使用DCNM構建Nexus 9000 VXLAN共用邊界多 站點部署

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簡介

本文檔旨在說明如何使用DCNM 11.2版共用邊界模型部署Cisco Nexus 9000 VXLAN多站點部署。

拓撲



拓撲詳細資訊

DC1和DC2是運行vxlan的兩個資料中心位置;

DC1和DC2邊界網關具有與共用邊界的物理連線;

共用邊界具有外部連線(例如,網際網路);因此,VRF精簡連線將在共用邊界上終止,並且預設路由 將由共用邊界注入到每個站點中的邊界網關

在vPC中配置共用邊框(使用DCNM部署交換矩陣時需要這樣做)

邊界網關在任播模式下配置

採用元件:

運行9.3(2)的Nexus 9ks

執行11.2版的DCNM

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。如果您的網路正在作用,請確保您已瞭解任何指令可能造成的影響。

高級步驟

1)考慮到本文檔基於兩個使用vxlan多站點功能的資料中心,因此必須建立兩個簡單結構

2) 為共用邊界建立另一個簡單的交換矩陣

3)建立MSD並移動DC1和DC2

4)建立外部交換矩陣

5)建立多站點底層和重疊(適用於East/West)

6)在共用邊框上建立VRF擴展附件

第1步:為DC1建立簡易交換矩陣

• 登入到DCNM,從儀表板中選擇選項 — >「Fabric Builder」



DCNM Licenses License this copy of DCNM for each managed switch to unlock Performance Collection.



Fabric Builder Creates a managed and controlled SDN fabric.



Networks & VRFs Simple network overlay provisioning for N9K VXLAN EVPN Fabrics.



Documentation Access cisco.com from documentation on configuration, maintenance and operation.

•選擇「建立交換矩陣」選項



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

Creata Fabric	

• 接下來是提供交換矩陣名稱、模板,然後開啟多個頁籤,這些頁籤需要詳細資訊,如ASN、交換矩陣介面編號、任意鑄造網關MAC(AGM)

Add Fabric

General Replication vPC Advanced Resources Manageability Bootstrap Configuration Backup * BGP ASN 65000 0 1-4294967295 1-65535[.0-65535] * Fabric Interface Numbering unnumbered • 0 Numbered(Point-to-Point) or Unnumbered * Underlay Subnet IP Mask 30 • 0 Mask for Underlay Subnet IP Range * Link-State Routing Protocol ospf • 0 Supported routing protocols (OSPF/IS-IS) * Route-Reflectors 2 • 0 Number of spines acting as Route-Reflectors * Anycast Gateway MAC 2020.2020.aaaa • 0 Shared MAC address for all leafs (xxxx.xxxx.xxxx) NX-OS Software Image Version • • • • •	* Fabric Name :	DC1 Easy_Fabric_11	_1	•				
* BGP ASN 65000 I -4294967295 1-65535[.0-65535] * Fabric Interface Numbering unnumbered Image * Underlay Subnet IP Mask 30 Image * Link-State Routing Protocol ospf Image * Route-Reflectors 2 Image * Anycast Gateway MAC 2020.2020.aaaa Image Image Version Image Version Image Version	eneral Replicatio	on vPC	Advanced	Resources	Man	nageability	Bootstrap	Configuration Backup
 * Fabric Interface Numbering unnumbered * Underlay Subnet IP Mask 30 30<th></th><th>* BGP ASN</th><th>65000</th><th></th><th></th><th>0 1-42949</th><th>067295 1-65535[</th><th>.0-65535]</th>		* BGP ASN	65000			0 1-42949	067295 1-65535[.0-65535]
* Underlay Subnet IP Mask 30 Image * Link-State Routing Protocol ospf Image * Route-Reflectors 2 Image * Anycast Gateway MAC 2020.2020.aaaa Image Image Image Image	* Fabric Interfa	ce Numbering	unnumbered		•	Number	ed(Point-to-Point,) or Unnumbered
 Link-State Routing Protocol ospf Supported routing protocols (OSPF/IS-IS) Route-Reflectors V Number of spines acting as Route-Reflectors Anycast Gateway MAC 2020.2020.aaaa Shared MAC address for all leafs (xxxx.xxxx.xxxx) NX-OS Software Image Version If Set, Image Version Check Enforced On All Switches If Set, Image Version Check Enforced On All Switches 	* Underlay S	ubnet IP Mask	30		•	Mask fo	r Underlay Subne	t IP Range
 * Route-Reflectors 2 V Participation * Anycast Gateway MAC 2020.2020.aaaa (2020.2020.aaaa) (2020.2020.aaaaa) (202	* Link-State Ro	uting Protocol	ospf		•	Suppor	rted routing proto	cols (OSPF/IS-IS)
* Anycast Gateway MAC 2020.2020.aaaa Shared MAC address for all leafs (xxxx.xxxx)	* Ro	ute-Reflectors	2		•	Number	of spines acting	as Route-Reflectors
NX-OS Software Image Version	* Anycast	Gateway MAC	2020.2020.aaa	a		Shared	MAC address for	all leafs (xxxx.xxxx.xxxx)
) inages can be oploaded i foin control.image opload	NX-OS Software	Image Version			•] 🕐 If Set, In Images Can	nage Version Che Be Uploaded Fro	eck Enforced On All Switches. m Control:Image Upload

#交換矩陣介面(即主幹/枝葉介面)可以是「未編號」或點對點;如果使用未編號,則所需的IP地 址較少(因為IP地址是未編號環回地址)

#AGM被交換矩陣中的主機用作預設網關MAC地址;所有作為預設網關的枝葉交換機上都是相同的

• 下一步是設定複製模式

* Fabric Name :	DC1						
* Fabric Template :	Easy_Fabric_11	_1	▼				
General Replica	tion vPC	Advanced	Resources	Man	ageability	Bootstrap	Configuration Backup
* -							(Tan Ka
° F	Replication Mode	Multicast			W Replicati	ion Mode for BUN	i Traπic
* Multica	st Group Subnet	239.1.1.0/25			Multicas	t address with pre	efix 16 to 30
Enable Tenant Routed	Multicast (TRM)	For Ove	erlay Multicast Sup	port In V	XLAN Fabrics	3	
Default MDT Addres	ss for TRM VRFs	239.100.100.10	0		IPv4 Mu	lticast Address	
* Rei	ndezvous-Points	2		•	Number	of spines acting a	as Rendezvous-Point (RP)
					<u> </u>		
	* RP Mode	asm		•	Multicas	t RP Mode	
* Underlay	* RP Mode RP Loopback Id	asm 254		•	<i>Multicas</i><i>0-512</i>	t RP Mode	
* Underlay	* RP Mode RP Loopback Id Underlay Primary RP Loopback Id	asm 254		•	 Multicas 0-512 0-512, P 	t RP Mode Primary Loopback	Bidir-PIM Phantom RP
* Underlay	* RP Mode RP Loopback Id Underlay Primary RP Loopback Id Underlay Backup RP Loopback Id	asm 254			 Multicas 0-512 0-512, F 0-512, F 	t RP Mode Primary Loopback	Bidir-PIM Phantom RP Bidir-PIM Phantom RP
* Underlay Underla	* RP Mode RP Loopback Id Underlay Primary RP Loopback Id Underlay Backup RP Loopback Id y Second Backup RP Loopback Id	asm 254		V	 Multicas 0-512 0-512, F 0-512, F 0-512, S 	t RP Mode Primary Loopback allback Loopback Second Fallback L	Bidir-PIM Phantom RP Bidir-PIM Phantom RP oopback Bidir-PIM Phantom RF

#在此處選擇的複製模式可以是組播或IR入口複製;IR將以單播方式將vxlan vlan內的任何傳入 BUM流量複製到其他VTEP(也稱為頭端複製),而多點傳送模式將傳送具有外部目的地IP位址的 BUM流量(與為每個網路定義的多點傳送群組的BUM位址相同)至骨幹,且主幹會將基於外部目的 地IP位址的OIL的多點傳送複製到其他VTEP

#組播組子網 — >複製BUM流量(如來自主機的ARP請求)時需要

#如果需要啟用TRM,請選中該覈取方塊並為TRM VRF提供MDT地址。

•「vPC」的頁籤預設保留;如果備份SVI/VLAN需要任何更改,可以在此處定義這些更改

• 高級頁籤是下一部分

* Fabric Name :	DC1							
* Fabric Template :	Easy_Fabric_11	_1	•					
General Replicat	ion vPC	Advanced	Resources	Mar	ageability	Bootstrap	Configuration Backup	
* Ne	* VRF Template twork Template	Default_VRF_Ur Default_Network	niversal CUniversal	•	 Default Default 	Overlay VRF Tem Overlay Network 1	plate For Leafs Template For Leafs	
* VRF Exte	nsion Template	Default_VRF_E>	tension_Universa		Default	Overlay VRF Tem	plate For Borders	
* Network Exte	nsion Template	Default_Network	_Extension_Unive	rsa ▼	Default	Overlay Network	Template For Borders	
	Site Id	65000			Defaults to F	PN Multi-Site Supp Fabric ASN	оп (MIN:1, Max: 28147497671	0055).
* Underlay Routi	ng Loopback Id	0			0-512			
* Underlay VT	EP Loopback Id	1			0-512			
* Link-State Routin	ng Protocol Tag	UNDERLAY			Routing	Process Tag (Ma)	(Size 20)	
	* OSPF Area Id	0.0.0.0			OSPF A	Area Id in IP addres	ss format	J
Enable OSPF	Authentication	0						
OSPF Autho	entication Key ID				0-255			
OSPF AU	uthentication Key				3DES E	Encrypted		
Enable IS-	S Authentication							
IS-IS Authentication	Keychain Name				0			
IS-IS Authe	entication Key ID				0-6553	5		
IS-IS Au	thentication Key				Cisco T	ype 7 Encrypted		
* Pow	er Supply Mode	ps-redundant		۳	🕜 Default	Power Supply Mo	de For The Fabric	
	* CoPP Profile	strict		v	Fabric V provided wh	Nide CoPP Policy. en 'manual' is sele	Customized CoPP policy shou cted	ld be
Enat	le VXLAN OAM	🗹 🕜 For Ope	erations, Administra	ation, ar	nd Manageme	nt Of VXLAN Fabr	ics	
Enab	le Tenant DHCP	✓ 🕜						
	Enable BFD	0						
* Greenfield	Cleanup Option	Disable		•	Switch	Cleanup Without R	eload When PreserveConfig=	10
Enable BGP	Authentication							

