## 配置VMM域与ACI和UCS B系列的集成

### 目录

简介 <u>先决条件</u> 要求 使用的组件 配置 创建VMM域 验证DVS是否在vCenter中创建 创建/检验UCS vNIC上是否启用了CDP或LLDP 在APIC上为UCS B配置vSwitch策略 验证 故障排除

## 简介

本文档介绍将思科统一计算系统(UCS)B系列集成到利用虚拟机管理器(VMM)域集成的以应用为中心的基础设施(ACI)交换矩阵所需的配置步骤。

## 先决条件

#### 要求

本文档没有任何特定的要求。

#### 使用的组件

本文档中的信息基于下列硬件和软件版本:

- •由两台主干交换机和两台枝叶交换机组成的ACI交换矩阵
- UCS B系列机箱,带两个交换矩阵互联
- •带VMware ESXi的UCS B系列刀片
- 应用策略基础设施控制器(APIC)

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原 始(默认)配置。如果您使用的是真实网络,请确保您已经了解所有命令的潜在影响。

#### 配置

#### 创建VMM域

大多数此配置类似于在任何服务器硬件上部署VMM域。解决方法有某些限制,即以某种方式配置 APIC。这些解决方法配置在本步骤中特别说明。 1. 创建动态VLAN池。从APIC用户界面中,选择Fabric > Access Policies > Pools > VLAN > Create VLAN Pool。

System	Tenants	Fabric	Virtual Networking
Inve	ntory   F	abric Policies	Access Policies
Policies	3		0 = 0
> 🔿 Quid	k Start		
> 📰 Swit	ches		
> 📰 Mod	lules		
> 🔚 Inter	faces		
> 🔲 Polic	cies		
V Pool	ls		
	/LAN Cre	ate VI AN Pool	-
> 🖬 🗤	/XLAN		
> 📰 \	/SAN		
> 🕅 🗸	/SAN Attribut	es	
> 📰 N	Aulticast Add	ress	
> 📄 Phys	sical and Exte	mal Domains	

2. 当"创建VLAN池"窗口打开时,输入以下信息: 在名称字段中输入池的名称。单击"**动态分配**"。 单击"**Encap Blocks(+)Plus"**符号,然后在"Create Ranges"对话框的"Range"字段中输入"Encap Block Range"。单击**分配模**式字段的动态分配。单击**External或On the wire encapsulations。** Click **OK**.单击"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	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	ternal or On the wire en

3. 从APIC用户界面中,选择**Virtual Networking > VMM Domains > VMware > Create vCenter** 



#### Domain.

4. 出现"Create vCenter Domain (创建vCenter域)"窗口时,输入以下信息:在Virtual Switch Name字段中输入域名。单击VMWare vSphere Distributed Switch。从Associated Attachable Entity Profile下拉列表中选择(如果需要,请创建)Demo-AEP。从VLAN池下拉列表中选择演示 池(动态)。单击vCenter Credentials(+)plus符号,然后在"创建vCenter凭据"对话框中输入 vCenter Credential信息。Click OK.单击"Submit"。

Create vCenter Domain	<b>9</b> &
Specify vCenter domain users and	controllers
Virtual Switch Na	ne: Demo-VMM
Virtual Swi	ch: VMware vSphere Distributed Switch Cisco AVS Cisco AVE
Associated Attachable Entity Pro	file: Demo-AEP 🗸 🕼
Delimi	ter:
Enable Tag Collect	on:
Access Mo	de: Read Only Mode Read Write Mode
Endpoint Retention Time (second	(2) (2) (2)
VLAN P	Demo-pool(dynamic) V
Security Doma	ins: T +
	Name Description
vCapter Credent	
Voenter ofedenti	Profile Name Licensena Description
Create vCenter	Cancel Submit Credential ?
Name:	Demo-VMM-Creds
Description:	optional
Username:	root
Password:	
Confirm Password:	

5. 单击"创**建vCenter域**"窗口中的"按vCenter显示的(+)加号"标题,可能需要向下滚动才能看到它 。当出现"Create vCenter Controller(创建vCenter控制器)"窗口时,输入以下信息:

vCenter:					+
	Name	IP	Туре	Stats Collection	

# 在主机名(或IP地址)字段中输入主机名或IP地址。从DVS Version下拉列表中选择vCenter Default。在数据中心字段中输入数据中心的名称。从"关联的凭据"下拉列表中选择Demo-VMM-Creds。Click OK.单击"Submit"。

