# 配置與ACI和UCS B系列的VMM域整合

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# 簡介

本文檔介紹將思科統一計算系統(UCS)B系列整合到利用Virtual Machine Manager(VMM)域整合的以應用為中心的基礎設施(ACI)交換矩陣所需的配置步驟。

# 必要條件

### 需求

本文件沒有特定需求。

#### 採用元件

本檔案中的資訊是根據以下硬體和軟體版本:

- ACI交換矩陣,由兩個主幹交換機和兩個枝葉交換機組成
- •帶有兩個交換矩陣互聯的UCS B系列機箱
- •採用VMware ESXi的UCS B系列刀片
- •應用程式原則基礎架構控制器(APIC)

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。

### 設定

#### 建立VMM域

大多數配置類似於在任何伺服器硬體上部署VMM域。解決方法是採用特定方式配置APIC,但存在 某些限制。這些解決方法配置在此過程中是專門呼叫的。 1. 建立動態VLAN池。在APIC使用者介面中,選擇Fabric > Access Policies > Pools > VLAN > Create VLAN Pool。

System	Tena	ints	Fabric	Virtu	al Networ	king -
Inve	ntory	Fabr	ic Policies	I Acces	ss Policies	-
Policies	3				0 =	0
> 🔿 Quid	k Start					
> 📰 Swit	ches					
> 📰 Mod	lules					
> 🔚 Inter	faces					
> 📰 Polic	cies					
V Pool	ls	/				
	/LAN	Create	VLAN Pool	-		
> 🖬 🗤	/XLAN					
> 📰 \	/SAN					
> 🕅 \	/SAN Att	ributes				
> 🕅 N	Aulticast	Address	s			
> 📄 Phys	sical and	Externa	I Domains			

2. 當建立VLAN池視窗開啟時,請輸入以下資訊:在名稱欄位中輸入池的名稱。按一下Dynamic Allocation。按一下Encap Blocks(+)加號並在「建立範圍」(Create Ranges)對話方塊的「範圍」(Range)欄位中輸入Encap Block Range。按一下Allocation Mode欄位的Dynamic Allocation。按一下External或On the wire encapsulations。按一下「OK」(確定)。按一下「Submit」。

	Create VLAN F	Pool			(2)⊗
	Specify the Pool ider	ntity			
	> Name	e: Demo-pool			
	Description	n: optional			
		e			
	Allocation Mode	: Dynamic Allocation	Static Allocation		
	Encap Blocks	s:			+
		VLAN Range	Allocation Mode	Role	
Cre	eate Ranges				08
Spe	cify the Encap Block R	ange			
	Type: VLAN	1			
	Range: VLA	N 🗸 100	- VLAN 🗸 199		
		Integer Value	Integer Value	105-01-028	
	Allocation Mode: Dy	namic Allocation Inf	nerit allocMode from parent Static	Allocation	
	Role: Ext	ternal or On the wire en	capsulations Internal		
	1				
				(	Cancel OK
Cr	eate VLAN Po	lool			?⊗
Spe	antification Dead Internatio				
	ecity the Pool identit	.y			
	Name:	y Demo-pool			
	Name: Description:	y Demo-pool optional			
	Name: Description:	y Demo-pool optional			
	Name:	y Demo-pool optional			
	Allocation Mode:	y Demo-pool optional Dynamic Allocation	Static Allocation		
	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation	Static Allocation		ý +
	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range	Static Allocation Allocation Mode	R	T +
	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range [100-199]	Static Allocation Allocation Mode Inherit allocMode fro	Re m par E	+ ble xternal or On the wire en
	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range [100-199]	Static Allocation Allocation Mode Inherit allocMode fro	Re m par E	ternal or On the wire en
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	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range [100-199]	Static Allocation Allocation Mode Inherit allocMode fro	R m par E	+ ble
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	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range [100-199]	Static Allocation Allocation Mode Inherit allocMode fro	R m par E	ternal or On the wire en
	Allocation Mode: Encap Blocks:	y Demo-pool optional Dynamic Allocation VLAN Range [100-199]	Static Allocation Allocation Mode Inherit allocMode fro	R m par E	ternal or On the wire en

3. 從APIC使用者介面中選擇Virtual Networking > VMM Domains > VMware > Create vCenter

System 7	Fenants	Fabric	Virtual Networking
			Inventory
Inventory			0 = 0
C Quick S	tart		
	omains		
> 🛄 Micr	osoft		
> 🕅 Ope	nStack		
> 📰 Red	Hat		
VMv	vare		
Contain	Create v	Center Domain	
> Clou	Save as		
> 🔚 Kube	Post		
> Dpe	nS Share		
	Open In	Object Store Brow	ser

Domain.