#此處提到的站點ID自動填充到此DCNM版本中,該DCNM版本源自「常規」頁籤下定義的ASN

#填寫/修改其他相關欄位

• Resources頁籤是下一個需要環回、底層的IP編址方案的頁籤

* Fabric Name :	DC1								
* Fabric Template :	Easy_Fabric_11	_1	▼						
General Replicat	tion vPC	Advanced	Resources	Mana	igeabil	ity	Bootstrap	Configuration Backup	
Manual Unde	erlay IP Address	Checkin	ng this will disable	Dynamic	Underla	ay IP A	ddress Allocation	IS	
* Underlay Routi	ing Loopback IP Range	10.10.10.0/24			🕜 Тур	pically	Loopback0 IP Ad	ldress Range	
* Underlay VTEP Loc	opback IP Range	192.168.10.0/24	4		🕐 Тур	pically	Loopback1 IP Ad	ldress Range	
* Underlay RP Loc	opback IP Range	10.100.100.0/24	4		🕜 Ang	iycast d	or Phantom RP IF	^{>} Address Range	
* Underlay \$	Subnet IP Range	10.4.10.0/24			🕜 Ad	ldress i	range to assign N	lumbered and Peer Link SVI IP:	5
* Layer 2 VX	XLAN VNI Range	100144,100145	i		Ov	erlay N	Network Identifier	Range (Min:1, Max:16777214)	
* Layer 3 VX	XLAN VNI Range	1001445			Ov	verlay V	VRF Identifier Rai	nge (Min:1, Max:16777214)	
* Netwo	ork VLAN Range	144,145			? Pe	er Switc	ch Overlay Netwo	rk VLAN Range (Min:2, Max:39	67)
* v	RF VLAN Range	1445			? Per	er Switc	ch Overlay VRF V	(LAN Range (Min:2, Max:3967)	
* Subinterfa	ace Dot1q Range	2-511			? Per	r Borde	er Dot1q Range I	For VRF Lite Connectivity (Min:2	?, Max:511)
* VRF I	Lite Deployment	Manual		•	? VR	RF Lite	Inter-Fabric Coni	nection Deployment Options	
* VRF Lite \$	Subnet IP Range	10.10.33.0/24			? Ad	ldress i	range to assign F	2P DCI Links	
* VRF L	ite Subnet Mask.	30			? Ma	ask for	Subnet Range (N	/in:8, Max:31)	

#第2層VXLAN VNI範圍 — >這些是稍後將對映到VIan的VNID(將更低顯示它)

#第3層VXLAN VNI範圍 — >這些是第3層VNID,稍後還將對映到第3層VNI Vlan到Vn段

• 此處未顯示其他索引標籤;但是如果需要,請填滿其他頁籤;

Add Fabric Name: * Fabric Name: * Fabric Template: Easy_Fabric_11_1 Ceneral Replication vPC Advanced Resources Manageability Boolstrap Configuration Backup Mourly Fabric Backup Boolstrap Configuration Backup Boolstrap Configura

• 儲存後,交換矩陣生成器頁面將顯示交換矩陣(來自DCNM-> Control-> Fabric Builder

Save

Cancel

۵	Dashboard		Eabric Builder	
*	Topology		Fabric Builder creates a managed and controlled SDN fabric. Select an existing fabric below	v or def
٩	Control	٥	Create Fabric	
0	Monitor	٥		
1 °	Administration	Ø	Fabrics (1)	
G	Applications		DC1	

#此部分顯示每個結構的結構、 ASN和複製模式的完整清單

• 下一步是將交換機新增到DC1交換矩陣

第2步:將交換機新增到DC1交換矩陣

按一下上圖中的DC1,即可選擇新增交換機。

	Dashboard	← Fabric Builder: DC1
*	Topology	Actions –
٢	Control 📀	■ Tabular view
0	Monitor 📀	Ø Refresh topology
1 °	Administration >>	 Save layout Delete saved layout
Ð	Applications	Random
		Restore Fabric Re-sync Fabric
		 Add switches ✿ Fabric Settings

•提供需要匯入到DC1交換矩陣的交換機的IP地址和憑證(根據本文檔開頭列出的拓撲,DC1-VTEP、DC1-SPINE、DC1-BGW1和DC1-BGW2是DC1的一部分)

Discover Existing Sw	tches PowerOn Auto Provisioning (POAP)	
Discovery Information	Scan Details	
Seed IP	10.122.165.173,10.122.165.200,10 <i>Ex:</i> *2.2.2.20*; *10.10.10.40-60*; *2.2.2.20, 2.2.2.21*	
Authentication Protocol	MD5 V	
Username	admin	
Password		
Max Hops	10 hop(s)	
Preserve Config	no yes Selecting 'no' will clean up the configuration on switch(es)	

#由於這是緣地部署,請注意,「preserve config」選項被選為「NO」;匯入時刪除框的所有配置 ,同時重新載入交換機

#選擇「開始發現」,以便DCNM開始根據「種子IP」列中提供的IP地址發現交換機

• DCNM完成交換機發現後,IP地址以及主機名將列在清單管理中

Inve	ntory Manager	nent							\times
Disc	cover Existing Switc	hes PowerOn Au	to Provisioning	(POAP)					
Disc	covery Information	Scan Details							
← Bac	k Note	Preserve Config selection is	'no'. Switch configur	ation will be erased.					Import into fabric
							Show	Quick Filter	v V
	Name	IP Address	Model	Version	Status	Progress			
	001								
	DC1-SPINE	10.122.165.200	N9K-C933	9.3(1)	manageable				
	DC1-BGW1	10.122.165.187	N9K-C931	9.3(1)	manageable				
\checkmark	DC1-BGW2	10.122.165.154	N9K-C931	9.3(1)	manageable				
	DC1-N3K	10.122.165.195	N3K-C317	7.0(3)I4(6)	manageable				
\checkmark	DC1-VTEP	10.122.165.173	N9K-C9332C	9.3(1)	manageable				

#選擇相關交換機,然後按一下「匯入交換矩陣」

r

		Warnin manag Do you	g: All s ement, want t	witch co will be to proce	onfigurati removed ed?	on othe immed	r than iately a	fter i	impor	t.	
							ок	(Cancel		
/er	ntory Manageme	ent s PowerOn Au	uto Provisionina	(POAP)							
/er Disc Disc	ntory Manageme cover Existing Switche covery Information	s PowerOn At Scan Details	uto Provisioning	(POAP)						Import into fat	pric
/er Disc Bac	ntory Manageme cover Existing Switche covery Information	ent Sent PowerOn Au Scan Details	uto Provisioning is 'no'. Switch configure	(POAP) ation will be erased.				Show	Quick Filter	Import into fat	pric
/er Disc Bac	ntory Manageme cover Existing Switche covery Information ck Note: Pi Name	ent s PowerOn At Scan Details reserve Config selection i IP Address	uto Provisioning is 'no'. Switch configure Model	(POAP) ation will be erased. Version	Status	Progress		Show	Quick Filter	Import into fat	oric D
ver Disc Disc	ntory Manageme cover Existing Switche covery Information :k Note: Pi Name DC1 X	ent s PowerOn Au Scan Details reserve Config selection i IP Address	uto Provisioning is 'no'. Switch configure Model	(POAP) ation will be erased.	Status	Progress		Show	Quick Filter	Import into fat	pric
ver Disc Disc	ntory Manageme cover Existing Switche covery Information xk Note: Pr Name DC1 X DC1-SPINE	ent s PowerOn At Scan Details reserve Config selection i IP Address 10.122.165.200	uto Provisioning is 'no'. Switch configure Model	(POAP) ation will be erased. Version 9.3(1)	Status manageable	Progress	0%	Show	Quick Filter	Import into fat	oric C
er lisc)isc 3ac	ntory Manageme cover Existing Switche covery Information x Note: Pr Note: Pr DC1-SPINE DC1-SPINE DC1-SPINE	ent Scan Details IP Address 10.122.165.187	uto Provisioning is 'no'. Switch configure Model N9K-C933 N9K-C931	(POAP) atton will be erased. Version 9.3(1) 9.3(1)	Status manageable manageable	Progress	9% 9%	Show	Quick Filter	Import into fat	oric
/er Disc Disc Bac	ntory Manageme cover Existing Switche covery Information	PowerOn At Scan Details reserve Config selection I IP Address 10.122.165.200 10.122.165.187 10.122.165.154	uto Provisioning is 'no'. Switch configure Model N9K-C933 N9K-C931 N9K-C931	(POAP) ation will be erased. Version 9.3(1) 9.3(1) 9.3(1)	Status manageable manageable manageable	Progress	0%	Show	Quick Filter	Import into fat	oric
/er Disc Jac	ntory Manageme cover Existing Switche covery Information x Note: Pi Name DC1 DC1-SPINE DC1-SPINE DC1-SGW1 DC1-BGW2 DC1-N3K DC4-N3K	PowerOn At s PowerOn At Scan Details Image: Config selection in the selection of	uto Provisioning is 'no'. Switch configure Model N9K-C933 N9K-C931 N9K-C931 N3K-C317	(POAP) ation will be erased. Version 9.3(1) 9.3(1) 9.3(1) 7.0(3)I4(6)	Status manageable manageable manageable manageable	Progress	0%	Show	Quick Filter	Import into fat	pric

#匯入完成後,fabric builder下的拓撲可能如下所示;



