetpoint	Off / Heat / Cool (No Auto Changeover) Off / Auto / Heat / Cool (Auto Changeover)	
	Off / Auto / Heat / Cool / EmergencyHeat (Heat Pump)	

Fig. 401 Command Points

Step 3.

- defaultSystemCommand: Allows to set the default value for the system command options:
 - Off: Off / Heat / Cool: ٠
 - Auto: Off / Auto / Heat / Cool

- Heat: Off / Heat
- Cool: Off / Cool
- Emergency Heat: Off / Auto / Heat / Cool / Emergency Heat

	Emergency Heat	
	Cool	
	Heat	
📄 setAsNetworkSetpoint	Auto	
📔 systemCommandValues	Off	
隌 defaultSystemCommand	Emergency Heat	•

Fig. 402 Default System Command Values

- Step 4. **systemCommandValues:** System command values display the various command values that are enabled based on the valid system commands that are selected. Incorrect values are disabled (depending on the system configuration options selected). You can switch between Off, Auto, Heat, Cool, and Emergency Heat modes.
 - Off = 255
 - Auto= 0
 - Heat = 2
 - Cool = 1
 - Emergency Heat = 3.

📔 systemCommandValu	ies Systen	System Command Values		
Off Off	255	[0-255]		
🗎 Auto	0	[0-255]		
📔 Heat	2	[0-255]		
Cool 👔	1	[0-255]		
📔 Emergency Heat	3	[0 - 255]		

Fig. 403 System Command State Values

- Step 5. **setAsNetworkSetpoint:** Connect the System command block to the Network input or setpoint and the Network output point using this option. If this option is not selected, the System command block can only refer to the Network output point and not the Network input or set point.
- **Note:** Set as Network Setpoint is disabled by default. The default value is No. By clicking YES or NO, you can enable or disable this option.
- **Note:** Set as Network Setpoint option is available only for theTR71/TR75/TR120 model.

Time Field Parameter Configuration

Pr	ope	erty S	Sheet					
۵	Tim	neFiel	d (Sylk In Out Param)					
		Execu	ution			32		
	Ð	Func	tion Block Name/Ann	otation/Comp	oosite Flash Memory Usage	0	B [0 - 900]	
	$\left[\right]$	Sylk	Device			TR75		
Ŧ	¢	Sylk	Config Data			Ui Parameter		
		р м	aster Sync Enabled	🔵 true				
	•	🕑 Т	imeField	Time Field Pa	aram			
		5	sylkDevice		TR75 👻			
		Q	status		{fault}			
		Q	faultCause		Parameter TimeField name	Length is 9 exc	24	
		Q	sendInterval (secon	ds)	Cov			
		Q	category		Category			
		Q	paramPermissions		Contractor Only 👻			
	📔 enableFD		NO Hours (Network Setpoint)					
		Þ. G	selectLabelsToShov	wOnScreen	Sylk Device Label Display Cor	nfig		

Fig. 404 Time Field Parameter

Steps to configure Time Field Parameter parameter:

- Step 1. **sylkDevice:** Select the Sylk device from the drop-down list.
- Step 2. **paramPermissions**: Select the permissions from the drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).

aramPermissions	Contractor Only 🗸
📄 selectSensor	Contractor Only
	Tenant Read Only
4 Increment Decrement	Tenant Read Write

Fig. 405 Parameter Permissions

Step 3. **timeComponent**: This option allows configuring time and date format. The following are the available time components.

- Hours (Network Setpoint)
- Minutes (Network Setpoint)
- Day (Network Setpoint)
- Month (Network Setpoint)
- Year (Network Setpoint)



Fig. 406 To configure Time and Date Format

Step 4. **selectLabelsToShowOnScreen**: This option allows to configure the Sylk device label display for the Sylk parameter.



Fig. 407 Sylk Device Label Display

Map UI terminal of the controller with Sylk parameter

If you want to show any Sylk parameter data, such as temperature on the Sylk wall module display, then you need to map the controller UI terminal with the Sylk parameter.

Steps to Map UI terminal of the controller with Sylk parameter:

Step 1. Open the **Wiresheet View**, right-click on the controller's UI terminal, and select **Link Mark**.



Fig. 408 UI Terminal

Step 2. Navigate to the Sylk application, right-click on the Sylk parameter, and select **Link From "UI_4".**



Fig. 409 Link to UI Terminal

Step 3. Select **Out** from the source and **In** from the target.





Step 4. Click **OK**. It maps the UI controller terminal with the Sylk parameter terminal.

Configure Sylk Device

The Sylk device's details are displayed on the property sheet. The details include Network number, address, status, power consumption, and other options.

Steps to configure a Sylk Device:

P	Property Sheet												
	TR12	0_TR	75E (S	ylk Devid	e Fun	ction Block	<)						
	E	xecu	tion								13		
	₽ F	unct	ion Blo	ck Name	/Anno	tation/Cor	mpo	site Flash Me	emory	Usage	0		B [0 - 900]
-	0.5	Sylk C	onfig D	ata							Ui Para	ameter	
	9	n Ma	aster Sy	nc Enabl	ed	🔵 true	-						
	- [E TR	120_TF	R75E		T R120 Syl	k De	vice For T R7	75 Emu	lation			
		Q	Model					Tr120_tr75 E					
		Ģ	Addre	SS				Unassigned	•				
		Ę.	Status	5				{ok}					
		Q	Fault	Cause									
		Q	Time F	Format				12 hour	-				
		Q,	Is Con	figuratio	n Dow	nloaded		false					
		Q	Power	Consun	ption			55		96			
)	2	Home	Screen (Option	s		T R7 X Hom	e Scre	en Cont	ainer		
			Passw	ord Prot	ection			Password C	Config				
		, Ç	Sylk D	evice Re	source	Usage		Resource U	sage N	leter			
			Catego	ories And	l Parai	meters Noo	de	Categories	And P	aramete	ers Node	1	
			Sched	ule				Schedule C	onfig				
		Q	Applic	ation Ty	pe			TR75Emula	tion				
			Time					Sylk Time					

Fig. 411 Sylk Device Property Sheet (TR120_TR75E)

- Step 1. **Address**: This option allows you to select a device address from the drop-down list.
- **Note:** When you add the Sylk device to the wiresheet view, it will automatically assign a unique address. You can change the assigned address manually.
 - Step 2. **Time Format**: Set the time format of the Sylk device (12 hours or 24 hours).
 - Step 3. **Home Screen Options**: This option allows you to configure the home screen settings.

Home Screen Options T R	7 X Home Screen Container		
💌 📔 HS1 🛛 T R7 X Home Screen Details Co	onfig		
) Set As Default	NO V		
Dption Type	Single Parameter (One Value with Custom Eight Character Label)		
📔 Label Name			
Note Note	Specify the parameter you want to show(F		
📔 Left Param	null	•	
📔 Middle Param	null	Ŧ	
📔 Right Param	null	Ŧ	
🕨 谨 Select Labels To Show On Home	Sylk Device Label Display Config		

Fig. 412 Home Screen Settings

÷

- Set As Default: Select this option if the current home screen needs to be set as default.
- **Option Type:** Select the type of screen:
 - Single parameter (one value with custom eight character label): This option displays one label in the home screen.
 - **Multiple parameter (up to three values with fixed label):** This option displays all three labels on the home screen.
- Label Name: Add the label name as per requirement.
- **Note:** Specify the parameter you want to show (For a single parameter home screen, only the middle parameter will be considered).
 - Left Parameter: Map the parameter that needs to be shown on the left side of the home screen.
 - **Middle Parameter:** Map the parameter needs to be shown in the middle of the home screen.
 - **Right Parameter**: Map the parameter that needs to be shown on the right side of the home screen.

To map the parameter with home screen follow the steps below:

i). Click the **Folder icon** () and select **Component Chooser** from the drop-down list.

📔 Left Param	null	🖿 - 🕨
Implies Implies Implies Implies Implies Implies Implies Implies Implies Select Labels To Show On Home Sylk Device Label Display Config	<u>B</u> ql Query Builder	
		 <u>C</u> omponent Chooser
Right Param	null	Component <u>G</u> rid Query Editor
Select Labels To Show On Home	Sylk Device Label Display Config	<u>D</u> irectory Ord Chooser
		<u>F</u> ile Ord Chooser
		<u>H</u> istory Ord Chooser
		Orion Ord Chooser

Fig. 413 Component Chooser

 ii). On the Select Ord window, click Drivers > BacnetNetwork > IrmBacnetDevice
 > Irm Program > Periodic program > Humidity and click OK. This action fetches the scheduler location to the scheduler block location filed.

Or

- i). Go to nav window, navigate to the Station > Drivers > BacnetNetwork > IrmBacnetDevice > Irm Program > Periodic program wiresheet.
- ii). Select the parameter and press Ctrl + L. This action opens the Ord window,
- iii). Copy the Ord link.
- iv). Navigate to the Sylk device's home screen settings option and paste the Ord URL into any of the parameter fields.

📔 Left Param	h:aflf0	*	۰.
📔 Middle Param	h:af202	•	•
📔 Right Param	h:aflf9	•	•

Fig. 414 Parameter Fields

- **Note:** The Sylk parameter linked to the left param displays the parameter value in the middle of the Sylk device. Sylk parameter linked to the middle param display the parameter value on top of the Sylk device, and the Sylk parameter linked to the right param display the parameter value on the bottom of the Sylk device.
 - Select Labels To Show On Home Screen: Select the required option (room top or room bottom) to display the parameter on the home screen shown below:



Fig. 415 Home Screen Labels

- Labels displayed on the top with middle param room (top), setpoint (top), and temperature.
- Labels displayed on the middle with middle param room (bottom) and setpoint (bottom).
- Labels displayed on the bottom with middle param humidity and outside.
- Only one engineering unit label is supported by the Sylk device (Ppm, Cfm, L/S, Cm, and inch). If you enable multiple engineering unit labels, then the system will consider the topmost unit label in the sequence in the home screen.

Example: If you enable Cfm, L/S, and inch unit label in the home screen, then the Sylk device will display Cfm unit, as in topmost unit label.

Step 4. **Password Protection**: The option allows you to set the password for the Sylk device. This feature restricts the tenants from making the changes in the Sylk controller.

Password Protection	Password Config
📔 Enable Password Protection	🛑 NO 👻
Password Label	
Password	

Fig. 416 Set the Password

- **Enable Password Protection**: This option allows you to enable the password protection for the Sylk device.
- Password Label: This option allows you to add password label information.
 The label length should be eight characters.

- **Password**: This option allows you to set the password. Numeric characters are allowed in the password.
- Step 5. **Categories And Parameters Node**: Categories and parameters node allows users to reorder the Sylk categories and the Sylk parameters from the workbench and browser. The Sylk device will display the categories and parameters in the order specified in this view or object.

Ŧ	Categories And	d Parameters Node	Categories And Parameters Node		
	🕨 📄 Time	Category Node			
	Set_Date	Category Node			
	🕨 📔 Set_Time	Category Node			
	Category	Category Node			

Fig. 417 Categories and Parameters Object

Reordering can be performed once the user completes the Sylk device and parameters configuration. Refer to the following section for more details on reordering, renaming, and disassociation categories and parameters.

- Reorder Parameters and Categories on page 283
- Rename Categories and Parameter on page 285
- Disassociate Parameter and Categories on page 285
- Step 6. **Schedule**: The schedule option allows configuring the Sylk device with an enumerated schedule and calendar.

Steps to configure schedule is as follows:

i). Open the Sylk device property sheet and navigate to the **Schedule option**.

•	😰 Schedule	Schedule Config		
	📔 Schedule Editable From Zio	● NO 👻		
) Param Permissions	Contractor Only 🗸		
	📔 Schedule Type	8 day schedule (Mon, Tue, Wed, Thu, Fri, Sat, Sun, Hol) 👻		
	Schedule Block Location	null	- 1	▶

Fig. 418 Schedule Option

- ii). Set the Schedule Editable From Zio field to Yes.
- iii). Change **Param Permissions** (contractor only, tenant read-only, and tenant read write) as per requirement.
- iv). Change the **Schedule Type** as per requirement (8-day schedule / 7-day schedule / 5-2-1-day schedule / 5-2-day schedule).
- v). Enter the schedule block location in the **Schedule Block Location** field. **Steps to add Scheduler Block Location:**
- i). Click the Folder icon () and select the **Component Chooser** from the drop-down list.

	😰 Schedule	Schedule Config	
	📔 Schedule Editable From Zio	YES 🗸	
	Param Permissions	Contractor Only 👻	
	📔 Schedule Type	8 day schedule (Mon, Tue, Wed, Thu, Fri, Sat, Sun, Hol) 🔹	
	Schedule Block Location	null	-
Þ	🔜 Time	Sylk Time	<u>B</u> ql Query Builder
			<u>C</u> omponent Chooser
			Component <u>G</u> rid Query Editor
			<u>D</u> irectory Ord Chooser
			<u>F</u> ile Ord Chooser
			Ulaters and also and

Fig. 419 Component Chooser

ii). On the Select Ord window, click **Drivers > BacnetNetwork > IrmBacnetDevice** > Irm Program > Periodic program> EnumSchedule, and then click OK.

This action fetches the enum schedule object to the **Scheduler Block Location** filed.

Orion Ord Chooser

Or

Go to nav window, navigate to the **Station > Drivers > BacnetNetwork > IrmBacnetDevice > Irm Program > Periodic program > EnumSchedule,** and press Ctrl + L or copy the enum schedule and paste into the field.

- iii). This action opens the Ord window, copy the location, and paste in the scheduler block location field.
- iv). Click Save.
- Step 7. **Time**: The time option allows you to enable the time component for the Sylk device. To add this time component, enable the **Time editable From Zio** option and select contractor only, tenant read only, or tenant read write from the drop-down menu.



Fig. 420 Enable Time

- If the contractor only is selected, only the contractor can view the time in the Sylk device.
- If tenant read only is selected, the tenant can view the time but cannot change the time.
- If tenant read write is selected, the tenant can view and modify the time. Time includes the year, month, date, hour, and minutes, enabling everything in the time component.

TimeField parameter allows you to customize access for contractor and tenant. For example, the contractor is allowed to change the time but not the date. To provide this type of controlled access, use the timefield parameter. For more details, refer to IRM Function Blocks User Guide - EN2B-0415-GE51.

Reorder Parameters and Categories

The parameters can be reordered either across and within the categories. Categories can also be reordered.

Steps to perform reorder:

Step 1. Navigate to the **TR75H** from the nav window and double-click **Categories and Parameters Node**.



Fig. 421 Categories and Parameters

Or, Navigate to **Wiresheet view** > double click on **TR75H Sylk device** > doubleclick on **Categories and Parameters Node.**

٣	9	Categories And	Parameters Node	Categories And Parameters Node		
	Ŧ	Category	Category Node			
		🕨 📔 vfwm	Parameter Node			
		Vfwm	Parameter Node			
		ctVal	Parameter Node			
	Ŧ	Sensors	Category Node			
			MP Parameter No	ode		
		Para	meter Ord h:aflf	£5	$\lim_{n\to\infty} -$	۲
		HUMIDIT	TY Parameter No	ode		
	Setpoint Category Node					

Fig. 422 Parameter Order

Step 2. Right-click on **Categories and Parameters Node > Actions > Load Categories And Parameters**.

Property Sheet				
🗎 Categories And Pa	rameters Nod	Views	Þ	Node)
🕨 🏢 Time 🛛 C	ategory Node	Actions	Þ	Load Categories And Parameters
Set_Date C	ategory Node			
Set_Time C	ategory Node	New	Þ	
Category C	ategory Node tpoint1 Par	Edit Tags		
🕨 隌 NetworkSe	etpoint2 Par		Ctrl+X	
ROOMTEMI	P Par			

Fig. 423 Load Categories and Parameters

Step 3. This will load all the categories and parameters associated with this Sylk device.

Proper	ty Sheet			
🗎 Categ	gories And Pa	arameters Node	(Catego	ries
🕨 🗎 Т	ïme	Category Node		
) 🗎 🗎	et_Date	Category Node		
) 🗎 🗎	et_Time	Category Node		
) 🗎 (ategory	Category Node		
🕨 🧎 C	ategory1	Category Node		
) 🗎 🖉	ategory3	Category Node		
🕨 🗎 C	ategory2	Category Node		

Fig. 424 Categories and Parameters

- Step 4. Right-click on **Categories and Parameters Node** from the property sheet and select **Reorder**.
- Step 5. Use **Move Up** or **Move Down** to reorder the Category and click **OK**.

- 6	ì	Categories And	Parameters Node	Categories And Parameters Node	
	,	Category	Category Node		
		▶ 🗎 vfwm	Parameter Node		
		Vfwm	Parameter Node		
		CtVal	Parameter Node		
4	,	Sensors	Category Node		
			EMP Parameter No	de	
		Para	meter Ord h:aflf	5	1
			TY Parameter No	de	
	,	Setpoint	Category Node		

Fig. 425 Reorder Category



Pr	operty Sheet			
Ę,	Categories And	Parameters Node	Categories And Parameters N	lode)
•	Category1	Category Node	N Reorder Category1	×
	NSP01	Parameter Node		
	NSP02	Parameter Node	NSP01	🔺 Move Up
	NSP05	Parameter Node		
	NSP06	Parameter Node		* MOVE DOWN
₽	Category3	Category Node	NSP05	Sort by Name
₽	Category2	Category Node	NSP06	Sort by Type
Þ	🗎 Time	Category Node		Cost by Desition
Þ	Ext_Date	Category Node		Solit by Position
Þ	🗎 Set_Time	Category Node	ОК	Cancel
₽	Category	Category Node		

Fig. 426 Reorder Parameters

Once re-ordering is completed and Sylk commission is done, you can view the same order of categories and parameters node in the connected Sylk device.

Step 6. Categories and parameters node allows you to see all the parameters associated with that device. Also, it provides an option to navigate to the parameter using the ord.

Fig. 427 Parameter Node

Rename Categories and Parameter

The categories and parameters field allows user to rename categories and parameters from the CentraLine workbench.

Steps to rename Parameter:

- Step 1. Select a parameter from the category, right-click, and select **Rename.** Rename window displays, enter the new name, and click **Ok.**
- Step 2. Navigate to **Categories and Parameters** node, right-click and select **Actions > Load Categories And Parameters**. This action loads the changes.

In the wiresheet, you can view the changed parameter name. Similarly, the user can rename the categories.

Disassociate Parameter and Categories

The categories and parameters option allows you to disassociate categories and parameters from the associated Sylk Device.

- To disassociate Parameter: Select parameter from the category > right-click and select Delete. This action disassociates the parameter from the Sylk device, and none will be displayed for that Sylk parameter.
- **To disassociate Category:** select **category** > right-click and select **Delete**. This action disassociates all the parameters from the Sylk device, and none will be displayed for all the parameters associated with that category.

Validate Sylk Device

After configuring Sylk Devices with the Sylk parameters, you need to validate the Sylk device configuration. Validate the Sylk device to verify the configuration of added Sylk device. Also, the validation action confirms any incorrect value entered in parameters or limitations for the configured Sylk device.

Steps to validate Sylk Device:

Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice.

Step 2. Right-click on the BACnet Program and select **Actions > Validate Sylk Devices.** It validates all the Sylk devices in the wiresheet view.



Fig. 428 Validate Sylk devices

Alternatively, If you want to validate a single Sylk device, follow the below steps:

- Step 3. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > Irm Program > Periodic program or Event program.
- Step 4. Right-click on the Sylk Device and select Actions > Validate Sylk Devices.

tł	C	×	🔇 My Network				
			P	<mark>∠⊪</mark> ∖ ∋ys	temotatus		
				🛕 Tim	neField		
				🛕 Tim	neOfDay		
				🛕 Val	ueFromWallmodule		
			•		75H		
			Þ		75		
			Þ		71H		
			Þ		71 Views		
				🛕 TR4	40 Actions	Annotation	
			Þ	🛕 TR4	^{42H}	Validate Svlk Device	
			•	🛕 TR4	^{‡20} New ▶I	Attach Upacsigned Parama	
				🛕 TR4	2 Edit Tags	Attach <u>o</u> nassigned Faranis	
				🛕 TR4	40H	<u>D</u> elete Associated Params	
			Þ		Make Template		
) – E		40C Cut		

Fig. 429 Validate Sylk Device

After performing the validate Sylk device action, you can view the status of the specified Sylk devices in the job log window. Using the job log information, discover and resolve all issues.

🐴 Job Log				×	
Status	Timestamp	Message	Details	[₽	
i Message	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:Sylk devices validation started.		
i Message	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:Validating Sylk device TR75H		
🔇 Failed	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:No parameter is associated with Sylk device TR75H.		
🔇 Failed	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:In Sylk device TR75H, label name is empty in homescreen.		
🔇 Failed	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:HomeScreen HS1:Middle parameter should be configured for Sylk Device TR75H		
🔇 Failed	30-Apr-20 2:44 PM IST	Sylk Compilation	IrmBacnetDevice:Validation failed due to invalid configuration.		
🔇 Failed	30-Apr-20 2:44 PM IST	Job Failed	$javax.baja.sys. Localizable {\tt Runtime Exception: Validation failed due to invalid configuration.}$		
ОК					

Fig. 430 Job Log

Validate Sylk device operations can be done in online mode or offline mode while setting Sylk devices on the workstation.

Teach to Controller

After you validate the Sylk device configuration, perform Teach to Controller operation. This installs the Sylk device application file in the Sylk devices like TR75, TR40, etc.

Steps to perform a teach to controller:

Step 1. Right-click on the Irm Program > Actions > click Teach to Controller.



Fig. 431 Teach to Controller

Step 2. Select **Overwrite BACnet objects values in Device** or **Overwrite BACnet object values in Application**.

Teach to Controllers		×			
Teach To Controller Arguments					
Teach Option	Overwrite BACnet object values in Device	-			
	Overwrite BACnet object values in Device				
	Overwrite BACnet object values in Application				

Fig. 432 Teach to Controllers dialog box

- **Overwrite BACnet objects values in Device**: This option overwrites BACnet object values in the controller and directly teaches the application in the controller.
- **Overwrite BACnet object values in Application**: This option update all BACnet object values and default values from controller to application. Then it teaches application in the controller.

The changes are written to the controller. The applications are synchronized. The successful action is displayed via **Irm Operations Monitor.** After the Sylk application is installed on the controller, the Sylk device reboots and displays updated values on the Sylk device.



Fig. 433 Sylk device display
Verify the Sylk device resource usage

After loading the Sylk application file into the controller, you can verify the Sylk device resource usage. These fields are read only. The Sylk device resource usage displays how many resources are utilized by each Sylk parameter as well proxy size of data by the controller.

Steps to verify the Sylk device resource usage:

- Step 1. Open the workstation and navigate to the **Sylk application**.
- **Note:** Ensure the controller is communicating with the station.
 - Step 2. Open the **Sylk Device** and click **Sylk Device Resource Usage**.

🚰 Sylk Device Resource Usage	Resource Usa	ge Meter
H S Counter	1	
Param Counter	13	
Category Counter	6	
🗎 Occ Over Counter	0	
Group Interval Counter	0	
Group Table Counter	3	[0-50]
🗎 Send Table Counter	11	[0 - 256]
Fan Counter	1	
Bypass Time Counter	0	
🗎 System Cmd Counter	0 т	
Time Field Counter	5	
Occ Status Counter	0	
) System Status Counter	0	
Time Of Day Counter	1	
-		

Fig. 434 Sylk Device Resource Usage

Step 3. Check that the **Is Configuration Downloaded** option is **True**.

Important: If any configuration changes are done in the Sylk device or parameters, the Is Configuration Downloaded will change to false. To update the changes, perform validate Sylk devices and teach to controller operation on the Sylk device.

Property Sheet	
🔻 🗱 Sylk Config Data 🛛 Ui Parameter	
🍞 Master Sync Enabled 🛛 🔵 true 🔤	
TR120H_TR75E T R120 Sylk D	evice For T R75 Emulation
Model	Tr120h_tr75 E
Address	10 -
🖬 Status 😽	{ok}
Fault Cause	
Time Format	12 hour -
Is Configuration Downloaded	🔵 true
Power Consumption	55 96
🐨 🚯 Home Screen Options	T R7 X Home Screen Container

Fig. 435 Sylk Device Property Sheet

Sylk Parameter Summary

Steps to view all the associated parameters to the Sylk device:

Step 1. Navigate to the Irm Program > Views > select Sylk Parameter Summary.



Fig. 436 Sylk Parameter Summary

TR75H	Category	ROOMTEMP	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/contrc honeywellSylkDevice:TemperatureParameter and the state of the state
TR75H	Category	SensorOffset	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/contrc honeywellSylkDevice:SensorOffsetParamatics and the state of the stat
TR75H		SystemCommand	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:SystemCommand the state of the stat
TR75H		SystemStatus	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/contrc honeywellSylkDevice:SystemStatus
TR75H	Category	TimeField	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeFieldParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeFieldParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeFieldParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeFieldParameters/BacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeFieldParameters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/BacnetDevice/IRMS20Programeters/BacnetDevice/BacnetDevi
TR75H	Category	TimeOfDay	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeOfDayParamondersetDevice/IRMS20Program/contrc honeywellSylkDevice:TimeOfDayParamondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevice/IRMS20ProgramondersetDevic
TR75H	Category	ValueFromWallmodule	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/contrc honeywellSylkDevice:ValueFromWallModularetDevice/IRM\$20Program/contrc honeywellSylkDevice:ValueFromWallModularetDevice/IRM%20Program/contrc honeywellSylkDevice:ValueFromWallModularetDevice/IRM%20Program/contrc honeywellSylkDevice:ValueFromWallModularetDevice/IRM%20Program/contrc honeywellSylkDevice
TR75H	Category	BypassTime	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Perioc\ honeywellSylkDevice:BypassTimeParam$
TR42CO2	Category	CO2	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Perioc\ honeywellSylkDevice:CO2Paramine the standard standar$
TR75H	Category	ControllerValue	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Perioc\ honeywellSylkDevice:ValueFromControllenterSylkDevice:ValueFromCo$
TR75H		FanCommand	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Perioc\ honeywellSylkDevice:FanCommand and the state of the st$
TR75H	Category	HUMIDITY	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/Perioc\ honeywellSylkDevice:HumidityParamine the standard st$
TR75H	Category	NetworkSetpoint	slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetNetwork/IrmBacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Program/Period honeywellSylkDevice:NetworkSetpointParameters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/IRMS20Programeters/BacnetDevice/Bacnet
TR75H		OccupancyOverrideCommand	$slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IRM\$20Program/Perioc\ honeywellSylkDevice:OccupancyOverrideOutput and the state of the st$

Fig. 437 Sylk Parameter Summary View

By following the procedure above, you can add and configure Sylk devices with the supported Sylk parameters. After configuring the Sylk parameters with the Sylk devices, create the Sylk proxy file and commission it to the controller.

