

# 地址ACI故障代碼F0467: invalid-vlan , invalid-path , encap-already-in-use

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## 簡介

本文檔介紹補救ACI故障F3274、invalid-vlan、invalid-path或encap-already-in-use的後續步驟。

## 背景資訊

ACI故障F0467會在不同的場景中標籤，但將為每個場景顯示不同的「原因」。

ACI故障F0467最常見的「原因」值包括：

- invalid-vlan
- invalid-path
- encap-already-in-use

ACI故障F3274的所有原因都可能影響交換機節點介面上的vlan部署。

### Intersight連線ACI交換矩陣

作為主動ACI服務的一部分，此故障[會受到主動監控](#)。

如果您有與Intersight連線的ACI交換矩陣，則會代表您生成服務請求，以指明在Intersight連線的ACI交換矩陣中發現了此故障的例項。

## ACI故障F0467場景

無效的VLAN配置： invalid-vlan

### 案例

- 配置了封裝VLAN 421的新EPG
- 分配給EPG的物理域
- EPG上VLAN 421的靜態埠繫結
- 故障F0467 — 使用指向EPG的指標針對交換機節點進行標籤
- 錯誤調試消息包含： invalid-vlan:vlan-x :EpG未與域關聯，或者域未分配此vlan

EPG - lc\_EPG

## Fault Properties

General Troubleshooting History

Fault Code: F0467  
 Severity: minor  
 Last Transition: 2023-06-04T14:35:08.407+00:00  
 Lifecycle: Raised  
 Affected Object: [topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-\[uni/tn-lc\\_TN/ap-lc\\_APP/epg-lc\\_EPG\]/node-103/stpathatt-\[eth1/13\]/nwissues](#)  
 Description: Fault delegate: Configuration failed for uni/tn-lc\_TN/ap-lc\_APP/epg-lc\_EPG node 103 eth1/13 due to Invalid VLAN Configuration, debug message: invalid-vlan: vlan-421 :Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it;  
 Type: Config  
 Cause: configuration-failed  
 Change Set: configQual:invalid-vlan, configSt:failed-to-apply, debugMessage:invalid-vlan: vlan-421 :Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it;, temporaryError:no  
 Created: 2023-06-04T14:33:00.796+00:00  
 Code: F0467  
 Number of Occurrences: 1  
 Original Severity: minor  
 Previous Severity: minor  
 Highest Severity: minor

故障描述明確表明「EpG未與域關聯，或者域未分配此VLAN」。

<#root>

```
APIC# moquery -c faultInst -f 'fault.Inst.code=="F0467"' | grep lc_EPG
descr : Configuration failed for uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG
node 103 eth1/13
    due to Invalid VLAN Configuration, debug message:
invalid-vlan:
vlan-421
:
Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it
;
dn : topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-[uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG]/n
```

潛在原因：關聯的VLAN池不包含所需的VLAN

枝葉節點上未部署訪問封裝VLAN 421。

<#root>

Node-103#

```
show vlan encap-id
```

```
421
```

```
extended
```

```
<<< Empty >>>
```

未建立EPG關聯的靜態路徑。

```
<#root>
```

```
APIC#
```

```
moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
```

```
<<< Empty >>>
```

域lc\_phys\_dom將其與lc\_EPG EPG關聯。

```
<#root>
```

```
APIC#
```

```
moquery -c fvRsDomAtt | grep -A 25 lc_EPG | grep rn
```

```
rn : rsdomAtt-[uni/
```

```
phys-lc_phys_dom
```

```
]
```

存在域到VLAN池的關聯。

```
<#root>
```

```
APIC# moquery -c infraRsVlanNs | grep -A 15
```

```
lc_phys_dom
```

```
| grep tDn
```

```
tDn : uni/infra/vlanns-[
```

```
lc_vlan_pool
```

```
]-static
```

Vlan池lc\_vlan\_pool的範圍僅包括VLAN 420。

```
<#root>
```

```
APIC# moquery -c fvnsEncapBlk | grep
```

```
lc_vlan_pool
```

```
dn : uni/infra/vlanns-[lc_vlan_pool]-static/from-[
```

```
vlan-420
```

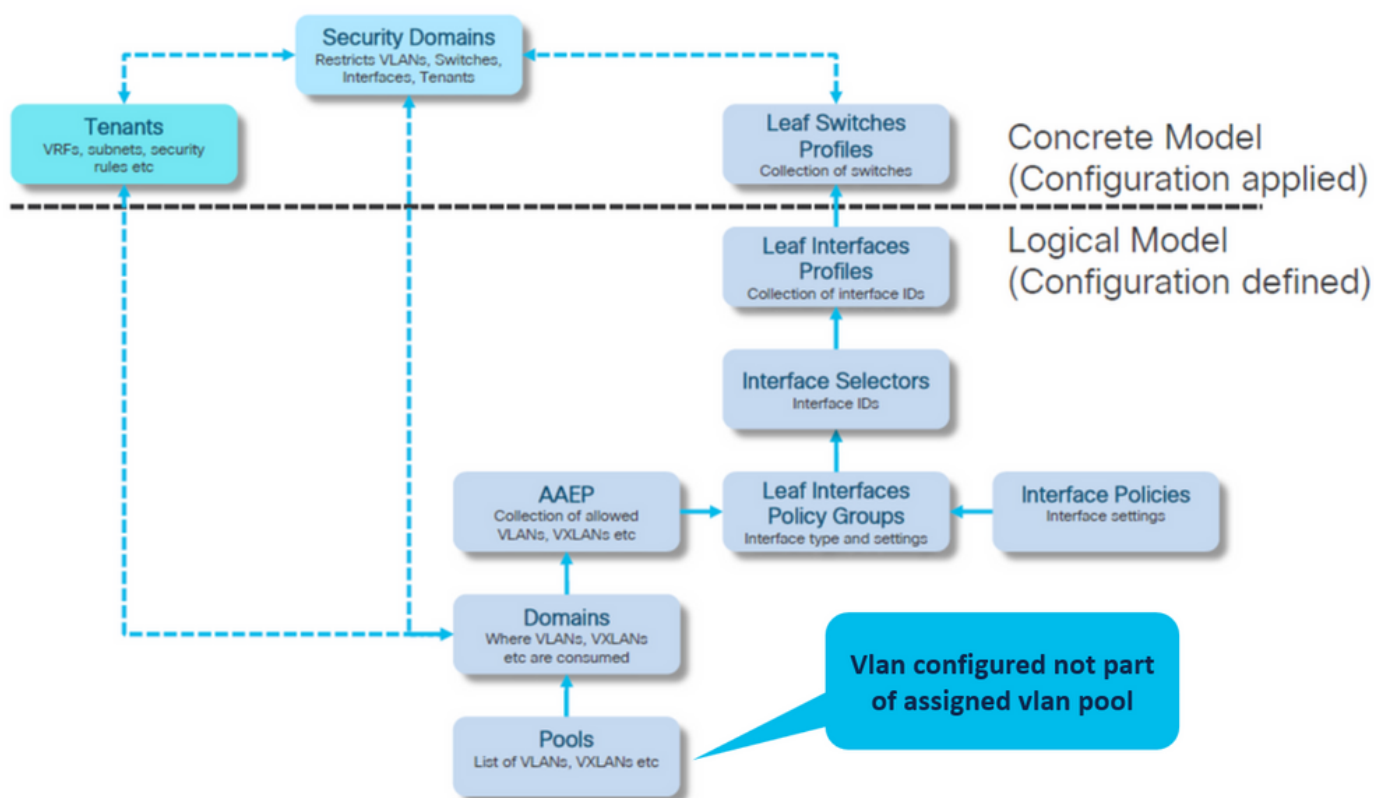
```
]-to-[
```

```
vlan-420
```

```
]
```

vlan 421不在上述池中，因此發生錯誤「invalid-vlan: vlan-421 : EpG is not associated with a domain or the domain does not have this vlan assigned to it」

在前面引用的方框圖中，此特定VLAN池引用突出顯示



將缺少的vlan 421新增到特定vlan範圍

Vlan池與封裝和域關聯 ( 結構>訪問策略>池> VLAN > lc\_vlan\_pool )

Properties

Name: lc\_vlan\_pool

Description: optional

Alias:

Allocation Mode: Static Allocation

Encap Blocks:

VLAN Range	Description	Allocation Mode	Role
[420]		Static Allocation	External or On the wire encapsulations
[421]		Static Allocation	External or On the wire encapsulations

