

通過DCNM 11.2(1)部署EVPN VXLAN、多站點

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簡介

本文說明如何部署兩個單獨的EVPN VXLAN交換矩陣，以及如何使用Cisco Data Center Manager(DCNM)11.2(1)將這兩個交換矩陣合併到EVPN多站點交換矩陣部署中。

多站點域(MSD)是在DCNM 11.0(1)版本中引入的，是一個多交換矩陣容器，建立它來管理多個成員交換矩陣。這是定義重疊網路和虛擬路由和轉發(VRF)的單一控制點，這些定義在成員結構之間共用。

註：本文檔不介紹DCNM中每個頁籤的功能/屬性的詳細資訊。請參見結尾處的參考資料，其中確實包括詳細的說明。

必要條件

需求

思科建議您瞭解以下主題：

- 用於部署DCNM虛擬機器的vCenter/UCS
- 熟悉NX-OS和Nexus 9000
- 以枝葉/主幹方式連線的Nexus 9000ToRs和EoR

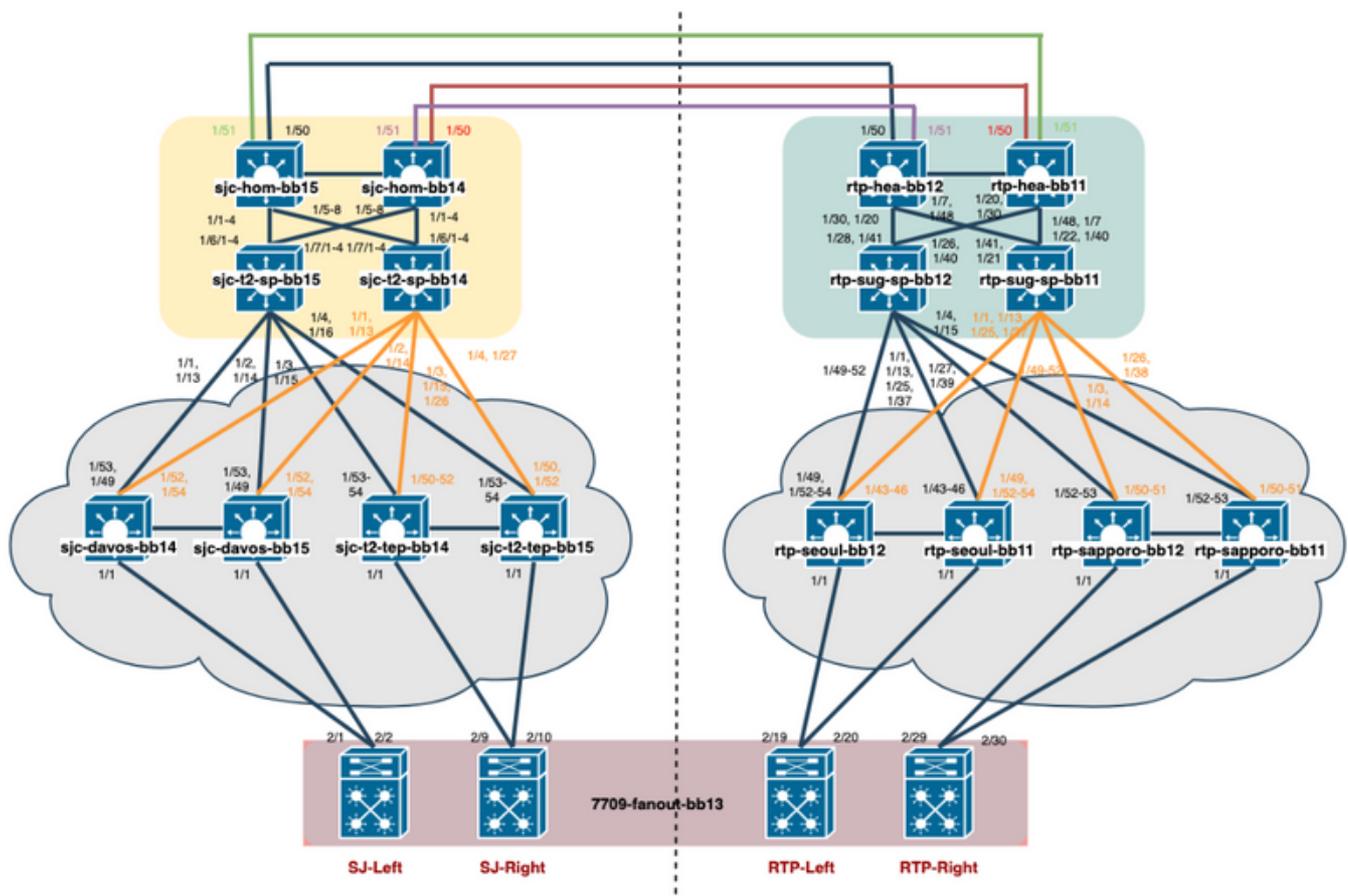
採用元件

本檔案中的資訊是根據以下軟體和硬體：

- DCNM 11.2(1)
- NX-OS 7.0(3)I7(7)和NX-OS 9.2(3)
- 主幹：N9K-C9508 / N9K-X97160YC-EX和N9K-C9508 / N9K-X9636PQ
- 枝葉：N9K-C9372TX、N9K-C93180YC-EX、N9K-C9372TX-E、N9K-C92160YC-X
- 邊界網關：N9K-C93240YC-FX2和N9K-C93180YC-FX
- 7K「主機」：N77-C7709

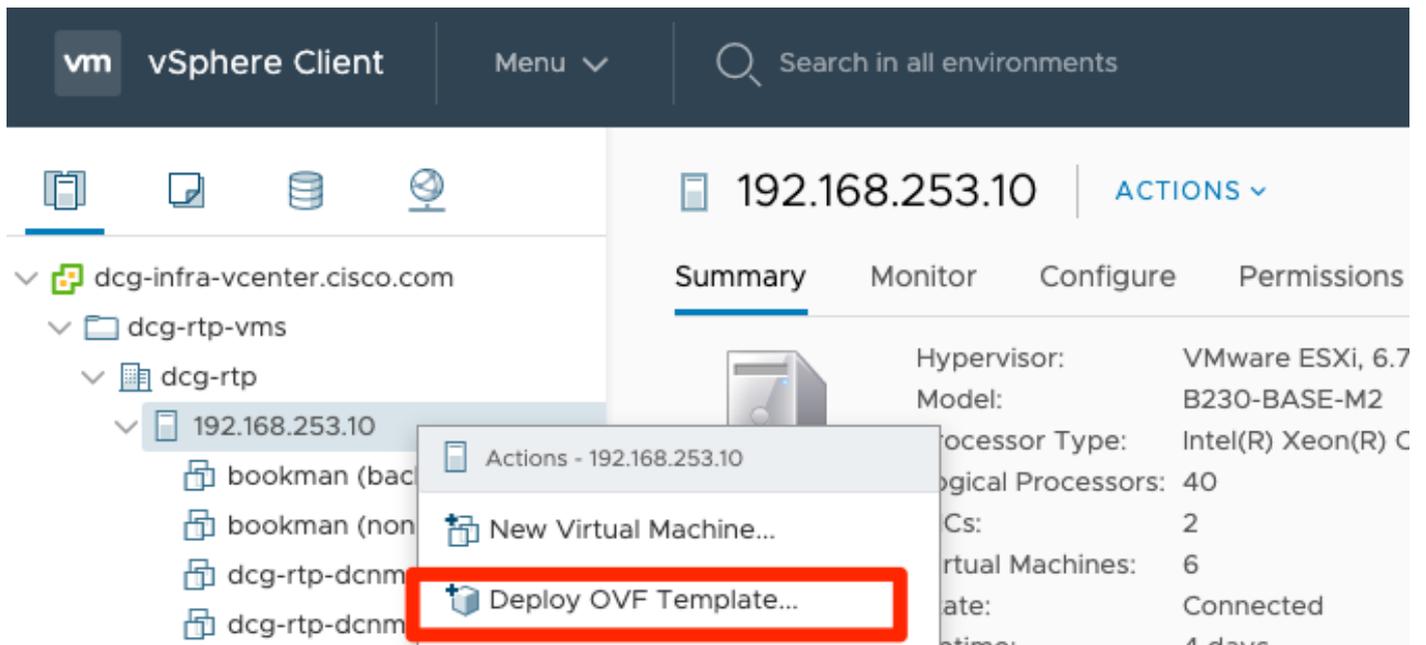
本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

物理拓撲已建立



在vCenter中部署OVA/OVF

步驟1.在vCenter下，在您選擇的伺服器/主機中部署開放式虛擬化格式(OVF)模板，如下圖所示。



1. 在本地擁有OVA/OVF等檔案，並通過Choose Files進行選擇，如下圖所示：

Deploy OVF Template

1 Select an OVF template

2 Select a name and folder

3 Select a compute resource

4 Review details

5 Select storage

6 Ready to complete

Select an OVF template

Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

URL

http | https://remoteserver-address/filetodeploy.ovf | .ova

Local file

Choose Files dcnm-va.11.2.1.ova

2. 按照其餘提示 (VM名稱、哪個主機、網路設定，如圖所示) 按一下Finish。

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Configuration
- ✓ 7 Select storage
- 8 Select networks**
- 9 Customize template
- 10 Ready to complete

Select networks

Select a destination network for each source network.

Source Network	Destination Network
dcnm-mgmt	DCG-INFRA-1
enhanced-fabric-mgmt	EVPN-NAT-1
enhanced-fabric-inband	EVPN-NAT-1

3 items

IP Allocation Settings

IP allocation: Static - Manual
IP protocol: IPv4

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Configuration
- ✓ 7 Select storage
- ✓ 8 Select networks
- 9 Customize template**
- 10 Ready to complete

Customize template

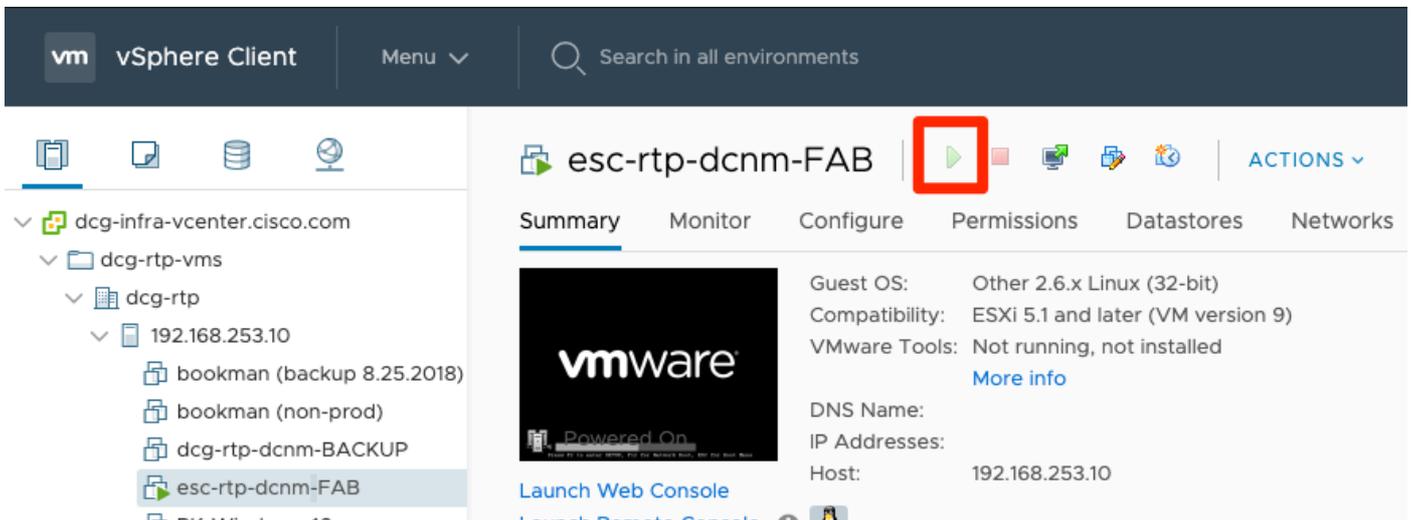
Customize the deployment properties of this software solution.

✓ All properties have valid values

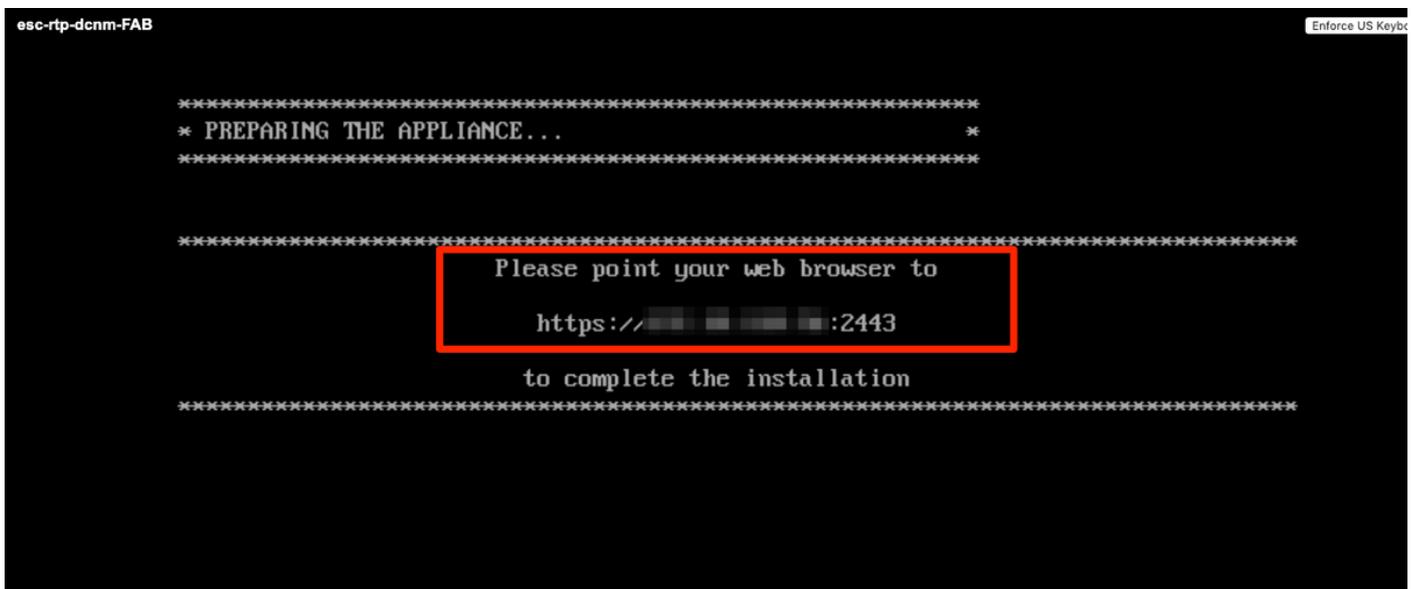
Management Properties	3 settings
1.IP Address	
2.Subnet Mask	255.255.255.0
3.Default Gateway	

步驟2.完成後，啟動DCNM VM，如此處所示。

Task Name	Target	Status	Initiator	Queued For	Start Time	Completion Time	Server
Power On virtual machine	esc-ntp-dcnm-FAB	Completed	DCG.LOCAL\Administrator	3 ms	06/17/2019, 3:19:21 PM	06/17/2019, 3:19:21 PM	dcg-infra-vcenter.cisco.com
Initialize powering On	dcg-ntp	Completed	DCG.LOCAL\Administrator	4 ms	06/17/2019, 3:19:21 PM	06/17/2019, 3:19:21 PM	dcg-infra-vcenter.cisco.com
Deploy OVF template	esc-ntp-dcnm-FAB	Completed	DCG.LOCAL\vpdx-extension-440bec49-45...	7 ms	06/17/2019, 3:01:45 PM	06/17/2019, 3:13:07 PM	dcg-infra-vcenter.cisco.com



步驟3.啟動Web控制檯，一旦進入控制檯，您應該會看到以下提示（IP不同，因為此提示特定於您的環境和配置）：



步驟4.轉到<https://<your IP>:2443>（這是您之前在OVA部署期間配置的IP），然後按一下Get Started。在本示例中，介紹全新安裝。

Cisco DCNM Installer

Please select how you want to setup this instance of Cisco Data Center Network Manager:

- Fresh installation - Standalone
 - Fresh installation - HA Primary
 - Fresh installation - HA Secondary
 - Fresh installation with backup file for restore
- [Continue](#)

步驟5.配置管理員密碼後，必須選擇要安裝的交換矩陣型別。在LAN或FAB之間進行選擇，因為每種型別具有不同的用途，因此請確保正確理解和選擇。在本例中，使用LAN光纖，適用於大多數VXLAN-EVPN部署。

Please choose the installation mode

LAN Fabric

LAN Fabric is for most VXLAN-EVPN deployments.

步驟6.按照安裝程式提示使用網路的DNS、網路時間協定(NTP)伺服器、DCNM主機名等。

Please enter the following system settings

Fully Qualified Host Name *

Fully Qualified Host Name as per RFC1123, section 2.1, for example:

myhost.mydomain.com

dcg-rtp-dcnm-fab.cisco.com

DNS Server Address *

DNS Server Address can be an IPv4 address or an IPv6 address

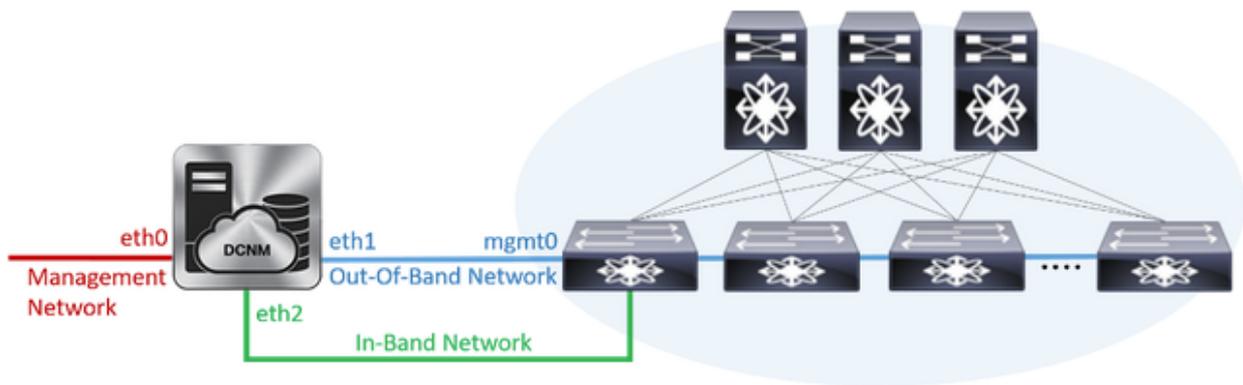
64.102.6.247

NTP Server *

RFC1123-compliant name or address (IPv4 or IPv6)

172.18.108.15

步驟7.配置管理IP和管理網關。管理網路提供與DCNM伺服器的連線 (SSH、SCP、HTTP和HTTPS)。這也是用於連線GUI的IP。IP地址應該從之前完成的OVA安裝中預先配置。



Management Network

The Management Network is the main network connection used for reaching the DCNM web user interface. When High Availability is enabled, 3 IP addresses are required on this network.