To replace the TR4x device with the TR7x device. Replace the TR42 device with the TR75 Sylk device and re-associate all parameters with the device. The Sylk devices configuration must then be validated and perform teach to the controller.

This action requires less effort to reconfigure the device. It also helps to establish a connection with the same Sylk device. However, the associated parameters vary from device to device.

Sylk Configuration Examples

Users can configure the Sylk parameters according to the requirements as shown in the examples below:

TR75H Sylk Configuration

In the Sylk device property sheet, the TR7x configuration would be auto-selected under the model tab based on the function block dropped in the wiresheet.

Check to ensure that the Wall Module's bus address dial (located on the back of the module) matches exactly with the setting of the configuration tool. Select 12 or 24-hour format.

Pr	Property Sheet							
Â	TR7	5H (S	ylk Device Function I	Block)				
	Ð	Execut	tion				1	
	Ð	Funct	ion Block Name/Ann	otation/Compos	site Flash Memory U	Isage	0	B [0 - 900]
•	¢	Sylk C	onfig Data				Ui Parameter	
		📄 Ma	ister Sync Enabled	🔵 true 🚽				
	-	📰 TR	75H	T R75 X Sylk De	vice			
			Model		Tr75h			
			Address		1 -			
			Status		{ok}			
		Q	Fault Cause					
			Time Format		12 hour 🔍			
			Is Configuration Do	wnloaded	12 hour			
			Power Consumptio	n	24 hour	96		
		• 8	Home Screen Optio	ns	T R7 X Home Scree	n Conta	iner	
		Þ 😢	Password Protectio	n	Password Config			
		Þ 🗎	Sylk Device Resource	e Usage	Resource Usage Me	eter		
		Þ 🗎	Categories And Para	ameters Node	Categories And Par	rameter	s Node	
		Þ 😰	Schedule		Schedule Config			
			Time		Sylk Time			

Fig. 438 TR75H Property Sheet

TR75H Logic Configuration

To configure the Sylk device, drag-drop the required Sylk parameters. Make sure the Sylk device supports the selected Sylk parameter.

Following are the Sylk Parameter details:

- **ROOMTEMP**: To measure the temperature of the space.
- OccupancyOverrideCommand: To override the unoccupancy mode to occupied mode.
- OccupancyStatus: Displays the occupancy status in the wall module.
- SensorOffset: To provide the sensor offset to the wall module.
- ValueFromWallModule: To provide the value from the wall module to the controller.
- SystemCommand: To override the system command from the wall module.
- **PassThru**: The passthru object passes temperature inputs and transfers the value to network outputs.
- **SavePermanent**: This object is used to save values in non-volatile memory. The value is not lost when the supply voltage is switched off.

• **Encode**: The Encode function translates enumerations of a digital value into different enumeration numbers, allowing standard and custom enumerations to be combined and used together.



Fig. 439 TR75H Logic Configuration example

TR71H Sylk Configuration and Logic

TR71H Logic Configuration

To configure the Sylk device, drag-drop the required Sylk parameters. Make sure the Sylk device supports the selected Sylk parameter.

Sylk Parameter details are as follows:

- **ROOMTEMP**: To measure the temperature of the space.
- **OccupancyOverrideCommand**: To override the unoccupancy mode to occupied mode.
- **PassThru**: The PassThru object passes temperature inputs and transfers the value to network outputs.
- **SavePermanent**: This object is used to save non-volatile memory values. When the supply voltage is switched off, the value remains unchanged.
- **Encode**: Enumerations of a digital value are translated into different enumeration numbers by the Encode function, allowing standard and custom enumerations to be combined and used together.



Fig. 440 TR71H Configuration

TR120H and TR75E Sylk Configuration

To configure the Sylk device, drag-drop the required Sylk parameters. Make sure the Sylk device supports the selected Sylk parameter.

Following are the Sylk Parameter details:

- **ROOMTEMP**: To measure the temperature of the space.
- **OccupancyOverrideCommand**: To override the unoccupancy mode to occupied mode.
- **OccupancyStatus**: Displays the occupancy status in the wall module.
- SensorOffset: To provide the sensor offset to the wall module.
- ValueFromWallModule: To provide the value from the wall module to the controller.
- **SystemCommand**: To override the system command from the wall module.
- **PassThru**: The passthru object passes temperature inputs and transfers the value to network outputs.
- **SavePermanent**: This object is used to save values in non-volatile memory. The value is not lost when the supply voltage is switched off.
- **Encode**: The Encode function translates enumerations of a digital value into different enumeration numbers, allowing standard and custom enumerations to be combined and used together.



Fig. 441 TR120H and TR75E Logic configuration

TR42x and TR40x Sylk Configuration

The TR4Ox and TR42x are temperature wall modules with basic setpoint, override, and fan options. TR4Ox and TR42x Sylk device is designed for a broad range of applications.

The TR40x and TR42x wall modules include:

- Models available with display (TR42) or without display (TR40).
- Models available with or without built-in humidity or CO2 sensors.

TR42x Sylk Configuration

TR40 Sylk sensors do not allow to override the current schedule or remote commanding capabilities.

Check to ensure that the Wall Module's bus address configured using the dip switches (located on the back of the module) matches exactly with the setting of the configuration tool.

Property Sheet	
A TR42HCO2 (Sylk Device Function Block)	
Execution	5
Function Block Name/Annotation/Composite Fl	ash Memory Usage 0 B [0 - 900]
🎬 Sync Sylk Device Display Name	🔵 Deny 👻
🔻 🗱 Sylk Config Data	Ui Parameter
🍋 Master Sync Enabled 🛛 🔵 true 🔽	
TR42HCO2 T R42 Sylk Device	
🍞 Sylk Device Display Name	<pre>%name%</pre> Output
🚡 Model	Tr42hco2
Address	5 🗸
Status	{ok}
Fault Cause	
Is Configuration Downloaded	false
Power Consumption	21 %
Device Name Viewable By Tenant	NO -
📔 Language	English
ì Language Viewable Editable By Tenant	NO 🗸
📄 Display Unit	°F 🗸
📔 Unit Viewable/editable by Tenant	NO V
Home Screen Options	Temperature
Dccupancy Status Param	null 🖿 🔹 🕨
Password Protection	Password Config

Fig. 442 TR42HCO2 Property Sheet

TR42x Logic Configuration

To configure the Sylk device, drag-drop the required Sylk parameters. Make sure the Sylk device supports the selected Sylk parameter.

Sylk Parameter details are as follows:

- ROOMTEMP: To measure the temperature of the space.
- SensorOffset: To provide the sensor offset to the wall module.
- **PassThru**: The PassThru object passes temperature inputs and transfers the value to network outputs.

- **SavePermanent**: It is used to save values in non-volatile memory. The value is not lost when the supply voltage is switched off.
- **Encode**: The Encode function translates enumerations of a digital value into different enumeration numbers, allowing standard and custom enumerations to be combined and used together.
- **HUMIDITY**: Measures the percent humidity of the space.
 - Vire Sheet

 Image: State and the sta
- **CO2**: Measures the CO2 concentration in the space.

Fig. 443 TR42 Logic Configuration

TR42 Configuration (Encode-Snap)

Property Sheet					
MVtoIRM (Enco	de)		r		
Execution	4		Property Sheet		
- Output	- {null}		Encode2 (Encod	le)	
Fire	- {null}		Execution	14	
— In Enum	- {null}	Ŧ	- Output	- {null}	
Disable	- {null}	Ŧ	Fire	- {null}	
— In1	- {null}	Ŧ	— In Enum	- {null}	¥
— In2	- (null)	Ŧ	Disable	- {null}	Ŧ
— In3	- {null}	¥	— In1	- {null}	¥
— In4	- (null)	Ŧ	- In2	- {null}	¥
— In5	- {null}	Ŧ	In3	- {null}	Ŧ
— In6	- (mull)	I	- In4	- {null}	÷
= In7	- (null)	T	- In5	- {null}	+
In 8	- (mull)	x	- In6	- {null}	÷
- 110	- {null}	•		- {null}	÷
- m9	- {null}	-	108	- {null}	•
	- {null}	-	- Ing	- {null}	•
- Out2	- {null}	+	- Out1	- {null}	• •
Out3	- {null}	Ŧ	- Out2	- {null}	×
— Out4	- {null}	Ŧ	= Out3	- {null}	× x
Out5	- {null}	Ŧ	= Out5	- (null)	I
— Out6	- {null}	¥	= Out6	- {null}	Ŧ
— Out7	- {null}	Ŧ	= Out7	- {null}	Ŧ
— Out8	- {null}	Ŧ	- Out8	- (null)	¥
— Out9	- {null}	Ŧ	— Out9	- {null}	Ŧ
🕨 💭 In1 Par	1.00		D In1 Par	0.00	
In2 Par	2.00		In2 Par	1.00	
In3 Par	3.00		In3 Par	255.00	
In4 Par	4.00		🕨 🗱 In4 Par	255.00	
In5 Par	255.00		🕨 🛱 In5 Par	255.00	
In6 Par	255.00		🕨 🗱 In6 Par	255.00	
In7 Par	255.00		In7 Par	255.00	
In8 Par	255.00		In8 Par	255.00	
In9 Par	255.00		In9 Par	255.00	
Out1 Par	1.00		Out1 Par	1.00	
Out2 Par	0.00		Out2 Par	2.00	
Out3 Par	3.00		Out4 Par	0.00	
Out4 Par	2.00		Out+ Par	0.00	
Out5 Par	0.00		Outo Par	0.00	
Out6 Par	0.00		Out7 Par	0.00	
Out7 Par	0.00		Out8 Par	0.00	
Out8 Par	0.00		Out9 Par	0.00	
Out9 Par	0.00				

Fig. 444 TR42 Encode-Snap

TR40 Sylk Configuration

To configure the Sylk device, drag-drop the required Sylk parameters. Make sure the Sylk device supports the selected Sylk parameter. Sylk Parameter details are as follows.

- **ROOMTEMP**: To measure the temperature of the space.
- **HUMIDITY**: Measures the percent humidity of the space.
- **CO2**: Measures the CO2 concentration in the space.



Fig. 445 TR40 Sylk Configuration

C7400S Configuration

In the Sylk device property sheet, the C7400s configuration would be auto-selected under the model tab based on the function block dropped in the wiresheet.

Ensure that the sensor bus address is configured using the dip switches matches exactly with the setting of the configuration tool. No other configuration is required to be configured for C7400S Sylk sensors.



Fig. 446 C7400S Configuration Logic

Delete a Sylk Device

If you want to remove a Sylk Device from a configured station, follow the below steps:

Steps to delete a Sylk Device is as follows:

- Step 1. Right-click on the **Sylk Device** from the nav window.
- Step 2. Select Delete.

Alternatively,

Double-click on **Periodic program**, navigate to the wiresheet view, select the Sylk device, and press delete.



Fig. 447 Delete Sylk Device

Note: Whenever you modify any Sylk device or parameter configuration, the impacted Sylk device will not perform to read and write function. This modification will not impact the read and write function of other commissioned Sylk devices.

Sylk Actuator

The IRM NX supports following Sylk actuator models:

MS3103, MS3105, MS4103, MS4105, MS7403, MS7405, MS7503, MS7505, MS8103, MS8105 Spring Return Direct Coupled Actuators (DCA) are used within heating, ventilating, and air-conditioning (HVAC) systems. They can drive a variety of quarter-turn, final control elements requiring spring return fail-safe operation.

Applications includes following operations:

- **Volume control dampers:** The volume control dampers mounted directly to the drive shaft or remotely (with accessory hardware).
- **Quarter-turn rotary valves:** The Quarter-turn rotary valves such as a ball or butterfly valve mounted directly to the drive shaft.
- **Linear stroke globe or cage valves:** The Linear stroke globe valves mounted with linkages to provide linear actuation.
- Available with cable on select models.

Inputs and Outputs of the Sylk Enabled Actuators

As shown in figure below, Sylk actuator has two inputs and five outputs. All the inputs and outputs communicate with the IRM NX controllers over a Sylk bus.



Fig. 448 Sylk Actuator Inputs and Outputs

- Actuator Command: Actuator commands are generated by the controller's output. An Actuator moves in response to a command.
- Actuator Travel Time: The actuator travel time is the time required by the actuator to travel from 0 % to 100 % open or 100 % to 0 % open. This time interval depends on the actuator type and varies from 0 to 500 seconds.
- Actuator Position: This is feedback from the actuator's current position ranging between 0 to 100 % and can be linked into the BACnet controller for monitoring.
- Actuator Cycle Count: It shows how many time actuators cycles from open to close position.
- Actuator Status: Actuator status returns a number with the following meaning:
 - 0: No Error
 - 1: Under Voltage

- 2: Over Voltage
- **3:** Stall
- 4: OverVoltage and Stall
- **5:** UnderVoltage and Stall
- Actuator Overridden: It provides actuator overridden status if the actuator is overridden externally.
- This will return "True" if the unit is in Test Mode. It occurs if the address port is manually turned to position 6.
- **Power Report:** This is a relative measurement. It is only calculated for the last commanded move, ranging from 0 to 100.

Add a Sylk Actuator

To configure the Sylk actuator device, you need to add it to the wiresheet.

Steps to add Sylk actuator device:

- Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > double-click IrmProgram. This action opens periodic program wiresheet.
- Step 2. Drag IrmFolder from the palette and drop onto **Periodic program** wiresheet.
- Step 3. Navigate to the palette, select the **SylkActuator** from the **SylkDevices** list and drop it to **Periodic program** wiresheet.



Fig. 449 Adding Sylk Actuator to the Wiresheet.

Step 4. Enter the **SylkActuator** name and click **OK**. This adds the Sylk Actuator under IrmBacnetDevice.

Step 5. Expand **SylkActuator** or double-click on **SylkActuator** and check the power consumption and configure the Sylk actuator device.

roperty Sheet		
SylkActuator (Sylk Device Function Blog	ck)	
Execution		1
Function Block Name/Annotation/C	omposite Flash Memory Usage	0 B [0-900]
🗱 Sylk Config Data		Ui Parameter
📔 Master Sync Enabled 🛛 🔵 true	▼	
💌 আি SylkActuator Sylk Actu	uator Device	
Model	Sylk_actuator	
Address	1 -	
📔 Status	{ok}	
Fault Cause		
) Is Configuration Downloaded	e false	
Power Consumption	5 96	
	roperty Sheet SylkActuator (Sylk Device Function Block Execution Function Block Name/Annotation/C Sylk Config Data Master Sync Enabled Model Address Status Fault Cause Is Configuration Downloaded Power Consumption	roperty Sheet SylkActuator (Sylk Device Function Block) Execution Function Block Name/Annotation/Composite Flash Memory Usage Sylk Config Data Master Sync Enabled true Master Sync Enabled Sylk Actuator Device Model Sylk_actuator Address 1 Status {ok} Fault Cause Fault Cause Solution Downloaded false Power Consumption 5 %

Fig. 450 Sylk Actuator Property Sheet

Sylk Actuator Device Type

Once you have added the **SylkActuator** in the Periodic program folder, configure the parameters of the **SylkActuatorDevice**.

Sylk Actuator Variables	Sylk Actuator Type					
Status Variables	Status Variables					
Parameter	Zelix	Diamond	Zeus			
Actuator Position	Y	Y	Y			
Actuator Cycle Count	Y	Y	Y			
Actuator Status	Y	Y	Y			
Actuator Overridden	Y	Y	Y			
Power Report	Y	N	N			
Control Variable						
Actuator Timing	Y	Y	Y			
Actuator Position Request	Y	Y	Y			

Table 41 Parameters Supporting Sylk Actuator

Configure Sylk Actuator Inputs

Steps to configure Sylk Actuator inputs:

- Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > double-click IrmProgram. This opens the Periodic program wiresheet view.
- Step 2. Navigate to the palette section, expand **Sylk > SylkParms >** select **SylkActuatorInputParam**.
- Step 3. Drag **SylkActuatorInputParam** from the palette and drop into the Irm Folder wiresheet.

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- Step 4. Double-click on the SylkActuatorInputParam modules.
- Step 5. Expand **SylkActuatorInputParam** property sheet, select **sylkDevice** as SylkActuatorDevice, and **inputType** as actuator or act travel time from the dropdown list.

Property Sheet		
▲ SylkActuatorInputParam (Sylk In Param)		
Execution	2	
📔 Function Block Name/Annotation/Composite Flash Memory Usage	0	B [0 - 900]
— In	- {null}	Ŧ
📔 Sylk Device	None	
🔻 🔅 Sylk Config Data	Ui Paramet	er
Master Sync Enabled 📃 🔍 🗸		
💌 🍖 SylkActuator Input Param 🛛 Sylk Actuator Input Param		
sylkDevice SylkActuator 🗸		
status {fault}		
TaultCause No Sylk device associated wi	th the param	
sendInterval (seconds) 5		
senDelta 0.50 [0.00-9999.00]		
Value in "senDelta" will be only if the "sendInterval" is set to "Cov"	honored	
📄 enableFD 📃 🔍 🗸		
FDInterval 20 s		
inputType Actuator 🗸		
Actuator functional ActTravelTime hterval (if	ity, send one-third Fail	
Detect is enabled).		

Fig. 451 Sylk Actuator Input Parameter Configuration

Configure Sylk Actuator Inputs Parameter

- In: Provides the Sylkactuator value to the controller.
- Master Sync Enabled: Enable or disable master sync.
- **sylkDevice**: Select the required Sylk actuator device from the drop-down menu.
- **Status**: Read-only point. Shows the status of the parameter. (alarm, fault, overridden, disabled, down, stale, null, unackedAlarm). For more details see Sylk component status behaviors.
- **faultCause**: Read-only point, displays the reason for the fault parameter. This property is empty unless a fault exists.
- **sendInterval (seconds):** sendInterval is the time interval for sending data from the controller to the network on a regular basis. The controller will send the input parameter value to the Sylk device based on the user-configured sendInterval (in

seconds).

For example, if the sendInterval value is set to 5 seconds, the controller will send the value of the input parameter to the Sylk device every 5 seconds. The allowed interval range is 5 to 75 seconds. The sendInterval value is set to 5 seconds by default.

If sendInterval is set to Cov (change of value), the controller will only send the value of the input parameter to the Sylk device when it changes. With Cov selection, the GPU (guaranteed periodic update) feature is added. To avoid data loss due to high network traffic, the controller updates the input parameter value to the Sylk device every 60 seconds.

- **Note:** If the Sylk device is configured at a higher address, it is possible that the Sylk device will miss reading the network's periodic parameter update. It is recommended that enableFD be set to "No." (If enableFD is set to "Yes," the Sylk parameter value will be set to default if it does not receive parameter updates, which may affect its behavior.)
- **Note:** Only use Cov at critical points. Cov utilize Sylk bandwidth for communication . Excessive bandwidth usage may result in data loss between Sylk devices.
 - **senDelta**: SenDelta is another name for the delta value for significant event notification. It allows the controller to send the input parameter value to the Sylk device only when the difference between the last sent value and the current value is greater than or equal to senDelta. Otherwise, the value change will not be propagated to the Sylk device.

For exmple: If the senDelta is two, the last sent input parameter value is two, and the current value is five. The difference in parameter values is three (5 - 2 = 3), which is greater than the senDelta value (two). This enables the controller to send the current value of the input parameter (five) to the Sylk device. It regulates the increase in network traffic caused by the frequent changes in the

values of input parameters. This can be used to tune the controller so that minor value changes do not propagate to the network. The senDelta value is set to 0.5 by default.

- **Note:** The senDelta feature is only available when the sendInterval is set to "Cov." A senDelta of zero indicates that any value change is significant and is propagated to the network.
 - **enableFD**: Fail Detect is the time until the controller is notified of a failure on this point.
 - **Yes**: If enableFD is set to true, the Sylk device anticipates a periodic update to the input parameter. If it does not receive parameter updates from the controller, an alarm is generated and the Sylk input parameter value is set to the default value.
 - **No**: If enableFD is set to false, the parameter retains the last value that was written to it. When it receives updated values from the controller, it will set the value. It does not allow parameter values to be set to their default value.
 - **FDInterval**: FDInterval for Sylk actuator input parameter is 20 secs.
- **Note:** To ensure proper functionality, sendInterval must be less than one-third of Fail Detect interval (if fail detect is enabled).
 - inputType: You can use this option to select Sylk Actuator input. SylkActuatorInputParam can be set to one of two input actuator and act travel time values.

- **Actuator**: The controller output is used to generate the actuator command. An actuator moves in response to a command.
- Actuator Travel Time: The actuator travel time is the amount of time it takes the actuator to travel from 0 % to 100 % open or 100 % to 0 % open. This time interval varies depending on the type of actuator and ranges from 0 to 500 seconds.

Configure Sylk Actuator Outputs

Steps to configure Sylk Actuator output:

- Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > double-click IrmProgram. This opens the Periodic program wiresheet view.
- Step 2. Navigate to the palette section, expand **Sylk > SylkParms >** select **SylkActuatorOutputParam**.
- Step 3. Drag **SylkActuatorOutputParam** from palette and drop into the IrmFolder wiresheet.
- Step 4. Double-click on the SylkActuatorOutputParam modules.
- Step 5. Expand **SylkActuatorOutputParam** Property Sheet, select **sylkDevice** as SylkActuatorDevice, and **outputType** as actuator position or actuator cycle count or actuator status or actuator overriden or power report from the dropdown list.

Pr	оре	erty Sheet						
	SylkActuatorOutputParam (Sylk Out Param)							
	Ð	Execution		3				
	Ð	Function Block Name/Annotation	n/Composite Flash Memory Usage	0	B [0 - 900]			
	-	Out		- {null}				
	Ð	Sylk Device		None				
•	Q	Sylk Config Data		Ui Parameter				
		📔 Master Sync Enabled	🔵 true 🔽					
	•	ဖြာ့SylkActuatorOutputParam	Sylk Actuator Output Param					
) sylkDevice	SylkActuator 🔻					
		🗎 status	{fault}					
		🗎 faultCause	No Sylk device associated with	the parame				
) sendInterval (seconds)	5 🗸					
		🗎 enableFD	NO 🗸	_				
		📄 outputType	Actuator Position 👻					
-	¢	Out Save		Out Save Fields				
		📔 Master Sync Enabled 🛛 🔵 tr	rue 🗸					
		📔 Out 🥚 D	isable 🗸					

Fig. 452 Sylk Actuator Output Parameter property

Note: A separate parameter configuration is required for adding input or output point type for Sylk actuator.

INPUT	OUTPUT			
SylkActuatorInputParam Sylk In Param Execution 2 In 10.00 (ok)	SylkActuatorOutputParam SylkOutParam Execution 3 Out -{null}	SylkActuatorOutputParam2 SylkOutParam Execution 6 Out -{null}		
Sylk Device SylkActuator	Sylk Device SylkActuator	Sylk Device SylkActuator		
SylkActuatorInputParam1	SylkActuatorOutputParam1	SylkActuatorOutputParam3 A		
Execution 4	Execution 5	Execution 7		
In 20.00 {ok}	Out -{null}	Out -{null}		
Sylk Device SylkActuator	Sylk Device SylkActuator	Sylk Device SylkActuator		



Configure Sylk Actuator Outputs Parameter

- **Out**: Provides the respective value to the controller from the Sylk device.
- Master Sync Enabled: Enable or disable master sync.
- **sylkDevice**: Select the required Sylk actuator device from the drop-down menu.
- **Status**: Read-only point. Shows the status of the parameter. (alarm, fault, overridden, disabled, down, stale, null, unackedAlarm). For more details see Sylk component status behaviors.
- **faultCause**: Read-only point, displays the reason for the fault parameter. This property is empty unless a fault exists.
- **sendInterval (seconds):** SenDelta is another name for the delta value for significant event notification. It allows the controller to send the input parameter value to the Sylk device only when the difference between the last sent value and the current value is greater than or equal to senDelta. Otherwise, the value change will not be propagated to the Sylk device.
- **Note:** The senDelta feature is only available when the sendInterval is set to "Cov." A senDelta of zero indicates that any value change is significant and is propagated to the network.
 - **enableFD**: Fail Detect is the time until the controller is notified of a failure on this point.
 - **Yes**: If enableFD is set to true, the Sylk device anticipates a periodic update to the input parameter. If it does not receive parameter updates from the controller, an alarm is generated and the Sylk input parameter value is set to the default value.
 - **No**: If enableFD is set to false, the parameter retains the last value that was written to it. When it receives updated values from the controller, it will set the value. It does not allow parameter values to be set to their default value.
 - **outputType**: This option allows you to customize the Sylk actuator output. SylkActuatorOutputParam can be configured to produce the following outputs:
 - Actuator Position: This is feedback from the actuator's current position ranging between 0 to 100 % and can be mapped into the controller for monitoring.

- Actuator Cycle Count: It shows how many time actuators cycles from open to close position.
- **Actuator Status**: Actuator status returns a number with the following meaning:
 - 0- No Error
 - 1- Under Voltage
 - 2- Over Voltage
 - 3- Stall
 - 4- OverVoltage and Stall
 - 5- UnderVoltage and Stall
- **Actuator Overridden**: It provides actuator overridden status if the actuator is overridden externally. This will return "True" if the unit is in Test Mode. It occurs if the address port is manually turned to position 6.
- **Power Report**: This is a relative measurement. It is only calculated for the last commanded move, ranging from 0 to 100 %.