4. 當出現「建立vCenter域」視窗時,請輸入以下資訊: 在虛擬交換機名稱欄位中輸入域名。按 一下VMWare vSphere Distributed Switch。從Associated Attachable Entity Profile下拉選單中 選擇(根據需要建立) Demo-AEP。從VLAN Pool下拉選單中選擇Demo-Pool(dynamic)。按 一下vCenter Credentials(+)plus符號,然後在「建立vCenter憑據」對話方塊中輸入vCenter憑 據資訊。按一下「OK」(確定)。按一下「Submit」。

Create vCenter Domain	• • •
Specify vCenter domain users and	controllers
Virtual Switch Nar	ne: Demo-VMM
Virtual Swit	ch: VMware vSphere Distributed Switch Cisco AVS Cisco AVE
Associated Attachable Entity Prof	ile: Demo-AEP 🗸 🖉
Delimit	er:
Enable Tag Collecti	n:
Access Mo	de: Read Only Mode Read Write Mode
Endpoint Retention Time (second	is): 0
> VLAN Po	ol: Demo-pool(dynamic) V
Security Domai	ns: = +
	Name Description
vCenter Credentia	als: +
	Profile Name Username Description
	Cancel Submit
Croate vCenter	Cradantial
Create vCenter	
Specify account profile	3
Nama	Denne VAIM Conde
Name.	Demo-vivivi-Creds
Description:	optional
Username:	root
Password:	
Confirm Password:	
	Cancel OK
n	

5. 在「建立vCenter域」視窗中按一下按vCenter顯示的(+)plus符號,可能需要向下滾動以檢視它 。當出現「Create vCenter Controller(建立vCenter控制器)」視窗時輸入以下資訊:

vCenter:					$^+$
	Name	IP	Туре	Stats Collection	

### 在Host Name(或IP Address)欄位中輸入主機名或IP地址。從DVS Version下拉選單中選擇 vCenter Default。在「資料中心」欄位中輸入資料中心的名稱。從Associated Credential下拉 選單中選擇Demo-VMM-Creds。按一下「OK」(確定)。按一下「Submit」。

Add vCenter Co	ntroller			00
Specify controller profile	е			
vCenter Controll	er			
Name:	Demo-vCenter			
Host Name (or IP Address):	192.168.100.50	-		
DVS Version:	vCenter Default	~		
Stats Collection:	Disabled Enabled			
Datacenter:	jristain	-		
Management EPG:	select an option	$\sim$		
Associated Credential:	Demo-VMM-Creds	~		
				Cancel OK

### 驗證是否在vCenter中建立DVS

您應該在「最近任務」視窗中看到一些新任務,以及在vCenter伺服器中新增分散式虛擬交換機 (DVS):

Recent Tasks						
Name	Target	Status	Details	Initiated by	vCenter Server	Requested Start Ti 💬
Create a vSphere Distributed Switch	Demo-VMM	Completed		root	JRISTAIN-VCE	4/9/2015 10:38:57 AM
Create alarm	Demo-VMM	Completed		root	JRISTAIN-VCE	4/9/2015 10:38:57 AM
Create alarm	📁 Demo-VMM	Completed		root	JRISTAIN-VCE	4/9/2015 10:38:56 AM
Create folder	jristain	Completed		root	JRISTAIN-VCE	4/9/2015 10:38:56 AM
□ □ jristain □ [] Demo □ □ [] Demo	o-VMM emo-VMM L Demo-VI	MM-DVUp	links-63	3		

### 建立/驗證UCS vNIC上是否已啟用CDP或LLDP

在ACI中部署UCS B時,您可以選擇希望用於發現主機的發現協定。本節將指導您如何在UCS Manager中配置每種型別。

預設情況下,在UCS虛擬網路介面卡(vNIC)上禁用思科發現協定(CDP),因為預設網路控制策略已 禁用CDP。要啟用CDP,您可以修改預設的網路控制策略,或建立一個啟用CDP的新策略。然後將 該策略應用到每個服務配置檔案中的每個vNIC。在本示例中,預設網路控制策略被修改,因為所有 服務配置檔案預設使用它:

Equipment Servers LAN SAN VM Admin	General Events	
Tilher al	Actions	Properties
	🟦 Delete 🛒 Show Policy Usage	Name: default Description:
COLAN Cloud     Appliances     Thermal LAN	💾 Use Gkbal	Owner: Local CDP: Obisabled  Enabled
Second Seco		MAC Register Mode:   Only Native Vian  All Host Vians  Action on Uplink Fail:  Link Down  Warning
E - S Link Profile     Threshold Policies     S UDLD Link Policy     Default vNIC Behavior     S Default vNIC Connection Policies		MAC Security Forge:  Allow O Deny
Flow Control Policies     LACP Policies     LAN Connectivity Policies     LAN Connectivity Policies     Multicast Policies     Multicast Policies     Solution State     CDP-Disable     Solution     Solution		

