使用以应用为中心的基础设施<mark>配置</mark>交换矩阵扩展 器

目录

简介 先决条件 要求 使用的组件 配置 1.将FEX连接到ACI交换矩阵 使用GUI配置 使用GUI检查FEX 在交换机CLI上验证 使用REST API将FEX连接到枝叶 2.配置FEX HIF 使用GUI进行验证 验证 故障排除

简介

本文档介绍如何使用以应用为中心的基础设施(ACI)配置交换矩阵扩展器(FEX),以及如何配置 FEX上的主机接口(HIF)。

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ACI软件版本1.1(3f)。

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。如果您的网络处于活动状态,请确保您了解所有命令的潜在影响。

配置

1.将FEX连接到ACI交换矩阵

撰写本文时:

- 支持FEX到枝叶的直通连接。
- 支持以下FEX型号: N2K-C2232PP-10GEN2K-C2232TM-E-10GEN2K-C2348UPQN2K-C2348TQN2K-C2332TQN2K-C2248TP-E-1GEN2K-C2248TP-1GEN2K-C2248PQ-10GEN2K-B22IBM-PN2K-B22DELL-P

但是,由于此列表可能经常更新,请参阅ACI软件的Nexus 9000交换机版本说明以获取准确且更新 的列表。

ACI中的FEX只能连接到具有一个或多个端口的单个枝叶。将FEX连接到离开的端口将是端口通道的 一部分。

在本例中,FEX已连接到端口1/17-18上的ACI枝叶1。

使用GUI配置

- 1. 在顶部菜单栏上,单击**交换**矩阵,然后单击**访问策略**。
- 2. 在左侧导航窗格中选择快速启动,然后单击配置接口、PC和VPC链接,如图所示。

	INVENTORY FABRIC POLICIES ACCESS POLICIES	
olicies 🗟 🖸	Quick Start	6
offices Cuids Start Quids Start Switch Policies Module Policies Global Policies Motoring Policies Motoring Policies Pools Pools Pools Pools Physical and External Domains	Quick Start HELP Access policies govern the operation of interfaces that provide external access to various functions or protocols. Administrators who have fabric administrators to select the pods, leaf switches, and interfaces to thick they will and hypervisors, hosts, routers, or fabric extenders (FEX). Access policies configure external-facing interfaces that do not connect to a spin controllers and hypervisors, hosts, routers, or fabric extenders (FEX). Access policies configure an interface, PC, and VPC wizard link below, you can apply that you will apply, such as CDP or LLDP policies, before launching the wizard. Quick Start Configure out-of-band management access Monitor access port statistics Configure out-of-band management access Configure out-of-band management access Configure out-of-band management access Configure out-of-band management access Monitor access port statistics Configure out-of-band manag	o the fabric. The system provides default access policies. Access policies enable configuring tileges can create new access policies according to their requirements. The APIC enables II apply access policies. The switch. External-facing interfaces connect to external devices such as virtual machine tilicies enable configuring port channels and virtual port channels, protocols such as LLDP, a common template to a number of interfaces. We recommended that you create the policies wou can also create the policies as you complete the wizard.

3. 单击绿色+图标,如此图所示。

CONFIGURED SWITCH INTERFACES ★ S SWITCH SWITCHES INTERFACES TYPE POLICY GROUP SRUCH SWITCH PAIRS ★ S PCOMMANID - SWITCH A SWITCH SWI	ONFI	GURE	INTER	FACE,	PC, A	ND VPC
CONFIGURED SWITCH INTERFACE SMTCHE SMTCHE SMTCHE NTERFACE TOP POLICY CONTRACT NTERFACE POLICY POLICY </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
	CONF	GURED	SWITCH	INTERFA	CES	
	+ ⊠					
VPC SWITCH PAIRS + ⊠ rcoman ID _ SWTCHA SWITCH B	SWITCH PROFILE	SWITCHES	INTERFACE SELECTOR	INTERFACES	TYPE	POLICY GROUP
VPC SWITCH PAIRS ÷ ⊠ PC DOMAN ID - SWTCH A SWITCH B						
VPC SWITCH PAIRS						
VPC SWITCH PAIRS + ⊠ PCDOMAIN ID _ SWITCH B						
VPC SWITCH PAIRS + X PRCDMAIN ID - SWITCH B SWITCH A SWITCH B						
VPC SWITCH PAIRS + IX PPC DOMAIN ID - SWITCH B SWITCH A SWITCH B						
VPC SWITCH PAIRS + X predomain Id — Switch B						
VPC SWITCH PAIRS + IM pre domain id _ switch b						
VPC SWITCH PAIRS +∕ ⊠ pre comain id switch 8						
VPC SWITCH PAIRS						
VPC SWITCH PAIRS ⇒ ∞ vpc domain id switch b						
VPC DOMAIN ID — SWITCH A SWITCH B	VPC SI	WITCH P	AIRS			
		N ID	- SWITCH	A.	SWITCH B	