Enum Schedule Configuration

Steps to configure Enum Schedule:

- Step 1. Navigate to Station > Config > Drivers > BacnetNetwork > IrmBacnetDevice > double-click IrmProgram. This opens the Periodic program wiresheet.
- Step 2. Navigate to the honIrmControl palette and expand **Date_Time.**
- Step 3. Drag **EnumSchedule** from palette and drop into the wiresheet.
- Step 4. Double-click on the **EnumSchedule** modules and expand **Schedule Config**.

Pr	operty Sheet			
⚠	EnumSchedule (Enum Sched	ule)		
	Execution		1	
	Function Block Name/Ann	otation/Composite Flash Memory Usage	0	B [0 - 900]
	Description			
	— Out Current		Unoccupie	ed {ok}
	— Out Next		Unoccupie	ed {ok}
	📟 Out Time To Next		- {null}	
	🏠 Priority For Writing		15	
₽	🔅 Bacnet Object Instance		2	
•	🗱 Schedule Config		Ui Parame	ter
	📔 Master Sync Enabled	🔵 true 🧹		
	time configData	Unoccupied {ok}		
Þ	🛱 Out Save		Out Save F	Fields

Fig. 454 Configure Schedule properties

- Step 5. Select Master Sync Enabled to true.
- Step 6. Click **ConfigData** to view the AX Scheduler.

configData Occupied {ok}



Note: Before configuring the ConfigData properties of the schedule configuration, add supported Sylk devices to the wiresheet.



Fig. 456 Weekly Schedule

Step 7. Click Save.

Alternatively, click **Refresh** and click **NO**, if you do not want to save the changes.

Note: The Sylk wall module supports four events per day. However, the IRM NX controllers BACnet schedule supports more than four events per day. So, the user cannot edit the schedules in-wall module when more than four events are configured per day.

Configure Sylk Schedule Event

Steps to configure Sylk Schedule Event:

- Step 1. Open the property sheet of the Sylk wall module.
- Step 2. Set the Schedule Editable From Zio field to Yes.
- Step 3. Select the permissions from the Param permission drop-down list as per the requirement (Contractor Only, Tenant Read-only, and Tenant Read Write).
- Step 4. Change the **Schedule Type** as required (8-day schedule/ 7-day schedule/ 5-2-1-day schedule/ 5-2-day schedule).
- Step 5. Enter the schedule block location in the **Schedule Block Location** field.

Pro	pert	ty Sheet							
<u>a</u> 1	R120								
) D	xecution		6					
	📄 Fi	unction Block Name/Annotation/Comp	osite Flash Memory Usage	0	B [0 - 90	0]			
•	🗘 Sj	ylk Config Data		Ui Param	leter				
	Ĵ,	Master Sync Enabled 🛛 🔵 true							
	-	TR120_TR75E T R120 Sylk D	vice For T R75 Emulation						
		🗎 Model	Tr120_tr75 E						
		Address	1 -						
		🗎 Status	{fault}						
		📔 Fault Cause	Sylk device name with:	in the IF	M device sl				
		📔 Time Format	12 hour 👻						
		ls Configuration Downloaded	e false						
		Power Consumption	55 96						
		Home Screen Options	T R7 X Home Screen Conta	ainer					
		🕨 🎬 HS1 🛛 T R7 X Home Screen De	tails Config						
	•	Password Protection	Password Config						
	•	📔 Sylk Device Resource Usage	Resource Usage Meter						
	•	Categories And Parameters Node	Categories And Paramete	rs Node					
		🔛 Schedule	Schedule Config						
) Schedule Editable From Zio	YES 🗸						
		Param Permissions	Contractor Only 🗸						
		Chedule Type	8 day schedule (Mon, Tue, Wed,	Thu, Fri, Sat	, Sun, Hol) 🔍 🤟				
		Chedule Block Location	8 day schedule (Mon, Tue, Wed, 7 day schedule (Mon, Tue, Wed)	Thu, Fri, Sat Thu, Fri, Sat	, Sun, Hol)		-	►	
		Application Type	5-2-1 day schedule (Mon-Fri. Sat	-Sun, Hol)	, 00117				
	₽	🔜 Time	5-2 day schedule (Mon-Fri, Sat-S	un)					

Fig. 457 Sylk Schedule Configuration

Note: Schedule configuration workflow changes after changing any schedule changes in the tool, perform Sylk commission.

Configure Schedule Block Location

Steps to configure Schedule Block Location:

Step 1. Click Folder icon () and select the **Component Chooser** from the drop-down list.

- 12	Schedule	Schedule Config						
) 📔 Schedule Editable From Zio	YES V						
	Param Permissions	Contractor Only 👻						
	🗎 Schedule Type	8 day schedule (Mon, Tue, Wed, Thu, Fri, Sat, Sun, Hol)						
	📔 Schedule Block Location							
	Application Type	TR75Emulation	<u>B</u> ql Query Builder					
	Time	Sylk Time	<u>C</u> omponent Chooser					
			Component <u>G</u> rid Query Editor					
			Directory Ord Chooser					
			File Ord Chooser					

Fig. 458 Component Chooser

Step 2. On the Select Ord window, click **Drivers > BacnetNetwork > IrmBacnetDevices** > **Irm Program > Event Program > EnumSchedule**, and click **OK**.

This action fetches the scheduler location to the **EnumSchedule Block** Location filed.

Step 3. Click **Save** Or click **Refresh** to cancel the changes.

Alternatively, go to nav window, navigate to the **Station > Config > Drivers > BacnetNetwork > IrmBacnetDevices > Irm Program > Event Program > Select EnumSchedule,** and press Ctrl + L.

This action opens the Ord window, copy the location,

Ord		×
Iocal: foxs: station:	slot:/Driver	s/BacnetNetwork/IrmBacnetDevice/IRM\$
	ОК	Cancel

Fig. 459 Ord Window

Navigate to Schedule Config option and paste the link in the Scheduler Block Location field.



Fig. 460 Scheduler Block Location

Step 4. Click **Save** to save the changes.



Configure Global Schedule Event

BACnet Schedule Export sends schedule or calendar components to IRM BACnet schedule or calendar objects in the station.

Prerequisites: A operational CentraLine-N4 workbench connected to a remote host station. To export, the BACnet device should include a schedule or calendar object.

The BACnet Schedule Export Manager view location: Go to **Bacnet Network > Bacnet Device > Schedules.**

The BACnet Schedule Export Manager view displays schedule components in the station as BACnet schedule objects or calendar objects. However, these server-type exported components available for any device on BACnet networked. It does not write to specific objects in a BACnet device, which acts as a client.

The BACnet Schedule Export Manager view displays schedule components as BACnet schedule objects or calendar objects in the station. These server-type exported components, on the other hand, are available to any BACnet networked device. It does not write to any specific objects in a BACnet device, which acts as a client.

Note: The IRM NX controllers does not support priorityForWriting function for Global Schedule event. To use the global schedule event, you need to disable priorityForWriting function.

To disable priorityForWriting function: Click Edit after selecting the global schedule event from the database. Click the skip writes property in the scheduling event edit box, then set the priorityForWriting property to True.

Name Object	ct ld Supe	ervisor Ord		Data Type	Enabled	Priority For Writing	Exe	
EnumSchedule sched	ule:1 statio	on: slot:/Drivers/BacnetNetwo	rk/GlobalSchedule	Unsigned	true	15	5 m	
Name	EnumSche	4 Config Facets						>
Dbject Id	schedule	Key	Туре	Value				
Supervisor Ord	station:	scheduleDefault	Boolean	false				
Data Type	Unsigned	weeklySchedule	Boolean	false				
Enabled	true	exceptionSchedule	Boolean	false				
Priority For Writing	15	effectivePeriod	Boolean	false				
Execution Time	Interval	priorityForWriting	Boolean	true				
Skip Writes	scheduleDe							•
Write Enum As	Unsigned					WF		9
Out Of Service	false			ОК	Cancel			

Fig. 462 Disabling priorityForWriting Feature for Global Schedule Event

Configure Enum Range

Perform the following operation to configure the Enum Range:

- Define Enum range on page 312
- Add Entry in Enum Library on page 312
- Modify Enum Library on page 313

Define Enum range

Steps to define Enum range:

Step 1. Double-click on **ConfigData > Properties > Facets option**, select **default range** (honIrmControl: ScheduleStatesEnum), and click (>>) icon.

												-		_													
				4	(Pi	rev F	age	4	Pr	ev N	lont	th	To	day		lext	Mon	th		Nex	t Pa	ge)					
		M	ay 2	020					Ju	in 20	020					J	ul 20	20					Au	ıg 20	020		
5	s r	<u>n</u> t	w	t	f	s	s	m	t	w	t	f	s	s	m	t	w	t	f	s	s	m	t	w	t	f	S
					1	2		1	2	3	4	5	6				1	2	3	4							1
3	3 4	1 5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
1	.0 1	1 12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
1	.7 1	8 19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
2	4 2	5 26	27	28	29	30	28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29
3	1																				30	31					
							1	ny D	ау	-	An	ny Mo	onth		Ar	уУ	ear		Ĥ								
													Thre	ough						-							
							1	ny D	ву	-	An	ny Mo	onth		Ar	уY	ear	-	Ħ	1							
										_																	
efault Output	t		nu	ll O	ccup	ied		•																			
				=hon	IrmC	ontr	Lo.																				
acets		- F	nige-			onus	it:Scr	edul	estai	esEr	num	>>>	• •	Э	-												
acets	al Ev	n anto (inge-			Untre	it:Scr	edul	esta	tesEr	num	>>		Ъ	•												
acets leanup Specia	al Ev	ents (tr	ue	-		d:Scr	edul	esta	tesEr	ıum))	•	9	•												
acets Cleanup Specia	al Ev	ents (tr	ue			d:Scr	edul	esta	tesEr	num	»		9	Ŧ												
Facets Cleanup Specia	al Ev	ents (tr	ue			d:Ser	edul	estar	esEr	ıum	<u>}</u>	•	9	•												
Facets Cleanup Specia	al Ev	ents (tr	rue	-		d:Ser	edul	estar	esEr	um	»	• •	9	•												
Facets Cleanup Specia	alEv	ents (tr	rue	Even	te	li ser	rope	ties	esEr	num	<u>>></u>		9	•												
acets Cleanup Specia Weekly Schr	al Ev edul	ents (tr	rue	Even	ts	F	rope	rties	C) Su	mma	ary	9	-												

Fig. 463 Defining Enum Range

Step 2. Select the default **Enum** range, click the (...) icon, and click the (>>) icon. This action open the Enum Library.

Add Entry in Enum Library

Steps to add entry in the Enum Library:

- Step 1. Select the blank fields.
- Step 2. Enter the **Ordinal** value, display information in the respective field and click **Add**.

N Enum ×								
✔ Use Frozen Enum in Range (module:name)								
honIrmControl:ScheduleStatesEnt ~								
Ordinal	Tag	Display		₽.				
0	Occupied	Occupied						
1	Unoccupied	Unoccupied						
3	Standby	Standby						
255	Null	Null						
10	Holid	lay						
A	dd	Modify	Remove					
Lexicon Mo	Lexicon Module Name							
		OK Cancel						

Fig. 464 To add an Entry in Enum Library

- **Note:** Working with default facets configuration when the schedule is linked to the Sylk Device is recommended. Suppose the user configures the value of the facet other than the default configuration. In that case, the Sylk module may not operate correctly.
- **Note:** In a Zio enum library maximum of 255 entries can be added.

Modify Enum Library

Steps to modify the entry in the Enum Library:

- Step 1. Select the entry.
- Step 2. Modify the **Ordinal** value, **Display** field, and **Tag** field and click **Modify**. Or
- Step 3. Change the **Ordinal** value, **Display** field, and **Tag** field and click **Add**.

Additional Configuration

The following are the additional configuration available on the Scheduler:

- Event time tuning
- Event Output
- Right-click menus

Event Time Tuning: You can specify the start and end times for each selected event by selecting the hours or minutes from the calendar or by entering the event start and end values in the corresponding boxes.



Fig. 465 Schedule Event Time Selection

Event Output: Select the required output value from the drop-down list.



Fig. 466 Schedule Output Value Selection

Right-click menus: The table below describes the available right-click menus (in the schedule area) and their descriptions.

Options	Descriptions
Delete Event	Deletes the selected event.
Paste Day	It appears if the copy day option was used. It copies all events into the selected day.
All Day Event	It makes currently selected (or last entered) events extend to an entire day.
Apply M-F	It copies all the events in the selected day to Mon, Tue, Wed, Thu, and Fri (and overwrites any existing events on those days).
Copy Day	It copies all the events in the selected day.
Clear Day	It clears all the events on the selected day.
Clear Week	It clears all the events in the entire weekly schedule.

Table 42	Right-click	menus
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Fig. 467 Right-click menus

Special Events

In the schedule view, each schedule object's special events are configured on a special events tab. The event times and values entered for any special event are only valid for that schedule.

Suppose the special event is set up as a "reference" type. In that case, the days of its occurrence should be specified as a reference in the calendar schedule functional block. It enables you to change the days of special events that occurred while editing one or more referenced CalendarSchedules on a global scale.

A M	dd	×
Name	Christmas	
Туре	Week And Day 🚽 🧹	
	Date	
An	Date Range	Week Any Month Y
	Week And Day	
	Custom	OK Cancel
	Reference	

Fig. 468 Schedule - Special events

Table 43 Special Events

Options	Descriptions
Date (default option)	By various combinations of weekday, numerical date, month or month combinations, and year.
Date Range	By start and end range, using for each a combination of day, month, year.
Week and Day	By the combination of day of the week, week in the month, month. Note: Calendar Week type will not support.
Custom	By combination of any day, month, weekdays, any week, and year. Note: Custom type events for Special events not supported by IRM Compact VAV and FCU controller.
Reference	By reference to a specific Calendar Schedule component in the station.

			🕀 Add	🕀 Edit	A Priority	▼ Priority	I Rename	🗙 Delete
III Weekly Schedule	Bpecial Events	Properties	() Summary					
						E Save	\mathcal{O} Refresh	1

Fig. 469 Special Events Options

Table 44	Special	Event options
----------	---------	----------------------

Options	Options Descriptions	
Add	Add a new special event.	
Edit	Edit day(s) selection criteria (but not changing special event type).	
Rename	Rename selected special event.	
Priority (up)	Move special events up in the priority list.	
Priority (down)	own) Move special events down in the priority list.	
Delete	Removes selected special events from the schedule component.	

Special Events

Sylk wall module supports the following exception:

- One exception schedule to configure for a holiday.
- BACnet schedule supports more than one exception schedule.

You can edit one of the first exception schedules in the wall module, and the second exception schedule onwards cannot be edited.

To implement this limitation, you must configure the calendar object with multiple holidays and use calendar references to create an exception schedule in the IRM schedule.

Note: The TR120x and TR75x wall modules can edit the schedule for one holiday. Since IRM NX controller supports a unique schedule for each holiday, when you integrate TR120x and TR75x, the user can edit only the first holiday created in the schedule.

When working with TR120x and TR75x wall modules, use the Calendar object to create multiple holidays and assign one schedule for all the holidays. When you edit the holiday schedule, it will apply to all the holidays.

Create Event for Multiple Days

You can create one event and apply to multiple days.

Steps to create event for multiple days:

- Step 1. Add a **Calendar** function block in the wiresheet, define all the holidays dates, and date ranges on the calendar.
- **Note:** When using the schedule and calendar function block in the application, controller time should be synchronized for the system time; else, the schedule function block will have wrong references and might not work correctly. TSYNC is the best way to synchronize time in the controller.
 - Step 2.Navigate to EnumSchedule > ConfigData > Special Events, create one
Exception Schedule, select calendar Type as Reference, and click OK.
Now define the time events for this Exception Schedule. The schedule will

execute these time events for all the dates defined in the Calendar.

Step 3. Wall module displays this exception schedule time events (as this is the first one) as Holiday time events on display.

Step 4. You can modify the holiday time events. These modified time events get written back to the first Exception Schedule, which is configured as calendar type as Reference. Hence same time events get applied to all the defined dates on the Calendar.

Scheduled Event Default Output

The schedule block output (Out slot) will be the default value whenever a scheduled event (special or weekly) is not defined or effective.

The white area in listed events indicates where the default value is used and displays the current default value.

Default Output	null Unoccupied		
Facets	range=honIrmControl:ScheduleStatesEnum	≫	9 -
Cleanup Special Events	true		

Fig. 470 Schedule event default value

Configuring WmConfigHvacA using Sylk Device

The honIrmControl provides "WmConfigHvacA" function blocks that can be configured and used to build the required application logic that supports various wall operating device.

Note: The WmConfigHvacA function block can be placed no more than three times onto the wiresheet. It can only be configured as a Sylk wall module once. Instead of using the Sylk wall module, the function block can also be configured as a wired or external wall module (a Modbus wall module).

The function block supports various wallmodules (WM) Wired, Sylk TR40/42 and an external WM. The external WM communicates e.g. via BACnet to the room controller.

For more detail about WmConfigHvacA functional block, refer to IRM Function Blocks User Guide - EN2B-0415-GE51.

Steps to configure WmConfigHvacA functional block:

- Step 1. Expand the Irm Program and double-click Periodic Program.
- Step 2. Open the **honIrmControl** palette and scroll down to the **Wallmodule**.
- Step 3. Expand **Wallmodule**, drag the **WmConfigHvacA**, and drop it onto the wiresheet.



Fig. 471 honIrmControl Palette

N	ame		×
?	WmConfigHva	cA	
	ОК	Cancel	

Step 4. Change the name if desired in the "Name" dialog box and click **OK.**

Fig. 472 Name Dialog Box

Step 5. Double-click the **WmConfigHvacA**. This action displays the property sheet.

WmConfigHvacA Wm Config Hvac A	
Execution	1
Out Room Temp	- {null}
Out Eff Occ Md	- {null}
Out Setpt Temp	22.00 {ok}
Out Setpt Md	Htg
Out Eff Hvac Md Bits	- {null}
Occ Sched	- {null}
Hvac Room Application Bits	- {null}
Hvac Md Plant Bits	- {null}

Fig. 473 WmConfigHvacA

Step 6. Expand **General Settings**, select the desired wall model from the drop-down list.

P	op	erty Sheet						
	Wn	nConfigHvacA (Wm	Config Hvac A)					
	Ð	Execution				1		
	Ð	Function Block Na	me/Annotation/Composite Flash Memo	ry Usa	ge	0	B [0 - 900]	
	-	Out Room Temp				- {null}		
	-	Out Eff Occ Md				- {null}		
	-	Out Setpt Temp				22.00 {ok}		
	Ð	Out Setpt Md				Htg		
	_	Out Eff Hvac Md Bi	ts			- {null}		
	-	Occ Sched				- {null}		Ŧ
	-	Occ Sensor				- {null}		Ŧ
	-	Hvac Room Applic	ation Bits			- {null}		Ŧ
	-	Hvac Md Plant Bits	3			- {null}		Ŧ
-	Ð	GeneralSettings				Irm Parameter Gr	oup	
		뛭 Wm Model	Tr42	-				
		🗎 Expert Mode	None	*				
-	Ð	Setpoint	Tr40			Irm Parameter Gr	oup	
) Setpt Clg Over	ı, Tr40H					
		🗎 Setpt Clg Unoc	c Tr40Co2					
) Setpt Clg Stby	p Tr40HCo2					
		📔 Setpt Clg Occ 🛛		11				
		🗎 Setpt Htg Occ I	Tr42C02					
		🗎 Setpt Htg Stby	F Tr42HCo2					
		🗎 Setpt Htg Uno	WiredWmTemp					
		🗎 Setpt Htg Fros	WiredWmTempSetpt					
		📔 Setpt Off Time	F WiredWmTempSetptLedButton	1				
			WiredWmTempSetptLedButtonFanspeed					
			WiredWmTempSetptFanspeed					
			e i bu					

Fig. 474 Wm Model Selection

Based on the Wall model selection, the general setting configuration varies.

- 6	🐉 GeneralSettings		Irm Parameter Group
	🗑 Wm Model	Tr42	V
	Ccc Ovrd Selection	Disabled 🔻	
	隌 Setpt Ovrd Type Par	NoSetptOvrd -	
	隌 Fan Ovrd Type Par	NoSelection 🔹	
	Hvac Ovrd Selection	Disabled -	
	🗎 Expert Mode	Standard -	

Fig. 475 Configure the Sylk Wallmodule Address

• Occ Ovrd Selection: This is used to check whether the room user may or may not overwrite the occupancy mode from the wall module. For example, the room user could switch to BYPASS in UNOCCUPIED mode to get the OCCUPIED setpoint. Accordingly, I/O slots and parameters are displayed or hidden depending on this parameter.

The overwrite can be done from a Wired WM with an overwrite button, a Sylk Wallmodule via the display, or an external WM. **Values:**

- 1: No Occupancy Overwrite
- **2:** Occupancy Overwrite
- Setpt Ovrd Type Par: Since this parameter is also available as an input, please refer to the input Setpt Ovrd Type description.
 Default Value:
 - **1:** No Setpoint Overwrite
- Fan Ovrd Type Par: Since this parameter is also available as an input, please refer to the input Fan Ovrd Type description.
 Default Value:
 - **1:** No Selection: No fanspeed selection possible from wallmodule
- Hvac Ovrd Selection: Hvac Ovrd Selection is used to select whether the room user may or may not overwrite the wall module's HVAC mode (Cooling or Heating). For example, the room user could switch to HEATING in the winter to avoid COOLING if the sun shines into the room. The overwrite can be done from a Sylk-TR42-Wallmodule or an external WM (Not from a wired wallmodule). With "No HVAC overwrite," the parameter Sylk Wallmodule – Show Item Bits should also be adjusted. Values:
 - **1:** No HVAC overwrite
 - 2: HVAC overwrite allowed
- Expert Mode: In Expert Mode, more I/O slots and parameters are displayed for advanced programmers, providing more functionality.
 Values:
 - **0:** Standard (Default)
 - 1: Expert

Step 7. Expand SylkWallmodule, enter the Show Item Bites and verify the Wm Address.

🔻 🎯 SylkWallmodule	Irm Pa	arameter Group
Wm Address	1	
Show Items Bits	255	
🖉 Setpoint	Irm Pa	arameter Group
SetpointOvrd	Irm Pa	arameter Group

Fig. 476 Wallmodule Address

- Wm Address: This parameter is used to configure the Sylk Wallmodule address. Range:
 - 0-15 (1 = Default = Factory default from Sylk-TR42-Wallmodule)
- Show Items Bits: Add the bit values of the items you want the operator to see. Bit-Values:
 - 1: Show Room Temperature
 - 2: Show Setpoint
 - **4:** Show the effective occupancy mode
 - 8: Show and allow the change of the occupancy overwrite
 - **16:** Show and allow the change of the effective HVAC mode
 - **32:** Show the fan stage and allow the change of the fan stage
 - **64:** Show the humidity
 - 128: Show the air quality
 - **Default:** 255 (All Bits true, show all)
- **Note:** The power supply of the controller needs to be AC (20 30 VAC). Otherwise, the Humidity and Air Quality cannot be measured and shown.
 - Step 8. Expand the Setpoint and configure the desire setpoint.
 - Step 9. Expand the SetpointOvrd and configure the desire setpoint overrides.
 - Step 10. Click **Save**.

CHAPTER

MODBUS ENGINEERING

PRESS RELEASE Modbus Organization Replaces Master-Slave with Client-Server July 9, 2020 — The Modbus Organization Board of Trustees announces it is expunging all occurrences of inappropriate language of the query and response paradigm of Modbus communications. With recent events, all companies and individuals with the ability to make positive changes should do so. As the holder of the standard for an industrial network with one of the largest installed bases in the world, it is important to complete the replacement of the current terminology with more thoughtful references. All instances of "**master-slave**" in the organization's literature and on its website will be removed. Current electronic content is being updated as of this announcement. Board Chair Todd Snide commented, "The time is overdue for these words to be removed. The terms are unnecessary and insensitive to the people who experience racism in this country and around the world. We urge our member companies and all those who use the Modbus protocol to take similar action to rid their documentation and communications of these terms."

The organization is using "client-server" to describe Modbus communications, characterized by communication between client device (s), which initiates communication and makes requests of server device(s), which process requests and return an appropriate response (or error message). About Modbus-Organization, Inc. Headquartered in Massachusetts, the Modbus Organization is an association of users and suppliers of control and automation devices. The organization works to support the Modbus protocol, provide information and tools for individuals and companies using Modbus. It maintains the authoritative website for Modbus information.

Additional information about the Modbus Organization can be found on the organization's website, www.modbus.org. Contact information: Lenore Tracey, Executive Director Modbus Organization, Inc. +1 (508) 435-7170 lenore@modbus.org

The controller has a removable 2-wire with shield, non-isolated RS-485 interface that is Modbus compatible (terminal 16, 17, and 18). It is installed in a gray terminal block. The controller can only act as a Modbus client.

The RS-485 interface suitable for Modbus communication is 2-wire with shield nonisolated hence the following considerations apply:

- Maximum Modbus length ("L"): 4000 ft (9.6 78.8 kbps) or 2600 ft (115.2 kbps). It is recommended that you select a low baud rate (for example, 19.2 kbps) for reliable operation.
- Use only shielded, twisted-pair of cables and daisy chain topology.

- Ground noise should not exceed the EIA-485 common mode voltage limit.
- Must conform to TIA/EIA 485 cabling guidelines.
- It Should not extend beyond a single building.

Specification	Description
Baudrate	19200
Parity	Even parity
Bytesize	8 bit
Stop bits	1 stop bit

Table 45 Default Modbus Details

The Modbus protocol is described in two documents, both of which can be found at www.modbus.org.