Domains:

Name	Type
lc_phys_dom	Physical Domain

## 新增VLAN 421後的VLAN池範圍驗證

```
<#root>
```

```
APIC#
```

```
moquery -c fvnsEncapBlk | grep lc_vlan_pool
```

```
dn : uni/infra/vlanns-[lc_vlan_pool]-static/from-[
```

```
vlan-420
```

```
]-to-[
```

```
vlan-420
```

```
]
```

```
dn : uni/infra/vlanns-[lc_vlan_pool]-static/from-[
```

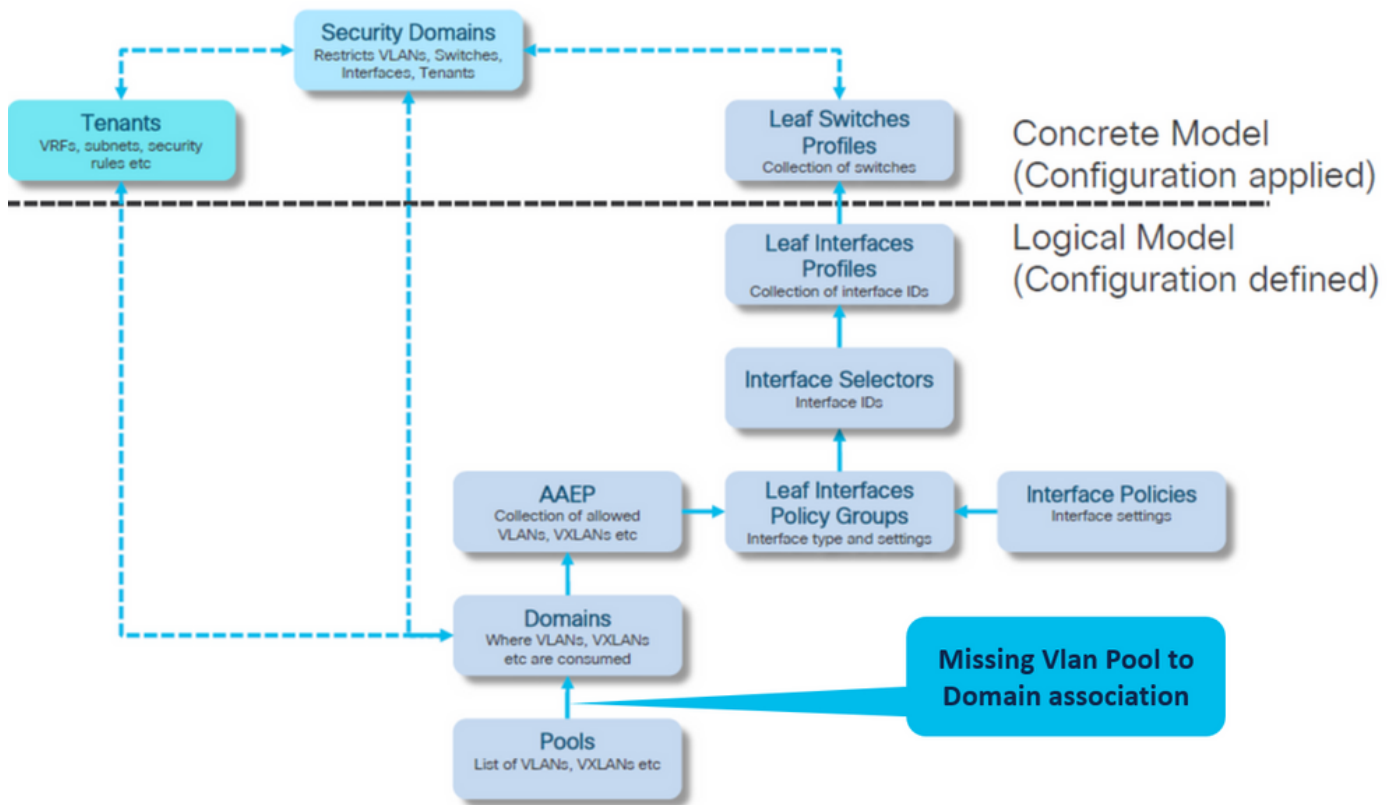
```
vlan-421
```

```
]-to-[
```

```
vlan-421
```

```
]
```

潛在原因：具有未與域關聯的所需VLAN的VLAN池



Fabric > Access Policies > Physical and External Domains > Physical Domains > lc\_phys\_dom



[+]域與VLAN池的關聯

<#root>

```
APIC# moquery -c infraRsVlanNs | grep -A 15
```

```
lc_phys_dom
```

```
| grep tDn
```

```
<< EMPTY >>
```

修復：包括丟失的VLAN關聯



## 無效的路徑配置：invalid-path

### 案例

- 已配置EPG
- 分配給EPG的域
- 在EPG上為VLAN 420建立靜態埠繫結，節點103 eth 1/13
- 故障F0467 — 使用指向EPG的指標針對交換機節點進行標籤
- 錯誤調試消息包含：invalid-path:EpG/L3Out未與域關聯，或者域未分配此介面

在沒有相應的訪問策略允許正確應用該配置的情況下進行交換機/埠/VLAN宣告時，將引發此故障。

根據此故障的描述，可能會缺少訪問策略關係的另一個元素。

EPG - lc\_EPG到租戶的故障關聯> lc\_TN > lc\_AP > lc\_EPG >故障>故障



EPG - lc\_EPG

## Fault Properties

General Troubleshooting History

Fault Code: F0467  
 Severity: minor  
 Last Transition: 2023-06-04T21:39:12.971+00:00  
 Lifecycle: Raised  
 Affected Object: [topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-\[uni/tn-lc\\_TN/ap-lc\\_APP/epg-lc\\_EPG\]/node-103/stpathatt-\[eth1/13\]/nwissues](#)  
 Description: Fault delegate: Configuration failed for uni/tn-lc\_TN/ap-lc\_APP/epg-lc\_EPG node 103 eth1/13 due to Invalid Path Configuration, debug message: invalid-path: Either the EpG/L3Out is not associated with a domain or the domain does not have this interface assigned to it;  
 Type: Config  
 Cause: configuration-failed  
 Change Set: configQual:invalid-path, configSt:failed-to-apply, debugMessage:invalid-path: Either the EpG/L3Out is not associated with a domain or the domain does not have this interface assigned to it;, temporaryError:no  
 Created: 2023-06-04T21:36:56.851+00:00  
 Code: F0467  
 Number of Occurrences: 1  
 Original Severity: minor  
 Previous Severity: minor  
 Highest Severity: minor

受影響的EPG、交換機節點ID和埠號在故障描述和DN中：

<#root>

```
APIC# moquery -c faultInst -f 'fault.Inst.code=="F0467"' | grep
```

```
lc_EPG
```

```
descr          : Configuration failed for
```

```
uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG
```

```
node 103 eth1/13
```

```
due to Invalid Path Configuration, debug message:
```

```
invalid-path:
```

```
Either the EpG/L3Out is not associated with a domain or the domain does not have this interface assigned to it;  
dn          : topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-[
```

```
uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG
```

```
]/
```

```
node-
```

```
103
```

```
/stpathatt-[
```

```
eth1/
```

```
13
```

]/nwissues/fault-F0467

## 快速啟動隔離

確認是否已部署VLAN。如果沒有，可以運行這些命令來隔離配置錯誤。

在以下cmds中，lc\_EPG是用於輸出篩選的EPG名稱。

枝葉節點上未部署Encap-vlan

```
Node-103# show vlan encap-id 420 extended
<<< Empty >>>
```

[1] EPG關聯策略的靜態路徑為空。

```
<#root>
```

```
APIC#
```

```
moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
```

```
<<< Empty >>>
```

[2]域與EPG的關聯

```
<#root>
```

```
APIC#
```

```
moquery -c fvRsDomAtt | grep -A 25 lc_EPG | grep rn
```

```
rn : rsdomAtt-[uni/
```

```
phys-lc_phys_dom
```

```
]
```

[3]域與VLAN池的關聯

```
<#root>
```

```
APIC#
```

```
moquery -c infraRsVlanNs | grep -A 15 lc_phys_dom | grep tDn
```

```
tDn : uni/infra/vlanns-[  
lc_vlan_pool  
]-static
```

#### [4] Vlan池範圍驗證

```
<#root>  
APIC#  
moquery -c fvnsEncapBlk | grep lc_vlan_pool  
  
dn : uni/infra/vlanns-[lc_vlan_pool]-static/from-[  
vlan-420  
]-to-[  
vlan-420  
]
```