#按一下一台交換機並將其與圖中的正確位置對齊,即可移動交換機



#按照需要佈局的順序重新排列交換機之後,選擇「儲存佈局」部分

• 為所有交換機設定角色



#按一下右鍵每台交換機並設定正確的角色;這裡,DC1-BGW1和DC1-BGW2是邊界網關

DC1-SPINE->將設定為role- Spine, DC1-VTEP->將設定為role-Leaf



• 下一步是儲存和部署

DCNM現在將列出交換機,並且還將預覽DCNM將推送到所有交換機的配置。

onfig Deple	oyment					
Step 1. Configu	ration Preview	Step 2. Configuration	Deployment Status			
witch Name	IP Address	Switch Serial	Preview Config	Status	Re-sync	Progress
C1-VTEP	10.122.165.173	FDO22260MFQ	301 lines	Out-of-sync	-	100%
C1-SPINE	10.122.165.200	FDO2313001T	520 lines	Out-of-sync	-	100%
C1-BGW1	10.122.165.187	FDO21412035	282 lines	Out-of-sync	-	100%
C1-BGW2	10.122.165.154	FDO20160TQM	282 lines	Out-of-sync		100%
	ſ					
			Deploy Config			
			Deploy Config			

Step 1. Configu	ration Preview	Step 2. Configuratio	n Deployment Status	GW2
Switch Name	IP Address	Status	Status Description	Progress
DC1-VTEP	10.122.165.173	STARTED	Deployment in progress.	30%
DC1-SPINE	10.122.165.200	STARTED	Deployment in progress.	23%
DC1-BGW2	10.122.165.154	STARTED	Deployment in progress.	31%
DC1-BGW1	10.122.165.187	STARTED	Deployment in progress.	29%
			Close	

#一旦成功,狀態將反映,並且交換機將以綠色顯示

Config Depl	oyment			\boxtimes
Step 1. Configu	ration Preview	Step 2. Configuration	Deployment Status	
Switch Name	IP Address	Status	Status Description	Progress
DC1-VTEP	10.122.165.173	COMPLETED	Deployed successfully	100%
DC1-SPINE	10.122.165.200	COMPLETED	Deployed successfully	100%
DC1-BGW2	10.122.165.154	COMPLETED	Deployed successfully	100%
DC1-BGW1	10.122.165.187	COMPLETED	Deployed successfully	100%
			Close	



步驟3:網路/VRF的配置

•網路/VRF的配置

#選擇DC1 Fabric(從右上下拉選單中),Control > VRFs



#接下來是建立VRF

/RFs		
VR F Name A VRF ID	Status	
VF Hame VFF ID	334114 ¹	Create VRF VRF Information VRF II 1001445 VRF Templat VRF Templat VRF Templat VRF Extension_Universal VRF Profile VRF VIan Name VRF VIan Name VRF Description
		Create VRF

11.2 DCNM版本自動填充VRF ID;如果為「Different」,請鍵入所需的名稱,然後選擇「Create VRF」

#此處使用的第3層VNID為1001445

• 下一步是建立網路

Network Name	 Network ID 	VRF Name	IPv4 Gateway/Subnet	IPv6 Gateway/Prefix	Status	VLAN ID				
data available										
					_					
					Create Netwo	ork				
					 Network In 	formation				
						* Network ID	100144	100114		
						* VRF Name	tenant-1	100144 ¥	+	
					* Not	Layer 2 Only	Default Net	work Universal		
					* Netw	ork Extension	Default_Net	work_Extension_Univer V		
						VLAN ID	144		Propose	VLAN
					Network P	rofile				
					Generate Multi	cast IP ()Ple	ase click on	y to generate a New Multicas	Group Addr	ess and overide the default value!
					General	IPv4 Catawa	w/NotMask	172 16 144 254/24		Paramole 192.0.2.1/24
					Advanced	IPv6 Gate	way/Prefix	172.10.194.234(24		example 2001:db8::1/64
							Vlan Name			If > 32 chars enable:system vian long-nable:
						Interface D	Description			0 69.0216
						IPv4 Secon	ndary GW1			example 192.0.2.1/24
						ID. A Control				A avampio 102.0.2.104

#提供網路ID(即第2層Vlan的相應VNID)

#提供SVI應加入的VRF;預設情況下,DCNM 11.2將VRF名稱填充為先前建立的名稱;根據需要進 行更改

Vlan ID將是對映到此特定VNID的第2層VL

IPv4 Gateway->這是將在SVI上配置的任播網關IP地址,對交換矩陣內的所有VTEP都是相同的

• Advanced Tab具有需要填充的額外行,例如;使用DHCP中繼;

 Network Information
* Network ID 100144
* Network Name MyNetwork_100144
* VRF Name tenant-1 VRF Name +
Layer 2 Only
* Network Template Default_Network_Universal
* Network Extension Template
VLAN ID 144 Propose VLAN
 Network Profile Generate Multicast IP OPlease click only to generate a New Multicast Group Address and overide the default value! General ARP Suppression OP Read-only per network, Fabric-wide setting Multicast Group 239.1.1.0 DHCPv4 Server 1 DHCPv4 Server 2 DHCPv4 Server 2 DHCPv4 Server VRF Coopback ID for DHCP Relay IP DHCPv4 Server VRF Coopback ID for DHCP Relay IP Max:10231

#填寫欄位後,按一下「建立網路」。

#建立需要成為此交換矩陣一部分的任何其他網路;

•目前,VRF和網路在DCNM中剛剛定義;但並未從DCNM推送到交換矩陣中的交換機。可以使 用以下命令進行驗證

Netwo	rk / VRF Selection Net	twork /	VRF Deployment					
Netw	orks							_
+								
	Network Name		Network ID	VRF Name	IPv4 Gateway/Subnet	IPv6 Gateway/Prefix	Status	VLAN ID
	MyNetwork_100144		100144	tenant-1	172.16.144.254/24		NA	144
	MyNetwork_100145		100145	tenant-1	172.16.145.254/24		NA	145
								J

#如果沒有部署到交換機,則狀態將為「不適用」。由於這是一個多站點並且涉及邊界網關,因此下 面將討論網路/VRF的部署。

第4步:對DC2重複相同步驟

- 現在DC1已完全定義,也將對DC2執行相同的過程
- 完全定義DC2後,它如下所示



第5步:為共用邊界建立簡單的交換矩陣

- •在此建立另一個簡單交換矩陣,該交換矩陣將包括vPC中的共用邊框
- •請注意,通過DCNM部署時的共用邊界應配置為vPC,否則在DCNM上執行「重新同步」操作 後,交換機間鏈路將關閉
- 共用邊界中的交換機將以「邊界」角色設定

Actions - + - E Tabular Vew Image: Tabular Vew <t< th=""></t<>
DC1 DC2

VRF數量也像以前一樣用於DC1和DC2交換矩陣

#共用邊界上不需要網路,因為共用邊界將沒有任何第2層Vlan/VNID;共用邊界不是從DC1到DC2的 任何東/西流量的隧道終端;只有邊界網關在東/西DC1的VXLAN封裝/解除封裝方面起作用<>DC2流 量

第6步 — 建立MSD和移動DC1和DC2交換矩陣

轉到Fabric Builder並建立新的交換矩陣並使用模板 — > MSD_Fabric_11_1

Fabric Builder Fabric Builder Fabric Builder Creates a managed and controlled SDN fabric. Select an existing fabric b Create Fabric	elow or define a new VXLAN fabric, add switches using Power On Auto Provisioning (POAP), set the roles of the switches and deploy settings to devices.
Fabrics (3) DC1	Ad Fabric X Pir state Weitstein Boot

* Fabric Name :	MSD			
* Fabric Template :	MSD_Fabric_11	_1		
General DCI	Resources			
DCI S	ubnet IP Range	10.10.1.0/24	Address range to assign P2P DCI Links	
Sub	net Target Mask	30	Target Mask for Subnet Range (Min:8, Max:31)	
* Multi-: Depl	Site Overlay IFC oyment Method	Centralized_To_Route_Server	Manual, Auto Overlay EVPN Peering to Route Servers, Auto Overlay EVPN Direct Peering to Border Gateways	
* Multi-Site R	oute Server List	10.10.100.1,10.10.100.2	Multi-Site Router-Server peer list, e.g. 128.89.0.1, 128.89.0.2	
* Multi-Si	te Route Server BGP ASN List	65001,65001	1-4294967295 1-65535[.0-65535], e.g. 65000, 65001	
Multi-Si Auto D	ite Underlay IFC eployment Flag			
			Save	Cancel

#請注意,多站點重疊IFC部署方法必須是「**centralized_To_Route_Server**」;在這裡,共用邊界被 視為路由伺服器,因此從下拉選單使用此選項

#在「多站點**路由伺服器清單**」中;這裡,找出共用邊界上Loopback0(即路由環回)的環回IP地址 ,並填寫

ASN是位於共用邊界上的路由器(如需更多詳細資訊,請參閱本文檔頂部的圖表);在本文檔中 ,共用邊界在同一個ASN中配置;相應地填寫

•下一個頁籤是提供多站點環回IP範圍的位置,如下所示

Add Fabric			×
* Fabric Name : MSD * Fabric Template : MSD) _Fabric_11_1		
General DCI Reso	ources		
* Multi-Site Routing Loo	Range 10.222.222.0/24	Typically Loopback100 IP Address Range	
			Save Cancel

#填寫所有欄位後,按一下「儲存」按鈕,將使用模板 — > MSD建立一個新的交換矩陣

#下一步是將DC1和DC2交換矩陣移至此MSD

dono Danger. mob	
one -	
- = &	
Tabular view	
Refresh topology	
Save layout	
Delete saved layout	
andom •	ve Fabric
	ease note that it may take a few minutes if there is
Fabric Settings	Selected 0 /
Move Fabrics	Fabric Name A Fabric Sta
) DC1 standalone
) DC2 standalone
	Charad Dordore standalone