- Modbus_over_serial_line_V1_02.pdf
- Modbus_Application_Protocol_V1_1b3.pdf
Addressing and Wiring Rules of Modbus Interface

Use shielded twisted pair cable J-Y-(St)-Y 4 x 2 x 0.8 and connect the Modbus shield to a noise-free earth ground (only once per Modbus network). Shielding is especially recommended when the Modbus cable is installed in areas with expected or actual electromagnetic noise. Avoiding such areas is to be preferred. You must use three wires:

- One wire for Modbus +
- One wire for Modbus –
- One wire for the signal common

When using one pair for Modbus (+) and Modbus (-) and one wire of another pair for the signal common, CAT 5 cable may also be used.

- Maximum 8 Modbus devices, maximum 155 read/write data points total Overloading the network will impact the performance.
- Address: Can be from 1 to 247.

Property Sheet	
🛕 ModbusDevice (Modbus Device)	
Execution	2
📔 Function Block Name/Annotation/Composite Flash Memo	ry Usage 0 B [0-900]
Device Address	0
🎦 Master Sync Enabled 🛛 🔵 true 🕞	
Device Address 0 [1 - 247]	
Byte Order	LittleEndian
Max Read Point Count	5
P: Device Address	0

Fig. 477 Modbus Device address

- **Note:** Never use the address 0 because it is used by the IRM NX controller exclusively for broadcasting Modbus addresses.
 - Address must be unique on the Modbus.
 - Dip switch setting (when available) must be correct (depending on its physical connection) for every Modbus device address.
 - Termination and bias must be correct for every Modbus device.
 - The wire connections on Modbus devices can be referred to by a different names and descriptions. The Modbus terminals are named as follows.
 - Transmit Data: TxD, Tx, T+/R+, D1, B
 - Receive Data: RxD, Rx, R-/T-, DO, A
 - Signal Ground: GND, COMMON
 - Terminal A and B are not clearly defined and can vary from one manufacturer to another. Verify the correct definition of A and B with the manufacturer of the Modbus device before wiring.

Wiring Topology

Only daisy chain wiring topology is allowed.



Fig. 478 Modbus Wiring Topology

Other wiring topologies (such as star wiring and mixed star wiring) are prohibited. This is to avoid communication problems of the physical layer.



Fig. 479 Prohibited Wiring Topology (example)

Preliminary Checks and Configuration

It is recommended that you conduct your investigation and checks in the following order.

- 1. Get Modbus RTU server device documentation: It is mandatory to have the vendor's documentation of the Modbus functionality for every Modbus device that is to be connected to the Modbus device. This will allow obtaining most of the required information, but most likely not all of it. Missing information can be obtained from the support function of the vendor.
- 2. Verify usage and activation of the correct Modbus device interface: Modbus devices may not have the Modbus interface activated by default. Activation may be necessary via software, for example, setting a parameter via the Modbus device's user interface. In addition, activation may be necessary via hardware, such as shorting the Modbus device's input. While using any Modbus device, verify that you have the correct hardware variant which supports Modbus on the RS-485 interface as expected.
- 3. **Verify RTU Transmission Mode**: All Modbus devices must use transmission mode RTU. No other transmission mode (for example, ASCII) is supported.

- 4. Ensure only one Modbus RTU client is on the bus: Only one Modbus client is allowed on the bus, the IRM NX controller. It does not support "Multi-client" or "Modbus plus" devices, nor does it support such configurations on the Modbus. As per the Modbus standard, the IRM NX controller (as the client device) does not have a Modbus address. The IRM NX controller must be added to the Bacnet Network.
- 5. **Configure Baud Rate:** All Modbus devices must have an identical Baud rate, an identical Parity, and an identical number of stop bits. Typically, the Baud rates of Modbus devices are set and changed via their user interfaces or their separate configuration software.

٣	RM Program		
	Control Manager	Modbus Baudrate	Baud19200 -
		Modbus Parity	Baud1200
		Madhus Stan Bits	Baud2400
	Event program	Modbus Stop Bits	Baud4800
	🕨 💽 On board IO		Baud9600
	Alarms		Baud14400
			Baud19200
			Baud38400
			Baud57600
			Baud115200

Fig. 480 Modbus Baud Rate

- 6. **Configure Parity:** Modbus devices may have a configurable parity, they will not have a configurable number of stop bits. If a Modbus device has an unmatching number of stop bits, this device cannot be used.
- **Note:** Modbus devices that have implemented "no parity" may have 1 or 2 stop bits.

•	RM Program	Modbus Baudrate	Baud19200 👻
	🕨 🗸 Control Manager	Modbus Parity	Even 🗸
	Periodic program	Modbus Stop Bits	Odd
	Event program		Even
	On board IO		None
	Alarms		

Fig. 481 Selecting Modbus Parity

In most cases, select Modbus Parity as "Even."

7. Configure Stop Bits: If Modbus Parity = "None, " select Modbus Stop Bits = "2".

•	RM Program	Modbus Baudrate	Baud19200 🗸
	🕨 🗸 Control Manager	Modbus Parity	Even 🚽
	Periodic program	Modbus Stop Bits	1 -
	Event program		1
	🕨 💽 On board IO		2
	Alarms		

Fig. 482 Selecting Modbus Stop Bits

Adding Modbus Device

Steps to add a Modbus device to the Bacnet Network:

- Step 1. Copy a IrmBacnetDevice from honIrmControl palette to the BacnetNetwork.
- Step 2. In the Nav tree, expand the **IRM Program** folder of the controller and doubleclick **Periodic program**.
- Step 3. Copy a **ModbusDevice** from the **honIrmControl** palette to the periodic program wire sheet.



Fig. 483 Adding Modbus Device If required, you can change the Modbus device name.

Configure Modbus Device Settings

Steps to configure Modbus Device Settings:

Step 1. Double-click on the Modbus device and check the device settings.

ModbusDevice



Fig. 484 Modbus Device Settings

- **Device Address:** Modbus devices have addresses ranging from 1 to 247. Every Modbus device must have a unique address. The third-party Modbus devices addresses are set and changed through their user interfaces or separate configuration software.
- **Byte Order:** he Modbus standard defines the serial bit order as least significant bit first and most significant bit last.

Byte Order	
LittleEndian	•
BigEndian	
LittleEndian	
LittleEndianWithWordSwap	
BigEndianWithWordSwap	

Fig. 485 Byte Order

However, the Modbus standard does not define the byte and word order of messages. Hence, Modbus devices will transmit most significant byte first or lower significant byte first. For 32-bit values, most significant word first or lower significant word first may be implemented.

BigEndian

Int32, Uint32, Float	
Byte1	Most Significant Byte
Byte2	Second most
Byte3	Third most
Byte4	Least Significant Byte

Int16, Uint16		Single Bit
Byte1	Most Significant Byte	Byte1
Byte2	Least Significant Byte	

LittleEndian

Int32, Uint32, Float		Int16, Uint16		Single Bit
Byte1	Least Significant Byte	Byte1	Least Significant Byte	Byte1
Byte2	Third most	Byte2	Most Significant Byte	
Byte3	Second most		Least Significant Byte	
Byte4	Most Significant Byte			

LittleEndianWithWordswap

Int32, Uint32, Float	
Byte1	Second most
Byte2	Least Significant Byte
Byte3	Most Significant Byte
Byte4	Third most

LittleEndianWithWordswap

Int32, Uint32, Float	
Byte1	Third most
Byte2	Most Significant Byte
Byte3	Least Significant Byte
Byte4	Second most

• Max Read Points Counts: The controller can request a single register from a Modbus device and receive a single value in return. In addition, the controller can request multiple registers (start register and number of registers) and return multiple values in a single response. This method reduces data traffic on the bus, resulting in faster communication.

When the controller recognizes multiple registers with the same operating mode, it automatically requests multiple registers in a message. The Modbus device manufacturer, on the other hand, has limited the number of registers that can be requested with a single message.

In a single message, the IRM can query up to 20 consecutive registers. This restriction can be specified in **Max Read Points Count.**



Fig. 486 Max Read Points Counts

Step 2. Select the **Read Point** tab and click on **Add**.

Read Points	Write Points								
						Total Rea	ad Points : O	Add	Delete
Read Point Name	Read Point Type	Read Point Address (Dec/Hex)▲	Operation Mode	Poll Time(Sec)	Scaling Factor	Data Format	Event Bit Masking(Hex) =	SelectAll

Fig. 487 Read Point tab

Step 3. Enter the following details in the **Modbus Read Point** window.

Read Point Name ReadPoint	Read Poin	nt Address (Dec/Hex) [0 - 65535]	Read Point Type ReadHoldingRegisters
Operation Mode UserDefined	Scaling Fa	[-3 - +3]	Data Format Uint16
Poll Time(Sec)	[1 - 86400]	Event Bit Masking(Hex) FFFFFFFF	0 - FFFFFFFF]

Fig. 488 Modus Read Point Window

• **Read Point Name:** Enter the read point name.

Read Point Address: Enter the read point address, the range is 0 to 65535.

Each coil or contact is 1 bit and assigned a data address between 0000 and 9998.

Each register is one word = 16 bits = 2 bytes and has a data address between 0000 and 9998.

• Read Point Type: This function is used to read Modbus Server Register type

Read Point Type	
ReadCoil	•
ReadCoil	
ReadDiscreteInputs	
ReadHoldingRegisters	
ReadInputRegisters	

Fig. 489 Read Point Type

- **ReadCoil:** This function is used to read from 1 to 2000 contiguous status of coils in a remote device.
- **ReadDiscreteInputs:** This function is used to read from 1 to 2000 contiguous status of discrete inputs in a remote device.
- **ReadHoldingRegisters:** This function is used to read the contents of a contiguous block of holding registers in a remote device.

•

- **ReadInputRegisters:** This function is used to read from 1 to 125 contiguous input registers in a remote device.
- ReadMultipleRegister: A single message with the initial address and the number of registers can be used to read several registers with sequential addresses from a Modbus device. Then, a single message with all register contents is transmitted to the bus, and a single response is also sent. This lightens the bus's load. For all registers with the same Read Point Type, the same Operation Mode (Poll rate), and consecutive Read Point Addresses, the firmware automatically sends just 1 message.
- **Operation Mode (Poll Rate):** This parameter allows adapting to the communication and processing performance of the Modbus device. If the Modbus device does not respond fast enough, increase the poll rate.

Slow	•
DoNotRead	
Slow	
Normal	
Fast	
UserDefined	

Operation Mode

Fig. 490 Operation Mode

- **DoNotRead:** Output is NULL.
- **Slow:** Register is read after multiple of 5 seconds, one register at a time.
- **Normal:** Register is read after all high priority registers are read, one register at a time.
- **Fast**: Register is read every 50 ms.

• UserDefined: This allows the user to define polling time.



Fig. 491 Operation Mode Priority

• Scaling Factor: To convert the register value to the required units, apply a scaling factor of 10 to it.

Example:

- Read value = 1500. With Scaling Factor -3 the calculated value = 1.5
- Read value = 1500. With Scaling Factor +2 the calculated value = 150000
- **Data Format:** Determines the number of consecutive registers written and how the value is converted to register values.

Data Format	
SingleBit	•
SingleBit	
Int16	
Uint16	
Int32	
Uint32	
Float	

Fig. 492 Data Format

SingleBit

Int16:	-32768 to 32767
Uint16:	0 to 65535
Int32:	-2147483648 to 2147483647
Uint32:	0 to 4294967295
Float:	-3.4E+38 to +3.4E+38 (32 Bit)

• **Poll Time (Sec):** Allows the user to define the polling time. This is a number between 60 and 86400.

[1 - 86400]

Fig. 493 Poll Time (Sec)

Event Bit Masking:

Event Bit Masking(Hex)	
FFFFFFF	[0 - FFFFFFFF]

Fig. 494 Event Bit Masking

If the Event Program reads the Read Point, the value can be masked using the Event BitMask. When the masked value changes, the Event Program logic inn wiresheet is executed immediately. Masked value means a logical AND with the Modbus value.

Example for a 16 bit value



Fig. 495 Example for 16 bit value

The Event Program wire sheet logic is executed on a regular basis. Furthermore, it can be carried out immediately (event-driven). Such an event can be triggered by a Modbus value.

- **Masked Occupancy Sensor:** When the Occupancy Sensor Bit changes, the Event Program wire sheet logic is immediately executed.
- **Occupancy Sensor (0xFFFF) none masked:** When the Occupancy Sensor or the Brightness Sensor changes, the Event Program wire sheet logic is executed immediately.
- Step 4. Click **OK.**
- Step 5. Select the **Write Point** tab and click **Add**.

Read Points	Vrite Points				
				Total Write Points : 1	Add Delete
Write Point Name	Write Point Type	Write point Address (Dec/Hex)▲	Significant Change	Data Format	SelectAll
Output	WriteSingleCoil	1 / 0x0001	0	SingleBit	

Fig. 496 Write Point tab

Step 6. Enter the following details in the **Modbus Write Point** window.

Write Point Name		Write point Address (Dec/Hex)		Write Point Type	
Modbus_Point		21001	[0 - 65535]	WriteSingleRegister	•
Uint16	•	1	J		

Fig. 497 Modbus Write Point Property

- Write Point Name: Enter the write point name.
- Write Point Address: The write point address is the data address and not the coil or register number of the Modbus device.
 - **Decimal Range**: 0-65535
 - Decimal format: 65535
 - HEX Range: 0 FFFF
 - Hex format: Oxfff
- Write Point Type:

Write Point Type

WriteSingleCoil 🔻
WriteSingleCoil
WriteSingleRegister
WriteCoils
WriteMultipleRegisters

Fig. 498 Write Point Type

- WriteSingleCoil: This function is used to write a single output to either ON or OFF in a remote device.
- WriteSingleRegister: This function is used to write a single holding register in a remote device.
- WriteCoils: This function is used to force each coil in a sequence of coils to either ON or OFF in a remote device.
- WriteMultipleResisters: The WriteMultipleRegisters is chosen as the Write Point Type. When the registers are set to WriteMultipleRegisters and have consecutive Write point Addresses, the firmware automatically transmits just one message for the registers.

A single message containing the initial address, the number of registers, and the values can be used to write many registers with successive addresses to a Modbus device. Then, on the bus, there is only 1 message sent, and there is only 1 reply. This reduces the bus's load.

Note: It is possible to select WriteRegister and WriteMultipleRegisters.

- If WriteMultipleRegisters are selected and the addresses are consecutive, then there will be one message.
- If WriteMultipleRegisters are selected and there are gaps in addresses, then there will be multiple messages.
 - **Data Format**: Determines the number of consecutive registers written and how the value is converted to register values.

Data Format	
SingleBit	•
SingleBit	
Int16	
Uint16	
Int32	
Uint32	
Float	

Fig. 499 Data Format

SingleBit	
Int16:	-32768 to 32767
Uint16:	0 to 65535
Int32:	-2147483648 to 2147483647
Uint32:	0 to 4294967295
Float:	-3.4E+38 to +3.4E+38 (32 Bit)

• **Significant Change:** A significant change for analog values is recommended to reduce the bus load. This ensures that values are only sent when the value has changed significantly from the value previously sent.

To finish the Modbus configuration, click the save icon 🔲 and then click periodic

or event program in the nav tree.



Fig. 500 Significant Change

Delete Modbus Device

Steps to delete complete Modbus device function block with read and write points configured:

- Step 1. Right-click on the **Modbus Device** > **Actions**, and select **Delete Modbus Device**.
- Note: The standard delete function is not applicable for deleting the Modbus device.



Fig. 501 Delete Modbus device

Duplicate Modbus Device

Saving Modbus Block as a Template

When you use the "Duplicate" function in the periodic program and event program wire sheets, it copies only the device and not the connected function blocks. Use the "Save As Template" function to save a complete Modbus device configuration as a template.

Steps to save Modbus block as a template:

Step 1. Right-click on the **Wire Sheet** view on the item you want to reuse and select **Save As Template**.



Fig. 502 Save as template

Step 2. Select location to save the template and click **Save**.

Current Pa	ath	
file		
• •	h 🖿 📄 🏭 🔍 - 🖻 🔊	
🕈 Sys Hom	ne	
O User Hor	me	
🕒 C:		
File name:	ModbusDevice.palette	Save
Files of type:	Template Files (*.palette)	Cancel
1		

Fig. 503 File Chooser

The template saved as Modbus palette. The default name will be the name of the identified function block. If you want to add or update a function block to an existing modbus template. Insert the template into the wire sheet, then click **Save As Template**, select an existing palette file, and then click **Append**.



Open Modbus Template

Steps to open Modbus template:

Step 1. Open **Palette** and click **Browse**.

N Open Palette	×
Select one or more palettes to open, or just start typing:	Browse

- Fig. 505 Open Palette
- Step 2. Select the Modbus template file and click **Open.** This adds Modbus template to the palette.

Current Pa	ath									
D:/TMP/pa	lette									
< ID	ħ	0	\equiv		Ь	*	I P	0		
Modbus	Device.	palette								
							м	odbusDe 7 12-Nov-19	vice.p KB 2:22 PM	alette I CET
File name:	Modbu	usDevid	e.pal	ette						Open
Files of type:	All File	es (*.*)							-	Cancel

Fig. 506 Modbus Template file

Step 3. Double click on the **ModbusDevice** in the palette panel.



Fig. 507 Function Blocks

On the wire sheet, select each component, copy the selection and paste it to your target wire sheet (for example, periodic program).

CHAPTER OTHER OPERATIONS

Controller Firmware Download

Before upgrading the controller firmware, check the latest software release bulletin or tech tip for the latest firmware for IRM NX controller.

Steps to upgrade the controller:

Step 1. Navigate to IrmBacnetDeviceManager view, select the controllers from the database, and click Download Firmware.

Database														
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Passwo
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	26-Aug-21 6:28 PM IST	None	Default
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default

Fig. 508 Download Firmware

Step 2. Navigate to the directory where you downloaded the firmware file, select the IRM NX controllers firmware file (IRMN4-IMG_Vxxxx.bin), and click **Open**.

File Spaces	-7	Current Path							
Mu File Dustan		D:/Software-Builds/Honeywell							
My File System									
My Modules									
		O honIrmControl-rt							
		ClPrintout-wb.jar							
		honIrmConfig-rt.jar	V0.044bis						
Bookmarks	2	honIrmConfig-wb.jar 3	375 KB 18-Mar-19 8:40 AM CET						
		The sector Control of ins							
		nonimcontrot-rt.jar							
		RMN4-IMG_V0.0.4.4.bin							
		×							
		File name: IRMN4-IMG_V0.0.4.4.bin	Open						

Fig. 509 File Chooser window

The firmware download process begins as indicated at the top of the firmware download progress bar. When the firmware download is complete, a "Success" message appears.

Sirmwa	re Download								>>	
Discovered									2	objects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank		C.
🖀 RS5N	device:4194302	20	24	Honeywell	RS5N	777	000000000000000000	1		
RL6N	device:4194302	20	45	Honeywell	RL6N	777	000088c04000020b	2		

Fig. 510 Irm Bacnet Device Manager view

Note: Whenever a new firmware upgrade request is initiated before the provisioning of the previous firmware upgrade has been completed, an invalid configuration error is encountered. Provisioning time is approximately 10 minutes after upgrading to a new firmware.

Solution: Retry to upgrade the firmware.

Note: The controller may become unreachable if a station or BACnet network is moved from one device to another while upgrading firmware on the IRM NX controller.

Solution: Reset, or power cycle the controllers, which have Ref In or Ref Out mapped to points to the station or BACnet network.

Important: Values updates after a controller power failure. If a controller has a power failure and the device restarts, it takes three to five minutes to update the values in the wiresheet. To accelerate the value update on the wiresheet, refresh the wiresheet by navigating to another page and returning to the wiresheet.

Hide Slots

Steps to hide function block slots:

- Step 1. Right-click the **function block** icon, of which you want to hide slots.
- Step 2. In the context menu, click **Pin Slots.**

Psychrometric	Views	•				
Execution						
Out Temperature	<u>A</u> ctions	►				
Rel Humidity						
P: Operation	<u>E</u> dit Tags					
	<u>M</u> ake Templat	e				
	C <u>u</u> t	Ctrl+X				
	<u>С</u> ору	Ctrl+C				
	<u>P</u> aste	Ctrl+V				
	Pa <u>s</u> te Special					
	<u>D</u> uplicate	Ctrl+D				
	Delete	Delete				
	Find					
	<u>r</u> ino					
	<u>L</u> ink Mark					
	Link From					
	Link To					
	Relation Mark					
	Relate From					
	Relate To					
	<u>R</u> ename	Ctrl+R				
	Set Display Na	me				
	Reorder					
	Composite					
	E <u>x</u> port					
	Pin Slots					

Fig. 511 Context menu

Step 3. Click the slot you want to hide and click **OK**.

N	Pin Slots >								
Psyc	chrometric								
-14	Execution								
	Function Block Name/Annotation/Composi								
	Annotation								
-14	Out								
-14	Temperature								
-14	Rel Humidity								
	Set Parameters To Default								
	Reset Overrides								
-14	P: Operation								
	OK Cancel								

Fig. 512 Pin slots

The "Temperature" and "Rel Humidity" slots in the functional block figure (A) below were selected for hiding. Figure (b) shows the updated view of the functional block after performing the hide operation..

Psychrometric A	Psychrometric 🏠
Execution	1 Psychrometric
Out - {nu	Execution 1
Temperature - {nu	I) Out - {null}
Rel Humidity - {nu	P: Operation Enthalpy
P: Operation Enthal	
A	В



Note: Any slots that are hidden manually in the Pin Slots dialog are not saved in the controller. The hidden slots will be visible again after performing "clearing the project" or "learning the application from the controller" operation.

Bulk Operations

Change Multiple Datapoint Names

While performing a batch operation, such as changing the names of multiple datapoints in the same group, it is important to maintain the project's uniqueness.

Steps to change datapoint names in a batch:

- Step 1. In the Nav tree, expand the **Services folder** and double-click on the **Program-Service.**
- Step 2. Click the **Find Objects** button. This action opens the **Bql Query Builder** dialog box.

O Cor	nfig		^						
- 3) Services								
Þ	AlarmService	N Bal Quenr	Builder						×
Þ	BackupService	Del Query	bulluel						~
►	CategoryService	🖿 - 💾	1	9 -					
Þ	JobService	Find							
►	RoleService							Of type: 🕥 Com	popent
₽	O UserService	III. O CONNE	~					on open	
Þ	AuthenticationSe			_	_				
•	DebugService	Match All							Ð
Þ	BoxService					ок	Cancel		
•	BoxService FoxService	L				ОК	Cancel		
•	 BoxService FoxService HierarchyService 					ок	Cancel		
	 BoxService FoxService HierarchyService HistoryService 		Г			ок	Cancel		
* * *	 BoxService FoxService HierarchyService HistoryService AuditHistoryService 	ice	Г			ОК	Cancel		
	 BoxService FoxService HierarchyService HistoryService AuditHistoryService LogHistoryService 	ice e	Γ			ок	Cancel		
	 BoxService FoxService HierarchyService HistoryService AuditHistoryService LogHistoryService ProgramService 	ice e	Γ			ОК	Cancel		
	 BoxService FoxService HierarchyService HistoryService AuditHistoryService LogHistoryService ProgramService SearchService 	ice e	-			ОК	Cancel		
	 BoxService FoxService HierarchyService HistoryService AuditHistoryService LogHistoryService ProgramService SearchService 	ice e	-			ОК	Cancel	2.000	E estra

Fig. 514 Bql Query Builder dialog box

Step 3. Click the magnifier icon to search a device. The **Choose Root** dialog box displays.



Fig. 515 Choose Root dialog box

- Step 4. Select the device and click **OK.**
- Step 5. The **Bql Query Builder** dialog box appears and displays the selected device name.



Fig. 516 Bql Query Builder dialog box

Step 6. Select **Custom Type** from the **Of type** drop-down list.



Fig. 517 To select Custom Type

Step 7. Select honIrmControl and Bacnet Boolean Input from the drop-down list.



Fig. 518 Bql Query Builder Dialog Box



N Bql Query Builder	×
🖿 - 🔟 💉 🕓 -	
Find	
In: D03 RL8N_44 Q Of type: (Custom Type) Inn: honirmControl BacnetBooleaninput	· • •
Match All	⊙
OK Cancel	

Fig. 519 Bql Query Builder

The datapoints found are listed on the Batch Editor view.

Batch Editor
Object
B /Drivers/BacnetNetwork/D03 RL8N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D04 RL4N_44/IRM Program/Event program/BBI_Ref_to_Mas
B /Drivers/BacnetNetwork/D04 RL4N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D011 RS4N_44/IRM Program/Event program/BBI_Ref_to_Mas
B /Drivers/BacnetNetwork/D011 RS4N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D015 RL4N_44/IRM Program/Event program/BBI_Ref_to_Mas
B /Drivers/BacnetNetwork/D015 RL4N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D016 RS03N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D019 RL5N_44/IRM Program/Event program/BBI_Ref_to_Mas
B /Drivers/BacnetNetwork/D019 RL5N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D020 RL6N_44/IRM Program/Event program/BBI_HIS_COV
B /Drivers/BacnetNetwork/D023 RS5N_44/IRM Program/Event program/BBI_Ref_to_Mas
B /Drivers/BacnetNetwork/D023 RS5N_44/IRM Program/Event program/BBI_HIS_COV

Fig. 520 Batch Editor view

Step 9. On the **Batch Editor** view, click the **Rename** button. The rename dialog box displays.

N Rename
Find: BBI
Replace: D017 BBI
Match case
Match whole word
OK Cancel

Fig. 521 Rename dialog box

Step 10. In the **Replace** field, enter the desired name. For example, 'D017' should be added as a prefix to the existing datapoint name 'BBI.' If desired, select additional options **Match case** or **Match whole word**.

Step 11. Click **OK**. The replacement results displays in the **BatchEditor Results** message box.