#### [5] 域與AAEP的關聯

```
<#root>  
APIC#  
moquery -c infraRtDomP | grep lc_phys_dom  
  
dn : uni/phys-lc_phys_dom/rtdomP-[uni/infra/attentp-  
lc_AAEP  
]
```

#### [6] AAEP到介面策略組關聯(IPG)

```
<#root>  
rtp-aci08-apic1#  
moquery -c infraRtAttEntP | grep lc_AAEP  
  
dn : uni/infra/attentp-lc_AAEP/rtattEntP-[uni/infra/funcprof/accportgrp-  
lc_IPG  
]
```

## [7] IPG與介面選擇器關聯

<#root>

APIC#

```
moquery -c infraRsAccBaseGrp | grep -B 15 lc_IPG | grep dn
```

dn : uni/infra/accportprof-leaf103\_IP/hports-

lc\_Interface\_Selector

-typ-range/rsaccBaseGrp

## [8]介面配置檔案與交換機配置檔案關聯

<#root>

APIC#

```
moquery -c infraRsAccPortP | grep leaf103_IP | grep dn
```

dn : uni/infra/nprof-

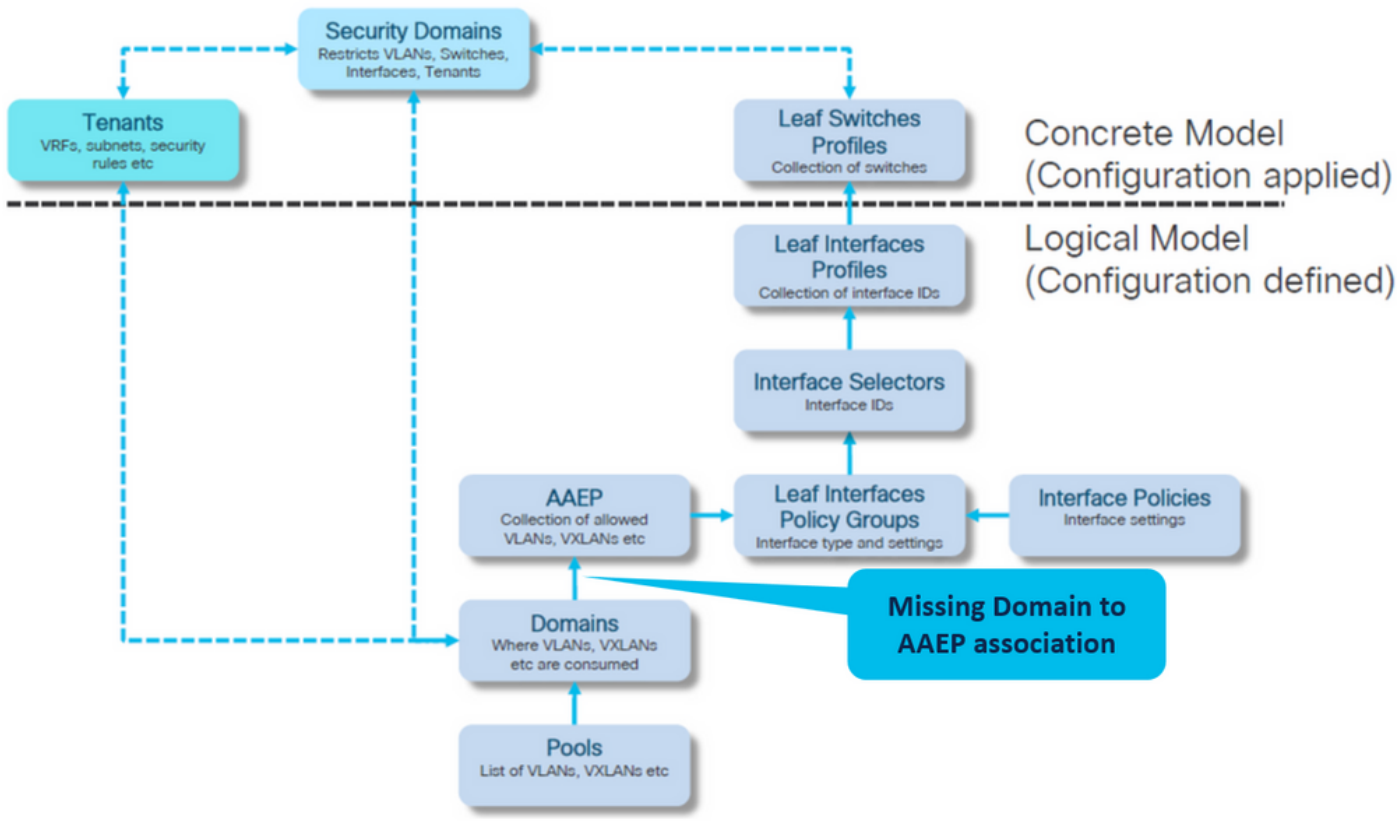
leaf103\_SP

/rsaccPortP-[uni/infra/accportprof-leaf103\_IP]

如果給定靜態路徑配置，缺少任何所需的關聯訪問策略，則會看到無效路徑的原因。瀏覽潛在原因，逐跳驗證訪問策略。

1. 缺少域與AAEP的關聯
2. 缺少AAEP到IPG的關聯
3. 缺少IPG與介面選擇器關聯
4. 缺少介面選擇器與介面配置檔案關聯
5. 缺少介面配置檔案與交換機配置檔案關聯

潛在原因：缺少域與AAEP關聯



交換矩陣>訪問策略>策略>全域性> AAEP > lc\_AAEP

Attachable Access Entity Profile - lc\_AAEP



[+] EPG關聯策略的靜態路徑為空

<#root>

```
APIC# moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
<< EMPTY >>
```