#交換矩陣移動後,它如下所示



#完成後,點選「save&Deploy」按鈕,該按鈕會將所需配置推送到邊界網關,只要涉及多站點

Atoms +	Actors	Notes *	 Fabric Builder: MSD 							
Config Deployment More Table Mor	Config Deployment Pagens Color 10 10 10 10 10 10 10 10 10 10 10 10 10	tents faces tents tents	Actions -							
			+ - :: @							
Anuma toxocore B Anuma toxocore Config Deployment X Config Deployment X toxocore Beg 2. Configuration Exployment Toxoco Config Deployment X Beg 2. Config Deployment Second Second	Anima taxaarii Anima taxaariii Anima taxaariiii Anima taxaariii Anima taxaariii Anima taxaariii Anima taxaariii Anima taxaariii Anima taxaariii Anima taxaariiii Anima taxaariiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	O Anum support X M International Statement X Outrom seed fraget.** Togs 1. Configuration Pressive M International Statement Maint Statement O Anum Statement Maint Statement Outrom seed fraget.** Maint Statement O Anum Statement Maint Statement Outrom seed fraget.** Maint Statement Outrom seed fraget.** Maint Statement Outrom seed fraget.** Statement	Tabular view							
B dise trace: Config Deployment: X V bies model track: Trace: Trace: X O fram: Bigs 1. Configuration Deployment trace: South Security 5. O fram: Bigs 1. Configuration Deployment trace: Deployment trace: O fram: Bigs 1. Configuration Deployment trace: Deployment trace: O fram: Bigs 1. Configuration Deployment trace: Deployment trace: O fram: Deployment trace: Deployment trace:	If thermout X X Owns work low.x They 5. Configurement Property Bits (S) If thermout low.x They 5. Configurement Property Bits (S) If there for the second to	Config Deployment Config Deployment	Ø Refresh topology							
None Forms Particle Statute Read Description Program @ Anno. Informs @ Anno. Informs 0.000011 4012 401440 0.000011 4012 401440 Program @ Anno. Informs 0.000011 4012 401440 0.000011 4012 401440 0.0000114012 401440 Program @ Anno. Informs 0.000011 4012 401440 0.0000114012 401440 0.000011401240 Program Displayment Repres @ Anno. Informs 0.000011 4012 401440 0.000011401240 0.0000140 Displayment Repres	X Dates send lipst 4 Outcome lipst 4 P Faces library B Stands Send Pack B Stands Send Pack D Stands Send Pack B Stands Sen	Marka mark Forgetable frame Tagetable frame Tagetable frame International frame International frame International frame International frame International frame International frame Interna	10 Save layout	Config Dep	loyment			:	<	
Description Big 1. Configuration Depayment Units Figure 1 © Faces External PAddenses Reads Reads Figure 2 © Faces External PAddenses Reads Reads Reads Reads © Faces External PAddenses Reads	Column sear fund. * Exp 2 Columnation Engineered Italia Program * Anno: Sampa ************************************	Destrum avaid failed: * Togs: Configuration Destruments Togs: Configuration Destruments Process • Same: Similary • Sa	X Delete saved layout							
Balanci Instrugi P Address Rature P Address Rature Progress © France, Sentral DC2-6002 V10.22 Mold Statistics Dougswent in progress. Compared in progress. © Mone Folces DC2-6002 V10.22 Mold Statistics Statistics Dougswent in progress. © V1-6002 V10.22 Mold Statistics Statistics Dougswent in progress. Compared in progress. © V1-6002 V10.22 Mold Statistics Dougswent in progress. Compared in progress.	Battle Name # Address Battle Progress © Fance Siming CQ_400/2 V122 MIS M8 Stattle Dogsyment in progress G @ Move Fances CQ_400/2 V122 MIS M8 Stattle Dogsyment in progress G CV:60/02 V122 MIS M8 StattleTD Dogsyment in progress G DCI:60/02 V122 MIS M8 StattleTD Dogsyment in progress G DCI:60/02 V122 MIS M8 StattleTD Dogsyment in progress G	District Statute P Address Entract Progress Q Statute Statutes N 122 Mis Mark Statute Description Progress Q Statute Statutes Cl2 Solog N 122 Mis Mark Statutes Entract Q Statute Statutes Cl2 Solog N 122 Mis Mark Statutes Entract Entract Cl2 Solog N 122 Mis Mark Statutes Entract Entract Entract Cl2 Solog N 122 Mis Mark Statutes Entract Entract Entract Cl2 Solog N 122 Mis Mark Statutes Entract Entract Entract	Custom saved layout +	Step 1. Config	ation Preview	Step 2. Configurati	on Depkoyment Status			
Ø fans fange Ø 102 101 44 Ø 102 101 44 Ø 104100 Ø 10410 Ø 10410 Ø 10410 Ø 1041	• Fance Sampy	© Same: Same: State: Same: State: State: Same: State: Same: S		Switch Name	IP Address	Status	Status Description	Progress		
Children DC2 Advint 15 323 50, 159 Doppment is program. Cold Advint CV-5007 51 323 50, 159 Doppment is program. Cold Advint	Image: Second	20 Move Rescu COLLADORT N1.021 MILL Copyreptient is program. Coll 20 Move Rescu V1.021 MILL StateTall Copyreptient is program. Coll 20 K14 Move Rescu V1.021 MILL StateTall Copyreptient is program. Copyreptient is program.	O Fabric Settings	DC2-8GW2	10.122.165.188	STARTED	Deployment in progress.	-	1	
CC140007 10 10 20 14 14 1 51770 Copyrent a program C	CCL4602 N10218154 SNATED Doppment program S	CC-450/2 N3 122 V85 V4 STANTED Dopument a propriss Companyment a propriss Companyment a propriss Companyment a proprism Companyment	8 Move Fabrice	DC2-8GW1	10.122.165.189	STARTED	Deployment in progress.	<u></u>		
TO SALARY IN 122 MARKET AVAILABLE AV	DC1400H 10.122 405 HF STATED Datapaset a program	CCL4GUNT 10 122 ND: 127 STATED Copinyment is progress		D01-80W2	10.122.165.154	STARTED	Deployment in progress.	<u>22</u>		
				DC1-BOW1	10.122.165.187	STARTED	Deployment in progress.			
							Ome			
						_		Laur arrive		

第7步:建立外部交換矩陣

#建立外部交換矩陣並將外部路由器新增到其中,如下所示;

* Fabric Name : * Fabric Template :	External_Fabric_11_1	
General Advance	ed Resources DCI Configuration Backup Bootstrap	
Fabri	* BGP AS # 65100 (2) 1-4294967295 1-65535[.0-65535] fic Monitor Mode (2) (2) If enabled, fabric is only monitored. No configuration will be deployed	5]

#命名交換矩陣並使用模板 — > "External_Fabric_11_1";

#提供ASN

#最後,各種結構將如下所示

Actions – + – 33 SS
 Tabuar view Refracts topology Save topol Cuttom saved topol Pastore Fabric Re-sync Fabric Add switches Fabric Setrings
SHARERDE1 SHARERDER2

第8步:用於實現BGW之間環回可達性的eBGP底層協定(以及共 用邊界之間的iBGP)

#共用邊界通過邊界網關和通往外部路由器的VRF-LITE連線運行eBGP l2vpn evpn

#使用環回形成eBGP I2vpn evpn之前,需要確保環回可以通過某種方法到達;在本示例中,我們使用從BGW到「共用」邊界的eBGP IPv4 AF,然後通告環回以進一步形成I2vpn evpn鄰居關係。



#選擇MSD交換矩陣後,切換到「表格檢視」

 Fabric Builder: MSD 										
Switches	Links									
+										

Link Management	- Add Link			×
* Link Type	Inter-Fabric			
* Link Sub-Type	MULTISITE UNDERLAY	r		
* Link Template	ext_multisite_underlay_setup_'	•		
* Source Fabric	DC1	-		
* Destination Fabric	Shared-Borders	-		
* Source Device	DC1-BGW1	-		
* Source Interface	Ethernet1/2			
* Destination Device	SHARED-BORDER1	-		
* Destination Interface	Ethernet1/1	•		
Advanced		* IP Address/Mask * BGP Neighbor IP * BGP Neighbor ASN * BGP Maximum Paths * Routing TAG	10.4.10.1/30 10.4.10.2 65001 1 54321	IP address with mask (e.g. Neighbor IP address Neighbor BGP Autonomou Maximum number of IBGP, Routing tag associated with
	4			Save