如果使用不同的策略,請確保將該策略新增到每個服務配置檔案中的vNIC:

Filter:       Al       Fault Summary       Properties         Image: Servers       Image: Service Profiles       Image: Service Profiles <t< th=""><th></th></t<>	
Change MAC Address     Change MAC Address     MAC Fool Instance: org root/mac-pool-default	
E A root MAC Pool Instance: org-root/mac-pool-default	
AL SOLI (JOEY)     Fabric B Enable Fail     Modify VLANs     Fabric ID:     Fabric A O Fabric B Enable Fail	wer
Product with Constraints     Description       Bind to a Template     Type: Ether       Bind to a Template     Type: Ether       Bind to a Template     Type: Ether       Bind to a Template     Equipment: sys/chassis-1/blade-1/adapter-1/host-other       Bind to a Template     Equipment: sys/chassis-1/blade-1/adapter-1/host-other	2
B VVIC MONT-A Boot Device: Disabled X Reset MAC Address MTU: 1500 VIC w0MT-8 VVIC w0MT-	
Image: States     Template Name:       Image: States     States	
B: ⇒ ACT-SOL4 (oey)     Uperational speed: time Rate       B: ⇒ ACT-SOL5 (lacon)     State: Applied       B: ⇒ ACT-SOL6 (lacon)     Policies	
ACI-SOL7 (closs)     Adapter Policy:        ACI-SOL8 (MkeR)     Adapter Policy Instance:     org-root/eth-profile-default       B to basic-service-profile     QoS Policy:        Cost Sub-Organizations     QoS Policy:	
Ger Policy Instance:     Control Policy: Knot set>     Service Template ACI-SOL	_
Sub-Organizations     Prin Group:       Poticies     Pin Group:       Bottom     Statis Threshold Policy:       CDP-Disable       Image: Statis Threshold Policy:     CDP-Disable	

在2.2(4b)及更高版本中,UCS支援從交換矩陣互聯到刀片式伺服器的鏈路層發現協定(LLDP)。這意 味著如果運行此版本或更高版本,您還可以使用LLDP來發現vCenter中的主機和結構。配置與上面

Create Network Control Policy
Create Network Control Policy
Name: LLDP-Enable
Description:
CDP:   Disabled  Enabled
MAC Register Mode: <ul> <li>Only Native Vlan</li> <li>All Host Vlans</li> </ul>
Action on Uplink Fail: 💿 Link Down 🔾 Warning
MAC Security Forge: <ul> <li>Allow</li> <li>Deny</li> </ul>
LLDP
Transmit: O Disabled O Enabled
Receive: O Disabled O Enabled
OK Cancel

### 在UCS B的APIC上配置vSwitch策略

在DVS上,預設情況下使用的發現協定是LLDP。對於任何支援LLDP的伺服器來說,這都是不錯的 ,但UCS B系列刀片僅支援UCSM 2.2(4b)及更高版本上的LLDP。因此,ESXi無法向APIC報告 LLDP資訊,除非您使用了正確的代碼。

作為LLDP的替代方案,請使用CDP來發現主機。為了讓DVS使用CDP,請在啟用CDP並禁用 LLDP的VMM域上配置vSwitch策略。

此外,在使用UCS B系列時,唯一支援的負載均衡機制是基於源虛擬埠的路由。如果配置macpinning策略,它會為埠組程式設計以使用此機制。這對於防止資料包丟失非常重要。

1. 從APIC使用者介面中選擇Virtual Networking > VMM Domains > VMware > Configured Domain > Create VSswitch Policies。

Inventory	0 =
O Quick Start	
VMM Domains	
> 📰 Microsoft	
> CopenStack	
> 📰 Red Hat	
VMware	
V 🌐 Demo-VMM	Create VSwitch Policies
> Controllers > Trunk Port 0	Migrate to Cisco AVE
> Container Domains	Save as
	Post
	Share
	Open In Object Store Browser

2. 此時,將顯示警告以警告您已建立預設VSwitch策略。

Properties	
Name:	Demo-VMM
Virtual Switch:	Distributed Switch
Associated Attachable Entity	<ul> <li>Name</li> </ul>
Promes.	Demo-AEP
	Warning Solution Warning Warning Solution Warning Solution Solutio
Encapsulation:	
eenigere nine i en ereeper	To configure port groups for virtual apic
Delimiter:	
Enable Tag Collection:	
Access Mode:	Read Only Mode Read Write Mode
Endpoint Retention Time (seconds):	0
VLAN Pool:	Demo-pool(dynamic) 🗸 📴
Security Domains:	+
	Name Description
	No Security Domains Discovered