Management IPv4 Address *

Enter a valid IPv4 address along with prefix, for example: 10.10.10.2/24

Management Network Default IPv4 Gateway *

Out-of-Band Network

The Out-of-Band Network provides connectivity to the device management ports (typically mgmt0). When High Availability is enabled, 3 IP addresses are required on this network.

IPv4 Address *

Enter a valid IPv4 address along with prefix, for example: 1.0.0.2/8

Gateway IPv4 Address

Gateway for the Out-of-Band Network

IPv6 Address

Enter a valid IPv6 address along with prefix, for example: 2001:db8:abcd:0012::0/96

DNS Server Address

If no value is provided, it will be set to Out-of-Band IPv4 address.

Only IPv4 addresses are accepted.

步驟8.配置帶內網路。帶內網路用於端點定位器等應用，端點定位器要求前面板埠連線到交換矩陣中的9K，以在DCNM和9K之間建立邊界網關協定(BGP)會話。

In-Band Network

The In-Band Network provides reachability to the devices via the front-panel ports. When High Availability is enabled, 3 IP addresses are required on this network.

IPv4 Address

Enter a valid IPv4 address along with prefix, for example: 2.0.0.2/8

Gateway IPv4 Address

Gateway for the In-Band Network

步驟9.配置內部應用服務網路 —

從DCNM 11.0版本開始，DCNM支援使用DCNM LAN OVA/ISO安裝的應用程式框架(AFW)。該框

架使用Docker在群集和非群集環境中將應用程式作為微服務進行協調，以實現橫向擴展體系結構。

預設情況下隨DCNM一起提供的其他應用程式套件包括Endpoint Locator、Watch Tower、Virtual Machine Manager外掛、Config Compliance等。AFW負責這些應用的生命週期管理，包括提供網路、儲存、身份驗證、安全等。AFW還管理Network Insights應用程式（即NIR和NIA）的部署和生命週期。如果您啟用了NIA/NIR，則此子網用於Docker服務。

如何安裝NIA/NIR將在第2天操作部分中介紹。

Internal Application Services Network

The Internal Application Services Network is used internally.

IPv4 Subnet *

Enter a valid IPv4 subnet with prefix, for example: 172.17.0.0/20.

Prefix length must be 20 to 22.

附註：此子網不應與分配給eth0/eth1/eth2介面的網路重疊（分配給DCNM和計算節點）。此外，此子網不應與分配給交換機或DCNM管理的其他裝置的IP重疊。安裝DCNM主節點和輔助節點時（在本機HA部署的情況下），所選子網應保持一致。

步驟10.檢查並確認所有配置詳細資訊並開始安裝。

Please review the configuration details

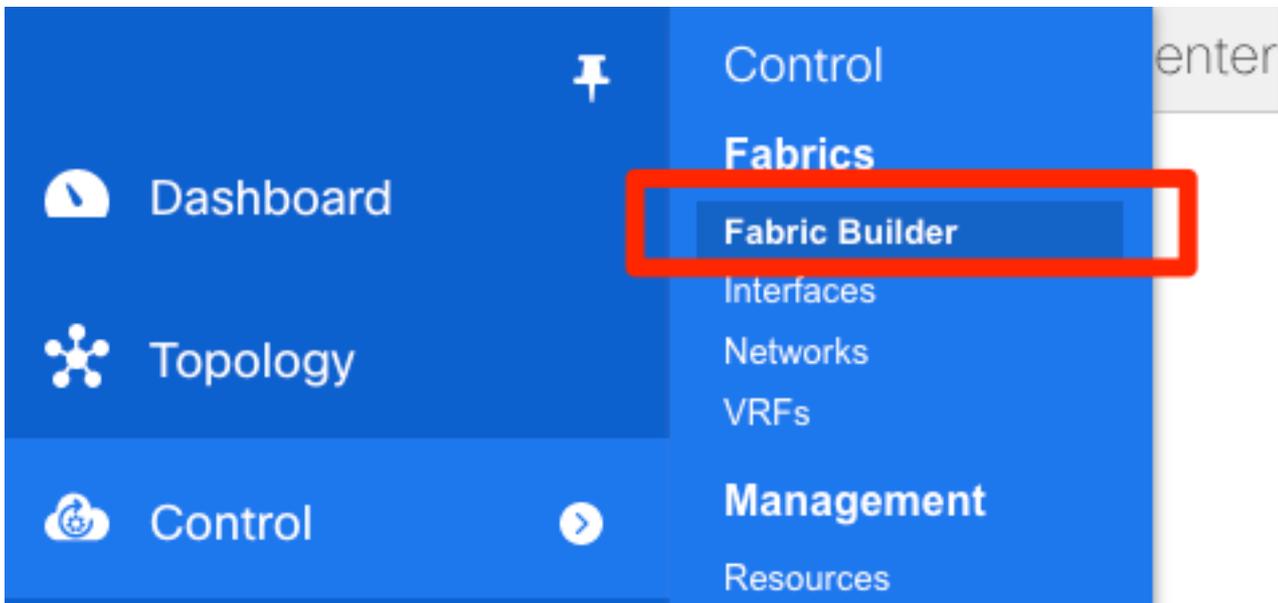
Installation mode	LAN Fabric
Fully Qualified Host Name	dcg-rtp-dcnm-fab.cisco.com
DNS Server Address	64.102.6.247
NTP Server Name	172.18.108.15
Management Network IP Address	172.18.118.56/24
Management Network Default Gateway	172.18.118.1
Management Network IPv6 Address	
Management Network Default IPv6 Gateway	
Out-of-Band Network IP Address	192.168.128.56/24
Out-of-Band Network IPv6 Address	
Out-of-Band Network DNS Server Address	192.168.128.56
Out-of-Band Gateway IP Address	192.168.128.1
In-Band Network IP Address	192.168.128.57/24
In-Band Gateway IP Address	192.168.128.1
Internal App Services IP Subnet	172.17.0.0/20
Administration Password	*****

A green rounded rectangular button with the text "Start installation" in white, enclosed within a red rectangular border.

步驟11.在完全安裝DCNM後，登入到GUI（先前配置的IP地址或主機名）。

部署第一個交換矩陣 — RTP交換矩陣

步驟1.在DCNM GUI中導航到Fabric Builder。「控制」>「結構」>「結構生成器」，以便建立第一個結構。



步驟2.點選**建立交換矩陣**，並根據網路需要填寫表格 — Easy Fabric是本地EVPN VXLAN部署的正確模板：



步驟3.填寫交換矩陣的底層、重疊、vPC、複製、資源等要求。

本節介紹通過DCNM所需的全部底層、重疊、vPC、複製等設定。這取決於網路編址方案、要求等。在本例中，大多數欄位保留為預設值。L2VNI和L3VNI已變更，使得L2VNI以2開始，而L3VNI以3開始，以便稍後進行疑難排解。還啟用雙向轉發檢測(BFD)以及其他功能。

Add Fabric

* Fabric Name :

* Fabric Template :

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
* BGP ASN	<input type="text" value="65534"/>	<input type="text" value="1-4294967295 1-65535[,0-65535]"/>					
* Fabric Interface Numbering	<input type="text" value="p2p"/>	<input type="text" value="Numbered(Point-to-Point) or Unnumbered"/>					
* Underlay Subnet IP Mask	<input type="text" value="30"/>	<input type="text" value="Mask for Underlay Subnet IP Range"/>					
* Link-State Routing Protocol	<input type="text" value="ospf"/>	<input type="text" value="Supported routing protocols (OSPF/IS-IS)"/>					
* Route-Reflectors	<input type="text" value="2"/>	<input type="text" value="Number of spines acting as Route-Reflectors"/>					
* Anycast Gateway MAC	<input type="text" value="1010.0000.00aa"/>	<input type="text" value="Shared MAC address for all leafs (xxxx.xxxx.xxxx)"/>					
NX-OS Software Image Version	<input type="text"/>	<input type="text" value="If Set, Image Version Check Enforced On All Switches. Images Can Be Uploaded From Control:Image Upload"/>					

Add Fabric

* Fabric Name :

* Fabric Template :

- General
- Replication
- vPC
- Advanced
- Resources
- Manageability
- Bootstrap
- Configuration Backup

Manual Underlay IP Address Allocation [?](#) Checking this will disable Dynamic Underlay IP Address Allocations

- * Underlay Routing Loopback IP Range [?](#) Typically Loopback0 IP Address Range
- * Underlay VTEP Loopback IP Range [?](#) Typically Loopback1 IP Address Range
- * Underlay RP Loopback IP Range [?](#) Anycast or Phantom RP IP Address Range
- * Underlay Subnet IP Range [?](#) Address range to assign Numbered and Peer Link SVI IPs
- * Layer 2 VXLAN VNI Range [?](#) Overlay Network Identifier Range (Min:1, Max:16777214)
- * Layer 3 VXLAN VNI Range [?](#) Overlay VRF Identifier Range (Min:1, Max:16777214)
- * Network VLAN Range [?](#) Per Switch Overlay Network VLAN Range (Min:2, Max:3967)
- * VRF VLAN Range [?](#) Per Switch Overlay VRF VLAN Range (Min:2, Max:3967)
- * Subinterface Dot1q Range [?](#) Per Border Dot1q Range For VRF Lite Connectivity (Min:2, Max:511)
- * VRF Lite Deployment [?](#) VRF Lite Inter-Fabric Connection Deployment Options
- * VRF Lite Subnet IP Range [?](#) Address range to assign P2P DCI Links
- * VRF Lite Subnet Mask [?](#) Mask for Subnet Range (Min:8, Max:31)

Add Fabric

* Fabric Name :

* Fabric Template :

- General
- Replication
- vPC
- Advanced
- Resources
- Manageability
- Bootstrap
- Configuration Backup

- * vPC Peer Link VLAN [?](#) VLAN for vPC Peer Link SVI (Min:2, Max:3967)
- * vPC Peer Keep Alive option [?](#) Use vPC Peer Keep Alive with Loopback or Management
- * vPC Auto Recovery Time [?](#) Auto Recovery Time In Seconds (Min:240, Max:3600)
- * vPC Delay Restore Time [?](#) vPC Delay Restore Time For vPC links in seconds (Min:1, Max:3600)
- vPC Peer Link Port Channel Number [?](#) Port Channel ID for vPC Peer Link (Min:1, Max:4096)
- vPC IPv6 ND Synchronize [?](#) Enable IPv6 ND synchronization between vPC peers
- vPC advertise-pip [?](#) For Primary VTEP IP Advertisement As Next-Hop Of Prefix Routes

Add Fabric



* Fabric Name : RTP-EVPN-Fabric

* Fabric Template : Easy_Fabric_11_1

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
			* VRF Template	Default_VRF_Universal	?	Default Overlay VRF Template For Leafs	
			* Network Template	Default_Network_Universal	?	Default Overlay Network Template For Leafs	
			* VRF Extension Template	Default_VRF_Extension_Universal	?	Default Overlay VRF Template For Borders	
			* Network Extension Template	Default_Network_Extension_Universa	?	Default Overlay Network Template For Borders	
			Site Id	65534	?	For EVPN Multi-Site Support (Min:1, Max: 281474976710655). Defaults to Fabric ASN	
			* Underlay Routing Loopback Id	0	?	0-512	
			* Underlay VTEP Loopback Id	1	?	0-512	
			* Link-State Routing Protocol Tag	UNDERLAY	?	Routing Process Tag (Max Size 20)	
			* OSPF Area Id	0.0.0.0	?	OSPF Area Id in IP address format	
			Enable OSPF Authentication	<input type="checkbox"/>	?		
			OSPF Authentication Key ID		?	0-255	
			OSPF Authentication Key		?	3DES Encrypted	
			Enable IS-IS Authentication	<input type="checkbox"/>	?		
			IS-IS Authentication Keychain Name		?		
			IS-IS Authentication Key ID		?	0-65535	
			IS-IS Authentication Key		?	Cisco Type 7 Encrypted	
			* Power Supply Mode	ps-redundant	?	Default Power Supply Mode For The Fabric	
			* CoPP Profile	strict	?	Fabric Wide CoPP Policy. Customized CoPP policy should be provided when 'manual' is selected	
			Enable VXLAN OAM	<input checked="" type="checkbox"/>	?	For Operations, Administration, and Management Of VXLAN Fabrics	
			Enable Tenant DHCP	<input checked="" type="checkbox"/>	?		
			Enable BFD	<input checked="" type="checkbox"/>	?		
			* Greenfield Cleanup Option	Disable	?	Switch Cleanup Without Reload When PreserveConfig=no	

步驟4.在Bootstrap配置下，配置您希望DCNM在POAP過程中分配給交換矩陣內的交換機的DHCP地址範圍。配置適當的（現有）預設網關。完成後，按一下**Save**，現在您可以繼續將交換機新增到交換矩陣中。

Edit Fabric



* Fabric Name : RTP-EVPN-Fabric

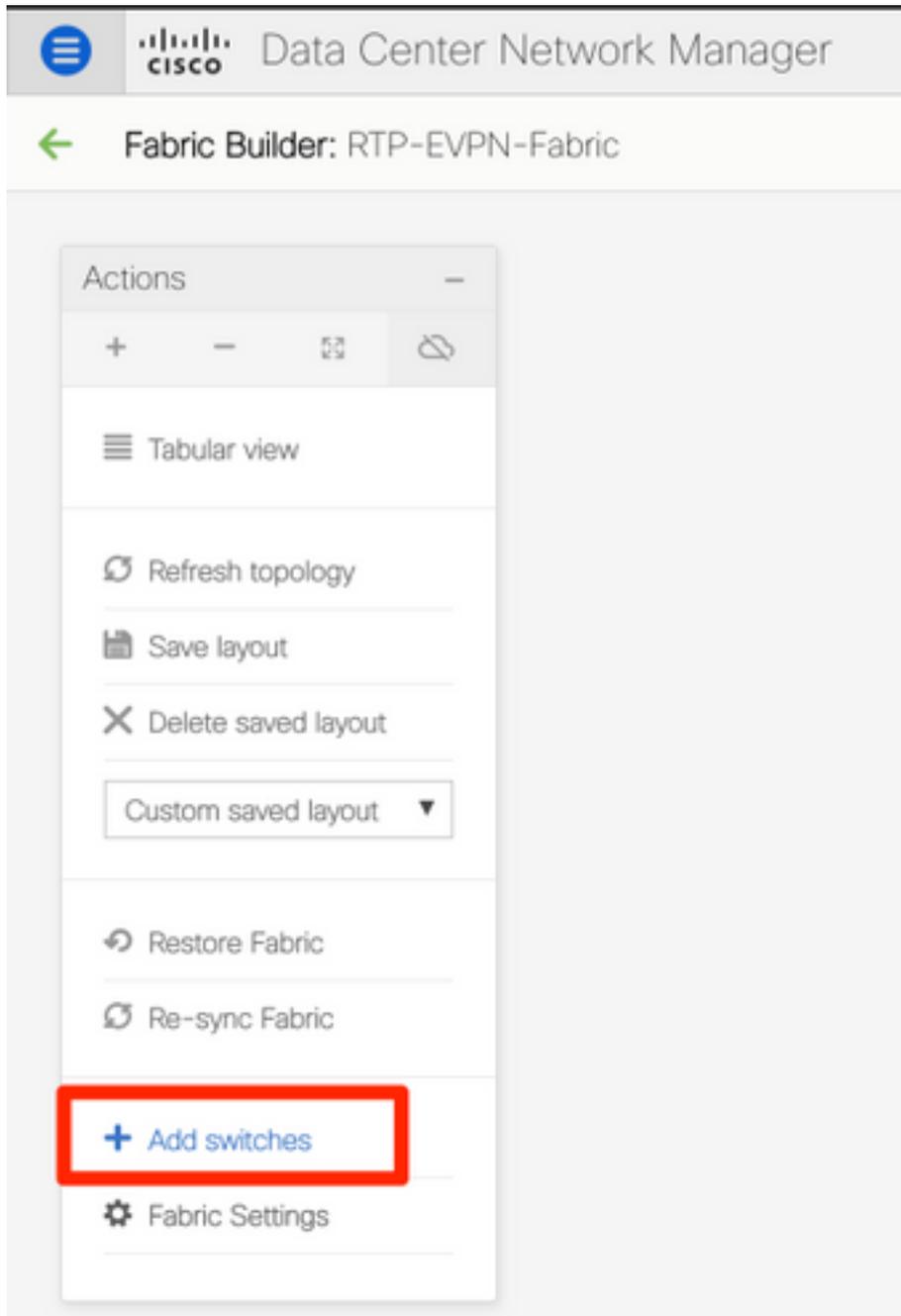
* Fabric Template : Easy_Fabric_11_1

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
			Enable Bootstrap	<input checked="" type="checkbox"/>	?	Automatic IP Assignment For POAP	
			Enable Local DHCP Server	<input checked="" type="checkbox"/>	?	Automatic IP Assignment For POAP From Local DHCP Server	
			* DHCP Scope Start Address	192.168.128.100	?	Start Address For Switch Out-of-Band POAP	
			* DHCP Scope End Address	192.168.128.110	?	End Address For Switch Out-of-Band POAP	
			* Switch Management Default Gate...	192.168.128.1	?	Default Gateway For Mgmt VRF On The Switch	
			* Switch Management Subnet Prefix	24	?	Prefix For Mgmt0 Interface On The Switch (Min:8, Max:30)	

Save Cancel

將交換機新增到交換矩陣

步驟1. 導航到**控制>結構>結構構建器**，然後選擇結構。在左側面板上，按一下**Add Switches**，如下圖所示。



您可以通過使用種子IP (表示必須手動配置每台交換機的mgmt0 IP) 來發現交換機，也可以通過POAP來發現交換機，並讓DCNM為您配置所有mgmt0 IP地址、VRF管理等。在本示例中，我們將使用POAP。

步驟2. 當您看到您感興趣的交換機後，輸入希望DCNM使用的所需IP地址和主機名，輸入Admin PW，然後點選**Bootstrap**，如下圖所示。

Discover Existing Switches

PowerOn Auto Provisioning (POAP)

ⓘ Please note that POAP can take anywhere between 5 and 15 minutes to complete!