BatchEdi	itor Results	x
[RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME] [RENAME]	<pre>slot:/Drivers/BacnetNetwork/D03\$20RL8N_44/IRM\$20Program/Event\$20program/BBI_HIS_COV -> I slot:/Drivers/BacnetNetwork/D04\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RS4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RS4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RS4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL4N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D01\$20RL5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas slot:/Drivers/BacnetNetwork/D023\$20RS5N_44/IRM\$20Program/Event\$20program/BBI_REf_to_Mas</pre>)01 ->0 ->0 ->0 ->0 ->0 ->0 ->0 ->0 ->0 ->0
<		- Þ
	ок	

Fig. 522 Batch Editor Resultd message box

Step 12. The datapoint names on the wiresheet are changed accordingly.

Ref_from_Slave_Bl Ref In	N	D017_BBI_HIS_COV Bacnet Boolean Input
Execution	72	Execution 8
Out	0.00 {ok}	Out inactive
Status Flags	0.00 {ok}	Status Flags 0.00 {ok}
Units	No Units	Event State Normal
		In false {ok}

Fig. 523 wiresheet

Step 13. Perform a **Teach to Controller** operation in the application. This action implements all the changes in the Bacnet points.

Create a Backup Controller and Application

Backup the Station

Steps to backup the station:

- Step 1. Navigate to the station name.
- Step 2. Right-click the **Station** node, and select **Backup Station**.



Fig. 524 Backup Station

While the station continues running, it saves the configuration and creates a backup file (.dist). The backup is stored in the **user> userName> Niagara4.x > CentraLine > backup**.

Backup the Application

Steps to backup the application:

Step 1. Navigate to **My File system** in the CentraLine-N4 workbench.



Fig. 525 My File System

Step 2. Right-click the file system directory (sys Home, User Home or C:) where you want create backup > **New** > click **PaletteFile.palette.**



Fig. 526 PaletteFile.palette





Fig. 527 StationBackup.palette

It adds the backup palette folder in the user local system.

- Step 4. Navigate to the workbench **Window > Side Bars >** and select **Palette.**
- Step 5. Type **baja** and double click to open baja Palette.

Y baja Module Description baja Niagara Framework bajaui Niagara User Interface Framework	
Module Description baja Niagara Framework bajaui Niagara User Interface Framework	
baja Niagara Framework bajaui Niagara User Interface Framework	Ę
bajaui Niagara User Interface Framework	
•	
	ŀ
OK Cancel	

Fig. 528 Open baja Palette

Step 6. Select the **UnrestrictedFolder** and copy under the **Palette** folder.



Fig. 529 Unrestricted Folder

Step 7. Enter the name of the unrestricted folder and click **OK**. The backup folder is created.



Fig. 530 Unrestricted Folder name

Step 8. Navigate to **BacnetNetwork**, right-click on the controller and click **Copy**.



Fig. 531 Copy IRM NX controller

- Step 9. Navigate to the backup folder and paste the controller configuration. This saves the controller configuration on the user's local system.
- **Note:** Do not alter the controller configuration file after pasting it in the backup folder. Any change will damage the file.



Fig. 532 Controller backup

This controller backup file can be restored on any station.

Steps to Restore the Backup

Steps to Restore the Controller Backup:

Step 1. Open the Palette and click browse using a file chooser.

Step 2. Locate the backup file in the user's local system and open the file.

filte	File Chooser				_						
Module	File Spaces	-7	Curr	ent Pa	ath						
aphp	C My File System		С:/В	аскир	16		=	=::	0.		5
apup	🚯 My Modules				Π	•	=	=::			শ
eEdge			ني St	ationE	Sackup	.palette			-2		
arm		_	-							St	ationBackup.palette
armOrio	Bookmarks	-7	-								199 bytes 06-Aug-21 1:50 PM IST
alytics			-								-
alytics-I											
			File na	me:	Stat	ionBac	:kup.pa	lette			Oper
			Files of	f type:	All Fil	es (*.*)					Canc

Fig. 533 File Chooser dialog box

Step 3. Controller backup file in the Palette window.



Fig. 534 Palette window

Step 4. Copy backup palette file under the new **BacnetNetwork**.

Reset to Factory Default

Steps to reset the controller to factory default settings:

- Step 1. Power off the controller.
- Step 2. Power on the device while holding the service pin button pressed.
 Wait for 10-15 seconds until the communication LEDs (Rx & Tx) blinks.
- Step 3. Release the service pin button.

After the factory reset, following changes occur in the controller.

- The entire configuration of the application clears from the controller.
- The controller will search for a new mac address. Auto MAC will be triggered once the controller receives the "you are" command.

CHAPTER

PRE-ENGINEERED TEMPLATES AND BALANCING

Templates

A template is a deployable package of Niagara objects. A template's purpose is to allow a group of configured objects to be encapsulated and deployed as a unit. The goal is to eliminate repetitive configuration steps when performing multiple installations with similar functionality.

Templates include a component tree with a single base component and associated support objects. A template is contained in a file with the ntpl file extension. For ease of distribution, template files can be grouped into modules. In addition, one or more instances of a template may be deployed to a station.

IP/ MSTP VAV Template

The IP/MSTP VAV controllers supports the Global VAV template. The template contains an embedded group of configured objects that are deployed with the global VAV template.

The Global VAV template package includes two templates.

- VAV_ISF1_HX_FX_IM.ntpl
- VAV_ISF1_HX_FX_SI.ntpl

For more information on the Global VAV template features and configuration, refer the Global VAV Template Design Guide - 31-00466 and Global VAV Template Engineering Guide - 31-00465 documentation.

Balancing

The VAV balancing is supported by the IRM NX VAV controllers.

The time spent starting and balancing each VAV box individually and waiting for them to reach the airflow setpoint is saved by balancing the controllers and calculating the flow calibration factors for the correspondence VAV boxes.

You can use a global balancing tool to balance setpoints, perform max-min balancing, and move dampers on multiple controllers.

Global Balancing Points

Following are the balancing points available in the global balancing point.

Object mapping	Object Name	Object ID	R, W, R/W	Engineering Units	Range, States, etc	Description
	Device Balance State	600	R		 0 = Not balanced (default) 1 = Setpoint/ Min-Max balanced 2 = Max balanced 3 = Min balanced 	Modified by balance tool to indicate balance state.
	Flow Calibration Factor	601	R/W	Unitless	0<+inf 0.813 (default)	Firmware balancing point.
	Damper Type	602	R		0 = Floating (default) 1 = 0-10v, 2 = 2-10v	Modified by balance tool. Not currently implemented.
	Damper Control Type	603	R/W		0 = CW (Direct) (default) 1 = CCW (Reverse)	Allows damper direction configuration through balancing tools.
	Drive Time	604	R/W	second	90 s (default) for 60 hertz frequency 108 sec for 50 hertz frequency	Allows damper drive time configuration through balancing tools.
CfgDuctAr ea	Duct Area	606	R/W	square feet, square meter	0<+inf	Allows duct area configuration through balancing tools.
BalMaxM easFlowA ct	Measured Max Flow	607	R/W	cfm, cmh, l/s	0<+inf	Balancing tools write field measured max flow to this point during balancing.
BalMinMe asFlowAct	Measured Min Flow	608	R/W	cfm, cmh, l/s	0<+inf	Balancing tools write field measured min flow to this point during balancing.

Table 46 Global Balancing Point Description

Object mapping	Object Name	Object ID	R, W, R/W	Engineering Units	Range, States, etc	Description
CfgMaxFl owSetpt	Set Point Max Flow	609	R/W	cfm, cmh, l/s	0<+inf	Cooling max flow setpoint.
CfgMinFl owSetpt	Set Point Min Flow	610	R/W	cfm, cmh, l/s	0<+inf	Cooling min flow setpoint.
	Device Zeroed State	611	R		0 = Not Zeroed (default) 1 = Zeroed	Modified by balance tool to indicate zeroed state.
	Temperatu re Compensa tion	612	R	N/A	N/A	Not currently implemented.
	Balancing Method	613	R		0 = Double point(default)1 = Single point	Modified by balance tool to indicate balance method used.
	Set Point Single Flow	614	R	cfm,cmh, l/s	0<+inf	Firmware balancing point.
	Measured Single Flow	615	R	cfm,cmh, l/s	0<+inf	Firmware balancing point.
	Corrected K Factor	616	R	Unitless	0<+inf	Firmware balancing point.
	Current Sensed Air Flow	618	R	cfm,cmh, l/s	0<+inf	Firmware balancing point.
	Damper Manual Position	620	R	%	0100 0 (default)	Firmware balancing point.
	Damper Manual Flow	621	R	cfm,cmh, l/s	0<+inf 0 (default)	Firmware balancing point.

Table 46 Global Balancing Point Description (Continued)

Object mapping	Object Name	Object ID	R, W, R/W	Engineering Units	Range, States, etc	Description
	Balancing Type	622	R		 0 = Auto mode. VAV operating in normal state 2 = Balance Max. Damper commanded to achieve max flow setpoint. 3 = Balance Min. Damper commanded to achieve min flow setpoint. 4 = Balance Single point. Device is in setpoint / K-factor mode. 5 = Manual Position. Damper is overridden to specified position. 6 = Manual Flow. Device is commanded to achieve specified flow. 15 = Balance Zero. Not currently implemented. 	Modified by balance tool to indicate balance process used.
	Damper Position	623	R	%	0100, null	Firmware balancing point.
	Clear Balance	624	R		0 = False (default) 1 = True	Firmware balancing point.
BalMaxM easFlowS pt	Sensed Max Flow	626	R	cfm,cmh, l/s	0<+inf 0 (default)	Controller sensed airflow during two-point maximum calibration.
BalMinMe asFlowSpt	Sensed Min Flow	627	R	cfm,cmh, l/s	0<+inf 0 (default)	Controller sensed airflow during two-point minimum calibration.
	Sensed Single Flow	629	R	cfm,cmh, l/s	0<+inf 0 (default)	Firmware balancing point.

Table 46 Global Balancing Point Description (Continued)

Object mapping	Object Name	Object ID	R,W, R/W	Engineering Units	Range, States, etc	Description
	Setpoint Tolerance	630	R	cfm,cmh, l/s	0<+inf 0 (default)	Firmware balancing point.
	Sync Direction	631	R		0 = Close (default) 1 = Open	Firmware balancing point.
	Zero Process Status	632	R		0 = False (default) 1 = True	Firmware balancing point.
	Sync Status	633	R		0 = False (default) 1 = True	Firmware balancing point.
	Action Elapsed Time	634	R	second	0<+inf	Firmware balancing point.
CfgKFact or	Manufactu rer K Factor	635	R/W	cfm, cmh, l/s	0<+inf	Manufactured defined K- factor for VAV must be assigned by programmer prior to balancing.
BalKFacto rOffset	K Factor Offset	636	R/W	cfm, cmh, l/s	> - inf<+inf 0 (default)	Offset applied by balancing tool during K- factor calibration mode.
BalBoxZer oOffset	Pressure Offset	637	R/W	In WC, pascal	0<+inf 0 (default)	Offset applied by balancing tool during zero calibration mode.
OvrRehea tPos	Reheat Ovrd	638	R/W	%	0100 null (default)	Balancing tool can override reheat through this point.
	Reheat Eff Pos	639	R/W	%	0100 null (default)	Firmware balancing point.
OvrPeriph Pos	Periphheat Ovrd	640	R/W	%	0100 null (default)	Balancing tool can override peripheral heat through this point.
	Periphheat Eff Pos	641	R/W	%	0100 null (default)	Firmware balancing point.
	VAV Fan Spd Ovrd	642	R/W	°⁄o	0100 null (default)	Balancing tool can override VAV fan speed through this point.

Table 46 Global Balancing Point Description (Continued)

Object mapping	Object Name	Object ID	R, W, R/W	Engineering Units	Range, States, etc	Description
	VAV Sys Type	643	R		07 Bit0 = Reheat Bit1 = Peripheral heat Bit2 = Fan	Firmware balancing point.
					 0 = Hide reheat, peripheral heat and vav fan option 1 = Show reheat option only 2 = Show peripheral heat option only 3 = Show reheat and peripheral heat option only 4 = Show vav Fan option only 5 = Show reheat and vav Fan option only 6 = Show peripheral heat and vav fan option only 7 = Show reheat, peripheral heat and vav fan option 	

Table 46 Global Balancing Point Description (Continued)

Flow Balancing View

A Variable Air Volume (VAV) system allows a single unit to provide the appropriate amount of cooling to multiple zones with different cooling loads. The VAV regulates the air volume to the zone by opening or closing the damper. This damper is controlled by a floating motor installed on an integrated actuator of the IRM NX VAV controller.

The Flow balancing tool can be configured with various parameters and indicators to optimize the calibrations used to balance the airflow.

Important: It is recommended to use Global VAV Balancing Tool or Honeywell Connect Mobile VAV Balancing application to perform calibration and balancing for the IP VAV controllers.

Prerequisites

- The controller must be online.
- The controller must be in a commissioned and synchronous state.
- Configure the following "Application Details Config" features under control manager in the engineering tool.

Application Type	Select VAV Zone Terminal Single Duct Application.					
	• Air balance supported is mandatory and other features as programmed in the application.					
Application Feature	 Reheat valve override supported option to calibrate the reheat valve. 					
	 Peripheral heat valve override supported option to calibrate the peripheral heat valve. 					
ApplicationT	VAV Zone Terminal Single Duct Application					
Application Details Config ApplicationF	Air Balance Supported 📄 Reheat Valve Override Supported 📄 Peripheral Heat Valve Override Supported 🗋 Serial Fan speed Supported					

Fig. 535 Application Details Config

• To work with flow balancer view, the user must configure the Bacnet objects according to the parameters listed in the table below, such as specific point name, object ID, point type, and respective units in the application. For details about Bacnet objects, see Flow Balancing View on page 361.

Following are the balancing points available in the Flow balancing tool.

Point Name	Point Type	Object ID	Metric Unit	Imperial Unit
CfgKFactor	Analog value	1000	Liter per second	Cubic feet per minute
CfgDuctArea	Analog value	1001	Sq meter	Square foot
CfgMaxFlowSetpt	Analog value	1002	Liter per second	Cubic feet per minute
CfgMinFlowSetpt	Analog value	1003	Liter per second	Cubic feet per minute
BalKFactorOffset	Analog value	1004	Pascal	Inches of WC
BalKFactorOffset	Analog value	1005	Liter per second	Cubic feet per minute
BalMaxMeasFlowAct	Analog value	1006	Liter per second	Cubic feet per minute
BalMaxMeasFlowSpt	Analog value	1007	Liter per second	Cubic feet per minute
BalMinMeasFlowAct	Analog value	1008	Liter per second	Cubic feet per minute
BalMinMeasFlowSpt	Analog value	1009	Liter per second	Cubic feet per minute
FlowOvrdState	Analog value	1010	No unit	No Unit
FlowOvrdPct	Analog value	1011	Percentage	Percentage
FlowOvrdFlow	Analog value	1012	Liter per second	Cubic feet per minute
BoxFlow	Analog value	1013	Liter per second	Cubic feet per minute
VelSenPress	Analog value	1014	Pascal	Inches of WC
DamperPos	Analog value	1015	Percentage	Percentage

Table 47 Bacnet objects for Flow balance tool
Note:	The configuration	must be complete	d before download	lina the proarar	n to the controller.
	The configuration	mast be complete		ing the program	

Flow balancing parameters Flow balancing status						
Actuator Travel Time	90	s	Set	Dev	vice Mode	Auto
				Dar	mper Position	0.000 %
K Factor	450.00		Set	Ser	nsed Flow	0 cfm
				Flo	w Pressure	0.0000 in/wc
Inlet Diameter	Custom Area 🗸			Flow	/ balancing action	IS
					Start Zero Ba	alancing
Inlet Area	1.2000	ft²	Set		Start K Factor	Balancing
Measured Flow		cfm	Set	\$	Start Maximum	Balancing
				5	Start Minimum	Balancing
Maximum Flow Setpoint	1800	cfm	Set		Set mode to	o auto
Minimum Flow Setpoint	400	cfm	Set		Reset to factor	y defaults

Fig. 536 Flow Balancing View

Bacnet objects details and requirement for Air flow balancing

The user must configure the Bacnet objects in the application using the parameters listed in the Table 47, "Bacnet objects for Flow balance tool," on page 360.

- **CfgKFactor:** This data point is used to set a factory k factor value in the balancing tool. Currently, the tool expects a value greater than equal to 10.
- **BalKFactorOffset:** This data point will be set with the K Factor value sent from the balancing tool. After performing k factor balancing, the balancing tool will set the calculated k factor.

The balancing tool makes sure that the calculated K Factor value is equal to CfgKFactor plus BalKFactorOffset.

- **BalBoxZeroOffset:** The balancing tool will set this value after performing zero calibration.
- CfgDuctArea: The user will set this value based on the VAV controller.
- **CfgMaxFlowSetpt:** The user will set the maximum flow setpoint value in the balancing tool. The same value will be used in the application.
- **CfgMinFlowSetpt:** The user will set the minimum flow setpoint value in the balancing tool. The same value will be used in the application.
- **BalMaxMeasFlowAct:** The balance maximum flow actual value will be set by the user in the balancing tool. The maximum flow balancing the actual measured flow will be set to this data point. This data point is used in a 2-point balancing ratio block.

If the VAV controller is k factor balanced, the balancing tool will set the maximum flow setpoint to this data point.

- **BalMaxMeasFlowSpt:** The maximum flow setpoint value will be set by the user in the balancing tool. The same value will be used in an application in a 2-point balancing ratio block.
- **BalMinMeasFlowAct:** The balance minimum flow actual value will be set by the user in the balancing tool. When doing, the minimum flow balancing the actual measured flow will be set to this data point. This data point is used in a 2-point balancing ratio block.

If the VAV controller is K Factor balanced, the balancing tool will set the minimum flow setpoint to this data point.

• FlowOvrdState:

Max balancing flow override state is 7.

- The effective flow setpoint will be set to the maximum flow setpoint in the application, and the controller will ramp up its output and the damper will open until the sensed flow equals the flow setpoint.
- When the measured flow reaches the effective flow setpoint (abs (CfgMaxFlowSetpt – BoxFlow) < = (CfgMaxFlowSetpt * 0.05)) for at least 5 seconds, the balancer enters the measured flow and the same value is assigned to data point BalMinMeasFlowAct.

Min balancing flow override state is 6.

- The effective flow setpoint will be set to the minimum flow setpoint in the application, and the controller will ramp down its output and the damper will close until the sensed flow equals the flow setpoint.
- When the measured flow reaches the effective flow setpoint (abs (CfgMaxFlowSetpt – BoxFlow) = (CfgMaxFlowSetpt * 0.05)) The balancer will enter the measured flow for at least 5 seconds, and the same value will be set to data point BalMinMeasFlowAct.

Zero balancing flow override state is 5

- In the application, the effective flow setpoint will be set to 0, and the controller's output will be ramped down and the damper closed until the sensed flow equals the flow setpoint.
- When the flow reaches the effective flow setpoint, the balancing tool calculates the offset pressure and assigns it to a data point. BalBoxZeroOffset.

K Factor balancing flow override state is 7

- The effective flow setpoint will be set to the maximum flow setpoint in the application, and the controller will ramp up its output and the damper will open until the sensed flow equals the flow setpoint.
- When the measured flow reaches the effective flow setpoint, the balancing tool calculates the offset k factor and assigns it to data point BalKFactorOffset. KFactorNew = Flow Measured / (VelSenPress)

Mode to Auto flow override state is 0

• When the mode is set to Auto in the balancing view, the application is set to auto mode).

- **Note:** If the measured airflow does not reach the effective airflow setpoint within the set actuator travel time, verify the K Factor value and the flow control loop.
- *Important:* Before migrating the existing controller application to the current application, the user must configure proper units for CfgKfactor, BalBoxZeroOffset, and BalKFactorOffset data points based on the measurement type (earlier, these points did not have any units).
 - **FlowOvrdPct:** When the application sets the datapoint FlowOvrdState to 3, the damper is overridden to FlowOvrdPct. This is not a required data point for balancing.
 - **FlowOvrdFlow:** When the application sets the datapoint FlowOvrdState to 2, the effective flow setpoint is set to FlowOvrdFlow, and the controller ramps its output to reach the effective flow setpoint. This is not a necessary data point for balancing.
 - **BoxFlow:** This data point determines whether or not the flow has been attained while balancing. This is used in the balancing sensed flow.
 - VelSenPress: This data point is used in the balancing flow pressure.
 - **DamperPos:** This data point is used in the balancing damper position. Flow velocity function block.

$$flow = K \sqrt{\Delta P - offset}$$

and

Flow calculation with metric and imperial unit.

The below metric units are calculated from VAV controller specification in imperial units.

- Inlet area: 1.2 sq ft = > 0.1115 sq meters
- Maximum Flow Setpoint: 1400 cfm = > 2379 m3/h
- Minimum Flow Setpoint: 700 cfm = > 1189 m3/h
- **K Factor**: 1400 cfm @ 1" wc = > 2379 @ 249 pa

Table 48 Pressure value in Imperial and Metric unit

Pressure	Imperial	Metric Unit
inch wc	K Factor: 1400 cfm @ 1" wc Area: 1.20 sq feet	K Factor: 2379 m3/h @ 249 pa Area: 0.11 sq meter
1	Flow: 1400 cfm	Flow: 2379 m3/h
2	Flow: 1979.70 cfm	Flow: 3364.41 m3/h
0.25	Flow: 700 cfm	Flow: 1189.5 m3/h
1.45	Flow: 1685.82 cfm	Flow: 2864.70 m3/h
0.12	Flow: 484.97 cfm	Flow: 824.11 m3/h

Configuring Flow Balance Parameters

Steps configure Flow Balance Parameters:

- **Note:** Before you start operating the flow balancer tool, you must configure the object names with specific object ID, object type, and respective units in the application to operate in the flow balancer view, see Table 47, "Bacnet objects for Flow balance tool," on page 360.
 - Step 1. In the Nav tree, browse to Station > Config > Drivers> BacnetNetwork > IrmBacnetDevice > IRM Program > Control Manager.
 - Step 2. Double-click on Control Manager and configure Application Details Config.
 - Step 3. Navigate to the **Application Type** as **VAV Zone Terminal Single Duct Application** from the drop-down list.
 - Step 4. Navigate to the **Application Features** as air balancing supported. If you want to calibrate the reheat and peripheral heat valves, select reheat valve override supported and peripheral heat valve override supported options.

	ApplicationType	VAV Zone Terminal Single [Duct Application 🚽	
Application Details Config	ApplicationFeature	Air Balance Supported	Reheat Valve Override Supporte	d 🛃 Peripheral Heat Valve Override Supported
		Fan Override Supported	d 🗌 Series Fan	Parallel fan

Fig. 537 Application Details Config

Step 5. Navigate to the **Measurement Type** and select Metric or Imperial. The object unit must be compatible with the global measure type. If not, it will throw an error when you run the Flow balancer view.

> When the configuration is finished, the tool is integrated into the application. The Flow Balancer View recognizes and validates the VAV application's configured data points. The Flow Balancer View uses the values from the configured data points to perform the balancing.

Step 6. Right-click **IrmBacnetDevice** and select **Views > Flow Balancing View**. The Flow Balancing View appears on the right pane.

				11 2
low balancing parameters	5		Flow balancing stat	tus
Actuator Travel Time	120	s Set	Device Mode	Auto
			Damper Position	100.000 %
K Factor	1800.00	L/s Set	Sensed Flow	873 L/s
			Flow Pressure	2.5375 cm/w
Inlet Diameter	Custom Area		Flow balancing acti	ions
			Start Zero	Balancing
Inlet Area	0.1115	m² Set	Start K Facto	or Balancing
Measured Flow		L/s Set	Start Maximu	m Balancing
			Start Minimu	m Balancing
Maximum Flow Setpoint	849.5	L/s Set	Set mode	e to auto
Minimum Flow Setpoint	188.8	L/s Set	Reset to fact	ory defaults
/alve override				
Re-heat Valve Override	NaN	% Over	ride Auto	
Peripheral Heat Valve Ove	erride NaN	% Over	ride Auto	

Fig. 538 Flow Balancing View

If the configured object ID, object type, and respective units in the application do not match, the Flow balancer tool identifies and generates errors.

The application validates in five stages:

- Stage 1: Validates if the device supports balancing or not.
- Stage 2: Validates if the device is online or offline.
- Stage 3: Validates if the device is VAV application supported or not.
- Stage 4: Validates if the device is commissioned or not.

Validates if the object rules are correctly configured or not.

- Checks configured objects with object names.
- Checks configured objects name with object lds.
 - Checks configured objects names with object type.
 - Checks configured object lds with the object unit.

Flow Balance Operations

Stage 5:

The following type of balancing you can be performed on the Flow balancer View.

- Zero Flow Balance Calibration on page 365
- K Factor Calibration on page 366
- Two Point Calibration on page 366
- Set Mode to Auto on page 366
- Restore to Factory Defaults on page 366



Fig. 539 Flow Balancing Actions

Zero Flow Balance Calibration

To start zero balancing, click on Start Zero Balancing.

The damper is completely closed. If any flow pressure is detected, that value is considered to be the flow pressure offset. After the completion of zero balancing the device, the mode is set to automatic operation.

Two Point Calibration

You can start maximum balancing in any order. The flow balance tool does not enforce any rules on the order of balancing.

• Maximum balancing: To start maximum balancing, click on Start Maximum Balancing.

The controller adjusts the damper in an attempt to achieve the maximum flow setpoint. When the setpoint is reached, the measured flow field becomes active, and the actual measured flow value can be entered. After completing maximum balancing, the device remains in manual mode (open maximum).

You can start minimum balancing in any order. The flow balance tool does not enforce any rules on the order of balancing.

• **Minimum balancing:** To start minimum balancing, click on **Start Minimum Balancing**. The controller adjusts the damper in an attempt to achieve the minimum flow setpoint. When the set point is reached, the measured flow field becomes active, and the actual measured flow value can be entered. After minimum balancing is completed, the device remains in manual mode (open minimum).

K Factor Calibration

To start the K factor calibration method > click on Start K Factor Balancing.

Important: After a warning message, the minimum point calibration and maximum point calibration data is reset to factory defaults.

The controller adjusts the damper in an attempt to achieve the maximum flow setpoint. When the setpoint is reached, the measured flow field becomes active, and the actual measured flow value can be entered.

