VSP Edge Deployment Guide, without NAC

Abstract: This guide describes the steps needed to automate the deployment of a VSP switch running VSP Operating System Software (VOSS) 8.3 or later in customer environments where the use of Network Access Control (NAC) is not desired. The process uses a combination of automation features in VOSS Fabric Connect and in ExtremeCloud™ IQ - Site Engine onboarding.

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Extreme Networks, Inc.
Phone / +1 408.579.2800
Toll-free / +1 888.257.3000
www.extremenetworks.com

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Contents

Prerequisites

- An existing Fabric Connect core switch running VSP Operating System Software (VOSS) 8.3 or later
- Extreme Management Center (XMC) 8.5 or later, or ExtremeCloud IQ - Site Engine version 21.9 or later (this guide uses ExtremeCloud IQ - Site Engine)
- DHCP/DNS server reachable on the existing Fabric Connect network
- An active ExtremeCloud IQ account for running ExtremeCloud IQ - Site Engine and for changing the switch persona from ExtremeXOS (EXOS) to VOSS

Overview

Objectives

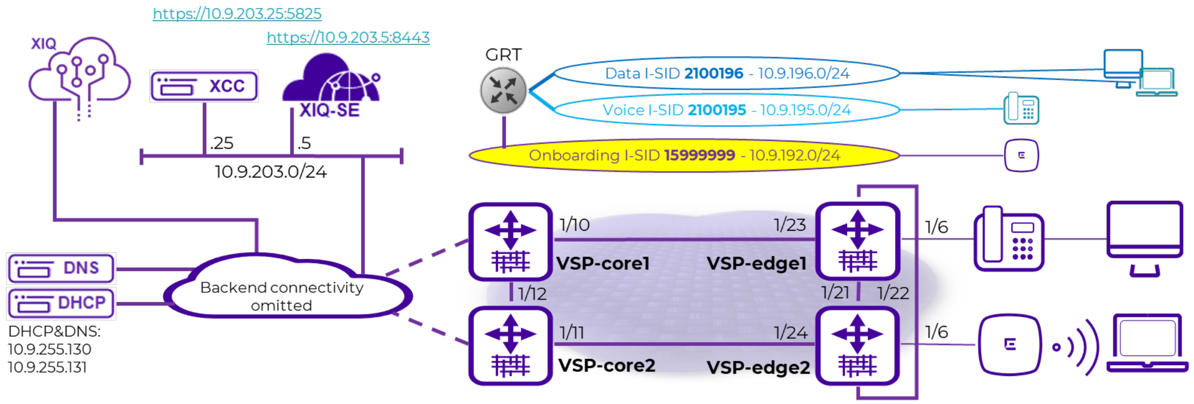
This guide describes the steps needed to automate the deployment of a VSP switch using a combination VSP Fabric Connect automation features and ExtremeCloud IQ - Site Engine, without the use of Network Access Control (NAC). In particular, this guide describes the following:

- Preparing ExtremeCloud IQ - Site Engine for a successful automated, zero-touch deployment of a VSP switch
- Automating VSP ZTP+ provisioning
- Converting a universal hardware switch from EXOS to VOSS using ExtremeCloud IQ or ExtremeCloud IQ - Site Engine
- Using VSP Zero Touch Fabric and port auto-sense functionality

Network Diagram

This guide uses the following network setup as an example of a typical VSP edge customer deployment. In particular it consists of the following devices:

- Two VSP core/distribution running VOSS 8.3 or later. These represent an existing customer Fabric Connect deployment
- Two universal-hardware switches as edge/access switches. Any VSP switch will work as an edge switch if it supports VOSS 8.3 or later
- One IP phone; Mitel 6920 model
- One Extreme Wireless AP, model AP505i
- One client VM acting as the wired client connected behind the phone
- One ExtremeCloud IQ - Site Engine instance
- One Extreme Campus Controller (XCC) instance
- ExtremeCloud IQ profile for onboarding the universal hardware edge switches



It is assumed in this guide that the two VSP core switches have already been deployed and are part of an existing Fabric network and reachable by ExtremeCloud IQ - Site Engine. This guide focuses on describing the additional configuration necessary to successfully onboard the VSP edge switches from a “factory default” condition where each edge switch does not have an existing configuration file present on the internal flash. The Edge switches will use ExtremeCloud IQ - Site Engine ZTP+ and the VOSS Zero Touch Fabric functionality to achieve a typical VSP edge deployment with the following characteristics:

- No more SMLT Clustering (MLAG) of the core nodes
- Use of DVR Controller on the core nodes and DVR Leaf on the VSP edge
- Use of Zero Touch Fabric as an alternative to edge switch stacking
- Complete automation of VSP edge deployment

The edge VSPs have no connection at all on their OOB Ethernet mgmt ports, which is customary in campus access deployments. All management of these switches will be inband and will show how VOSS 8.3 Zero Touch Fabric solves the chicken-and-egg problem of past times: cannot manage the switch inband until Fabric is deployed; cannot deploy Fabric without having management access to switch.

At the end of the deployment, all connected endpoints (IP phone, AP, client) must be operational without any need to have performed any manual configuration on the VSP edge switches and in particular on any of the access ports.

It should be noted that some fabric “seed” configuration will initially be required on the VSP core, and this guide covers that configuration in detail. But the real gains of Zero Touch Fabric are realized when deploying the large quantities of edge access switches in any Fabric design.

The same network diagram tries to depict both the physical topology of the setup as well as the logical Fabric topology when deployed. The latter will comprise 3 L2 VSNs where each is allocated an I-SID and an IP subnet.

The onboarding I-SID 15999999 is a special I-SID which will always be unique across the whole Fabric (or area, if SPB multi-area is in use). This is because it is the default I-SID that a newly unboxed VSP, with no configuration, will always use when onboarding itself after it has joined the existing fabric.

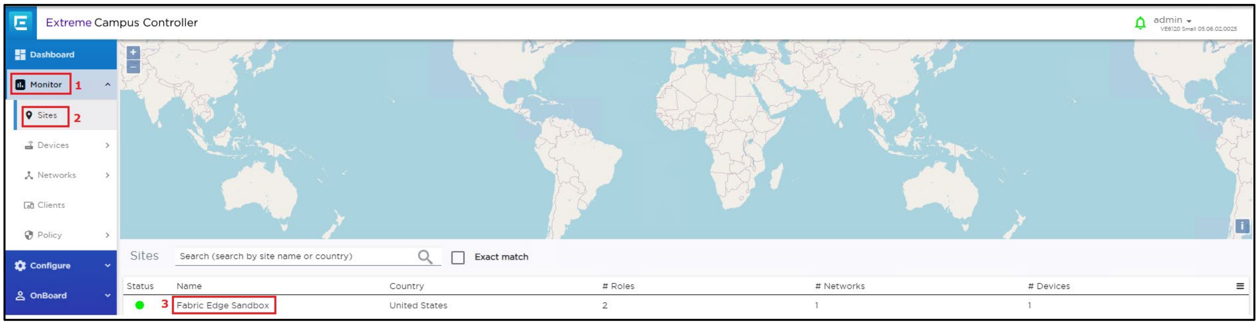
The other two L2 VSNs will simply be the Voice I-SID for the IP phones and the Data I-SID for client connectivity. Currently, if Network Access Control (NAC) is not in use, only one global Data I-SID can be set on the VSP edge. As of VOSS 8.4.2, it is possible to set a different Data I-SID per port, and in a future version of ExtremeCloud IQ - Site Engine it will be possible to set these via ZTP+ port templates. This guide will be updated when these enhancements become available.

All these L2 VSNs will be IP routed in the base GRT (VRF-0) of the core VSPs and edge DVR-Leaf nodes. Use of VRF and L3VSNs is of course possible but will not be covered in this guide as it changes nothing from the VSP to the edge model.

Pre-Existing Configuration

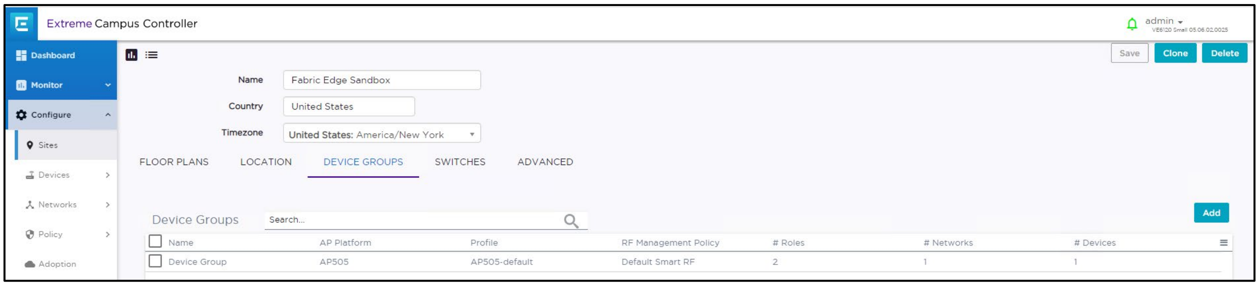
Extreme Campus Controller Pre-Existing Configuration Review

Extreme Campus Controller has already been configured with one Site for the VSP edge Deployment.



Status		Name	Country	# Roles	# Networks	# Devices
●	3	Fabric Edge Sandbox	United States	2	1	1

With a single Device Group for our AP505.



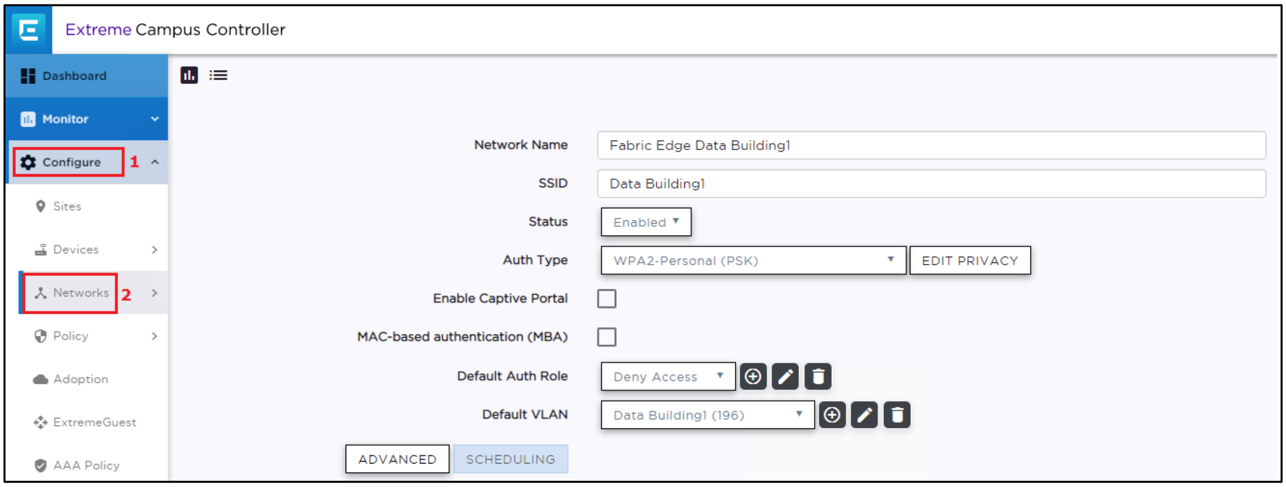
Name: Fabric Edge Sandbox

Country: United States

Timezone: United States: America/New York

□	Name	AP Platform	Profile	RF Management Policy	# Roles	# Networks	# Devices
□	Device Group	AP505	AP505-default	Default Smart RF	2	1	1

The following WLAN Network is defined and assigned to the above Device Group.



Network Name: Fabric Edge Data Building1

SSID: Data Building1

Status: Enabled

Auth Type: WPA2-Personal (PSK)

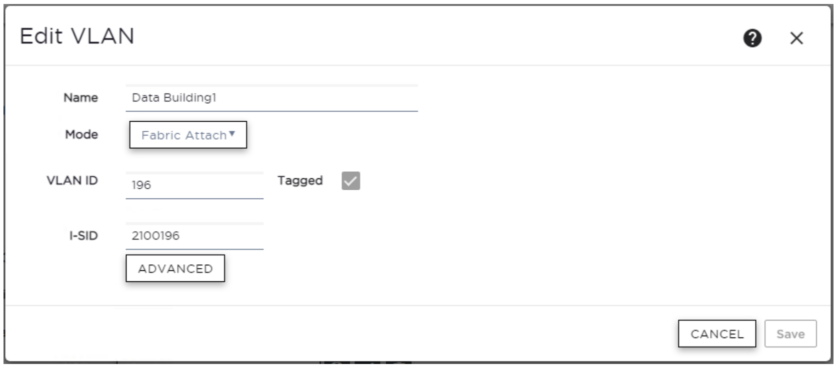
Enable Captive Portal: □

MAC-based authentication (MBA): □

Default Auth Role: Deny Access

Default VLAN: Data Building1 (196)

And the associated VLAN is in Fabric Attach mode with the VLAN and I-SID.



Edit VLAN

Name: Data Building1

Mode: Fabric Attach

VLAN ID: 196

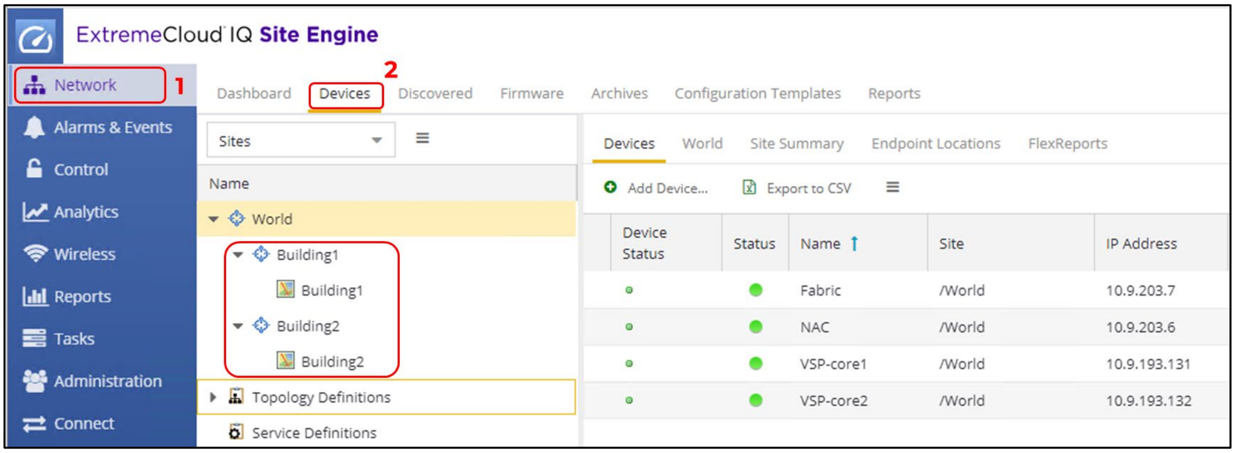
Tagged ☑

I-SID: 2100196

ExtremeCloud IQ - Site Engine Preparation for VSP Edge

Site Creation

Under ExtremeCloud IQ - Site Engine Network, the following Sites are created:



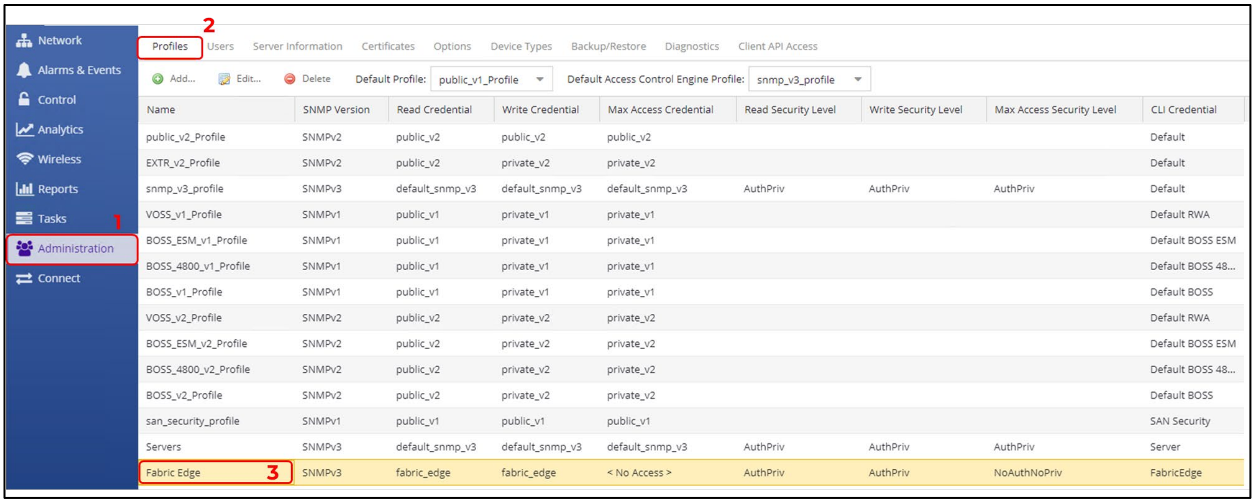
Device Status	Status	Name	Site	IP Address
●	●	Fabric	/World	10.9.203.7
●	●	NAC	/World	10.9.203.6
●	●	VSP-core1	/World	10.9.193.131
●	●	VSP-core2	/World	10.9.193.132

A map of the same name is already defined for each site, and the corresponding map has already been set under the Site Actions “add to Map” option.

In this deployment guide the VSP edge switches are onboarded into the Building1 Site.

Admin profile Creation

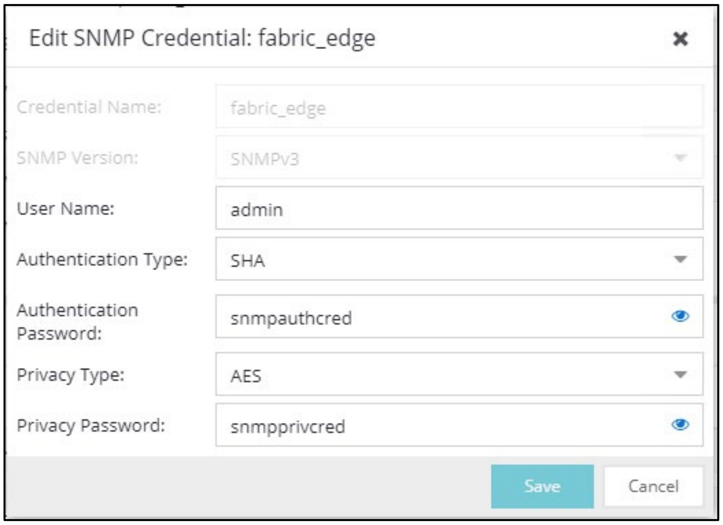
Under Administration, the following admin profile is created to manage the switches:



Default Profile: public_v1_Profile
Default Access Control Engine Profile: snmp_v3_profile

Name	SNMP Version	Read Credential	Write Credential	Max Access Credential	Read Security Level	Write Security Level	Max Access Security Level	CLI Credential
public_v2_Profile	SNMPv2	public_v2	public_v2	public_v2				Default
EXTR_v2_Profile	SNMPv2	public_v2	private_v2	private_v2				Default
snmp_v3_profile	SNMPv3	default_snmp_v3	default_snmp_v3	default_snmp_v3	AuthPriv	AuthPriv	AuthPriv	Default
VOSS_v1_Profile	SNMPv1	public_v1	private_v1	private_v1				Default RWA
BOSS_ESM_v1_Profile	SNMPv1	public_v1	private_v1	private_v1				Default BOSS ESM
BOSS_4800_v1_Profile	SNMPv1	public_v1	private_v1	private_v1				Default BOSS 48...
BOSS_v1_Profile	SNMPv1	public_v1	private_v1	private_v1				Default BOSS
VOSS_v2_Profile	SNMPv2	public_v2	private_v2	private_v2				Default RWA
BOSS_ESM_v2_Profile	SNMPv2	public_v2	private_v2	private_v2				Default BOSS ESM
BOSS_4800_v2_Profile	SNMPv2	public_v2	private_v2	private_v2				Default BOSS 48...
BOSS_v2_Profile	SNMPv2	public_v2	private_v2	private_v2				Default BOSS
san_security_profile	SNMPv1	public_v1	public_v1	public_v1				SAN Security
Servers	SNMPv3	default_snmp_v3	default_snmp_v3	default_snmp_v3	AuthPriv	AuthPriv	AuthPriv	Server
Fabric Edge	SNMPv3	fabric_edge	fabric_edge	< No Access >	AuthPriv	AuthPriv	NoAuthNoPriv	FabricEdge

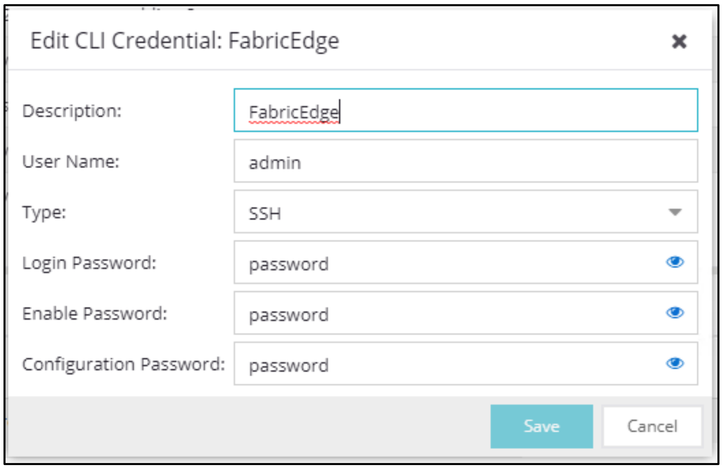
Which uses these SNMP credentials:



Edit SNMP Credential: fabric_edge

Credential Name:	fabric_edge
SNMP Version:	SNMPv3
User Name:	admin
Authentication Type:	SHA
Authentication Password:	snmpauthcred
Privacy Type:	AES
Privacy Password:	snmpprivcred

And these CLI credentials:



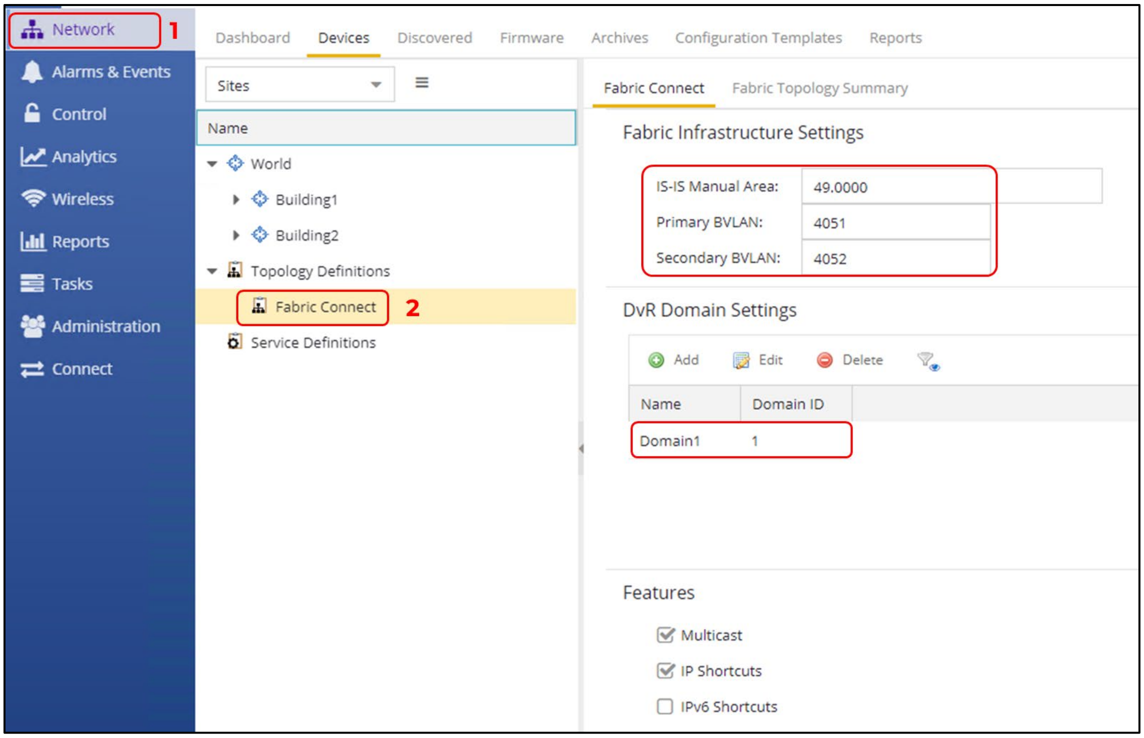
Edit CLI Credential: FabricEdge

Description:	FabricEdge
User Name:	admin
Type:	SSH
Login Password:	password
Enable Password:	password
Configuration Password:	password

These are non-default credentials, so it will illustrate how ZTP+ is able to configure these credentials on the switch when it is onboarded for the first time.

Fabric Topology Definitions

Under ExtremeCloud IQ - Site Engine Network→Topology definitions, the following Fabric Connect Topology settings are configured.



Fabric Infrastructure Settings

IS-IS Manual Area: 49.0000
Primary BVLAN: 4051
Secondary BVLAN: 4052

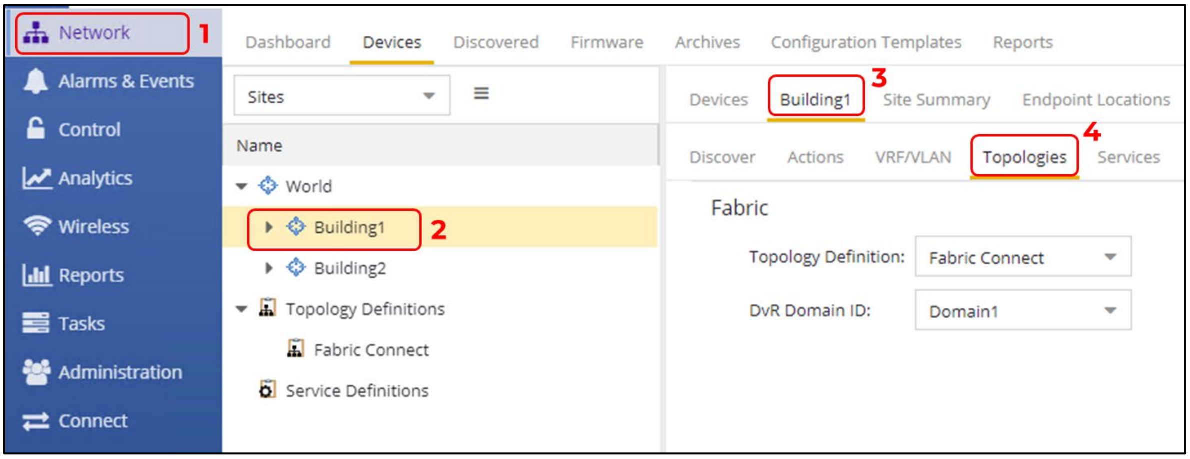
DvR Domain Settings

Name	Domain ID
Domain1	1

Features

☑ Multicast
☑ IP Shortcuts
□ IPv6 Shortcuts

And they are assigned to both the Building1 and Building2 sites.



Fabric

Topology Definition: Fabric Connect
DvR Domain ID: Domain1

The VSP cores are already fabric configured. But when onboarding the VSP edge, the “Onboard VSP” workflow will automatically convert the VSP edge into DVR Leaf nodes, and for this to happen the workflow needs to be able to read the DVR Domain ID from the Site.

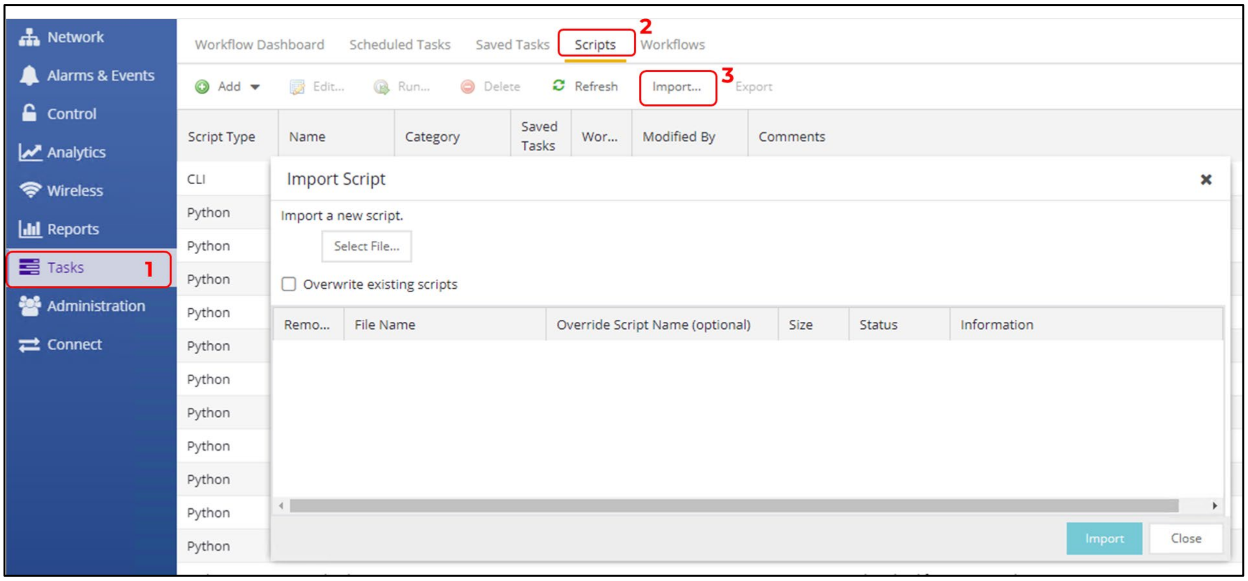
ExtremeCloud IQ - Site Engine Add-On Scripts and Workflows

The following ExtremeCloud IQ - Site Engine scripts and workflows from GitHub are used for automating the deployment of VSP edge.

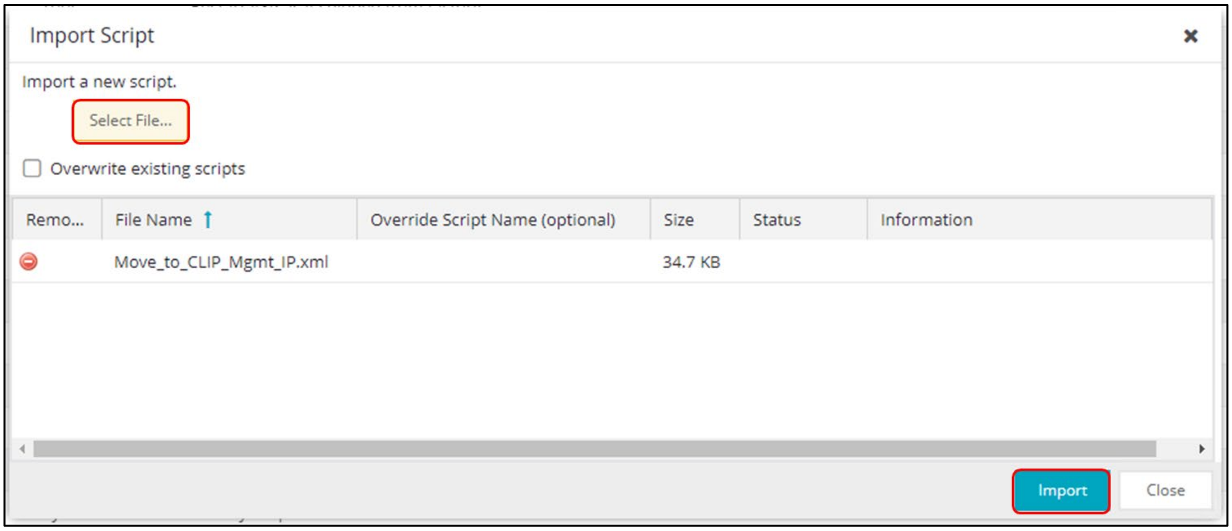
Name	Type	GitHub URL
Move to CLIP Mgmt IP	Script	https://github.com/extremenetworks/ExtremeScripting/tree/master/Netsight/oneview_CLI_scripts
Change persona to VOSS	Workflow	https://github.com/extremenetworks/ExtremeScripting/tree/master/Netsight/oneview_workflows
Onboard VSP	Workflow	https://github.com/extremenetworks/ExtremeScripting/tree/master/Netsight/oneview_workflows

The script named “Move to CLIP Mgmt IP” was downloaded using right-click and “Save link as….”

Then the script was imported into ExtremeCloud IQ - Site Engine by going under Tasks→Scripts→Import…

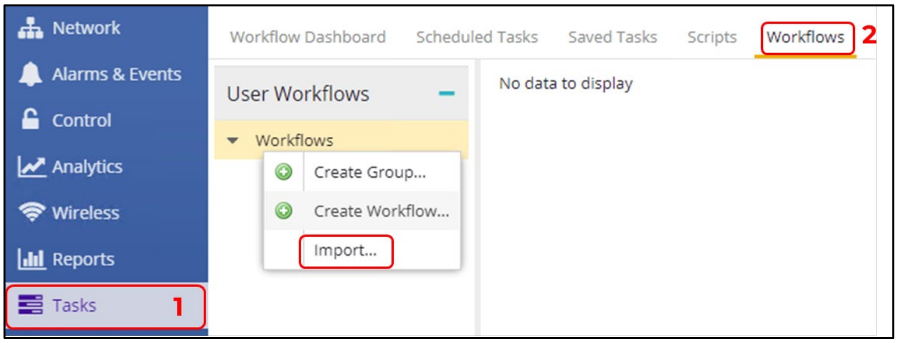


Then by selecting the XML file downloaded from GitHub, selecting the Import button, and selecting **Close**.



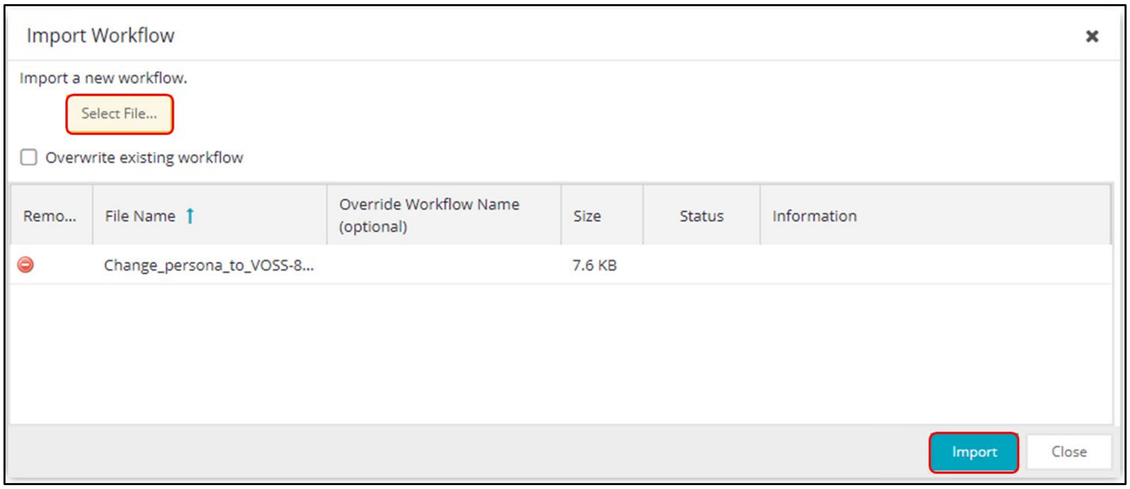
Remo...	File Name	Override Script Name (optional)	Size	Status	Information
	Move_to_CLIP_Mgmt_IP.xml		34.7 KB		

The workflow named “ZTP+ Change the persona to VOSS” was downloaded and then imported under ExtremeCloud IQ - Site Engine Tasks→Workflows.