4. 单击**Advanced**按钮,在Switchs(交换机)部分中单击小型**+并**选择FEX所连接的枝叶(本例 中为枝叶101),如下图所示。 CONFIGURE INTERFACE, PC, AND VPC

CONFIGURED SWITCH INTERFACES	Select Switches To Configure Interfaces: O Quick Octoard
+ X	Switches: +
SWITCH SWITCHES INTERFACE INTERFACES TYPE POLICY	Switch IDs Switch Policy Group
PROFILE SELECTOR SELECTOR GROUP	101 v select or type to pre-provision v
	ID - NAME TYPE
	Switch Profile Name
	Switch Type: 102 leaf2 leaf
	Fexes: 😛
	ID Switch Port(s) It Connects To
	interfaces
VPC SWITCH PAIRS	
VPC DOMAIN ID - SWITCH A SWITCH B	الريط البريط البريط البريط البريط
	SAVE CANCEL
	Switch (TACcess Port Tabric Port). Only the access ports can be selected.

SUBMIT CANCEI

- 5. 请完成以下步骤: 在Switch Profile Name字段中,输入FEX配置文件的名称(在本例中为 fex101)。在FEX部分,输入FEX ID(这将是FEX编号)和枝叶上连接到该FEX的端口列表 (1/17-18)。单击**更新。**
- 6. Click Save.
- 7. 单击"Submit"。

CONFIGURE	D SWITCH INTE	RFACES	Select Switches To Co	nfigure Interfaces: () Quick	Advanced	-
NOCE ID INTO 100-182 1111-184 1111-184	araces (), in type,	ENCIP		South De 101	Switch Policy Group	
102 103 103 104			Switch Profile Name: Switch Type: Feren:	fex101	đi.	
			<	D 111 UPDATE	0 1/07-18 CANCE	\geq
VPC SWITCH	PAIRS				Chck 's' to cost interfaces	igure melicit
e di					וייזריזריזריזרי	
ITC DOMAIN ED	— янится з	101012		1	355555	0
100	583	102				SAVE CANCE

8. 您的FEX现已连接到交换矩阵。

使用GUI检查FEX

1.在顶部菜单栏中,单击"交换**矩阵"**,然后单击"**访问策略**"。

2.在左侧的导航窗格中,您将看到Switch Policies > Profiles、您在步骤3.中使用的FEX的名称,以 及具有相同名称和附加的if_selector字符串的关联接口配置文件。

	INVENTORY FABRIC POLICIES A	CCESS POLICIES		
Policies 🧧 🖸	Switch Profile - 1	fex101		
Quick Start				POL
Policy Graups				
The Profiles	PROPERTIES			
Leaf1	Name:	fex101		
Leaf1-2	Description:	GUI Interface Selector Generated Profile: fex101		
Leaf2				
E Leaf3				
🔲 Leaf3-4	Switch Selectors:			
Control Control		- NAME	BLOCKS	POLICY GROUP
fex101		fex101 selector 1	101	
Modure Pointies				
Interface Policies				
E Policies				
Profiles				
E5x01				
E5/02	Associated Interface			
H ESX02-copper	Selector Profiles:	NAME	DESCRIPTION	
🕂 📃 E5x03		Control (Control of the	CIT Interface Columbus Concepted Parts Deables (cr.101	
H 🗐 N3k-If-isolated	S	Tex101_IISelector	dot interface selector denerated Porte Prome: Textor	Tormeu
🔣 📃 N6k-Isolated				
E [] fex101_FexP101				
fex101_ifselector				
FexCard101	Associated Module Selector			
i noid-PC	Profiles:		DECONTION	
E rekt-vpc		NAME.	UCSCRIPTION	SIAIL
E INSZ PC			No items have been found.	
Interface Overrides			sheet Actions to create a new item.	
Global Policies				
Hanitoring Policies				
Troubleshoot Policies		1		
Pools				