Bootstrap

	Serial Number	Model	Version	IP Address	Hostname	Gateway
<input type="checkbox"/>	FDO213001M0	N9K-C9372TX	7.0(3)I4(7)			192.168.128.1/24
<input checked="" type="checkbox"/>	FDO21331SLK	N9K-93180YC-EX	7.0(3)I7(6)	192.168.128.102	rtp-seoul-bb11	192.168.128.1/24

成功的啟動日誌應如下圖所示，從交換機控制檯開始。

```

2019 Jun 19 14:58:51 switch %$ VDC-1 %$ %POAP-2-POAP_DHCP_DISCOVER_START: [FDO21331SLK-70:7D:B9:4A:72:21] - POAP DHCP Discover
phase started
2019 Jun 19 14:59:12 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Start DHCP v4 session
2019 Jun 19 14:59:12 switch %$ VDC-1 %$ %POAP-2-POAP_DHCP_DISCOVER_START: [FDO21331SLK-70:7D:B9:4A:72:21] - POAP DHCP Discover
phase started
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Using DHCP, information received over
mgmt0 from 192.168.128.57
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Assigned IP address: 192.168.128.102
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Netmask: 255.255.255.0
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - DNS Server: 64.102.6.247
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Default Gateway: 192.168.128.1
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Script Server: 192.168.128.56
2019 Jun 19 14:59:37 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Script Name: poap_dcnm.py
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Using DHCP, information received over
mgmt0 from 192.168.128.56
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Assigned IP address: 192.168.128.102
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Netmask: 255.255.255.0
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - DNS Server: 64.102.6.247
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Default Gateway: 192.168.128.1
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Script Server: 192.168.128.56
2019 Jun 19 14:59:38 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Script Name: poap_dcnm.py
2019 Jun 19 14:59:48 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - The POAP Script download has started
2019 Jun 19 14:59:48 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - The POAP Script is being downloaded
from [copy tftp://192.168.128.56/poap_dcnm.py bootflash:scripts/script.sh vrf management ]
2019 Jun 19 14:59:49 switch %$ VDC-1 %$ %POAP-2-POAP_SCRIPT_DOWNLOADED: [FDO21331SLK-70:7D:B9:4A:72:21] - Successfully downloaded
POAP script file
2019 Jun 19 14:59:49 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - Script file size 100623, MD5 checksum
d44d85cd6433a6efb6467faa17396933
2019 Jun 19 14:59:49 switch %$ VDC-1 %$ %POAP-2-POAP_INFO: [FDO21331SLK-70:7D:B9:4A:72:21] - MD5 checksum received from the script
file is d44d85cd6433a6efb6467faa17396933
2019 Jun 19 14:59:49 switch %$ VDC-1 %$ %POAP-2-POAP_SCRIPT_STARTED_MD5_VALIDATED: [FDO21331SLK-70:7D:B9:4A:72:21] - POAP script
execution started(MD5 validated)
2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: - CLI : show license host-id - script.sh
2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: - INFO: Get serial number: FDO21331SLK - script.sh
2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO:device type is n9k - script.sh

2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO:device type is n9k - script.sh
2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO:device os version is - script.sh
2019 Jun 19 14:59:56 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO: check free space - script.sh
2019 Jun 19 14:59:57 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO: free space is 34643592 kB - script.sh
2019 Jun 19 14:59:57 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - Get and set interface default - script.sh
2019 Jun 19 14:59:57 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - CLI : show run | inc breakout - script.sh
2019 Jun 19 14:59:58 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - CLI : show run int | inc Ethernet - script.sh
2019 Jun 19 14:59:59 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO: Ready to copy protocol scp, host
192.168.128.56, source /var/lib/dcnm/dcnm-server-list.cfg vrf management user poap password ***** - script.sh
2019 Jun 19 14:59:59 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - CLI : terminal dont-ask ; terminal password ***** ;
copy scp://poap@192.168.128.56/var/lib/dcnm/dcnm-server-list.cfg dcnm-server-list.cfg vrf management - script.sh
2019 Jun 19 15:00:00 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FDO21331SLK] - INFO: Get Device Image Config File - script.sh

```

```

2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: create_image_conf - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Ready to copy protocol scp, host
192.168.128.56, source /var/lib/dcnm/licenses/device-license.idx vrf management user poap password ***** - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : terminal dont-ask ; terminal password ***** ;
copy scp://poap@192.168.128.56/var/lib/dcnm/licenses/device-license.idx device-license.idx vrf management - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: device license index does not exist, no
device licenses will be downloaded - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Ready to copy protocol scp, host
192.168.128.56, source /var/lib/dcnm/licenses/device-config vrf management user poap password ***** - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : terminal dont-ask ; terminal password ***** ;
copy scp://poap@192.168.128.56/var/lib/dcnm/licenses/device-config device-config vrf management - script.sh

2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Get Device Recipe - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: removing tmp file /bootflash/device-
recipe.cfg - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: create_image_conf - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Ready to copy protocol scp, host
192.168.128.56, source /var/lib/dcnm/licenses/device-license.idx vrf management user poap password ***** - script.sh
2019 Jun 19 15:00:01 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : terminal dont-ask ; terminal password ***** ;
copy scp://poap@192.168.128.56/var/lib/dcnm/licenses/device-license.idx device-license.idx vrf management - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: device license index does not exist, no
device licenses will be downloaded - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Ready to copy protocol scp, host
192.168.128.56, source /var/lib/dcnm/licenses/device-config vrf management user poap password ***** - script.sh
2019 Jun 19 15:00:02 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : terminal dont-ask ; terminal password ***** ;
copy scp://poap@192.168.128.56/var/lib/dcnm/licenses/device-config device-config vrf management - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Completed Copy of Config File - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Split config invoked... - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - Found an interface line in config:interface mgmt0
- script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - Adding interface defaults - no shut on all
interfaces - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Split config is complete - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Setting the boot variables - script.sh
2019 Jun 19 15:00:04 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : copy running-config startup-config -
script.sh
2019 Jun 19 15:00:08 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : copy poap_2.cfg scheduled-config - script.sh
2019 Jun 19 15:00:08 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Copying the scheduled cfg done - script.sh
2019 Jun 19 15:00:08 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - INFO: Configuration successful - script.sh

2019 Jun 19 15:00:08 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - FINISH: Clean up files. - script.sh
2019 Jun 19 15:00:08 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : delete device-config - script.sh
2019 Jun 19 15:00:09 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : delete poap_1.cfg - script.sh
2019 Jun 19 15:00:09 switch %$ VDC-1 %$ %USER-1-SYSTEM_MSG: S/N[FD021331SLK] - CLI : delete poap_2.cfg - script.sh
2019 Jun 19 15:00:12 switch %$ VDC-1 %$ %POAP-2-POAP_SCRIPT_EXEC_SUCCESS: [FD021331SLK-70:7D:B9:4A:72:21] - POAP script execution
success
2019 Jun 19 15:00:13 switch %$ VDC-1 %$ %POAP-2-POAP_RELOAD_DEVICE: [FD021331SLK-70:7D:B9:4A:72:21] - Reload device
2019 Jun 19 15:00:15 switch %$ VDC-1 %$ %PLATFORM-2-PFM_SYSTEM_RESET: Manual system restart from Command Line Interface
<switch boot sequence here_omitting for brevity>
2019 Jun 19 15:04:05 rtp-seoul-bb11 %$ VDC-1 %$ %ASCII-CFG-2-CONF_CONTROL: System ready
[#####] 100%
Copy complete, now saving to disk (please wait)...
Copy complete.
Auto provisioning

User Access Verification
rtp-seoul-bb11 login:

```

步驟3.在部署整個交換矩陣的配置之前，請確保之前已使用裝置憑證配置DCNM。您登入時，GUI中應該出現一個彈出視窗。如果沒有，您可以始終通過**管理>憑證管理>LAN憑證**來訪問它。

附註：如果缺少裝置憑證，DCNM無法將配置推送到交換機。



When changing the device configuration DCNM uses the device credentials provided by the user. You have not provided the LAN switch credentials yet. Do you want to set the LAN switch credentials now?

Do not show this message again.

Yes

No

Administration / Credentials Management / LAN Credentials

Default Credentials

Default credentials will be used when changing device configuration. You can override the default credentials by specifying credentials for each of the devices in the Switch Table below.

DCNM uses individual switch credentials in the Switch Table. If the Username or Password column is empty in the Switch Table, the default credentials will be used.

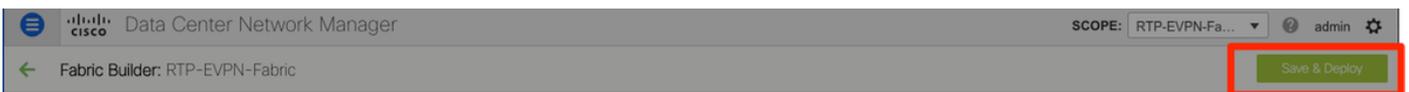
* User Name
* Password
* Confirm Password

Save

Clear

部署交換矩陣的配置

步驟1。使用相同的步驟發現給定交換矩陣的所有交換機後，導航到**Control > Fabric > Fabric Builder > <您選擇的交換矩陣>**。您應該在此處看到您的交換機及其所有鏈路。按一下「**Save & Deploy**」。



步驟2.在**Config Deployment**視窗中，檢視每台交換機DCNM推送的配置行數。如果需要，您也可以預覽配置，並比較之前和之後的配置：

Config Deployment



Step 1. Configuration Preview > Step 2. Configuration Deployment Status >

Switch Name	IP Address	Switch Serial	Preview Config	Status	Re-sync	Progress
rtp-seoul-bb12	192.168.128.106	FDO21332CS5	481 lines	Out-of-sync		100%
rtp-seoul-bb11	192.168.128.102	FDO21331SLK	469 lines	Out-of-sync		100%
rtp-sapporo-bb12	192.168.128.105	FDO21302J5Z	464 lines	Out-of-sync		100%
rtp-sug-sp-bb12	192.168.128.104	FGE21332GQ9	314 lines	Out-of-sync		100%
rtp-sapporo-bb11	192.168.128.101	FDO213001M0	464 lines	Out-of-sync		100%
rtp-sug-sp-bb11	192.168.128.100	FGE21332H1D	313 lines	Out-of-sync		100%

確保所有交換機狀態均為已完成，100%沒有任何錯誤 — 如果有任何錯誤，請確保一次解決一個錯誤(有關示例，請參閱在此部署過程中遇到的問題部分)

Config Deployment



Step 1. Configuration Preview > Step 2. Configuration Deployment Status >

Switch Name	IP Address	Status	Status Description	Progress
rtp-seoul-bb12	192.168.128.106	COMPLETED	No Commands to execute.	100%
rtp-seoul-bb11	192.168.128.102	COMPLETED	No Commands to execute.	100%
rtp-sug-sp-bb12	192.168.128.104	COMPLETED	No Commands to execute.	100%
rtp-sapporo-bb11	192.168.128.101	COMPLETED	Deployed successfully	100%
rtp-sug-sp-bb11	192.168.128.100	COMPLETED	Deployed successfully	100%
rtp-sapporo-bb12	192.168.128.105	COMPLETED	Deployed successfully	100%

步驟3. (可選) 此時您可以登入裝置，並發出任何show run CLI，以驗證DCNM是否已成功推送配置。

範例：

```
rtp-sug-sp-bb11# show run bgp

!Command: show running-config bgp
!Time: Wed Jun 19 17:28:37 2019

version 7.0(3)I7(5) Bios:version 08.34
feature bgp

router bgp 65534
router-id 10.1.0.11
neighbor 10.1.0.7
  remote-as 65534
  update-source loopback0
  address-family l2vpn evpn
    send-community
    send-community extended
  route-reflector-client
neighbor 10.1.0.8
  remote-as 65534
  update-source loopback0
  address-family l2vpn evpn
    send-community
    send-community extended
  route-reflector-client
neighbor 10.1.0.9
  remote-as 65534
  update-source loopback0
  address-family l2vpn evpn
    send-community
    send-community extended
  route-reflector-client
neighbor 10.1.0.10
  remote-as 65534
  update-source loopback0
  address-family l2vpn evpn
    send-community
    send-community extended
  route-reflector-client
```

部署第二個交換矩陣 — SJ

對RTP交換矩陣執行與之前相同的步驟，對BGP AS等使用不同的值。

步驟1。導覽至Control > Fabric > Fabric Builder > Create Fabric > Name it!

本部分介紹所有需要的Underlay、Overlay、vPC、Replication等設定。這取決於網路編址方案、要求等。

附註：如果使用了多站點，則此處的任播網關MAC應與另一個交換矩陣匹配，但稍後不支援不同的任播網關MAC。稍後在「多站點部署」部分對此進行了更正（由於篇幅簡短，未顯示在文章中）。

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
	* BGP ASN	65535	1-4294967295 1-65535[0-65535]				
	* Fabric Interface Numbering	p2p	Numbered(Point-to-Point) or Unnumbered				
	* Underlay Subnet IP Mask	30	Mask for Underlay Subnet IP Range				
	* Link-State Routing Protocol	ospf	Supported routing protocols (OSPF/IS-IS)				
	* Route-Reflectors	2	Number of spines acting as Route-Reflectors				
	* Anycast Gateway MAC	2020.0000.00bb	Shared MAC address for all leaves (xxxx.xxxx.xxxx)				
	NX-OS Software Image Version		If Set, Image Version Check Enforced On All Switches. Images Can Be Uploaded From Control:Image Upload				

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
	* Replication Mode	Multicast	Replication Mode for BUM Traffic				
	* Multicast Group Subnet	239.2.2.0/25	Multicast address with prefix 16 to 30				
	Enable Tenant Routed Multicast (TRM)	<input type="checkbox"/>	For Overlay Multicast Support In VXLAN Fabrics				
	Default MDT Address for TRM VRFs		IPv4 Multicast Address				
	* Rendezvous-Points	2	Number of spines acting as Rendezvous-Point (RP)				
	* RP Mode	asm	Multicast RP Mode				
	* Underlay RP Loopback Id	254	0-512				
	Underlay Primary RP Loopback Id		0-512, Primary Loopback Bidir-PIM Phantom RP				
	Underlay Backup RP Loopback Id		0-512, Fallback Loopback Bidir-PIM Phantom RP				
	Underlay Second Backup RP Loopback Id		0-512, Second Fallback Loopback Bidir-PIM Phantom RP				
	Underlay Third Backup RP Loopback Id		0-512, Third Fallback Loopback Bidir-PIM Phantom RP				

步驟2.如前所述配置Bootstrap部分。再次瀏覽Add Switches。發現所有配置後，按一下Save & Deploy部署配置。這全部在RTP交換矩陣部署部分中介紹（此處省略是為了簡潔起見）。

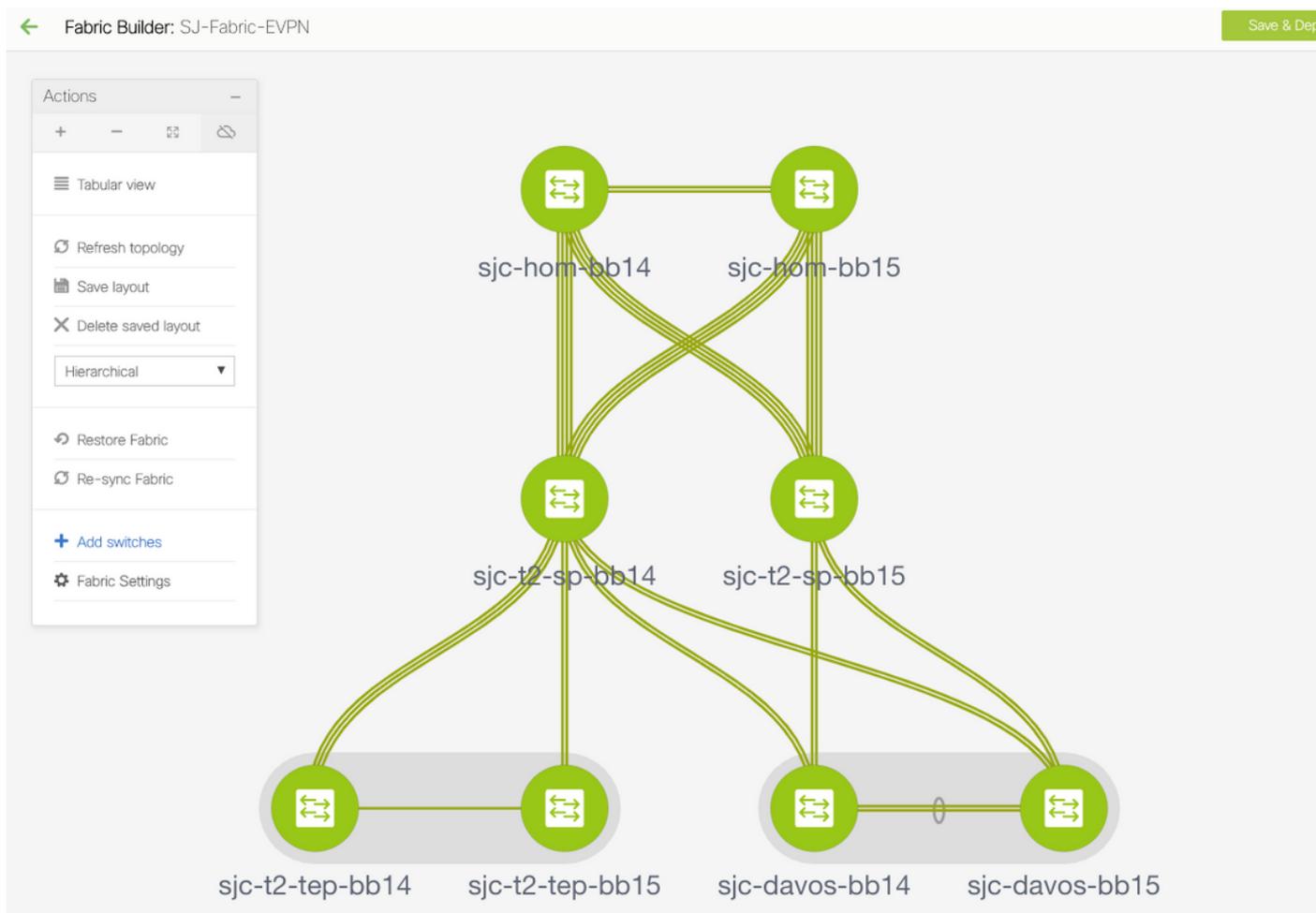
Config Deployment



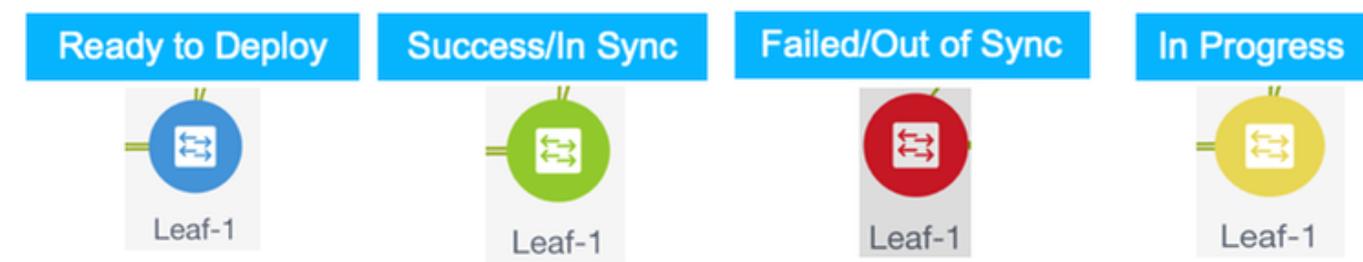
Step 1. Configuration Preview > Step 2. Configuration Deployment Status >