No data to display

The file just downloaded was selected, followed by Import and then Close.



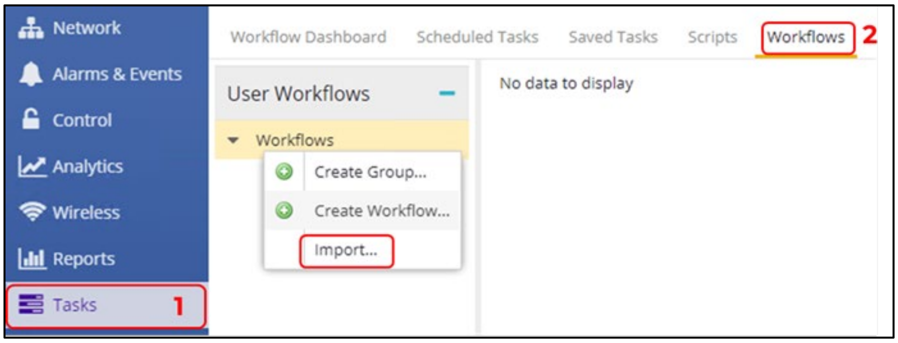
Import Workflow

Import a new workflow.

☐ Overwrite existing workflow

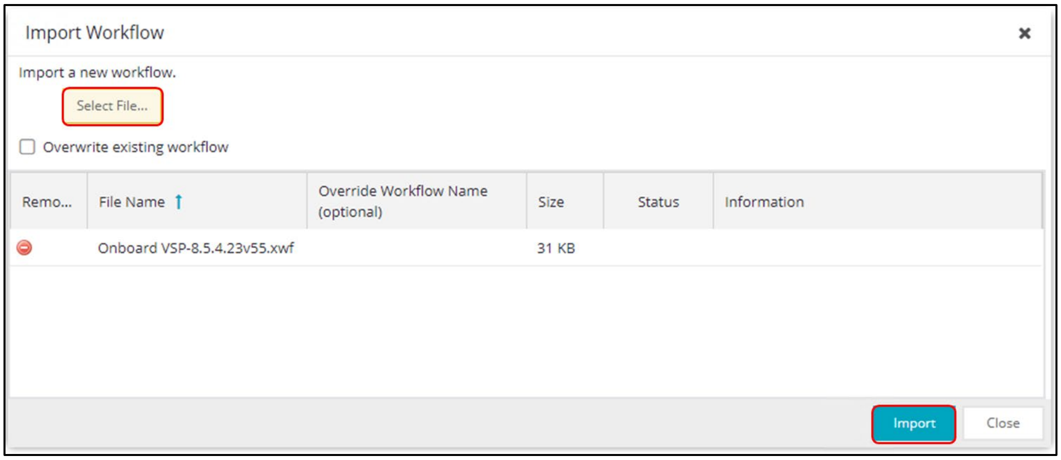
Remo...	File Name	Override Workflow Name (optional)	Size	Status	Information
⊖	Change_persona_to_VOSS-8...		7.6 KB		

Finally, the workflow named “Onboard VSP” was downloaded and then imported under ExtremeCloud IQ - Site Engine Tasks→Workflows.



No data to display

The file just downloaded was selected, followed by Import and then Close.



Import Workflow

Import a new workflow.

□ Overwrite existing workflow

Remo...	File Name	Override Workflow Name (optional)	Size	Status	Information
⊖	Onboard VSP-8.5.4.23v55.xwf		31 KB		

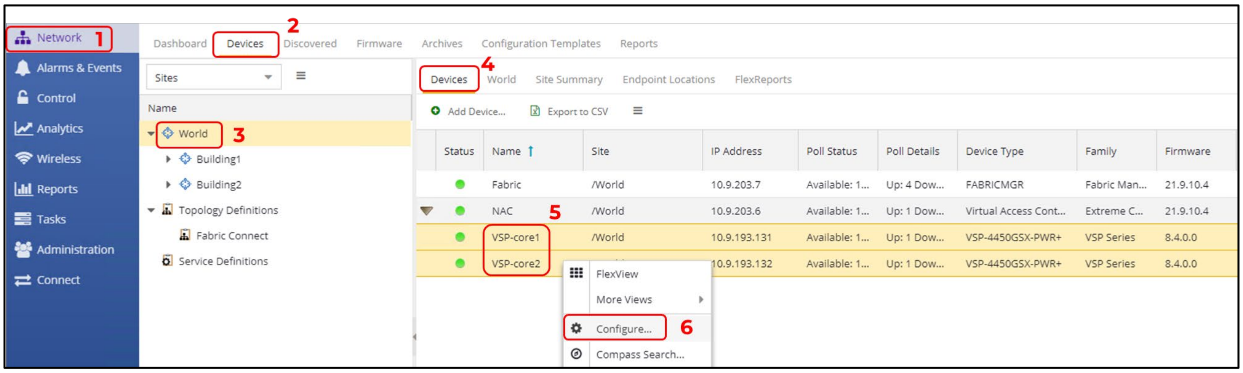
VSP Core Preparation for Automated VSP Edge

Site Selection

When deploying VSP edge across multiple buildings, it is desirable that the switches get automatically added to the correct ExtremeCloud IQ - Site Engine Site without any operator action.

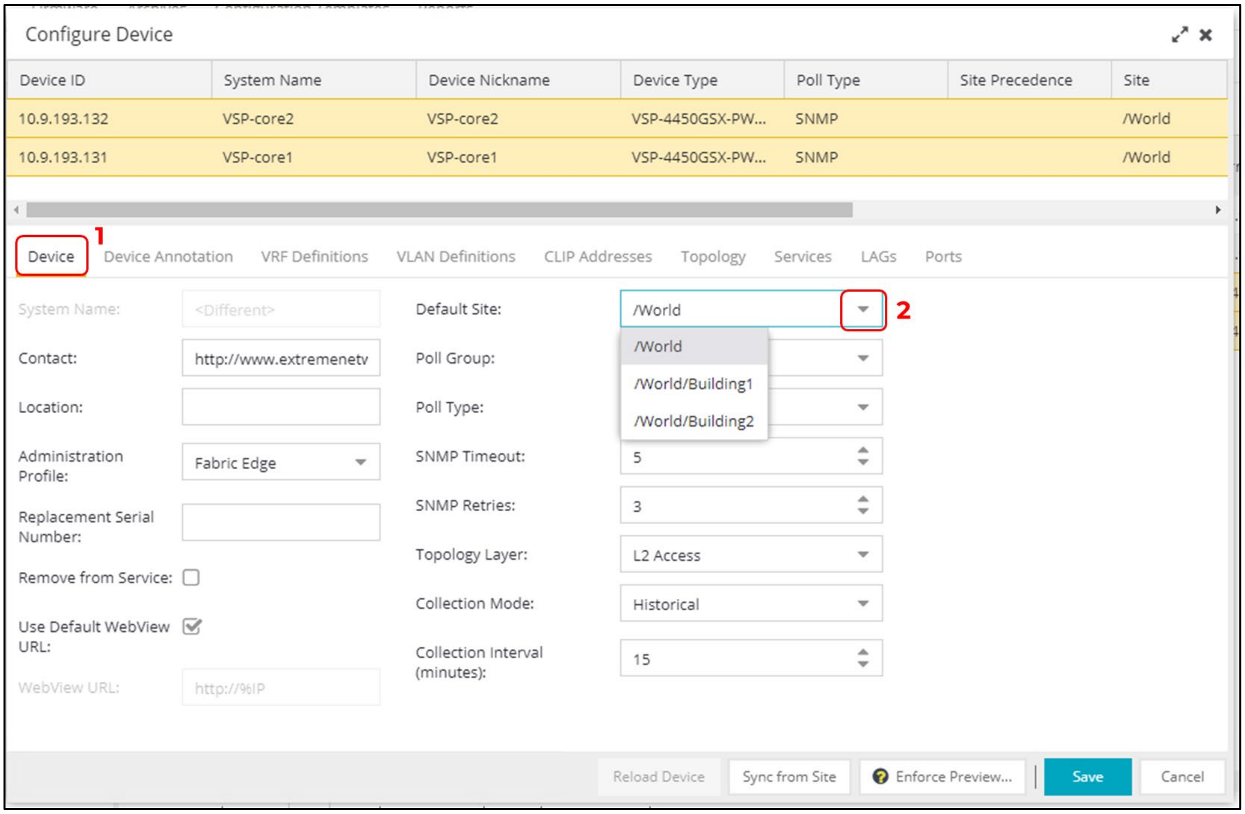
To achieve this, it is sufficient to position the VSP core switches into the correct ExtremeCloud IQ - Site Engine Site and then let ZTP+ auto allocate VSP edge switches based on their LLDP neighbors to the core/distribution VSPs. How to configure ZTP+ to achieve this will be covered in the ZTP+ configuration chapter later in this guide.

Navigate to the Network→Devices→World site. Select both VSP core switches, right-click, and then select **Configure**.



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	Fabric	/World	10.9.203.7	Available: 1...	Up: 4 Dow...	FABRICMGR	Fabric Man...	21.9.10.4
●	NAC	/World	10.9.203.6	Available: 1...	Up: 1 Dow...	Virtual Access Cont...	Extreme C...	21.9.10.4
●	VSP-core1	/World	10.9.193.131	Available: 1...	Up: 1 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2		10.9.193.132	Available: 1...	Up: 1 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

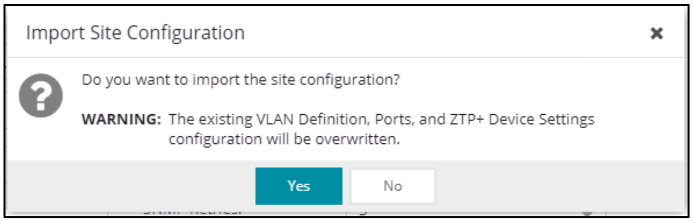
Assign both switches to the Building1 site.



Device ID	System Name	Device Nickname	Device Type	Poll Type	Site Precedence	Site
10.9.193.132	VSP-core2	VSP-core2	VSP-4450GSX-PW...	SNMP		/World
10.9.193.131	VSP-core1	VSP-core1	VSP-4450GSX-PW...	SNMP		/World

System Name:	<Different>	Default Site:	/World
Contact:	http://www.extremenetv	Poll Group:	
Location:		Poll Type:	
Administration Profile:	Fabric Edge	SNMP Timeout:	5
Replacement Serial Number:		SNMP Retries:	3
Remove from Service:	□	Topology Layer:	L2 Access
Use Default WebView URL:	☑	Collection Mode:	Historical
WebView URL:	http://%IP	Collection Interval (minutes):	15

Select **Yes** in the confirmation popup.



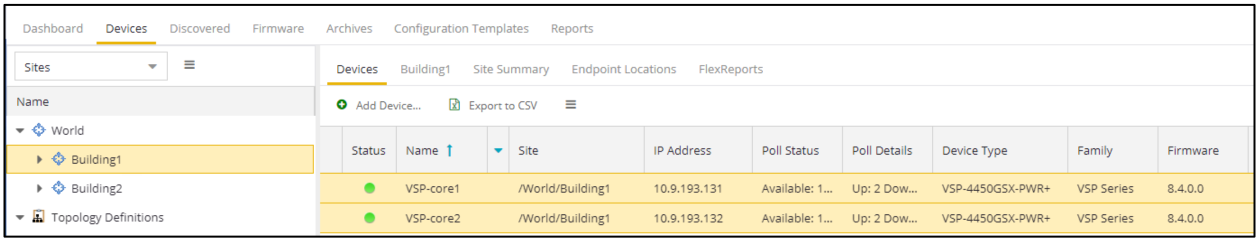
Import Site Configuration

Do you want to import the site configuration?

WARNING: The existing VLAN Definition, Ports, and ZTP+ Device Settings configuration will be overwritten.

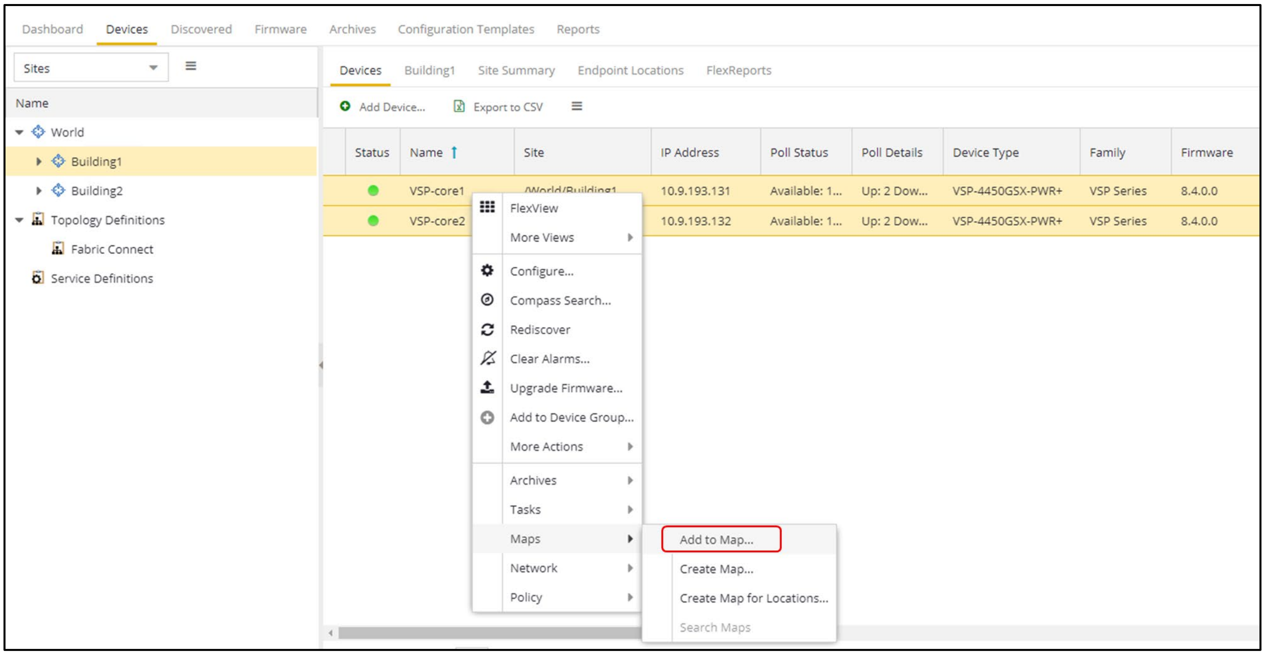
Then select Save to commit.

Now navigate to the Building1 site that has been selected and make sure both VSP cores have been added.



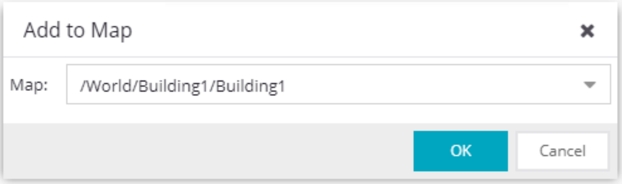
Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 2 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 2 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

Next, right-click on both VSP cores again and select Maps→Add to Map...



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 2 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2		10.9.193.132	Available: 1...	Up: 2 Dow...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

Then enter the Building site that was chosen. Select **OK**.



Add to Map

Map: /World/Building1/Building1

The VSP cores have now been added to the map.

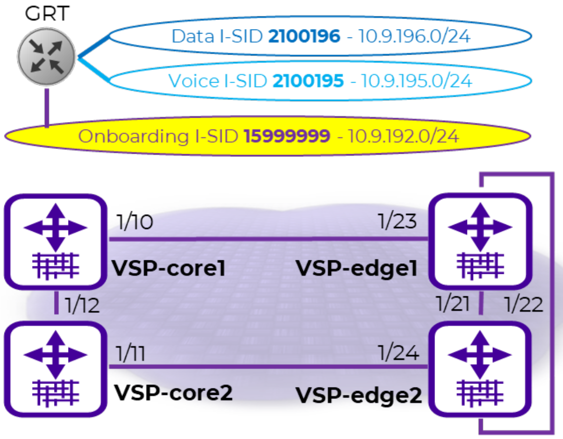
Add to Map

The devices were successfully added to /World/Building1/Building1

Applying DVR Controller, VLAN and IP Configuration

The VSP cores will need to route IP traffic across a number of VLANs/L2 VSNs. These VLANs do not exist on the VSP cores and need to be created.

Because the VSP edge will be onboarded as DVR Leaf nodes, the VSP cores will also need to be configured as DVR Controllers and a DVR-GW IP will be configured on the Voice and Data VLANs.


GRT
Data I-SID 2100196 - 10.9.196.0/24
Voice I-SID 2100195 - 10.9.195.0/24
Onboarding I-SID 15999999 - 10.9.192.0/24
1/10
1/23
VSP-core1
VSP-edge1
1/12
1/21
1/22
1/11
1/24
VSP-core2
VSP-edge2

The above configuration will be performed via SSH CLI.

Open an SSH session to both the VSP cores and paste the following commands:

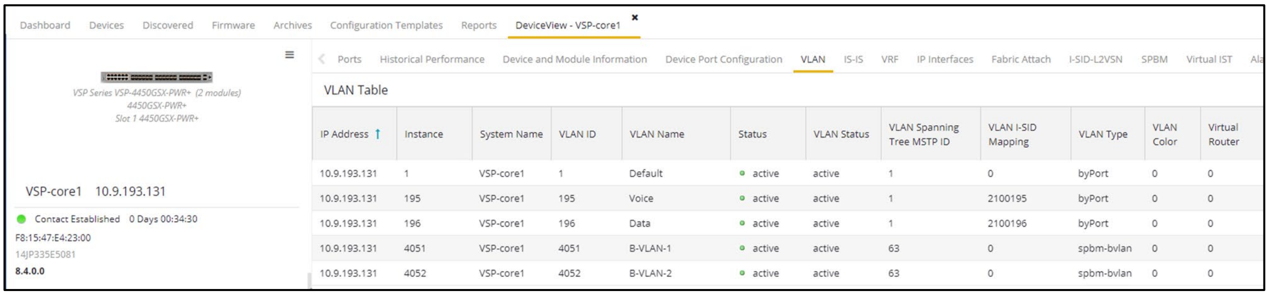
VSP-core1

```
enable
config term
dvr controller 1
vlan create 195 name "Voice" type port-mstprstp 0

vlan i-sid 195 2100195
interface Vlan 195
   dvr gw-ipv4 10.9.195.1
   dvr enable
   ip address 10.9.195.2/24
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.130 mode bootp_dhcp
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 enable
   ip dhcp-relay fwd-path 10.9.255.131 mode bootp_dhcp
exit
vlan create 196 name "Data" type port-mstprstp 0

vlan i-sid 196 2100196
interface Vlan 196
   dvr gw-ipv4 10.9.196.1
   dvr enable
   ip address 10.9.196.2/24
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.130 mode bootp_dhcp
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 enable
   ip dhcp-relay fwd-path 10.9.255.131 mode bootp_dhcp
exit
end
```

VSP-core2

```
enable
config term
dvr controller 1
vlan create 195 name "Voice" type port-mstprstp 0

vlan i-sid 195 2100195
interface Vlan 195
   dvr gw-ipv4 10.9.195.1
   dvr enable
   ip address 10.9.195.3/24
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.130 mode bootp_dhcp
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 enable
   ip dhcp-relay fwd-path 10.9.255.131 mode bootp_dhcp
exit
vlan create 196 name "Data" type port-mstprstp 0

vlan i-sid 196 2100196
interface Vlan 196
   dvr gw-ipv4 10.9.196.1
   dvr enable
   ip address 10.9.196.3/24
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.130 mode bootp_dhcp
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 enable
   ip dhcp-relay fwd-path 10.9.255.131 mode bootp_dhcp
exit
end
```

Open ExtremeCloud IQ - Site Engine Device View against both core VSPs and verify that the VLANs and L2 VSNs have been configured.



VSP-core1 10.9.193.131

Contact Established 0 Days 00:34:30

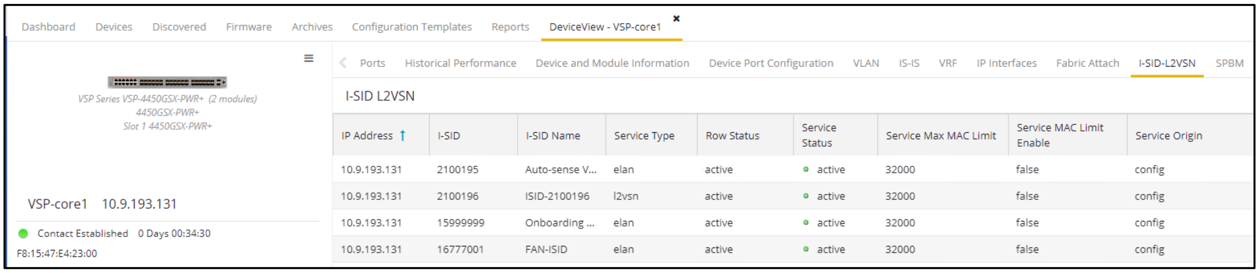
F8:15:47:E4:23:00

14JP335E5081

8.4.0.0

VLAN Table

IP Address	Instance	System Name	VLAN ID	VLAN Name	Status	VLAN Status	VLAN Spanning Tree MSTP ID	VLAN I-SID Mapping	VLAN Type	VLAN Color	Virtual Router
10.9.193.131	1	VSP-core1	1	Default	active	active	1	0	byPort	0	0
10.9.193.131	195	VSP-core1	195	Voice	active	active	1	2100195	byPort	0	0
10.9.193.131	196	VSP-core1	196	Data	active	active	1	2100196	byPort	0	0
10.9.193.131	4051	VSP-core1	4051	B-VLAN-1	active	active	63	0	spbm-bvlan	0	0
10.9.193.131	4052	VSP-core1	4052	B-VLAN-2	active	active	63	0	spbm-bvlan	0	0



VSP-core1 10.9.193.131

Contact Established 0 Days 00:34:30

F8:15:47:E4:23:00

I-SID L2VSN

IP Address	I-SID	I-SID Name	Service Type	Row Status	Service Status	Service Max MAC Limit	Service MAC Limit Enable	Service Origin
10.9.193.131	2100195	Auto-sense V...	elan	active	active	32000	false	config
10.9.193.131	2100196	ISID-2100196	l2vsn	active	active	32000	false	config
10.9.193.131	15999999	Onboarding ...	elan	active	active	32000	false	config
10.9.193.131	16777001	FAN-ISID	elan	active	active	32000	false	config

Applying Seed Configuration for Zero Touch Fabric

Before the VSP edge can automatically join the fabric further down, the VSP core first needs to be configured in these areas:

1. **Nickname server**: This is so that unique SPB nicknames can be assigned to VSP edge switches as they join the fabric. An SBP node needs a nickname to create multicast I-SID trees, which in turn are needed for transmitting BUM (Broadcast/Unknown-unicast/Multicast) traffic in fabric VSNs. Without a nickname, a VSP edge switch cannot transmit a DHCP Discovery on the onboarding I-SID to get an IP address.
   The VSP cores (or any pair of core/distribution VSPs) need to be set up as nickname servers. It is sufficient to have two nickname servers per fabric (and in VOSS 8.4, with multi-area support, a pair of nickname servers is required for each ISIS area). Both nickname servers can be set up to assign nicknames in the same prefix range or in different ranges. The mechanism used by the nickname server to assign nicknames is essentially identical to how a DHCP server works, with the exception that nicknames are assigned instead of IP addresses.
   To enable nickname server functionality on a VSP, the VSP must already be configured with a static nickname. (The VSP core switches were already pre-configured with a static nickname.)

2. The **onboarding I-SID 15999999** must be set up on the core VSPs so that it can handle DHCP requests, from the universal-hardware edge and from other onboarding devices. Two approaches are possible:

   a. The VSP cores are configured simply to bridge the onboarding I-SID onto an existing segment where DHCP is available.
      Redundantly bridging a segment out of two VSP cores would require those VSPs

to be configured as a Virtual-IST cluster and would require the use of SMLT links. That approach is not covered here.

b. The onboarding I-SID is created into a new dedicated IP subnet for which both VSP cores will act as default gateways and DHCP-relay agent. This is the approach used here, as it is a better design approach.
If the VSP cores were originally built from VOSS 8.2 (or later) default values, the default onboarding private-VLAN 4048 will already be present and will need to be deleted and re-created as a regular port-based VLAN (because VOSS currently does not support IP configuration on PVLANs [this will become possible in VOSS8.5]). In this case, the VSP cores do not have private-VLAN 4048, so a regular port-based VLAN will need to be created with a DHCP relay configuration and then assigned to the onboarding I-SID.

3. If the VSP core was not originally built from VOSS 8.3 default values (for example, it was upgraded from a pre-VOSS 8.3 release), it will also need to have auto-sense enabled on the interfaces connecting to the VSP edge.

The VSP core configurations were built from pre-VOSS 8.2 default values. As a result, they have no onboarding I-SID defined, all unused ports are disabled, no ports are auto-sense enabled, and there is no nickname server. Thus, the three configuration areas enumerated above will need to be applied to these VSP Cores.

Apply the following configuration to both core VSPs:

VSP-core1

```
enable
config term
interface gigabitEthernet 1/10
   auto-sense enable
   no shutdown
exit
vlan create 4048 name "onboarding-vlan" type port-mstprstp 0
vlan i-sid 4048 15999999
auto-sense onboarding i-sid 15999999
interface Vlan 4048
   ip address 10.9.192.2/24
   ip vrrp version 3
   ip vrrp address 1 10.9.192.1
   ip vrrp 1 enable
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 mode dhcp
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 mode dhcp
   ip dhcp-relay fwd-path 10.9.255.131 enable
exit
spbm nick-name server prefix a.10.00
spbm nick-name server
end
```

VSP-core2

```
enable
config term
interface gigabitEthernet 1/11
   auto-sense enable
   no shutdown
exit
vlan create 4048 name "onboarding-vlan" type port-mstprstp 0
vlan i-sid 4048 15999999
auto-sense onboarding i-sid 15999999
interface Vlan 4048
   ip address 10.9.192.3/24
   ip vrrp version 3
   ip vrrp address 1 10.9.192.1
   ip vrrp 1 enable
   ip dhcp-relay
   ip dhcp-relay fwd-path 10.9.255.130
   ip dhcp-relay fwd-path 10.9.255.130 mode dhcp
   ip dhcp-relay fwd-path 10.9.255.130 enable
   ip dhcp-relay fwd-path 10.9.255.131
   ip dhcp-relay fwd-path 10.9.255.131 mode dhcp
   ip dhcp-relay fwd-path 10.9.255.131 enable
exit
spbm nick-name server prefix a.10.00
spbm nick-name server
end
```

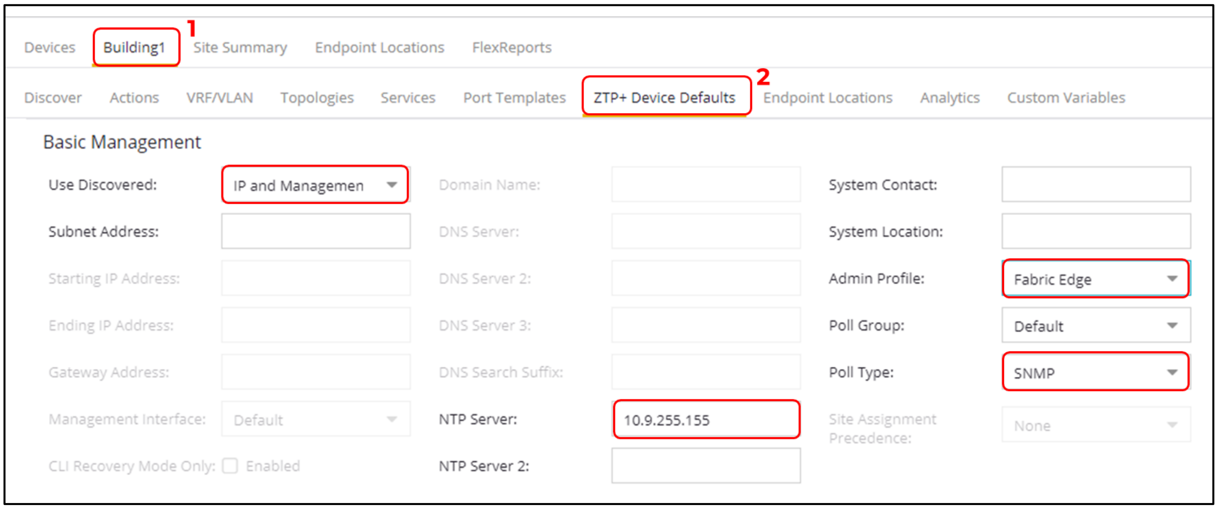
Preparing ExtremeCloud IQ - Site Engine for Fully Automated Edge Deployment

Configuration of ZTP+

Confirm the ZTP+ configuration for these sites is correct before onboarding the universal-hardware edge into either Building1 or Building2. Go to the selected site and select the ZTP+ Device Defaults tab.

Under Basic Management set options as follows:

- Use Discovered: **IP and Management Interface**
- Admin Profile: **Fabric Edge**
- Poll Type: **SNMP**
- NTP Server: **10.9.255.155**



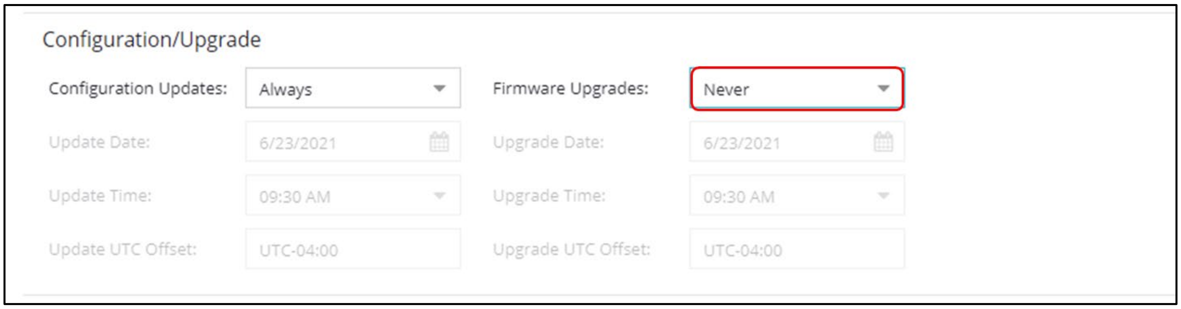
Basic Management

Use Discovered:	IP and Managemen	Domain Name:		System Contact:	
Subnet Address:		DNS Server:		System Location:	
Starting IP Address:		DNS Server 2:		Admin Profile:	Fabric Edge
Ending IP Address:		DNS Server 3:		Poll Group:	Default
Gateway Address:		DNS Search Suffix:		Poll Type:	SNMP
Management Interface:	Default	NTP Server:	10.9.255.155	Site Assignment Precedence:	None
CLI Recovery Mode Only:	☐ Enabled	NTP Server 2:			

Initiate the onboarding of the VSP edge switches by using the same DHCP IP address they will have initially acquired on the onboarding I-SID. To do this, set **Use Discovered** to "IP and Management Interface." After the switches are onboarded, there will be steps on how to move them to their final Mgmt CLIPs.

Under Configuration/Upgrade, **Configuration Updates** can be left to "Always" (this setting is not applicable in SNMP Poll Type).

The value for **Firmware Upgrades** will depend on how the universal-hardware OS conversion is performed (next chapter). If you are using the ExtremeCloud IQ - Site Engine workflow "Change persona to VOSS", set **Firmware Upgrades** to "None" because the workflow will be configured with the desired VOSS software version from the start. On the other hand, if you are using ExtremeCloud IQ for the OS conversion, **Firmware Upgrades** can be left enabled if the desired VOSS image to use is not the same version of the VOSS image that ExtremeCloud IQ will use for the OS conversion (currently 8.4.0.0).



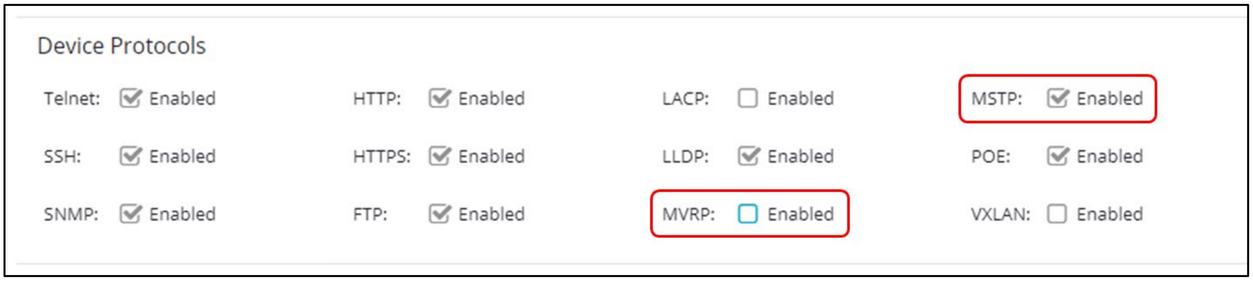
Configuration/Upgrade

Configuration Updates:	Always	Firmware Upgrades:	Never
Update Date:	6/23/2021	Upgrade Date:	6/23/2021
Update Time:	09:30 AM	Upgrade Time:	09:30 AM
Update UTC Offset:	UTC-04:00	Upgrade UTC Offset:	UTC-04:00

In the "Device Protocols" section, clear the MVRP check box because ZTP+ will attempt to apply the default port templates during switch onboarding. (The templates can be inspected on the Port Template tab.)

The rest of the settings can be left as you found them, and **MSTP** must remain checked. Note that the **Telnet**, **HTTP** and **HTTPS** protocol options only work as of VOSS 8.4. All protocol options work with EXOS and will apply when the universal-hardware edge is initially onboarded as EXOS.

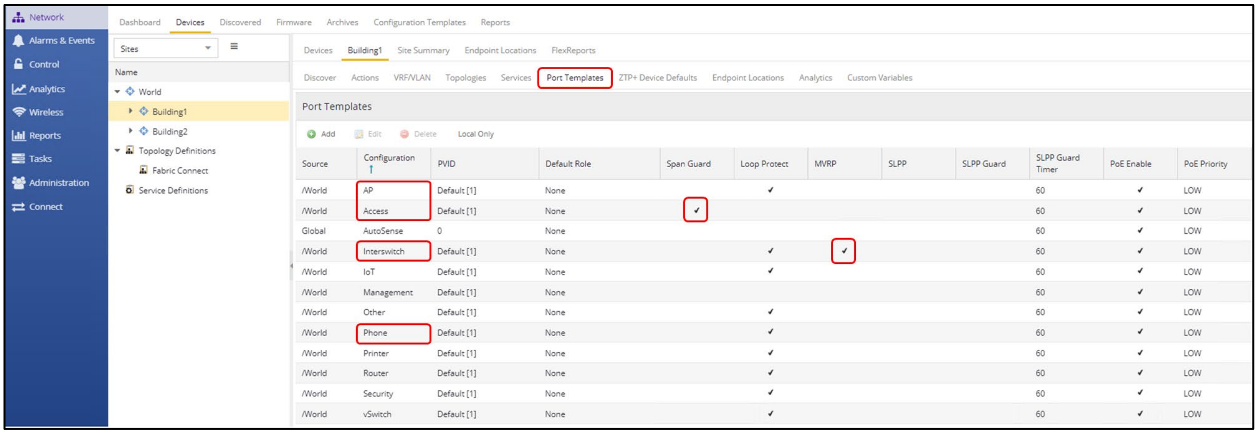
Note that SSH will automatically be enabled on the VSP – not because of the setting below but because the IQAgent running on the switch will always attempt to activate it.