3.在接口策**略>配置文件**中,您将看到自动生成的接口策略名称:**name_ifselector**。这包含工作窗格 中的FEX附件信息,其中包括枝叶上用于连接到FEX的端口(在示例端口17-18中)。

cisco System	M TENANTS		VM NETWORKING	L4-L7 SERVICES	ADMIN	OPERATIONS	i
		VENTORY FABRIC POLICIES ACCE	SS POLICIES				
Policies	a 0	Interface Profile - f	ex101_ifselector				
Quick Start Switch Policies Diverties Div		PROPERTIES Name: fex Description: GU Interface Selectors:	101_ifselector Interface Selector Generated PortF NAME CardIO1	P Profile: fex101	>		POLICY GROUP Feidendlef101

4.在顶部菜单栏中,单击"交换**矩阵"**,然后单击"资产"。

5.在左侧的导航窗格中,导航至Pod 1 **>交换矩阵扩展器**。您将看到FEX和FEX详细信息显示在工作 窗格中。

这可能需要从您配置它到在资产中显示它的时间(大约1分钟)之间的一段时间。 如果您是首次将此FEX连接或配置到交换矩阵,或者ACI交换矩阵刚刚升级,则ACI可能会下载新软件来升级FEX。 在这种情况下,FEX的可见时间要长得多(预计超过10分钟)。 在此场景中,如果将安全外壳 (SSH)连接到枝叶并单击show fex detail,您会看到软件下载。

ululu cisco	SYSTEM	TENANTS	FABRIC	VM NETWORKING	L4-L7 SERVICES
		INVEN		POLICIES	
Inventory		30 F	EX - Fex 101		
Inventory Quick Start Topology Pod 1 Pod 2 Pod 1 Pod 2	mmissioned Switches		EX - Fex 101	Extender 48x1GE + 4x10G N e C2248TP-1GE Systems 4280VQE 1/18 YPE	1odule ADM

当仍处于**Fabric > Inventory、Expand Pod 1 > Leaf1 > Interfaces**中时,您将看到Leaf1上的接口列 表,该列表应列出按**fex_id/1/x**编号的FEX的主机接口。FEX ID是您在步骤5中选择的ID号。x是 FEX上的HIF。

ululu cisco	SYSTEM	TENANTS			VM NETWORKING	L	4-L7 SERVICES	ADMIN	OPERA	ATIONS	P	
		IN										
Inventory		S 2	Physical In	terfaces								
Inventory Quick Start Topology Quick Start Topology Constrained Co	is Modules .		Physical Ir	SPEED Inherit Inherit Inherit Inherit	LAYER switched switched switched switched switched	MODE trunk trunk trunk trunk trunk	SWITCHING STATE enabled enabled enabled enabled enabled	USAGE EPG EPG EPG EPG EPG	OPER VLANS	CONFIGURED VLANS 47-48 47-48 47-48 47-48 47-48	BUNDLE INDEX unspecified unspecified unspecified unspecified unspecified	OP full full full full
eth1/2			eth101/1/36	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
C eth1/4			eth101/1/37	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
C eth1/5			eth101/1/38	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
eth1/7			eth101/1/39	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
C eth1/8			eth101/1/40	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
C eth1/10			eth101/1/41	inhent	switched	trunk	enabled	EPG		47-48	unspecified	Tull
eth1/11			eth101/1/42	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
🖵 eth1/13			eth101/1/43	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
C eth1/14			eth101/1/44	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full
ctn1/15			eth101/1/45	inherit	switched	trunk	enabled	EPG		47-48	unspecified	full

注意:从交换矩阵视点为FEX主机端口提供的完整接口编号包括节点ID。因此,枝叶X上FEX Y上的主机接口Z将编号为X/Y/1/Z。例如,FEX 101枝叶101上的端口1将为101/101/1/1。