Switch Name	IP Address	Status	Status Description	Progress
sjc-hom-bb15	192.168.254.103	COMPLETED	No Commands to execute.	100%
sjc-davos-bb14	192.168.254.106	COMPLETED	No Commands to execute.	100%
sjc-hom-bb14	192.168.254.107	COMPLETED	No Commands to execute.	100%
sjc-davos-bb15	192.168.254.102	COMPLETED	No Commands to execute.	100%
sjc-t2-tep-bb14	192.168.254.105	COMPLETED	No Commands to execute.	100%
sjc-t2-tep-bb15	192.168.254.101	COMPLETED	No Commands to execute.	100%
sjc-t2-sp-bb15	192.168.254.100	COMPLETED	Deployed successfully	100%
sjc-t2-sp-bb14	192.168.254.104	COMPLETED	Deployed successfully	100%

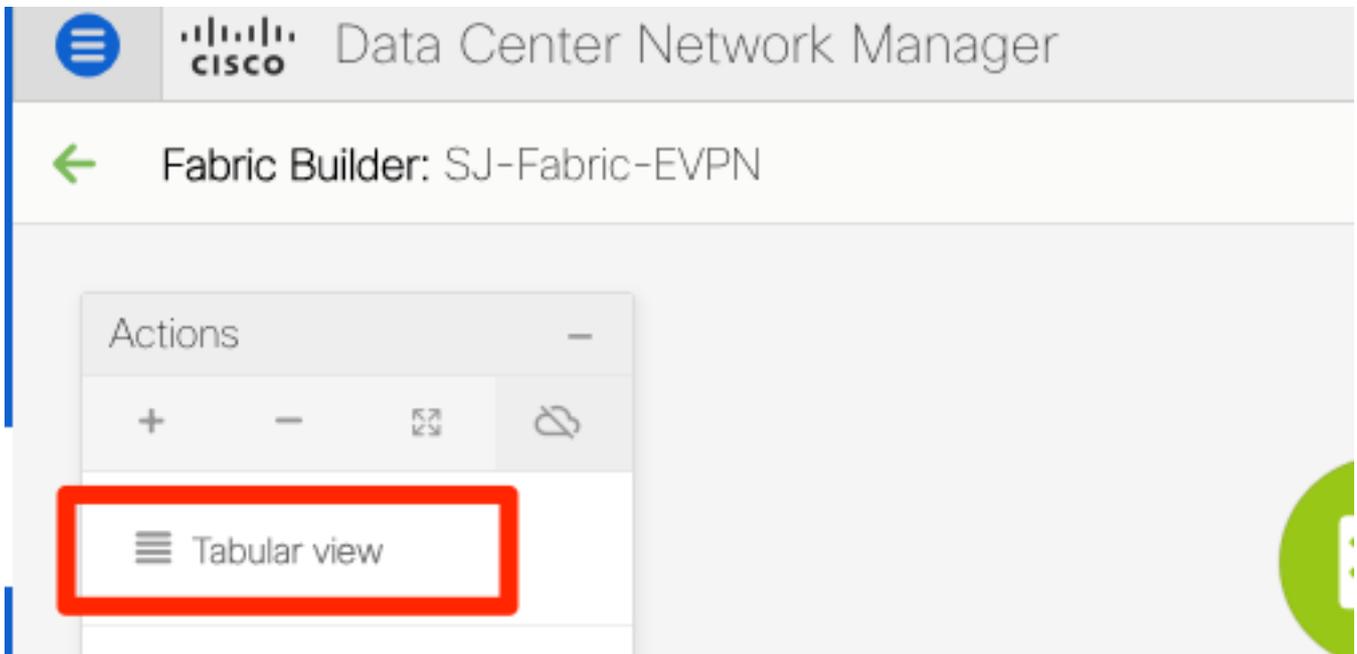
最後從Fabric Builder的角度看拓撲。



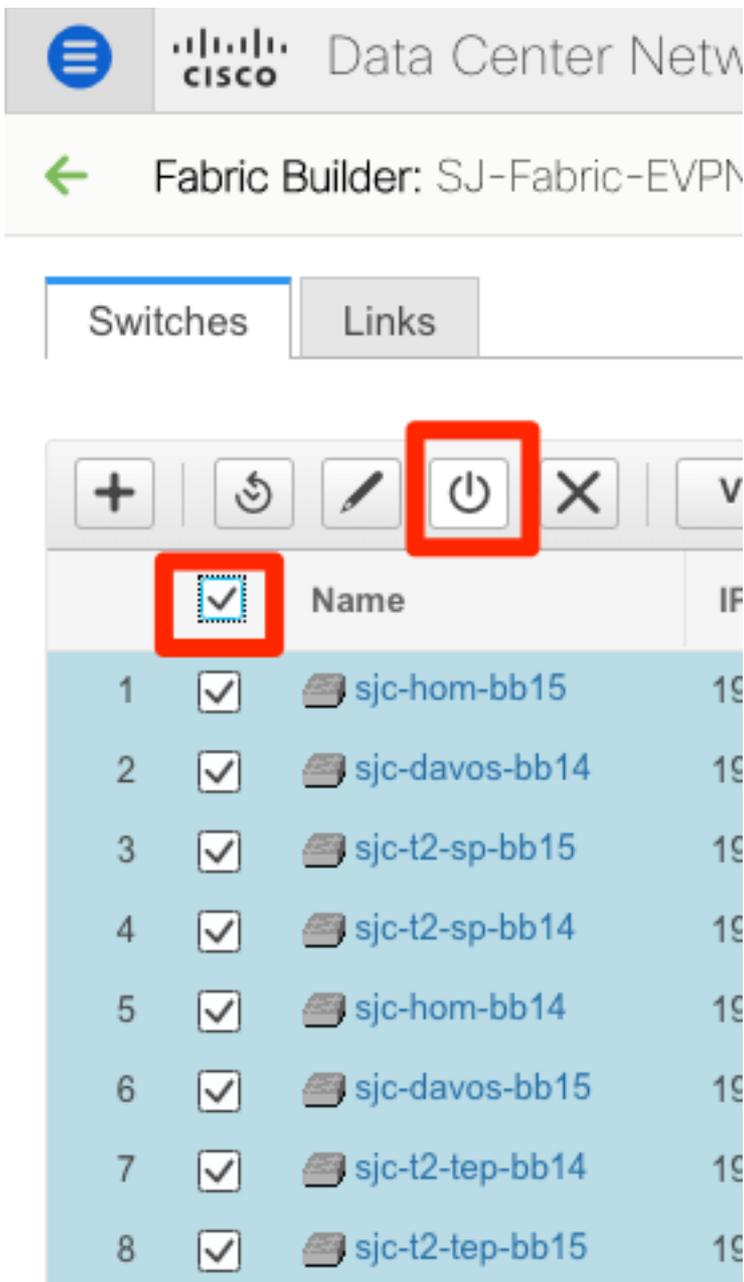
理想情況下，所有交換機及其鏈路都應顯示為綠色。此圖顯示了DCNM中不同的狀態顏色。



步驟3.配置並部署兩個交換矩陣後，確保儲存配置並重新載入，以便TCAM更改生效。請轉到**控制 > 結構 > 結構構建器 > <您的結構>**，導航到**表格檢視**，如下圖所示。

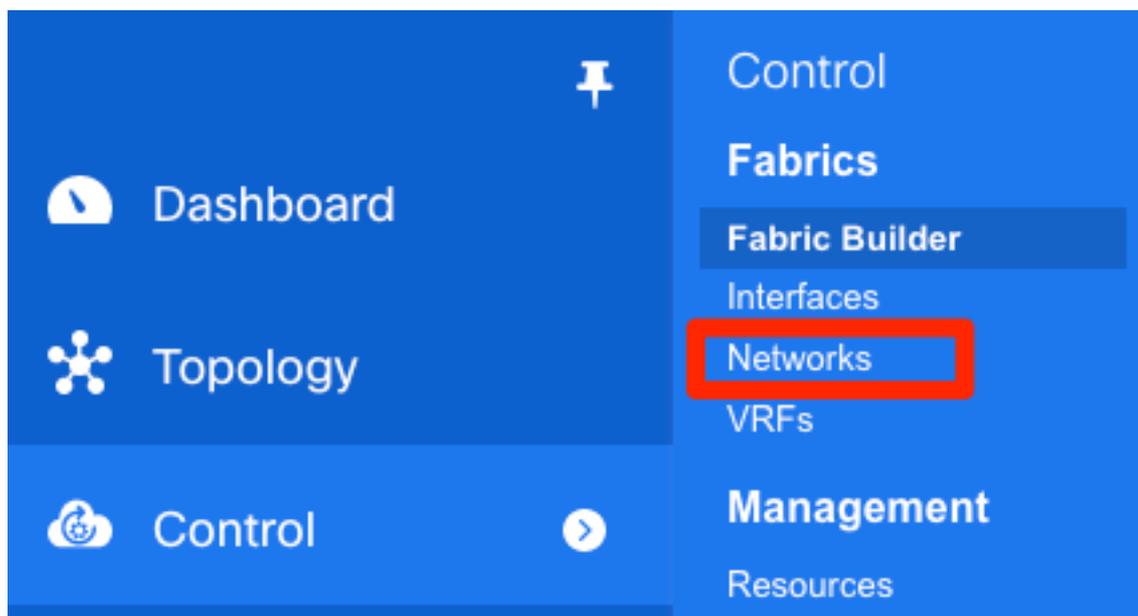


步驟4.然後按一下power 按鈕 (這會同時重新載入所有交換器) :

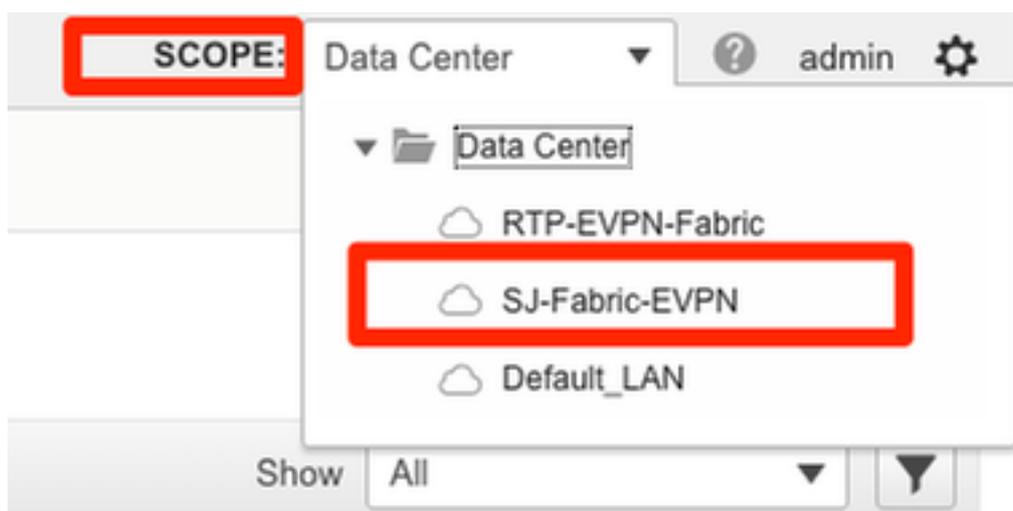


建立網路(VLAN/L2VNI)和VRF(L3VNI)

步驟1. 導覽至Control > Fabric > Networks，如下圖所示。



步驟2. 如圖所示，選擇Scope以進行更改。即，此配置需要應用到哪個交換矩陣？



步驟3. 按一下+符號，如下圖所示。



步驟4. DCNM將引導您完成建立交換機虛擬介面(SVI) (或純L2 VLAN) 的過程。如果在此階段未建立VRF，請再次按一下+按鈕，這將臨時將您帶到VRF瀏覽，然後繼續使用SVI設定。

Create Network



Network Information

* Network ID

* Network Name

* VRF Name +

Layer 2 Only

* Network Template

* Network Extension Template

VLAN ID Propose VLAN ?

Create VRF



VRF Information

* VRF ID

* VRF Name

* VRF Template

* VRF Extension Template

VRF Profile

General

Advanced

VRF Vlan Name ?

VRF Intf Description ?

VRF Description ?

Create VRF

Network Profile

Generate Multicast IP

Please click only to generate a New Multicast Group Address and override the default value!

General	IPv4 Gateway/NetMask	10.212.20.1/24	? example 192.0.2.1/24
Advanced	IPv6 Gateway/Prefix	2001:db8::1/64	? example 2001:db8::1/64
	Vlan Name	Test_Network_20001	? if > 32 chars enable:system vlan long-name
	Interface Description	SVI 2300	?
	MTU for L3 interface	9216	? 68-9216
	IPv4 Secondary GW1		? example 192.0.2.1/24
	IPv4 Secondary GW2		? example 192.0.2.1/24

您可以在**Advanced** 索引標籤下設定這些功能：

- ARP抑制
- 輸入複製
- 多點傳送群組
- DHCP
- 路由標籤
- TRM
- L2 VNI路由目標
- 在邊界上啟用第3層網關

步驟5. 按一下**Continue**以部署網路/VRF組態。

The screenshot shows the Cisco Data Center Network Manager interface. The top navigation bar includes the Cisco logo, 'Data Center Network Manager', and 'SCOPE: SJ-Fabric-EVPN'. Below the navigation bar, there are two tabs: 'Network / VRF Selection' and 'Network / VRF Deployment'. The 'Continue' button is highlighted with a red box. The main content area shows 'Fabric Selected: SJ-Fabric-EVPN' and a table of networks.

Network Name	Network ID	VRF Name	IPv4 Gateway/Subnet	IPv6 Gateway/Prefix	Status	VLAN ID
Andrea_TestNetwork_20001	20001	Andrea_VRF_RED	10.212.20.1/24	2001:db8::1/64	NA	2300

步驟6. 按兩下拓撲檢視中的裝置 (或裝置) (DCNM會自動將您帶到此處) , 以將其選擇用於適用的配置。按一下「**Save**」, 如下圖所示。

Network Attachment - Attach networks for given switch(es)



Fabric Name: SJ-Fabric-EVPN

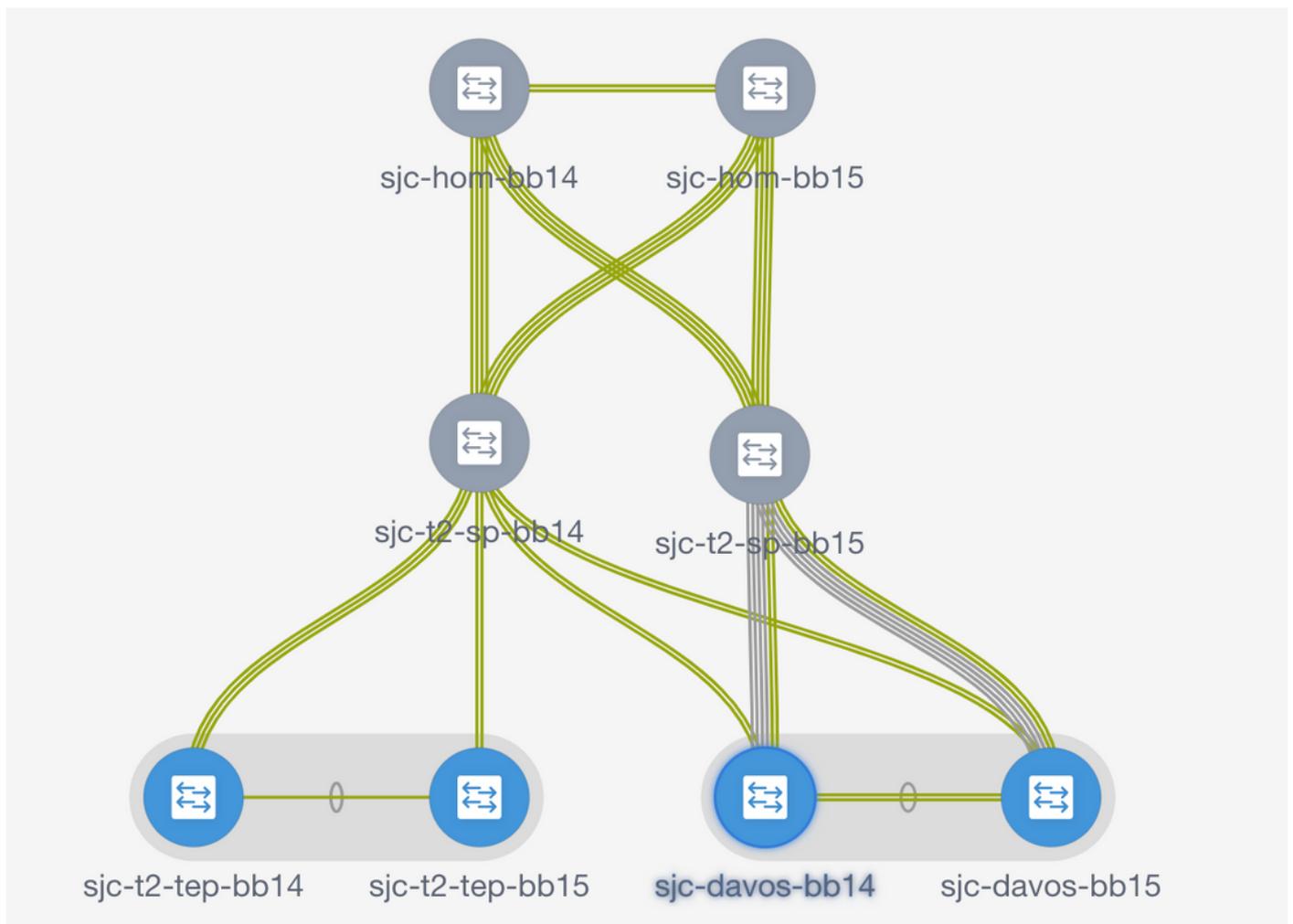
Deployment Options

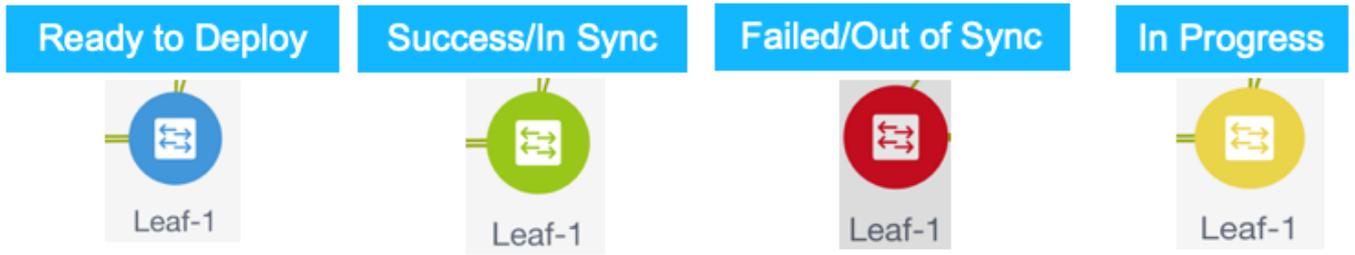
Select the row and click on the cell to edit and save changes