Device Protocols

Telnet: ☑ Enabled	HTTP: ☑ Enabled	LACP: ☐ Enabled	MSTP: ☑ Enabled
SSH: ☑ Enabled	HTTPS: ☑ Enabled	LLDP: ☑ Enabled	POE: ☑ Enabled
SNMP: ☑ Enabled	FTP: ☑ Enabled	MVRP: ☐ Enabled	VXLAN: ☐ Enabled

Select **Save** to commit changes to the Site.



Port Templates

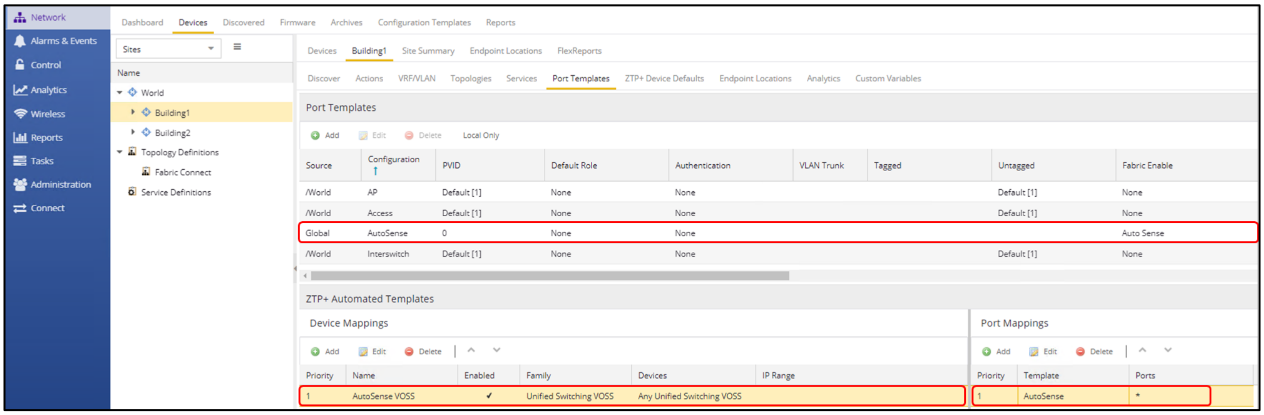
Source	Configuration	PVID	Default Role	Span Guard	Loop Protect	MVRP	SLPP	SLPP Guard	SLPP Guard Timer	PoE Enable	PoE Priority
/World	AP	Default [1]	None		✓				60	✓	LOW
/World	Access	Default [1]	None	✓					60	✓	LOW
Global	AutoSense	0	None						60	✓	LOW
/World	Interswitch	Default [1]	None		✓	✓			60	✓	LOW
/World	IoT	Default [1]	None		✓				60	✓	LOW
/World	Management	Default [1]	None						60	✓	LOW
/World	Other	Default [1]	None		✓				60	✓	LOW
/World	Phone	Default [1]	None		✓				60	✓	LOW
/World	Printer	Default [1]	None		✓				60	✓	LOW
/World	Router	Default [1]	None		✓				60	✓	LOW
/World	Security	Default [1]	None		✓				60	✓	LOW
/World	vSwitch	Default [1]	None		✓				60	✓	LOW

The default AP, Access, Interswitch, and Phone port templates are automatically applied by ZTP+ when onboarding a new switch. The logic is that the AP and Phone port templates are applied on ports where an AP or Phone was LLDP discovered. Likewise, the Interswitch port template is applied on ports where a Bridge/Switch neighbor was LLDP discovered, and the Access port template is applied to all other ports.

Some of the port-based features enabled by the default port templates can be detrimental to the successful deployment of universal hardware VSP edge. Two such features are Span Guard and MVRP.

MVRP has effect only when the universal hardware is onboarded in EXOS mode. In some topologies, it can cause a MAC learning issue because the EXOS switches generate MVRP PDUs with the switch's MAC out of Spanning Tree Blocked ports, which cause the VSP cores to learn those MACs on the wrong ports, causing intermittent connectivity to the EXOS DHCP IP address. Disabling the MVRP Protocol ensures that MVRP does not get activated by any port templates.

Span Guard is also a problem because it results in BPDU-Guard being enabled on VOSS auto-sense ports when the universal hardware is onboarded in VOSS mode. If those ports are then used to interconnect VSPs together, BPDU-Guard will conflict with some auto-sense states which will trigger self-generated BPDUs to prevent loops and will also result in auto-sense ports going offline. To avoid these issues, ExtremeCloud IQ - Site Engine 21.9 introduces a new Global "AutoSense" port template which is automatically applied to VOSS universal hardware devices via a ZTP+ Automated Templates entry:



Port Templates

Source	Configuration ↑	PVID	Default Role	Authentication	VLAN Trunk	Tagged	Untagged	Fabric Enable
/World	AP	Default [1]	None	None			Default [1]	None
/World	Access	Default [1]	None	None			Default [1]	None
Global	AutoSense	0	None	None				Auto Sense
/World	Interswitch	Default [1]	None	None			Default [1]	None

ZTP+ Automated Templates

Device Mappings

Priority	Name	Enabled	Family	Devices	IP Range
1	AutoSense VOSS	✓	Unified Switching VOSS	Any Unified Switching VOSS	

Port Mappings

Priority	Template	Ports
1	AutoSense	*

The ZTP+ Automated Templates entries allow for overriding the automatic application of the default port templates described above.

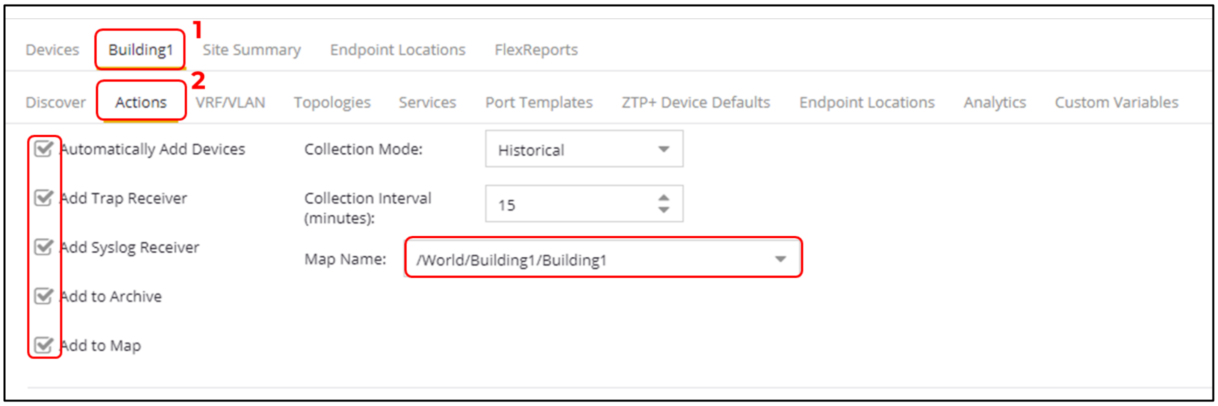
Note that the ZTP+ Automated Templates entry will exist only on new sites created in ExtremeCloud IQ - Site Engine. If an older version of ExtremeCloud IQ - Site Engine or XMC was upgraded to ExtremeCloud IQ - Site Engine 21.9 or later, then that entry will not exist and will need to be created (or the Site deleted and re-created).

Also note that the default entry only covers VOSS universal hardware switches. If you onboard a VSP4900 or other VSP switch model, it is necessary to create a similar entry with **Family** set to "VSP Series."

Now move to the Actions tab, and verify that all of these actions are set:

- Automatically Add Devices
- Add Trap Receiver
- Add Syslog Receiver
- Add to Archive

- Add to Map (and the correct map is selected)



☑ Automatically Add Devices
☑ Add Trap Receiver
☑ Add Syslog Receiver
☑ Add to Archive
☑ Add to Map

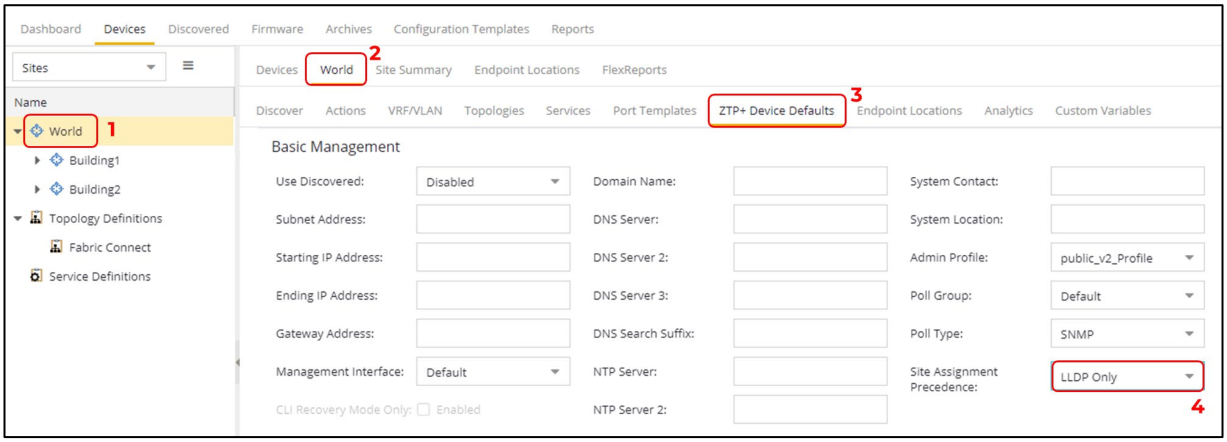
Collection Mode: Historical
Collection Interval (minutes): 15
Map Name: /World/Building1/Building1

Now configure ExtremeCloud IQ - Site Engine so that it can automatically onboard the universal-hardware edge to the correct site Building1/2 and thus perform all of that site's ZTP+ configuration as well as the Site Actions setup mentioned above.

The VSP cores have been manually added to the Building1 ExtremeCloud IQ - Site Engine site. For the universal-hardware edge this will not be a manual process but will be automated by ExtremeCloud IQ - Site Engine.

To do this, access ExtremeCloud IQ - Site Engine's global ZTP+ configuration located under the root World site, and select the ZTP+ Device Defaults tab.

Locate the Site Assignment Precedence dropdown and set its value to "LLDP Only." Note that this dropdown is configurable only from the root site World.



Basic Management

Use Discovered: Disabled
Subnet Address:
Starting IP Address:
Ending IP Address:
Gateway Address:
Management Interface: Default
CLI Recovery Mode Only: □ Enabled
Domain Name:
DNS Server:
DNS Server 2:
DNS Server 3:
DNS Search Suffix:
NTP Server:
NTP Server 2:
System Contact:
System Location:
Admin Profile: public_v2_Profile
Poll Group: Default
Poll Type: SNMP
Site Assignment Precedence: LLDP Only

Now, when ExtremeCloud IQ - Site Engine discovers the universal-hardware edge switches, it will examine their LLDP neighbor tables, and when it finds one of the VSP core switches, it will assume that this access switch must automatically be onboarded into the same ExtremeCloud IQ - Site Engine Site as the VSP cores.

Save the change.

Preparing Universal Hardware Edge OS Conversion

Because you are deploying a fabric with VSP edge, the universal-hardware switches will need to be converted into running VOSS. Two approaches are possible here: using ExtremeCloud IQ or using an ExtremeCloud IQ - Site Engine workflow. In each case, the process involves three switch restarts.

Doing the OS conversion via ExtremeCloud IQ:

1. Initial boot as EXOS
    a. Switch onboards ExtremeCloud IQ
    b. In ExtremeCloud IQ, the switch serial number is associated with VOSS OS
    c. ExtremeCloud IQ converts the switch to VOSS
    d. Currently, ExtremeCloud IQ converts the switch to VOSS using 8.4.0.0
2. Switch boots as VOSS with 8.4.0.0
    a. Switch onboards ExtremeCloud IQ - Site Engine via ZTP+
    b. Switch is added to ExtremeCloud IQ - Site Engine Site, but in read-only state

    ➔ Manual action required:

    - On ExtremeCloud IQ: delete the device from ExtremeCloud IQ
    - On ExtremeCloud IQ - Site Engine: re-add the device to ExtremeCloud IQ via ExtremeCloud IQ - Site Engine

    c. "Onboard VSP" workflow is triggered
    d. ExtremeCloud IQ - Site Engine workflow sets the DVR Leaf configuration and reboots the switch a final time
3. Switch boots as DVR Leaf with final configuration

Caution

Currently, with ExtremeCloud IQ - Site Engine, the above steps 2c and 2d will not happen automatically if the switch is already added to ExtremeCloud IQ, because ExtremeCloud IQ - Site Engine is designed not to manage or configure a device already added to ExtremeCloud IQ. Manual action is required to first delete the switch from ExtremeCloud IQ and then force ExtremeCloud IQ - Site Engine to re-add the same switch to ExtremeCloud IQ (details will follow). Then, the above steps 2c and 2d will resume automatically. This manual action is somewhat impractical and will be no longer be required after a "monitor-only" profile is added to ExtremeCloud IQ in a future release.

Doing the OS conversion via ExtremeCloud IQ - Site Engine workflow:

1. Initial boot as EXOS
    a. Switch onboards ExtremeCloud IQ - Site Engine via ZTP+

   b. Switch is added to ExtremeCloud IQ - Site Engine Site and the “Convert Persona to VOSS” workflow is executed

   c. The VOSS image configured on the workflow (8.3 or later) is downloaded to the switch as part of OS conversion to VOSS

2. Switch boots as VOSS

   a. Switch re-onboards ExtremeCloud IQ - Site Engine via ZTP+

   b. Switch is added to ExtremeCloud IQ - Site Engine site and “Onboard VSP” workflow is triggered

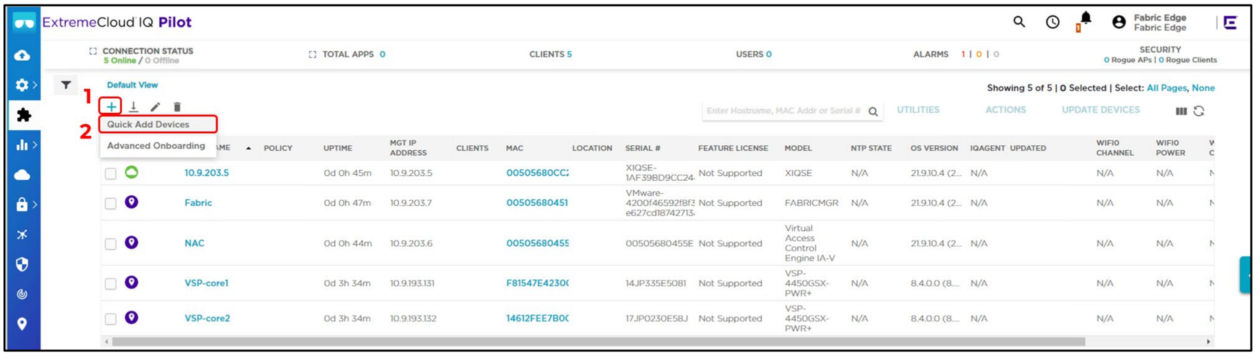
   c. ExtremeCloud IQ - Site Engine workflow sets the DVR Leaf configuration and reboots the switch a final time

3. Switch boots as DVR Leaf with final configuration

To proceed, decide which approach to use by following the relevant sections below.

Preparing via ExtremeCloud IQ

Log in to ExtremeCloud IQ and add a new switch using the serial number of the relevant universal-hardware switch. Under Manage, Devices, select **+** (add), then select **Quick Add Devices**.



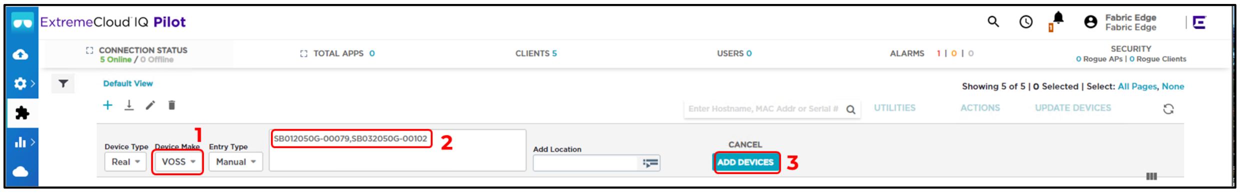
CONNECTION STATUS 5 Online / 0 Offline | TOTAL APPS 0 | CLIENTS 5 | USERS 0 | ALARMS 1 | 0 | 0 | SECURITY 0 Rogue APs | 0 Rogue Clients

Default View

Showing 5 of 5 | 0 Selected | Select: All Pages, None

AME	POLICY	UPTIME	MGT IP ADDRESS	CLIENTS	MAC	LOCATION	SERIAL #	FEATURE LICENSE	MODEL	NTP STATE	OS VERSION	IQAGENT	UPDATED	WIFI0 CHANNEL	WIFI0 POWER	W C
10.9.203.5		0d 0h 45m	10.9.203.5		00505680CC:		XIQSE-1AF39BD9CC24	Not Supported	XIQSE	N/A	21.9.10.4 (2...	N/A		N/A	N/A	N
Fabric		0d 0h 47m	10.9.203.7		00505680451		VMware-4200f46592f8f3 e627cd18742713	Not Supported	FABRICMGR	N/A	21.9.10.4 (2...	N/A		N/A	N/A	N
NAC		0d 0h 44m	10.9.203.6		00505680455		00505680455E	Not Supported	Virtual Access Control Engine IA-V	N/A	21.9.10.4 (2...	N/A		N/A	N/A	N
VSP-core1		0d 3h 34m	10.9.193.131		F81547E4230(		14JP335E5081	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0 (8....	N/A		N/A	N/A	N
VSP-core2		0d 3h 34m	10.9.193.132		14612FEE7B0(		17JP0230E58J	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0 (8....	N/A		N/A	N/A	N

In the Device Add banner that is revealed, set the Device Make to VOSS, paste the universal-hardware edge serial number into the serial number text box, and select the appropriate location.



CONNECTION STATUS 5 Online / 0 Offline | TOTAL APPS 0 | CLIENTS 5 | USERS 0 | ALARMS 1 | 0 | 0 | SECURITY 0 Rogue APs | 0 Rogue Clients

Default View

Showing 5 of 5 | 0 Selected | Select: All Pages, None

Device Type: Real
Device Make: VOSS
Entry Type: Manual
SB012050G-00079,SB032050G-00102
Add Location

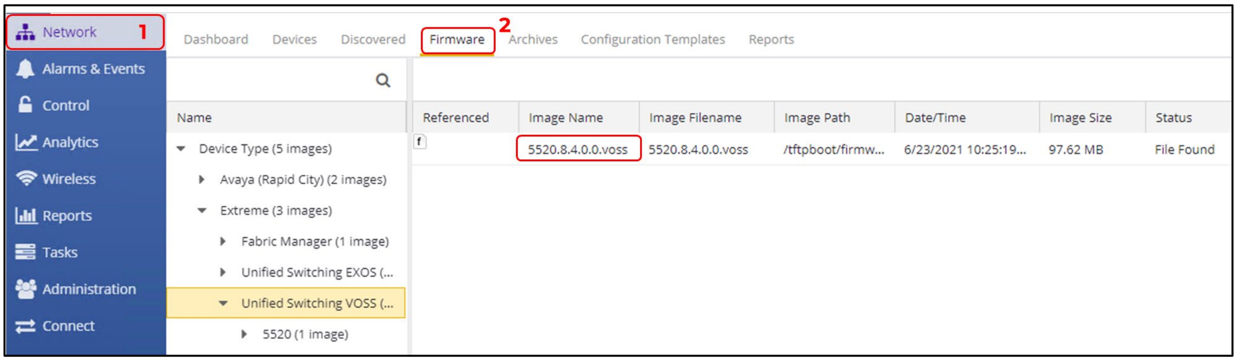
Note: The desired OS for the universal hardware edge was specified to be VOSS. When the universal hardware onboards to ExtremeCloud IQ, if it is found to be in EXOS mode (which it will be out of the box) then ExtremeCloud IQ will immediately convert it to VOSS.

Preparing via ExtremeCloud IQ - Site Engine Workflow

To use ExtremeCloud IQ - Site Engine to convert a universal-hardware switch from EXOS to VOSS, the “Change Persona to VOSS” workflow will be used. This workflow is available on GitHub.

This workflow has been already imported into ExtremeCloud IQ - Site Engine, but it will need to be configured to use the desired VOSS image for the OS conversion.

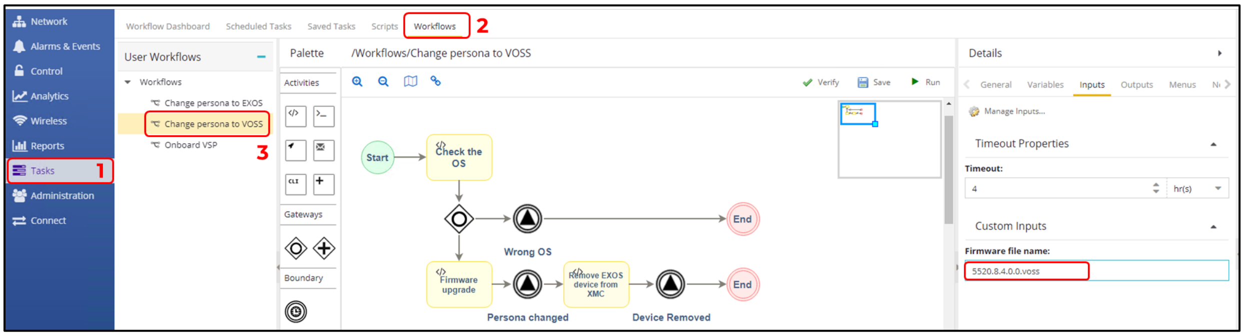
Under ExtremeCloud IQ - Site Engine Network, go to the Firmware tab and locate the universal-hardware VOSS image to use. Use VOSS 8.4.0.0 or later.



Referenced	Image Name	Image Filename	Image Path	Date/Time	Image Size	Status
f	5520.8.4.0.0.voss	5520.8.4.0.0.voss	/tftpboot/firmw...	6/23/2021 10:25:19...	97.62 MB	File Found

Copy and paste the desired image name. Note that the workflow uses FTP to transfer the image, and so the image must be located in /tftpboot/firmware/images.

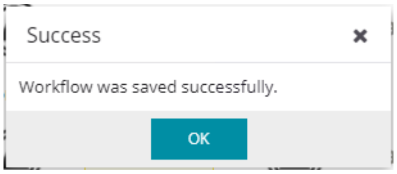
Then navigate to the ExtremeCloud IQ - Site Engine Tasks →Workflows tab, select the “Change persona to VOSS” workflow, and under the workflow details, view the Inputs tab.



Timeout: 4 hr(s)

Firmware file name: 5520.8.4.0.0.voss

In the “Firmware file name” input, paste the 5520 VOSS image name to use. Then select **Save** and **OK** the confirmation popup.



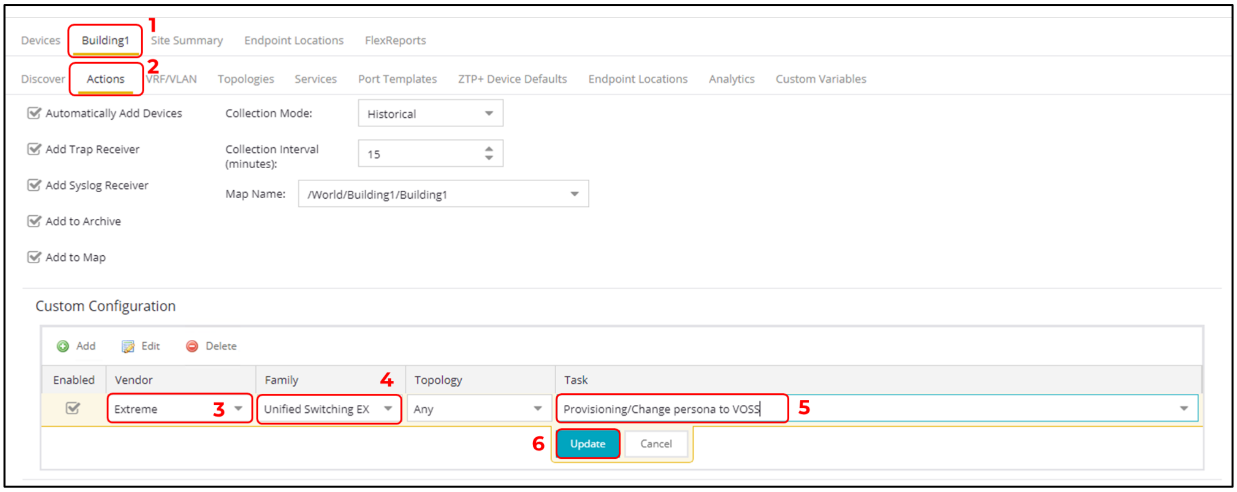
Success

Workflow was saved successfully.

Now go to the selected Building1/2 Site, Actions Tab, and under Custom Configuration add an entry pointing to the workflow:

- Vendor: **Extreme**
- Family: **Unified Switching EXOS**
- Topology: **Any**
- Task: **Provisioning/Change persona to VOSS**

Select **Update** and then select **Save**.



☑ Automatically Add Devices

☑ Add Trap Receiver

☑ Add Syslog Receiver

☑ Add to Archive

☑ Add to Map

Collection Mode: Historical

Collection Interval (minutes): 15

Map Name: /World/Building1/Building1

Custom Configuration

Enabled	Vendor	Family	Topology	Task
☑	Extreme	Unified Switching EX	Any	Provisioning/Change persona to VOSS

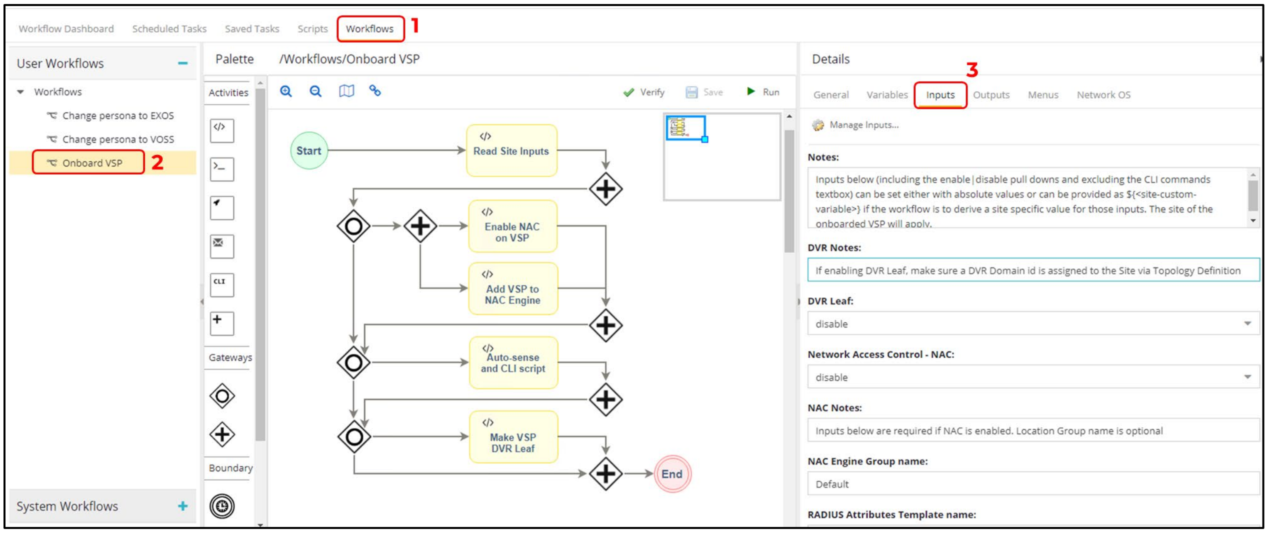
The onboarding section describes how this workflow kicks in after the universal-hardware switch initially booting as EXOS gets added to the Site in the following sections.

Configuration of ExtremeCloud IQ - Site Engine workflow for VSP onboarding

The following configurations need to be performed on ExtremeCloud IQ - Site Engine in order to fully automate the onboarding of the VSP edge switches and deploy a set of network infrastructure and service parameter as a starter configuration:

1. Configure any of the VSP auto-sense parameters, such as:
    a. Voice I-SID
    b. Data I-SID
    c. ISIS Hello authentication
    d. FA Message authentication
2. Convert the VSP into a DVR Leaf

With the current release 21.4.11.3, ExtremeCloud IQ - Site Engine cannot natively perform the above, so to fully automate the VSP edge onboarding process the ExtremeCloud IQ - Site Engine Workflow named “Onboard VSP” will be used. This workflow is available on GitHub and needs to be configured for use. Go to ExtremeCloud IQ - Site Engine Tasks then Workflow tab then select the “Onboard VSP” workflow and under the workflow details, view the input tab.



Notes:

Inputs below (including the enable|disable pull downs and excluding the CLI commands textbox) can be set either with absolute values or can be provided as ${<site-custom-variable>} if the workflow is to derive a site specific value for those inputs. The site of the onboarded VSP will apply.

DVR Notes:

If enabling DVR Leaf, make sure a DVR Domain id is assigned to the Site via Topology Definition

DVR Leaf: disable

Network Access Control - NAC: disable

NAC Notes:

Inputs below are required if NAC is enabled. Location Group name is optional

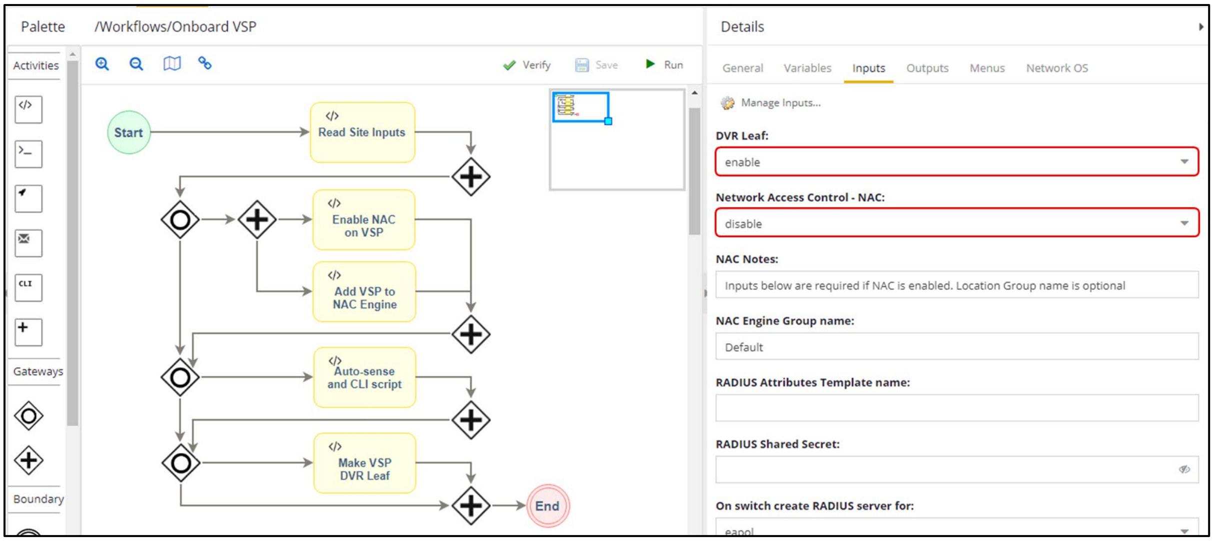
NAC Engine Group name: Default

RADIUS Attributes Template name:

Provide the following inputs:

- DVR Leaf: enable
- Network Access Control (NAC): disable
- NAC Engine Group name: <ignore>
- RADIUS Attributes Template name: <leave empty>
- RADIUS Shared Secret: <leave empty>
- On switch create RADIUS for: <ignore>
- Location Group name: <leave empty>
- Auto-sense Voice I-SID: 2100195
- Auto-sense Voice VLAN-ID only if tagged: 195
- Auto-sense Data I-SID: 2100196
- Auto-sense Data platform VLAN-ID: <leave empty, will be auto-allocated>
- Auto-sense ISIS Authentication key: <either leave empty, or set a key for ISIS auth>
- Auto-sense FA Authentication key: <leave empty for this sandbox>
- Additional CLI commands:
    - clock time-zone US Eastern

Note: NAC is not used in this deployment guide, so the NAC dropdown is set to disable and all the workflow NAC related inputs can be ignored and left empty.



DVR Leaf: enable

Network Access Control - NAC: disable

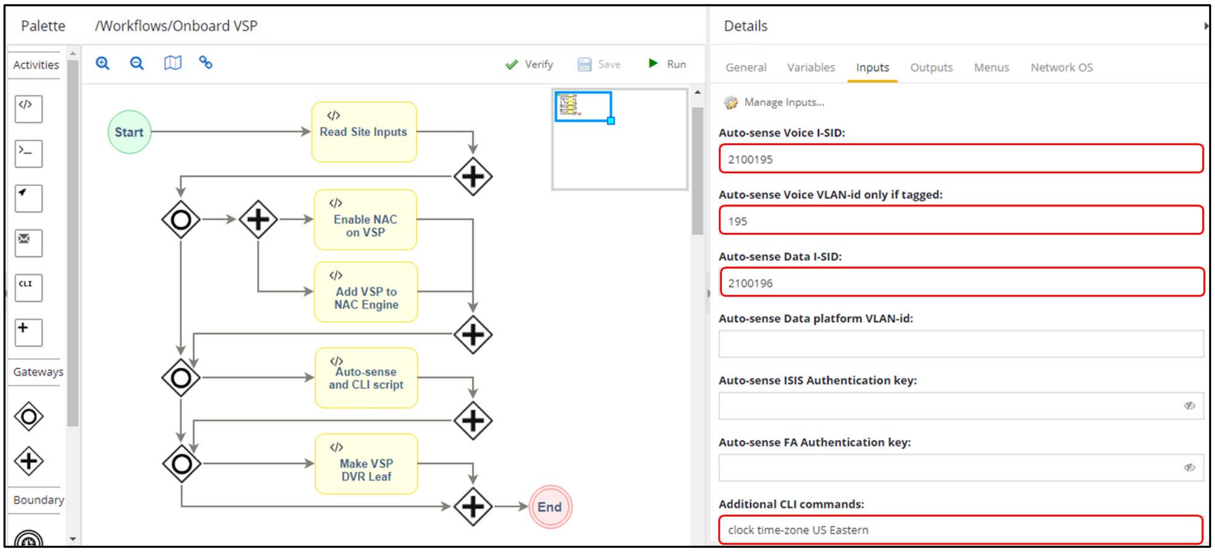
NAC Notes: Inputs below are required if NAC is enabled. Location Group name is optional

NAC Engine Group name: Default

RADIUS Attributes Template name:

RADIUS Shared Secret:

On switch create RADIUS server for: eapol



Auto-sense Voice I-SID: 2100195

Auto-sense Voice VLAN-id only if tagged: 195

Auto-sense Data I-SID: 2100196

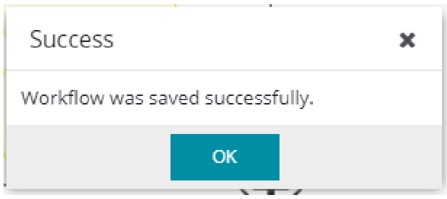
Auto-sense Data platform VLAN-id:

Auto-sense ISIS Authentication key:

Auto-sense FA Authentication key:

Additional CLI commands: clock time-zone US Eastern

Save the modified workflow, and select OK the confirmation popup.