#選擇「交換矩陣間」並使用「Multisite_UNDERLAY」

#我們正在嘗試與共用邊界路由器建立IPv4 BGP鄰居關係;因此,請相應地選擇交換機和介面。

#請注意,如果CDP檢測到從DC1-BGW1到SB1的鄰居,則只需在此提供本節中的IP地址,並且執 行「儲存和部署」後,將在相關介面上有效配置IP地址

4	Fabric Builder: MSD											
Sv	itches	Links										
										Selected 1 / Total 24 💭		
+										Show All 🔻		
		Fabric Name	Name		Policy	Info		Admin State	Oper State			
1		DC1	DC1-VTEP~Ethernet1/2DC1-N3									
-		DC1<->Shared-Bor	DC1-BGW1~loopback0SHARED	Config Dep	oloyment				×			
4		DC1<->Shared-Bor	DC1-BGW1~loopback0SHAREE						Config Preview - Switch 10.122.165.187	×		
4		DC1<->Shared-Bor	DC1-BGW2~loopback0SHAREE		uration Preview							
4		DC1<->Shared-Bor	DC1-BGW2~loopback0SHAREE	switch Name	IP Address	Switch Serial	Preview Goot	lig Status	Pending Config Side-by-side Comparison			
(DC2	DC2-VTEP~Ethernet1/1DC2-N3	DC1-BGW1	10.122.165.187	FDO21412035	21 lines	Out-of-sync	interface ethernet1/2			
3		DC2<->Shared-Bor	DC2-BGW1~loopback0SHARED	DC1-BGW2	10.122.165.154	FDO20160TQM	0 lines	In-Sync	no switchport ip address 10.4.10.1/30 tag 54321			
8		DC2<->Shared-Bor	DC2-BGW1~loopback0SHAREE	DC2-BGW2	10.122.165.188	FD022273T3B	0 lines	In-Sync	evpn multisite dci-tracking mtu 9216			
9		DC2<->Shared-Bor	DC2-BGW2~loopback0SHAREE	DC2-BGW1	10.122.165.189	FDO21412HUV	0 lines	In-Sync	router bp 65000			
10		DC2<->Shared-Bor	DC2-BGW2~loopback0SHAREE						maximum-paths 64 maximum-paths 64			
1		DC1	DC1-VTEP~Ethernet1/1DC1-SP						exit address-family inv6 unicast			
			DC1-BGW1~Ethernet1/3DC1-SF						maximum-paths 64 maximum-naths (hen 64			
1:		DC 1<->Shared-Bor	DC1-BGW1~Ethernet1/2SHARE						exit reighor 10.4.10.2			
~	-0	Dc1<->Shared-Bor	DC1-BGW1~Ethernet1/1SHARE						remote-as 65001 update-source Ethernet1/2			
18		DC1<->Shared-Bor	DC1-BGW2~Ethernet1/3SHARE						address-family ipv4 unicast next-hop-self			
16		DC1	DC1-BGW2~Ethernet1/2DC1-SF						configure terminal			
17		DC1<->Shared-Bor	DC1-BGW2~Ethernet1/1SHARE									
18		DC2	DC2-VTEP~Ethernet1/3DC2-SP							4		
19		DC2<->Shared-Bor	DC2-BGW1~Ethernet1/2SHARE									
20		DC2<->Shared-Bor	DC2-BGW1~Ethernet1/3SHARE				Deploy Confi	ο d				
2		DC2	DC2-BGW1~Ethernet1/1DC2-SF									
24		DC2	DC2-BGW2-Ethernet1/1DC2-SP	INE~Ethernet	int_intra_fabric_unnum	_link_11_1 Link	Present	Up:Up	Up:Up			

#選擇「儲存並部署」後,將為DC1-BGW1傳播所需的配置行;選擇「共用邊界」結構後,必須執 行相同的步驟。

4	Fabric Builder: Shared-Borders												
S	vitches	Links											
									Selected 0 / Total 23 💢 🕴				
-									Show All 🔻				
		Fabric Name	Name	Policy		Info	Admin State	Oper State					
		DC1<->Shared-Bor	DC1-BGW1~loopback0SHARED										
	2	DC1<->Shared-Bor	DC1-BGW1~loopback0SHARED	Config Deployment					X				
		DC1<->Shared-Bor	DC1-BGW2~loopback0SHAREE		Class C. Casfer								
	:	DC1<->Shared-Bor	DC1-BGW2~loopback0SHARED	Step 1. Consignation Preview									
	5	DC2<->Shared-Bor	DC2-BGW1~loopback0SHARED	Switch Name	IP Address	Switch Serial	Preview Config	Status	De rues D				
	5	DC2<->Shared-Bor	DC2-BGW1~loopback0SHARED	SHARED-BORDER1	10.122.165.198	FD022141QDG	60 lines	Out-of-svr	Config Preview - Switch 10.122.165.198				
		DC2<->Shared-Bor	DC2-BGW2~loopback0SHARED	SHARED-BORDER2	10.122.165.178	FD0221314QC	40 lines	Out-of-svr					
		DC2<->Shared-Bor	DC2-BGW2~loopback0SHARED						Pending Config Side-by-side Comparison				
	•	DC1<->Shared-Bor	DC1-BGW1~Ethernet1/2SHARE						interface ethernet1/1 *				
1		DC1<->Shared-Bor	DC1-BGW1~Ethernet1/1SHARE						no switchport ip address 10.4.10.2/30 tag 54321				
1		DC1<->Shared-Bor	DC1-BGW2~Ethernet1/3SHARE						mtu 9216 no shutdown				
1	2	DC1<->Shared-Bor	DC1-BGW2~Ethernet1/1SHARE						router bgp 65001 address-family ipv4 unicast				
1	•	DC2<->Shared-Bor	DC2-BGW1~Ethernet1/2SHARE						maximum-paths 64 maximum-paths ibgp 64				
1	•	DC2<->Shared-Bor	DC2-BGW1~Ethernet1/3SHARE						exit address-family ipv6 unicast				
1	5	Shared-Borders <->	SHARED-BORDER1~Ethernet1/4						maximum-paths 64 maximum-paths ibgp 64				
1	5	Shared-Borders<->	SHARED-BORDER1~Ethernet1/5						exit neighbor 10.4.10.1				
1		Shared-Borders<->	SHARED-BORDER1~Ethernet1/4-						remote-as esono update-source Ethernet1/1				
1	3	Shared-Borders	SHARED-BORDER2~Port-channe						eores-remily prv unicest next-hop-self				
1	•	Shared-Borders<->	SHARED-BORDER2~Ethernet1/5						exit exit 10.10.10.1				
2		Shared-Borders	SHARED-BORDER2~Ethernet1/10			Deploy Cor	rha -		remote-as 65000 undata surver Tombarkin				
2		Shared-Borders	SHARED-BORDER2~Ethernet1/5										

#在CLI中,可使用以下命令驗證相同內容;

DC1-BGW1# show ip bgp sum BGP summary information for VRF default, address family IPv4 Unicast BGP router identifier 10.10.10.1, local AS number 65000 BGP table version is 11, IPv4 Unicast config peers 1, capable peers 1 2 network entries and 2 paths using 480 bytes of memory BGP attribute entries [1/164], BGP AS path entries [0/0] BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd 10.4.10.2 4 65001 6 7 11 0 0 00:00:52 0 #請注意,「save&Deploy」也必須在DC1交換矩陣上完成(選擇DC1的下拉框,然後執行同樣操作),以便相關IP編址、BGP配置傳播到DC1(邊界網關)中的交換機;

#此外,多站點底層必須從DC1-BGW、DC2-BGW建立到共用邊界;因此,必須同時執行上述相同 步驟。

#最後,共用邊界將與DC1和DC2中的所有BGW建立eBGP IPv4 AF鄰居關係,如下所示;

SHARED-BORDER1# sh ip bgp sum												
BGP summary info	BGP summary information for VRF default, address family IPv4 Unicast											
BGP router ident	BGP router identifier 10.10.100.1, local AS number 65001											
BGP table version	on	is 38	, IPv4 Ur	nicast con	fig peers	з4,	capal	ole peers	4			
18 network entre	Les	and 2	20 paths	using 456	0 bytes o	of me	emory					
BGP attribute er	ıtı	cies [2	2/328], E	BGP AS pat	h entries	s [2/	12]					
BGP community er	ntı	cies [()/0], BGH	clusterl	ist entri	les [0/0]					
ber community energies [0/0], ber crusterrist energies [0/0]												
Neighbor	v	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd			
10.4.10.1	4	65000	1715	1708	38	0	0	1d03h	5			
10.4.10.6	4	65000	1461	1458	38	0	0	1d00h	5			
10.4.10.18	4	65002	1459	1457	38	0	0	1d00h	5			
10.4.10.22 4 65002 1459 1457 38 0 0 1d00h 5												
SHARED-BORDER2#	sł	ı ip b <u></u>	yp sum									
BGP summary info	orr	nation	for VRF	default,	address f	Eamil	y IPv	v4 Unicast	:			
BGP router ident	:if	Eier 10	0.10.100	2, local	AS number	650	01					
BGP table version	on	is 26	, IPv4 Ur	nicast con	fig peers	з4,	capab	ole peers	4			
18 network entre	Les	and 2	20 paths	using 456	0 bytes o	of me	emory					
BGP attribute en	ntı	cies [2	2/328], E	BGP AS pat	h entries	5 [2/	12]					
BGP community er	ntı	cies [()/0], BGH	clusterl	ist entri	ies [0/0]					
Neighbor	v	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd			
10.4.10.10	4	65000	1459	1458	26	0	0	1d00h	5			
10.4.10.14	10.4.10.14 4 65000 1461 1458 26 0 0 1d00h 5											
10.4.10.26 4 65002 1459 1457 26 0 0 1d00h 5												
10.4.10.30	4	65002	1459	1457	26	0	0	1d00h	5			

#以上是建立從BGW到共用邊界的l2vpn EVPN鄰居關係的先決條件(請注意,它不是必須使用 BGP;交換環回字首的任何其他機制都可以);最後,基本要求是所有BGW應可到達所有環回(共用邊 界,BGW)

#請注意,需要在共用邊界之間建立iBGP IPv4 AF鄰居關係;截止到今天,DCNM沒有使用模板/下 拉在共用邊界之間構建iBGP的選項;為此,必須完成自由形式配置,如下所示;

← Fabric Builder: Shared-Borders											
Switches Links											
+ 🕑 🗶 View/Edit Policies Manage Interfaces History Deploy											
Name	IP Address	Role	Serial Number	Fabric Name							
1 🥑 🦪 SHARED-BORD	10.122.165.178	border	FD0221314QC	Shared-Borders							
2 🗌 🎒 SHARED-BORD	10.122.165.198	border	FDO22141QDG	Shared-Borders							

View/Edit Policies for SHARED-BORDER1 (FDO22141QDG)											
+	View	View All Push Cor	nfig Current Sw	ritch Config		Selected Show Quick Filter	1 / Total 1 🦪 🗸	* • 7			
	Template fre X	Policy ID	Fabric Name	Serial Number	Editable 🔻	Entity Type	Entity Name				
	switch_freeform	POLICY-78700	Shared-Borders	FDO22141QDG	true	SWITCH	SWITCH				
Edit F Ent * Prio	Policy ID: POLICY-78700 ity Type: SWITCH prity (1-1000): 500 General		Template Name: swi Entity Name: SW	tch_freeform ITCH							
Varia	ibles:	* Switch Freeform Config	route-map direct router bgp 65001 address-family ipv redistribute direct neighbor 10.100.1 remote-as 65001 address-family ip next-hop-self	4 unicast t route-map direct 00.2 vv4 unicast			H	•			
	4				Save	Push Config	Cancel				

#查詢在共用邊界的備份SVI上配置的IP地址;如上所示,Shared-border1交換機上會新增 freeform,並且指定的iBGP鄰居是Shared-border2(10.100.100.2)的iBGP鄰居