Andrea_TestNetwork_20001						
<input checked="" type="checkbox"/>	Switch	VLAN	Interfaces	CLI Freeform	Status	
<input checked="" type="checkbox"/>	sjc-t2-tep-bb14	2300	...	Freeform config	NA	
<input checked="" type="checkbox"/>	sjc-t2-tep-bb15	2300	...	Freeform config	NA	

Save

步驟7.選擇後，交換機應顯示為藍色（準備部署），如下圖所示。





注意：如果您要在部署之前驗證CLI的配置，可以按一下**Detailed View**而不是**Deploy**，然後在下一個螢幕上按一下**Preview**。

應用配置時，交換機變為黃色，配置完成後將返回綠色。

步驟8. (可選) 如果需要，可以登入CLI驗證配置 (請記住使用expand-port-profile選項) ：

```

sjc-davos-bb14# show nve peers
Interface Peer-IP      State LearnType Uptime  Router-Mac
-----
nve1      10.2.0.16           Up     CP         00:00:34 00f6.638e.4fd5

sjc-davos-bb14# show nve vni
Codes: CP - Control Plane      DP - Data Plane
       UC - Unconfigured       SA - Suppress ARP
       SU - Suppress Unknown Unicast
       Xconn - Crossconnect
       MS-IR - Multisite Ingress Replication
Interface VNI      Multicast-group  State Mode Type [BD/VRF]  Flags
-----
nve1      20001           239.2.2.0       Up   CP   L2 [2300]
nve1      30000           n/a              Up   CP   L3 [andrea_vrf_red]

sjc-davos-bb14# show nve vrf andrea_vrf_red
VRF-Name  VNI      Interface Gateway-MAC
-----
andrea_vrf_red 30000    nve1      707d.b987.11a3

sjc-davos-bb14# show run int vlan 2300 expand-port-profile

!Command: show running-config interface Vlan2300 expand-port-profile
!Running configuration last done at: Mon Jun 24 15:07:05 2019
!Time: Mon Jun 24 15:08:13 2019

version 9.2(3) Bios:version 07.61

interface Vlan2300
  description SVI 2300
  no shutdown
  mtu 9216
  vrf member andrea_vrf_red
  no ip redirects
  ip address 10.212.20.1/24 tag 12345
  ipv6 address 2001:db8::1/64 tag 12345
  no ipv6 redirects
  fabric forwarding mode anycast-gateway

sjc-davos-bb14# show nve interface nve 1 detail
Interface: nve1, State: Up, encapsulation: VXLAN
VPC Capability: VPC-VIP-Only [notified]
Local Router MAC: 707d.b987.11a3
Host Learning Mode: Control-Plane
Source-Interface: loopback1 (primary: 10.2.0.14, secondary: 10.2.0.15)
Source Interface State: Up
Virtual RMAC Advertisement: No
NVE Flags:
Interface Handle: 0x49000001
Source Interface hold-down-time: 180
Source Interface hold-up-time: 30
Remaining hold-down time: 0 seconds
Virtual Router MAC: 0200.0a02.000f
Interface state: nve-intf-add-complete

```

多站點配置

對於此全新部署，MSD交換矩陣通過邊界網關(BGW)之間直接對等進行部署。另一種方法是使用集中式路由伺服器，本文檔未對此進行說明。

步驟1。導覽至Control > Fabric Builder > Create Fabric，如下圖所示。



Fabric Builder

Fabric Builder creates a managed and controlled SDN fabric. Select an existing fabric below or define a new VXLAN fabric (POAP), set the roles of the switches and deploy settings to devices.

Create Fabric

步驟2. 為您的多站點交換矩陣指定一個名稱，並在交換矩陣模板的下拉選單中選擇 MSD_Fabric_11_。

步驟3. 在General下，確保您的L2和L3 VNI範圍與您的單個交換矩陣所使用的相匹配。此外，兩個交換矩陣上的任播網關MAC必須匹配（在本例中為RTP/SJ）。如果網關MAC不匹配，並且需要在MSD部署前進行更正，則DCNM會給出一個錯誤。

General | DCI | Resources

- * Layer 2 VXLAN VNI Range: 20000-29000 Overlay Network Identifier Range (Min:1, Max:16777214)
- * Layer 3 VXLAN VNI Range: 30000-39000 Overlay VRF Identifier Range (Min:1, Max:16777214)
- * VRF Template: Default_VRF_Universal Default Overlay VRF Template For Leafs
- * Network Template: Default_Network_Universal Default Overlay Network Template For Leafs
- * VRF Extension Template: Default_VRF_Extension_Universal Default Overlay VRF Template For Borders
- * Network Extension Template: Default_Network_Extension_Universa Default Overlay Network Template For Borders
- Anycast-Gateway-MAC: 1010.0000.00aa Shared MAC address for all leaves
- * Multisite Routing Loopback Id: 100 0-512

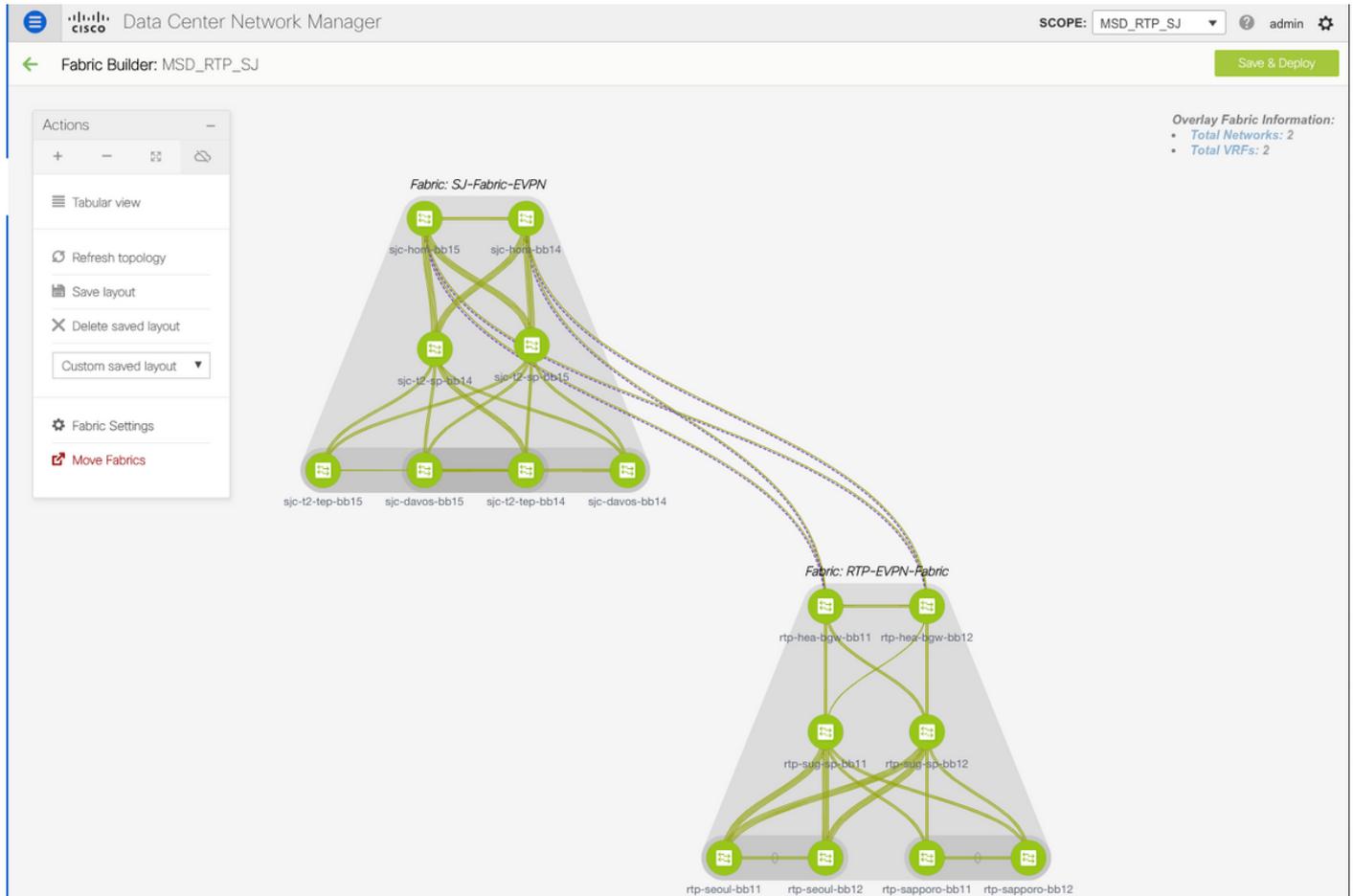
General | DCI | Resources

- DCI Subnet IP Range: 10.10.1.0/24 Address range to assign P2P DCI Links
- Subnet Target Mask: 30 Target Mask for Subnet Range (Min:8, Max:31)
- * Multi-Site Overlay IFC Deployment Method: Direct_To_BGWS Manual, Auto Overlay EVPN Peering to Route Servers, Auto Overlay EVPN Direct Peering to Border Gateways
- Multi-Site Route Server List: Multi-Site Router-Server peer list, e.g. 128.89.0.1, 128.89.0.2
- Multi-Site Route Server BGP ASN List: 1-4294967295 | 1-65535[,0-65535], e.g. 65000, 65001
- Multi-Site Underlay IFC Auto Deployment Flag:

General | DCI | Resources

- * Multi-Site Routing Loopback IP Range: 10.10.0.0/22 Typically Loopback100 IP Address Range

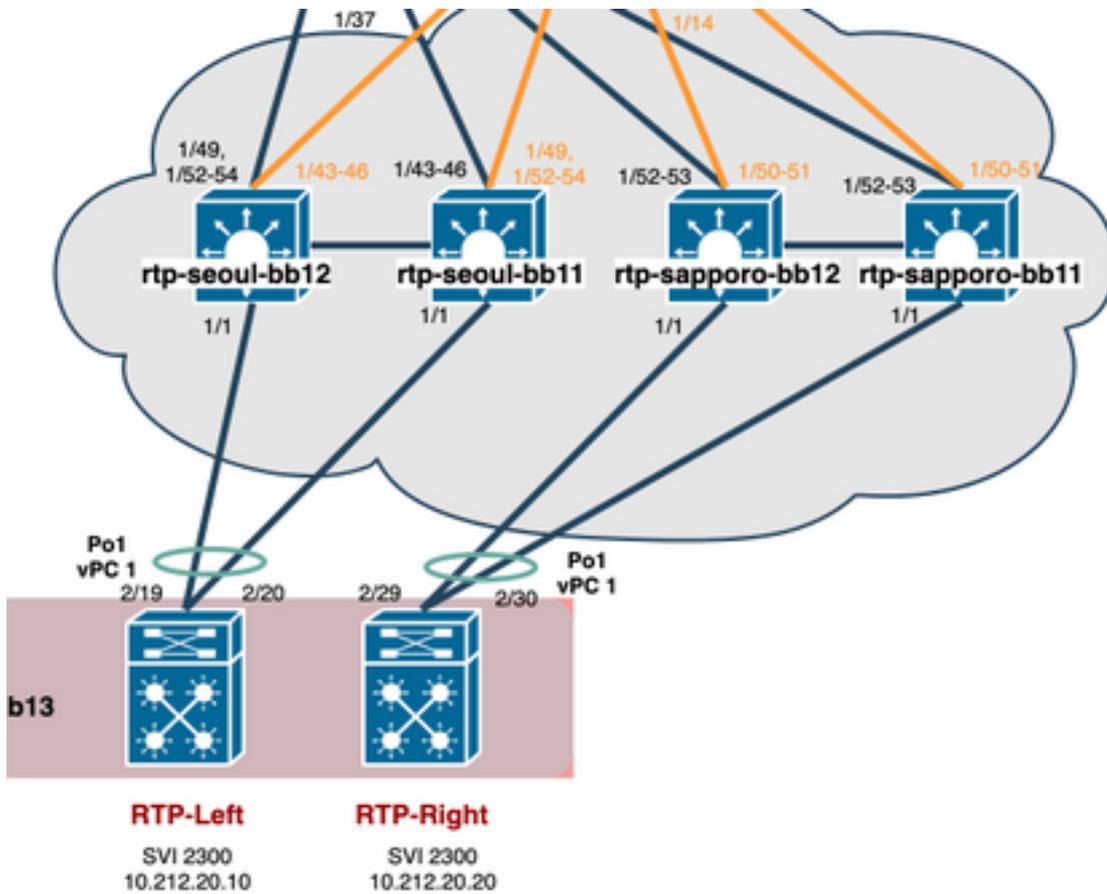
步驟4.按一下**Save**，然後導覽至MSD光纖，然後按一下**Save & Deploy**。成功完成之後，您的拓撲應如下所示（所有交換機+鏈路為綠色）：



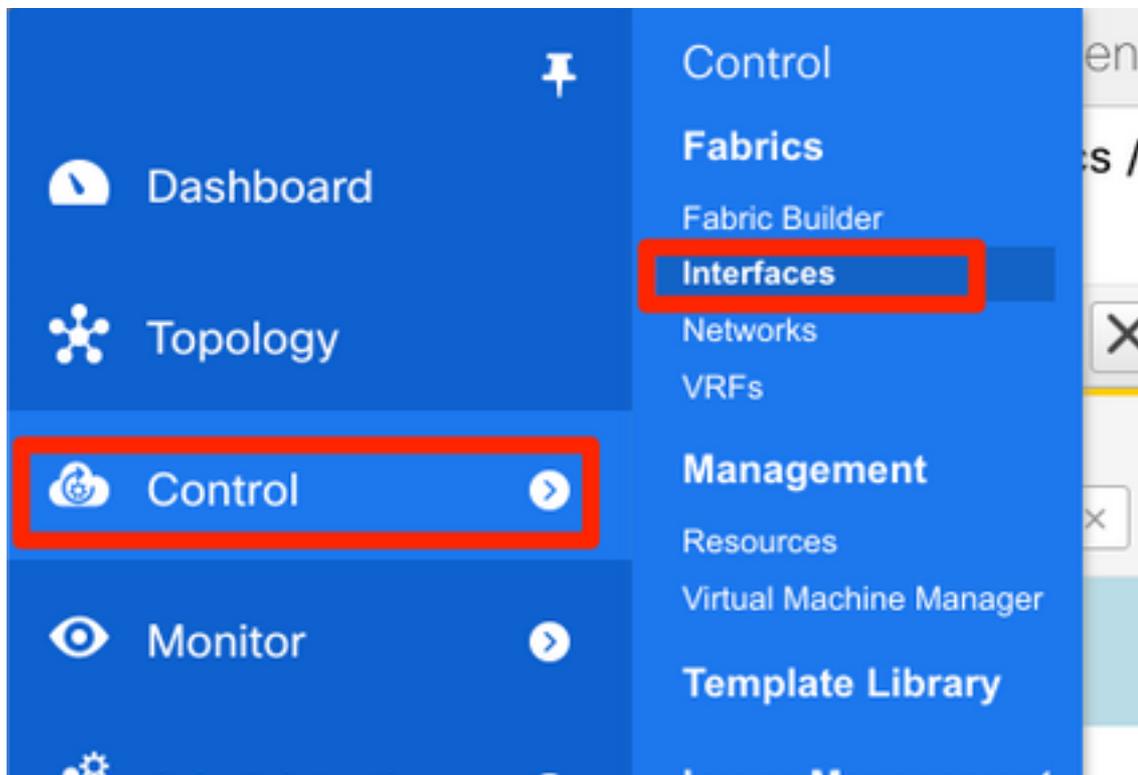
Do not forget to re-deploy any Networks/VRFs across both fabrics + the MSD Fabric!

部署主機訪問/中繼策略

在本示例中，配置兩個不同VTEP對的vPC中繼並測試本地RTP交換矩陣內的連線。相關拓撲，如下圖所示：



步驟1. 導覽至Control > Fabric > Interfaces，如下圖所示。



步驟2. 按一下+以進入「Add an Interface」嚮導，如下圖所示。

Interfaces

+ ↕ ✎ ✕ ↑ ↓ 👁 🔄 📄 Deploy Sho							
Device Name	Name	Admin	Oper	Reason	Policy	Overlay Network	Status
sapporo-bb ✕	1/1 ✕	up ✕	up ✕	ok ✕			
<input checked="" type="checkbox"/> rtp-sapporo-bb11	Ethernet1/1	↑	↑	ok	int_trunk_host_11_1	NA	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> rtp-sapporo-bb12	Ethernet1/1	↑	↑	ok	int_trunk_host_11_1	NA	<input checked="" type="checkbox"/>

在本示例中，在N7K的下游建立了一個vPC中繼，用於在此引導中ping測試。

步驟3.選擇適當的vPC對、物理介面、LACP開/關、BPDUGuard等。

Add Interface ✕

* Type:

* Select a vPC pair:

* vPC ID:

* Policy:

Note : PeerOne = rtp-sapporo-bb11 & PeerTwo = rtp-sapporo-bb12

General

Peer-1 Port-Channel ID: Peer-1 VPC port-channel number (Min:1, Max:4096)

Peer-2 Port-Channel ID: Peer-2 VPC port-channel number (Min:1, Max:4096)

Peer-1 Member Interfaces: A list of member interfaces for Peer-1 [e.g. e1/5,eth1/7-9]

Peer-2 Member Interfaces: A list of member interfaces for Peer-2 [e.g. e1/5,eth1/7-9]

* Port Channel Mode: Channel mode options: on, active and passive

* Enable BPDU Guard: Enable spanning-tree bpduguard

Enable Port Type Fast: Enable spanning-tree edge port behavior

Note : PeerOne = rtp-sapporo-bb11 & PeerTwo = rtp-sapporo-bb12

General

* MTU ? MTU for the Port Channel

* Peer-1 Trunk Allowed... ? Allowed values: 'none', 'all', or vlan ranges (ex: 1-200,500-2000,3000)

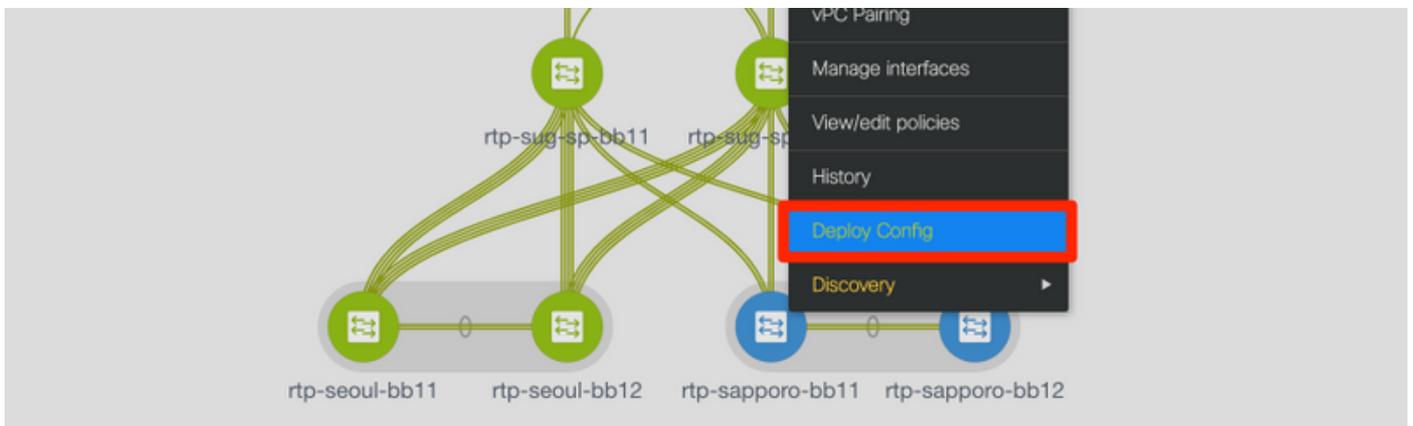
* Peer-2 Trunk Allowed... ? Allowed values: 'none', 'all', or vlan ranges (ex: 1-200,500-2000,3000)