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

#### 验证DVS是否在vCenter中创建

您应在"最近的任务"窗口中看到一些新任务,并在vCenter服务器中添加分布式虚拟交换机(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
Createfolder	jristain	Completed		root	JRISTAIN-VCE	4/9/2015 10:38:56 AM
□ □ □ jristain □ [] □ □ □ □ □ □ □	o-VMM emo-VMM	MM-DVUp	links-6	3		

#### 创建/检验UCS vNIC上是否启用了CDP或LLDP

在ACI中部署UCS B时,您可以选择要用于发现主机的发现协议。本节将介绍如何在UCS

默认情况下,UCS虚拟网络接口卡(vNIC)上禁用了思科发现协议(CDP),因为默认网络控制策略禁用了CDP。要启用CDP,您可以修改默认网络控制策略,或在启用CDP的情况下创建新的网络控制策略。然后,将该策略应用于每个服务配置文件中的每个vNIC。在本示例中,默认网络控制策略被修改,因为所有服务配置文件都默认使用:

Equipment Servers LAN SAN VM Admin	General	Events			
Filter: Al	Actio	ns		Properties	
± =	l 🗇	Delete		Name: default	
E-= LAN	E I	Show Policy Usag	e	Description:	
🕀 🙆 LAN Cloud	- 🔒 Ue			Owner: Local	
⊕ Optiances				CDP: O Disabled  Enabled	
E-= Internal LAN					
H Andiances				MAC Register Mode: Only Native Vian O All Host Vians	
E O LAN Cloud				Action on Uplink Fail:   Link Down  Warning	
🖮 🖾 Link Profile					
E S Threshold Policies				MAC Security	
DUDLD Link Policy				Forge: Allow Degy	
E Defends AllC Rehavior				Torget O Hann O Deny	
E S Flow Control Policies					
LACP Policies					
🖾 LAN Connectivity Policies					
E Si Link Protocol Policy					
D Multicast Policies					
CDP-Disable					
default					

如果使用不同的策略,请确保将该策略添加到每个服务配置文件中的vNIC:



在版本2.2(4b)及更高版本中,UCS支持从交换矩阵互联到刀片的链路层发现协议(LLDP)。这意味着 ,如果运行此版本或更高版本,您还可以使用LLDP来发现vCenter和交换矩阵中的主机。配置与上 述配置完全相同,但您可以在两个方向上启用LLDP:



#### 在APIC上为UCS B配置vSwitch策略

在DVS上,默认使用的发现协议是LLDP。这对于支持LLDP的任何服务器都适用,但UCS B系列刀 片仅在UCSM版本2.2(4b)及更高版本上支持LLDP。因此,除非您使用正确的代码,否则ESXi无法 向APIC报告LLDP信息。

作为LLDP的替代方案,请使用CDP来发现主机。要使DVS使用CDP,请在启用CDP且禁用LLDP的 VMM域上配置vSwitch策略。

此外,使用UCS B系列时唯一支持的负载均衡机制是基于源虚拟端口的路由。如果配置了**macpinning策**略,它会对端口组进行编程以使用此机制。这对于防止数据包丢失非常重要。

1. 从APIC用户界面中,选择Virtual Networking > VMM Domains > VMware > Configured Domain > Create VSwitch Policies。

Inventory	0 🗉 🛈
O Quick Start	
VMM Domains	
> 🔛 Microsoft	
> CopenStack	
> 🔚 Red Hat	
VMware	
Controllers     Trunk Port C     Container Domains	Create VSwitch Policies Migrate to Cisco AVE Delete Save as Post Share Open In Object Store Browser

2. 此时,系统将显示警告,提醒您已创建默认VSwitch策略。

Properties	
Name:	Demo-VMM
Virtual Switch:	Distributed Switch
Associated Attachable Entity	<ul> <li>Name</li> </ul>
Profiles:	Demo-AFP
	Warning
	warning 🗸
	VSwitch Policy Container has been
	created.
E	ОК
Encapsulation:	
Configure Infra Port Groups:	To configure port groups for virtual apic
Delimiter:	
Enable Tag Collection:	
Access Mode:	Read Only Mode Read Write Mode
Endpoint Retention Time (seconds):	<u> </u>
VLAN Pool:	Demo-pool(dynamic) 🗸 🗗
Security Domains:	+
	Name Description
	No Security Domains Discovered