Success

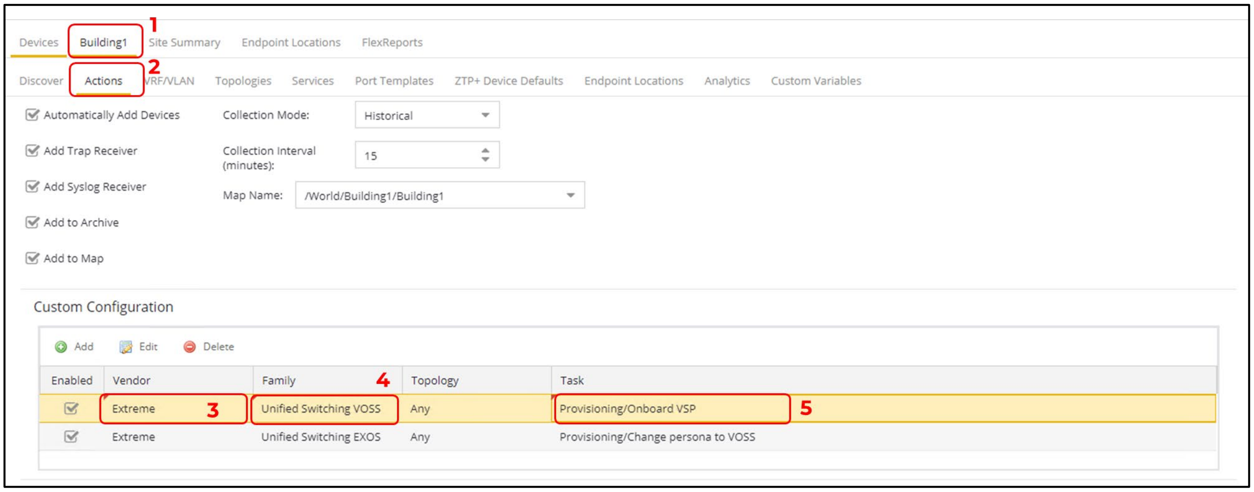
Workflow was saved successfully.

Now go to the ExtremeCloud IQ - Site Engine Site where the core VSPs have been onboarded, under Actions tab. Under Custom Configuration, add an additional entry with the following:

- Vendor: Extreme
- Family: Unified Switching VOSS
- Topology: Any
- Task: Provisioning/Onboard VSP

If the Provisioning/Onboard VSP workflow is not listed, cancel out and refresh the ExtremeCloud IQ - Site Engine page.

Note,: If you are using a recent non-universal VSP hardware model (such as VSP 4900 or VSP 7400), an additional entry for: **Extreme / VSP Series** needs to be set. Older VSP models require creating an entry for: **Avaya / VSP Series.** A good way to determine a Family type is by configuring the device in ExtremeCloud IQ - Site Engine and inspecting the Vendor Profile tab.



☑ Automatically Add Devices

☑ Add Trap Receiver

☑ Add Syslog Receiver

☑ Add to Archive

☑ Add to Map

Collection Mode: Historical

Collection Interval (minutes): 15

Map Name: /World/Building1/Building1

Custom Configuration

Enabled	Vendor	Family	Topology	Task
☑	Extreme	Unified Switching VOSS	Any	Provisioning/Onboard VSP
☑	Extreme	Unified Switching EXOS	Any	Provisioning/Change persona to VOSS

Select **Save** to commit changes.

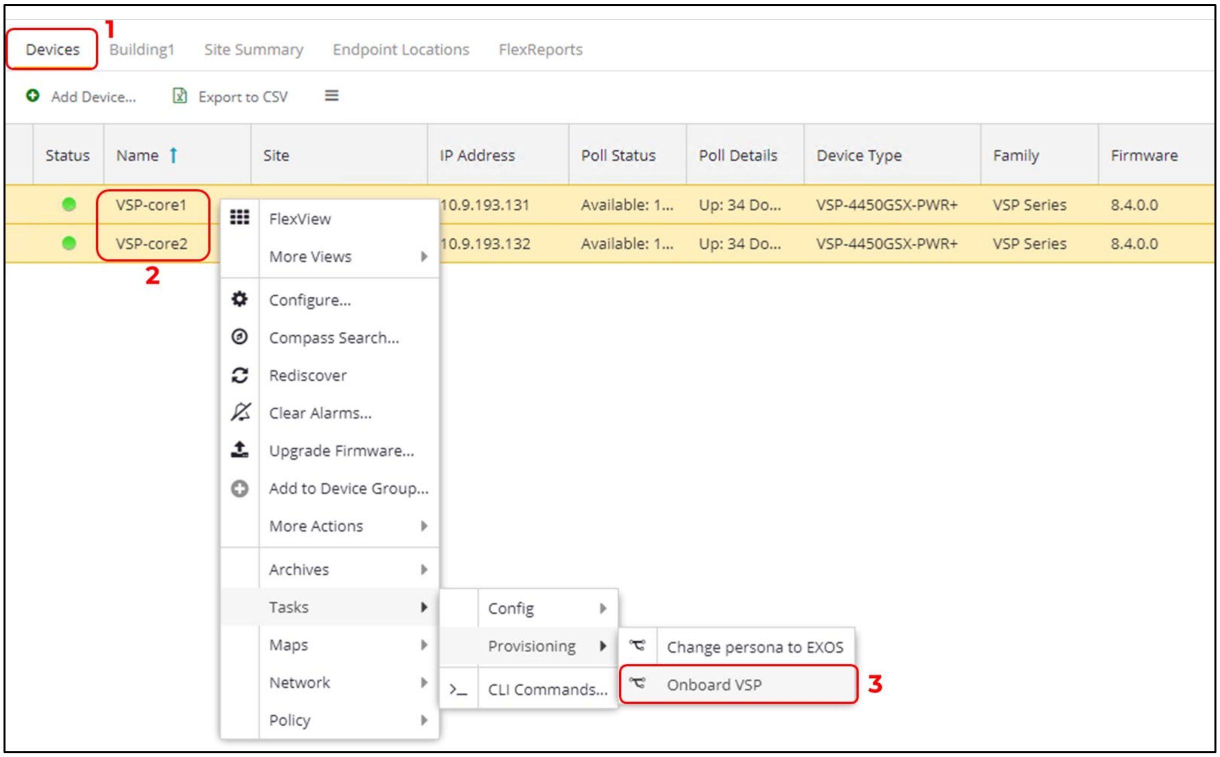
Manual Run of ExtremeCloud IQ - Site Engine Workflow on VSP Core Nodes

This step is not necessarily required, but it might be needed if any of the settings performed by the workflow on the VSP edge switches are also required on the VSP core nodes.

For example, are auto-sense Voice/Data I-SID settings required on them? That depends on whether phones and end-stations are going to be directly connected on the VSP core nodes.

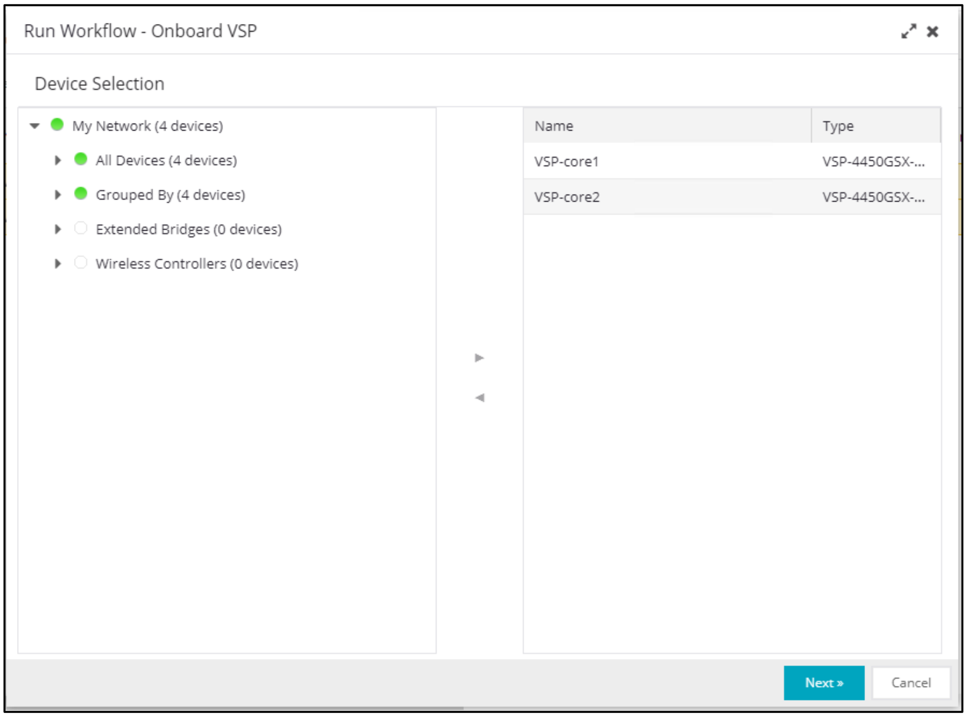
The VSP core nodes will never need to be made DVR Leaf nodes, but there might be a need to set the auto-sense ISIS Hello authentication key if ISIS authentication is required before new edge VSPs are allowed to perform Zero-Touch-Fabric. For example, in this use case, the auto-sense ISIS Authentication key is required, so the “Onboard VSP” workflow must be executed manually to configure the VSP Cores with this parameter. Here are the steps to do this.

Navigate to the ExtremeCloud IQ - Site Engine Site where the VSP cores were onboarded. Select both VSP cores and select Tasks →Provisioning →Onboard VSP.



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	VSP-core1		10.9.193.131	Available: 1...	Up: 34 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2		10.9.193.132	Available: 1...	Up: 34 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

Accept the switch selection of both VSP cores. Then select **Next**.



Name	Type
VSP-core1	VSP-4450GSX-...
VSP-core2	VSP-4450GSX-...

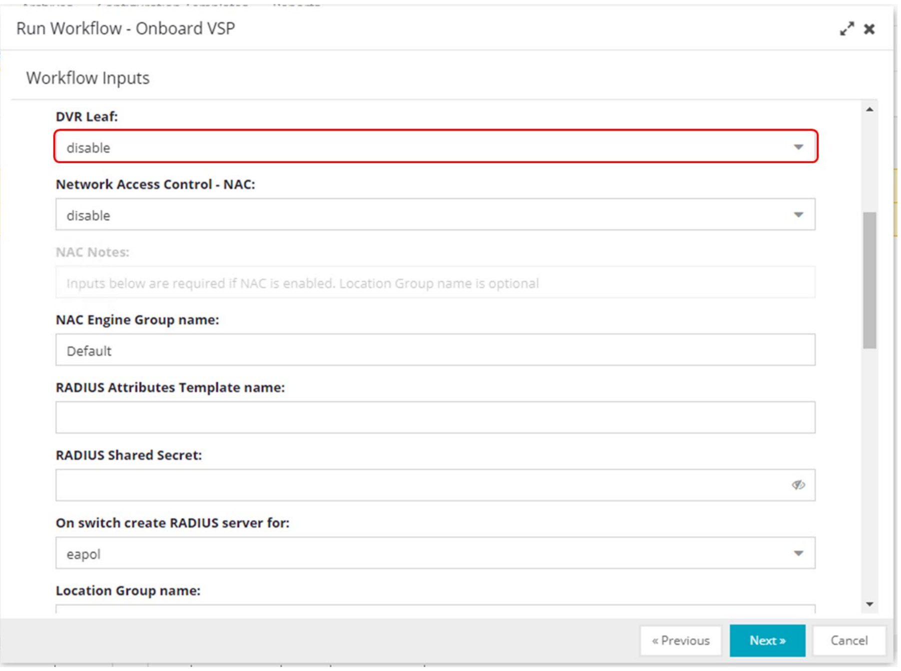
The same workflow inputs will be shown, but this time any change made for those inputs will not persist beyond this run of the workflow. That is, if any changes are made here, those changes will not override the workflow input settings that have been set on the workflow.

This time set the inputs to:

- DVR Leaf: disable
- Network Access Control (NAC): **disable**

- NAC Engine Group name: <ignore>
- RADIUS Attributes Template name: <leave empty>
- RADIUS Shared Secret: <leave empty>
- On switch create RADIUS for: <ignore>
- Location Group name: <leave empty>
- Auto-sense Voice I-SID: 2100195
- Auto-sense Voice VLAN-ID only if tagged: 195
- Auto-sense Data I-SID: 2100196
- Auto-sense Data platform VLAN-ID: <leave empty, will be auto-allocated>
- Auto-sense ISIS Authentication key: <either leave empty, or set a key for ISIS auth>
- Auto-sense FA Authentication key: <leave empty for this sandbox>
- Additional CLI commands:
  - clock time-zone US Eastern

Basically, this means you will only change the DVR Leaf dropdown to **disable**. The rest is left the same—though the DVR Leaf could have been left untouched as well, because the workflow will not try to convert the switch into a DVR Leaf if it detects that the VSP is already configured as a DVR Controller.



Run Workflow - Onboard VSP

Workflow Inputs

DVR Leaf: disable

Network Access Control - NAC: disable

NAC Notes: Inputs below are required if NAC is enabled. Location Group name is optional

NAC Engine Group name: Default

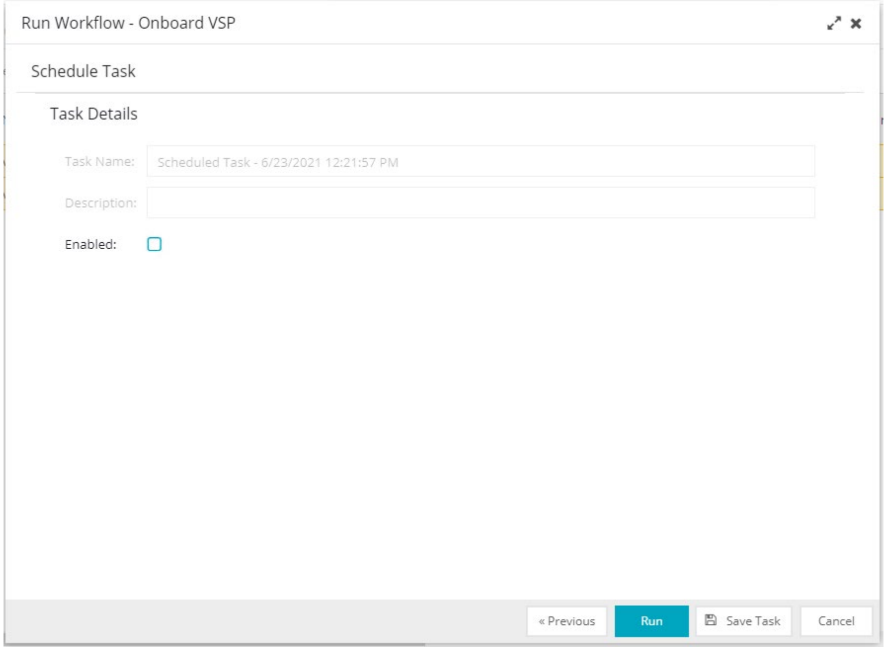
RADIUS Attributes Template name:

RADIUS Shared Secret:

On switch create RADIUS server for: eapol

Location Group name:

Select **Next**.



Run Workflow - Onboard VSP

Schedule Task

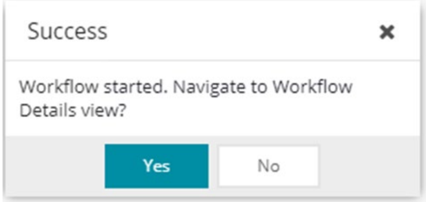
Task Details

Task Name: Scheduled Task - 6/23/2021 12:21:57 PM

Description:

Enabled: □

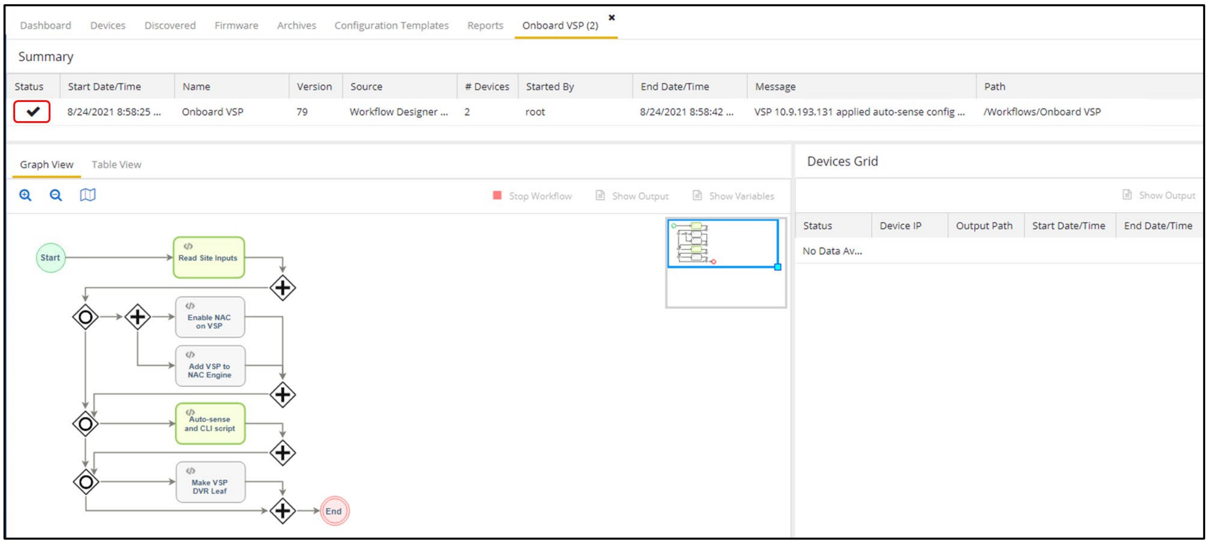
Then select **Run** and **Yes** to view the workflow as it runs.



Success

Workflow started. Navigate to Workflow Details view?

Wait for the workflow to complete. On completion, the status rotating cog changes to a checkmark if the workflow is completed successfully and to an exclamation mark otherwise.



Summary

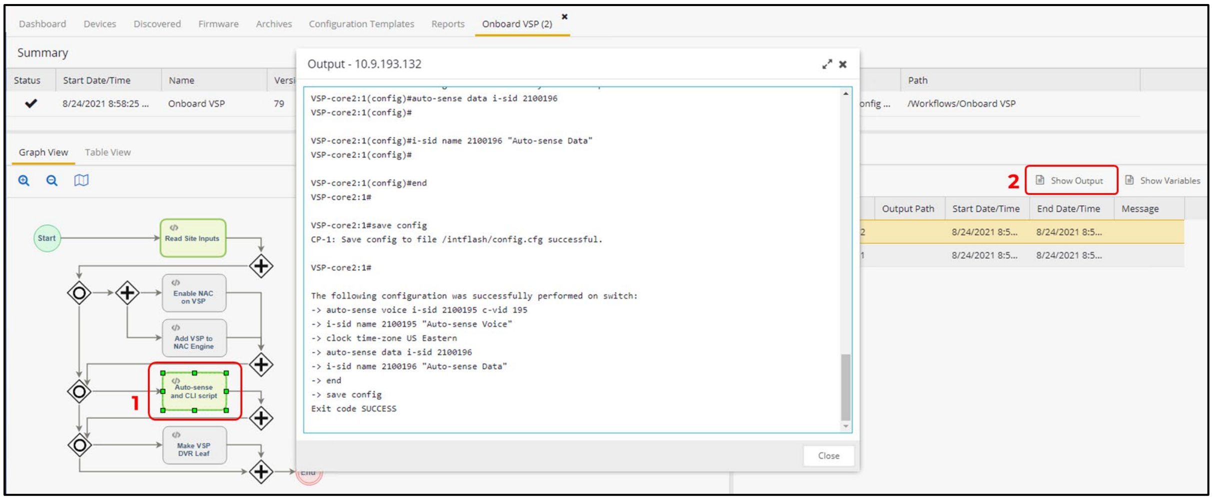
Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Message	Path
✓	8/24/2021 8:58:25 ...	Onboard VSP	79	Workflow Designer ...	2	root	8/24/2021 8:58:42 ...	VSP 10.9.193.131 applied auto-sense config ...	/Workflows/Onboard VSP

Devices Grid

Status	Device IP	Output Path	Start Date/Time	End Date/Time
No Data Av...				

When the workflow has completed, inspect the various workflow activity boxes by selecting them and then selecting **Show Output** to see the detail of the actions performed.

The auto-sense configuration was applied.



```
VSP-core2:1(config)#auto-sense data i-sid 2100196
VSP-core2:1(config)#

VSP-core2:1(config)#i-sid name 2100196 "Auto-sense Data"
VSP-core2:1(config)#

VSP-core2:1(config)#end
VSP-core2:1#

VSP-core2:1#save config
CP-1: Save config to file /intflash/config.cfg successful.

VSP-core2:1#

The following configuration was successfully performed on switch:
-> auto-sense voice i-sid 2100195 c-vid 195
-> i-sid name 2100195 "Auto-sense Voice"
-> clock time-zone US Eastern
-> auto-sense data i-sid 2100196
-> i-sid name 2100196 "Auto-sense Data"
-> end
-> save config
Exit code SUCCESS
```

Notice that the activity blocks named “Enable NAC on VSP”, “Add VSP to NAC Engine” and “Make VSP DVR Leaf” did not run.

Deployment of Edge Switches

Everything is now ready to accept the automated deployment of universal-hardware switches as VSP edge.

It will be sufficient for a technician to unbox the switches, rack the switches into their wiring closet rack, connect the fabric uplinks into the VSP core, connect any fabric side links into adjacent units in the same wiring closet rack, and power on the switches.

The rest the deployment is zero-touch, and there is no need for the technician to connect via the serial console of the switch. Nor is there any need to pre-stage the switches before deploying them in their final wiring closet rack.

Caution

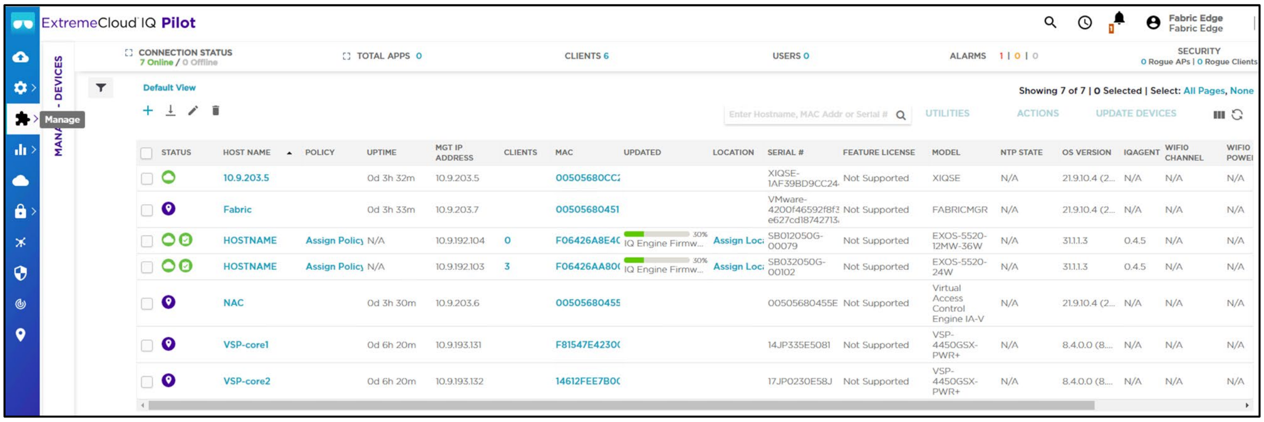
The exception is non universal hardware that ships with a VOSS version earlier than 8.3.0.0. This is currently the case for the VSP 4900. Going forward, the VSP 4900 will ship with VOSS 8.3.1.0, but there is always a chance that the units were shipped from a distributor, in which case the shipped software might not be 8.3.1.0.

Onboarding of VSP Edge Switches

OS Conversion via ExtremeCloud IQ

If the universal-hardware serial numbers were added to ExtremeCloud IQ in the previous section, then as soon as the switches come online as EXOS switches they will be able to join ExtremeCloud IQ.

An activity bar in the UPDATED column displays the switch's firmware update status.



STATUS	HOST NAME	POLICY	UPTIME	MGT IP ADDRESS	CLIENTS	MAC	UPDATED	LOCATION	SERIAL #	FEATURE LICENSE	MODEL	NTP STATE	OS VERSION	IQAGENT	WIFI0 CHANNEL	WIFI0 POWE
	10.9.203.5		0d 3h 32m	10.9.203.5		00505680CC			XIQSE-1AF39BD9CC24	Not Supported	XIQSE	N/A	21.9.10.4 (2...	N/A	N/A	N/A
	Fabric		0d 3h 33m	10.9.203.7		00505680451			VMware-4200f46592f8f3 e627cd18742713	Not Supported	FABRICMGR	N/A	21.9.10.4 (2...	N/A	N/A	N/A
	HOSTNAME	Assign Policy	N/A	10.9.192.104	0	F06426A8E4C	30% IQ Engine Firmw...	Assign Loc	SB012050G-00079	Not Supported	EXOS-5520-12MW-36W	N/A	31.1.1.3	0.4.5	N/A	N/A
	HOSTNAME	Assign Policy	N/A	10.9.192.103	3	F06426AA80C	30% IQ Engine Firmw...	Assign Loc	SB032050G-00102	Not Supported	EXOS-5520-24W	N/A	31.1.1.3	0.4.5	N/A	N/A
	NAC		0d 3h 30m	10.9.203.6		00505680455			00505680455E	Not Supported	Virtual Access Control Engine IA-V	N/A	21.9.10.4 (2...	N/A	N/A	N/A
	VSP-core1		0d 6h 20m	10.9.193.131		F81547E4230C			14JP335E5081	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0 (8....	N/A	N/A	N/A
	VSP-core2		0d 6h 20m	10.9.193.132		14612FEE7B0C			17JP0230E58J	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0 (8....	N/A	N/A	N/A

ExtremeCloud IQ currently does the OS conversion using VOSS 8.4.0.0.

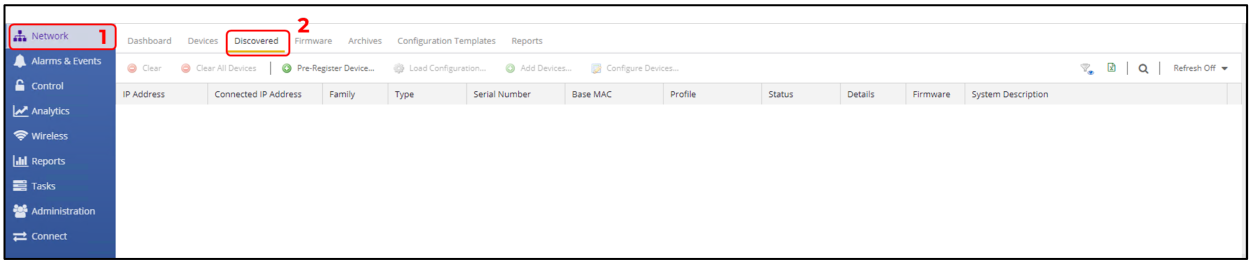
The switch will be rebooted and will come back as a VOSS switch.

The conversion to VOSS will take about 8 minutes and it will take VOSS a further 3 minutes to join the Fabric, obtain a nickname, obtain a DHCP address, and call into ExtremeCloud IQ - Site Engine for the first time as a VOSS switch.

OS Conversion via ExtremeCloud IQ - Site Engine Workflow

Another method is to automate the universal-hardware OS conversion via ExtremeCloud IQ - Site Engine. This process will begin as soon as the universal-hardware edge onboards to ExtremeCloud IQ - Site Engine using ZTP+ as an EXOS switch.

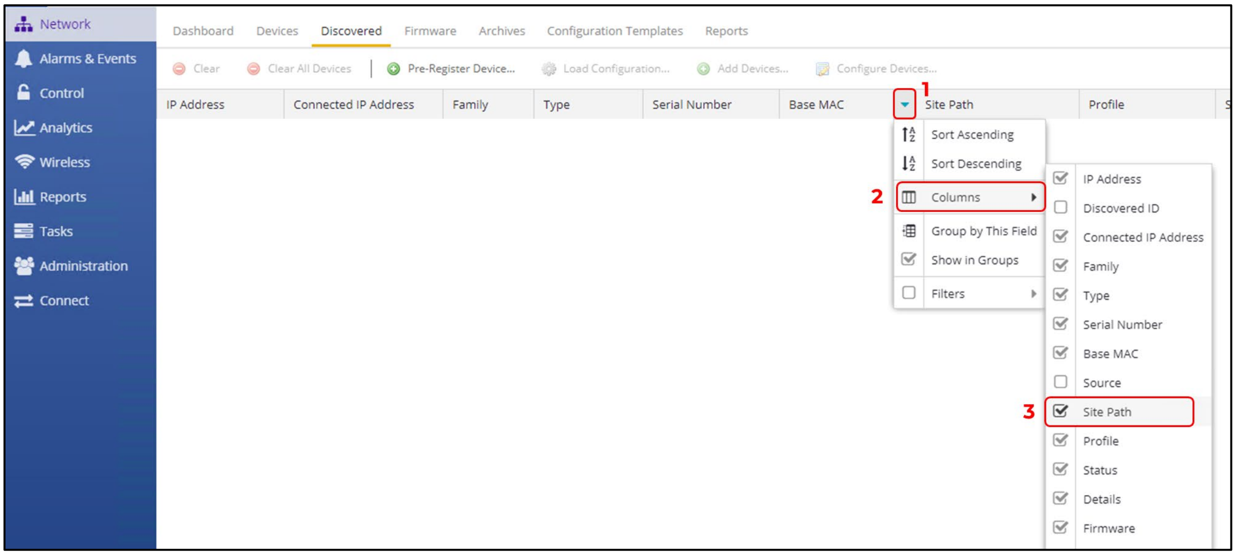
Monitor the ExtremeCloud IQ - Site Engine Discovered tab.



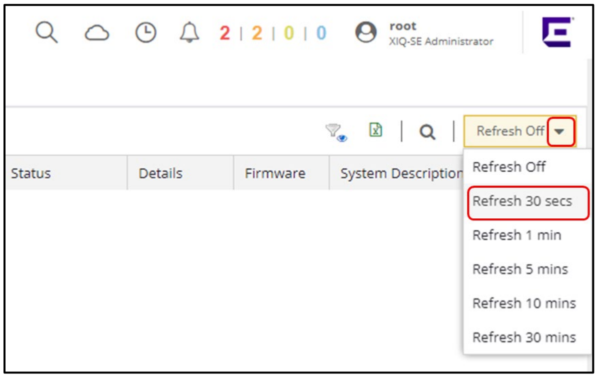
IP Address	Connected IP Address	Family	Type	Serial Number	Base MAC	Profile	Status	Details	Firmware	System Description

While waiting, tune the Discovery tab to show the Site Path, which will be useful information to see.

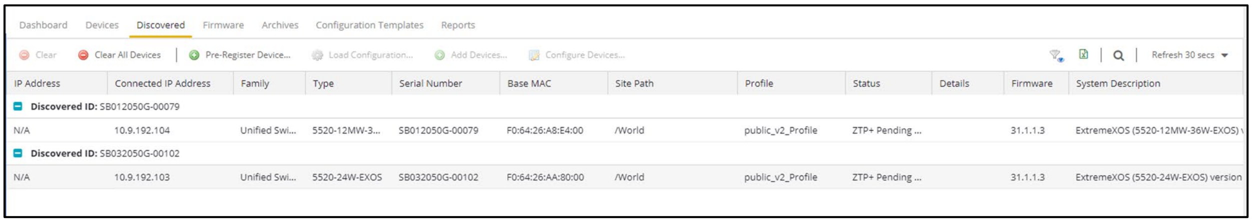
Select any of the columns, select the dropdown triangle, then select **Columns** and enable (check) **Site Path**.



Then, in the top right-hand corner, set auto refresh to 30 seconds.

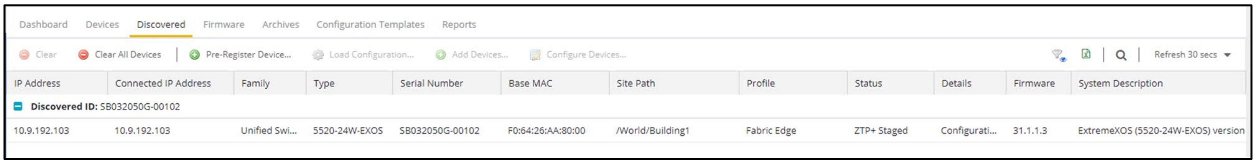


When the universal-hardware switches finally register with ExtremeCloud IQ - Site Engine, the switches will appear in the Discovered tab.



IP Address	Connected IP Address	Family	Type	Serial Number	Base MAC	Site Path	Profile	Status	Details	Firmware	System Description
Discovered ID: SB012050G-00079											
N/A	10.9.192.104	Unified Swi...	5520-12MW-3...	SB012050G-00079	F0:64:26:A8:E4:00	/World	public_v2_Profile	ZTP+ Pending ...		31.1.1.3	ExtremeXOS (5520-12MW-36W-EXOS) \
Discovered ID: SB032050G-00102											
N/A	10.9.192.103	Unified Swi...	5520-24W-EXOS	SB032050G-00102	F0:64:26:AA:80:00	/World	public_v2_Profile	ZTP+ Pending ...		31.1.1.3	ExtremeXOS (5520-24W-EXOS) version

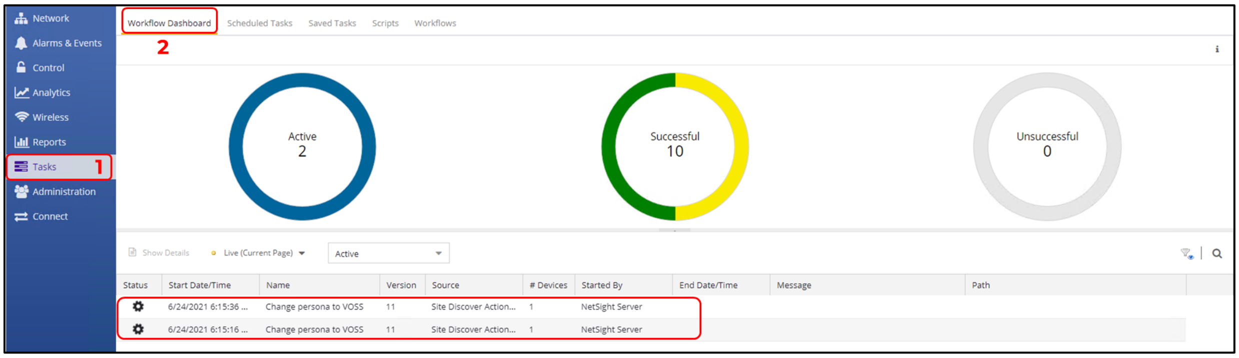
And it will take about 3 minutes before the ZTP+ onboarding stages the configuration and adds the EXOS switch into the ExtremeCloud IQ - Site Engine site.