在交换机CLI上验证

通过SSH连接到交换机(pod2-leaf1),并使用以下命令进行验证:

show fex

· show fex detail

ACI枝叶可能需要将新映像下载到FEX。如果是这样,您将看到:

pod2-lea:	f1# show fex			
FEX	FEX	FEX	FEX	
Number	Description	State	Model	Serial
101	FEX0101	Image Download	N2K-C2248TP-1GE	SSI14280VQE
完全发现	[FEX后,您将看]	到:		
pod2-lea:	fl# show fex			
FEX	FEX	FEX	FEX	
Number	Description	State	Model	Serial
101	FEX0101	Online	N2K-C2248TP-1GE	SSI14280VQE
pod2-lea:	f1# show fex det	ail		
FEX: 101	Description: FE	X0101 state: On	line	
FEX ve	rsion: 11.1(3f) [Switch version: 12	1.1(3f)]	
FEX Int	terim version: 11	1(3f)		
Switch	Interim version:	11.1(3f)		
Extende	er Model: N2K-C22	48TP-1GE, Extende	er Serial: SSI14280	VQE
Part No	o: 68-3601-05			
Card Io	d: 99, Mac Addr:	c4:71:fe:42:d7, Nu	um Macs: 64	

Module Sw Gen: 22 [Switch Sw Gen: 21]

pinning-mode: static Max-links: 1
Fabric port for control traffic: Eth1/17

Fabi	ric interface	e state	∋:			
Εt	th1/17 - Inte	erface	Up.	Sta	te:	Active
Εt	ch1/18 - Inte	erface	Up.	Sta	te:	Active
Po	o7 - Interfac	ce Up.	Sta	te: 1	Act	ive
Fex	Port	State	Fal	bric	Роз	rt
	Eth101/1/1	Up			Po	7
	Eth101/1/2	Down			Po	7
	Eth101/1/3	Down			Po	7
	Eth101/1/4	Down			Po	7
	Eth101/1/5	Down			Po	7
	Eth101/1/6	Down			Po	7
	Eth101/1/7	Down			Po	7
	Eth101/1/8	Down			Po	7
	Eth101/1/9	Down			Po	7
	Eth101/1/10	Up			Po	7
	Eth101/1/11	Down			Po	7
	Eth101/1/12	Down			Po	7
	Eth101/1/13	Down			Po	7
	Eth101/1/14	Down			Po	7
	Eth101/1/15	Down			Po	7
	Eth101/1/16	Down			Po	7
	Eth101/1/17	Down			Po	7
	Eth101/1/18	Down			Po	7
	Eth101/1/19	Down			Po	7
	Eth101/1/20	Down			Po	7
	Eth101/1/21	Down			Po	7
	Eth101/1/22	Down			Po	7
	Eth101/1/23	Down			Po	7
	Eth101/1/24	Down			Po	7
	Eth101/1/25	Down			Po	7
	Eth101/1/26	Down			Po	7
	Eth101/1/27	Down			Po	7
	Eth101/1/28	Down			Po	7
	Eth101/1/29	Down			Po	7
	Eth101/1/30	Down			Po	7
	Eth101/1/31	Down			Po	7
	Eth101/1/32	Down			Po	7
	Eth101/1/33	Down			Po	7
	Eth101/1/34	Down			Po	7
	Eth101/1/35	Down			Po	7
	Eth101/1/36	Down			Po	7
	Eth101/1/37	Down			Po	7
	Eth101/1/38	Down			Po	7
	Eth101/1/39	Down			Po	7
	Eth101/1/40	Down			Po	7
	Eth101/1/41	Down			Po	7
	Eth101/1/42	Down			Po	7
	Eth101/1/43	Down			Po	7
	Eth101/1/44	Down			Po	7
	Eth101/1/45	Down			Po	7
	Eth101/1/46	Down			Po	7
	Eth101/1/47	Down			Po	7
	Eth101/1/48	Down			Po	7

使用REST API将FEX连接到枝叶

发布到x.x**.x.x/api/mo/uni.xml的此XML**代码将FEX101添加到端口1/17-18上的枝叶1(软件101):

```
<infraLeafS descr="" name="FEX101_selector_101" ownerKey="" ownerTag="" type="range">
        <infraNodeBlk from_="101" name="single0" to_="101"/>
     </infraLeafS>
     <infraRsAccPortP tDn="uni/infra/accportprof-FEX101_ifselector"/>
   </infraNodeP>
   <infraFexP descr="GUI Interface Selector Generated FexP Profile: FEX101_FexP101"</pre>
dn="uni/infra/fexprof-FEX101_FexP101" name="FEX101_FexP101" ownerKey="" ownerTag="">
      <infraFexBndlGrp descr="GUI Interface Selector Generated FexBundleP Profile"</pre>
name="FexBndleP101" ownerKey="" ownerTag="">
         <infraRsMonFexInfraPol tnMonInfraPolName=""/>
      </infraFexBndlGrp>
   </infraFexP>
   <infraAccPortP descr="GUI Interface Selector Generated PortP Profile: FEX101"</pre>
dn="uni/infra/accportprof-FEX101_ifselector" name="FEX101_ifselector" ownerKey="" ownerTag="">
      <infraHPortS descr="" name="FexCard101" ownerKey="" ownerTag="" type="range">
         <infraRsAccBaseGrp fexId="101" tDn="uni/infra/fexprof-FEX101_FexP101/fexbundle-</pre>
FexBndleP101"/>
         <infraPortBlk fromCard="1" fromPort="17" name="block1" toCard="1" toPort="18"/>
      </infraHPortS>
   </infraAccPortP>
</infraInfra>
```