#請注意,在DCNM中提供自由形式的配置時,請在每個命令後提供正確的間距(保留偶數空格;即 在路由器bgp65001後,提供兩個空格,然後發出neighbor <>命令等)

#還確保在BGP或其他形式中為直接路由(環迴路由)執行重分發直接通告以通告環回;在上方示例中,建立路由對映直接以匹配所有直接路由,然後在IPv4 AF BGP內完成redistribute direct

#從DCNM中「儲存和部署」配置後,iBGP鄰居關係的形成如下所示;

SHARED-BORDER1	# sł	ı ip bo	gp sum										
BGP summary in:	GP summary information for VRF default, address family IPv4 Unicast												
BGP router idea	GP router identifier 10.10.100.1, local AS number 65001												
BGP table version is 57, IPv4 Unicast config peers 5, capable peers 5													
18 network entries and 38 paths using 6720 bytes of memory													
GP attribute entries [4/656], BGP AS path entries [2/12]													
BGP community	BGP community entries [0/0], BGP clusterlist entries [0/0]												
Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	Stat	e/Pfx	Rcd		
10.4.10.1	4	65000	1745	1739	57	0	0	1d04h	5				
10.4.10.6	4	65000	1491	1489	57	0	0	1d00h	5				
10.4.10.18	4	65002	1490	1487	57	0	0	1d00h	5				
10.4.10.22	4	65002	1490	1487	57	0	0	1d00h	5				
10.100.100.2	4	65001	14	6	57	0	0	00:00:16	18 #	iBGP	neighborship	from	

#下一步是構建多站點覆蓋;

第9步:構建從BGW到共用邊界的多站點重疊

#請注意,此處共用邊界也是路由伺服器

#選擇MSD,然後轉到「表格檢視」,可以在其中建立新連結;從這裡開始,必須建立一個新的多 站點重疊鏈路,並且相關IP地址必須提供正確的ASN,如下所示;必須對所有l2vpn evpn鄰居(從 每個BGW到每個共用邊界)執行此步驟

Ľ	aunic	Builder, MSD					
Swite	hes:	Links		Link Management	t - Add Link		×
+				* Link Type	Inter-Fabric	•	
U		Eabric Name	Name	* Link Sub-Type	MULTISITE_OVERLAY	•	
		Pablic Halle		* Link Template	ext_evpn_multisite_overlay_s	se 🔻	
1		DC1	DC1-VTEP~Enemen/2DC1-N3K-Ethemen/1	* Source Fabric	DC1	•	
2		DC1<->Shared-Bor	DC1-BGW1~loopback0SHARED-BORDER2~Loopback0	* Destination Fabric	Shared-Borders	•	
3		DC1<->Snared-Bor	DC1-BGW1~loopback0SHARED-BORDER1~Loopback0	* Source Device	DC1-BGW1	•	
4		DC1<->Shared-Bor	DC1-BGW2~loopback0SHARED-BORDER2~Loopback0	* Source Interface	Loopback0	•	
5		DC1<->Shared-Bor	DC1-BGW2~loopback0SHARED-BORDER1~Loopback0	* Destination Device	SHARED-BORDER1	•	
6		DC2	DC2-VTEP~Ethernet1/1DC2-N3K~Ethernet1/1/1	* Destination Interface	Loopback0	•	
7		DC2<->Shared-Bor	DC2-BGW1~loopback0SHARED-BORDER2~Loopback0				
8		DC2<->Shared-Bor	DC2-BGW1~loopback0SHARED-BORDER1~Loopback0	Link Profile			
9		DC2<->Shared-Bor	DC2-BGW2~loopback0SHARED-BORDER2~Loopback0	General	* BGB Local ASN	65000	BGP Local Autonomous System Number
10		DC2<->Shared-Bor	DC2-BGW2~loopback0SHARED-BORDER1~Loopback0		* Source IB Address	10.10.10.1	Source IPv4 Address for BGP EVPN Peering
11		DC1	DC1-BGW1~Ethernet1/3DC1-SPINE~Ethernet1/3		Source IP Address	10.10.10.1	Destination IDv/ Address for BCD EV/NY Comp
12		DC1	DC1-BGW2~Ethernet1/2DC1-SPINE~Ethernet1/2		Destination IP Addr	10.10.100.1	Costination in PV4 Address for DOF EVEN Peeling
13		DC1	DC1-VTEP~Ethernet1/1DC1-SPINE~Ethernet1/1		BGP Neighbor ASN	65001	g BGP Neighbor Autonomous System Number
14		Shared-Borders<->	SHARED-BORDER2~Ethernet1/4DC2-BGW2~Ethernet1/4				
15		Shared-Borders<->	SHARED-BORDER1~Ethernet1/4DC2-BGW2~Ethernet1/2		\square		
16		DC2	DC2-VTEP~Ethernet1/3DC2-SPINE~Ethernet1/3				
17		DC2	DC2-BGW2~Ethernet1/1DC2-SPINE~Ethernet1/1				
18		DC2	DC2-BGW1~Ethernet1/1DC2-SPINE~Ethernet1/2				
19		Shared-Borders<->	SHARED-BORDER1~Ethernet1/3DC2-BGW1~Ethernet1/2	4			
20		Shared-Borders<->	SHARED-BORDER1~Ethernet1/2DC1-BGW2~Ethernet1/3				
21		DC1<->Shared-Bor	DC1-BGW1~Ethernet1/2SHARED-BORDER1~Ethernet1/1				
22		Shared-Borders<->	SHARED-BORDER2~Ethernet1/1DC1-BGW1~Ethernet1/1				
23		Shared-Borders<->	SHARED-BORDER2~Ethernet1/3DC2-BGW1~Ethernet1/3				
24		Shared-Borders<->	SHARED-BORDER2~Ethernet1/2DC1-BGW2~Ethernet1/1	e			Save

#以上是一個例子;對所有其他多站點重疊連結執行相同操作,最後CLI如下所示;

SHARED-BORDER1# sh bgp l2vpn evpn summary BGP summary information for VRF default, address family L2VPN EVPN BGP router identifier 10.10.100.1, local AS number 65001 BGP table version is 8, L2VPN EVPN config peers 4, capable peers 4 1 network entries and 1 paths using 240 bytes of memory BGP attribute entries [1/164], BGP AS path entries [0/0] BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.10.10.1	4	65000	21	19	8	0	0	00:13:52	0
10.10.10.2	4	65000	22	20	8	0	0	00:14:14	0
10.10.20.1	4	65002	21	19	8	0	0	00:13:56	0
10.10.20.2	4	65002	21	19	8	0	0	00:13:39	0

SHARED-BORDER2# sh bgp l2vpn evpn summary BGP summary information for VRF default, address family L2VPN EVPN BGP router identifier 10.10.100.2, local AS number 65001 BGP table version is 8, L2VPN EVPN config peers 4, capable peers 4 1 network entries and 1 paths using 240 bytes of memory BGP attribute entries [1/164], BGP AS path entries [0/0] BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.10.10.1	4	65000	22	20	8	0	0	00:14:11	0
10.10.10.2	4	65000	21	19	8	0	0	00:13:42	0
10.10.20.1	4	65002	21	19	8	0	0	00:13:45	0
10.10.20.2	4	65002	22	20	8	0	0	00:14:15	0

步驟10:在兩個站點上部署網路/VRF

#當我們完成多站點底層和重疊後,下一步是在所有裝置上部署網路/VRF;

#從交換矩陣上的VRF開始 — > DC1、DC2和共用邊界。





#選擇VRF檢視後,按一下「繼續」;這將列出拓撲中的裝置

#由於VRF必須部署到多個交換機(包括邊界網關和枝葉),請選中最右側的覈取方塊,然後選擇同時具有相同角色的交換機;如;一次可以選擇DC1-BGW1和DC1-BGW2,然後儲存兩台交換機;之後,選擇適用的枝葉交換機(此處是DC1-VTEP)



#如上所示,當選擇「部署」選項時,所有先前選擇的交換機都將開始部署,並且如果部署成功,最 終變為綠色。

#部署網路必須執行相同的步驟;



#如果建立了多個網路,請記住在部署之前導航到後續頁籤以選擇網路

Network / VRF 1	Selection Network / VR	# Depkyment					
Fabric Name Network(s).3	r DC1 Iglected						
	Network Extens	ion Attachm	ent - Attach ext	ensions for given switch(es	;)		8
	Fabric Name: DC1						
	Deployment Option	5					
	Select the role and citcle on	te cel u eth ant ann ch	arden				Steed Bodes
	MyNetwork_1001	VLAN	k_100145 Extend	Interfaces	CLI Freeform	Status	
	DC1-BQW1	144	MULTISITE	Applicable to BOW Leaf - VPC only	Freeform config)	NA	
	☑ 0C1-8GW2	144	MULTISITE	Applicable to BOW Leaf - VPC only	Freeform config)	NA	
		J					
							DC1-BGW1 DC7-BGW2
						Save	

#狀態現在會從「NA」變為「DEPLOYED」,可以使用下面的交換機CLI驗證部署

DC1-VTEP#	‡ sh nve v	ni					
Codes: CI	? - Contro	l Plane DP	- Data	Plan	e		
UC	C - Unconf	igured SA	- Supp	ress	ARP		
St	J - Suppre	ss Unknown Unicas	t				
Xc	conn - Cro	ssconnect					
MS	S-IR - Mul	tisite Ingress Re	plicati	on			
Interface	e VNI	Multicast-group	State	Mode	Type [BD/VRF]	Flags	
nvel	100144	239.1.1.144	 Up	 CP	L2 [144]	 #	Network1 which is VLan
144 mappe	ed to VNID	100144					
nvel	100145	239.1.1.145	Up	CP	L2 [145]	#	Network2 Which is Vlan
145 mappe	ed to VNID	100145					
nvel	1001445	239.100.100.100	Up	CP	L3 [tenant-1]	#	VRF- tenant1 which is
mapped to	O VNID 100	1445					
DC1-BGW1 Codes: CH UC ST XC MS Interface	<pre># sh nve v P - Contro C - Unconf J - Suppre conn - Cro S-IR - Mul e VNI</pre>	ni il Plane DP igured SA ss Unknown Unicas ssconnect tisite Ingress Re Multicast-group	- Data - Supp t plicati State	Plan ress on Mode	e ARP Type [BD/VRF]	Flags	
nvel	100144	239.1.1.144	Up	CP	L2 [144]	MS-IR	
nvel	100145	239.1.1.145	Up	CP	L2 [145]	MS-IR	
nvel	1001445	239.100.100.100	Up	CP	L3 [tenant-1]		
#以上也?	來自BGW	;因此,簡而言之,	,我們在	5 步驟	早期選擇的所有	交換機都將	與網路和VRF一起部署