3. 接受警告消息並導航到VMM域下的Vswitch Policy頁籤: 選擇或建立 **啟用CDP**的CDP策略。選 擇或建立Port Channel Policy 並選擇mac-pinning模式。選擇或建立**CDP禁用的LLDP策略**。按 一下「Submit」。附註:如果您在UCSM 2.2(4b)或更高版本上,並且想要使用LLDP,則可以 在此vSwitch策略中開啟LLDP,因為UCS支援它。此示例僅適用於不支援LLDP的UCSM版本 ,或者需要使用CDP的情況。 如果同時啟用了LLDP和CDP,則LLDP優先。

				_	Policy Operations	al As	socia	ated EP
				General	VSwitch Policy	Fault	S	History
3 😳 🙆 🕐						0	+	***
roperties								
Port Channel Policy:	MAC-pinning	~	9					
LLDP Policy:	LLDP_off	~	1					
CDP Policy:	CDP_on	~	3					
NetFlow Exporter Policy:	select an option	~						

按一下**Submit**後,可以看到已在vCenter中重新配置 DVS:

_	_	_	_
Dame.			

:

nmary Networks Ports Resource Allocation Configuration Virtual Machines Hosts Tasks & Events Alarms Permissions Remove Add Host... Manage Hosts... Nev

Demo-VMM 0

General Advanced	Advanced Maximum MTU: Discovery Protocol Status: Type: Operation: Administrator Contact Infinitian Name: Other details:	9000 • Enabled • Cisco Discovery Protocol Both • Example: email address, phone number etc.
---------------------	---	--

您還可以驗證虛擬機器是否看到來自交換矩陣互聯的CDP資訊

	Demo-VMM-DVUplinks-63
	uplink1(1NICAdapter)
<b>—</b>	vmnic4 14.2.104.48
Cisco Discovery Proto	
Craco Diacordi y From	on 0
Properties	
Version:	2
Timeout:	0
Time to live:	129
Samples:	1517
Device ID:	aci-sol-calo-ucsb-A(SSI18220541)
IP Address:	14.2.104.23
Port ID:	Vethernet813
Software Version:	Cisco Nexus Operating System (
Hardware Platform:	UCS-FI-6248UP
IP Prefix:	0.0.00
IP Prefix Length:	0
VLAN:	1
Full Duplex:	Disabled
MTU:	1500
System Name:	aci-sol-calo-ucsb-A
System OId:	1.3.6.1.4.1.9.12.3.1.3.1062
Management Addres	s: 14.2.104.23
Location:	snmplocation
Peer Device Capabilit	y Enabled
Router:	No
Transparent Bridge:	No
Source Route Bridge	: No
Network Switch:	Yes
Host:	No
IGMP:	Yes
Repeater:	No

4. 驗證埠組上是否已程式設計「基於源虛擬埠的路由」。在Networking(網路)頁籤中按一下右 鍵埠組,然後編輯設定以驗證這一點:

Jelielai	Policies		
Policies	Teaming and Failover		
Security Traffic Shaping	Load Balancing:	Route based on originating v	irtual port 💌
VLAN Teaming and Failover	Network Failover Detection:	Link status only	<b>•</b>
Resource Allocation	Notify Switches:	Yes	-
Miscellaneous	Failback:	Yes	-
Auvanceu	Failover Order		
	Name	A	
	Name Active Uplinks	<u>^</u>	Move Up
	Name Active Uplinks uplink1		Move Up
	Name Active Uplinks uplink1 uplink2		Move Up love Down
	Name Active Uplinks uplink1 uplink2 uplink3 uplink3		Move Up love Down
	Name Active Uplinks uplink1 uplink2 uplink3 uplink4 uplink5		Move Up love Down
	Name Active Uplinks uplink1 uplink2 uplink3 uplink4 uplink5 uplink6		Move Up love Down
	Name Active Uplinks uplink1 uplink2 uplink3 uplink4 uplink5 uplink6 uplink7		Move Up love Down
	Name Active Uplinks uplink1 uplink2 uplink3 uplink4 uplink5 uplink6 uplink7 < III		Move Up love Down

# 驗證

使用本節內容,確認您的組態是否正常運作。

進行這些更改後,vCenter應向APIC通知CDP資訊。若要驗證這一點,請檢查VMM域的清單。

在APIC使用者介面中,選擇Virtual Networking > Inventory > VMM Domains > VMware > Domain > Controllers > vCenter > Hypervisors > Hypervisor > General以檢視「屬性」視窗。



此時,您可以更改VM網路設定,將介面卡新增到正確的埠組並測試連線。Ping應該會成功。如果 ping不成功,請驗證vCenter和APIC中的所有設定是否都正確,以進行CDP鄰居發現。

# 疑難排解

目前尚無適用於此組態的具體疑難排解資訊。