[+]域與AAEP關聯

<#root>

```
APIC# moquery -c infraRtDomP | grep
```

lc\_phys\_dom

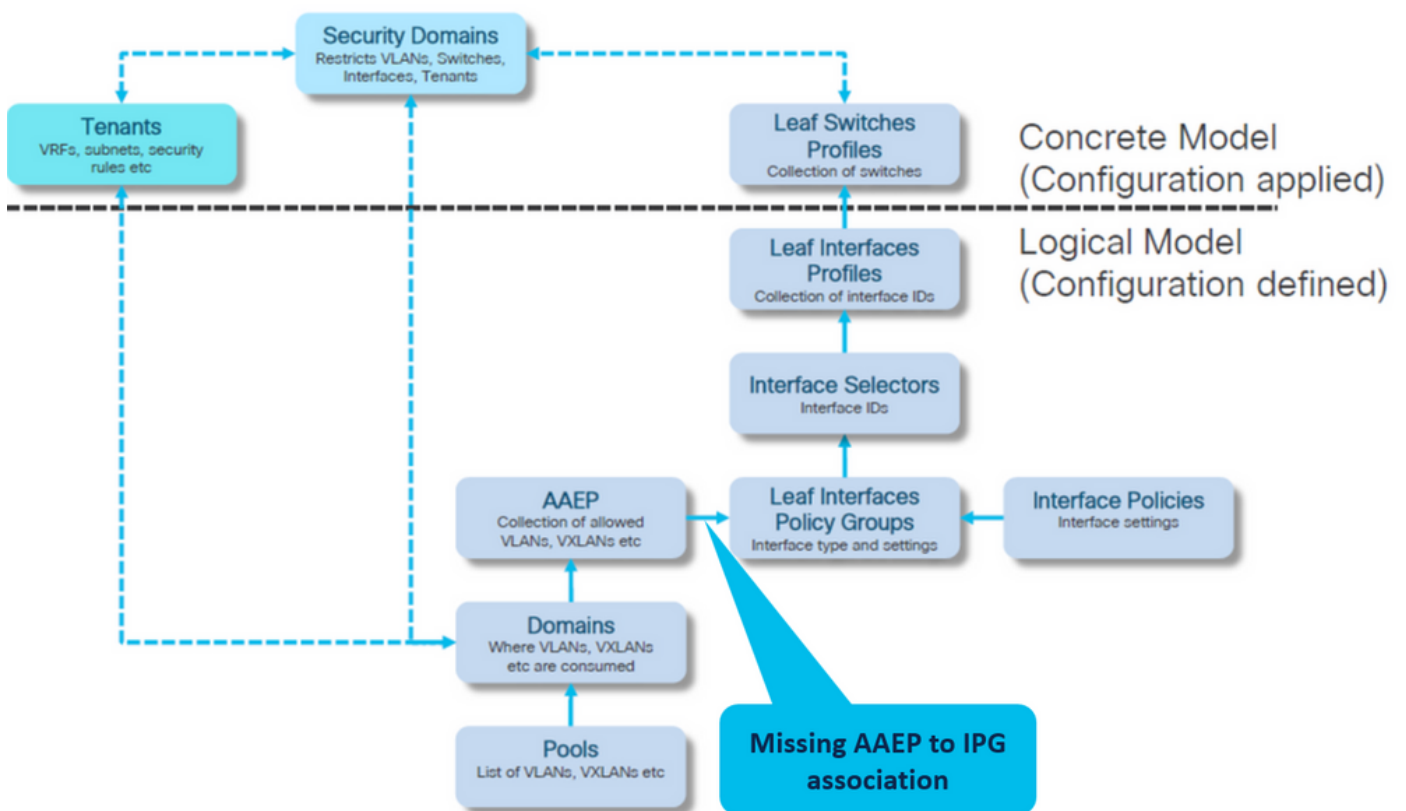
<< EMPTY >>

修復：包括缺少的域關聯

Fabric > Access Policies > Physical and External Domains > Physical Domains > lc\_phys\_dom



潛在原因：缺少AAEP到IPG的關聯



IPG到AAEP的關聯

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc\_IPG

Properties

Name: lc\_IPG

Description: optional

Alias:

Attached Entity Profile: select an option

CDP Policy: select a value

Link Level Policy: select a value

LLDP Policy: select a value

[+] EPG關聯策略的靜態路徑為空

<#root>

```
APIC# moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
```

```
<< EMPTY >>
```

[+] IPG到AAEP的關聯為空

<#root>

```
APIC# moquery -c infraRsAttEntP | grep -A 15
```

```
lc_IPG
```

```
| grep tDn
```

```
<< EMPTY >>
```

修復：缺少AAEP到IPG的關聯

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc\_IPG

Properties

Name: lc\_IPG

Description: optional

Alias:

Attached Entity Profile: lc\_AAEP

CDP Policy: select a value

Link Level Policy: select a value

LLDP Policy: select a value

[+] IPG與AAEP關聯

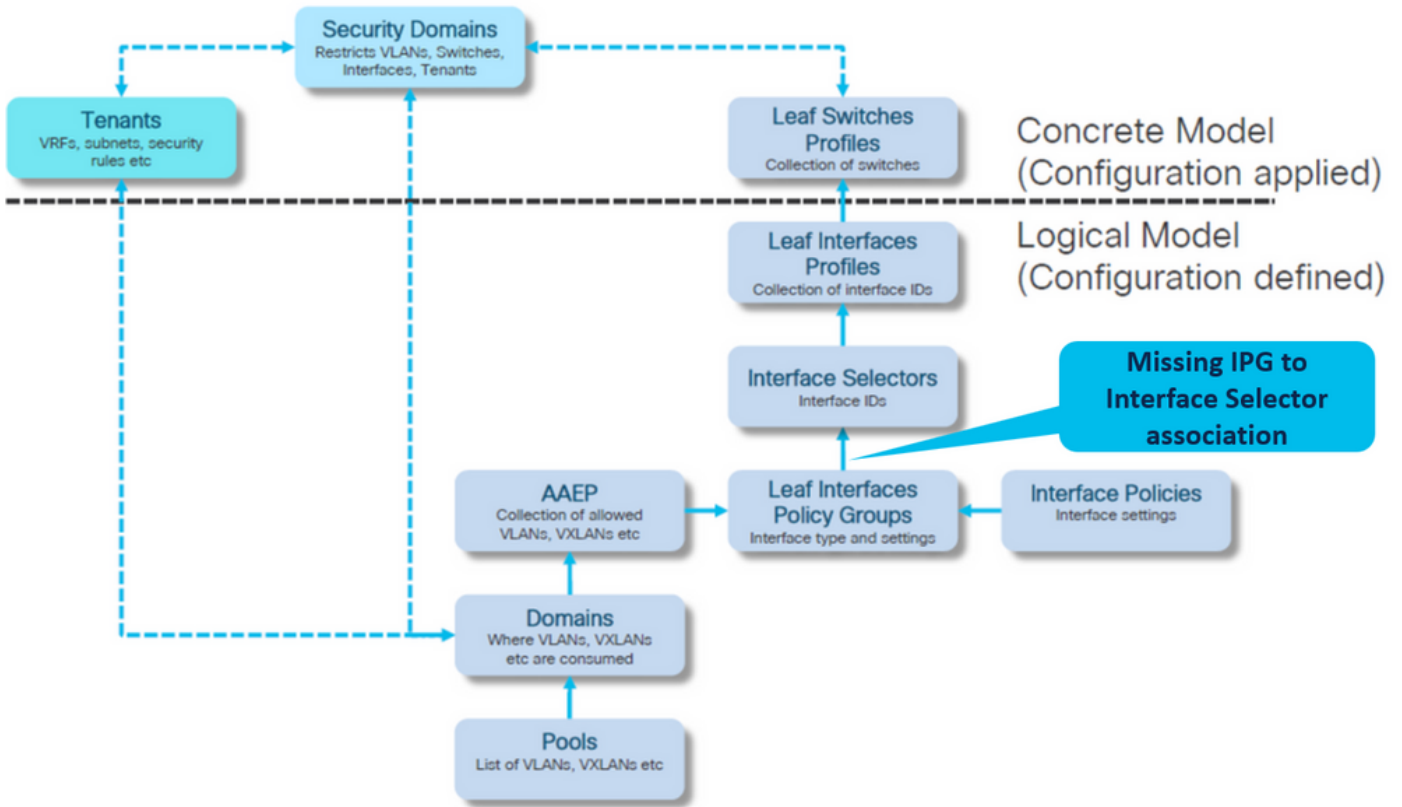
<#root>

```
APIC# moquery -c infraRsAttEntP | grep -A 15
```

```
lc_IPG
```

```
| grep tDn
tDn : uni/infra/attentp-
lc_AAEP
```

潛在原因：缺少IPG與介面選擇器關聯



介面選擇器與介面策略組關聯

交換矩陣>訪問策略>介面>枝葉介面>配置檔案>枝葉103\_IP > lc\_Interface\_Selector

Access Port Selector - lc\_Interface\_Selector



[+] IPG與介面選擇器關聯

<#root>

```
APIC# moquery -c infraRsAccBaseGrp | grep -B 15
```

```
lc_IPG
```

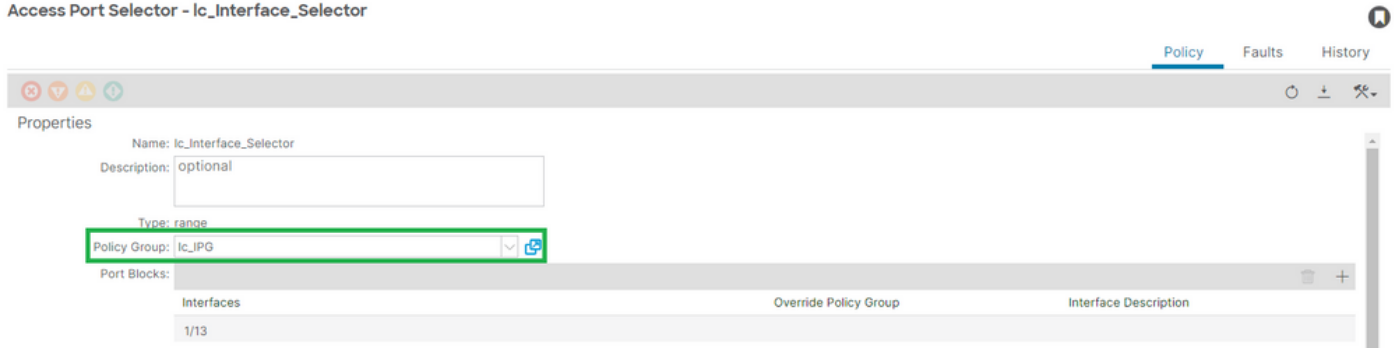


```
| grep dn
```

```
<< EMPTY >>
```