#交換矩陣DC2共用邊界也必須執行相同的步驟。請記住,共用邊界不需要任何網路或第2層

VNID;僅需要L3 VRF。

步驟11:在枝葉交換機/VTEP上建立下游中繼/接入埠

#在此拓撲中,分別來自DC1-VTEP和DC2-VTEP的埠Eth1/2和Eth1/1連線到主機;因此在DCNM GUI中將這些埠作為中繼埠移動,如下所示



Edit Configuration				
Name DC1-VTEP:Ethernet1/2				
Policy: int_trunk_host_11_1	T			
General				
* Enable BPDU Guard	no	•	Enable spanning-tree bpduguard	Â
Enable Port Type Fast	O Enable spanning-tree edge por	t beha	vior	
* мто	jumbo	•	MTU for the interface	
* SPEED	Auto	. 6	Interface Speed	
* Trunk Allowed Vlans	all		Allowed values: 'none', 'all', or vian ranges (ex	: 1-200,500-2000,3000)
Interface Description			Add description to the interface (Max Size 254	9
Freeform Config				Note ! All configs she strictly match 'show run' c with respect to case and Any mismatches will yield
1				unexpected diffs during a

#選擇相關介面並將「允許的vlan」從「無」更改為「全部」(或僅允許需要的vlan)

步驟12:共用邊框上所需的自由形式

#由於共用邊界交換機是路由伺服器,因此需要在BGP I2vpn evpn鄰居關係方面進行一些更改

#使用單播複製站點間BUM流量;表示在Vlan 144(例如)中到達BGW後的任何BUM流量;根據哪 個BGW是指定轉發器(DF),DF將執行到遠端站點的單播複製;此複製在BGW從遠端BGW接收到第 3類路由後實現;這裡,BGW正在形成I2vpn evpn對等僅與共用邊界對等;並且共用邊界不應具有 任何第2層VNID(如果建立,將導致東/西流量被黑鎖)。由於第2層VNID缺失,且路由型別3由每 個VNID的BGW產生,因此共用邊界不會執行從BGW傳入的BGP更新;要解決此問題,請使用AF I2vpn evpn下的「retain route-target all」

#另一個要點是確保共用邊界不會更改下一跳(BGP DEFAULT會更改eBGP鄰居的下一跳);在這裡,從站點1到2的單點傳播流量的站點間隧道應該從BGW到BGW(從dc1到dc2,反之亦然);為此,必須為從共用邊界到每個BGW的每個l2vpn evpn鄰居建立並應用路由對映

#對於以上兩點,必須在共用邊框(如下所示)上使用自由形式

route-map direct
route-map unchanged
set ip next-hop unchanged
router bgp 65001
address-family ipv4 unicast
redistribute direct route-map direct
address-family 12vpn evpn
retain route-target all

```
neighbor 10.100.100.2
 remote-as 65001
 address-family ipv4 unicast
   next-hop-self
neighbor 10.10.10.1
  address-family 12vpn evpn
    route-map unchanged out
neighbor 10.10.10.2
  address-family 12vpn evpn
   route-map unchanged out
neighbor 10.10.20.1
 address-family l2vpn evpn
   route-map unchanged out
neighbor 10.10.20.2
  address-family 12vpn evpn
   route-map unchanged out
```

						Selected 1 / Total	1 💭 🌣 -	
+ /		View	View All	Push Config	Current Switch Config	Show Quick Filter		
Temp	late		Policy ID	Edit Policy				
fre		×		Policy ID: POLIC Entity Type: SWIT	CY-78700	Template Name: switch_freeform Entity Name: SWITCH		
switch	_freeform		POLICY-7	* Priority (1-1000):	500			
					General			
				Variables:	* Switch Freeform Con	route-map direct route-map unchanged set ip next-hop unchanged router bgp 65001 address-family ipv4 unicast redistribute direct route-map direct address-family (zvpn evpn retain route-target all neighbor 10.100.100.2 remote-as 65001 address-family ipv4 unicast next-hop-self neighbor 10.10.10.1 address-family (zvpn evpn route-map unchanged out neighbor 10.10.2		

步驟13:BGW上租戶VRF內的環回

#對於來自枝葉交換機內所連線主機的北/南流量,BGW使用NVE Loopback1 IP地址的外部SRC IP;共用邊界僅在預設情況下形成與BGW的多站點環回Ip地址的NVE對等;因此,如果vxlan封包與 BGW Loopback1的外部SRC IP位址進入共用邊界,則封包將由於SRCTEP未命中而遭捨棄;為避 免這種情況,必須在每個BGW交換機上建立租戶— VRF中的環回,然後通告到BGP,以便共用邊 界接收此更新,然後與BGW Loopback1 IP地址形成NVE對等;

#最初NVE對等項在共用邊界上如下所示

Multisite	Loopback 100 IP address of DC1-BGWs					
nvel	10.222.222.1	Up	СР	01:20:09	0200.0ade.de01	#
Interface	Peer-IP	State	LearnType	Uptime	Router-Mac	_
SHARED-BOR	DER1# sh nve pee					

nvel	10.222.2	222.2					τ	Up	CP		01:17:43 0200.0ade.de02 #	
Multisite	Loopback	: 100	IP	address	of	DC2-BG	1s					
Add Interface												
						* Type:	Loopback		T	٦)	
						* Select a device	DC1-BGW2		•			
						* Loopback ID	2					
						* Policy:	int_loopback_11_1		•			
General											J	
Interface V	RF tenant-1		_	Interface VRF name,	default V	RF if not specified	^					
* Loopback	IP 172.17.10.2		-	IP address of the loop	pback							
Route-Map T	AG 12345			Route-Map tag asso	ciated with	h interface IP						
Interface Descripti	on			Add description to the contract of the cont	e interfac	e (Max Size 254)						
Freeform Con	fig					() strict with Any unexy	Vote I All configs shi y match 'show run' c espect to case and ismatches will yiek pected diffs during o					

Save Preview Deploy

#如上所示,loopback2是從DCNM建立的,在tenant-1 VRF中配置,並給予12345標籤,因為此標 籤是路由對映在進行通告時用於匹配環回的標籤

```
DC1-BGW1# sh run vrf tenant-1
!Command: show running-config vrf tenant-1
!Running configuration last done at: Tue Dec 10 17:21:29 2019
!Time: Tue Dec 10 17:24:53 2019
version 9.3(2) Bios:version 07.66
interface Vlan1445
 vrf member tenant-1
interface loopback2
 vrf member tenant-1
vrf context tenant-1
 vni 1001445
 ip pim rp-address 10.49.3.100 group-list 224.0.0.0/4
 ip pim ssm range 232.0.0.0/8
 rd auto
 address-family ipv4 unicast
   route-target both auto
   route-target both auto mvpn
   route-target both auto evpn
 address-family ipv6 unicast
   route-target both auto
    route-target both auto evpn
router bqp 65000
vrf tenant-1
    address-family ipv4 unicast
     advertise 12vpn evpn
redistribute direct route-map fabric-rmap-redist-subnet
     maximum-paths ibgp 2
    address-family ipv6 unicast
      advertise 12vpn evpn
      redistribute direct route-map fabric-rmap-redist-subnet
      maximum-paths ibgp 2
```

DC1-BGW1# sh route-map fabric-rmap-redist-subnet route-map fabric-rmap-redist-subnet, permit, sequence 10 Match clauses: tag: 12345 Set clauses: ###在出版目期後 NU信幣# 如西南京东东口, and and Dubth N

#執行此步驟後,NVE對等項將顯示所有Loopback1 IP地址以及多站點環回IP地址。

SHARED-BOR	DER1# sh nve pee				
Interface	Peer-IP	State	LearnType	Uptime	Router-Mac
nvel	192.168.20.1	Up	CP	00:00:01	b08b.cfdc.2fd7
nvel	10.222.222.1	Up	CP	01:27:44	0200.0ade.de01
nvel	192.168.10.2	Up	CP	00:01:00	e00e.daa2.f7d9
nvel	10.222.222.2	Up	CP	01:25:19	0200.0ade.de02
nvel	192.168.10.3	Up	CP	00:01:43	6cb2.aeee.0187
nvel	192.168.20.3	Up	CP	00:00:28	005d.7307.8767
#在此階段	,應正確轉發東/西流量				

步驟14:從共用邊界到外部路由器的VRFLITE擴展

#有時交換矩陣外部的主機必須與交換矩陣內的主機通訊。在此示例中,共用邊界使相同內容成為可 能;

#位於DC1或DC2中的任何主機都將能夠通過共用邊界交換機與外部主機通訊。

#為此目的,共用邊界將終止VRF Lite;在此示例中,eBGP從共用邊界運行到外部路由器,如圖開頭 所示。

#要從DCNM配置此功能,需要新增vrf擴展附件。為實現這一目標,需要執行以下步驟。

a)將交換矩陣間鏈路從共用邊界新增到外部路由器



←	Fabric	Builder: Shared-Borders
Swi	tches	Links
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		Name
1		SHARED-BORDER2
2		SHARED-BORDER1