Peer-1 PO Description ? Add description to Peer-1 VPC port-channel (Max Size 254)

Peer-2 PO Description ? Add description to Peer-2 VPC port-channel (Max Size 254)

? Note ! All configs :

步驟4.完成後按一下Save。或者，您可以直接部署，如圖所示。



Config Deployment

Step 1. Configuration Preview > Step 2. Configuration Deployment Status >

Switch Name	IP Address	Switch Serial	Preview Config	Status	Re-sync	Progress
rtp-sapporo-bb12	192.168.128.105	FDO21302J5Z	15 lines	Out-of-sync		<div style="width: 100%;"><div style="width: 100%;"></div></div> 100%
rtp-sapporo-bb11	192.168.128.101	FDO213001M0	15 lines	Out-of-sync		<div style="width: 100%;"><div style="width: 100%;"></div></div> 100%

步驟5. (可選) 檢視要應用的配置。

Config Preview - Switch 192.168.128.105



Pending Config

Side-by-side Comparison

```
interface ethernet1/1
  no spanning-tree port type edge trunk
interface port-channel1
  switchport
  switchport mode trunk
  mtu 9216
  vpc 1
  spanning-tree bpduguard disable
  description To N7K RTP-Right Eth2/29
  no shutdown
  switchport trunk allowed vlan 1-4094
interface ethernet1/1
  channel-group 1 force mode active
  no shutdown
configure terminal
```

Config Deployment



Step 1. Configuration Preview >

Step 2. Configuration Deployment Status >

Switch Name	IP Address	Status	Status Description	Progress
rtp-sapporo-bb11	192.168.128.101	COMPLETED	Deployed successfully	100%
rtp-sapporo-bb12	192.168.128.105	COMPLETED	Deployed successfully	100%

步驟6. (可選) 7K上的手動配置 :

```
RTP-Right# show run interface port-channel 1 membership
```

```
!Command: show running-config interface port-channel1 membership  
!Running configuration last done at: Mon Sep 9 17:29:39 2019  
!Time: Mon Sep 9 17:33:01 2019
```

```
version 8.2(4)
```

```
interface port-channel1  
  switchport  
  switchport mode trunk
```

```
interface Ethernet2/29  
  description vPC from sapporo-bb11/12 eth1/1  
  switchport  
  switchport mode trunk  
  channel-group 1 mode active  
  no shutdown
```

```
interface Ethernet2/30  
  description vPC from sapporo-bb11/12 eth1/1  
  switchport  
  switchport mode trunk  
  channel-group 1 mode active  
  no shutdown
```

```
RTP-Right# show port-channel summary interface po1
```

```
Flags: D - Down          P - Up in port-channel (members)  
       I - Individual    H - Hot-standby (LACP only)  
       S - Suspended     r - Module-removed  
       b - BFD Session Wait  
       S - Switched      R - Routed  
       U - Up (port-channel)  
       M - Not in use. Min-links not met
```

```
-----  
Group Port-      Type      Protocol  Member Ports  
Channel  
-----  
1      Po1(SU)    Eth      LACP      Eth2/29(P) Eth2/30(P)
```

步驟7. (可選) 在N7K上建立測試SVI以對RTP中的VTEP執行ping操作(VTEP在VRF中具有10.212.20.1的任播網關(_red)):

```
RTP-Right# show run interface vlan 2300
```

```
!Command: show running-config interface Vlan2300  
!Running configuration last done at: Mon Sep 9 17:41:10 2019  
!Time: Mon Sep 9 17:44:30 2019
```

```
version 8.2(4)
```

```
interface Vlan2300  
  description VRF Andrea_Red in TEPs  
  no shutdown  
  no ip redirects  
  ip address 10.212.20.20/24  
  no ipv6 redirects
```

```
RTP-Right# ping 10.212.20.1
```

```
PING 10.212.20.1 (10.212.20.1): 56 data bytes  
64 bytes from 10.212.20.1: icmp_seq=0 ttl=254 time=1.235 ms  
64 bytes from 10.212.20.1: icmp_seq=1 ttl=254 time=0.832 ms  
64 bytes from 10.212.20.1: icmp_seq=2 ttl=254 time=0.819 ms  
64 bytes from 10.212.20.1: icmp_seq=3 ttl=254 time=0.81 ms  
64 bytes from 10.212.20.1: icmp_seq=4 ttl=254 time=0.828 ms
```

```
--- 10.212.20.1 ping statistics ---  
5 packets transmitted, 5 packets received, 0.00% packet loss  
round-trip min/avg/max = 0.81/0.904/1.235 ms
```

步驟8. (可選) 驗證RTP中的其他VTEP是否透過EVPN/HMM看到此主機 :

```
rtp-seoul-bb12# show bgp l2vpn evpn 10.212.20.20 vrf andrea_vrf_red
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 10.1.0.10:35067 (L2VNI 20001)
BGP routing table entry for [2]:[0]:[0]:[48]:[002a.6a5c.6045]:[32]:[10.212.20.20]/272, version 168
Paths: (2 available, best #1)
Flags: (0x000212) (high32 00000000) on xmit-list, is in l2rib/evpn, is not in HW

Advertised path-id 1
Path type: internal, path is valid, is best path, in rib
Imported from 10.1.0.13:35067:[2]:[0]:[0]:[48]:[002a.6a5c.6045]:[32]:[10.212.20.20]/272
AS-Path: NONE, path sourced internal to AS
10.1.0.1 (metric 6) from 10.1.0.11 (10.1.0.11)
Origin IGP, MED not set, localpref 100, weight 0
Received label 20001 30000
Extcommunity: RT:65534:20001 RT:65534:30000 S00:10.1.0.1:0 ENCAP:8
Router MAC:3890.a5eb.05cf
Originator: 10.1.0.13 Cluster list: 10.1.0.11
```

步驟9. (可選) 對seoul-bb11/12重複相同的過程 (建立vPC埠通道 , 建立SVI 2300) 。 從RTP-Left向RTP-Right執行ping操作以確認RTP交換矩陣內通過EVPN的L2連線 :

```
RTP-Left# ping 10.212.20.20
PING 10.212.20.20 (10.212.20.20): 56 data bytes
64 bytes from 10.212.20.20: icmp_seq=0 ttl=254 time=1.385 ms
64 bytes from 10.212.20.20: icmp_seq=1 ttl=254 time=1.03 ms
64 bytes from 10.212.20.20: icmp_seq=2 ttl=254 time=0.98 ms
64 bytes from 10.212.20.20: icmp_seq=3 ttl=254 time=0.997 ms
64 bytes from 10.212.20.20: icmp_seq=4 ttl=254 time=0.974 ms

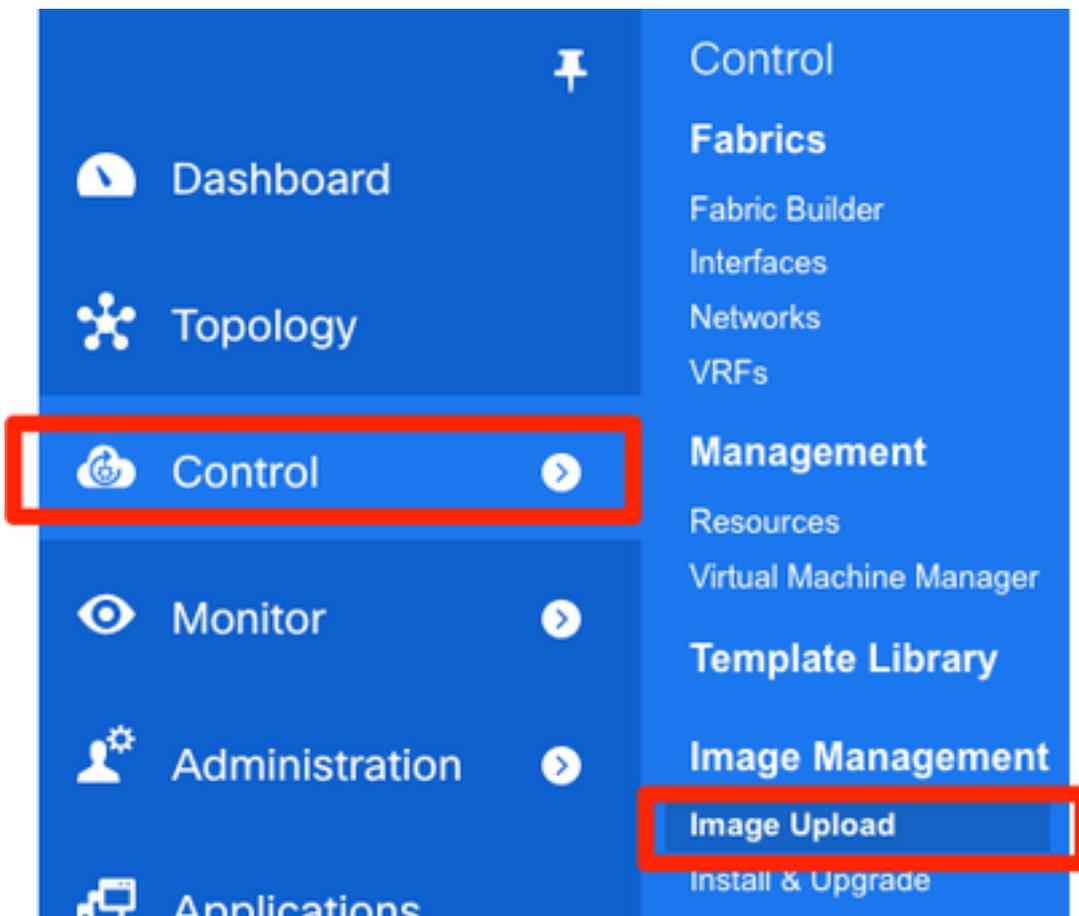
--- 10.212.20.20 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.974/1.073/1.385 ms
```

在Add Interfaces上下文中可以執行類似的步驟來建立非vPC埠通道、訪問介面等。

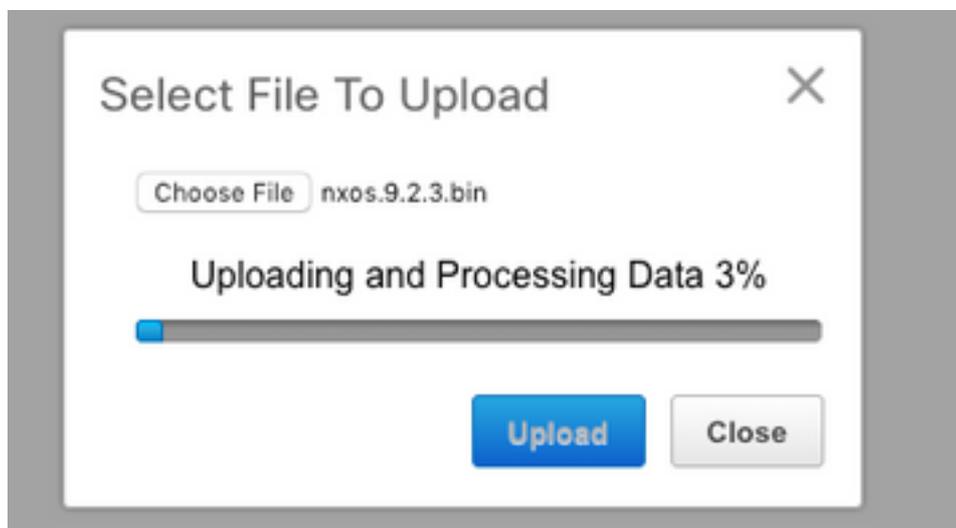
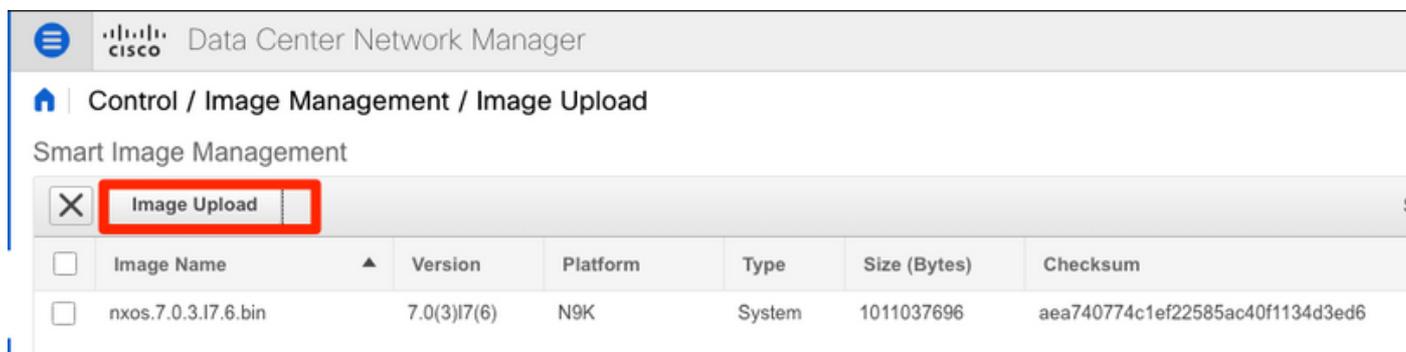
第2天運營

通過DCNM升級NX-OS軟體

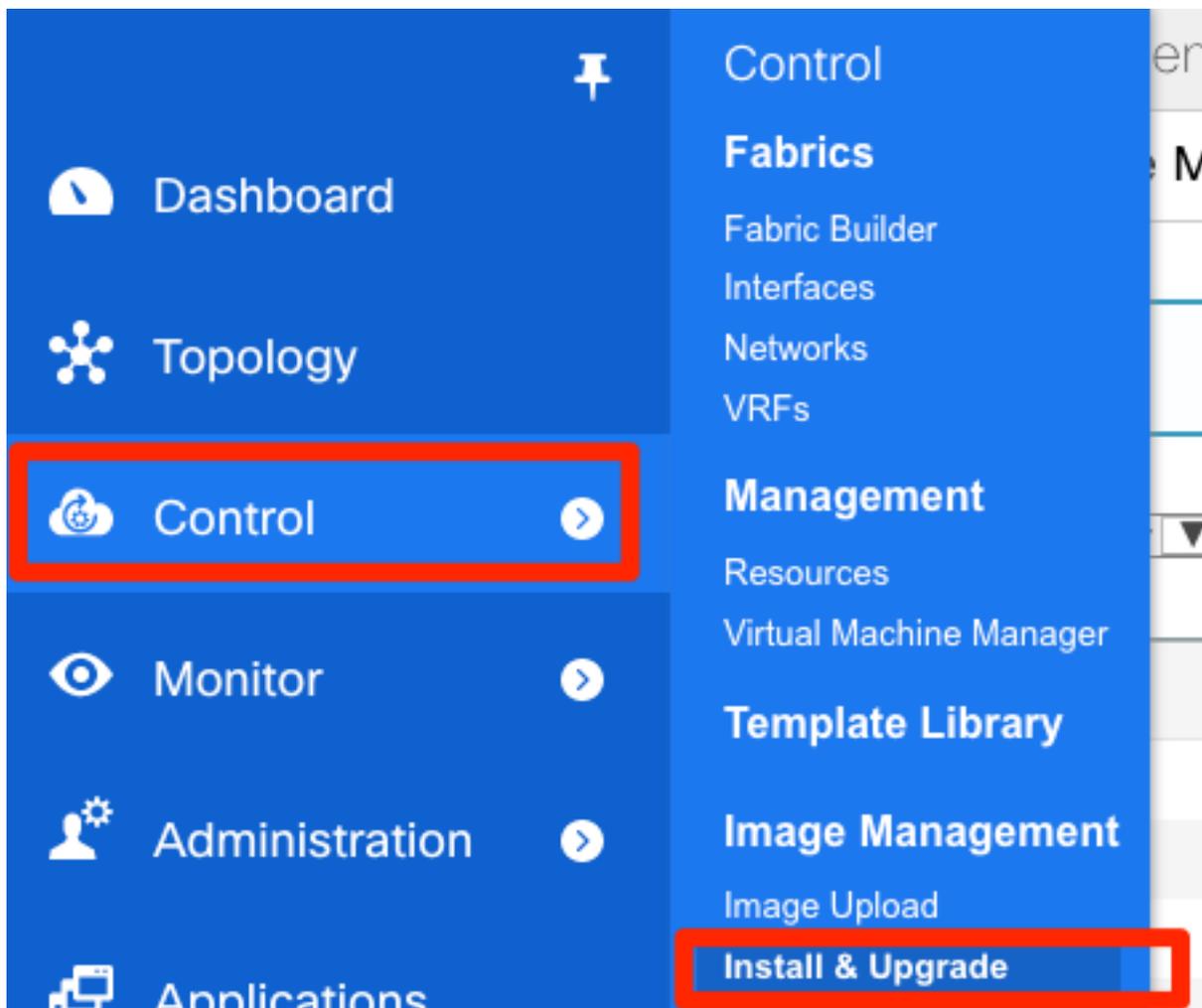
步驟1. 上傳映像 (或一組映像到DCNM的伺服器) , 然後導覽至Control > Image Management > Image Upload , 如下圖所示。



步驟2.按照提示進行本機上傳，然後檔案應如下圖所示：



步驟3.上傳檔案後，如果交換器需要升級，您可以前往**安裝與升級**。導覽至Control > Image Management > Install & Upgrade，如下圖所示。



步驟4.選擇要升級的交換機。在本示例中，升級了整個RTP交換矩陣。

Control / Image Management / Install & Upgrade

1 Select Switches → 2 Specify Software Images ✓ → 3 Pre-Installation Checks → 4 Schedule Job

Device Scope: Data Center ▼

Available Switches

<input type="checkbox"/>	Switch Name	IP Address	Model	Version
<input type="checkbox"/>	sjc-davos-bb14	192.168.254.106	N9K-C92160YC-X	9.2(2.71)
<input type="checkbox"/>	sjc-davos-bb15	192.168.254.102	N9K-C92160YC-X	7.0(3)I7(5)
<input type="checkbox"/>	sjc-hom-bb14	192.168.254.107	N9K-C93180YC-FX	9.2(1)
<input type="checkbox"/>	sjc-hom-bb15	192.168.254.103	N9K-C93180YC-FX	9.2(1)
<input type="checkbox"/>	sjc-t2-sp-bb14	192.168.254.104	N9K-C9508	7.0(3)I7(1)
<input type="checkbox"/>	sjc-t2-sp-bb15	192.168.254.100	N9K-C9508	7.0(3)I7(3)
<input type="checkbox"/>	sjc-t2-tep-bb14	192.168.254.105	N9K-C9372TX-E	7.0(3)I7(5a)
<input type="checkbox"/>	sjc-t2-tep-bb15	192.168.254.101	N9K-C9372TX-E	7.0(3)I7(4)

Selected Switches

<input type="checkbox"/>	Switch Name
<input type="checkbox"/>	rtp-sug-sp-bb12
<input type="checkbox"/>	rtp-sug-sp-bb11
<input type="checkbox"/>	rtp-seoul-bb12
<input type="checkbox"/>	rtp-seoul-bb11
<input type="checkbox"/>	rtp-sapporo-bb12
<input type="checkbox"/>	rtp-sapporo-bb11
<input type="checkbox"/>	rtp-hea-bgw-bb12
<input type="checkbox"/>	rtp-hea-bgw-bb11

Previous Next Finish Cancel

步驟5.選擇要將交換機升級至哪個NX-OS版本 (最佳實踐是將所有交換機升級到同一NX-OS版本) :

Control / Image Management / Install & Upgrade

1 Select Switches ✓ → 2 Specify Software Images ✓ → 3 Pre-Installation Checks → 4 Schedule Job

Auto File Selection Select File Server: Default_S... Image Version: 7.0(3)I7(6) Path*: /var/lib/dcnm/images/ Apply

Name	Version	Kickstart Image	System Image	KSI Image	Vrf	Available Space (MB)		Selected Files Size(MB)	Skip Ver... Compati...	Select P... Line Ca...	Upgrade Options
						Primary Supervi...	Secondary Supervisor				
rtp-hea-b...	7.0(3)I7(5)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	115145	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-hea-b...	7.0(3)I7(5)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	115146	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-sapp...	7.0(3)I7(3)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	49821	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-sapp...	7.0(3)I7(3)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	50535	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-seoul...	7.0(3)I7(6)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	35476	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-seoul...	7.0(3)I7(...)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	33780	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-sug-s...	7.0(3)I7(5)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	20294	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options
rtp-sug-s...	7.0(3)I7(5)	Not Applicab	nxos.7.0.3.I7.	Not Applicable	manage...	46651	Not Available	1012	<input type="checkbox"/>	<input type="checkbox"/>	Options

*Provide absolute path in case of SCP and SFTP servers. For TFTP and FTP servers, please provide the relative path from TFTP/FTP home directory. For more information on auto file selection refer to online help.