IP Address	Connected IP Address	Family	Type	Serial Number	Base MAC	Site Path	Profile	Status	Details	Firmware	System Description
Discovered ID: SB032050G-00102											
10.9.192.103	10.9.192.103	Unified Swi...	5520-24W-EXOS	SB032050G-00102	F0:64:26:AA:80:00	/World/Building1	Fabric Edge	ZTP+ Staged	Configurati...	31.1.1.3	ExtremeXOS (5520-24W-EXOS) version

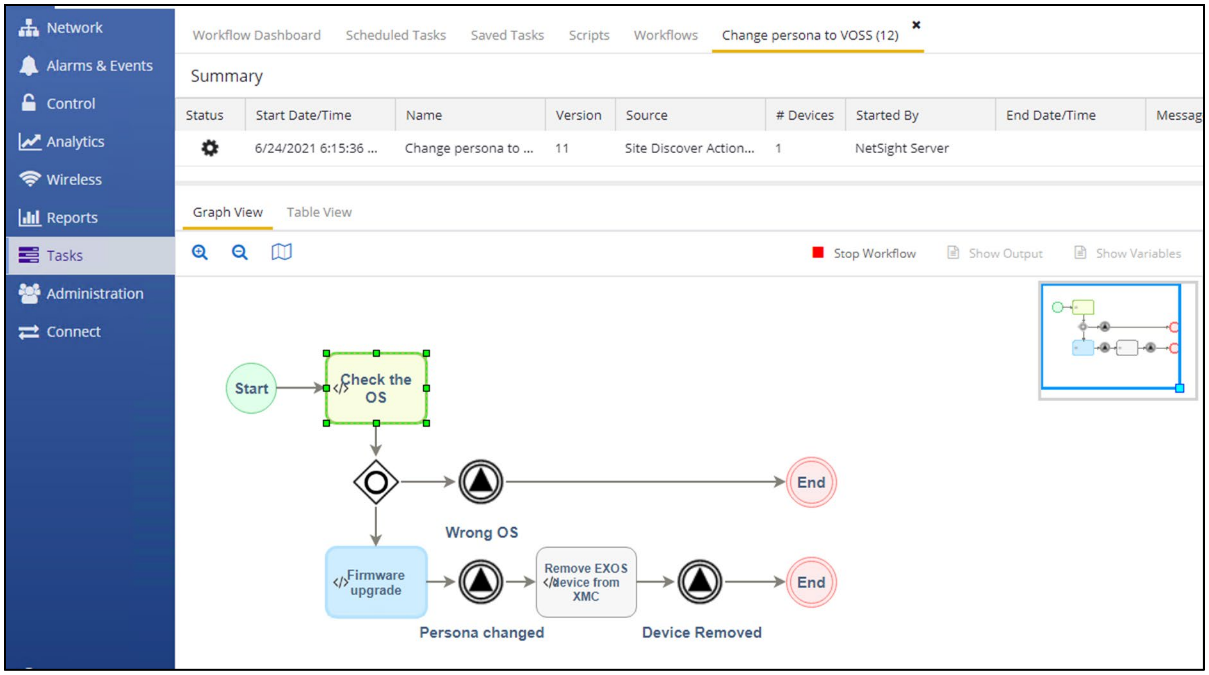
As soon as the switches are deleted from the Discovered tab, they are added and can be found on the onboarded Site. At the same time, the Site's actions will be performed. Quickly go to

ExtremeCloud IQ - Site Engine Tasks →Workflow Dashboard. There is a chance the workflows are still running (they will run for a couple of minutes).



Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Message	Path
⚙	6/24/2021 6:15:36 ...	Change persona to VOSS	11	Site Discover Action...	1	NetSight Server			
⚙	6/24/2021 6:15:16 ...	Change persona to VOSS	11	Site Discover Action...	1	NetSight Server			

If a non-zero count is displayed in the Active chart, click on the chart to list the currently active workflows. Double-click on the workflow entry to reveal the workflow details as it is running.



Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Messag
⚙	6/24/2021 6:15:36 ...	Change persona to ...	11	Site Discover Action...	1	NetSight Server		

Green activity boxes have run and have completed successfully; red activity boxes have run and failed; blue activity boxes are still running.

When the workflow has completed successfully, the EXOS universal-hardware switches will reboot into VOSS and will be deleted from ExtremeCloud IQ - Site Engine.

The conversion to VOSS will take about 8 minutes, and it will take VOSS a further 3 minutes to join the Fabric, obtain a Nickname, obtain a DHCP address, and call into ExtremeCloud IQ - Site Engine once more as a VOSS switch.

VSP Edge Onboarding Steps

The order of events should be as follows. There are two possibilities.

If the Auto-sense ISIS Hello Authentication key was not specified on the VSP cores:

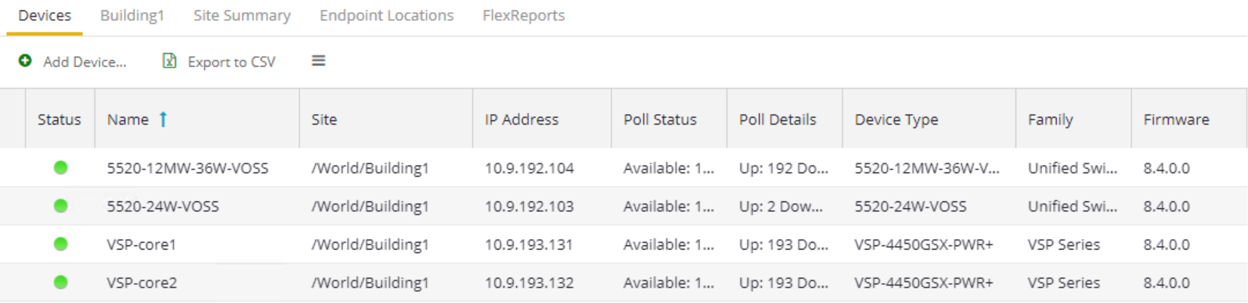
1. ISIS adjacency form with neighboring VOSS switches
2. Nickname is dynamically assigned by Nickname servers (VSP core)
3. DHCP obtains IP address on onboarding I-SID 15999999
4. DHCP provides default gateway, DNS servers, Domain Name
5. Switch does a DNS lookup for “extremecontrol.<domain-name>”
6. DNS lookup must return ExtremeCloud IQ - Site Engine’s IP address
7. Switch calls in to ExtremeCloud IQ - Site Engine, and will now appear in Discovered tab (provided it does not already exist in ExtremeCloud IQ - Site Engine’s database)
8. If ExtremeCloud IQ - Site Engine can allocate the switch to a Site, then the Site’s ZTP+ configuration is pushed. If not, the switch will remain in the Discovered tab until an administrator manually configures or adds the switch to a Site.
9. When the switch is allocated to an ExtremeCloud IQ - Site Engine Site, the Site’s actions are performed; this is when the “Onboard VSP” workflow will be executed
10. “Onboard VSP” applies final Auto-sense configuration as well as DVR-Leaf conversion

If the Auto-sense ISIS Hello Authentication key was specified on the VSP cores:

1. ISIS adjacency will not form with neighboring VSP core switches because there is no ISIS authentication key on the booting edge switches
2. But the auto-sense ports will get untagged connectivity into the onboarding VLAN 4048 on the VSP cores
3. DHCP obtains IP address on untagged UNI management onboarding VLAN4048
4. DHCP provides default gateway, DNS servers, Domain Name
5. Switch does a DNS lookup for “extremecontrol.<domain-name>”
6. DNS lookup must return ExtremeCloud IQ - Site Engine’s IP address
7. Switch calls in to ExtremeCloud IQ - Site Engine, and will now appear in Discovered tab (provided it does not already exist in ExtremeCloud IQ - Site Engine’s database)
8. If ExtremeCloud IQ - Site Engine can allocate the switch to a Site, then the Site’s ZTP+ configuration is pushed. If not, the switch will remain in the Discovered tab until an administrator manually configures or adds the switch to a Site.
9. When the switch is allocated to an ExtremeCloud IQ - Site Engine Site, the Site’s Actions are performed; this is when the “Onboard VSP” workflow will be executed
10. “Onboard VSP” applies final Auto-sense configuration as well as DVR-Leaf conversion. Only now the onboarded VSP edge switch gets the Auto-sense ISIS Hello authentication key
11. ISIS adjacency can now form with neighboring VSP core switches

12. Nickname is dynamically assigned by Nickname servers (VSP core)
13. There is a brief period where the onboarding switch is unreachable as its connectivity into the onboarding I-SID 15999999 transitions from a UNI connection to a fabric NNI connection

When the configuration is saved, the switch will disappear from ExtremeCloud IQ - Site Engine Discovered tab. It will be added to the final site and to the corresponding site Map.



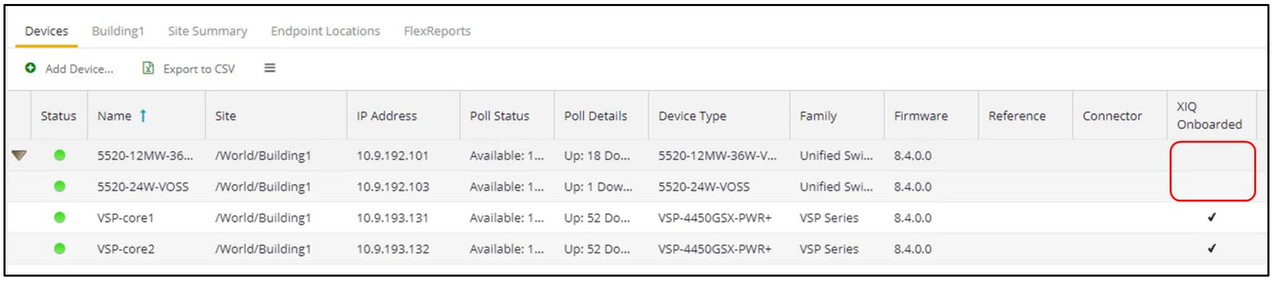
Status	Name ↑	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	5520-12MW-36W-VOSS	/World/Building1	10.9.192.104	Available: 1...	Up: 192 Do...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0
●	5520-24W-VOSS	/World/Building1	10.9.192.103	Available: 1...	Up: 2 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 193 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 193 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

Manual Steps Required if OS Conversion Was Done via ExtremeCloud IQ

If the OS conversion of the universal-hardware was performed by the ExtremeCloud IQ - Site Engine workflow, this section can be skipped.

If, on the other hand, ExtremeCloud IQ made the OS conversion, the universal hardware will be added to ExtremeCloud IQ - Site Engine by ZTP+. But ExtremeCloud IQ - Site Engine will detect that these devices are already present in ExtremeCloud IQ and will not attempt to manage the devices. The devices will be in a read-only mode where they cannot be configured, and no ExtremeCloud IQ - Site Engine script or workflow can be executed against them. As a result, the "Onboard VSP" workflow will not execute.

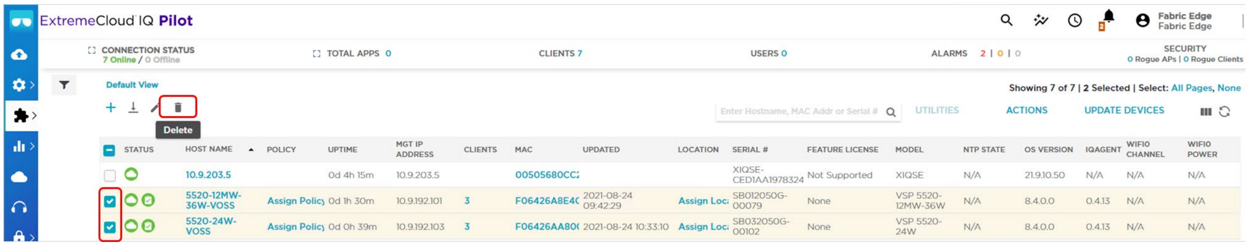
This can be seen by inspecting the "ExtremeCloud IQ Onboarded" device column, which will have a missing check mark.



Status	Name ↑	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware	Reference	Connector	XIQ Onboarded
●	5520-12MW-36...	/World/Building1	10.9.192.101	Available: 1...	Up: 18 Do...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0			
●	5520-24W-VOSS	/World/Building1	10.9.192.103	Available: 1...	Up: 1 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0			
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 52 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0			✓
●	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 52 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0			✓

To allow ExtremeCloud IQ - Site Engine to fully manage these devices, two manual actions are required.

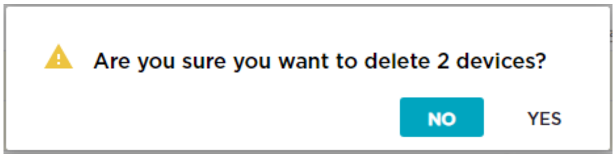
First, the devices need to be deleted from ExtremeCloud IQ. Select the universal hardware switches in ExtremeCloud IQ (these should now be seen as VOSS devices), and select **Delete**.



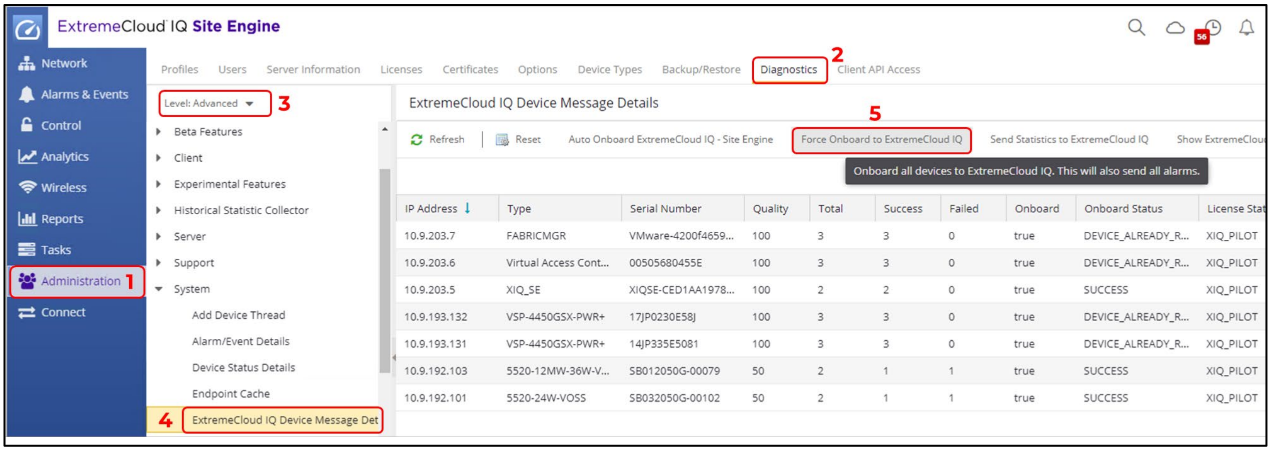
Showing 7 of 7 | 2 Selected | Select: All Pages, None

	STATUS	HOST NAME	POLICY	UPTIME	MGT IP ADDRESS	CLIENTS	MAC	UPDATED	LOCATION	SERIAL #	FEATURE LICENSE	MODEL	NTP STATE	OS VERSION	IQAGENT	WIFI0 CHANNEL	WIFI0 POWER
☐	○	10.9.203.5		0d 4h 15m	10.9.203.5		00505680CC:			XIQSE-CED1AA1978324	Not Supported	XIQSE	N/A	21.9.10.50	N/A	N/A	N/A
☑	○ ✓	5520-12MW-36W-VOSS	Assign Policy	0d 1h 30m	10.9.192.101	3	F06426A8E4(	2021-08-24 09:42:29	Assign Loc:	SB012050G-00079	None	VSP 5520-12MW-36W	N/A	8.4.0.0	0.4.13	N/A	N/A
☑	○ ✓	5520-24W-VOSS	Assign Policy	0d 0h 39m	10.9.192.103	3	F06426AA80(	2021-08-24 10:33:10	Assign Loc:	SB032050G-00102	None	VSP 5520-24W	N/A	8.4.0.0	0.4.13	N/A	N/A

Confirm the deletion by selecting **Yes**.


Are you sure you want to delete 2 devices?

Second, ExtremeCloud IQ - Site Engine needs to be instructed to re-synch its devices with ExtremeCloud IQ. Navigate ExtremeCloud IQ - Site Engine to Administration→Diagnostics, select level "Advanced" then select the "ExtremeCloud IQ Device Message Details" folder under the System main folder.

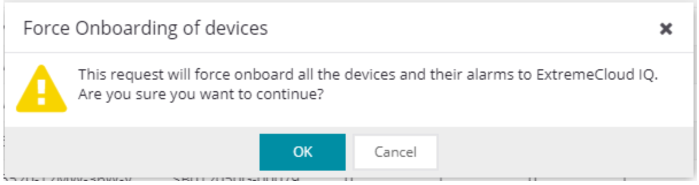


ExtremeCloud IQ Device Message Details

Onboard all devices to ExtremeCloud IQ. This will also send all alarms.

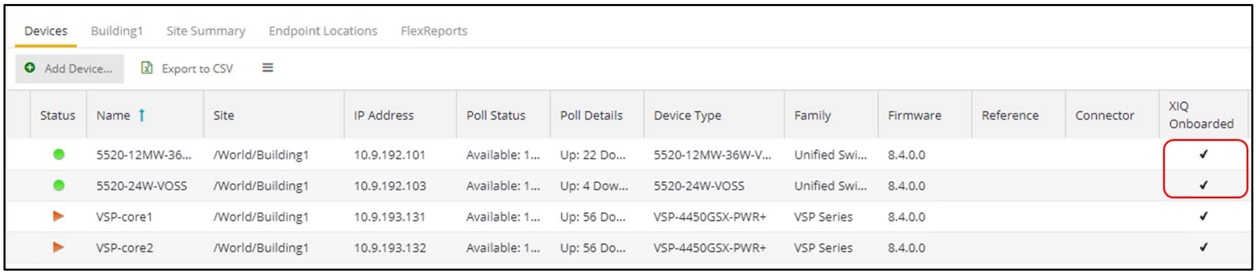
IP Address	Type	Serial Number	Quality	Total	Success	Failed	Onboard	Onboard Status	License Stat
10.9.203.7	FABRICMGR	VMware-4200f4659...	100	3	3	0	true	DEVICE_ALREADY_R...	XIQ_PILOT
10.9.203.6	Virtual Access Cont...	00505680455E	100	3	3	0	true	DEVICE_ALREADY_R...	XIQ_PILOT
10.9.203.5	XIQ_SE	XIQSE-CED1AA1978...	100	2	2	0	true	SUCCESS	XIQ_PILOT
10.9.193.132	VSP-4450GSX-PWR+	17JP0230E58J	100	3	3	0	true	DEVICE_ALREADY_R...	XIQ_PILOT
10.9.193.131	VSP-4450GSX-PWR+	14JP335E5081	100	3	3	0	true	DEVICE_ALREADY_R...	XIQ_PILOT
10.9.192.103	5520-12MW-36W-V...	SB012050G-00079	50	2	1	1	true	SUCCESS	XIQ_PILOT
10.9.192.101	5520-24W-VOSS	SB032050G-00102	50	2	1	1	true	SUCCESS	XIQ_PILOT

Select the **Force Onboard to ExtremeCloud IQ** button. Then select **OK** in the confirmation popup.


Force Onboarding of devices

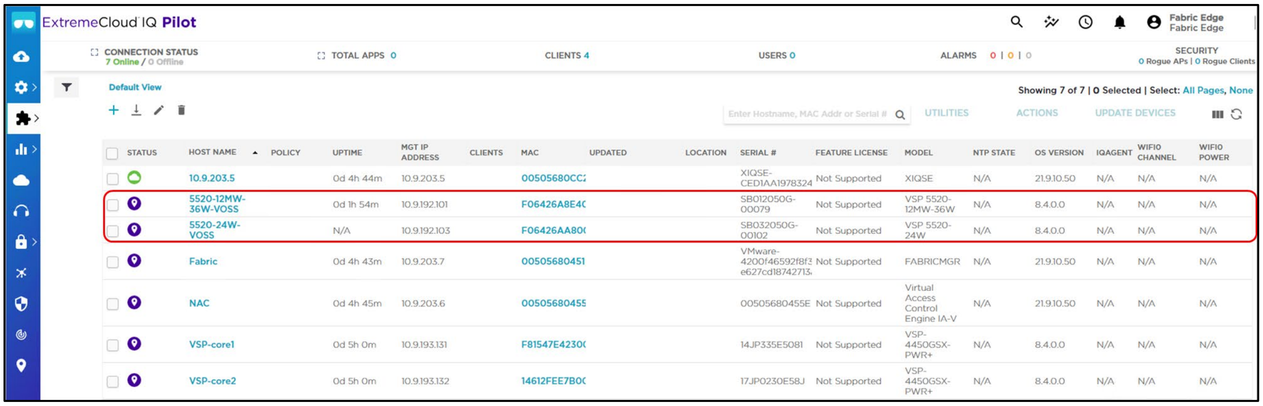
This request will force onboard all the devices and their alarms to ExtremeCloud IQ.
Are you sure you want to continue?

Allow a few seconds for ExtremeCloud IQ - Site Engine to re-submit all devices to ExtremeCloud IQ. Then inspect the devices. They should now have a check mark in the "XIQ Onboarded" column.



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware	Reference	Connector	XIQ Onboarded
●	5520-12MW-36...	/World/Building1	10.9.192.101	Available: 1...	Up: 22 Do...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0			✓
●	5520-24W-VOSS	/World/Building1	10.9.192.103	Available: 1...	Up: 4 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0			✓
▶	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 56 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0			✓
▶	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 56 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0			✓

Inspection of ExtremeCloud IQ will also show the same switches re-added to ExtremeCloud IQ, but this time by ExtremeCloud IQ - Site Engine.

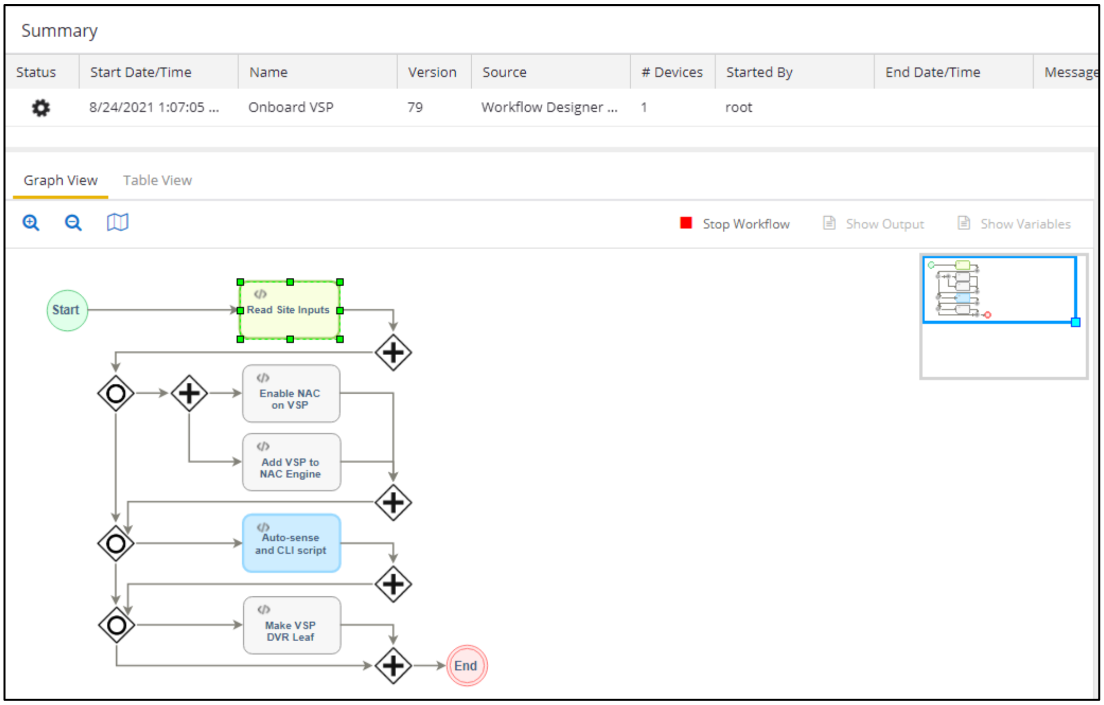


STATUS	HOST NAME	POLICY	UPTIME	MGT IP ADDRESS	CLIENTS	MAC	UPDATED	LOCATION	SERIAL #	FEATURE LICENSE	MODEL	NTP STATE	OS VERSION	IQAGENT	WIFI0 CHANNEL	WIFI0 POWER
○	10.9.203.5		0d 4h 44m	10.9.203.5		00505680CC:			XIQSE-CED1AA1978324	Not Supported	XIQSE	N/A	21.9.10.50	N/A	N/A	N/A
●	5520-12MW-36W-VOSS		0d 1h 54m	10.9.192.101		F06426A8E4(			SB012050G-00079	Not Supported	VSP 5520-12MW-36W	N/A	8.4.0.0	N/A	N/A	N/A
●	5520-24W-VOSS		N/A	10.9.192.103		F06426AA80(			SB032050G-00102	Not Supported	VSP 5520-24W	N/A	8.4.0.0	N/A	N/A	N/A
●	Fabric		0d 4h 43m	10.9.203.7		00505680451			VMware-4200f46592f8f3 e627cd18742713	Not Supported	FABRICMGR	N/A	21.9.10.50	N/A	N/A	N/A
●	NAC		0d 4h 45m	10.9.203.6		00505680455			00505680455E	Not Supported	Virtual Access Control Engine IA-V	N/A	21.9.10.50	N/A	N/A	N/A
●	VSP-core1		0d 5h 0m	10.9.193.131		F81547E4230(			14JP335E5081	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0	N/A	N/A	N/A
●	VSP-core2		0d 5h 0m	10.9.193.132		14612FEE7B0(			17JP0230E58J	Not Supported	VSP-4450GSX-PWR+	N/A	8.4.0.0	N/A	N/A	N/A

A few moments later, the ExtremeCloud IQ - Site Engine site actions, which had been defined to start the "Onboard VSP" workflow will execute automatically without any need for further manual intervention. Follow through into the next section.

Observing ExtremeCloud IQ - Site Engine Onboarding Workflow Completion

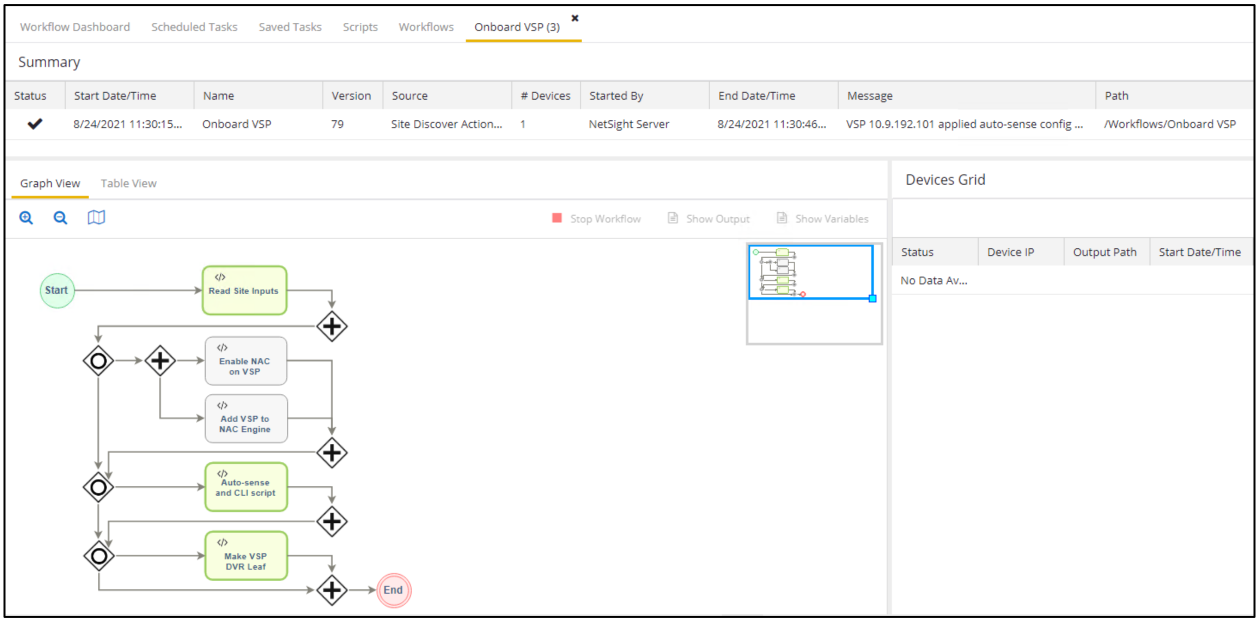
If you are quick, you can view the progress of the "Onboard VSP" workflow as it is being executed. Go to ExtremeCloud IQ - Site Engine Tasks and display the Workflow Dashboard tab. See if any workflows are actively running; select the Active pie chart, then double-click any "Onboard VSP" workflow seen running in the list below.



Summary

Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Message
⚙	8/24/2021 1:07:05 ...	Onboard VSP	79	Workflow Designer ...	1	root		

If there are no active workflows, the “Onboard VSP” workflow has probably completed. If this is the case, set the dropdown to “Historical” and find the most recently run workflows. There should be some for “Onboard VSP”; you can double-click on them to inspect their execution details.



Summary

Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Message	Path
✓	8/24/2021 11:30:15...	Onboard VSP	79	Site Discover Action...	1	NetSight Server	8/24/2021 11:30:46...	VSP 10.9.192.101 applied auto-sense config ...	/Workflows/Onboard VSP

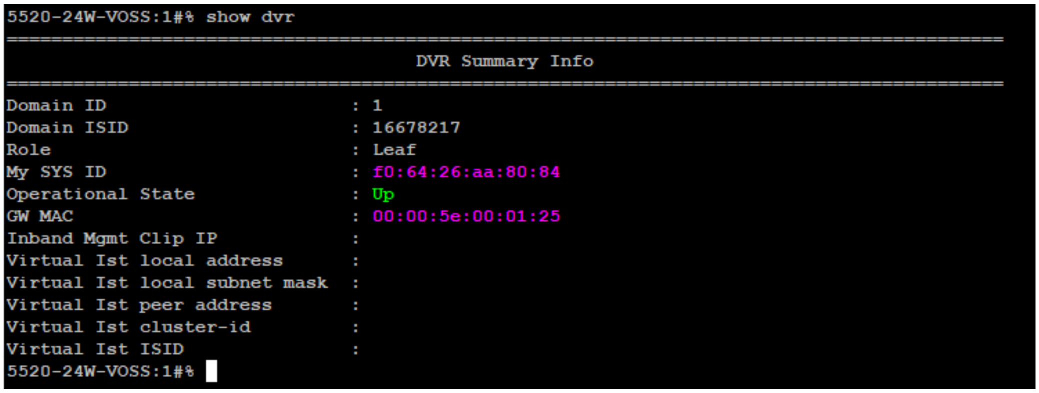
Devices Grid

Status	Device IP	Output Path	Start Date/Time
No Data Av...			

Note that the last activity of the “Onboard VSP” workflow converts the VSP switch into a DVR Leaf, and to do so the switch is automatically rebooted one last time.

Now the VSP edge onboarding process is complete, and the configuration is saved and final. When the switches come back online, there will be no more ZTP+ for them and no more site actions. They will be fully deployed as VSP edge.

When the switches have come back online, SSH into them and verify that indeed they were made DVR Leaf nodes, with the CLI command `show dvr`.



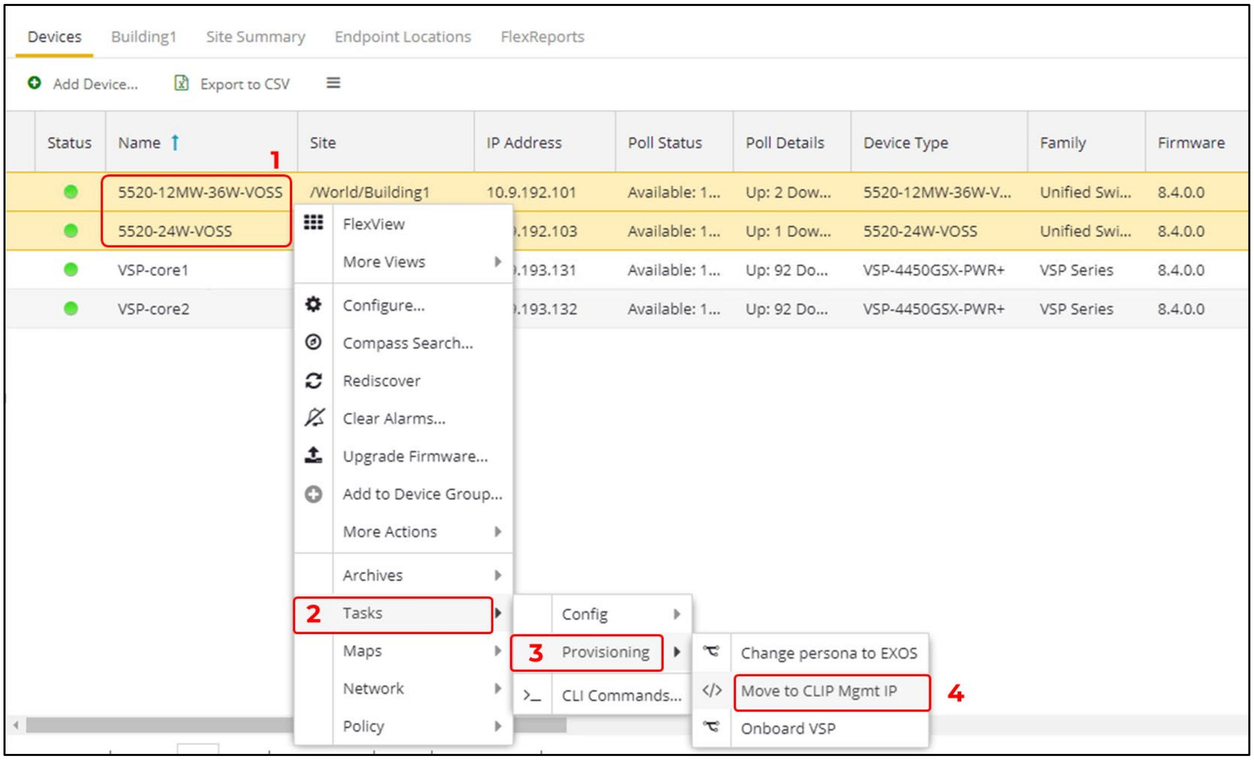
```
5520-24W-VOSS:1#% show dvr
==========================================================================================
                                    DVR Summary Info
==========================================================================================
Domain ID                       : 1
Domain ISID                     : 16678217
Role                            : Leaf
My SYS ID                       : f0:64:26:aa:80:84
Operational State               : Up
GW MAC                          : 00:00:5e:00:01:25
Inband Mgmt Clip IP             :
Virtual Ist local address       :
Virtual Ist local subnet mask   :
Virtual Ist peer address        :
Virtual Ist cluster-id          :
Virtual Ist ISID                :
5520-24W-VOSS:1#%
```

Migrating VSP Edge to Dedicated Switch mgmt CLIP

Both VSP edge switches were onboarded using their DHCP assigned IP addresses (which were made static IPs by ZTP+) and are still using the onboarding VLAN 4048 I-SID 15999999.