修復：介面選擇器與介面策略組關聯

Access Port Selector - lc\_Interface\_Selector



[+] IPG與介面選擇器關聯

```
<#root>
```

```
APIC# moquery -c infraRsAccBaseGrp | grep -B 15
```

```
lc_IPG
```

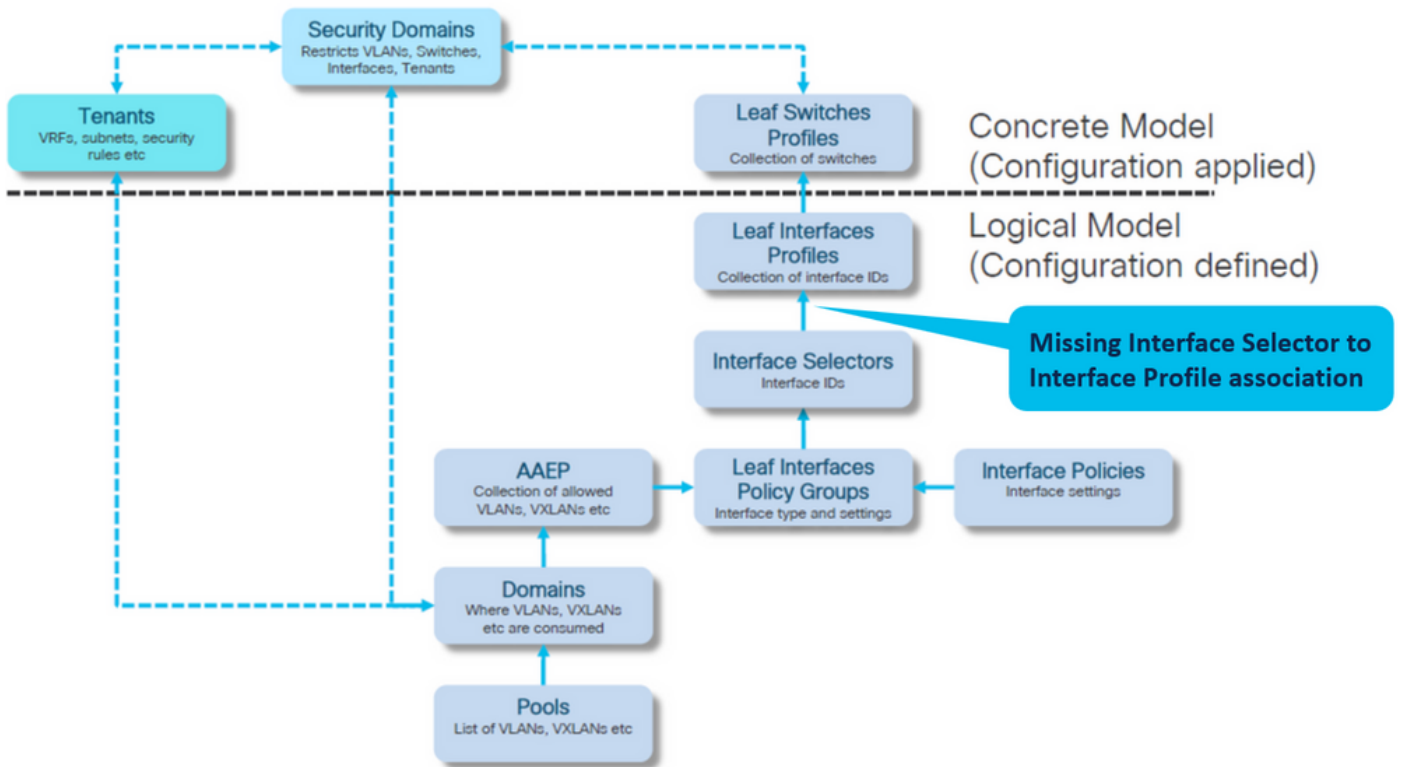
```
| grep dn
```

```
dn : uni/infra/accportprof-lead103_IP/hports-
```

```
lc_Interface_Selector
```

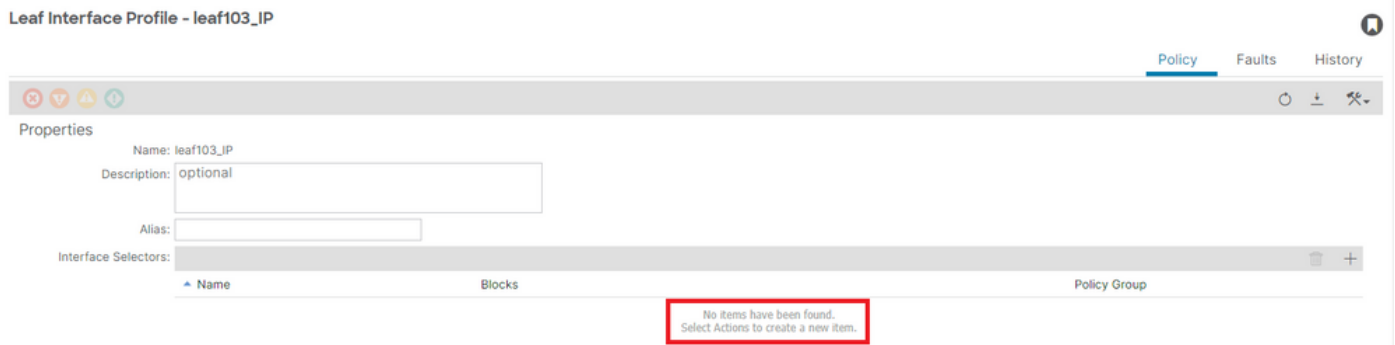
```
-typ-range/rsaccBaseGrp
```

潛在原因：缺少介面選擇器與介面配置檔案關聯



介面配置檔案與介面選擇器關聯

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103\_IP



疑難排解:

<#root>

```
APIC# moquery -c infraHPortS | grep leaf103_IP
```

```
<< EMPTY >>
```

將介面配置檔案修復為介面選擇器關聯

Policy    Faults    History

Properties

Name: leaf103\_IP  
Description: optional  
Alias:

Name	Blocks	Policy Group
lc_Interface_Selector	1/13	lc_IPG

<#root>

APIC# moquery -c infraHPortS | grep

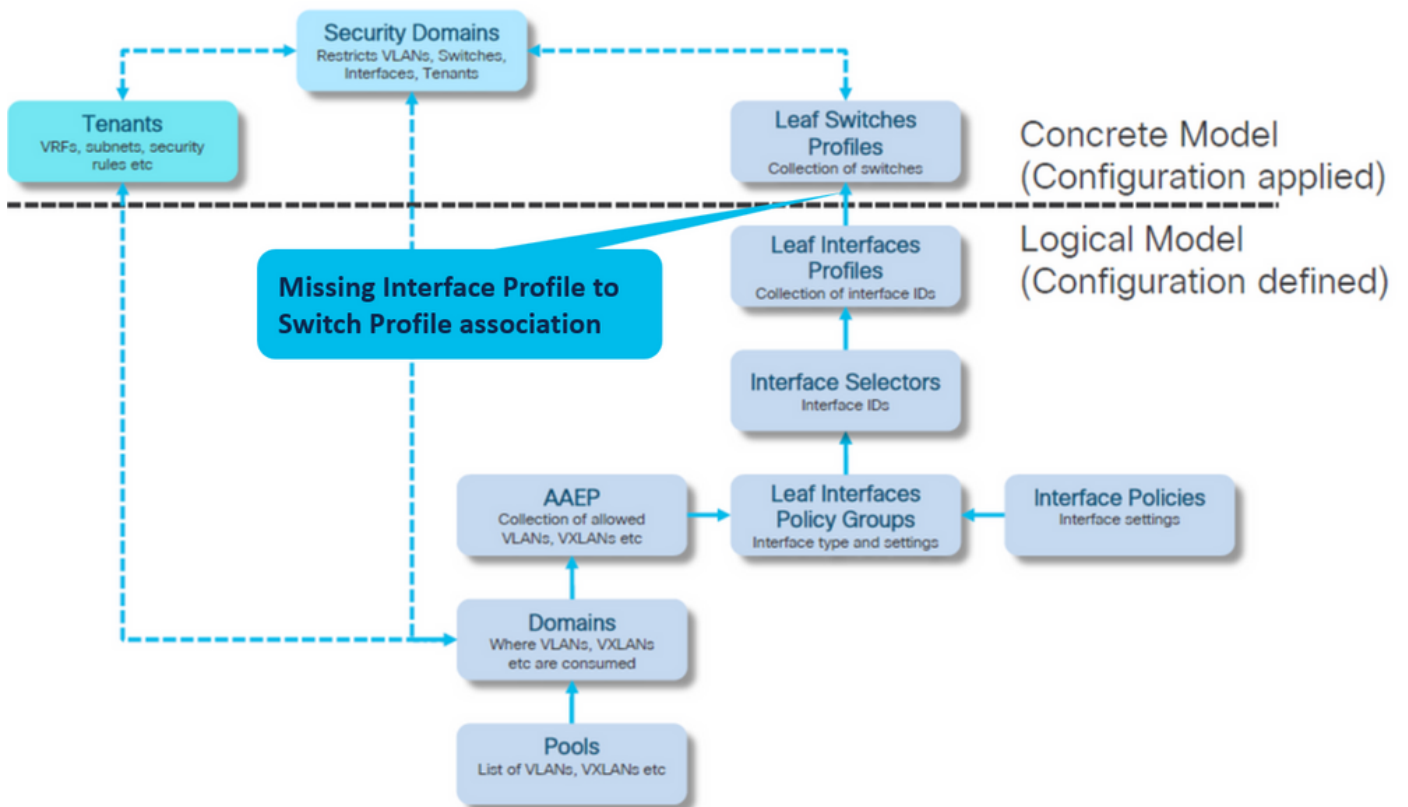
leaf103\_IP

dn : uni/infra/accportprof-leaf103\_IP/hports-

lc\_Interface\_Selector

-typ-range

潛在原因：缺少與交換機配置檔案關聯的介面配置檔案



介面配置檔案與交換機配置檔案關聯

交換矩陣>訪問策略>交換機>枝葉交換機>配置檔案>枝葉103\_SP

Policy Faults History

Properties

Name: leaf103\_SP  
Description: optional

Leaf Selectors:

Name	Blocks	Policy Group
leaf103_SP	103	leaf103_SPG

Associated Interface Selector Profiles:

Name	Description	State
No items have been found. Select Actions to create a new item.		

<#root>

```
APIC# moquery -c infraRsAccPortP | grep leaf103_IP | grep dn
```

```
<< EMPTY >>
```

將枝葉配置檔案固定到介面選擇器配置檔案關聯

Policy Faults History

Properties

Name: leaf103\_SP  
Description: optional

Leaf Selectors:

Name	Blocks	Policy Group
leaf103_SP	103	leaf103_SPG

Associated Interface Selector Profiles:

Name	Description	State
leaf103_IP		formed

[+]介面配置檔案與交換機配置檔案關聯

<#root>

```
APIC# moquery -c infraRsAccPortP | grep
```

```
leaf103_IP
```

```
| grep dn  
dn : uni/infra/nprof-
```

```
leaf103_SP
```

```
/rsaccPortP-[uni/infra/accportprof-leaf103_IP]
```

## Encap已在另一個EPG中使用：encap-already-in-use

### 案例

預設情況下，VLAN具有全域性範圍。給定的VLAN ID只能用於給定枝葉交換機上的單個EPG。

在給定枝葉交換機內的多個EPG上重複使用同一VLAN的任何嘗試都會導致封裝已在使用的F0467故障。

EPG到租戶的故障關聯> lc\_TN > lc\_AP > lc\_EPG >故障>故障

EPG - lc\_EPG

### Fault Properties

General Troubleshooting History

Fault Code: F0467  
Severity: minor  
Last Transition: 2023-07-03T15:02:06.354+00:00  
Lifecycle: Soaking  
Affected Object: [topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-\[uni/tn-lc\\_TN/ap-lc\\_APP/epg-lc\\_EPG\]/node-103/stpathatt-\[eth1/13\]/nwissues](#)  
Description: Fault delegate: Configuration failed for uni/tn-lc\_TN/ap-lc\_APP/epg-lc\_EPG node 103 eth1/13 due to Encap Already Used in Another EPG, debug message: encap-already-in-use: Encap (vlan-420) is already in use by lc\_TN\_Dup:lc\_APP:lc\_EPG;  
Type: Config  
Cause: configuration-failed  
Change Set: configQual:encap-already-in-use, configSt:failed-to-apply, debugMessage:encap-already-in-use: Encap (vlan-420) is already in use by lc\_TN\_Dup:lc\_APP:lc\_EPG;, temporaryError:no  
Created: 2023-07-03T15:02:06.354+00:00  
Code: F0467  
Number of Occurrences: 1  
Original Severity: minor  
Previous Severity: minor  
Highest Severity: minor

```
APIC# moquery -c faultInst -f 'fault.Inst.code=="F0467"' | grep lc_EPG
changeSet : configQual:encap-already-in-use, configSt:failed-to-apply, debugMessage:encap-already-in-use: Encap (vlan-420) is already in use by lc_TN_Dup:lc_APP:lc_EPG;
descr : Configuration failed for uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG node 103 eth1/13 due to Encap Already Used in Another EPG, debug message: encap-already-in-use: Encap (vlan-420) is already in use by lc_TN_Dup:lc_APP:lc_EPG;
dn : topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-[uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG]/node-103/stpathatt-[eth1/13]/nwissues
```

### 快速啟動隔離

[+]您可以確認已在其他租戶lc\_TN\_Dup上使用的封裝

```
Node-103# show vlan extended | egrep "Encap|----|vlan-420"
VLAN Name                               Encap                               Ports
-----
3    lc_TN_Dup:lc_APP:lc_EPG               vlan-420                            Eth1/13
```

## 修正選項

### 選項1:

在枝葉或VPC對上使用不同的VLAN編號。

### 選項2:

在未嘗試部署Vlan的不同枝葉或VPC對上使用相同的VLAN。

### 選項3:

刪除重複的EPG上的靜態埠關聯，這將允許新部署。

### 選項4:

在v1.1版本之前的ACI版本中，給定的VLAN封裝只對映到枝葉交換機上的單個EPG。如果同一枝葉交換機上有第二個具有相同VLAN封裝的EPG，則ACI會引發此故障。

從v1.1版本開始，您可以在Per Port VLAN配置中，在給定的枝葉交換機（或FEX）上部署具有相同VLAN封裝的多個EPG

## 每埠VLAN配置指南

[https://www.cisco.com/c/en/us/td/docs/switches/datacenter/aci/apic/sw/2-x/L2\\_config/b\\_Cisco\\_APIC\\_Layer\\_2\\_Configuration\\_Guide/b\\_Cisco\\_APIC\\_Layer\\_2\\_Configuration\\_Guide\\_c](https://www.cisco.com/c/en/us/td/docs/switches/datacenter/aci/apic/sw/2-x/L2_config/b_Cisco_APIC_Layer_2_Configuration_Guide/b_Cisco_APIC_Layer_2_Configuration_Guide_c)

## 其他詳細資訊

### 成功的配置參考

本節可作為功能設定的完整配置的參考指南。

### EPG到靜態路徑關聯

租戶> Ic\_TN > Ic\_AP > Ic\_EPG > 靜態埠



### [+]靜態埠到EPG關聯策略

<#root>

```

APIC# moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
dn : topology/pod-1/node-103/sys/ctx-[vlan-2195458]/bd-[vlan-16416666]/vlan-[
vlan-420
]/rtfvDomIfConn-[uni/epp/fv-[uni/tn-lc_TN/ap-lc_APP/epg-
lc_EPG
]/
node-103
/stpathatt-[
eth1/13
]/conndef/conn-[vlan-420]-[0.0.0.0]]

```

## EPG與AAEP關聯

交換矩陣>訪問策略>策略>全域性> AAEP > lc\_AAEP

### Attachable Access Entity Profile - lc\_AAEP

Properties

Name: lc\_AAEP  
Description: optional

Enable Infrastructure VLAN:

Domains (VMM, Physical or External) Associated to Interfaces:

name	State
lc_phys_dom (Physical)	formed

Application EPGs

Application EPGs	Encap	Primary Encap	Mode
lc_TN/lc_APP/lc_EPG	vlan-420	unknown	Access (802.1P)

Show Usage Reset Submit

<#root>

```
APIC# moquery -c fvIfConn -f 'fv.IfConn.encap=="
```

```
vlan-420
```

```
''' | grep dn
```

```
dn : uni/epp/fv-[uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG]/node-103/attEntitypathatt-[lc_AAEP]/conndef/conn-[
```

vlan-420

]-[0.0.0.0]

## EPG到域的關聯

租戶> lc\_TN > lc\_AP > lc\_EPG > 域

Domains (VMs and Bare-Metals)