Previous Next Finish Cancel

步驟6.按一下下一步,DCNM通過安裝前檢查運行交換機。此視窗可能需要相當長的時間,因此您也

可以選擇Finish Installation Later，並在您離開時安排升級。

The screenshot shows the 'Control / Image Management / Install & Upgrade' workflow. Step 3, 'Pre-Installation Checks', is active. A 'Finish Installation Later' button is highlighted with a red box. Below the workflow, a 'Compatibility Check' section shows a table of switches with their current actions and version compatibility verification status.

Name	Current Action	Version Compatibility Verification
<input checked="" type="radio"/> rtp-sug-sp-bb12	Compatibility check in progress	STARTED
<input type="radio"/> rtp-sug-sp-bb11	Compatibility check in progress	STARTED
<input type="radio"/> rtp-seoul-bb12	Compatibility check in progress	STARTED
<input type="radio"/> rtp-seoul-bb11	Compatibility check in progress	STARTED
<input type="radio"/> rtp-sapporo-bb12	Compatibility check in progress	STARTED
<input type="radio"/> rtp-sapporo-bb11	Compatibility check in progress	STARTED
<input type="radio"/> rtp-hea-bgw-bb12	Compatibility check in progress	STARTED

完成任務後，此命令將任務排隊，其顯示與如下圖所示。

The screenshot shows the 'Software Upgrade Tasks' table. The 'Finish Installation' button is highlighted with a red box. The table contains one task with the status 'COMPLETED WITH EXCEPTION', which is highlighted with an orange box.

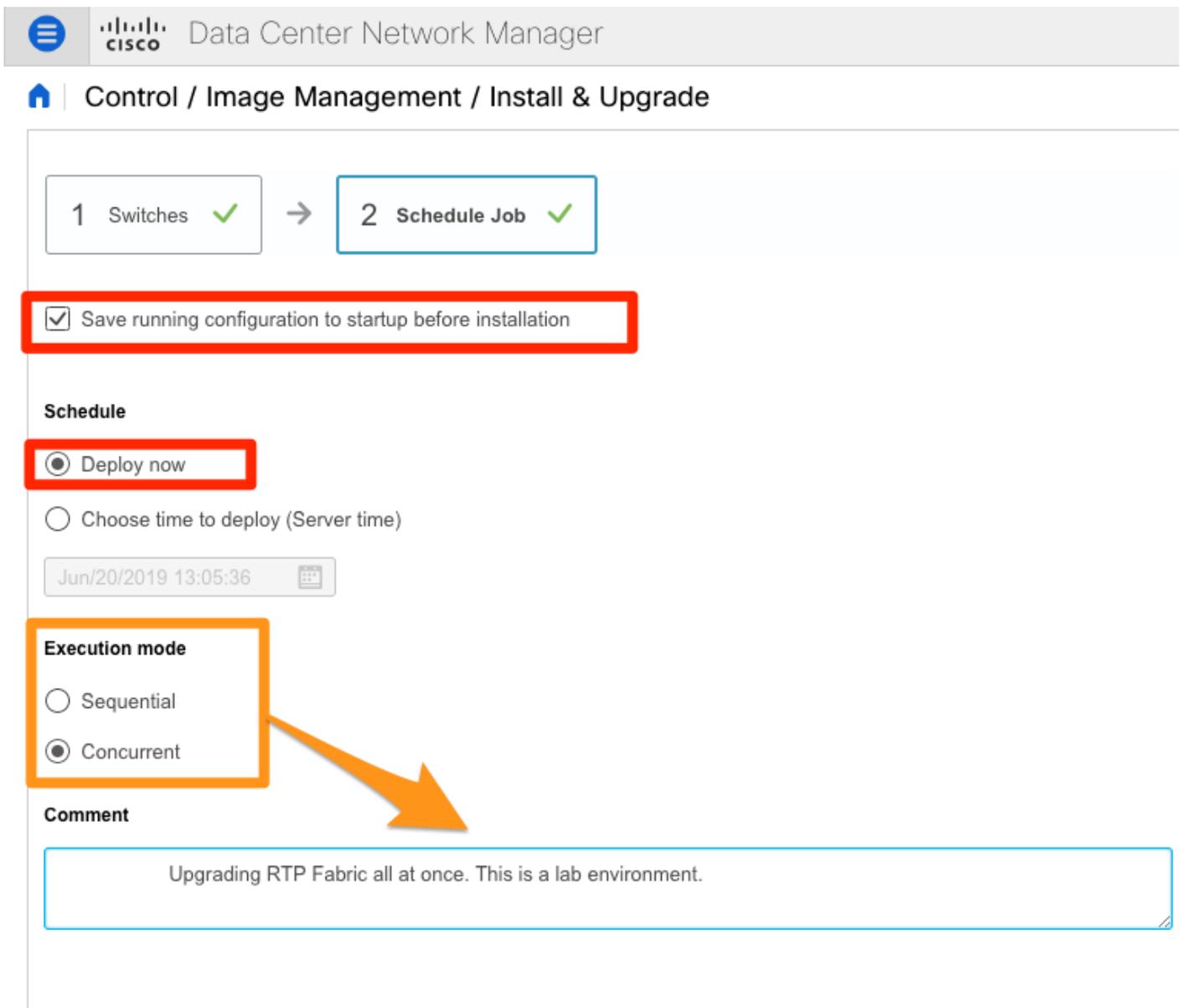
Task Id	Task Type	Owner	Devices	Job Status	Created Time	Scheduled At	Completed Time
<input checked="" type="checkbox"/> 1	Compatibility	admin	rtp-hea-bgw-bb11,rtp-hea...	COMPLETED WITH EXCEPTION	2019-06-20 12...	2019-06-20 12...	2019-06-20 13:03...

註：上述情況的例外情況是，其中一台RTP交換機沒有足夠空間用於NX-OS映像。

步驟7.完成相容性後，按一下同一視窗中的完成安裝，如下圖所示。



步驟8.您可以選擇要併發（所有同時進行）或按順序（一次進行）進行的升級。由於這是實驗室環境，因此選擇是併發。



任務建立後會顯示IN PROGRESS，如下圖所示。

Upgrade History | Switch Level History

Software Upgrade Tasks Selected 0 / Total 1  

Show

<input type="checkbox"/>	Task Id	Task Type	Owner	Devices	Job Status	Created Time	Scheduled At	Completed Time	Comment
<input type="checkbox"/>	1	Upgrade	admin	rtp-hea-bgw-bb11,rtp-hea...	IN PROGRESS	2019-06-20 13...	2019-06-20 13...		Upgrading RTP Fabric all

Upgrade History | Switch Level History

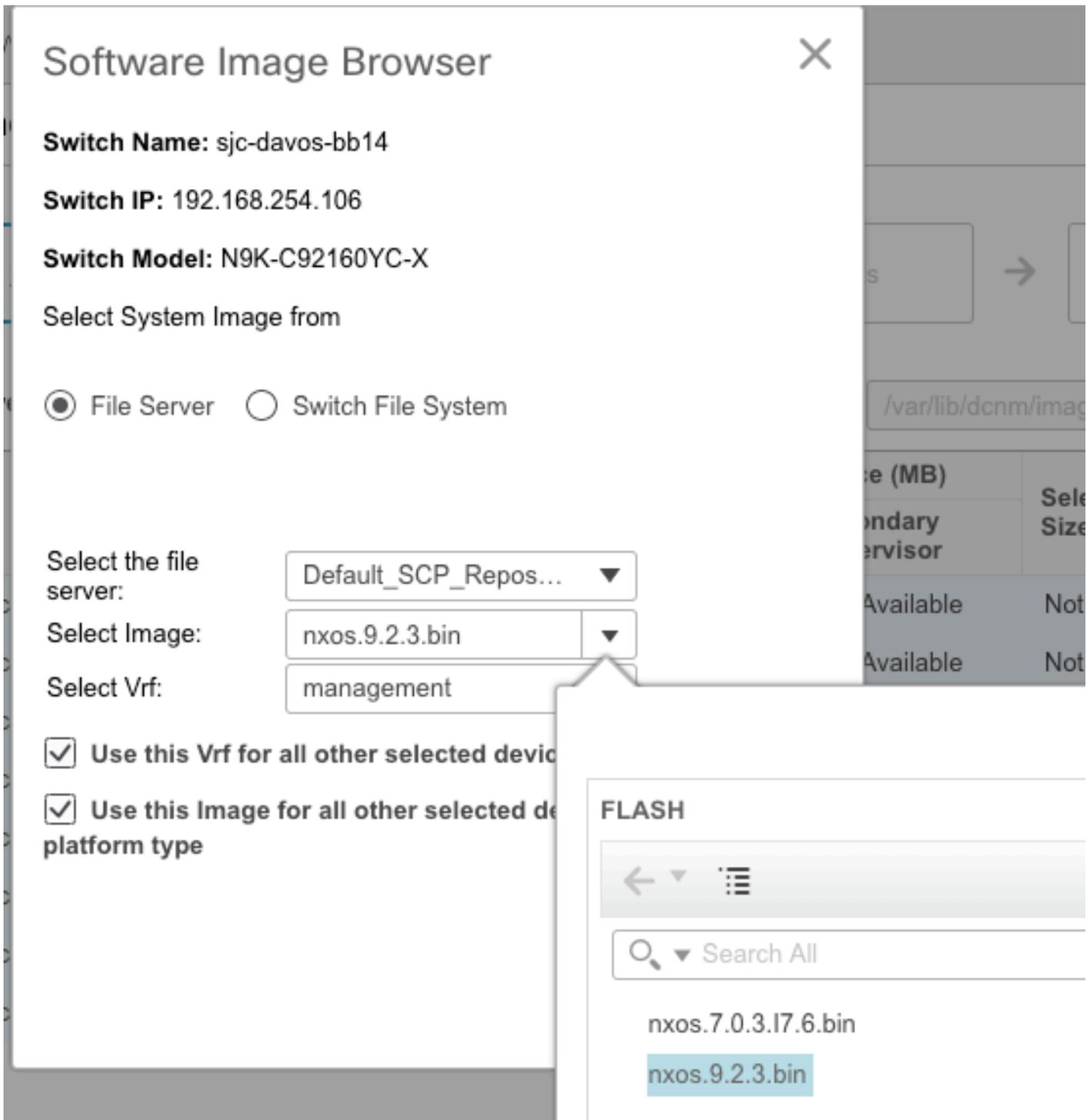
Software Upgrade Tasks Selected 0 / Total 1  

Show

<input type="checkbox"/>	Task Id	Task Type	Owner	Devices	Job Status	Created Time	Scheduled At	Completed Time	Comment
<input type="checkbox"/>	1	Upgrade	admin	rtp-hea-bgw-bb11,rtp-hea...	COMPLETED	2019-06-20 13...	2019-06-20 13...	2019-06-20 13:20:...	Upgrading RTP Fabric all

此處顯示選擇影象的另一種方式。

sjc-t2-sp...	7.0(3) 7(1)	Not Applicabl	Select Image	Not Applicable	manage...	6326	2683	Not Applicable	<input type="checkbox"/>	<input type="checkbox"/>	Options
sjc-t2-sp...	7.0(3) 7(3)	Not Applicabl	Select Image	Not Applicable	manage...	4437	Not Available	Not Applicable	<input type="checkbox"/>	<input type="checkbox"/>	Options



安裝終結點定位器

要使DCNM應用正常工作，您必須在DCNM伺服器 and 前面板埠之間具有到交換矩陣中某個Nexus 9000的帶內連線。在本示例中，DCNM伺服器連線到RTP交換矩陣中一個主幹的Ethernet1/5。

步驟1.將此CLI手動新增到Nexus 9000:

```
rtp-sug-sp-bb12# show run interface ethernet1/5

!Command: show running-config interface Ethernet1/5
!Running configuration last done at: Wed Sep 11 14:41:05 2019
!Time: Wed Sep 11 14:53:25 2019

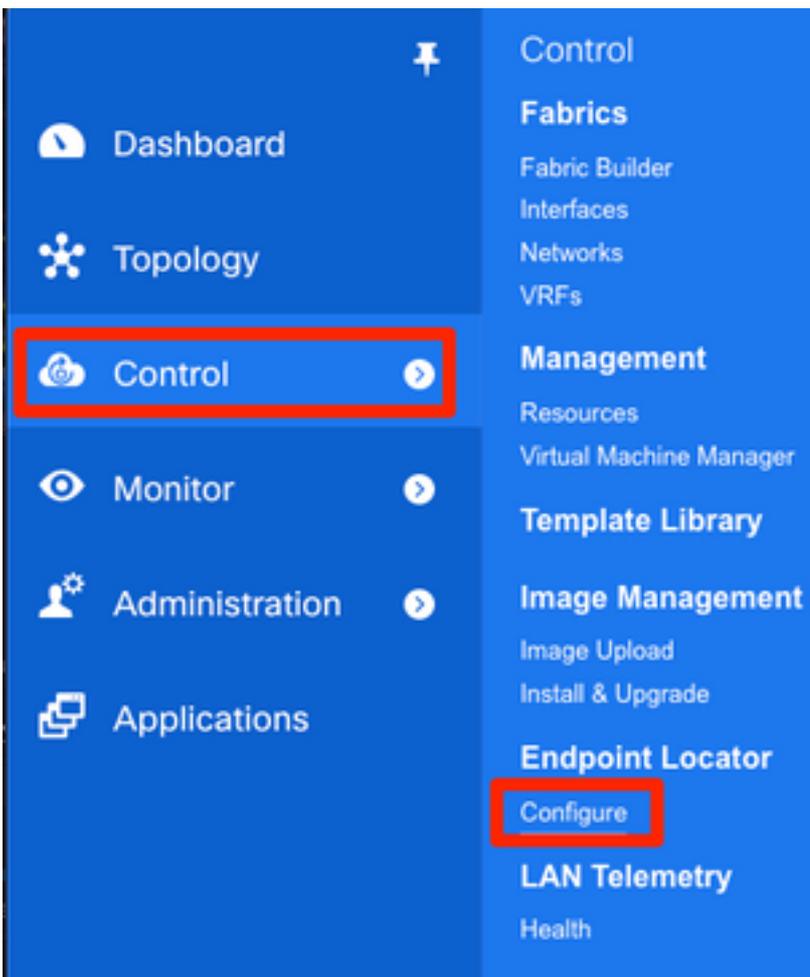
version 7.0(3)I7(7) Bios:version 08.36

interface Ethernet1/5
 description To DCNM Server for Endpoint Locator & Apps
 mtu 9216
 no ip redirects
 ip address 99.99.99.2/30
 no ipv6 redirects
 no shutdown
```

步驟2.確保您可以ping通DCNM伺服器，反之亦然。

```
[root@dcg-rtp-dcnm-fab ~]# ping 99.99.99.2
PING 99.99.99.2 (99.99.99.2) 56(84) bytes of data:
 64 bytes from 99.99.99.2: icmp_seq=1 ttl=255 time=0.780 ms
 64 bytes from 99.99.99.2: icmp_seq=2 ttl=255 time=0.802 ms
 64 bytes from 99.99.99.2: icmp_seq=3 ttl=255 time=0.772 ms
^C
--- 99.99.99.2 ping statistics ---
 3 packets transmitted, 3 received, 0% packet loss, time 2001ms
 rtt min/avg/max/mdev = 0.772/0.784/0.802/0.034 ms
```

步驟3.導覽至DCNM GUI > Control > Endpoint Locator > Configure，如下圖所示。



步驟4.選擇要啟用終端定位器的結構，如下圖所示。

1. Select a Fabric

Choose a fabric where you want the Endpoint Locator functionality to be enabled.

Continue

步驟5.如圖所示，選擇骨幹。

2. Select Spine

For an iBGP-based fabric, choose the Route-Reflectors.
For an eBGP-based fabric, choose the transit spines.