#選擇鏈路並新增「交換矩陣間」連結,如下所示

* Link Sub-Type VRF_LITE V * Link Template ext_fabric_setup_11_1 V * Source Fabric Shared-Borders V * Destination Fabric External V * Source Device SHARED-BORDER2 V * Source Interface Ethernet1/49 V Destination Device EXT_RTR V testination Interface Ethernet1/50 V Link Profile General Advanced * BGP Local ASN 65001 C Advanced * BGP Local ASN 65001 C * BGP Neighbor IF * BGP Neighbor IF * BGP Neighbor ASN 65100 C * BGP Neighbor ASN 65100 C * BGP Autonomous System Number * BGP Neighbor ASN 65100 C * BGP Autonomous System Number	* Link Type	Inter-Fabric	•	
* Link Template ext_fabric_setup_11_1 * Source Fabric Shared-Borders Destination Fabric External * Source Device SHARED-BORDER2 * Source Interface Ethemet1/49 Destination Device EXT_RTR Ethemet1/50 Link Profile Ceneral Advanced * BGP Local Ast 65001 172.16.222.1/24 IP address for sub-interface in each VRF * BGP Neighbor IF 172.16.222.2 Neighbor IP address in each VRF * BGP Neighbor Ast 65100 Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor BGP Autonomous System Number * BGP Neighbor Ast 65100 * BGP Neighbor Ast 65100 * BGP Neighbor Ast 65100 * BGP Neighbor Ast 7 * BGP Neighbor Ast 7	* Link Sub-Type	VRF_LITE	•	
* Source Fabric Shared-Borders Destination Fabric External * Source Device SHARED-BORDER2 * Source Interface Ethernet1/49 Destination Device EXT_RTR Destination Interface Ethernet1/50 Link Profile Link Profile BGP Local ASM 65001 Cal BGP Autonomous System Number IP Address/Mask 172.16.222.1/24 IP address for sub-interface in each VRF BGP Neighbor IF 172.16.222.2 Keighbor IP address in each VRF BGP Neighbor ASM 65100 Keighbor BGP Autonomous System Number	* Link Template	ext_fabric_setup_11_1	•	
Destination Fabric External SHARED-BORDER2 StARED-BORDER2 Source Device StareD-BORDER2 Source Interface Ethernet1/49 Source Interface Ethernet1/50 Source Interface Ethernet1/50 Source Interface Ethernet1/50 Source Interface In	* Source Fabric	Shared-Borders		
* Source Device SHARED-BORDER2 * Source Interface Ethemet1/49 Destination Device EXT_RTR stination Interface Ethemet1/50 Link Profile General Advanced * BGP Local ASh 65001 I P Address/Mash 172.16.222.1/24 * BGP Neighbor IF 172.16.222.2 * BGP Neighbor IF 172.16.222.2 * BGP Neighbor ASh 65100 Neighbor IP address in each VRF Neighbor IP address in each VRF Nei	Destination Fabric	External	•	
Source Interface Ethemet1/49 EXT_RTR EXT_RTR Ethemet1/50 Themet1/50 Themet1/5	* Source Device		V	
Destination Device EXT_RTR estination Interface Ethemet1/50 Link Profile General Advanced * BGP Local ASI 65001 C Local BGP Autonomous System Number 172.16.222.1/24 IP Address for sub-interface in each VRF * BGP Neighbor IF 172.16.222.2 Neighbor IP address in each VRF * BGP Neighbor ASI 65100 Reighbor BGP Autonomous System Number	* Source Interface	Ethernet1/49	•	
Ethernet1/50 Link Profile General Advanced * BGP Local ASN 65001 (C Local BGP Autonomous System Number 172.16.222.1/24 (C IP address for sub-interface in each VRF * BGP Neighbor IF * BGP Neighbor ASN 65100 (C Neighbor BGP Autonomous System Number	Destination Device	EXT_RTR		
Link Profile General Advanced * BGP Local ASN 65001 C Local BGP Autonomous System Number 172.16.222.1/24 IP address for sub-interface in each VRF * BGP Neighbor IF * BGP Neighbor ASN 65100 Keighbor BGP Autonomous System Number	estination Interface	Ethernet1/50	•	
* BGP Neighbor ASN 65100 @ Neighbor BGP Autonomous System Number	Link Profile General Advanced	* BGP Local ASI	65001	Local BGP Autonomous System Number
	Link Profile General Advanced	* BGP Local ASI * IP Address/Masi * BGP Neighbor II	65001 172.16.222.1/24 172.16.222.2	 Local BGP Autonomous System Number IP address for sub-interface in each VRF Neighbor IP address in each VRF

#必須從下拉選單中選擇VRF LITE子型別

#源交換矩陣為共用邊界,目標交換矩陣為外部,因為這將是從小型企業到外部的VRF LITE

Save

#選擇流向外部路由器的相關介面

#提供IP地址和掩碼以及鄰居IP地址

#ASN將自動填充。

#完成此操作後,按一下「儲存」

#對共用邊界和VRFLITE中的所有外部第3層連線執行相同操作

b)新增VRF擴展

#轉至共用邊界VRF部分

#VRF將處於部署狀態;選中右側的覈取方塊,以便可以選擇多個交換機

#選擇共用邊框,將會開啟「VRF EXtension attachment」視窗

#在「extend」下,從「None」更改為「VRFLITE」

#對兩個共用邊框執行相同操作

#完成後,「Extension Details」將填充先前在步驟a)中給出的VRF LITE介面。



DOT1Q ID自動填充為2

#其他欄位也會自動填充

#如果必須通過VRFLITE建立IPv6鄰居關係,則應對IPv6執行步驟a)

#現在按一下「儲存」

#最後,在網頁右上角執行「部署」。

#成功部署將導致將配置推送到共用邊界,其中包括在這些子介面上設定IP地址並與外部路由器建立 BGP IPv4鄰居

#請記住,在這種情況下,外部路由器配置(在子介面上設定IP地址和BGP鄰居關係語句)由CLI手 動完成。

#可通過共用邊界上的以下命令進行CLI驗證;

SHARED-BORDER1# sh ip bgp sum vr tenant-1
BGP summary information for VRF tenant-1, address family IPv4 Unicast
BGP router identifier 172.16.22.1, local AS number 65001
BGP table version is 18, IPv4 Unicast config peers 1, capable peers 1
9 network entries and 11 paths using 1320 bytes of memory
BGP attribute entries [9/1476], BGP AS path entries [3/18]
BGP community entries [0/0], BGP clusterlist entries [0/0]

 Neighbor
 V
 AS
 MsgRcvd
 MsgSent
 TblVer
 InQ
 OutQ
 Up/Down
 State/PfxRcd

 172.16.22.2
 4
 65100
 20
 20
 18
 0
 00:07:59
 1

SHARED-BORDER2# sh ip bgp sum vr tenant-1
BGP summary information for VRF tenant-1, address family IPv4 Unicast
BGP router identifier 172.16.222.1, local AS number 65001
BGP table version is 20, IPv4 Unicast config peers 1, capable peers 1
9 network entries and 11 paths using 1320 bytes of memory
BGP attribute entries [9/1476], BGP AS path entries [3/18]
BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd 172.16.222.2 4 65100 21 21 20 0 0 00:08:02 1 #使用上述所有配置,將建立北/南連通性,如下所示(從外部路由器到交換矩陣中主機的ping)

EXT_RTR# ping 172.16.144.1 Fabric # 172.16.144.1 is Host in DC1

PING 172.16.144.1 (172.16.144.1): 56 data bytes 64 bytes from 172.16.144.1: icmp_seq=0 ttl=251 time=0.95 ms 64 bytes from 172.16.144.1: icmp_seq=1 ttl=251 time=0.605 ms 64 bytes from 172.16.144.1: icmp_seq=2 ttl=251 time=0.598 ms 64 bytes from 172.16.144.1: icmp_seq=3 ttl=251 time=0.568 ms 64 bytes from 172.16.144.1: icmp_seq=4 ttl=251 time=0.66 ms ^[[A^[[A --- 172.16.144.1 ping statistics ---5 packets transmitted, 5 packets received, 0.00% packet loss round-trip min/avg/max = 0.568/0.676/0.95 ms EXT_RTR# ping 172.16.144.2 # 172.16.144.2 is Host in DC2 Fabric PING 172.16.144.2 (172.16.144.2): 56 data bytes 64 bytes from 172.16.144.2: icmp_seq=0 ttl=251 time=1.043 ms 64 bytes from 172.16.144.2: icmp_seq=1 ttl=251 time=6.125 ms 64 bytes from 172.16.144.2: icmp_seq=2 ttl=251 time=0.716 ms 64 bytes from 172.16.144.2: icmp_seq=3 ttl=251 time=3.45 ms

64 bytes from 172.16.144.2: icmp_seq=4 ttl=251 time=1.785 ms

--- 172.16.144.2 ping statistics ---5 packets transmitted, 5 packets received, 0.00% packet loss round-trip min/avg/max = 0.716/2.623/6.125 ms

Traceroute還指向資料包路徑中的正確裝置

EXT_RTR# traceroute 172.16.144.1

traceroute to 172.16.144.1 (172.16.144.1), 30 hops max, 40 byte packets

1 SHARED-BORDER1 (172.16.22.1) 0.914 ms 0.805 ms 0.685 ms

2 DC1-BGW2 (172.17.10.2) 1.155 ms DC1-BGW1 (172.17.10.1) 1.06 ms 0.9 ms

3 ANYCAST-VLAN144-IP (172.16.144.254) (AS 65000) 0.874 ms 0.712 ms 0.776 ms

4 DC1-HOST (172.16.144.1) (AS 65000) 0.605 ms 0.578 ms 0.468 ms

EXT_RTR# traceroute 172.16.144.2 traceroute to 172.16.144.2 (172.16.144.2), 30 hops max, 40 byte packets 1 SHARED-BORDER2 (172.16.222.1) 1.137 ms 0.68 ms 0.66 ms 2 DC2-BGW2 (172.17.20.2) 1.196 ms DC2-BGW1 (172.17.20.1) 1.193 ms 0.903 ms 3 ANYCAST-VLAN144-IP (172.16.144.254) (AS 65000) 1.186 ms 0.988 ms 0.966 ms 4 172.16.144.2 (172.16.144.2) (AS 65000) 0.774 ms 0.563 ms 0.583 ms EXT_RTR#