3. 接受警告消息并导航至VMM域下的Vswitch Policy选项卡:选择或创建启用CDP的CDP策略。选择或创建端口通道策略,并选择mac-pinning模式。选择或创建禁用CDP的LLDP策略。单击 "Submit"。注意:如果您在UCSM 2.2(4b)或更高版本上,并且要使用LLDP,则可以在此 vSwitch策略中打开LLDP,因为UCS支持它。本示例仅适用于不支持LLDP的UCSM版本,或者如果需要CDP。如果同时启用LLDP和CDP,则LLDP优先。

			General	VSwitch Policy	Faults	Histo
0 📀 🙆 📀					0 ±	**-
Properties						
Port Channel Policy:	MAC-pinning	V (2)				
LLDP Policy:	LLDP_off	V (2)				
CDP Policy:	CDP_on	~ @				
NetFlow Exporter Policy:	select an option	~				

Accordated EDGe

Oners

#### 单击"提**交"**后,您可以看到DVS在vCenter中重新配置

:

			_	
Date:				
		-		
_	_			

:

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

roperties Network Adapters	Private VLAN   NetFlow   Port	Mirroring
General	Maximum MTU: Discovery Protocol Status: Type: Operation: Administrator Contact Inf Name: Other details:	9000       Image: Case Discovery Protocol         Case Discovery Protocol       Image: Case Discovery Protocol         Both       Image: Case Discovery Protocol         Formation       Image: Case Discovery Protocol         formation       Image: Case Discovery Protocol         Example: email address, phone number etc.       Image: Case Discovery Protocol
Неір		ок са

您还可以验证vmnic是否从交换矩阵互联查看CDP信息

E Demo	o-VMM-DVUplinks-63 🕕 📝
E 📬	uplink1 (1 NIC Adapter)
	nic4 14.2.104.48
Cisco Discovery Protocol	×
Presentier	
Properties	2
Version:	2
Timeout:	120
Time to live:	129
Samples:	151/
Device ID:	aci-sol-calo-ucsD-A(55118220541)
IP Address:	14.2.104.23
Port ID:	Vethernet813
Software Version:	Cisco Nexus Operating System (
Hardware Platform:	UCS-FI-6248UP
IP Prefix:	0.0.0.0
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 Address:	14.2.104.23
Location:	snmplocation
Peer Device Capability Enable	ed
Router:	No
Transparent Bridge:	No
Source Route Bridge:	No
Network Switch:	Yes
Host:	No
IGMP:	Yes
Repeater:	No

 验证端口组上是否已编程"基于源虚拟端口的路由"。在"网络"选项卡中右键单击端口组,然后 编辑设置以验证此情况:

Ø	Joey-Tenant Joey-Profile Joe	ey-EPG1-BD1 Settings	<b>— — X</b>
General Policies Security Traffic Shaping VLAN Teaming and Fallover Resource Allocation Monitoring Miscellaneous Advanced	Policies Teaming and Failover Load Balancing: Network Failover Detection: Notify Switches: Failback: Failback: Failover Order Select active and standby uplinks. D order specified below. Name Active Uplinks uplink1 uplink2 uplink3 uplink4 uplink5 uplink6 uplink7 <	Preserver and a failover, standby uplinks activate	rtual port
Help		C	K Cancel

## 验证

使用本部分可确认配置能否正常运行。

在进行这些更改后,vCenter应将CDP信息通知APIC。要验证此情况,请检查VMM域的清单。

从APIC用户界面中,选择Virtual Networking > Inventory > VMM Domains > VMware > Domain > Controllers > vCenter > Hypervisors > Hypervisor > General,以便查看"属性"窗口。



此时,您可以更改VM网络设置,将适配器添加到适当的端口组并测试连接。Ping 操作应该成功。 如果ping不成功,请验证vCenter和APIC中的所有设置是否正确,以便CDP邻居发现。

## 故障排除

目前没有针对此配置的故障排除信息。