We want to transition the management of these VSP edge switches to a mgmt CLIP. To perform this task, the ExtremeCloud IQ - Site Engine Script named “Move to CLIP Mgmt IP” (available from GitHub) will be used.

Select both VSP edge switches, right-click, and select Tasks→Provisioning→Move to CLIP Mgmt IP.



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	5520-12MW-36W-VOSS	/World/Building1	10.9.192.101	Available: 1...	Up: 2 Dow...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0
●	5520-24W-VOSS		.192.103	Available: 1...	Up: 1 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0
●	VSP-core1		.193.131	Available: 1...	Up: 92 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2		.193.132	Available: 1...	Up: 92 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0

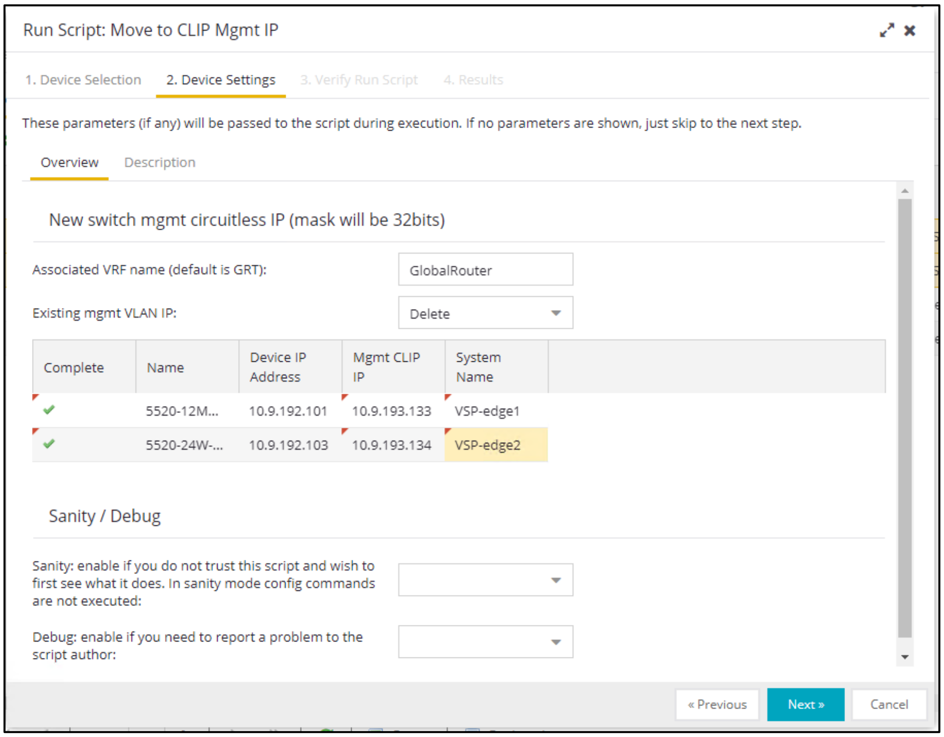
In the script input window, we will provide the CLIP IP for the VSP edge switches. We allocate a couple of extra CLIPs from the 10.9.193.128/25 subnet that is available.

- VSP-edge1 10.9.193.133/32

- VSP-edge2   10.9.193.134/32

In the script inputs, leave the associated VRF as GlobalRouter (this is the only VRF supported for mgmt CLIP on a DVR Leaf), and set the dropdown to “delete” the pre-existing mgmt VLAN IP. Then provide the new CLIP IP for each VSP edge switch in the table below. Enter only the IP address (not the mask).

Because the script will effectively remove and re-add the same switch to ExtremeCloud IQ - Site Engine, it makes sense to rename the VSP edge switches as part of the same process. To do this, provide the desired switch names in the System Name column.



These parameters (if any) will be passed to the script during execution. If no parameters are shown, just skip to the next step.

New switch mgmt circuitless IP (mask will be 32bits)

Associated VRF name (default is GRT): GlobalRouter

Existing mgmt VLAN IP: Delete

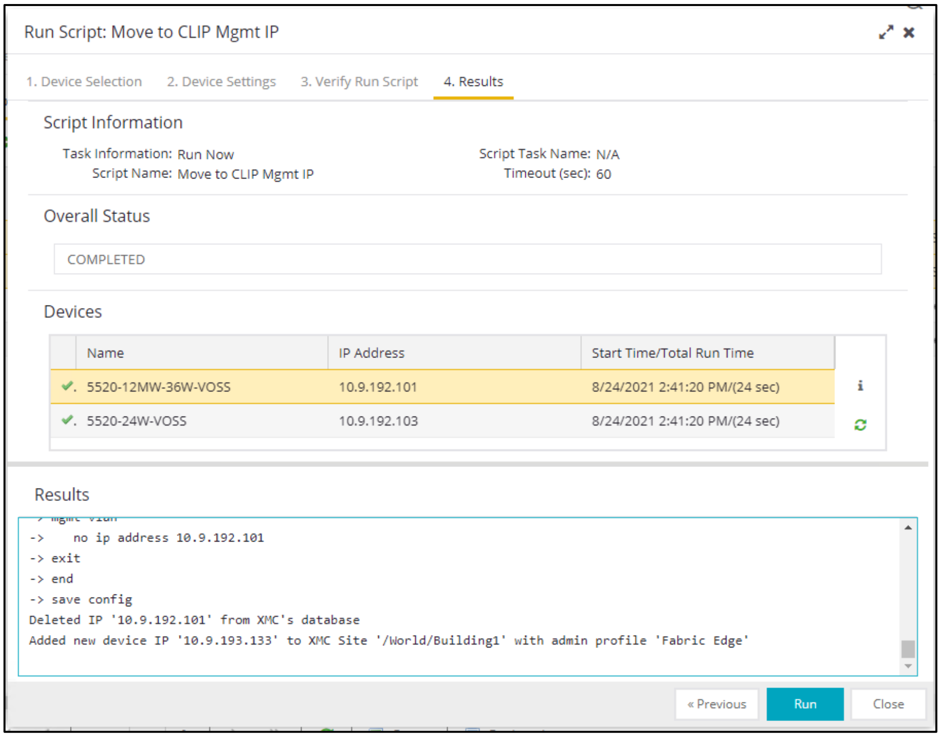
Complete	Name	Device IP Address	Mgmt CLIP IP	System Name
✓	5520-12M...	10.9.192.101	10.9.193.133	VSP-edge1
✓	5520-24W-...	10.9.192.103	10.9.193.134	VSP-edge2

Sanity / Debug

Sanity: enable if you do not trust this script and wish to first see what it does. In sanity mode config commands are not executed:

Debug: enable if you need to report a problem to the script author:

Select **Next**. Then select **Run**.



Script Information

Task Information: Run Now
Script Name: Move to CLIP Mgmt IP
Script Task Name: N/A
Timeout (sec): 60

Overall Status

COMPLETED

Devices

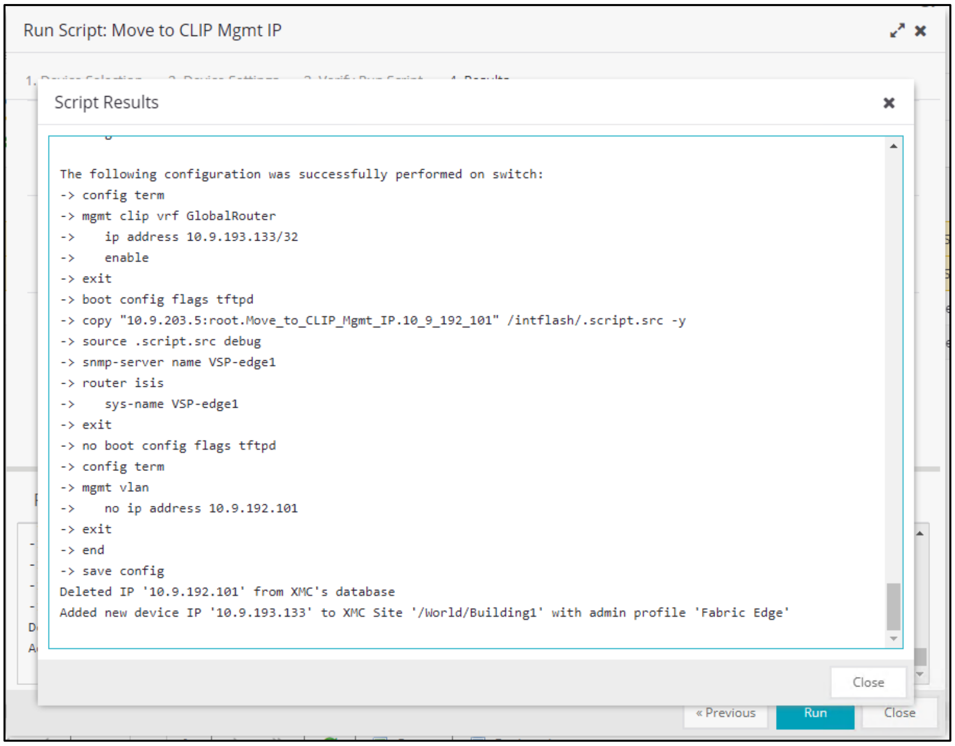
Name	IP Address	Start Time/Total Run Time
✓ 5520-12MW-36W-VOSS	10.9.192.101	8/24/2021 2:41:20 PM/(24 sec)
✓ 5520-24W-VOSS	10.9.192.103	8/24/2021 2:41:20 PM/(24 sec)

Results

```
->    no ip address 10.9.192.101
-> exit
-> end
-> save config
Deleted IP '10.9.192.101' from XMC's database
Added new device IP '10.9.193.133' to XMC Site '/World/Building1' with admin profile 'Fabric Edge'
```

The script creates the new mgmt CLIP while at the same time deleting any preexisting mgmt CLIP or any pre-existing mgmt VLAN IP.   Then it deletes the switch from ExtremeCloud IQ - Site Engine and re-adds it using the new CLIP IP. As part of the same process, the switch is renamed. The new switch system name is assigned to both SNMP (CLI prompt) and ISIS.

When the script has completed, expand the Results window by selecting the “i” button.



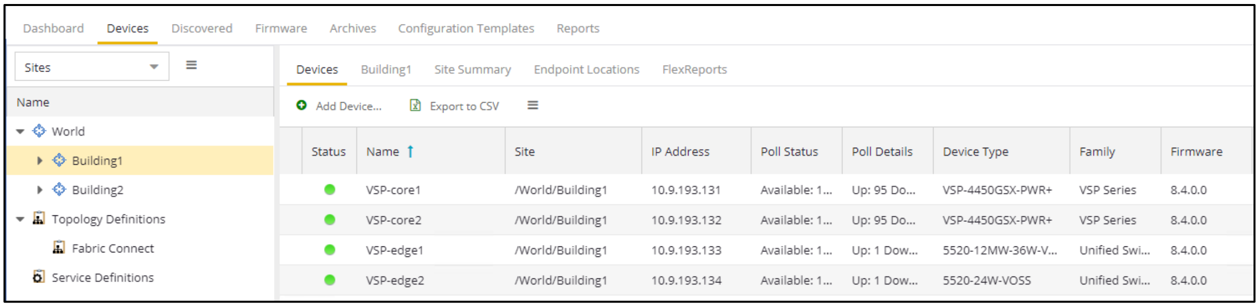
```
The following configuration was successfully performed on switch:
-> config term
-> mgmt clip vrf GlobalRouter
->    ip address 10.9.193.133/32
->    enable
-> exit
-> boot config flags tftpd
-> copy "10.9.203.5:root.Move_to_CLIP_Mgmt_IP.10_9_192_101" /intflash/.script.src -y
-> source .script.src debug
-> snmp-server name VSP-edge1
-> router isis
->    sys-name VSP-edge1
-> exit
-> no boot config flags tftpd
-> config term
-> mgmt vlan
->    no ip address 10.9.192.101
-> exit
-> end
-> save config
Deleted IP '10.9.192.101' from XMC's database
Added new device IP '10.9.193.133' to XMC Site '/World/Building1' with admin profile 'Fabric Edge'
```

The script essentially packs up the necessary CLI commands into a text file, which is then positioned on ExtremeCloud IQ - Site Engine’s TFTP root directory. The switch then fetches the file via TFTP and executes it locally. Finally, the script deletes and re-adds the switch to ExtremeCloud IQ - Site Engine with the new CLIP IP (In a future VOSS release, single-command management IP conversion options will be made available).

Close the script window.

Now confirm that all four VSPs have their final management IP.

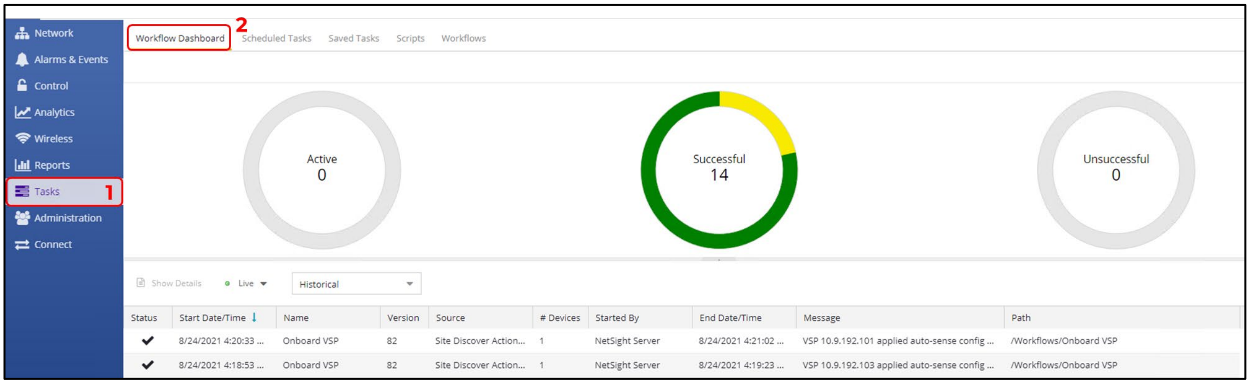
Select **Refresh** if necessary.



Status	Name	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 95 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 95 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-edge1	/World/Building1	10.9.193.133	Available: 1...	Up: 1 Dow...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0
●	VSP-edge2	/World/Building1	10.9.193.134	Available: 1...	Up: 1 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0

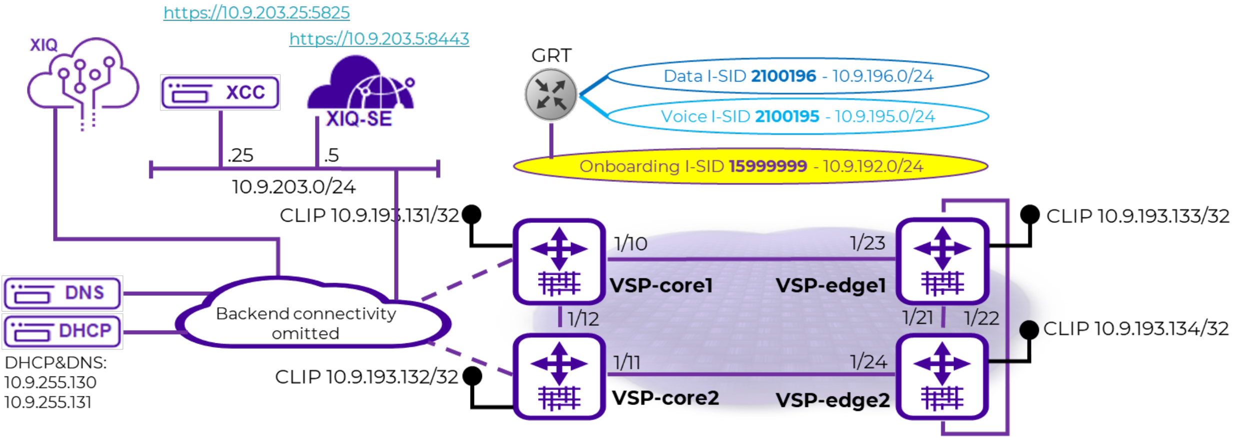
Note that the “Move to CLIP Mgmt IP” script will have caused the “Onboard VSP” workflow to execute once more.

Verify the workflow execution for the new switch IP under Tasks, Workflow Dashboard.



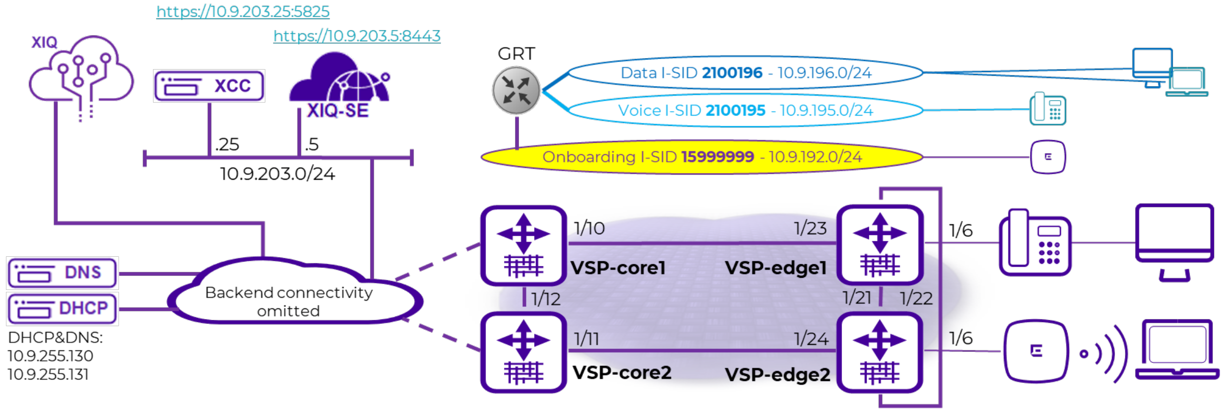
Status	Start Date/Time	Name	Version	Source	# Devices	Started By	End Date/Time	Message	Path
✓	8/24/2021 4:20:33 ...	Onboard VSP	82	Site Discover Action...	1	NetSight Server	8/24/2021 4:21:02 ...	VSP 10.9.192.101 applied auto-sense config ...	/Workflows/Onboard VSP
✓	8/24/2021 4:18:53 ...	Onboard VSP	82	Site Discover Action...	1	NetSight Server	8/24/2021 4:19:23 ...	VSP 10.9.192.103 applied auto-sense config ...	/Workflows/Onboard VSP

The following diagram shows what has been configured so far.



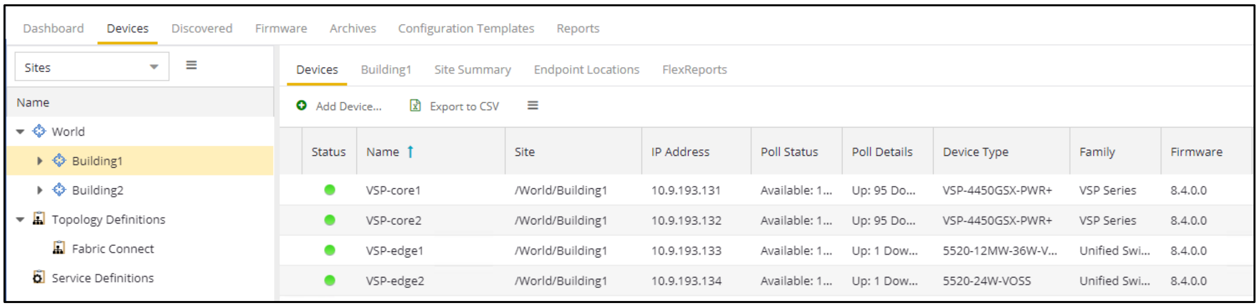
Verification that All End-Devices Are Operational

To verify that the process has worked, here is the same diagram with end stations added.



Inspection of VSP Fabric

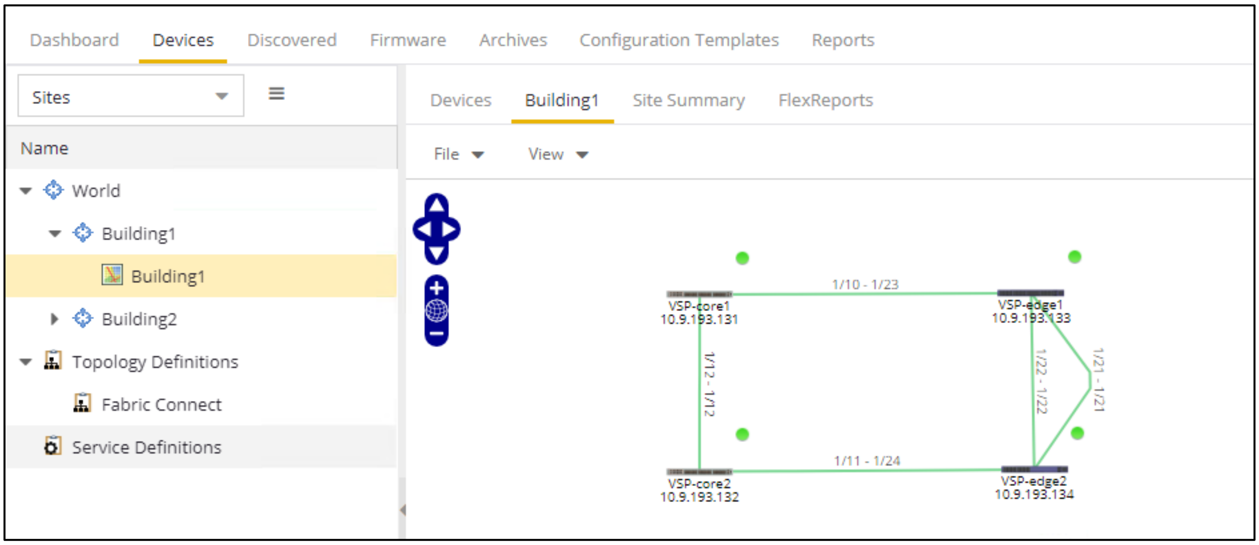
Refresh the Site Device view.



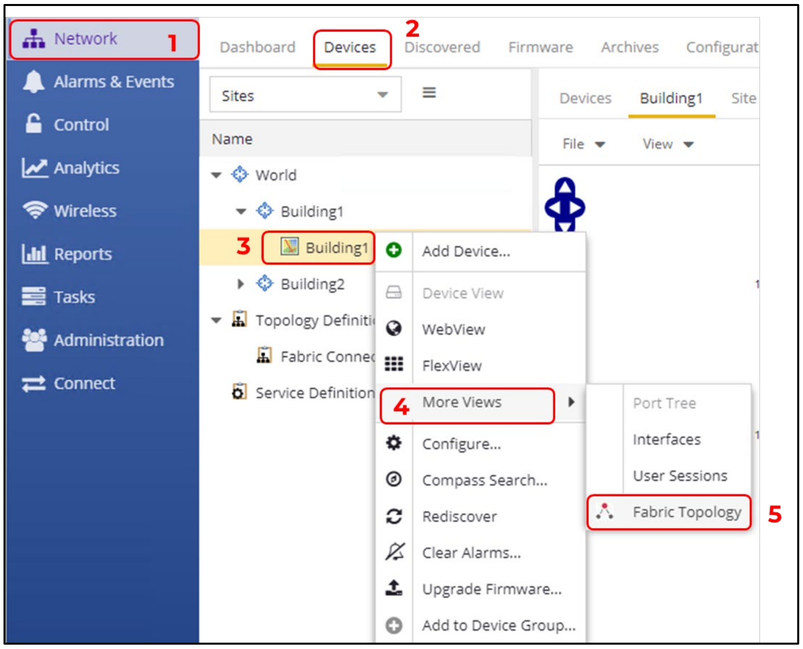
Status	Name ↑	Site	IP Address	Poll Status	Poll Details	Device Type	Family	Firmware
●	VSP-core1	/World/Building1	10.9.193.131	Available: 1...	Up: 95 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-core2	/World/Building1	10.9.193.132	Available: 1...	Up: 95 Do...	VSP-4450GSX-PWR+	VSP Series	8.4.0.0
●	VSP-edge1	/World/Building1	10.9.193.133	Available: 1...	Up: 1 Dow...	5520-12MW-36W-V...	Unified Swi...	8.4.0.0
●	VSP-edge2	/World/Building1	10.9.193.134	Available: 1...	Up: 1 Dow...	5520-24W-VOSS	Unified Swi...	8.4.0.0

The Fabric Edge is now deployed.

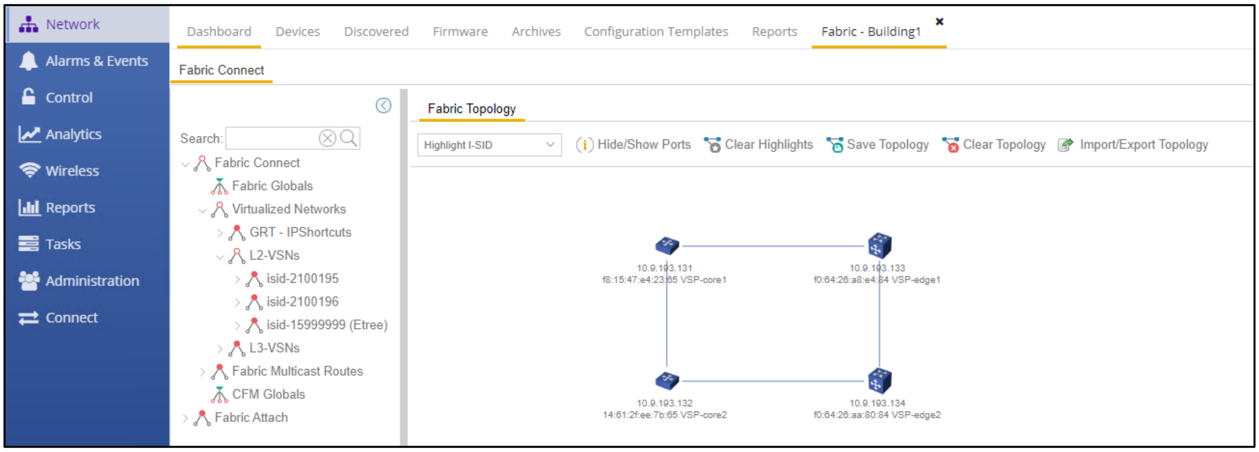
Visit the map and arrange the icons.



Right-click on the Site or map and select More Views→Fabric Topology.

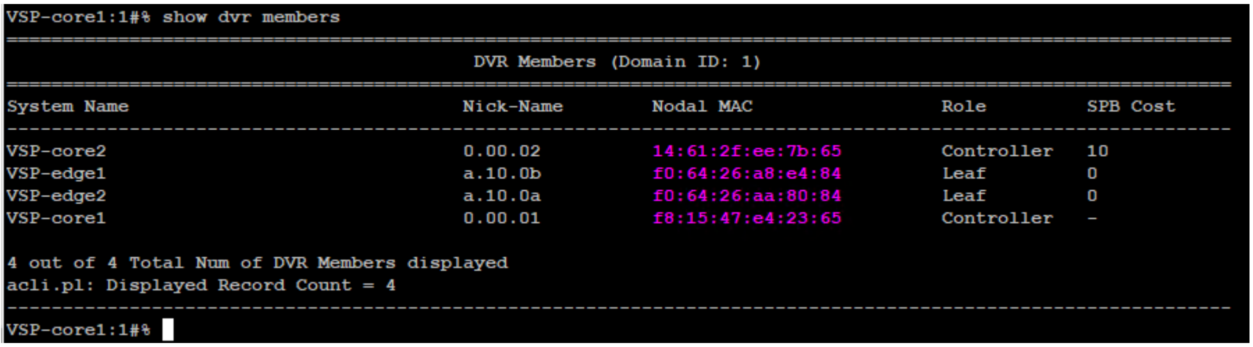


Then arrange the map.



The Fabric is up. The fabric services are listed under L2 VSN and can be highlighted on the map using the dropdown.

To verify that DVR is operational, SSH to one of the VSPs and execute `show dvr members`.

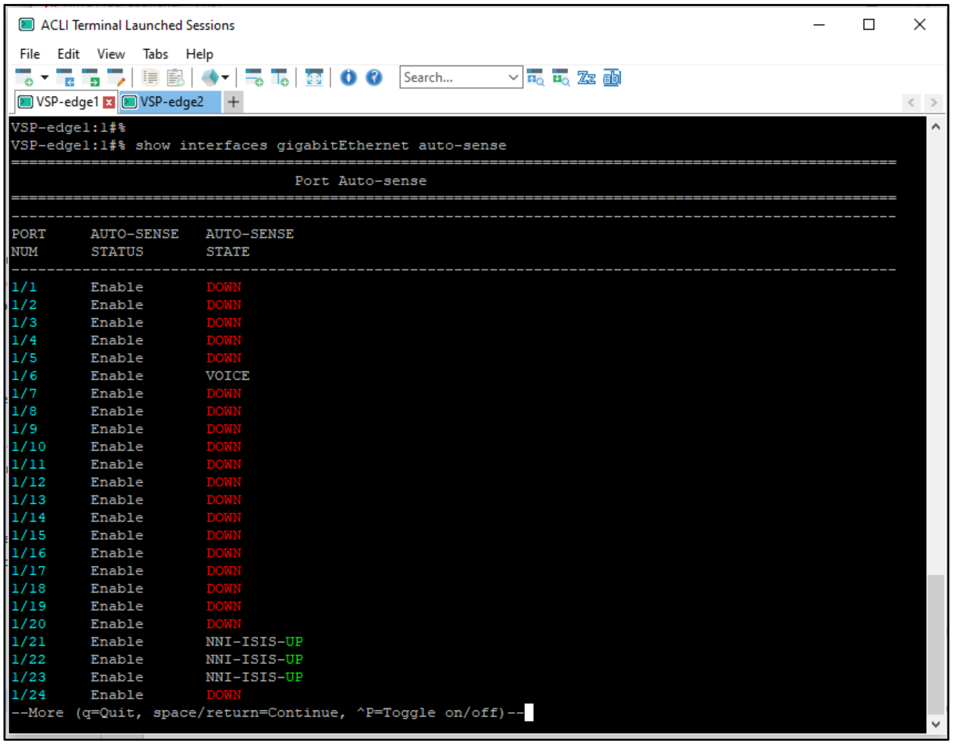


```
VSP-core1:1#% show dvr members
==============================================================================================================
                                    DVR Members (Domain ID: 1)
==============================================================================================================
System Name                                 Nick-Name      Nodal MAC              Role          SPB Cost
--------------------------------------------------------------------------------------------------------------
VSP-core2                                   0.00.02        14:61:2f:ee:7b:65      Controller    10
VSP-edge1                                   a.10.0b        f0:64:26:a8:e4:84      Leaf          0
VSP-edge2                                   a.10.0a        f0:64:26:aa:80:84      Leaf          0
VSP-core1                                   0.00.01        f8:15:47:e4:23:65      Controller    -

4 out of 4 Total Num of DVR Members displayed
acli.pl: Displayed Record Count = 4
--------------------------------------------------------------------------------------------------------------
VSP-core1:1#%
```

The VSP cores should be set up as Controllers and the edge VSPs as DVR Leaf.

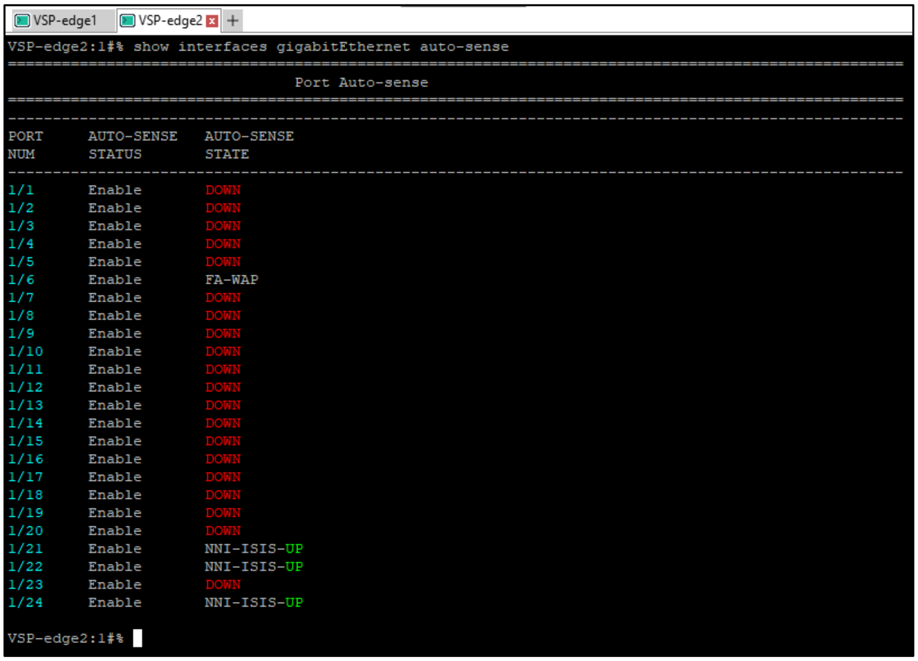
Inspection of Endpoint Auto-Sense

Connect via SSH to both VSP edge switches. Run the CLI command `show interfaces gigabitEthernet auto-sense`.



```
VSP-edge1:1#%
VSP-edge1:1#% show interfaces gigabitEthernet auto-sense
====================================================================================================
                                Port Auto-sense
====================================================================================================
----------------------------------------------------------------------------------------------------
PORT     AUTO-SENSE    AUTO-SENSE
NUM      STATUS        STATE
----------------------------------------------------------------------------------------------------
1/1      Enable        DOWN
1/2      Enable        DOWN
1/3      Enable        DOWN
1/4      Enable        DOWN
1/5      Enable        DOWN
1/6      Enable        VOICE
1/7      Enable        DOWN
1/8      Enable        DOWN
1/9      Enable        DOWN
1/10     Enable        DOWN
1/11     Enable        DOWN
1/12     Enable        DOWN
1/13     Enable        DOWN
1/14     Enable        DOWN
1/15     Enable        DOWN
1/16     Enable        DOWN
1/17     Enable        DOWN
1/18     Enable        DOWN
1/19     Enable        DOWN
1/20     Enable        DOWN
1/21     Enable        NNI-ISIS-UP
1/22     Enable        NNI-ISIS-UP
1/23     Enable        NNI-ISIS-UP
1/24     Enable        DOWN
--More (q=Quit, space/return=Continue, ^P=Toggle on/off)--
```

Note that VSP-edge1 has transitioned to Voice state on the port where the telephone is connected. Also notice that ports 1/21-1/23 were auto-sense transitioned into NNI-ISIS state. These are the Fabric interconnects that where automatically configured.