Spine 2 (optional)

步驟6. (可選)。繼續下一步之前，通過DCNM伺服器上的此CLI將eth2的IP從原始部署更改（如果DCNM伺服器全新安裝期間配置的原始IP仍然正確，則不需要執行此步驟）：

```

[root@dcdg-rtp-dcnm-fab ~]# ifconfig eth2 0.0.0.0
[root@dcdg-rtp-dcnm-fab ~]# appmgr setup inband
Configuring Interface for InBand Connectivity...
Please enter the information as prompted:
InBand Physical IP [e.g. 2.2.2.69]: 99.99.99.1
InBand Network Mask [e.g. 255.255.255.0]: 255.255.255.252
InBand Gateway [e.g. 2.2.2.1]: 99.99.99.2
Validating Inputs ...
You have entered these values..
PIP=99.99.99.1
NETMASK=255.255.255.252
GATEWAY=99.99.99.2

Press 'y' to continue configuration, 'n' to discontinue [y] y
{"ResponseType":0,"Response":"Refreshed"}
Done.

[root@dcdg-rtp-dcnm-fab ~]# ifconfig eth2
eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 99.99.99.1 netmask 255.255.255.252 broadcast 99.99.99.3
    inet6 fe80::250:56ff:fe9e:23f5 prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:9e:23:f5 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 11 bytes 698 (698.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

步驟7.檢驗帶內介面配置。此專案應與上一步中設定的專案相符。

3. Verify DCNM In-band Interface

Choose the Ethernet interface on the DCNM that will provide reachability to the Spine(s) within the fabric.

eth2

Interface IP

99.99.99.1 / 30

5. Review and Enable Endpoint Locator

Fabric: RTP-EVPN-Fabric

DCNM Interface: eth2 (99.99.99.1/30)

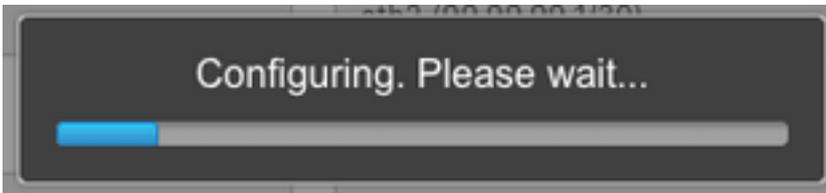
* Collect additional information (Port, VLAN, etc.) Yes

Spine 1: rtp-sug-sp-bb12 (192.168.128.104)

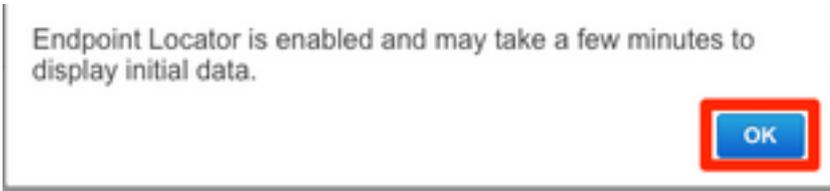
Next-hop IP: 99.99.99.1

Spine 2:

步驟8.檢視配置後，按一下**Configure**。此步驟可能需要幾分鐘時間：



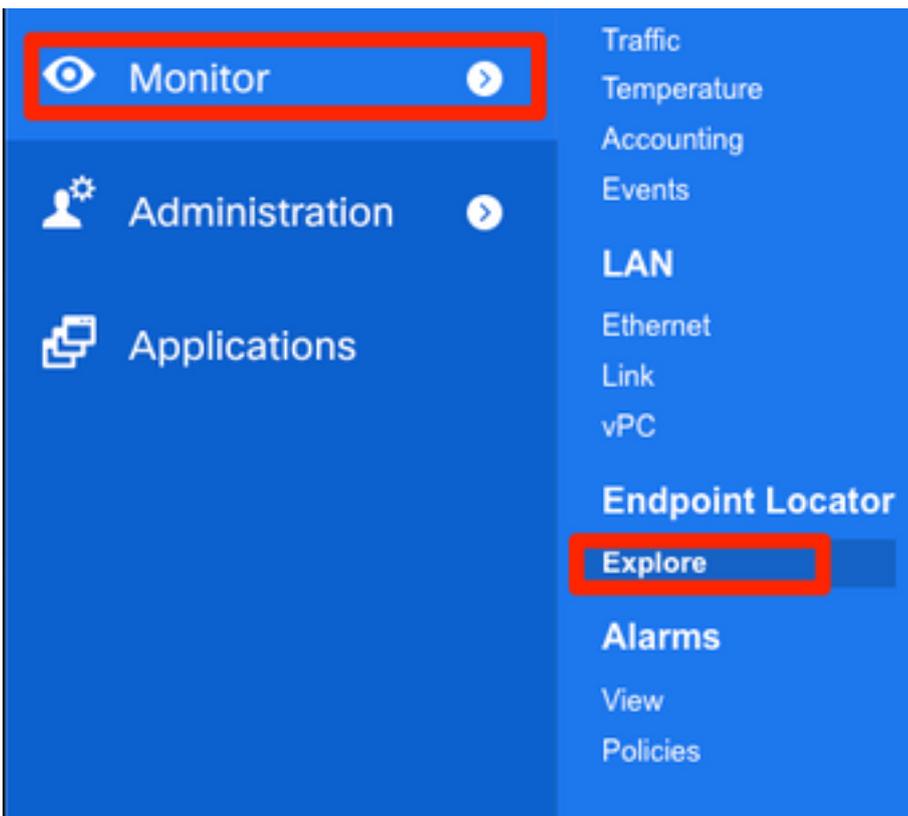
完成後，系統會顯示通知，如下圖所示。



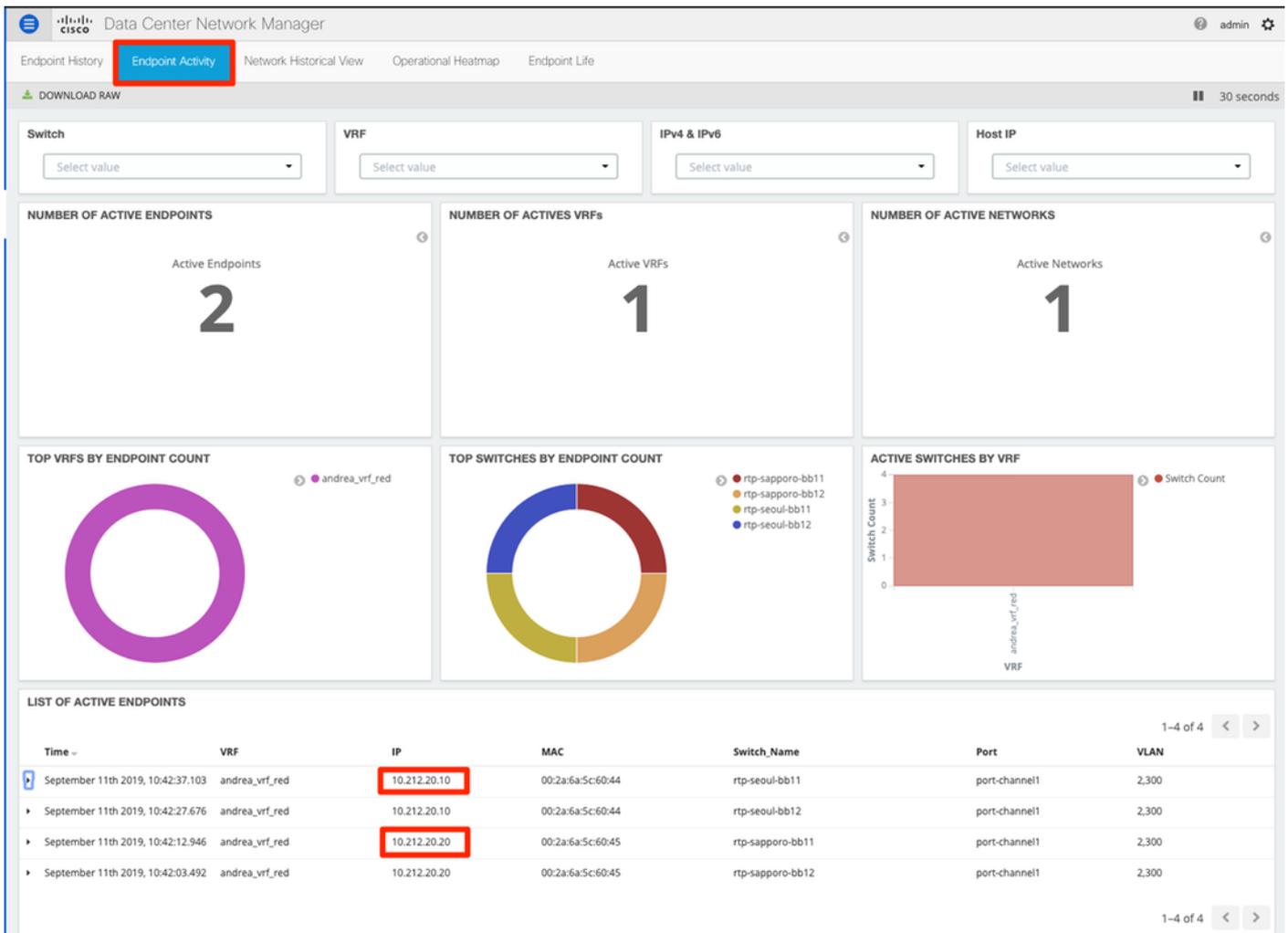
請注意，DCNM已在L2VPN EVPN系列中的所選主幹上配置了BGP鄰居。

```
rtp-sug-sp-bb12# show run bgp | sec "neighbor 99"
neighbor 99.99.99.1
remote-as 65534
address-family l2vpn evpn
send-community
send-community extended
route-reflector-client
```

步驟9.您現在可以使用終端定位器。導航至Monitor > Endpoint Locator > Explore。



在本例中，您可以看到為RTP交換矩陣中的本地ping測試配置的兩台主機：



部署過程中遇到的問題

纜線連線錯誤

一對交換機佈線錯誤，導致vPC對等鏈路埠通道500出現捆綁錯誤。示例：

Switch Name	IP Address	Status	Status Description	Progress
rtp-sapporo-bb11	192.168.128.101	FAILED	feature ngoam is an invalid command	2%
rtp-sapporo-bb12	192.168.128.105	FAILED	channel-group 500 force mode active Failed with follo...	15%
rtp-sug-sp-bb11	192.168.128.100	COMPLETED	Deployed successfully	100%
rtp-sug-sp-bb12	192.168.128.104	COMPLETED	Deployed successfully	100%
rtp-seoul-bb11	192.168.128.102	COMPLETED	Deployed successfully	100%
rtp-seoul-bb12	192.168.128.106	COMPLETED	Deployed successfully	100%

步驟1. 導航回控制 > Fabric Builder，並檢視錯誤：

🔔 2 pending errors

Fabric errors & warnings

2 Errors, 0 Warnings, 0 Info

✖ Delete all

- ✖ Switch[FDO21302J5Z] - CLI command 'channel-group 500 force mode active' failed with following error:command failed: port not compatible:[Buffer boost] ** You can use force option to override the port's parameters ** (e.g. "channel-group X force") ** Use "show port-channel compatibility-parameters" to get more information on failure ✖
- ✖ Switch[FDO213001M0] - CLI command 'feature ngoam' failed with following error:CLI command is invalid. ✖

步驟2.關於port-channel500命令失敗的第一個錯誤 — 通過show cdp neighbors驗證到vPC對等體的連線是在10G和40G埠上 (不相容)。已物理刪除10G埠並從DCNM中刪除該鏈路：



Do you want to remove the Link:
Ethernet1/48(rtp-sapporo-bb11) --> Ethernet1/48(rtp-sapporo-bb12) ?

OK

Cancel

未能配置功能

第二個錯誤與「feature ngoam」配置失敗有關 — 交換機已升級到支援「feature ngoam」的較新NX-OS版本，然後再次按一下**Save & Deploy**。這兩個問題均已解決。

重疊不同交換矩陣的管理子網

當部署第二個交換矩陣(SJ)時，使用了相同的子網（如果物理上是獨立的，則應該可以正常使用）；但是，DCNM會記錄衝突並且POAP失敗。這是因為SJ交換矩陣被置於不同的管理VLAN中並更改了DHCP地址的範圍。

Add Fabric

* Fabric Name :

* Fabric Template :

General	Replication	vPC	Advanced	Resources	Manageability	Bootstrap	Configuration Backup
Enable Bootstrap <input checked="" type="checkbox"/> Automatic IP Assignment For POAP							
Enable Local DHCP Server <input checked="" type="checkbox"/> Automatic IP Assignment For POAP From Local DHCP Server							
* DHCP Scope Start Address	<input type="text" value="192.168.128.108"/>	Start Address For Switch Out-of-Band POAP					
* DHCP Scope End Address	<input type="text" value="192.168.128.115"/>	End Address For Switch Out-of-Band POAP					
* Switch Management Default Gate...	<input type="text" value="192.168.128.1"/>	Default Gateway For Mgmt VRF On The Switch					
* Switch Management Subnet Prefix	<input type="text" value="24"/>	Prefix For Mgmt0 Interface On The Switch (Min:8, Max:30)					



The fabric **SJ-EVPN-Fabric** was added with below message:

Management Default Gateway network 192.168.128.0 for fabric SJ-EVPN-Fabric has conflict with fabric RTP-EVPN-Fabric's Management Default Gateway network 192.168.128.0. Same Gateway network cannot be used within the same or different fabrics, please use different Gateway Network.

Close

分組介面

步驟1.對於某些交換機中的分支介面（請參閱拓撲），已為T2主幹手動新增此CLI:

```
sjc-t2-sp-bb14# show run | i i breakout
interface breakout module 1 port 6-7 map 10g-4x
```

步驟2.導覽至Control > Interfaces，然後刪除父介面：

 Data Center Network Manager SCOPE: SJ-Fabric-EVPN

Control / Fabrics / Interfaces

Interfaces Selected 4 / Total 520

Show Quick Filter

	Device Name	Name	Admin	Oper	Reason	Policy	Overlay Network	Status	Port-C
<input checked="" type="checkbox"/>	sjc-t2-sp-bb14	Ethernet1/7			Not discovered	int_trunk_host_11_1	NA	✕	
<input checked="" type="checkbox"/>	sjc-t2-sp-bb14	Ethernet1/6			Not discovered	int_trunk_host_11_1	NA	✕	
<input checked="" type="checkbox"/>	sjc-t2-sp-bb15	Ethernet1/7			Not discovered	int_trunk_host_11_1	NA	✕	
<input checked="" type="checkbox"/>	sjc-t2-sp-bb15	Ethernet1/6			Not discovered	int_trunk_host_11_1	NA	✕	

實際使用的介面是Eth1/6/1-4和Eth1/7/1-4。如果您不更正此問題，儲存和部署稍後將失敗。有一個方法可以通過DCNM本身進行突破(+符號旁邊的按鈕；但是，本文未涉及)

部署到不受支援的功能時出現結構錯誤

 Data Center Network Manager SCOPE: SJ-Fabric-EVPN admin

Network / VRF Selection > Network / VRF Deployment > VRF View | Continue

Fabric Selected: SJ-Fabric-EVPN

Networks Selected 1 / Total 2

Show All

	Network Name	Network ID	VRF Name	IPv4 Gateway/Subnet	IPv6 Gateway/Prefix	Status	VLAN ID
<input type="checkbox"/>	Andrea_TestNetwork_20001	20001	Andrea_VRF_RED	10.212.20.1/24	2001:db8::1/64	DEPLOYED	2300
<input checked="" type="checkbox"/>	mesau-22302	22302	mesau-southeas...	10.23.2.1/24		OUT-OF-SYNC	2302

Network Information

* Network ID

* Network Name

* VRF Name

Layer 2 Only

* Network Template

* Network Extension Template

VLAN ID ?

Network Profile

Please click only to generate a New Multicast Group Address and override the default value!

General | **Advanced**

DHCPv4 Server 2 ? DHCP Relay IP

DHCPv4 Server VRF ?

Loopback ID for DHCP Relay interface (Min:0, Max:1023) ?

Routing Tag ? 0-4294967295

TRM Enable ? Enable Tenant Routed Multicast

L2 VNI Route-Target Both Enable ?

Enable L3 Gateway on Border ?

SJ交換矩陣中的某些機箱(T2)不支援TRM，因此，當DCNM嘗試推送此配置時，它無法前進。TRM支援如下

: https://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus9000/sw/92x/vxlan-92x/configuration/guide/b-cisco-nexus-9000-series-nx-os-vxlan-configuration-guide-92x/b_Cisco_Nexus_9000_Series_NX-OS_VXLAN_Configuration_Guide_9x_chapter_01001.html#concept_vw1_syb_zfb

已取消選中Network和VRF Edit視窗下的TRM Enable框，如下圖所示。

在Control > Fabric Builder > VRF下重複相同的過程。

Data Center Network Manager

SCOPE: SJ-Fabric-EVPN admin

Network / VRF Selection > Network / VRF Deployment >

Fabric Selected: SJ-Fabric-EVPN

VRFs Selected 1 / Total 2

+	✎	✕	↺	↻	Show	All	▼
<input type="checkbox"/>	VRF Name	▲	VRF ID	Status			
<input type="checkbox"/>	Andrea_VRF_RED		30000	DEPLOYED			
<input checked="" type="checkbox"/>	mesau-southeast-corner		32302	PENDING			

Edit VRF
✕

▼ VRF Information

* VRF ID

* VRF Name

* VRF Template

* VRF Extension Template

▼ VRF Profile

General

Advanced

VRF Intf MTU ? 68-9216

Loopback Routing Tag ? 0-4294967295

Redistribute Direct Route Map ?

Max BGP Paths ? 1-64

Max iBGP Paths ? 1-64

TRM Enable ? Enable Tenant Routed Multicast

* Is RP External ? Is RP external to the fabric?



按前所述分別按一下Continue和Deploy。

DCNM 11.2中有哪些新功能？

- vPC光纖對等
- 基於eBGP的路由結構在頂部啟用EVPN
- 簡易光纖棕色場增強功能邊界骨幹/邊界網關骨幹PIM Bidir租戶路由多點傳送
- 使用外部DHCP伺服器的第0天/載入程式

第2天運營：

- 網路洞察資源
- 網路洞察顧問
- 適用於外部存取的IPv6支援(eth0)
- UCS-FI的VMM計算可視性
- 拓撲檢視增強功能

- 從11.0/11.1進行內嵌升級

使用DCNM從傳統vPC改為無MCT vPC:

無MCT vPC的優勢：

- 增強型雙歸屬解決方案，不會浪費物理埠
- 保留傳統vPC特徵
- 使用PIP為單一宿主終端最佳化路由

相關資訊

- Cisco DCNM LAN光纖組態設定指南11.2(1)版
https://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/11_2_1/config_guide/lanfabric/b_dcnm_fabric_lan/control.html
- 章節：VXLAN BGP EVPN交換矩陣中的邊界調配使用案例 — 多站點
https://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/11_2_1/config_guide/lanfabric/b_dcnm_fabric_lan/border-provisioning-multisite.html
- 使用vPC邊界網關的VXLAN EVPN多站點下一代DCI白皮書
https://www.cisco.com/c/en/us/products/collateral/switches/nexus-9000-series-switches/whitepaper-c11-742114.html#_Toc5275096
- 章節：DCNM應用
https://www.cisco.com/c/en/us/td/docs/switches/datacenter/sw/11_2_1/config_guide/lanfabric/b_dcnm_fabric_lan/applications.html