Domain	Type	Deployment	Resolution	Allow Micro-Segmentation	Primary VLAN	Port Encap	Switching Mode	Encap Mode	Cos Value	Enhanced Lag Policy	Custom EPG Name
lc_phys_dom	Physical Domain						native	Auto	Cos0		

[+]域lc\_phys\_dom已將其與EPG關聯。

<#root>

```
APIC# moquery -c fvRsDomAtt | grep -A 25
```

```
lc_EPG
```

```
| grep rn  
rn : rsdmAtt-[uni/
```

```
phys-lc_phys_dom
```

```
]
```

## 域到AAEP和VLAN池關聯

Fabric > Access Policies > Physical and External Domains> Physical Domains > lc\_phys\_dom

Physical Domain - lc\_phys\_dom

Policy | Faults | History

Properties

Name: lc\_phys\_dom

Associated Attachable Entity Profiles: lc\_AAEP

VLAN Pools: lc\_vlan\_pool(static)

Security Domains:

Select	Name	Description
--------	------	-------------

[+]域與AAEP關聯

<#root>



```
APIC# moquery -c infraRtDomP | grep
```

```
lc_phys_dom
```

```
dn : uni/phys-lc_phys_dom/rtdomP-[uni/infra/attentp-
```

```
lc_AAEP
```

```
]
```

## [+]域與VLAN池的關聯

```
<#root>
```

```
APIC# moquery -c infraRsVlanNs | grep -A 15
```

```
lc_phys_dom
```

```
 | grep tDn  
tDn : uni/infra/vlanns-[
```

```
lc_vlan_pool
```

```
]-static
```

## 要封裝塊和域關聯的VLAN池

交換矩陣>訪問策略>池> VLAN > lc\_vlan\_pool

VLAN Pool - lc\_vlan\_pool (Static Allocation)

Policy Operational Faults History

Properties

Name: lc\_vlan\_pool  
Description: optional  
Alias:

Allocation Mode: Static Allocation

Encap Blocks:	VLAN Range	Description	Allocation Mode	Role
	[420]		Static Allocation	External or On the wire encapsulations

Domains:	Name	Type
	lc_phys_dom	Physical Domain

## [+] Vlan池範圍驗證

```
<#root>
```

```
APIC# moquery -c fvnsEncapBlk | grep
```

```
lc_vlan_pool
```

```
dn : uni/infra/vlanns-[lc_vlan_pool]-static/from-[  
vlan-420  
]-to-[  
vlan-420  
]
```

[+]已使用lc\_vlan\_pool的域

<#root>

```
APIC# moquery -c fvnsRtVlanNs | grep  
lc_vlan_pool
```

```
dn : uni/infra/vlanns-[lc_pool]-dynamic/rtinfraVlanNs-[uni/  
phys-lc_phys_dom  
]
```

AAEP到域的關聯

交換矩陣>訪問策略>策略>全域性> AAEP > lc\_AAEP



<#root>

```
APIC# moquery -c infraRsDomP | grep  
lc_AAEP
```

```
dn : uni/infra/attentp-lc_AAEP/rsdomP-[uni/phys-  
lc_phys_dom  
]
```

## IPG到AAEP的關聯

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc\_IPG

Leaf Access Port Policy Group - lc\_IPG

Properties

Name: lc\_IPG  
Description: optional

Alias:

Attached Entity Profile: lc\_AAEP

CDP Policy: select a value

Link Level Policy: select a value

LLDP Policy: select a value

## [+] IPG與AAEP關聯

<#root>

```
APIC# moquery -c infraRsAttEntP | grep -A 15
```

```
lc_IPG
```

```
| grep tDn  
tDn : uni/infra/attentp-
```

```
lc_AAEP
```

## 枝葉配置檔案與介面選擇器關聯

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103\_IP

Leaf Interface Profile - leaf103\_IP

Properties

Name: leaf103\_IP  
Description: optional

Alias:

Interface Selectors:

Name	Blocks	Policy Group
lc_Interface_Selector	1/13	lc_IPG

<#root>

```
APIC# moquery -c infraHPortS | grep
```

```
leaf103_IP
```

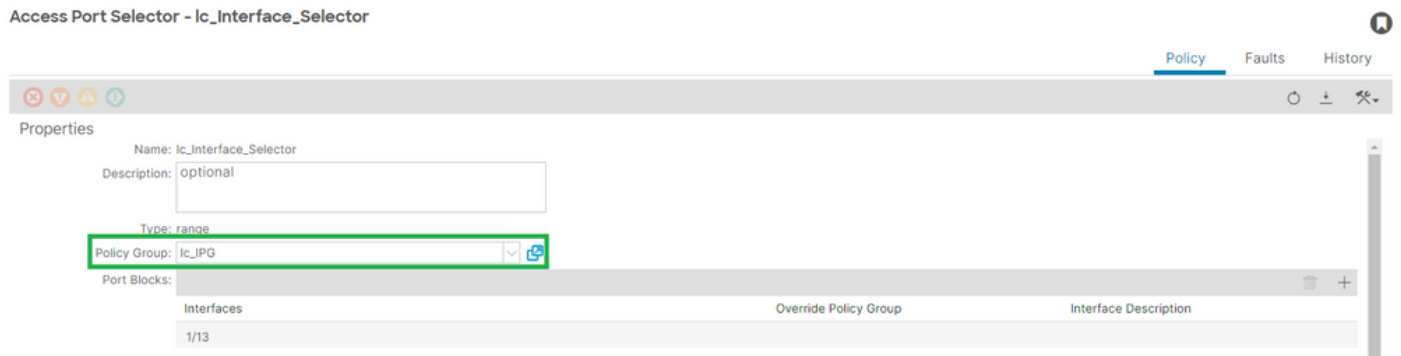
```
dn : uni/infra/accportprof-leaf103_IP/hports-
```

```
lc_Interface_Selector
```

-typ-range

## 介面選擇器與介面策略組關聯

交換矩陣>訪問策略>介面>枝葉介面>配置檔案>枝葉103\_IP > Ic\_Interface\_Selector



## [+] IPG與介面選擇器關聯

<#root>

```
APIC# moquery -c infraRsAccBaseGrp | grep -B 15
```

```
Ic_IPG
```

```
| grep dn  
dn : uni/infra/accportprof-
```

```
lead103_IP
```

```
/hports-
```

```
Ic_Interface_Selector
```

```
-typ-range/rsaccBaseGrp
```

## 枝葉介面設定檔到介面選擇器和枝葉交換器設定檔關聯

交換矩陣>訪問策略>交換機>枝葉交換機>配置檔案>枝葉103\_SP

Properties

Name: leaf103\_SP  
Description: optional

Leaf Selectors:

Name	Blocks	Policy Group
leaf103_SP	103	leaf103_SPG

Associated Interface Selector Profiles:

Name	Description	State
leaf103_IP		formed

### [+]枝葉介面配置檔案與交換機配置檔案關聯

<#root>

```
APIC# moquery -c infraRsAccPortP | grep
```

```
leaf103_IP
```

```
| grep dn  
dn : uni/infra/nprof-
```

```
leaf103_SP
```

```
/rsaccPortP-[uni/infra/accportprof-
```

```
leaf103_IP
```

```
]
```

### [+]交換機配置檔案與交換機配置式組關聯

<#root>

```
APIC# moquery -c infraRsAccNodePGrp | grep -A 8
```

```
leaf103_SP
```

```
| grep tDn  
tDn : uni/infra/funcprof/accnodegrp-
```

```
leaf103_SPG
```

## Vlan部署驗證

### 案例

- 接入封裝VLAN 420部署在節點103 - E1/13上

- 部署所有相關訪問策略和EPG配置

## 通過APIC檢查ACI交換矩陣VLAN部署

可以根據所關心的VLAN封裝過濾對fvIcConn類的查詢，以顯示部署VLAN的每個EPG/交換機/介面組合。

```
<#root>
APIC#
moquery -c fvIcConn -f
'fv.IcConn.encap=="vlan-420"' | grep dn

dn          : uni/epp/fv-[uni/tn-1c_TN/ap-1c_APP/epg-1c_EPG]/
node-
103
/stpathatt-[
eth1/
13
]/conndef/conn-[
vlan-
420
]-[0.0.0.0]
```