2.配置FEX HIF

在此阶段,ACI枝叶可以看到FEX HIF,但是,当您配置FEX HIF的物理属性时,它们仍未完成。

在本示例中,将FEX 101的接口1和2设置为1千兆以太网速度。

1. 选择Fabric > Access Policy。在"导航"窗格中,导航至接口策略>配置文件并选择 fex101_FexP101。(当FEX连接到枝叶时,会自动创建此选项,如本文档前面所述。此对象命 名为附加有FexP<fexId>的FEX。 在工作窗格中,单击FEX的接口选择器前面的+按钮:

1 101 102 three									
Anicconnected 102	-						POLICY FAULT	IS HIST	ORY
EFV leaf2								ACTIONS	
								ACTIONS	
apicConnectedLeaves		PROPERTIES							
E fex101		Name:	fex101 FexP101						
fexSwitchProfile 104			antor_feation						
n3k_connections		Description:	GUI Interface Selector (Generated FexP Profile:					
Module Policies			TEXTOI_FEXFIOI						
Interface Policies									
+ Policies		FEX Policy Group:	FexBndleP101						
+ Policy Groups		Interface Selectors For FEX:							
Profiles			- NAME	TYPE	POLICY GROUP	BLOCKS			
+ 101_102_2_ifselector									
+ 101_102_ifselector					No items h	ave been found.			
+ 101_102_port21_switchprof_ifselector	4				Select Actions	to create a new item.			
+ 101_102_three_ifselector									Ε
+ E Apicconnected 102_ifselector									
+ EX_leaf2_FexP104									
FEX_leaf2_ifselector	-								
+ DVPC_N3K_ifselector									
+ B apicConnectedLeaves ifselector									
fex101 FexP101									
fex101 ifselector	18								
+ E fexSwitchProfile 104 FexP 102									
fexSwitchProfile 104 ifselector									
+ an3k_connections_ifselector									
Global Policies									
Monitoring Policies									
Troubleshoot Policies		4							
+ Pools									
							SUBMIT	RESET	

2. 在"创建访问端口选择器"窗口: 注意:在此步骤中,选择并配置主机端口。因此,此处选择的接口ID是FEX 101上的HIF,而不是任何物理枝叶端口。a.在Name字段中,输入要配置的端口组的名称,如下所示:Fex101_access_port_select。
b.在接口IDs字段中,输入要配置的接口ID,此处:1/1-2 的多播地址发送一次邻居消息。
c.从接口策略组(Interface Policy Group)下拉列表中,选择之前配置的1千兆以太网接口速度(名为1Gig)策略。您可能希望为此端口组创建新策略。

d.单击"Submit"。

CREATE ACCESS F	PORT SELECTOR	i ×
Specify the selector identity		
	Faul 01 access part calent	
Name:	FexT01_access_port_select	
Description:	optional	
Interface IDs:	1/1-2	
	valid values: All or Ranges. For Example:	
	1/13,1/15 or 1/22-24	
Interface Policy Group:	select an option	
	1-41 test	
	1Gig	
	CDP	
	inband	
	L2_ext	
	LLDP_ACT	
	mioAcessPortPolicyGroup	
	n3k_pol	
	N3K_Policy	
	UCS_B_SERIES	
	VMM	
	Create Assess Dat Daliau	
	Group	
	F	\frown
1 100 1		SUBMIT

使用GUI进行验证

在交换矩阵资产中,导航**到Pod 1>LeafX(连接FEX的枝叶)>Interfaces。**选择FEX HIF,如此图 所示。



验证

当前没有可用于此配置的验证过程。

故障排除

目前没有针对此配置的故障排除信息。