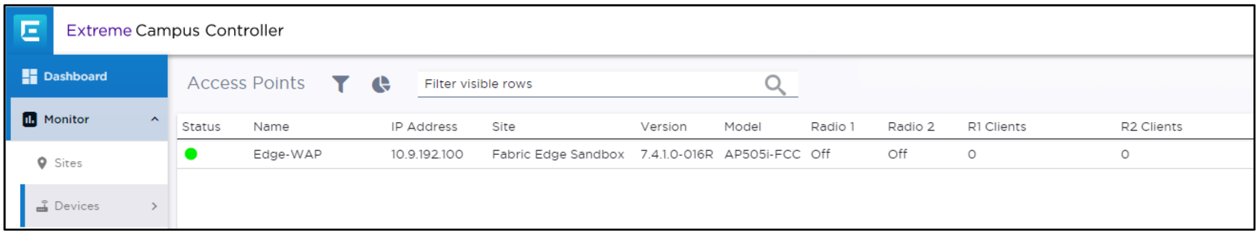


```
VSP-edge2:1#% show interfaces gigabitEthernet auto-sense
====================================================================================================
                                Port Auto-sense
====================================================================================================
----------------------------------------------------------------------------------------------------
PORT     AUTO-SENSE    AUTO-SENSE
NUM      STATUS        STATE
----------------------------------------------------------------------------------------------------
1/1      Enable        DOWN
1/2      Enable        DOWN
1/3      Enable        DOWN
1/4      Enable        DOWN
1/5      Enable        DOWN
1/6      Enable        FA-WAP
1/7      Enable        DOWN
1/8      Enable        DOWN
1/9      Enable        DOWN
1/10     Enable        DOWN
1/11     Enable        DOWN
1/12     Enable        DOWN
1/13     Enable        DOWN
1/14     Enable        DOWN
1/15     Enable        DOWN
1/16     Enable        DOWN
1/17     Enable        DOWN
1/18     Enable        DOWN
1/19     Enable        DOWN
1/20     Enable        DOWN
1/21     Enable        NNI-ISIS-UP
1/22     Enable        NNI-ISIS-UP
1/23     Enable        DOWN
1/24     Enable        NNI-ISIS-UP

VSP-edge2:1#%
```

On VSP-edge2, notice that auto-sense transitioned into FA-WAP state where the Access Point is connected.

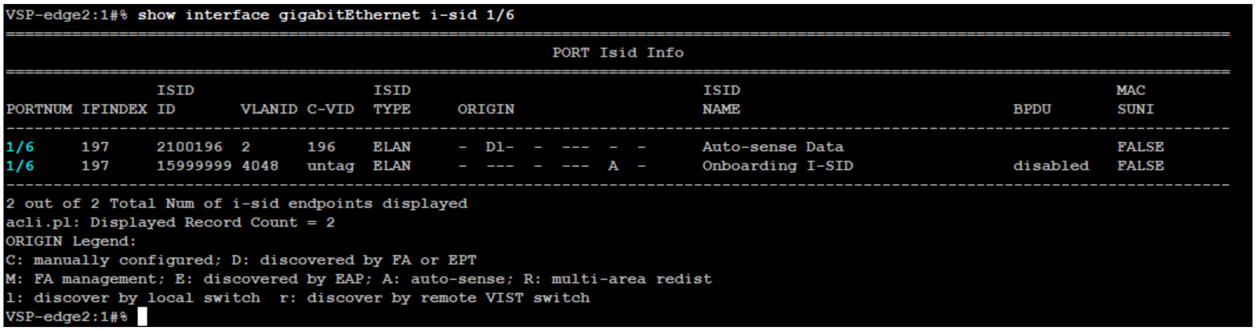
Verification that WLAN AP Is in Service

Connect to Extreme Campus Controller, and go to Monitor→Devices→Access Points. Make sure the AP is online and green. It should have an IP address on the AP-Mgmt I-SID 2X00194 in the onboarding subnet 10.9.192.0/24.



Status	Name	IP Address	Site	Version	Model	Radio 1	Radio 2	R1 Clients	R2 Clients
●	Edge-WAP	10.9.192.100	Fabric Edge Sandbox	7.4.1.0-016R	AP505i-FCC	Off	Off	0	0

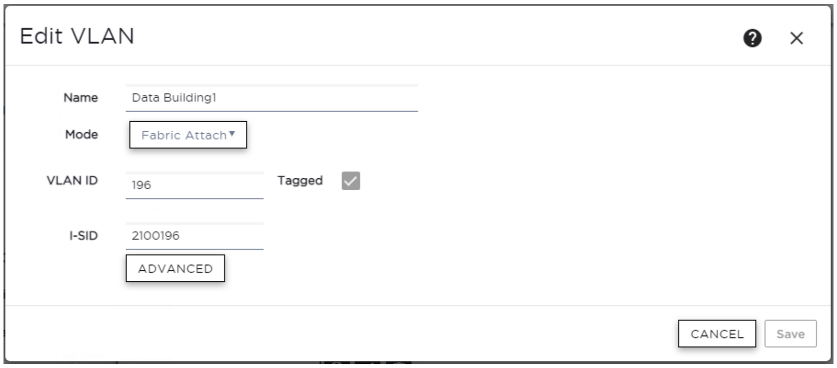
On VSP-edge2, inspect what I-SIDs are configured on the AP port 1/6 using the CLI command `show interface gigabitEthernet i-sid 1/6`.



```
VSP-edge2:1#% show interface gigabitEthernet i-sid 1/6
==================================================================================================================================
                                                          PORT Isid Info
==================================================================================================================================
                ISID                   ISID                                 ISID                                       MAC
PORTNUM IFINDEX ID         VLANID C-VID TYPE      ORIGIN                    NAME                             BPDU      SUNI
----------------------------------------------------------------------------------------------------------------------------------
1/6     197     2100196  2      196   ELAN      -  D1-  -  ---  -  -      Auto-sense Data                            FALSE
1/6     197     15999999 4048   untag ELAN      -  ---  -  ---  A  -      Onboarding I-SID                 disabled  FALSE
----------------------------------------------------------------------------------------------------------------------------------
2 out of 2 Total Num of i-sid endpoints displayed
acli.pl: Displayed Record Count = 2
ORIGIN Legend:
C: manually configured; D: discovered by FA or EPT
M: FA management; E: discovered by EAP; A: auto-sense; R: multi-area redist
l: discover by local switch  r: discover by remote VIST switch
VSP-edge2:1#%
```

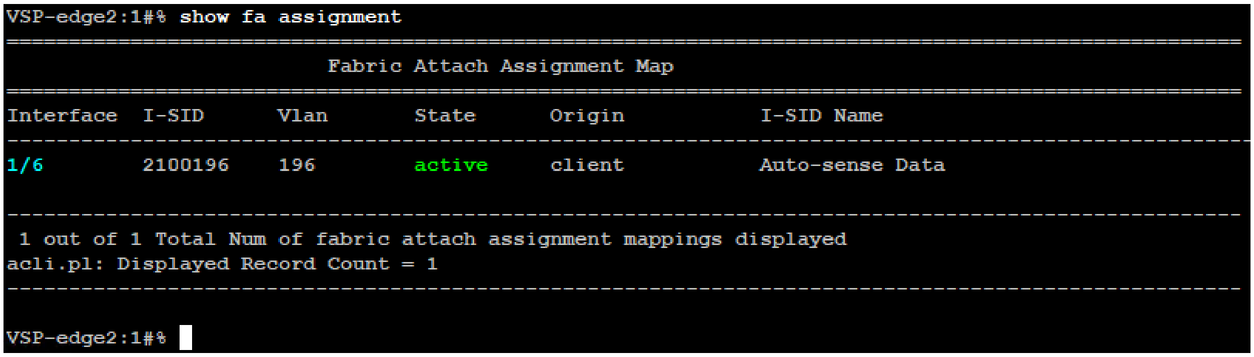
Note: there are two bindings on the port where the AP is connected. The first binding is the onboarding I-SID, which is where the AP will perform DHCP initially.

The second binding on the 1/6 port was discovered via Fabric Attach and is the Data I-SID binding for which the AP received the configuration from Extreme Campus Controller.



Name: Data Building1
Mode: Fabric Attach
VLAN ID: 196
Tagged ☑
I-SID: 2100196

Confirm by inspecting the Fabric Attach assignments on the switch using the CLI command `show fa assignment`.

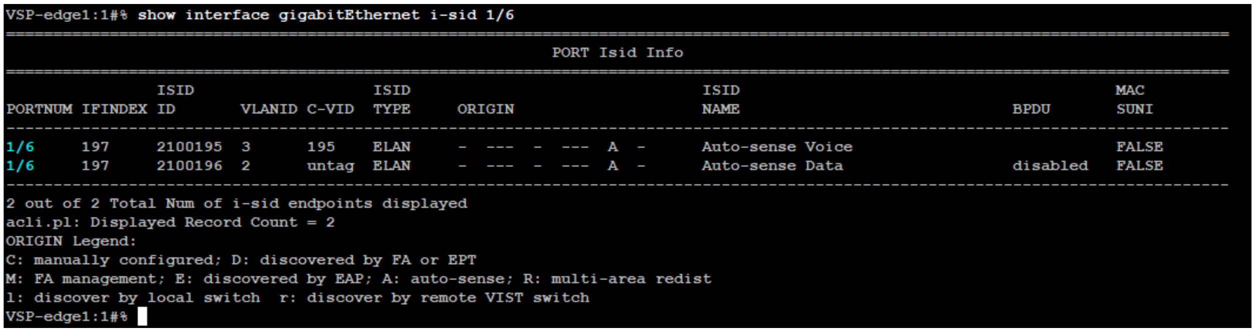


```
VSP-edge2:1#% show fa assignment
================================================================================================
                          Fabric Attach Assignment Map
================================================================================================
Interface  I-SID      Vlan       State      Origin          I-SID Name
------------------------------------------------------------------------------------------------
1/6        2100196    196        active     client          Auto-sense Data

------------------------------------------------------------------------------------------------
 1 out of 1 Total Num of fabric attach assignment mappings displayed
acli.pl: Displayed Record Count = 1
------------------------------------------------------------------------------------------------

VSP-edge2:1#%
```

The AP is fully operational, and a wireless client would be able to associate onto the Data I-SID.

Verification that IP Phone Is in Service

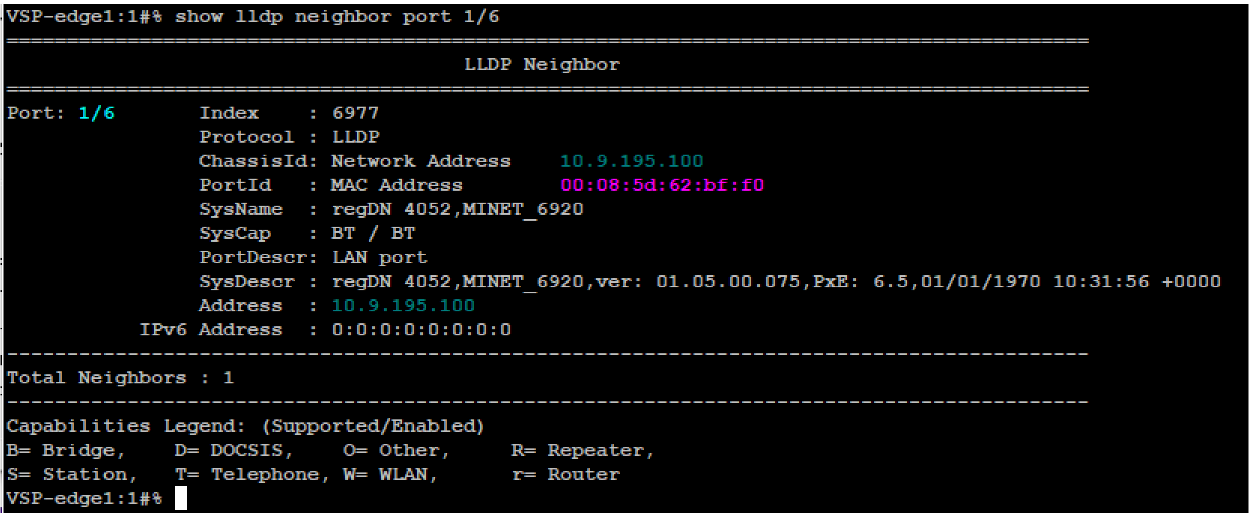
On VSP-edge1, inspect what I-SIDs are configured on phone port 1/6 using the CLI command `show interface gigabitEthernet i-sid 1/6`.



```
VSP-edge1:1#% show interface gigabitEthernet i-sid 1/6
===========================================================================================================================
                                                    PORT Isid Info
===========================================================================================================================
                ISID                    ISID                                   ISID                                 MAC
PORTNUM IFINDEX ID          VLANID C-VID TYPE     ORIGIN                        NAME                          BPDU     SUNI
---------------------------------------------------------------------------------------------------------------------------
1/6     197     2100195  3      195   ELAN     -  ---  -  ---  A  -           Auto-sense Voice                       FALSE
1/6     197     2100196  2      untag ELAN     -  ---  -  ---  A  -           Auto-sense Data              disabled  FALSE
---------------------------------------------------------------------------------------------------------------------------
2 out of 2 Total Num of i-sid endpoints displayed
acli.pl: Displayed Record Count = 2
ORIGIN Legend:
C: manually configured; D: discovered by FA or EPT
M: FA management; E: discovered by EAP; A: auto-sense; R: multi-area redist
l: discover by local switch  r: discover by remote VIST switch
VSP-edge1:1#%
```

Note there are two bindings on the port where the phone is connected. The first binding is the Voice I-SID 2100195, which was assigned by auto-sense because a telephone was detected via LLDP. This is a tagged binding because it shows a VLAN-ID in the C-VID column.

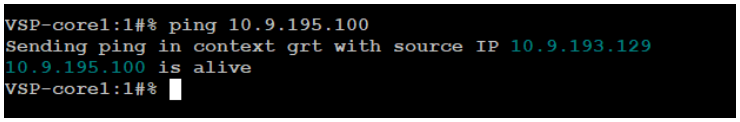
Inspect the LLDP neighbor details on the same port using the CLI command `show lldp neighbor port 1/6`.



```
VSP-edge1:1#% show lldp neighbor port 1/6
==========================================================================================
                                      LLDP Neighbor
==========================================================================================
Port: 1/6         Index     : 6977
                  Protocol  : LLDP
                  ChassisId: Network Address     10.9.195.100
                  PortId    : MAC Address         00:08:5d:62:bf:f0
                  SysName   : regDN 4052,MINET_6920
                  SysCap    : BT / BT
                  PortDescr: LAN port
                  SysDescr  : regDN 4052,MINET_6920,ver: 01.05.00.075,PxE: 6.5,01/01/1970 10:31:56 +0000
                  Address   : 10.9.195.100
             IPv6 Address   : 0:0:0:0:0:0:0:0
------------------------------------------------------------------------------------------
Total Neighbors : 1
------------------------------------------------------------------------------------------
Capabilities Legend: (Supported/Enabled)
B= Bridge,     D= DOCSIS,     O= Other,     R= Repeater,
S= Station,    T= Telephone, W= WLAN,       r= Router
VSP-edge1:1#%
```

Notice the neighbor system capabilities: B = Bridge and T = Telephone. Also notice the IP address, which the phone obtained, is in the expected Voice I-SID subnet.

Verify that the phone can be pinged from either of the VSP cores. The phone should be able to connect to its Call Server.

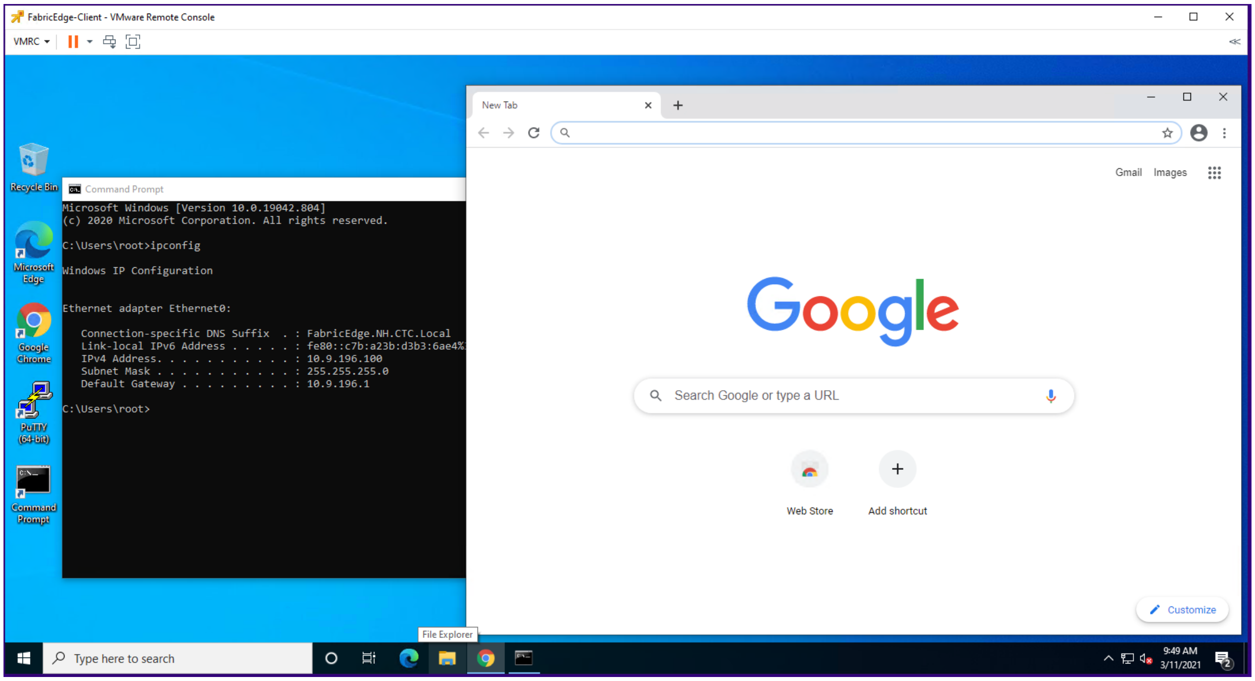


```
VSP-core1:1#% ping 10.9.195.100
Sending ping in context grt with source IP 10.9.193.129
10.9.195.100 is alive
VSP-core1:1#%
```

Verification that Client PC Is on Data I-SID

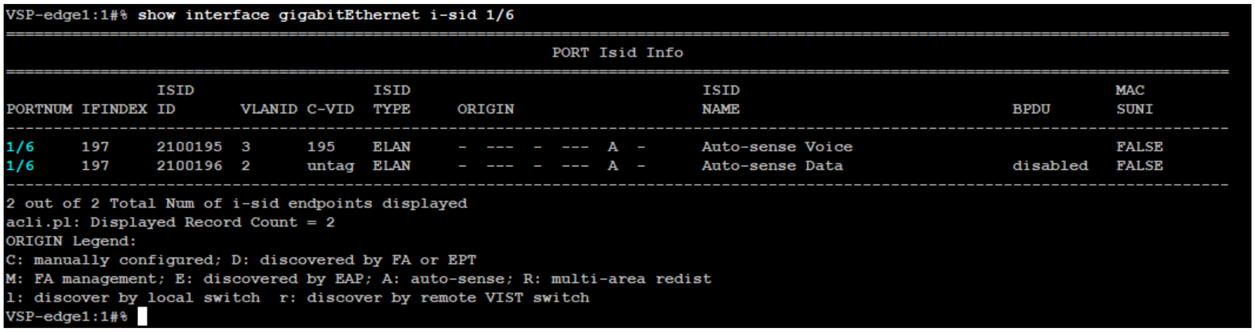
On the PC client, run the browser and verify that it has connectivity to the Internet (hence, over the VSP Fabric).

Verify also that the client VM obtained an IP address in the Data I-SID 2X00196 IP subnet 10.9.196.0/24.



```
Microsoft Windows [Version 10.0.19042.804]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\root>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet0:

   Connection-specific DNS Suffix  . : FabricEdge.NH.CTC.Local
   Link-local IPv6 Address . . . . . : fe80::c7b:a23b:d3b3:6ae4%
   IPv4 Address. . . . . . . . . . . : 10.9.196.100
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 10.9.196.1

C:\Users\root>
```

On the same VSP-edge1 port 1/6 where the phone is connected, confirm these I-SID bindings.



```
VSP-edge1:1#% show interface gigabitEthernet i-sid 1/6
==================================================================================================================================
                                                          PORT Isid Info
==================================================================================================================================
                ISID                   ISID                               ISID                                        MAC
PORTNUM IFINDEX ID       VLANID C-VID  TYPE     ORIGIN                    NAME                             BPDU       SUNI
----------------------------------------------------------------------------------------------------------------------------------
1/6     197     2100195  3      195    ELAN     -  ---  -  ---  A  -      Auto-sense Voice                            FALSE
1/6     197     2100196  2      untag  ELAN     -  ---  -  ---  A  -      Auto-sense Data                  disabled   FALSE
----------------------------------------------------------------------------------------------------------------------------------
2 out of 2 Total Num of i-sid endpoints displayed
acli.pl: Displayed Record Count = 2
ORIGIN Legend:
C: manually configured; D: discovered by FA or EPT
M: FA management; E: discovered by EAP; A: auto-sense; R: multi-area redist
l: discover by local switch  r: discover by remote VIST switch
VSP-edge1:1#%
```

The second binding is untagged and is the auto-sense Data I-SID which will automatically replace the Onboarding I-SID on auto-sense ports that are in state UNIONBOARDING and VOICE.

Deployment of Fabric VSP edge is now complete.

Appendix – Final Configurations

Here are the final configurations of all four VSPs.

VSP-core1

```
#
# Wed Aug 25 20:05:01 2021 EDT
# box type             : VSP-4450GSX-PWR+
# software version     : 8.4.0.0
# cli mode             : ECLI
#
#Card Info :
#  Slot 1 :
#                    CardType          : 4450GSX-PWR+
#                    CardDescription   : 4450GSX-PWR+
#                    CardSerial#       : 14JP335E5081
#                    CardPart#         :
#                    CardAssemblyDate  : 20140814
#                    CardHWRevision    : 01
#                    CardHWConfig      : none
#                    OperStatus        : up
#
#!end
#
config terminal

#
# BOOT CONFIGURATION
#
boot config flags sshd
#boot config sio console baud 9600 1
# end boot flags
#
# SPBM CONFIGURATION
#
spbm
spbm ethertype 0x8100
spbm nick-name server prefix A.10.00
spbm nick-name server

#
# CLI CONFIGURATION
#
prompt "VSP-core1"
password password-history 3

#
# CLOCK TIME-ZONE CONFIGURATION
#
clock time-zone US Eastern

#
# SYSTEM CONFIGURATION
#
ip domain-name "FabricEdge.NH.CTC.Local"
ip name-server primary 10.9.255.130
ip name-server secondary 10.9.255.131
syslog host 1
syslog host 1 address 10.9.203.5
syslog host 1 enable

#
# LOG CONFIGURATION
#
# LINK-FLAP-DETECT CONFIGURATION
#
# IEEE VLAN AGING CONFIGURATION
#
# ACCESS-POLICY CONFIGURATION
#
# SSH CONFIGURATION
#
ssh

#
# MCAST SOFTWARE FORWARDING CONFIGURATION
#
# SNMP V3 GLOBAL CONFIGURATION
#
# SNMP V3 GROUP MEMBERSHIP CONFIGURATION
#
snmp-server user admin group "initial"
snmp-server user snmpuser group "snmpuser"
snmp-server user snmpuser group "snmpuser"

#
# SNMP V3 NOTIFY FILTER CONFIGURATION
#
# SNMP V3 MIB VIEW CONFIGURATION
#
# SNMP V3 GROUP CONFIGURATION
#
snmp-server group "snmpuser" "" auth-priv notify-view root
```

```
#
# SNMP V3 TARGET ADDRESS CONFIGURATION
#
snmp-server host 10.9.203.5 v3 authPriv snmpuser inform

#
# DDI CONFIGURATION
#
# SLOT CONFIGURATION
#
# MAC AGING CONFIGURATION
#
# SMTP CONFIGURATION
#
# WEB CONFIGURATION
#
web-server enable
no web-server secure-only


#
# GLOBAL FDB FILTER CONFIGURATION
#
# QOS CONFIGURATION - PHASE I
#
# LACP CONFIGURATION
#
# VRF CONFIGURATION
#
# MAINTENANCE-DOMAIN CONFIGURATION
#
# MAINTENANCE-ASSOCIATION CONFIGURATION
#
# MAINTENANCE-ENDPOINT CONFIGURATION
#
# POE GLOBAL CONFIGURATION
#
# PORT CONFIGURATION - PHASE I
#
interface GigabitEthernet 1/12
encapsulation dot1q

exit

#
# ISIS SPBM CONFIGURATION
#
router isis
spbm 1
spbm 1 nick-name 0.00.01
spbm 1 b-vid 4051-4052 primary 4051
spbm 1 multicast enable
spbm 1 ip enable
exit

#
# SPB-PIM-GW CONFIGURATION
#
# MLT CONFIGURATION
#
# IP PREFIX LIST CONFIGURATION - GlobalRouter
#
# IP PREFIX LIST CONFIGURATION - VRF
#
# IPv6 PREFIX LIST CONFIGURATION - GlobalRouter
#
# IPv6 PREFIX LIST CONFIGURATION - VRF
#
# RMON CONFIGURATION
#
# DVR CONFIGURATION
#
dvr controller 1

#
# VLAN CONFIGURATION
#
vlan members remove 1 1/1-1/50 portmember
vlan create 195 name "Voice" type port-mstprstp 0
vlan i-sid 195 2100195
interface Vlan 195
dvr gw-ipv4 10.9.195.1
dvr enable
ip address 10.9.195.2 255.255.255.0 1
ip dhcp-relay
exit
vlan create 196 name "Data" type port-mstprstp 0
vlan i-sid 196 2100196
interface Vlan 196
dvr gw-ipv4 10.9.196.1
dvr enable
ip address 10.9.196.2 255.255.255.0 1
ip dhcp-relay
exit
vlan create 4048 name "onboarding-vlan" type port-mstprstp 0
vlan i-sid 4048 15999999
interface Vlan 4048
ip address 10.9.192.2 255.255.255.0 2
ip dhcp-relay
ip vrrp version 3
ip vrrp address 1 10.9.192.1
ip vrrp 1 enable
```

```
exit
vlan create 4051 name "B-VLAN-1" type spbm-bvlan
vlan create 4052 name "B-VLAN-2" type spbm-bvlan

#
# MSTP CONFIGURATION
#
# NLS CONFIGURATION
#
mgmt clip vrf GlobalRouter
ip address 10.9.193.131/32
enable
exit

#
# FHS CONFIGURATION
#
# MAC ACL CONFIGURATION
#
# IPv6 FHS ACL CONFIGURATION
#
# RA-GUARD CONFIGURATION
#
# DHCP-GUARD CONFIGURATION
#
# FHS SNOOPING CONFIGURATION
#
# SFLOW CONFIGURATION
#
# DHCP SNOOPING CONFIGURATION
#
# DHCP SNOOPING BINDING CONFIGURATION
#
# VIRTUAL IST CONFIGURATION
#
# MLT INTERFACE CONFIGURATION
#
# PORT CONFIGURATION - PHASE II
#
interface GigabitEthernet 1/2
no shutdown
brouter port 1/2 vlan 4000 subnet 10.9.223.2/255.255.255.252 mac-offset 0
ip bfd enable
no spanning-tree mstp  force-port-state enable
exit
interface GigabitEthernet 1/10
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/12
default-vlan-id 0
no shutdown
isis
isis spbm 1
isis enable
no spanning-tree mstp  force-port-state enable
no spanning-tree mstp msti 62 force-port-state enable
exit
interface GigabitEthernet 1/13
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/14
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/15
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/16
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/17
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/18
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/19
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/20
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/21
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/22
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/23
no lldp tx-tlv med extendedPSE
```

```
exit
interface GigabitEthernet 1/24
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/25
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/26
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/27
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/28
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/29
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/30
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/31
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/32
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/33
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/34
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/35
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/36
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/37
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/38
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/39
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/40
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/41
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/42
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/43
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/44
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/45
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/46
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/47
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/48
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/49
```

```
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/50
no lldp tx-tlv med extendedPSE

exit

#
# LINK-STATE TRACKING
#
# IP CONFIGURATION
#
# IP AS LIST CONFIGURATION - GlobalRouter
#
# IP COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP ROUTE MAP CONFIGURATION - GlobalRouter
#
# IP CONFIGURATION -  GlobalRouter
#
ip route 0.0.0.0 0.0.0.0 10.9.223.1 weight 10

#
# BFD CONFIGURATION -  GlobalRouter
#
router bfd enable
ip route bfd 10.9.223.1

#
# CIRCUITLESS IP INTERFACE CONFIGURATION - GlobalRouter
#
interface loopback 1
ip address 1 10.9.193.129/255.255.255.255
exit

#
# TOPOLOGY-CLIP-IP
#
# MSDP CONFIGURATION - GlobalRouter
#
# CIRCUITLESS IPV6 INTERFACE CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - VRF
#
# UDP FORWARDING PORT CONFIGURATION
#
# UDP FORWARDING VLAN CONFIGURATION
#
# DHCP CONFIGURATION - GlobalRouter
#
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.130
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.130  mode dhcp
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.131
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.192.2 10.9.255.131  mode dhcp
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.130
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.130  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.131
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.195.2 10.9.255.131  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.130
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.130  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.131
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.196.2 10.9.255.131  mode bootp_dhcp

#
# RIP CONFIGURATION - GlobalRouter
#
# RIP VLAN CONFIGURATION
#
# IGMP CONFIGURATION - GlobalRouter
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# TIMED PRUNE CONFIGURATION - GlobalRouter
#
# RSMLT CONFIGURATION
#
# IPV6 CONFIGURATION - GlobalRouter
#
# MLD CONFIGURATION - GlobalRouter
#
# ISIS CONFIGURATION
#
router isis
sys-name "VSP-core1"
ip-source-address 10.9.193.129
is-type l1
manual-area 49.0000
exit
router isis enable
```

```
#
# LOGICAL ISIS CONFIGURATION
#
# VTEP CONFIGURATION
#
# REMOTE VTEP CONFIGURATIONS
#
# VLAN NODAL MEP/MIP CONFIGURATION
#
# QOS CONFIGURATION - PHASE II
#
qos queue-profile 1 member add 1/1-1/50

#
# CFM CONFIGURATION - PHASE II
#
cfm spbm enable

#
# DIAG CONFIGURATION
#
# NTP CONFIGURATION
#
no ntp

#
# ES CONFIGURATION
#
#  OSPF CONFIGURATION - GlobalRouter
#
router ospf
exit

#
#  OSPF CONFIGURATION - VRF
#
# OSPF ACCEPT CONFIGURATION - GlobalRouter
#
# OSPF ACCEPT CONFIGURATION - VRF
#
# BGP CONFIGURATION - GlobalRouter
#
# BGP CONFIGURATION - VRF
#
# ISIS SPBM IPVPN CONFIGURATION
#
# IP ISID LIST CONFIGURATION - GlobalRouter
#
# IP ISID LIST CONFIGURATION - VRF
#
# ISIS ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS ACCEPT CONFIGURATION - VRF
#
# ISIS IPv6 ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS IPv6 ACCEPT CONFIGURATION - VRF
#
# IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
router isis
redistribute static
redistribute static enable
redistribute direct
redistribute direct enable
exit

#
# IP REDISTRIBUTION CONFIGURATION - VRF
#
# OSPF VLAN CONFIGURATION
#
# OSPF PORT CONFIGURATION
#
# OSPF LOOPBACK CONFIGURATION
#
# RIP PORT CONFIGURATION
#
# IPVPN CONFIGURATION
#
# SLPP CONFIGURATION
#
# FILTER CONFIGURATION
#
# APPLICATION TELEMETRY CONFIGURATION
#
# IPV6 TUNNEL CONFIGURATION
#
#  IPV6 OSPFV3 CONFIGURATION - GlobalRouter
#
# IPV6 RIPng CONFIGURATION
#
router rip
exit

#
# IPV6 STATIC ROUTE CONFIGURATION - GlobalRouter
#
# IPV6 OSPF VLAN CONFIGURATION
#
# IPV6 OSPF PORT CONFIGURATION
```

```
#
# IPV6 RIP VLAN CONFIGURATION
#
# IPV6 RIP PORT CONFIGURATION
#
# IPV6 VRRP VLAN CONFIGURATION
#
# IPV6 VRRP PORT CONFIGURATION
#
# IPV6 NEIGHBOR CONFIGURATION - GlobalRouter
#
# IPV6 STATIC ROUTE BFD CONFIGURATION - GlobalRouter
#
# IPV6 DHCP CONFIGURATION - GlobalRouter
#
# IPV6 DHCP CONFIGURATION - VRF
#
# I-SID NAME CONFIGURATION
#
i-sid name 2100195 "Auto-sense Voice"
i-sid name 2100196 "Auto-sense Data"
i-sid name 15999999 "Onboarding I-SID"

#
# I-SID CONFIGURATION
#
i-sid 2100195 elan
exit
i-sid 15999999 elan
exit

#
# GLOBAL AUTO-SENSE CONFIGURATION
#
auto-sense voice i-sid 2100195 c-vid 195
auto-sense eapol voice lldp-auth
auto-sense data i-sid 2100196
auto-sense onboarding i-sid 15999999



#
# RADIUS CONFIGURATION
#
radius server host 10.9.203.6 key ******  used-by eapol
radius enable
radius dynamic-server client 10.9.203.6 secret ****** enable

#
# TACACS CONFIGURATION
#
# LLDP  CONFIGURATION
#
# EAP  CONFIGURATION
#
eapol enable

#
# MACSEC CONFIGURATION
#
# GLOBAL MACSec CA Configured
#
# FABRIC ATTACH CONFIGURATION
#
# DVR IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
# DVR IP REDISTRIBUTION CONFIGURATION - VRF
#
# SPB-PIM-GW CONFIGURATION
#
# SOFTWARE CONFIGURATION
#
#  APPLICATION CONFIGURATION
#
# IPSEC CONFIGURATION
#
# IPSEC POLICY TABLE CONFIGURATION
#
# IPSEC SA TABLE CONFIGURATION
#
# IPSEC SA POLICY LINK TABLE CONFIGURATION
#
# IPV6 OSPFV3 IPSEC CONFIGURATION
#
# IPV6 IPSEC INTERFACE CONFIGURATION
#
# IP IPSEC INTERFACE CONFIGURATION
#
# IKE CONFIGURATION
#
#  SYSTEM CONFIGURATION Phase 2
#
end



#
# IP REDISTRIBUTE APPLY CONFIGURATIONS
#
isis apply redistribute static
isis apply redistribute direct
```

```
#
# IP ECMP APPLY CONFIGURATIONS
```