The tool calculates and displays the K factor value after entering the measured flow. The tool prompts you to save this value to the device. You can calculate the K factor without using the tool and enter the calculated value in the K factor field. After K factor balancing is completed, the device remains in manual mode (open maximum).

Set Mode to Auto

When the device is enabled, click **Set mode to auto** to enable automatic operation. If the device is in manual mode when you exit the view, the tool prompts you to switch to automatic mode.

Restore to Factory Defaults

To restore the factory default value of the zero calibration, K factor calibration, minimum flow calibration, and maximum flow calibration values, click the **Restore to factory defaults**.

Flow Balancing Parameters

-Flow balancing parameters					
Actuator Travel Time		Set			
KFactor		Set			
Inlet Diameter					
Inlet Area		Set			
Measured Flow		Set			
Maximum Flow Setpoint		Set			
Minimum Flow Setpoint		Set			

Fig. 540 Flow Balancing Parameters

- Actuator Travel Time: The time required for the actuator to travel from 0 % to 100 % open or 100 % to 0 % open. The time interval varies depending on the type of actuator and ranges from 0 to 500 seconds.
- K Factor: Allows you to change the K Factor value from 0 to 10000 manually.
- Inlet Area: The area of the inlet duct is displayed. In this field, you can choose between a standard diameter and a custom area. The inlet area can range from 0 to 100 square feet.
- **Measured Flow:** Displays the actual airflow when measured by the balancer using an air flow hood or other T&B calibrated tool. This value can be edited.
- **Maximum Flow Setpoint:** This field allows you to set the flow setpoint for maximum flow calibration and K Factor calibration from 0 to 138850 cfm. When you set the calibration source value, the controller begins to stabilize the airflow.
- **Minimum Flow Setpoint:** This field allows you to specify the flow setpoint value, which ranges from 0 to 138850 cfm. To obtain minimum flow calibration, set the minimum flow setpoint lower than the maximum flow setpoint value. When you set the calibration source value, the controller begins to stabilize the airflow.

Valve Override

Valve override		
Re-heat Valve Override	Override	Auto
Peripheral Heat Valve Override	Override	Auto

Fig. 541 Valve Override

Re-heat Valve Override: This field allows you to override the value of the reheat valve. This field visible when the "Reheat Valve Override Supported" feature is enabled in the "Application Details Config" under control manager.



Fig. 542 Reheat Valve Override Supported

Steps to override the reheat valve position:

- Step 1. Type the reheat value in percentage and click the **Override**.
- **Note:** Click the auto button to set the reheat heat valve into automatic operation.
 - **Peripheral Heat Valve Override:** This field allows you to override the value of the peripheral heat valve. This field is visible when the "Peripheral Heat Valve Override Supported" feature is enabled in the "Application Details Config" under control manager.

	ApplicationType	VAV Zone Terminal Single D	uct Application 🗸	
Application Details Config	Application Fosture	Air Balance Supported	Reheat Valve Override Supported	Peripheral Heat Valve Override Supported
	ApplicationFeature	Fan Override Supported	Series Fan	Parallel fan

Fig. 543 Peripheral Heat Valve Override Supported

Steps to override the peripheral heat valve position:

Step 1. Type the peripheral heat value in percentage and click the **Override**.

Note: Click the auto button to set the peripheral heat valve into automatic operation.

Flow Balancing Status

•

Flow balancing status				
-				
Device Mode				
Dompor Desition				
DamperPosition				
Sensed Flow				
Flow Pressure				

Fig. 544 Flow Balancing Status

- **Device Mode:** Displays the current device mode.
- Damper Position: Displays the current damper position.
- Sensed Flow: Displays the actual airflow as measured by a pressure sensor.
- Flow Pressure: Displays the current flow pressure.

Venom Application Balancing

When the Venom balancing view is first opened, this service is automatically added to the station. The service is transient by default, which means that its properties are not saved to the station BOG file and it will not be present after a station restart. If changes to the service's properties are made and need to be retained after restarting, the slot sheet view of the Services container can be used to clear the VenomBalanceService's Transient flag..

The service includes the following properties:

- Damper Full Open: True (default) = the zero calibration job will command half of the devices to 'Damper 100 %'.
 False = the zero calibration job will command half of the devices to 'Max Flow'.
- **Auto Update Database:** True (default) = a 'Sync Device to Wiresheet' will be performed on a IrmBacnetDevice or an 'Upload' will be performed on a device on successful completion of flow balancing.

False = no sync or upload will occur automatically.

- Flow Cal Poll Interval: (default 5 seconds) During flow balancing, the device damper position and velocity pressure will be sampled at this rate. If the damper drive time is very slow and the calibration view drops out of its wait state too early, increasing this value may allow correct operation.
- **Network View Device Refresh Interval:** (default 5 minutes) While the Venom Balance Network View is active, devices values will be polled at this interval. This will detect any changes to device variables that occurred from a source other than the Venom tools.
- **Poll Delay Between Devices:** (default 100 milliseconds) This is a wait time that occurs between polling one device's variables and the next. This value can be increased if more time is needed for other station polling to occur (i.e. proxy points), however the Venom Balance Network View will take longer to populate the device values.

Global Balancing Object

The global balancing object is a part of the engineering tool. It allows you to configure the balancing object as per the project requirement and generates the balancing data report of the controller. Following are available Global Balancing Object points.

Pr	ope	erty Sheet	
Ę,	Glo	bal Balancing Object (Global B	alancing Object)
₽	Ð	Device Balance State	ID: 600_Value: 0.0(NotBalanced)
Þ		Flow Calibration Factor	ID: 601_Value: 0.0
Þ		Damper Type	ID: 602_Value: 0.0(Floating)
₽	Ð	Damper Control Type	ID: 603_Value: 0.0(Direct)
₽	Ð	Drive Time	ID: 604_Value: 0.0 s
₽	Q,	Duct Area	ID: 606_Value: 0.0
₽	Q,	Measured Max Flow	ID: 607_Value: 0.0
₽	Q,	Measured Min Flow	ID: 608_Value: 0.0
Þ	Q,	Set Point Max Flow	ID: 609_Value: 0.0
Þ	Q,	Set Point Min Flow	ID: 610_Value: 0.0
₽	Ð	Device Zeroed State	ID: 611_Value: 0.0(notZeroed)
₽	Ð	Temperature Compensation	ID: 612_Value: 0.0(Enable)
₽	Q,	Balancing Method	ID: 613_Value: 0.0(DoublePoints)
₽	Q,	Set Point Single Flow	ID: 614_Value: 0.0
₽	Ð	Measured Single Flow	ID: 615_Value: 0.0
₽	Ð	Corrected K Factor	ID: 616_Value: 0.0
₽	Ð	Current Sensed Air Flow	ID: 618_Value: 0.0
₽	Ð	Damper Manual Position	ID: 620_Value: 0.0 %
₽	Ð	Damper Manual Flow	ID: 621_Value: 0.0
₽	Q,	Balancing Type	ID: 622_Value: 0.0(Balanced_Done)
₽	Q,	Damper Position	ID: 623_Value: 0.0 %
Þ	Q,	Clear Balance	ID: 624_Value: 0.0(False)
Þ	Q,	Sensed Max Flow	ID: 626_Value: 0.0
Þ	Q,	Sensed Min Flow	ID: 627_Value: 0.0
Þ	Q,	Sensed Single Flow	ID: 629_Value: 0.0
Þ	Ð	Setpoint Tolerance	ID: 630_Value: 0.0
₽	Q,	Sync Direction	ID: 631_Value: 0.0
₽	Q,	Zero Process Status	ID: 632_Value: 0.0
₽	Q.	Sync Status	ID: 633_Value: 0.0
Þ	Q,	Action Elapsed Time	ID: 634_Value: 0.0 s
Þ	Q,	Manufacturer K Factor	ID: 635_Value: 0.0
Þ	Q,	K Factor Offset	ID: 636 Value: 0.0
₽	Q,	Vav Fan Spd Ovrd	ID: 642_Value: 0.0 %
₽	Q,	Vav Sys Type	ID: 643_Value: 0.0(None)
₽	Q,	Reheat Eff Pos	ID: 639_Value: 0.0 %
₽	Q	Periphheat Ovrd	ID: 640_Value: 0.0 %
₽	Q	Vav Fan Spd Ovrd	ID: 642_Value: 0.0 %
₽	Q,	Vav Sys Type	ID: 643_Value: 0.0(None)

Fig. 545 Global Balancing Object property sheet

The balancing report can be generated using the online controller or wire sheet values.

- **Online Controller Values:** Reads the values from the online controller only.
- Wire Sheet Values: Read the wire sheet values mapped to the online and offline controller.

You can perform the following operation in the Global Balancing Object:

- Map the Balancing objects with Bacnet Objects on page 371
- Teach Balancing Values to Controller on page 373
- Learn Balancing Object from Controller on page 373
- Generating Balancing Report on page 375
- Global Balancing Application Sync on page 377

Map the Balancing objects with Bacnet Objects

Steps to map the balancing objects with Bacnet objects:

Step 1. Click the **Folder** icon () and select **Component Chooser** from the drop-down list.

💌 뉕 Manufacturer K Factor	ID: 635_Value: 0.0	
📔 Master Sync Enabled	🔵 true 🔽	
📔 Property Id	635	
🗎 Mapping Status	{ok}	
📔 Fault Cause		
Dbject Mapping	null	
Value	0.00	<u>B</u> ql Query Builder
🔻 뒡 K Factor Offset	ID: 636_Value: 0.0	<u>C</u> omponent Chooser
) Master Sync Enabled	🔵 true 🔍	Component <u>G</u> rid Query Editor
Property Id	636	Directory Ord Chooser
📔 Mapping Status	{ok}	File Ord Chooser
📔 Fault Cause		– History Ord Chooser
📔 Object Mapping	null	Orion Ord Chooser
🗎 Value	0.00	Secured Point Chooser

Fig. 546 Component Chooser

Step 2. On the Select Ord window, navigate to the **Drivers > BacnetNetwork >** IrmBacnetDevice > IRM Program > Periodic program > select the Bacnet Object and click OK.

This action map the Bacnet object with the balancing object.

Or

Navigate to the Station > Drivers > BacnetNetwork > IrmBacnetDevice > IRM Program > Periodic program > select the Bacnet Object and press Ctrl + C.

Navigate to the balancing object and press Ctrl + V in the **Object Mapping** field.

- 9	Manufacturer K Factor	ID: 635_Value: 0.0
	Master Sync Enabled	🔵 true 🗸
	Property Id	635
	📔 Mapping Status	{ok}
	📔 Fault Cause	
[) Object Mapping	station:/slot:/Drivers/BacnetNetwork/IrmBacnetDevice/IrmProg
	📔 Value	0.00

Fig. 547 Object Mapping

Step 5. Click Save.

Step 6. Click the arrow icon (). This opens the Bacnet objects property sheet.

Property Sheet			
🛕 BacnetNumericValue (Bacnet Numeric Value)			
Execution	1		
Function Block Name/Annotation/Composite Flash Memory Usage	0	B [0 - 900]	
Description			
- Out	- {null}		
- Status Flags	- {null}		
📔 Event State	Normal		
 Out Of Service 	- {null}		
— In	- {null}		Ŧ
- Fail Detect Enable	- {null}		Ŧ
- Fail Detect Fallback Value Select	- {null}		Ŧ
Fail Detect Fallback Value	- {null}		Ŧ
- Fail Detect Delay	- {null}		Ŧ
Units	No Units		
Cov Increment	0.10		
🕨 🗱 Default Value	10.00		
Bacnet Object Instance	1		
Fail Detect Fixed Value	nan		
Out Save	Out Save Fields		
Fail Detect	Irm Parameter Fie	elds	

Fig. 548 Bacnet Objects property sheet

Step 7. Expand Default Value, enter the Default Value, and click Save.

To send the modified balancing object values from the workbench to controller, perform **Teach Balancing Values To Controller**. See Teach Balancing Values to Controller on page 373.

Similarly, to bring the updated balancing object values from the controller to the workbench, perform **Learn Balancing Object From Controller**. See Learn Balancing Object from Controller on page 373.

You can also generate the report. For more details, see Generating Balancing Report on page 375.

Teach Balancing Values to Controller

Teach Balancing Values To Controller: This allows the commission engineer to send the modified balancing values from the workbench to the IRM NX controller.

Note: Set the desired measurement type before configuring the Global VAV Balancing Tool.

Steps to teach balancing values to controller:

- Step 1. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program > Control Manager >** double-click **Global Balancing Object.** This opens the global balancing object property sheet.
- Step 2. Right-click the Global Balancing Object > Actions> Teach Balancing Object To Controller.

Property Sheet		
Global B Views		ncing Object)
Device Views	r	600 Value: 0.0(NotBalanced)
K Fac	s 🕨	Teach Balancing Object To Controller
🕨 📄 Dam 🛛 New	•	Learn Balancing Object From Controller
Dam		603 Value: 0.0/Direct)

Fig. 549 Teach Balancing Object To Controller

Teach Balancing Values to Multiple Controllers

Steps to teach balancing values to multiple controllers:

- Step 1. Right-click on the BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the controllers from the device list.
- Step 3. Select **Teach Balancing Object**.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7ff	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_FX_SI	device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

 Image: New Folder
 I

Fig. 550 Teach Balancing Object Option Step 4. Click Yes.

N Te	ach Balancing Object To Controller	×
?	This action will teach the balancing object values to contro Do you want to continue?	oller.
	Yes No	

Fig. 551 Popup Message Window

The Balancing value changes are updated in the controller, and the successful action is displayed in the workbench job service.

Learn Balancing Object from Controller

Learn Balancing Object From Controller: This allows the commissioning engineer to bring the modified balancing values from the IRM NX controller to the workbench.

Steps to learn balancing object from controller:

- Step 1. Navigate to the BacnetNetwork > IrmBacnetDevice > IRM Program > Control Manager > double-click Global Balancing Object.
- Step 2. Right-click the Global Balancing Object > Actions> Learn Balancing Object From Controller.

Property Sheet		
Global B		ncing Object)
Device		600 Value: 0.0(NotRalanced)
K Fac	s 🕨	<u>T</u> each Balancing Object To Controller
🕨 📄 Dam 🛛 _{New}	•	Learn Balancing Object From Controller
Dam		603 Value 0.0(Direct)
Fig. 55	52 Learn Balancir	ng Object From Controller

- **Note:** Make sure to map the balancing components with the BACnet objects points correctly (BacnetNumericValue, BacnetBooleanValue, or BacnetEnumValue).
 - Drive Time ID: 604 Value: 0.0 s Master Sync Enabled true Property Id 604 Mapping Status {fault} 📔 Fault Cause Only Bacnet Value Type Objects are allow h:ae57 in -Object Mapping ► 🗎 Value 0.00 s

Fig. 553 Mapping The Balancing Objects

Note: The balancing objects do not support the input and output points.

Learn Balancing Values from Multiple Controllers

Steps to learn balancing values from multiple controllers:

- Step 1. Right-click on the **BacnetNetwork > Views > Irm Bacnet Device Manager** view.
- Step 2. Select all the controllers from the database.
- Step 3. Select Learn Balancing Object.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap Status
VAV_ISF1_HX_F	X_IM device:1000	{ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
VAV_ISF1_HX_F	X_SI device:-1	(fault)	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

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Fig. 554 Learn Balancing Object to Controller dialog box

Step 4. Click Yes.

💊 Le	earn Balancing Object From Controller >	<
?	This action will learn the balancing object values from controlle Do you want to continue?	er.
	Yes No	

Fig. 555 Popup message window

The Balancing values uploaded into the project and the successful action displayed in the workbench job service.

Generating Balancing Report

You can generate the balancing data report for the set of controllers by using the online controller values or the wire sheet values.

- Online Controller Values: Reads the values from the online controller only.
- Wiresheet Values: Reads the wire sheet values linked to the online and offline controller.

Generating Balancing Report for Multiple Devices

Steps to generate a balancing report for a set of devices:

- Step 1. Navigate to the Irm Bacnet Device Manager view and select the devices.
- Step 2. Select **Generate Balancing Report**. This opens the generating balancing report dialog box.

Database																
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Password Status	Auto Mac	Swap State
VAV_ISF1_HX_	FX_IM device:10	00 {ok}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	26-Aug-21 6:28 PM IST	None	Default Password	Enabled	Swapped In
S VAV ISF1 HX	FX SI device:-1	{fault}	1	169.254.1.24:0xBAC0	VA75IBWA24NM	0.0.0.68	00000b7ff1f58618	IrmControl 2.0.0.0	IrmProgram	vc6 gik	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In

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Fig. 556 Generating Balancing Report dialog boxStep 3.Select From Online Controller Values or From Wiresheet Values.

Generate Balancing Rep	ort	\times
📔 Generate Balancing R	eport Arguments	
Report Option	From Online Controller Values	-
OK	From Online Controller Values	
	From Wiresheet Values	

Fig. 557 Generating Balancing Report

Step 4. Click OK.

Generating Balancing Report from the Station

Steps to generate balancing report from the station:

- Step 1. Navigate to the **BacnetNetwork.**
 - Config Views Services Add Serial Number Actions ۲ Drivers Swap Out NiagaraNetwo New Swap In BacnetNetwo Edit Tags Set Controller Password Local Dev Bacnet C Make Template Reset Tool Password Monitor Update MAC Address Configurations Cut X TuningP ь Generate Balancing Report Сору C IrmConfi Paste 2 IrmBac
- Step 2. Select IrmConfig, right-click the Actions > Generate Balancing Report.

Fig. 558 Actions





Step 4. Click OK.

The report is saved in the shared directory (C:\Users\User account\Niagara4.x\CentraLine\stations\"current station name"\shared\BalancingReports). Go to the BalancingReports inside the shared folder and open the Balancing Report CSV file.

→ This PC → OSDisk (C:) → ProgramData	> Niagara4.10 → tridium	stations > IPVAV_28thJuly2021_216 > shared > BalancingReports	
Name	Date modified	Туре	Size
PVAV_28thJuly2021_216_Balancing report	27-08-2021 20:27	Microsoft Excel Comma Separated Values File	2 KB

Fig. 560 Balancing Report CSV file

File Format: Stationname_Balancing report_unique number

Timestamp:	27-Apr-21 6:35 PM IST																
Station Name:	NewTestStation																
Controller Name	Controller Instance Number	Controller Model Number	SlotPath	Measurement Type	AirFlow U	Duct Area	K Factor	SetPoint	SetPoint	Sensed M	Measure	Sensed N	Measured	Drive Tin	n Damper	T Damper (Remarks
ghgvhnghb	1001	VA75IBWA24NM	:/ghgvhnghb	SI-Metric	Cubic Fee	0.387097	1	5297.2	847.552	0	0	0	1000	90	210V_A	r Reverse	
AL-VA423B24N	1000	VA423B24N	:/AL-VA423B24N	SI-Metric	Cubic Me	0.004	21	1189.308	3600	2.11E+10	1440000	1.111515	4.32	800	210V_A	r Reverse	
CPO-VA75MB24NM1	1002	VA75MB24NM	:/CPO-VA75MB24NM1	SI-Metric	Cubic Fee	0.02	1	423.776	847.552	0	0	0	0	90	Floating	Direct	
CPO-VA75MB24NM	1003	VA75MB24NM	:/CPO-VA75MB24NM	SI-Metric	Cubic Fee	0.02	43	423.776	1.91E+07	0	0	0	0	90	Floating	Direct	

Fig. 561 File Format

Global Balancing Application Sync

Steps to Sync Global Balancing Application:

- Step 1. Expand the station and double-click **Drivers**.
- Step 2. Navigate to the **BacnetNetwork > IrmBacnetDevice > IRM Program > Control Manager >** double-click **Global Balancing Object**. This opens the global balancing object property sheet.

⊩ų	📄 Sync Status	ID: 633_Value: 1.0
ÞQ	Action Elapsed Time	ID: 634_Value: 5.0 s
∎ Q	Manufacturer K Factor	ID: 635_Value: -10000.0 cfm
	📔 Master Sync Enabled	🔵 true 🔽
	Property Id	635
	Mapping Status	{ok}
	📔 Fault Cause	
	Object Mapping	h:91a0e3
	🗎 Value	-10000.00 cfm
1	K Factor Offset	ID: 636_Value: -10000.0 cfm
) Master Sync Enabled	🔵 true 🤍
	Master Sync Enabled	• true •
	Master Sync Enabled Property Id Mapping Status	true 636 {ok}
	Master Sync Enabled Property Id Mapping Status Fault Cause	true 636 {ok}
	Master Sync Enabled Property Id Mapping Status Fault Cause Object Mapping	• true • 636 {ok} h:91a0ee
	Master Sync Enabled Mapping Status Fault Cause Object Mapping Value	<pre>true 636 {ok} h:91a0ee -10000.00 cfm</pre>

Fig. 562 Global Balancing Application

Step 3. Click **Save** to apply the changes.

Map the balancing objects with the BACnet Objects points (BacnetNumericValue).

Post Balancing Procedure

The Post balancing procedure is performed to sync the updated balanced data from the project to the controller.

You can perform the post balancing procedure for the following device conditions:

- Empty or Factory device balancing on page 378
- Project Balancing State (In Sync) on page 378
- Project Balancing State (Project with modifications) on page 379

Empty or Factory device balancing

Steps to perform the post balancing for the Empty or Factory device:

Step 1. Perform the balancing procedure for the controller. The controller can be balanced using Honeywell Connect Mobile Application or Global VAV Balancing Tool. For more details, see Honeywell VAV Balancing Tools User Guide EN2Z-1086-IE67.

After performing the balancing, the balanced data will be saved in the Bacnet object.

- Step 2. Perform the Bacnet object mapping procedure to bring the balanced values from the controller to the wire sheet. For more details, see Map the Balancing objects with Bacnet Objects on page 371.
- *Important:* If you perform the **Teach balancing to the controller** procedure before syncing the balanced data to the project will erase the balanced data of the controller.
 - Step 3. Perform the **Learn Balancing Object From Controller** procedure to sync the balanced values from the controller to the workbench. For more details, see Learn Balancing Object from Controller on page 373.
 - Step 4. Perform the **Teach Full Application To Controller** procedure to update the new configuration of the project to the controller. For more details, see Teach Full Application To Controller on page 174.

Project Balancing State (In Sync)

Application is already taught and controller and project status is "In Sync."

Steps to perform the post balancing for the device application is already taught:

Step 1. Perform the balancing procedure for the controller. The controller can be balanced using Honeywell Connect Mobile Application or Global VAV Balancing Tool. For more details, see Honeywell VAV Balancing Tools User Guide EN2Z-1086-IE67.

After performing the balancing, the balanced data will be saved in the Bacnet object.

Step 2. Perform the "sync to application" operation using Honeywell Connect Mobile Application or Global VAV Balancing Tool to update the balanced values in the application Bacnet object.

After performing the "sync to application" operation, the synchronization status will be changed to "controller Bacnet object modified."

Step 3. Perform the **Learn From Controller** procedure to sync the controller and project with the updated balanced values. For more details, see Learn from Controller on page 177.

After performing the Learn from Controller procedure, the synchronization status will be changed to "In Sync."

Step 4. Perform the **Learn Balancing Object from Controller** to updated balancing object values in the engineering tool. For more details, refer to Learn Balancing Object from Controller on page 373.

Project Balancing State (Project with modifications)

Application is already taught and controller and project status is "Project has modifications"

Steps to perform the post balancing for the device application is already taught:

Step 1. Perform the balancing procedure for the controller. The controller can be balanced using Honeywell Connect Mobile Application or Global VAV Balancing Tool. For more details, see Honeywell VAV Balancing Tools User Guide EN2Z-1086-IE67.

After performing the balancing, the balanced data will be saved in the Bacnet object.

Step 2. If you perform the "sync to application" operation, the synchronization status will be changed to "Project modified and controller bacnet object."

If the 'sync to application" operation is not performed (no sync), the synchronization status will remain as "Project has modifications."

- Step 3. Perform the Learn Balancing Object From Controller procedure to update the balanced data from the controller to the wire sheet. For more details, see Learn Balancing Object from Controller on page 373.
- *Important:* Any changes in the Bacnet objects mapped to balancing will be overwritten by the values from the controller.
 - Step 4. Perform the Teach Full Application To Controller procedure to update the new configuration of the project to the controller. For more details, see Teach Full Application To Controller on page 174.

Using Application Library

Steps of use application library:

- Step 1. Open the CentraLine-N4 workbench.
- Step 2. Navigate to the platform and connect to the station.
- Step 3. Open the **Palette** and click the **Open Palette** icon.
- Step 4. In the open palette dialog box, enter "honIrmAppl" and click **OK.**

Open Palette		×
Select one or more pale	ttes to open, or just start typing:	Browse
Module	Description	9
honIrmAppl	IRM application library	
		OK Cancel

Fig. 563 Open Palette window

Step 5. In the Palette view, expand the **honIrmAppl** folder.



Fig. 564 honIrmAppl Folder

Step 6. Right-click IRM Program and select Copy from the context menu.



Fig. 565 IRM Program

Step 7. Expand the IrmBacnetDevice, navigate to the IRM Program, and click **Delete** from the context menu. This action will delete the existing program.





Step 8.



Fig. 567 Adding IRM Program application

The device Nav of the station updates after pasting the IRM Program into the IrmBacnetDevice. Expand the IrmBacnetDevice and double-click the Control Manager. Examine the application's properties such as the application name, function block version, number of folders, and so on.

Property Sheet	
X Control Manager (Irm Control Manager)	
📔 Author	Honeywell
Description	IRMN_H_0002 (HVAC)
Device Model Name	RL4N -
Application Type	y4t.dbm
 Application Details 	Application Details
Application Name FCU Application	1 IRMN_H_0002
Application Version Application Versio	in
Function Block Family	IrmControl
Function Block Version	2.0.0.0
📔 Number Of Folders	24
Wumber Of Function Blocks	1215
📔 Number Of Links	1629
📔 Number Of Out Save Enabled Properties	0
🚡 Memory Usage	DDC Memory: Function Block Name/IRM Folder Name/Annotation/ SubFolder Count/Composite Flash Memory Usage:
Flash Memory Exceeded FBs & IRM Folders	Flash Memory Exceeded FBs & IRM Folde
Controller Hardware Features	

Fig. 568 Application Property

Global VAV Template

The Global VAV template is a deployable package of CentraLine-N4 objects. These templates allow a set of configured objects to be encapsulated and deployed as a unit. The goal is to eliminate repetitive configuration steps when making multiple installations with similar functionality.

The template contains a component tree with a single base component and associated with supported objects. The file extension for the VAV template is *.ntpl.

Integrating the Global VAV Templates in the CentraLine-N4 workbench is recommended to work with IRM NX controller. For more details, refer to Global VAV Template Design Guide - 31-00466 and Global VAV Template Engineering Guide - 31-00465.

Prerequisite

- Check the system requirements before performing engineering or commissioning. Refer to the release notes for more information.
- Make sure that the latest CentraLine-N4 workbench is installed on the computer.
- Use the latest version of the IRM engineering tool.

Deploy Global VAV Template

Deploy a Global VAV template on a station by dragging the templates from sidebar onto the project station. It is similar to dragging and dropping components from a palette.

Steps to Deploy VAV Template:

- Step 1. Copy and paste the application template file to the templates folder available under C:\Users\User Account\Niagara4.x\CentraLine\templates).
- Step 2. Run the CentraLine-N4 station and navigate to **Window > Side Bars >** click **Template.** This opens the template sidebar.
- Step 3. Select application template as per the site requirements.
 - VAV_ISF1_HX_FX_IM-2.x", Version 2.x: Supports imperial units).
 - VAV_ISF1_HX_FX_SI-2.x", Version 2.x : Supports SI units).

• Te	mplate	7
ā	C Template	•
0	VAV_ISF1_HX_FX_IM-2.9	
6	VAV_ISF1_HX_FX_SI-2.9	

Fig. 569 Template

Step 4. Select the template file and drag the template file from template to the BacnetNetwork.



Fig. 570 Station

This action opens the configuration property window of the template.

- Step 5. Configure the template properties as per your project requirements. For more details, refer to Global VAV Application Design User Guide 31-00466.
 - Configuration Properties: VAV_ISF1_HX_FX_IM1

DeviceID	Device v 10000
CO2_Control_Enable	Disable -
Setpoint_Type	Absolute 🗸
WM_Share	NoShare 🔹
Fan_Control_Type	None
Heater_Type	None 🔻
Reheat_En_in_HeatMode	Auto -
Max_Heat_Stage	None -
Heater_Alarm_Type	NoAlarm 👻
Reheat_Flow_Type	FixedFlow -
Drive_Time	90.00
Sync_Direction	OpenSync 🔻
	OK Cancel

Fig. 571 Configuration properties

Step 6. Click **OK** to save the configuration.





You can reuse the same template in another station by clicking Save As option and saving it with a different filename (keeping the original template unchanged).

After deployment, the VAV templates are displayed under **Station > BACnetNetwork**.



Fig. 573 VAV Templates

Important: Opening the template via the palette is not recommended; it will not create the PX images in the desired location.

10 TROUBLESHOOTING

Best Practices and Troubleshooting Tips

Below are recommendations for larger sites that include more than 30 controllers per MSTP network.

- After initiating the following bulk actions, ensure the Irm BACnet Device Manager view is closed. It will help avoid the traffic in the MSTP traffic in the network and response time to complete the actions will be faster.
 - Teach To Controller or Teach Full Application To Controller
 - Clear Controller
 - Learn from Controller
- When the BACnet Points or schedule are modified over BACnet, the synchronization status changes to "BACnet Object Modified" state. To change it back to In-Sync, perform learn from controller.
- When Teach Full Application To Controller is initiated with more than 30 controllers, there may be a failure for one or two controllers with "app power cycle error" or "lockup error."
 - **Solution:** Retry Teach Full Application To Controller on the failed devices.
- While performing actions like Clear Controller, Teach To Controller, or Learn from Controller the controller may fail with, "Transaction Id" *error.*
 - Solution: Retry Clear Controller, Teach To Controller or Learn from Controller.
- While performing actions like Teach To Controller or Teach Full Application To Controller, teach fails with buffer overflow issue, an infrequent observation.
 - **Solution:** Retry discover devices operation and perform Teach To Controller on page 172 again.
- Before initiating the Controller Firmware Download on page 327, swap out the application to improve the firmware download time.
- It is highly recommended to swap out the IRM Program after commissioning. The following are the advantages of keeping the IRM Program in swap out mode.
 - Improve the system traffic.
 - Reduce heap usage in HAWK-8000, EAGLEHAWK, or Honeywell Plant controller.
 - Quick reboot of HAWK-8000, EAGLEHAWK, or Honeywell Plant controller station.

• When you see rejection proprietary during teach, refer to the latest service bulletin to ensure the engineering tool and firmware versions are compatible.

Refer to the help document before configuring the special events in the Sylk wall module ORD: *local:/module://honIrmControl/doc/honIrmControl-WmConfigHvacA.html*.

- Do not delete any nodes below the IRM Program if no backup is maintained. If deleted, you have to re-add and configure the complete IRM program.
- It is recommended to check the controller sync status from time to time. Go to Bacnet Network Irm Bacnet Device Manager View on page 28 or Control Manager on page 62 to check controller sync status.
- It is advised to export the Irm bacnet device manager view to the local repository once all the necessary configurations and the device status are in sync and operational.
- You cannot downgrade the engineering tool from a higher to a lower version after upgrading it from a lower to a higher version.
- The user can set the higher poll time for the Bulk Teach & Bulk Firmware download, which could ease out the Network Traffic and help in Teach or Firmware download consistency.

Refer to the screenshot to navigate to the poll service for the IP network, and for the MSTP network, the poll service will be under the MSTP port.



Fig. 574 Poll Service

• If required, the user must set the wait time based on the network load (default is 120 seconds).

Refer to the screenshot to navigate to the IrmConfig property sheet and set the wait time.

	Station () Config : Drivers : Bacr	netNetwork : IrmConfig
Nav My Network Station Station Station Gonfig Gonfig Gorvices Others Others Others Gonethetwork Gonethetwo	Comp Contest	1 [0 - 4194302] 4194302 [0 - 4194302] • Deny • • Utue • • Overwrite BACnet object values in Application • • Overwrite BACnet object values in Application • • Itue •

Fig. 575 IRM Config Property Sheet

Service Button



Fig. 576 IRM controllers service button

The service button is used to trigger dedicated events. It is important to distinguish different controller behaviors which are elicited depending upon whether the service button is pressed when the controller is powering up or when it is in normal operation.

Press Service Button during controller power up

The controller is reset to factory settings when you press the service button and turn it on (while the service button is pressed). The factory defaults are as follows:

Note: Press the service button until the green power LED goes out at least twice and returns to its normal state.

Following changes happen in the controller after a factory reset:

- The application is cleared from the controller.
- The MAC address will be set to 0xFF (255), meaning that the controller will now search for a new MAC address (Auto MAC will be automatically triggered after controller power-up).
- The Max Master setting will revert to its default value.
- The max info frames will revert to 10.
- The device instance will revert to its default of 4194302.
- The device name will revert to CLME-VAxxxx or UNI-Rxxxxxxxxxx [model name].
- The values of Auto MAC, Min MAC, and Max MAC will be reset to default.
- The Modbus, Ethernet, and Bluetooth settings will revert to their factory settings. The user settings for Modbus and BLE will be erased, the IP address will be reset to default, and the device will enter DHCP IP configuration.

Default Max Master	Default Min MAC	Default Max MAC	Default Baud rate	
64	1	64	38400	

Note: 0 and 127 mac address reserved for auto mac addressing.

Press Service Button during Normal Operation

During the regular operation of the controller, a short press (< 1 sec) of the service button will cause a service pin message (BACnet WhoAmI as a Private Transfer (SerialNo. = 130)) to be sent.

Synchronization Status

The synchronization status feature displays the status between the project and the controller in the Bacnet network. The engineering tool performs a synchronization check between the project and controller whenever the controller or project parameters are updated.

Ρ	roperty Sheet	
Ŧ	Control Manager (Irm Control Manager)	
	🗎 Author	Demo
	Description	
	Device Model Name	VA75IB24NM
	Application Type	ord.ai2
₽	Application Details	Application Details
	Function Block Family	IrmControl
	Function Block Version	2.0.0.0
	📔 Number Of Folders	4
	Number Of Function Blocks	18
	📔 Number Of Links	0
	📔 Number Of Out Save Enabled Properties	0
	📔 Memory Usage	DDC Memory: 2% of 2.00 MB ▼ Function Block Name/IRM Folder Name/Annotation/ SubFolder Count/Composite Flash Memory Usage: 236 B Consumed ▼
Þ	📔 Flash Memory Exceeded FBs & IRM Folders	Flash Memory Exceeded FBs & IRM Folde
	Controller Hardware Features	1*Service Pin, 5*BO, 1*Flow Sensor, 1*Act
	📔 Hardware Compatibility	Yes
	Controller Connection	Bacnet 🗸
	Teaching Mode	On Demand 🗸
	Measurement Type	SI-Metric 🗸
	📔 Air Flow Unit	Cubic Meter Per Hour
	📔 Drop Of Bacnet Output	Create Ref Output 👻
_	📔 Drop Of Bacnet Value	Create Ref Input 👻
	📔 Is Synchronized	No
	Synchronization Status	Project has modifications
	🚛 Last Program Change	20-Jan-2022 05:39 PM 151
	📔 Last Commissioned	null

Fig. 577 Synchronization Status on Control Manger

This is the list of available synchronization status engineering tool displays is as follows:

- Unknown Controller differs from Project
- In Sync Project has modifications
- Controller is empty
- BACnet Object configuration changed
- Out Of Sync Project is empty
- Project modified and BACnet Object config. changed in controller
- **Important:** The engineering tool displays appropriate messages or notifications while performing any action or change in the controller's status. Read all the messages to avoid misleading or incorrect actions, resulting in the deletion or loss of application data.

Synchronize applications between project and controllers

If inconsistencies occurs between project and controller, the synchronization status displays Out Of Sync.

To synchronize the application perform any of the following actions:

- Teach To Controller: Teach the changes from the project to the controller.
- Learn from Controller: Learn the changes from the controller to the project.
- Check Hw Compatibility: Checks the hardware configuration of the physical controller and the hardware configuration defined in the controller project. Any differences are indicated graphically on the terminals on the wiresheet.
- Check Application Compatibility: Checks the application compatibility in the project and in the controller. See the BACnet device property details.
- Clear Project: Clear the application from the controller.
- Clear Controller: Clear the controller from the database.
- **Note:** If the "Synchronization Status" goes into unknown, perform **IrmProgram > Actions > Ping**.

Device Object Rename

After adding the BACnet device to the network, you can rename the device's name.

- When the controller is online: When you rename a controller, the engineering tool automatically updates the controller name in the Nav tree. You will get the controller's updated name if you run the discover operation.
- When the controller is offline: When you rename an offline controller, the engineering tool keeps track of the changes. Whenever the controller comes online, the engineering tool automatically updates the controller name in the Nav tree.

Steps to rename the device is as follows:

- Step 1. Navigate to the Station > Config > Drivers > BACnetNetwork > IrmBacnetDevice.
- Step 2. Right-click on the IrmBacnetDevice > select Rename.



Fig. 578 Device Rename

Step 3. Enter the required name and click **OK**.



Fig. 579 Rename dialog box

Rename Bacnet Objects

The Rename Bacnet Objects feature is used to customize the BACnet points by adding prefixes and suffixes. Adding prefixes or suffixes will only update the BACnet point name stored in the controller, but not the BACnet point name displayed in the application.



Note: By default Rename Bacnet Objects feature is disabled.



Steps to rename Bacnet objects:

- Step 1. Set **Enabled** option to true.
- Step 2. In the **Prefix Pattern** field, enter the prefix name.
- Step 3. In the **Suffix Pattern** field, enter the suffix name.

The prefix and suffix pattern are both in BFormat strings. To know more details on BFormat click on ② icon seen in the Rename Bacnet Objects view below.

Step 4. Click Save.

Property Sheet	
🗎 Rename Bacnet Obje	cts (Rename Bacnet Objects)
Enabled	🕒 true 🔍
Prefix Pattern	<pre>\$parent.name\$_</pre>
📔 Suffix Pattern	_%parent.parent.name%
Note 🗋	Changes to Rename Bacnet Objects configuration requires teach/full teach to controller.

Fig. 581 Rename Bacnet Objects

You can verify the updated bacnet point name in Irm Bacnet Point Manager view.

Step 5. Expand BacnetNetwork > Controller, right-click on Points > Views> Irm Bacnet Point Manager and select Offline discovery.

: Drivers : BacnetNetwork : IrmBacnetDevice : Points	💉 Irm Bacnet Point Manager
RM Offline Discovery	Success ≫ 🕱
Discovered	0 objects
Object Name Object ID Property ID Index Value Description	(¢
Database	0 objects
Name Out Object ID Property ID Index Read Write	(U
New Folder New Sedit Cancel 💮 Add	d ≽ Match 🖏 Tagit
<u>O</u> nline	
✓Offline	

Fig. 582 Offline Point Discovery

Step 6. Click **Discover**.

IRM Offline Discovery					
Discovered					
Object Name	Object ID	Property ID	Index	Value	Description
	multiStateValue:1	presentValue			
IrmBacnetDevice_BacnetBooleanValue_BacnetNetwork	binaryValue:1	presentValue			
🗄 🔃 IrmBacnetDevice_BacnetNumericValue_BacnetNetwork	analogValue:2	presentValue			
	multiStateValue:2	presentValue			
	binaryValue:2	presentValue			
	analogValue:3	presentValue			

Fig. 583 Renamed Bacnet Points

Step 7. Run **Teach To Controller** or **Teach Full Application To Controller** to apply the changes to the controller.

Also, you can rename BACnet points for multiple controllers from the Irm Bacnet Device Manager view.

Steps to Rename BACnet points of multiple controllers:

- Step 1. Right click on BacnetNetwork > Views > Irm Bacnet Device Manager.
- Step 2. Select the controllers and click **Rename Bacnet Objects**.

Database														3 obje
Name	Device ID	Status	Netwk	MAC Addr	Model	Firmware Rev	Serial No	Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Irm Master Sync	Passv
VAV_ISF1_HX_FX_IM	device:1000	{ok}	1	169.254.1.75:0xBAC0	VA75IBWA24NM	1.0.1.31	00000b7fcb992f4b	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	24-May-22 2:41 PM IST	None	Defau
VAV_ISF1_HX_FX_IM1	device:-1	{fault,stale}	0	null	VA75IBWA24NM	1.0.1.31		IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Unknown	24-May-22 2:41 PM IST	None	Un Kn
VAV_ISF1_HX_FX_IM2	device:-1	{fault}	0	null	VA75IBWA24NM	1.0.1.31		IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Unknown	24-May-22 2:41 PM IST	None	Un Kn
	Image: Second Objects X Image: Second							X to controller.						
					OK	Cancel								
•		1.0						1	<i>m</i>	1		1 0	_	
C New Folde	er 👍 Ne	W Ed	lit	Discover	Cancel (+) A	dd >>> Mat	Ch () TSynch	DeviceID	MAC Config	P Config	BLE Config	Swap Out Swa	apin	
t as Source 🚽 Set	as Source 🚽 Set as Target 📄 Set as None 📎 Master Sync 🗳 Split-off Application 🌈 Clone Application 🚉 Clear Project 🗶 Clear Controller 🙏 Update All BACnet Objects 🛃 Generate Balancing Report													
to Controller	to Controller 🛃 Application Full Teach to Controller 🚯 Learn from Controller 👌 Download BLE Firmware 🛃 Download Firmware													

Fig. 584 Rename BACnet points from Irm Bacnet Device Manager View

- **Note:** The Rename Bacnet Objects feature displays default settings if you select multiple controllers. When you select a single controller, the Rename Bacnet Objects feature will display the settings that existed in the controller.
 - Step 3. Set **Enabled** option to True.
 - Step 4. In the **Prefix Pattern** field, enter the prefix name.
 - Step 5. In the Suffix Pattern field, enter the suffix name.
 That prefix pattern and suffix pattern are both in BFormat strings. To know more details on BFormat click on ⑦ icon.
 - Step 6. Click Save.
 - Step 7. Run **Teach To Controller** or **Teach Full Application To Controller** to apply the changes to the controller.

Irm Controller Diagnostics

The Irm controller diagnostics primarily monitors the activity in the control engine, BACnet, Modbus trace, and Sylk trace.

Important: The tool's default setting hides the Irm controller diagnostics feature. You must unhide Irm controller diagnostics in order to use this feature.

Pı	roperty Sheet	
6	IRM Program (Irm Program)	
	Execution	0
		DDC Memory: 2% of 48.0 KB
	Memory Usage	Function Block Name/IRM Folder Name/Annotation/ SubFolder Count/Composite Flash Memory Usage: 0% of 900 B
	📔 Sub Folder Count	0
	Function Block Count	0
Þ	🗸 Control Manager	Irm Control Manager
	📔 Wiresheet Poll Frequency	Normal 👻
	📔 Unique Number	0
•	Irm Controller Diagnostics	Irm Controller Diagnostics
	📔 Control Engine 🛛 🛑 fal	lse 🔽
	📔 Bacnet 🛑 fal	lse 🗸
	📔 Modbus Trace 🔴 fa	lse 🗸
	📔 Sylk Trace 🛑 fal	lse 🗸
Þ	뤔 Periodic program	Irm Folder (Periodic program)
Þ	🕞 Event program	Irm Folder (Folder)
Þ	🕞 On board IO	Irm Folder (Folder)
Þ	Alarms	Irm Folder (Folder)

Fig. 585 Irm Program property sheet

- **Control Engine:** To collect logs for the function blocks. These logs are utilized to identify the functionality issues in the function block.
- **Bacnet:** To monitor the BACnet network traffic between engineering tool to controller or vice-versa.
- Modbus Trace: To monitor Modbus RS-485 connection activity.
- Sylk Trace: To monitor configured Sylk device activity.
- **Note:** You should enable one of the parameters (control engine or BACnet or Modbus trace or Sylk trace) at a time for diagnostic.

Steps to access Irm Controller Diagnostics option:

- Step 1. Navigate to **BacnetNetwork > IrmBacnetDevice.**
- Step 2. Right-click IRM Program > Views > select AX Slot Sheet and locate irmControllerDiagnostics property in the Slot Sheet.
- Step 3. Right-click **irmControllerDiagnostics** property and select **Config Flags**.
- Step 4. In the **Config Flags**, uncheck the **Hidden** option.
| Slot Sheet | : | | | |
|------------|----|--------------------------------------|-------------------|---------------------------|
| Slot | # | Name | 🏰 Config Flags | × |
| O Property | 31 | vuniqueNumber | | _ |
| O Property | 32 | programDeleted | Operator | No Audit |
| O Property | 33 | sylkParameterSummary | Confirm Required | Composite Remove On Clone |
| O Property | 34 | sylkDeviceSummary | Execute On Change | Metadata |
| O Property | 35 | irmControllerDiagnostics | Transient | Link Target |
| O Action | 36 | ping | Summary | Non-Critical |
| Action | 37 | teachToController | No Run | User Defined 1 |
| Action | 38 | teachFullApplicationToController | Fan In | User Defined 2 |
| O Action | 39 | generateApplicationFileAndSaveToFile | ✔ Hidden | User Defined 3 |
| O Action | 40 | learnFromController | Default On Clone | User Defined 4 |
| O Action | 41 | checkHwCompatibility | Async | |
| O Action | 42 | checkApplicationCompatibility | ОК | Cancel |
| Action | 43 | clearController | Clear Control | ler |

Fig. 586 Slot Sheet

Step 5. Click **Ok.**

The Irm controller diagnostics feature is visible in the IrmProgram property sheet.

Steps to use Irm Controller Diagnostics:

- Step 1. Navigate to **BacnetNetwork > IrmBacnetDevice.**
- Step 2. Right-click **IRM Program > Views >** select **AX Property Sheet.** This opens the Bacnet Program property sheet.
- Step 3. Right-click **Irm Controller Diagnostics > Action > Start Diagnostics.** This action starts the diagnosis of the selected a parameter.
- Step 4. Right-click **Irm Controller Diagnostics > Action > Stop Diagnostics.** This action stops the diagnosis process and generates a Diagnostics report.
- Step 5. Right-click **Irm Controller Diagnostics > Action > Read Diagnostics**. This action generates the diagnostics file.



Fig. 587 Irm Controller Diagnostics

Step 6. Open the CentraLine-N4 console, check the location of the Diagnostics file and navigate to the location.

INFO	[16:03:51	10-Jun-21	IST][honIrmConfig.manager]] Serial Number for device:131 = 0000-0000-0000-0000
INFO	[16:03:51	10-Jun-21	IST][honIrmConfig.manager]] Registered Nano Fb Family: IrmControl ver 3.0.0.0
INFO	[16:03:51	10-Jun-21	IST][honIrmConfig.manager]] Serial Number for device:1000 = 00000b7feaba88af
INFO	[16:03:51	10-Jun-21	IST][honIrmConfig.manager]] Serial Number for device:1002 = 00000c7feec88c59
INFO	[16:06:06	10-Jun-21	IST][honIrmConfig.manager]] Diagnostics File printed to C:\Users\\Niagara4.8\tridium\shar
ed\CP	O-VA75IBW	A24NM_Diag	CPO-VA75IBWA24NM	
INFO	[16:16:50	10-Jun-21	IST][honIrmConfig.manager]] Diagnostics File printed to C:\Users\\Niagara4.8\tridium\shar
ed\CP	O-VA75IBW	A24NM_Diag	CPO-VA75IBWA24NM	

Fig. 588 Console

Share that Diagnostics file with the technical support team to resolve the issue in the controller.

Note: Currently, you can generate diagnostics reports for a single controller at a time.

Modifications and Consistency Check

When working on the application, the control manager detects every modification and is indicated graphically by a yellow warning symbol that replaces the original symbols at the modified item on the wire sheet and in the tree.

Important: This feature is applicable when the Teaching mode is set to On Demand. If the Teaching mode is set to Immediate, the changes are not indicated graphically on the wire sheet in the workbench since they are written instantly to the controller.

Controller Connection	Bacnet 🗸
📔 Teaching Mode	On Demand 🚽
Measurement Type	Immediate
🎦 Air Flow Unit	On Demand

Fig. 589 Teaching Mode

Note: If you perform a cut and paste or copy and paste action on multiple functional blocks in Immediate mode, the controller will go out of sync. If this happens, you must perform **Teach To Controller**. When moving or copying multiple function blocks from one folder to another, On demand mode is recommended.

On the property sheet of the controller manager, the synchronization status switches accordingly.



Fig. 591 Non-synchronous States

Depending on where the application is created (station) or changed (station or controller), the application must be taught to the controller or learned from the controller to achieve synchronization. In both cases, if required, the controller or the project must be cleared first.

Configure the Character Set

Steps to set the Character Set to ISO 10646_UTF8:

- Step 1. Go to **BacnetNetwork** property sheet.
- Step 2. Under Local Device property, set the Character Set to ISO 10646_UTF8.

📔 Character Set	Iso10646_UTF8 🗸
Enumeration List	Extensible Enum List
Export Table	ExportTable:0
Time Synchronization Recipients	8

Fig. 592 Character set

Bluetooth configuration is applicable for IP/MSTP VAV controllers.

Important: Ensure to check the following points before performing Bluetooth configuration.

- All IP and MSTP controllers support the UTF-8 format. Therefore, when a user sets the device name using the device object, the tool will write the data in the UTF-8 format.
- If the "Character Set" is not set to UTF-8, the controller will not displayed in the "Device Discovery page" of the VAV Balancing app.

Before changing the controller name, ensure that the Bacnet network is configured for character set UTF-8, or else the VAV balancing app device discovery page will not display the controller.

Bacnet Object limits in the Application

Unsupported linking within the Irm Bacnet Device may result in unintended outcomes. According to a reasonable "thumb rule" all slots accessible by default when adding an function block to the wire sheet are suitable for linking.

The function blocks in the honIrmControl palette provide a lot of flexibility when developing control applications.

For example, if a user wanted to change the lowLimit and highLimit parameters of a Sylk NetworkSetpoint block from the network, the link would be unsupported. These issues are not displayed in the function block by default. They can, however, be made to appear as composite slots, as shown in Fig. 594. After compositing, external data can be attached to them, as shown in Fig. 401 on page 401.

Composite Editor						×
Composite Editor Expose child slots as slots on the parent						
(+) Add	🔶 Revei	rse I R	ename	🗙 Remove	🛦 Move Up	Wov
RoomSpt	Direction	Slot	Ord			Ę
💌 🗱 Sylk Config Data	┥ In	lowLimit	sylkCon	figData/RoomSpt	/tR4XConfig/lowl	Limit
Master Sync Enabled	∢ In	highLimit	sylkCon	figData/RoomSpt	/tR4XConfig/high	Limit
- RoomSpt						
sylkDevice						
status						
faultCause						
📄 sendinterval (seconds)						
category						
paramPermissions						
enableFD						
allowNullValue						
tR7XConfig						
Display Type						
Setpoint Type						
Number Of Decim						
📔 Wiresheet Unit						
📄 Increment/Decren						
Low Limit						
📔 High Limit						
*						
			-			
	ОК	Cance	el			





Fig. 594 Linking to Composite slots

The configuration displayed in Fig. 400 on page 400 and Fig. 595 is invalid. Changes to the limitations made during runtime via the BACnet objects will not be propagated to the controller. Furthermore, if you use Maser Sync to change the limitations in the RoomSpt property sheet, the property values will not be sent to the target devices.

In most cases, alternate logic that does not rely on unsupported linkages can be used to satisfy the required sequence. On the Room Spt block, Fig. 595 shows how to enforce setpoint relationships without using composites.