VSP-core2

```
#
# Wed Aug 25 22:32:22 2021 EDT
# box type              : VSP-4450GSX-PWR+
# software version      : 8.4.0.0
# cli mode              : ECLI
#
#Card Info :
#  Slot 1 :
#                    CardType           : 4450GSX-PWR+
#                    CardDescription    : 4450GSX-PWR+
#                    CardSerial#        : 17JP0230E58J
#                    CardPart#          : EC4400A05-E6
#                    CardAssemblyDate   : 20170110
#                    CardHWRevision     : 03
#                    CardHWConfig       : none
#                    OperStatus         : up
#
#!end
#
config terminal

#
# BOOT CONFIGURATION
#
boot config flags sshd
#boot config sio console baud 9600 1
# end boot flags
#
# SPBM CONFIGURATION
#
spbm
spbm ethertype 0x8100
spbm nick-name server prefix A.10.00
spbm nick-name server

#
# CLI CONFIGURATION
#
prompt "VSP-core2"
password password-history 3

#
# CLOCK TIME-ZONE CONFIGURATION
#
clock time-zone US Eastern

#
# SYSTEM CONFIGURATION
#
ip domain-name "FabricEdge.NH.CTC.Local"
ip name-server primary 10.9.255.130
ip name-server secondary 10.9.255.131
syslog host 1
syslog host 1 address 10.9.203.5
syslog host 1 enable

#
# LOG CONFIGURATION
#
# LINK-FLAP-DETECT CONFIGURATION
#
# IEEE VLAN AGING CONFIGURATION
#
# ACCESS-POLICY CONFIGURATION
#
# SSH CONFIGURATION
#
ssh

#
# MCAST SOFTWARE FORWARDING CONFIGURATION
#
# SNMP V3 GLOBAL CONFIGURATION
#
# SNMP V3 GROUP MEMBERSHIP CONFIGURATION
#
snmp-server user admin group "initial"
snmp-server user snmpuser group "snmpuser"
snmp-server user snmpuser group "snmpuser"

#
# SNMP V3 NOTIFY FILTER CONFIGURATION
#
# SNMP V3 MIB VIEW CONFIGURATION
#
```

```
# SNMP V3 GROUP CONFIGURATION
#
snmp-server group "snmpuser" "" auth-priv notify-view root

#
# SNMP V3 TARGET ADDRESS CONFIGURATION
#
snmp-server host 10.9.203.5 v3 authPriv snmpuser inform

#
# DDI CONFIGURATION
#
# SLOT CONFIGURATION
#
# MAC AGING CONFIGURATION
#
# SMTP CONFIGURATION
#
# WEB CONFIGURATION
#
web-server enable
no web-server secure-only


#
# GLOBAL FDB FILTER CONFIGURATION
#
# QOS CONFIGURATION - PHASE I
#
# LACP CONFIGURATION
#
# VRF CONFIGURATION
#
# MAINTENANCE-DOMAIN CONFIGURATION
#
# MAINTENANCE-ASSOCIATION CONFIGURATION
#
# MAINTENANCE-ENDPOINT CONFIGURATION
#
# POE GLOBAL CONFIGURATION
#
# PORT CONFIGURATION - PHASE I
#
interface GigabitEthernet 1/12
encapsulation dot1q

exit

#
# ISIS SPBM CONFIGURATION
#
router isis
spbm 1
spbm 1 nick-name 0.00.02
spbm 1 b-vid 4051-4052 primary 4051
spbm 1 multicast enable
spbm 1 ip enable
exit

#
# SPB-PIM-GW CONFIGURATION
#
# MLT CONFIGURATION
#
# IP PREFIX LIST CONFIGURATION - GlobalRouter
#
# IP PREFIX LIST CONFIGURATION - VRF
#
# IPv6 PREFIX LIST CONFIGURATION - GlobalRouter
#
# IPv6 PREFIX LIST CONFIGURATION - VRF
#
# RMON CONFIGURATION
#
# DVR CONFIGURATION
#
dvr controller 1

#
# VLAN CONFIGURATION
#
vlan members remove 1 1/1-1/50 portmember
vlan create 195 name "Voice" type port-mstprstp 0
vlan i-sid 195 2100195
interface Vlan 195
dvr gw-ipv4 10.9.195.1
dvr enable
ip address 10.9.195.3 255.255.255.0 1
ip dhcp-relay
exit
vlan create 196 name "Data" type port-mstprstp 0
vlan i-sid 196 2100196
interface Vlan 196
dvr gw-ipv4 10.9.196.1
dvr enable
ip address 10.9.196.3 255.255.255.0 1
ip dhcp-relay
exit
vlan create 4048 name "onboarding-vlan" type port-mstprstp 0
vlan i-sid 4048 15999999
interface Vlan 4048
ip address 10.9.192.3 255.255.255.0 2
ip dhcp-relay
ip vrrp version 3
ip vrrp address 1 10.9.192.1
ip vrrp 1 enable
exit
vlan create 4051 name "B-VLAN-1" type spbm-bvlan
vlan create 4052 name "B-VLAN-2" type spbm-bvlan

#
# MSTP CONFIGURATION
#
# NLS CONFIGURATION
#
mgmt clip vrf GlobalRouter
ip address 10.9.193.132/32
enable
exit

#
# FHS CONFIGURATION
#
# MAC ACL CONFIGURATION
#
# IPv6 FHS ACL CONFIGURATION
#
# RA-GUARD CONFIGURATION
#
# DHCP-GUARD CONFIGURATION
#
# FHS SNOOPING CONFIGURATION
#
# SFLOW CONFIGURATION
#
# DHCP SNOOPING CONFIGURATION
#
# DHCP SNOOPING BINDING CONFIGURATION
#
# VIRTUAL IST CONFIGURATION
#
# MLT INTERFACE CONFIGURATION
#
# PORT CONFIGURATION - PHASE II
#
interface GigabitEthernet 1/2
no shutdown
brouter port 1/2 vlan 4000 subnet 10.9.223.6/255.255.255.252 mac-offset 0
ip bfd enable
no spanning-tree mstp  force-port-state enable
exit
interface GigabitEthernet 1/11
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/12
default-vlan-id 0
no shutdown
isis
isis spbm 1
isis enable
no spanning-tree mstp  force-port-state enable
no spanning-tree mstp msti 62 force-port-state enable
exit
interface GigabitEthernet 1/13
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/14
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/15
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/16
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/17
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/18
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/19
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/20
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/21
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/22
no lldp tx-tlv med extendedPSE
```

```
exit
interface GigabitEthernet 1/23
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/24
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/25
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/26
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/27
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/28
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/29
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/30
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/31
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/32
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/33
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/34
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/35
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/36
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/37
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/38
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/39
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/40
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/41
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/42
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/43
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/44
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/45
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/46
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/47
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/48
```

```
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/49
no lldp tx-tlv med extendedPSE

exit
interface GigabitEthernet 1/50
no lldp tx-tlv med extendedPSE

exit

#
# LINK-STATE TRACKING
#
# IP CONFIGURATION
#
# IP AS LIST CONFIGURATION - GlobalRouter
#
# IP COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP ROUTE MAP CONFIGURATION - GlobalRouter
#
# IP CONFIGURATION -  GlobalRouter
#
ip route 0.0.0.0 0.0.0.0 10.9.223.5 weight 10

#
# BFD CONFIGURATION -  GlobalRouter
#
router bfd enable
ip route bfd 10.9.223.5

#
# CIRCUITLESS IP INTERFACE CONFIGURATION - GlobalRouter
#
interface loopback 1
ip address 1 10.9.193.130/255.255.255.255
exit

#
# TOPOLOGY-CLIP-IP
#
# MSDP CONFIGURATION - GlobalRouter
#
# CIRCUITLESS IPV6 INTERFACE CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - VRF
#
# UDP FORWARDING PORT CONFIGURATION
#
# UDP FORWARDING VLAN CONFIGURATION
#
# DHCP CONFIGURATION - GlobalRouter
#
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.130
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.130  mode dhcp
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.131
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.192.3 10.9.255.131  mode dhcp
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.130
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.130  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.131
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.195.3 10.9.255.131  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.130
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.130  enable
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.130  mode bootp_dhcp
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.131
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.131  enable
ip dhcp-relay fwd-path 10.9.196.3 10.9.255.131  mode bootp_dhcp

#
# RIP CONFIGURATION - GlobalRouter
#
# RIP VLAN CONFIGURATION
#
# IGMP CONFIGURATION - GlobalRouter
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# TIMED PRUNE CONFIGURATION - GlobalRouter
#
# RSMLT CONFIGURATION
#
# IPV6 CONFIGURATION - GlobalRouter
#
# MLD CONFIGURATION - GlobalRouter
#
# ISIS CONFIGURATION
#
router isis
sys-name "VSP-core2"
ip-source-address 10.9.193.130
```

```
is-type l1
manual-area 49.0000
exit
router isis enable

#
# LOGICAL ISIS CONFIGURATION
#
# VTEP CONFIGURATION
#
# REMOTE VTEP CONFIGURATIONS
#
# VLAN NODAL MEP/MIP CONFIGURATION
#
# QOS CONFIGURATION - PHASE II
#
qos queue-profile 1 member add 1/1-1/50

#
# CFM CONFIGURATION - PHASE II
#
cfm spbm enable

#
# DIAG CONFIGURATION
#
# NTP CONFIGURATION
#
no ntp

#
# ES CONFIGURATION
#
#  OSPF CONFIGURATION - GlobalRouter
#
router ospf
exit

#
#  OSPF CONFIGURATION - VRF
#
# OSPF ACCEPT CONFIGURATION - GlobalRouter
#
# OSPF ACCEPT CONFIGURATION - VRF
#
# BGP CONFIGURATION - GlobalRouter
#
# BGP CONFIGURATION - VRF
#
# ISIS SPBM IPVPN CONFIGURATION
#
# IP ISID LIST CONFIGURATION - GlobalRouter
#
# IP ISID LIST CONFIGURATION - VRF
#
# ISIS ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS ACCEPT CONFIGURATION - VRF
#
# ISIS IPv6 ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS IPv6 ACCEPT CONFIGURATION - VRF
#
# IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
router isis
redistribute static
redistribute static enable
redistribute direct
redistribute direct enable
exit

#
# IP REDISTRIBUTION CONFIGURATION - VRF
#
# OSPF VLAN CONFIGURATION
#
# OSPF PORT CONFIGURATION
#
# OSPF LOOPBACK CONFIGURATION
#
# RIP PORT CONFIGURATION
#
# IPVPN CONFIGURATION
#
# SLPP CONFIGURATION
#
# FILTER CONFIGURATION
#
# APPLICATION TELEMETRY CONFIGURATION
#
# IPV6 TUNNEL CONFIGURATION
#
#  IPV6 OSPFV3 CONFIGURATION - GlobalRouter
#
# IPV6 RIPng CONFIGURATION
#
router rip
exit

#
# IPV6 STATIC ROUTE CONFIGURATION - GlobalRouter
```

```
#
# IPV6 OSPF VLAN CONFIGURATION
#
# IPV6 OSPF PORT CONFIGURATION
#
# IPV6 RIP VLAN CONFIGURATION
#
# IPV6 RIP PORT CONFIGURATION
#
# IPV6 VRRP VLAN CONFIGURATION
#
# IPV6 VRRP PORT CONFIGURATION
#
# IPV6 NEIGHBOR CONFIGURATION - GlobalRouter
#
# IPV6 STATIC ROUTE BFD CONFIGURATION - GlobalRouter
#
# IPV6 DHCP CONFIGURATION - GlobalRouter
#
# IPV6 DHCP CONFIGURATION - VRF
#
# I-SID NAME CONFIGURATION
#
i-sid name 2100195 "Auto-sense Voice"
i-sid name 2100196 "Auto-sense Data"
i-sid name 15999999 "Onboarding I-SID"

#
# I-SID CONFIGURATION
#
i-sid 2100195 elan
exit
i-sid 15999999 elan
exit

#
# GLOBAL AUTO-SENSE CONFIGURATION
#
auto-sense voice i-sid 2100195 c-vid 195
auto-sense eapol voice lldp-auth
auto-sense data i-sid 2100196
auto-sense onboarding i-sid 15999999



#
# RADIUS CONFIGURATION
#
radius server host 10.9.203.6 key ******  used-by eapol
radius enable
radius dynamic-server client 10.9.203.6 secret ****** enable

#
# TACACS CONFIGURATION
#
# LLDP  CONFIGURATION
#
# EAP  CONFIGURATION
#
eapol enable

#
# MACSEC CONFIGURATION
#
# GLOBAL MACSec CA Configured
#
# FABRIC ATTACH CONFIGURATION
#
# DVR IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
# DVR IP REDISTRIBUTION CONFIGURATION - VRF
#
# SPB-PIM-GW CONFIGURATION
#
# SOFTWARE CONFIGURATION
#
#  APPLICATION CONFIGURATION
#
# IPSEC CONFIGURATION
#
# IPSEC POLICY TABLE CONFIGURATION
#
# IPSEC SA TABLE CONFIGURATION
#
# IPSEC SA POLICY LINK TABLE CONFIGURATION
#
# IPV6 OSPFV3 IPSEC CONFIGURATION
#
# IPV6 IPSEC INTERFACE CONFIGURATION
#
# IP IPSEC INTERFACE CONFIGURATION
#
# IKE CONFIGURATION
#
#  SYSTEM CONFIGURATION Phase 2
#
end



#
# IP REDISTRIBUTE APPLY CONFIGURATIONS
```

```
#
isis apply redistribute static
isis apply redistribute direct

#
# IP ECMP APPLY CONFIGURATIONS
```

VSP-edge1

```

#
# Thu Aug 26 03:01:28 2021 EDT
# box type             : 5520-12MW-36W-VOSS
# software version     : 8.4.0.0
# cli mode             : ECLI
#
#Card Info :
#  Slot 1 :
#                   CardType           : 5520-12MW-36W-VOSS
#                   CardDescription    : 5520-12MW-36W-VOSS
#                   CardSerial#        : SB012050G-00079
#                   CardPart#          : 800990-00-AB
#                   CardAssemblyDate   : 20201216
#                   CardHWRevision     : AB
#                   CardHWConfig       :
#                   AdminStatus        : up
#                   OperStatus         : up
#
#!end
#
config terminal

#
# BOOT CONFIGURATION
#
boot config flags dvr-leaf-mode
boot config flags ftpd
boot config flags sshd
boot config flags telnetd
#boot config sio console baud 115200 1
# end boot flags
#
# SPBM CONFIGURATION
#
spbm
spbm ethertype 0x8100

#
# CLI CONFIGURATION
#
prompt "VSP-edge1"
password password-history 3

#
# CLOCK TIME-ZONE CONFIGURATION
#
clock time-zone US Eastern

#
# SYSTEM CONFIGURATION
#
ip domain-name "FabricEdge.NH.CTC.Local"
ip name-server primary 10.9.255.130
ip name-server secondary 10.9.255.131
syslog host 1
syslog host 1 address 10.9.203.5
syslog host 1 enable

#
# LOG CONFIGURATION
#
# LINK-FLAP-DETECT CONFIGURATION
#
# IEEE VLAN AGING CONFIGURATION
#
# ACCESS-POLICY CONFIGURATION
#
# SSH CONFIGURATION
#
ssh

#
# MCAST SOFTWARE FORWARDING CONFIGURATION
#
# SNMP V3 GLOBAL CONFIGURATION
#
# SNMP V3 GROUP MEMBERSHIP CONFIGURATION
#
snmp-server user admin group "initial"
snmp-server user snmpuser group "snmpuser"
snmp-server user snmpuser group "snmpuser"
```

```
#
# SNMP V3 NOTIFY FILTER CONFIGURATION
#
# SNMP V3 MIB VIEW CONFIGURATION
#
# SNMP V3 GROUP CONFIGURATION
#
snmp-server group "snmpuser" "" auth-priv notify-view root

#
# SNMP V3 TARGET ADDRESS CONFIGURATION
#
snmp-server host 10.9.203.5 v3 authPriv snmpuser inform

#
# DDI CONFIGURATION
#
# SLOT CONFIGURATION
#
# MAC AGING CONFIGURATION
#
# SMTP CONFIGURATION
#
# WEB CONFIGURATION
#
web-server enable
no web-server secure-only


#
# GLOBAL FDB FILTER CONFIGURATION
#
# QOS CONFIGURATION - PHASE I
#
# LACP CONFIGURATION
#
# VRF CONFIGURATION
#
# MAINTENANCE-DOMAIN CONFIGURATION
#
# MAINTENANCE-ASSOCIATION CONFIGURATION
#
# MAINTENANCE-ENDPOINT CONFIGURATION
#
# POE GLOBAL CONFIGURATION
#
# PORT CHANNELIZE CONFIGURATION
#
# PORT CONFIGURATION - PHASE I
#
# ISIS SPBM CONFIGURATION
#
router isis
exit

#
# SPB-PIM-GW CONFIGURATION
#
# MLT CONFIGURATION
#
# IP PREFIX LIST CONFIGURATION - GlobalRouter
#
# IP PREFIX LIST CONFIGURATION - VRF
#
# IPv6 PREFIX LIST CONFIGURATION - GlobalRouter
#
# IPv6 PREFIX LIST CONFIGURATION - VRF
#
# RMON CONFIGURATION
#
# VLAN CONFIGURATION
#
vlan members remove 1 1/1-1/48 portmember
vlan create 4048 name "onboarding-vlan" type pvlan-mstprstp 0 secondary 4049
vlan i-sid 4048 15999999
vlan create 4051 type spbm-bvlan
vlan create 4052 type spbm-bvlan

#
# MSTP CONFIGURATION
#
# NLS CONFIGURATION
#
mgmt oob
exit
mgmt clip vrf GlobalRouter
ip address 10.9.193.133/32
enable
exit
mgmt vlan 4048
mac-offset 0
ip route 0.0.0.0/0 next-hop 10.9.192.1 weight 200
enable
exit

#
# FHS CONFIGURATION
#
# MAC ACL CONFIGURATION
#
# IPv6 FHS ACL CONFIGURATION
```

```
#
# RA-GUARD CONFIGURATION
#
# DHCP-GUARD CONFIGURATION
#
# FHS SNOOPING CONFIGURATION
#
# SFLOW CONFIGURATION
#
# DHCP SNOOPING CONFIGURATION
#
# DHCP SNOOPING BINDING CONFIGURATION
#
# VIRTUAL IST CONFIGURATION
#
# MLT INTERFACE CONFIGURATION
#
# DVR CONFIGURATION
#
dvr leaf 1

#
# PORT CONFIGURATION - PHASE II
#
interface GigabitEthernet 1/1
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/2
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/3
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/4
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/5
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/6
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/7
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/8
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/9
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/10
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/11
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/12
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/13
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/14
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/15
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/16
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/17
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/18
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/19
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/20
```

```
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/21
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/22
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/23
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/24
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/25
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/26
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/27
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/28
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/29
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/30
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/31
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/32
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/33
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/34
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/35
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/36
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/37
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/38
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/39
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/40
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/41
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/42
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/43
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/44
auto-sense enable
no shutdown
exit
```

```
interface GigabitEthernet 1/45
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/46
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/47
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/48
auto-sense enable
no shutdown
exit

#
# LINK-STATE TRACKING
#
# IP CONFIGURATION
#
# IP AS LIST CONFIGURATION - GlobalRouter
#
# IP AS LIST CONFIGURATION - VRF
#
# IP COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP COMMUNITY LIST CONFIGURATION - VRF
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - VRF
#
# IP ROUTE MAP CONFIGURATION - GlobalRouter
#
# IP ROUTE MAP CONFIGURATION - VRF
#
# IP CONFIGURATION -  GlobalRouter
#
# IP CONFIGURATION -  VRF
#
# BFD CONFIGURATION -  GlobalRouter
#
# BFD CONFIGURATION -  VRF
#
# CIRCUITLESS IP INTERFACE CONFIGURATION - GlobalRouter
#
# CIRCUITLESS IP INTERFACE CONFIGURATION - VRF
#
# TOPOLOGY-CLIP-IP
#
# MSDP CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - VRF
#
# UDP FORWARDING CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - VRF
#
# UDP FORWARDING VLAN CONFIGURATION
#
# DHCP CONFIGURATION - GlobalRouter
#
# DHCP CONFIGURATION - VRF
#
# RIP CONFIGURATION - GlobalRouter
#
# RIP CONFIGURATION - VRF
#
# RIP VLAN CONFIGURATION
#
# IGMP CONFIGURATION - GlobalRouter
#
# IGMP CONFIGURATION - VRF
#
# MROUTE CONFIGURATION
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# TIMED PRUNE CONFIGURATION - GlobalRouter
#
# TIMED PRUNE CONFIGURATION - VRF
#
# IPFIX CONFIGURATION
#
# RSMLT CONFIGURATION
#
# MLD CONFIGURATION - GlobalRouter
#
# MROUTE6 CONFIGURATION
#
# ISIS CONFIGURATION
#
router isis
sys-name "VSP-edge1"
is-type l1
exit
```

```
router isis enable

#
# LOGICAL ISIS CONFIGURATION
#
# VLAN NODAL MEP/MIP CONFIGURATION
#
# QOS CONFIGURATION - PHASE II
#
qos queue-profile 1 member add 1/1-1/48

#
# CFM CONFIGURATION - PHASE II
#
cfm spbm enable

#
# DIAG CONFIGURATION
#
# NTP CONFIGURATION
#
no ntp
ntp server 10.9.255.155

#
# ES CONFIGURATION
#
#  OSPF CONFIGURATION - GlobalRouter
#
#  OSPF CONFIGURATION - VRF
#
# OSPF ACCEPT CONFIGURATION - GlobalRouter
#
# OSPF ACCEPT CONFIGURATION - VRF
#
# BGP CONFIGURATION - GlobalRouter
#
# BGP CONFIGURATION - VRF
#
# ISIS SPBM IPVPN CONFIGURATION
#
# IP ISID LIST CONFIGURATION - GlobalRouter
#
# IP ISID LIST CONFIGURATION - VRF
#
# ISIS ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS ACCEPT CONFIGURATION - VRF
#
# ISIS IPv6 ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS IPv6 ACCEPT CONFIGURATION - VRF
#
# IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
router isis
exit

#
# IP REDISTRIBUTION CONFIGURATION - VRF
#
# OSPF VLAN CONFIGURATION
#
# OSPF PORT CONFIGURATION
#
# OSPF LOOPBACK CONFIGURATION
#
# RIP PORT CONFIGURATION
#
# IPVPN CONFIGURATION
#
# SLPP CONFIGURATION
#
# FILTER CONFIGURATION
#
# APPLICATION TELEMETRY CONFIGURATION
#
# IPV6 TUNNEL CONFIGURATION
#
#  IPV6 OSPFV3 CONFIGURATION - GlobalRouter
#
# IPV6 RIPng CONFIGURATION
#
# IPV6 MGMT INTERFACE CONFIGURATION
#
# IPV6 STATIC ROUTE CONFIGURATION - GlobalRouter
#
# IPV6 MGMT INTERFACE CONFIGURATION
#
# IPV6 OSPF VLAN CONFIGURATION
#
# IPV6 OSPF PORT CONFIGURATION
#
# IPV6 RIP VLAN CONFIGURATION
#
# IPV6 RIP PORT CONFIGURATION
#
# IPV6 VRRP VLAN CONFIGURATION
#
# IPV6 VRRP PORT CONFIGURATION
#
# I-SID NAME CONFIGURATION
```

```
#
i-sid name 2100195 "Auto-sense Voice"
i-sid name 2100196 "Auto-sense Data"
i-sid name 15999999 "Onboarding I-SID"

#
# I-SID CONFIGURATION
#
# GLOBAL AUTO-SENSE CONFIGURATION
#
auto-sense voice i-sid 2100195 c-vid 195
auto-sense data i-sid 2100196
auto-sense onboarding i-sid 15999999

#
# VNID CONFIGURATION
#
# RADIUS CONFIGURATION
#
# TACACS CONFIGURATION
#
# LLDP  CONFIGURATION
#
# EAP  CONFIGURATION
#
# MACSEC CONFIGURATION
#
# GLOBAL MACSec CA Configured
#
# FABRIC ATTACH CONFIGURATION
#
# ENDPOINT TRACKING CONFIGURATION
#
# SPB-PIM-GW CONFIGURATION
#
# SOFTWARE CONFIGURATION
#
#  APPLICATION CONFIGURATION
#
# IPSEC CONFIGURATION
#
# IPSEC POLICY TABLE CONFIGURATION
#
# IPSEC SA TABLE CONFIGURATION
#
# IPSEC SA POLICY LINK TABLE CONFIGURATION
#
# IPV6 OSPFV3 IPSEC CONFIGURATION
#
# IPV6 IPSEC INTERFACE CONFIGURATION
#
# IP IPSEC INTERFACE CONFIGURATION
#
# IKE CONFIGURATION
#
#  SYSTEM CONFIGURATION Phase 2
#
end


#
# IP REDISTRIBUTE APPLY CONFIGURATIONS
#
# IP ECMP APPLY CONFIGURATIONS
```

VSP-edge2

```
#
# Thu Aug 26 03:01:28 2021 EDT
# box type             : 5520-24W-VOSS
# software version     : 8.4.0.0
# cli mode             : ECLI
#
#Card Info :
#  Slot 1 :
#                   CardType          : 5520-24W-VOSS
#                   CardDescription   : 5520-24W-VOSS
#                   CardSerial#       : SB032050G-00102
#                   CardPart#         : 800992-00-AB
#                   CardAssemblyDate  : 20201215
#                   CardHWRevision    : AB
#                   CardHWConfig      :
#                   AdminStatus       : up
#                   OperStatus        : up
#
#!end
#
config terminal
```

```
#
# BOOT CONFIGURATION
#
boot config flags dvr-leaf-mode
boot config flags ftpd
boot config flags sshd
boot config flags telnetd
#boot config sio console baud 115200 1
# end boot flags
#
# SPBM CONFIGURATION
#
spbm
spbm ethertype 0x8100

#
# CLI CONFIGURATION
#
prompt "VSP-edge2"
password password-history 3

#
# CLOCK TIME-ZONE CONFIGURATION
#
clock time-zone US Eastern

#
# SYSTEM CONFIGURATION
#
ip domain-name "FabricEdge.NH.CTC.Local"
ip name-server primary 10.9.255.130
ip name-server secondary 10.9.255.131
syslog host 1
syslog host 1 address 10.9.203.5
syslog host 1 enable

#
# LOG CONFIGURATION
#
# LINK-FLAP-DETECT CONFIGURATION
#
# IEEE VLAN AGING CONFIGURATION
#
# ACCESS-POLICY CONFIGURATION
#
# SSH CONFIGURATION
#
ssh

#
# MCAST SOFTWARE FORWARDING CONFIGURATION
#
# SNMP V3 GLOBAL CONFIGURATION
#
# SNMP V3 GROUP MEMBERSHIP CONFIGURATION
#
snmp-server user admin group "initial"
snmp-server user snmpuser group "snmpuser"
snmp-server user snmpuser group "snmpuser"

#
# SNMP V3 NOTIFY FILTER CONFIGURATION
#
# SNMP V3 MIB VIEW CONFIGURATION
#
# SNMP V3 GROUP CONFIGURATION
#
snmp-server group "snmpuser" "" auth-priv notify-view root

#
# SNMP V3 TARGET ADDRESS CONFIGURATION
#
snmp-server host 10.9.203.5 v3 authPriv snmpuser inform

#
# DDI CONFIGURATION
#
# SLOT CONFIGURATION
#
# MAC AGING CONFIGURATION
#
# SMTP CONFIGURATION
#
# WEB CONFIGURATION
#
web-server enable
no web-server secure-only


#
# GLOBAL FDB FILTER CONFIGURATION
#
# QOS CONFIGURATION - PHASE I
#
# LACP CONFIGURATION
#
# VRF CONFIGURATION
#
# MAINTENANCE-DOMAIN CONFIGURATION
#
# MAINTENANCE-ASSOCIATION CONFIGURATION
#
```

```
# MAINTENANCE-ENDPOINT CONFIGURATION
#
# POE GLOBAL CONFIGURATION
#
# PORT CHANNELIZE CONFIGURATION
#
# PORT CONFIGURATION - PHASE I
#
# ISIS SPBM CONFIGURATION
#
router isis
exit

#
# SPB-PIM-GW CONFIGURATION
#
# MLT CONFIGURATION
#
# IP PREFIX LIST CONFIGURATION - GlobalRouter
#
# IP PREFIX LIST CONFIGURATION - VRF
#
# IPv6 PREFIX LIST CONFIGURATION - GlobalRouter
#
# IPv6 PREFIX LIST CONFIGURATION - VRF
#
# RMON CONFIGURATION
#
# VLAN CONFIGURATION
#
vlan members remove 1 1/1-1/24 portmember
vlan create 4048 name "onboarding-vlan" type pvlan-mstprstp 0 secondary 4049
vlan i-sid 4048 15999999
vlan create 4051 type spbm-bvlan
vlan create 4052 type spbm-bvlan

#
# MSTP CONFIGURATION
#
# NLS CONFIGURATION
#
mgmt oob
exit
mgmt clip vrf GlobalRouter
ip address 10.9.193.134/32
enable
exit
mgmt vlan 4048
mac-offset 0
ip route 0.0.0.0/0 next-hop 10.9.192.1 weight 200
enable
exit

#
# FHS CONFIGURATION
#
# MAC ACL CONFIGURATION
#
# IPv6 FHS ACL CONFIGURATION
#
# RA-GUARD CONFIGURATION
#
# DHCP-GUARD CONFIGURATION
#
# FHS SNOOPING CONFIGURATION
#
# SFLOW CONFIGURATION
#
# DHCP SNOOPING CONFIGURATION
#
# DHCP SNOOPING BINDING CONFIGURATION
#
# VIRTUAL IST CONFIGURATION
#
# MLT INTERFACE CONFIGURATION
#
# DVR CONFIGURATION
#
dvr leaf 1

#
# PORT CONFIGURATION - PHASE II
#
interface GigabitEthernet 1/1
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/2
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/3
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/4
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/5
auto-sense enable
no shutdown
```

```
exit
interface GigabitEthernet 1/6
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/7
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/8
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/9
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/10
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/11
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/12
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/13
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/14
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/15
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/16
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/17
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/18
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/19
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/20
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/21
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/22
default-vlan-id 0
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/23
auto-sense enable
no shutdown
exit
interface GigabitEthernet 1/24
default-vlan-id 0
auto-sense enable
no shutdown
exit

#
# LINK-STATE TRACKING
#
# IP CONFIGURATION
#
# IP AS LIST CONFIGURATION - GlobalRouter
#
# IP AS LIST CONFIGURATION - VRF
#
# IP COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP COMMUNITY LIST CONFIGURATION - VRF
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - GlobalRouter
#
# IP EXTENDED COMMUNITY LIST CONFIGURATION - VRF
#
# IP ROUTE MAP CONFIGURATION - GlobalRouter
#
# IP ROUTE MAP CONFIGURATION - VRF
```

```
#
# IP CONFIGURATION -  GlobalRouter
#
# IP CONFIGURATION -  VRF
#
# BFD CONFIGURATION -  GlobalRouter
#
# BFD CONFIGURATION -  VRF
#
# CIRCUITLESS IP INTERFACE CONFIGURATION - GlobalRouter
#
# CIRCUITLESS IP INTERFACE CONFIGURATION - VRF
#
# TOPOLOGY-CLIP-IP
#
# MSDP CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - GlobalRouter
#
# VRRP CONFIGURATION - VRF
#
# UDP FORWARDING CONFIGURATION - GlobalRouter
#
# UDP FORWARDING CONFIGURATION - VRF
#
# UDP FORWARDING VLAN CONFIGURATION
#
# DHCP CONFIGURATION - GlobalRouter
#
# DHCP CONFIGURATION - VRF
#
# RIP CONFIGURATION - GlobalRouter
#
# RIP CONFIGURATION - VRF
#
# RIP VLAN CONFIGURATION
#
# IGMP CONFIGURATION - GlobalRouter
#
# IGMP CONFIGURATION - VRF
#
# MROUTE CONFIGURATION
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# MCAST RESOURCE USAGE CONFIGURATION
#
# TIMED PRUNE CONFIGURATION - GlobalRouter
#
# TIMED PRUNE CONFIGURATION - VRF
#
# IPFIX CONFIGURATION
#
# RSMLT CONFIGURATION
#
# MLD CONFIGURATION - GlobalRouter
#
# MROUTE6 CONFIGURATION
#
# ISIS CONFIGURATION
#
router isis
sys-name "VSP-edge2"
is-type l1
exit
router isis enable

#
# LOGICAL ISIS CONFIGURATION
#
# VLAN NODAL MEP/MIP CONFIGURATION
#
# QOS CONFIGURATION - PHASE II
#
qos queue-profile 1 member add 1/1-1/24

#
# CFM CONFIGURATION - PHASE II
#
cfm spbm enable

#
# DIAG CONFIGURATION
#
# NTP CONFIGURATION
#
no ntp
ntp server 10.9.255.155

#
# ES CONFIGURATION
#
#  OSPF CONFIGURATION - GlobalRouter
#
#  OSPF CONFIGURATION - VRF
#
# OSPF ACCEPT CONFIGURATION - GlobalRouter
#
# OSPF ACCEPT CONFIGURATION - VRF
#
# BGP CONFIGURATION - GlobalRouter
#
```

```
# BGP CONFIGURATION - VRF
#
# ISIS SPBM IPVPN CONFIGURATION
#
# IP ISID LIST CONFIGURATION - GlobalRouter
#
# IP ISID LIST CONFIGURATION - VRF
#
# ISIS ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS ACCEPT CONFIGURATION - VRF
#
# ISIS IPv6 ACCEPT CONFIGURATION - GlobalRouter
#
# ISIS IPv6 ACCEPT CONFIGURATION - VRF
#
# IP REDISTRIBUTION CONFIGURATION - GlobalRouter
#
router isis
exit

#
# IP REDISTRIBUTION CONFIGURATION - VRF
#
# OSPF VLAN CONFIGURATION
#
# OSPF PORT CONFIGURATION
#
# OSPF LOOPBACK CONFIGURATION
#
# RIP PORT CONFIGURATION
#
# IPVPN CONFIGURATION
#
# SLPP CONFIGURATION
#
# FILTER CONFIGURATION
#
# APPLICATION TELEMETRY CONFIGURATION
#
# IPV6 TUNNEL CONFIGURATION
#
#  IPV6 OSPFV3 CONFIGURATION - GlobalRouter
#
# IPV6 RIPng CONFIGURATION
#
# IPV6 MGMT INTERFACE CONFIGURATION
#
# IPV6 STATIC ROUTE CONFIGURATION - GlobalRouter
#
# IPV6 MGMT INTERFACE CONFIGURATION
#
# IPV6 OSPF VLAN CONFIGURATION
#
# IPV6 OSPF PORT CONFIGURATION
#
# IPV6 RIP VLAN CONFIGURATION
#
# IPV6 RIP PORT CONFIGURATION
#
# IPV6 VRRP VLAN CONFIGURATION
#
# IPV6 VRRP PORT CONFIGURATION
#
# I-SID NAME CONFIGURATION
#
i-sid name 2100195 "Auto-sense Voice"
i-sid name 2100196 "Auto-sense Data"
i-sid name 15999999 "Onboarding I-SID"

#
# I-SID CONFIGURATION
#
# GLOBAL AUTO-SENSE CONFIGURATION
#
auto-sense voice i-sid 2100195 c-vid 195
auto-sense data i-sid 2100196
auto-sense onboarding i-sid 15999999

#
# VNID CONFIGURATION
#
# RADIUS CONFIGURATION
#
# TACACS CONFIGURATION
#
# LLDP  CONFIGURATION
#
# EAP  CONFIGURATION
#
# MACSEC CONFIGURATION
#
# GLOBAL MACSec CA Configured
#
# FABRIC ATTACH CONFIGURATION
#
# ENDPOINT TRACKING CONFIGURATION
#
# SPB-PIM-GW CONFIGURATION
#
# SOFTWARE CONFIGURATION
#
```

```
#  APPLICATION CONFIGURATION
#
# IPSEC CONFIGURATION
#
# IPSEC POLICY TABLE CONFIGURATION
#
# IPSEC SA TABLE CONFIGURATION
#
# IPSEC SA POLICY LINK TABLE CONFIGURATION
#
# IPV6 OSPFV3 IPSEC CONFIGURATION
#
# IPV6 IPSEC INTERFACE CONFIGURATION
#
# IP IPSEC INTERFACE CONFIGURATION
#
# IKE CONFIGURATION
#
#  SYSTEM CONFIGURATION Phase 2
#
end



#
# IP REDISTRIBUTE APPLY CONFIGURATIONS
#
# IP ECMP APPLY CONFIGURATIONS
```

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Revision History

Date	Revision	Changes Made	Author
26/8/2021	1.0a	First version	Ludovico Stevens
9/9/2021	1.0	Review	Michael Lam
10/7/2021	1.1	Copyedit	Larry Kunz