Fig. 595 Enforce setpoint without using composites

The IrmFolder and IrmSubFolder components only provide partial support for the composite feature. When using them to expose a function block slot, a good "thumb rule" to follow is to only make slots visible at the function block's top level. It is not required to drill into the child objects underneath a function block. For example, In and Out slots of Room Spt appearing in and out are eligible for usage in a composite. However, the lowLimit and highLimit values shown in Fig. 596 are invalid.



Fig. 596 Valid composite slots for IrmFolder and IrmSubFolder



Fig. 597 Invalid composite slots for IrmFolder and IrmSubFolder

Download Bluetooth Firmware

Steps to download Bluetooth Firmware:

- Step 1. Right-click on BacnetNetwork > Views > Irm Bacnet Device Manager view.
- Step 2. Select all the IP or MSTP devices from the device list.
- **Note:** Download BLE Firmware option will not be available, if any unsupported device is selected from the device list.
 - Step 3. Select **Download BLE Firmware**.
 - Step 4. Navigate to the firmware file and click **open**.

	💰 File Chooser										\times										
	File Spaces	R	Curre	nt Path																	
	Autoria Contra		C:/Es	vari_202	1/IRM/J	uly 20	20/IRM_IP	VAV Proj	ject/L	ATEST Firmware_V0.0.0.28											
	ChryFile System																				
	Omymodules			_VAVA_	P_V0.0.0.	28.bin	n														
Databas	5								Ι.												
Name	Bookmarks	21			"	632 KB	"		Irm Family	Irm Program Name	Irm Application Type	Irm Synch Status	Irm Last Change	Password Status	Auto Mac	Swap Status					
🔒 VAV_IS		-					27-May-214:30 PM IST		18	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	*VA75IBWA24NM:00000b7f	26-Aug-21 6:28 PM IST	Default Password	Enabled	Swapped In				
a vav_isi												18	IrmControl 2.0.0.0	IrmProgram	vc6_gjk	Project has modifications	26-Aug-21 5:29 PM IST	None	Default Password	Enabled	Swapped In
			ile nar	ne: NT	a vava	TP V	70 0 0 28	hin		Op	en										
		F	iles of	type: Al	l Files (*.*)				Can	ncel										
				🖸 New	Folder	Ē	New	. 🖉 E	dit	m Discover	ancel	1	🕀 Add ≽	Match 🕒 TSyno	h 🛕 DeviceID	💮 MAC Config 🔞	IP Config 🚯 B	LE Config	Swap Out	Swap In	
	0	Set or	Sour		e tos là	e Tarr		Set as	Nor	Maeter Sync	46	Sol	lit-off Applicatio	Clone Anni	ication 🖻 Clear	Project Clear Co	ntroller 🕇 Und	ate All BACnet Ob	iacte 📕 Gan	erate Balar	cing Penort
	V	Set as	- 30 u ii		2 Set a	s raig	Rer	J Set a:	SNUI	// Master ayric		Sh	пс-оп аррисано	I I Come whh	Le cicai	Fioject A clear co	introtter opu	ate All DACHELOD	Jects den	crate batan	icing keport

🛓 Teach to Controller 👌 Application Full Teach to Controller 👌 Learn from Controller 👌 Download BLE Firmware 👌 Download Firmware

Fig. 598 Download Bluetooth Firmware

Step 5. Check the job log to get the status of the Bluetooth firmware download.

🕌 Job Log			
Status	Timestamp	Message	Details
i Message	29-Jun-21 3:46 PM IST	Bluetooth Firmware file download STARTED	
1 Message	29-Jun-21 3:46 PM IST	Download started for the device :: 1025 :: VAV_ISF1_HX_FX_SI	
i Message	29-Jun-21 3:46 PM IST	Download Completed for the device :: 1025 :: VAV_ISF1_HX_FX_SI	
Success	29-Jun-21 3:46 PM IST	Bluetooth Firmware file download completed.	
Success	29-Jun-21 3:46 PM IST	Job Success	
		ок	

Fig. 599 Job Log

- Step 6. Click **OK**.
- Step 7. Power cycle the controller.

Troubleshooting Modbus Communication

For a first communication test, connect only one Modbus device using a short cable (cable less than 10 feet in length).

Steps to verify Modbus communication:

- Step 1. Create one read point, and the read point should have a known value that can be verified.
- Step 2. Verify that the T2 and R2 LEDs are flickering (indicating data communication). Use the engineering tool to verify that the Modbus data can be read and written.
- Step 3. T2 LED indicates sending a request message to a Modbus Device, and R2 LED indicates receiving an answer message from the Modbus Device.

Possible error causes could be wrong settings for Baud rate, Parity, and Stop bits.

The function block Modbus Read Point has two outputs.

- **Out:** Received value from the Modbus device.
- **Out Cause:** Error code. 0 = no error; Further values are listed in the Niagara Guide Help of the Modbus Read Point function block. Out Cause pin slot is not visible by default and needs to be enabled.

Possible error causes:

- Reverse Modbus polarity.
- The polling interval defined in Operation Mode is too short (Out Cause = Timeout = 8). Some devices do not support fast polling and, therefore, might not respond in time.
- **Note:** Modbus device failure behavior: If a Modbus device does not respond to a register poll command, the register is entered into the list of "Failed Registers." After that, the IRM NX controller polls this single register only every 10 seconds. If the register could be read successfully, the register is read again in the defined interval.
 - Read/Write Point Address Offset +1/-1
 - Device Setting Byte order
 - Step 4. Once this is working properly, add the next Modbus device.

Flow Balancing Troubleshooting

If you run the flow balancing tool without configuring the VAV application, the application will generate an error.



Fig. 600 Error message for unconfigured flow balancing tool

• If you run the flow balancing tool with an incorrect network interface, the application displays error.



Fig. 601 Error message for incorrect network interface

• If you run the flow balancing tool, the application will generate an error when the device is offline.



Fig. 602 Error message for offline device

• If you run the flow balancing tool, when the tool doesn't have enough objects to balance, the application will generate an error.



Fig. 603 Error message for insufficient objects to balancing

APDU Size and Segmentation Errors

A Teach full application to controller may be required if the maximum APDU size and segmentation supported under device object properties are not updating in the controller, resulting in commissioning failures.

년	Property Sheet	
My Network	Device Object (Bacnet Device Object)	
	Poll Frequency	Normal -
WEB-VA75IB24NM	🗎 Status	{ok}
Alarm Source Info	Fault Cause	
Points	Dbject Id	device -1
Virtual	Object Name	WEB-VA75IB24NM
Alarms	Object Type	Device
Schedules	System Status	Operational
Trend Logs	Vender Name	
Config	Vendor Identifier	noneyweii international inc.
Device Object		
IP Settings	Model Name	VA001B24NM
BLE Configuration	Firmware Revision	1.0.1.32
Rename Bacnet Objects	Application Software Version	VAV.16777216.0.0_0_0.
RM Program	Protocol Version	1
Control Manager	Protocol Revision	14
Periodic program	Protocol Services Supported	11000111110010111100100000101010110100010 ₹
Event program	Protocol Object Types Supported	111111101000001101010000000000000000000
On board IO	Max A P D U Length Accepted	1476
Alarms	Segmentation Supported	Segmented Both
	📔 Apdu Timeout	3000
	Number Of A P D U Retries	2
	Device Address Binding	8
	Database Revision	206

Fig. 604 APDU Size and Segmentation Supported

Important: Application Download Failure: A download of an application may fail for a different reason. In the Jobs Sidebar, an error message appears. Parts of the application may have already been downloaded to the controller during a failed application download. The IRM controller could be started and operated using such application parts. This can cause damage the controllers.

Solution: If the application download fails, clear the controller and re download the application to avoid damage to the controller or the environment.

Value Updates after Device Power Failure

If a device had a power failure and the device is restarting, it will take 3 - 5 minutes until the values will be updated in the wire sheet. To accelerate the value update on the wire sheet, please manually refresh the wire sheet by navigating to another page and returning to the wire sheet.

RJ45 Connector for BACnet WiFi Adapter

A BACnet Wifi Adapter can be connected to the controller's RJ45 connector in order to establish wireless communication with a PC with COACH NX so that the application engineer can commission the controller.

Recommendation:

- Maximum10 devices connected to the controller's BACnet MSTP interface.
- Max Master for all the controllers which is connected to the Adapter via MSTP has to be 35, since BAC-A Adapter Max Master is 35.
- **Note:** When the BACnet Wifi Adapter is connected to the controller's RJ45 connection, it is powered by the controller. It is then prohibited to simultaneously power the BACnet WiFi Adapter via a wall adapter. When, on the other hand, the BACnet WiFi Adapter is instead connected to the controller's BACnet MSTP interface, it is prohibited to simultaneously use an RJ45 plug; instead, the BACnet WiFi Adapter must then be powered by a wall adapter (standard 5-V USB wall adapter with micro USB connector).
- **Note:** When using the BACnet WiFi Adapter (BACA-A) to commission the controllers, the following steps should be followed:

1) Set the property maxMaster to a value of 35 for all controllers on the MSTP bus to which the BACnet WiFi Adapter is to be connected.

2) Ensure that one of the following MAC addresses is free on this MSTP bus: 31 or 32 or 33 or 34.

3) Connect the BACnet WiFi Adapter to the MSTP bus.

Caution: It is permitted to connect only the BACnet WiFi Adapter to this RJ45 connector. Do not connect IP.



Fig. 25. RJ45 interface and BACnet WiFi Adapter

For more details on install BACnet Wifi Adapter, refer BACnet Wifi Adapter (BACA-A) - Mounting / Operating Instructions guide - MU1B0592-GE51.

Steps to configure BACnet WiFi Adapter

- Step 1. Run Niagara Workbench and add BacnetNetwork under supervisor station.
- Step 2. Expand BACnetNetwork.



Step 3. Expand Bacnet Comm > Network > double-click on IP Port.

Property Sheet		
📔 Ip Port (Network Port)		
Network Number	1	
🔻 🃔 Link	B/IP (192.168.9	92.69:0xBAC0) Standard
) Adapter		Intel(R) Wireless-AC 9560 160MHz
Ip Address		none
🗎 Udp Port		Microsoft Wi-Fi Direct Virtual Adapter #5
Ip Device Type		Intel(R) Wireless-AC 9560 160MHz
Bbmd Address		null
Registration Lifet	me	+00000h 15m 00s
🕨 隌 Broadcast Distrib	ution Table	BDT: 0 entries
🕨 🍞 Foreign Device Ta	ble	Foreign Device Table
) Bbmd Debug		🛑 false 🔍
📔 Status	{ok}	
📔 Fault Cause		
Poll Service	BacnetMultiPo	əll
Max Devices	max	
Enabled Enabled	🔵 true 🚽 🗸	
Port Id	1	
Port Info	Annex J IP	

- Step 4. Select the BACnet Wifi adapter from drop-down list. Make sure the Station and BACnet Wifi adapter in same subnet in the computer.
- Step 5. Click Save.

Fixing Function Block Link Issue

Links are the primary mechanism of execution flow in the CentraLine-N4 Framework. Links allow components to be wired together graphically by propagating an event from one slot to another slot.

A link is used to establish an event relationship between the source link and the target link. The source link generates an event when the output slot value gets modified and the value propagated to the input slot of the target link.

Note: Connecting a target function block slot from two different source function blocks is not supported by the engineering tool. By enabling the "FanIn" flag, users can override the default CentraLine-N4 behavior and connect from more than one source slot. But this is invalid procedure for creating invalid links in the engineering tool. The background verification process in the engineering tool prevents the user from enabling the fan-in flag.



Fig. 605 Link Creation

To resolve this issue, the user must install the most recent engineering tool. This prevents the user from changing the FanIn flag and displays an error message.

N En	ror X
3	Could not invoke the command "Config Flags". FanIn flag not allowed, component cannot be linked from two source components to single slot.

Fig. 606 Error Message

If the FanIn flag is enabled in any of the existing stations, then user will unable to launch the station using the latest engineering tool version. The user need to remove the FanIn flag first, delete if there are multiple links to the same slot, and then launch the station using the latest engineering tool.

Workaround for Tuning Policy behavior issue

Scenario 1

When the IRM NX controller is online, if you set the **Use Cov Property** to true and **Tuning Policy Name** property to **IrmTuningPolicy**.

Issue: If you perform the clear controller operation, the IRM NX controller and BACnet points will go offline.

Add							Property Sheet			
Add							X IrmTuningPolicy (Bacnet Tuning Policy)			
Name	Туре	Enabled	Object ID	Property ID	Index	Tun	🗎 Min Write Time	00000h	00m 00s 🗮 [0ms-+	-inf]
BacnetNumericValue	Numeric Point	true	analogValue:1	Present Value	-1	IrmT	Max Write Time	00000h	00m 00s 🚆 [0ms-+	·inf]
🗎 Name	BacnetNume	ricValue]			📔 Write On Start	🔵 false	: •	
Туре	Numeric Po	int	2				Write On Up	false		
Diject ID	Analog Val	ue	~ 1				Write On Enabled	false	2	
Property ID	Present Va	lue					📔 Stale Time	00000h	00m 00s ≝ [0ms-+	-inf]
Tuning Policy Name	IrmTuningE	olicy					Poll Frequency	Slow	-	
Data Type	REAL	3			A-B		📔 Use Cov	🔵 true		
🗎 Read	unsubscrib	ed			A-B		📔 Use Confirmed Cov	🔵 true		
Write	readonly				₩B A⊐		Cov Subscription Lifetime	15	min	
Device Facets	priPV=false,ur	nits=null,Av	ailableBacnetPro	operties=; 》	•	-	📔 Use Cov Property	🔵 true	-	
Facets	units=null,Ava	ailableBacn	etProperties=;75	;77;79;85; 》	9	•	📔 Use Confirmed Cov Property	🔵 true	-	
Conversion	1 Default						Cov Property Increment	1.00		
<							Cov Property Subscription Lifetime	15	min	
			ок	Cancel			Accept Unsolicited Cov	🛑 false	•	

Fig. 607 Tuning Policy Name property

Solution 1: While assigning points to a BACnet device, set the **Tuning Policy Name** property as **Default Policy** (without COV mode).

Or

Go to **Points**, double-click on the point to open the property sheet, and set **Tuning Policy Name** property as **Default Policy**. The controller will be online in a few seconds.

Name	Туре	Enabled	Object ID	Property ID	Ind	ex	Tuning Policy Name	Data Type	Read
BacnetNumericValue	Numeric Point	true	analogValue:1	Present Value	-1		defaultPolicy	REAL	Object:
Name	BacnetNume	ricValue]					
Туре	Cannot edit								
Enabled	🔵 true	-							
Dbject ID	Analog Val	ue	- 1						
Property ID	Present Va	lue							
Index	-1								
Tuning Policy Name	Default Po	licy [
Data Type	REAL				⊫B A=1				
Read	Object:Unk	nown Obj	ect		A-B				
Write	readonly				#8 A-1				
Device Facets	priPV=false,ur	nits=null,Av	ailableBacnetPro	operties=; >	>	•			
Facets	units=null,Ava	ailableBacn	etProperties=;75	;77;79;85;)	>	9	•		
Conversion	TE Default								

Fig. 608 Editing Point Property

Solution 2: Go to **BacnetNetwork**, double-click on the controller to open the property sheet, and set the **Use Cov** property to **False**. The controller will be online in a few seconds.

Name	Туре	Device ID	Netwk	MAC Addr	Enabled	Use Cov	Use Cov Property	Max Cov Subsc
WEB-VA75MB24NM4	rm Bacnet Device	device:-1	0	null	true	false	false	max
Name	WEB-VA75M	B24NM4						
Туре	Cannot edit							
Device ID	device	-	-1					
Netwk 0 [0-65535]								
MAC Addr	null							
Enabled	🔵 true	•						
Use Cov	🛑 false	-						
Use Cov Property	🛑 false							
Max Cov Subscriptio	ns true							

Fig. 609 Editing Controller Property

Scenario 2

When the IRM NX controller is online, if you the set the **Tuning Policy Name** property as **Irm Tuning Policy** in the Global VAV template or Venom template.

Issue: The controller will go offline if the match operation is performed on an online device.

Solution: When creating a template, make sure that all of the points are disabled by default.

Cfg_ParFanTempEnSo	Numeric Writable	e false	analogValue:211	Present Value	-1	IrmTuningPolic
SharedWMRmTemp	Numeric Writable	e false	analogValue:1089	Present Value	-1	IrmTuningPolic
3 SharedWMSp	Numeric Writable	e false	analogValue:1090	Present Value	-1	IrmTuningPolic
Cfg_SaTempOffset	Numeric Point	false	analogValue:1165	Present Value	-1	IrmTuningPolic
SaEffTemp	Numeric Point	false	analogValue:1166	Present Value	-1	IrmTuningPolic
SharedOccMd	Enum Writable	false	multiStateValue:84	Present Value	-1	IrmTuningPolic
Cfg_SaTempSp	Numeric Writable	e false	analogValue:204	Present Value	-1	IrmTuningPolic
Cfg_OccHtgSp	Numeric Writable	e false	analogValue:179	Present Value	-1	IrmTuningPolic
EmgMd	Enum Writable	false	multiStateValue:86	Present Value	-1	IrmTuningPolic
Cfg_MasterSelect	Enum Writable	false	multiStateValue:52	Present Value	-1	IrmTuningPolic
Cfg_MaxHtgStg	Enum Point	false	multiStateValue:80	Present Value	-1	IrmTuningPolic
TR23_RmLED	Numeric Writable	e false	analogOutput:67	Present Value	-1	IrmTuningPolic
Cfg_DmprDriveTime	Numeric Point	false	analogValue:5	Present Value	-1	IrmTuningPolic
Name	DamperCtrl					
Туре	Cannot edit					
Enabled	🛑 false 🚽 🚽					
Object ID	Analog Output	-	59			
Property ID	Present Value		V			
Index	-1					
Tuning Policy Name	IrmTuningPolicy	-				
Data Type	REAL			-B		
Read	Object:Unknown Obj	ject		-B A-1		
Write	Read Only			B		
				0		
Device Facets	units=%,AvailableBacnet	Properties	=;75;77;79;85;111 >	· · ·		
Device Facets	units=%,AvailableBacnet	Properties	#;75;77;79;85;111 》	· · ·		

Fig. 610 Points edit window

While performing the match operation between the template and the device, do not set the **Use Cov** property to True.

Edit								×
Name	Туре	Device ID	Netwk	MAC Addr	Enabled	Use Cov	Use Cov Property	Max Cov Subscr
WEB-VA75MB24NM	Irm Bacnet Device	device:1002	5	55	true	false	false	max
Name	WEB-VA75	MB24NM						
Туре	Cannot edi	t						
Device ID	device	•	1002					
🗎 Netwk	5	[0-6	5535]					
MAC Addr	55							
Enabled	🔵 true	•						
🗎 Use Cov	🛑 false	-						
Use Cov Property	🔵 false	-						
Max Cov Subscript	tions max							
								E E
		l	ОК	Cance	l			

Fig. 611 Use Cov Property

Important: Disable the BACnet points if the TuningPolicyName property is IrmTuningPolicy. You can enable the points after commissioning or teach the controller operation.

Replacing Defective Controller

Use this method to replace defective controller with the new controller. When a controller become defective it become inoperative. You can replace the defective controller with new controller and restore the configuration and application data to the new controller.

Note: When replacing the MSTP controller, make sure the max master is within the same range as the other controllers in the network.

Steps to replace defective controller with new controller:

- Step 1. Replace defective controller with new controller and connect to the **Bacnet Network**.
- Step 2. Navigate to the **Irm Bacnet Device Manager** view and click **Discover**. The new controllers in the Bacnet Network are discovered.

Note: The new controllers is in factory default state.

Discovered									2 objects
Device Name	Device ID	Netwk	MAC Addr	Vendor	Model	Objects	Serial No	Service Pin Rank	(P
🖀 Spyder Model 5 or Spyder Model 7	device:1000	1	169.254.1.68:0xBAC0	Honeywell International	Inc. VA00IB24NM	12	00008a8280000143		
🖀 Spyder Model 7	device:2	0	null	Honeywell	VA00IB24NM	222	8A8280000147	1	
Database									0 objects
Name Device ID Status Netwk	MAC Addr	Model	Firmware Rev Seria	l No Irm Family Irm P	rogram Name	Irm Applica	ation Type Irm Syn	ch Status Irm Last Change Irm Master Sync Password Status Auto Mac Swap Status	th

🗈 New Folder 🗋 New 🖋 Edit 👬 Discoveri 🖩 Cancel 📀 Add ≽ Match 🕐 Tsynch 🛕 DeviceID 🔤 MAC Config 🔄 IP Config 🚱 BLE Config 🔂 Swap Out 🕞 Swap In

🕞 Set as Source 🔄 Set as Target 📄 Set as Target 📄 Set as None 🐊 Master Synce 🏐 Split off Application / Clone Application / Clone Application 🔁 Clear Project 🔀 Clear Controller 🙏 Update All BACnet Objects 🛓 Generate Balancing Report

🛃 Teach to Controller 👌 Application Full Teach to Controller 👌 Learn from Controller 👌 Download BLE Firmware 👌 Download Firmware 👌 Download Firmware

Fig. 612 Discovered Controller

Step 3. Select the new controller from the Discovered section and the existing controller from the Database section.

🕗 🥕 Ba	acnet Discov	er Devices												Succ	ess)	▶ [×
Discove	ered														1	21 obje	ects
Device Na	me	Device ID	Netwk	MAC Add	lr	Ve	endor			Мо	odel	Objects	Serial N	lo	Serv	ice Pir	ı 🛱
Spyder	Model 7	device:3004	212	8		н	oneyw	ell Inter	national Inc.	VA	00IB24NM	9	0000088	04001cc72			^
🖀 Spyder I	Model 7	device:2103	21	3		н	oneyw	ell Inter	national Inc.	VA	001B24NM	73	00000c	0400f3a51			
🖀 Spyder	Model 7	device:2008	212	10		He	oneyw	ell Inter	national Inc.	VA	00IB24NM	91					1
Spyder	Model 7	device:2105	21	4		н	oneyw	ell Inter	national Inc.	VA	00IB24NM	8	00000c	0400f3a4d			
€			1													÷	Ť
Databa	se															1 ob	jects
Name	Device ID	Status			Netwk	MAC A	\ddr	Model	Firmware	Rev	Serial No	Irr	n Family	Irm Progr	am Na	ame	ln ₽
🖀 RL6N	device: -1	{down,ala	rm,unack	edAlarm}	0	null		VA00IB24NM	4		00000c0400f	3a51		IRM Progra	m		

Image: New Folder I

Fig. 613 Irm Bacnet Device Manager View

The new controllers properties matched to the existing controller indicated in the Database section.

If desired, you can change the name, device id, network number, and MAC address, and enable Use Cov by selecting "true" from the drop-down list.

- Step 5. Click OK.
- Step 6. Perform the hardware compatibility check to ensure that the application is appropriately designed to run seamlessly in the created device.

Step 7. Click Teach Full Application to Controller.

Note: If a large application is created in the controller, it is recommended to perform Teach Full Application To Controller.

Step 4. Click Match.

Configure IP Address Of Computer

There are two ways to configure the IP address on a computer.

- Obtaining IP address automatically
- Manually configuring TCP/IP Properties

Obtaining IP address automatically

- Step 1. Go to Internet Protocol 4 (TCP/ IPv4) properties.
- Step 2. Set **Obtain an IP address automatically** and **Obtain DNS server address automatically**.
- Step 3. Click **OK** to save the settings.

Internet Protocol Version 4 (TCP/IPv4) Properties							
General Alternate Configuration							
You can get IP settings assigned autor this capability. Otherwise, you need to for the appropriate IP settings.	matically if your network supports o ask your network administrator						
Obtain an IP address automatical	lly						
OUse the following IP address:							
IP address:							
Subnet mask:							
Default gateway:							
Obtain DNS server address autor	matically						
Use the following DNS server add	dresses:						
Preferred DNS server:							
Alternate DNS server:							
Validate settings upon exit	Advanced						
	OK Cancel						

Fig. 614 Automatic IP Address Configuration

Manually configuring TCP/IP Properties

- Step 1. Go to Internet Protocol 4 (TCP/ IPv4) properties.
- Step 2. Select **Use the following IP address**, type IP address, subnet mask and default gateway IP address into it.

If the router's LAN IP address is 169.254.1.0, please type in IP address 169.254.1.x (x is from 2 to 253?, subnet mask 255.255.255.0, and default gateway 169.254.1.1.

Step 3. Select Use the following DNS server addresses.

You can keep Preferred DNS server and the Alternate DNS server blank.

Step 4. Click **OK** to save the settings.

Internet Protocol Version 4 (TCP/IPv4) Properties					
General					
You can get IP settings assigned auton this capability. Otherwise, you need to for the appropriate IP settings.	natically if your network supports ask your network administrator				
• Use the following IP address:					
IP address:	169.254.1.0				
Subnet mask:	255.255.0.0				
Default gateway:	169.254.1.1				
Obtain DNS server address auton	natically				
• Use the following DNS server add	resses:				
Preferred DNS server:					
Alternate DNS server:					
Validate settings upon exit	Advanced				
	OK Cancel				

Fig. 615 Manual IP Address Configuration

Step 5. Click **OK** to save and apply your settings.

Ethernet 7 Properties	×
Networking Authentication Sharing	
Connect using:	
🚍 Dell Giga Ethernet	
Confi	gure
This connection uses the following items:	
Client for Microsoft Networks	~
File and Printer Sharing for Microsoft Networks	
QoS Packet Scheduler	
Cisco AnyConnect Network Access Manager Filt	er Driv
Internet Protocol Version 4 (TCP/IPv4) Mismae® Natural Adaptes Multiplanes Protocol	
Microsoft I UDP Protocol Driver	
	>
Install Uninstall Prope	rties
Description	
Transmission Control Protocol/Internet Protocol. The de	efault
wide area network protocol that provides communicatio across diverse interconnected networks	n
ОК	Cancel

Fig. 616 Applying Updated IP Settings

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