## 通過交換機CLI檢查VLAN部署

可以在任何交換機上運行「show vlan extended」，以檢查交換機上當前部署的VLAN，以及VLAN所繫結的EPG和介面。

「encap-id xx」過濾器在ACI 4.2版及更高版本中可用。

```
<#root>
Node-103#
show vlan encap-id
420

extended
```

VLAN Name	Encap	Ports
2	vlan-420	Eth1/13

通過交換機CLI檢查平台無關的VLAN部署

ACI交換器節點中的每個VLAN都會對映到某個平台獨立(PI)VLAN，這是每個交換器節點的本地值。

接入封裝對映到名為「FD VLAN」的PI VLAN，而網橋域對映到名為「BD VLAN」的PI Vlan。

可以在交換機上運行「show system internal epm vlan all」以顯示枝葉上部署的vlan清單。

```
<#root>
```

```
Node-103#
```

```
show vlan extended | egrep
```

```
"Encap|----|1/13"
```

VLAN Name	Encap	Ports
2	vlan-420	Eth1/13
		--> FD vlan 2
18	vlan-16416666	Eth1/13
		--> BD vlan 18

可以使用「show interface」命令驗證FD vlan和BD vlan到介面的配置。

```
<#root>
```

```
Node-103#
```

```
show interface eth
```

```
1/13 trunk | grep -A 2
```

```
Allowed
```

```
Port          Vlans Allowed on Trunk
```

-----  
Eth1/13

2,18

## 檢查SVI VLAN部署

如果使用BD SVI驗證第3層VLAN，則使用moquery class fvSubnet獲取子網的IP地址。

```
<#root>
```

```
APIC#
```

```
moquery -c fvSubnet | grep lc_BD
```

```
dn : uni/tn-lc_TN/BD-lc_BD/subnet-[201.201.201.254/24]
```

然後檢查「show ip interface brief」並檢查匹配的IP地址以驗證VLAN和預期的VRF。

在本示例中，驗證來自上一個CLI輸出示例的BD Vlan 18。

```
<#root>
```

```
Node-103#
```

```
show ip interface brief
```

```
...
```

```
IP Interface Status for VRF "
```

```
lc_TN:lc_VR
```

```
F"(16)
```

Interface	Address	Interface Status
-----------	---------	------------------

```
vlan18
```

```
201.201.201.254/24
```

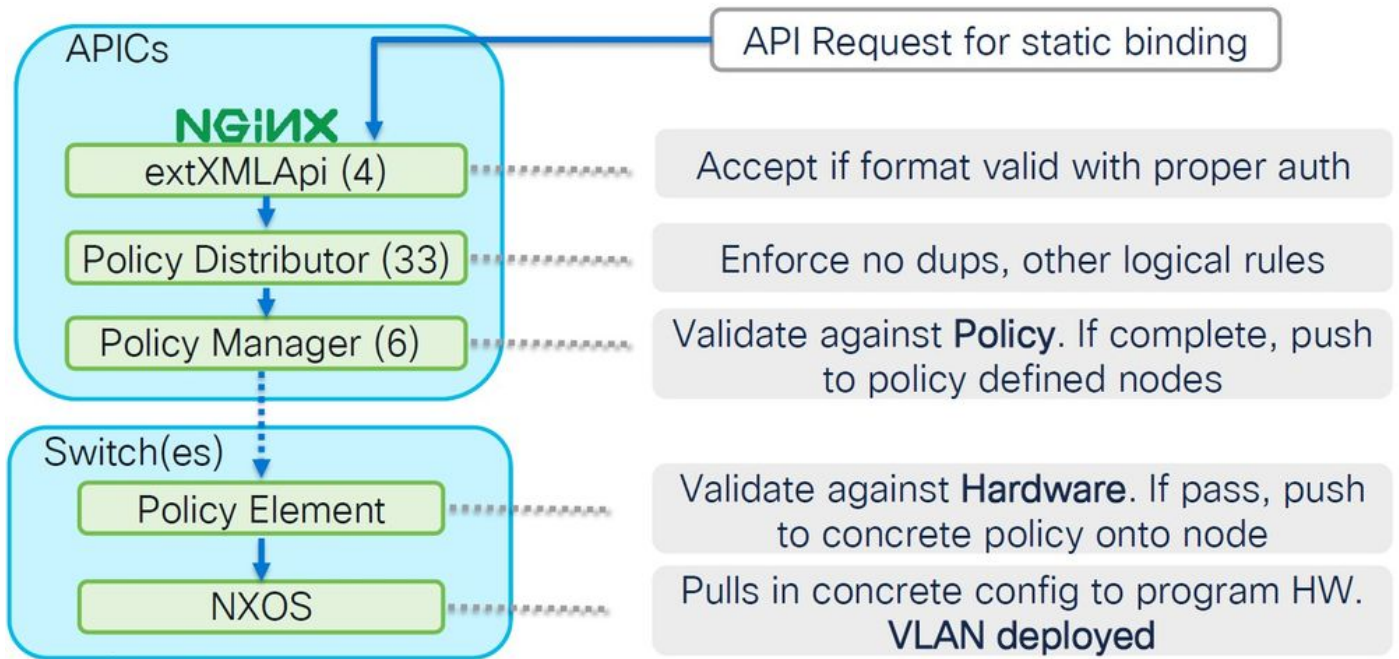
```
protocol-up/link-up/admin-up
```

## 參考圖

### 靜態路徑繫結的高級編程式列

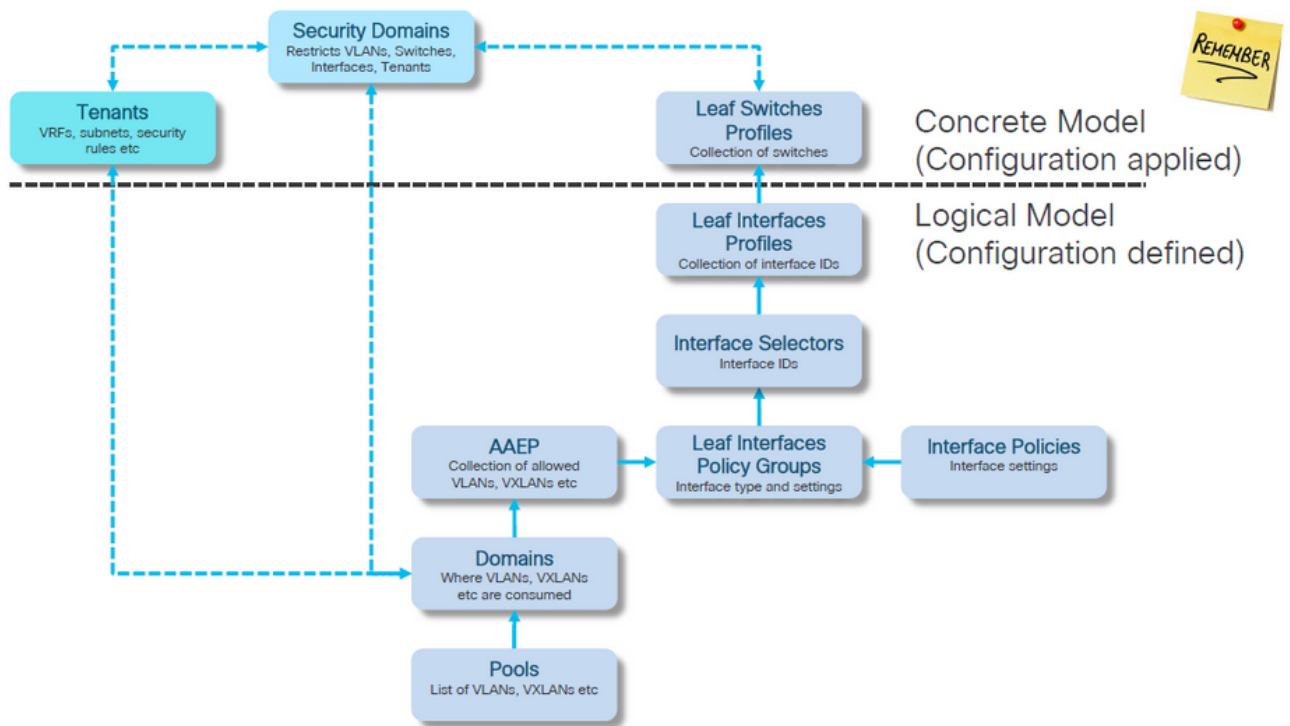
此高級序列彙總了從VLAN靜態路徑API呼叫到交換機節點VLAN部署所涉及的步驟。





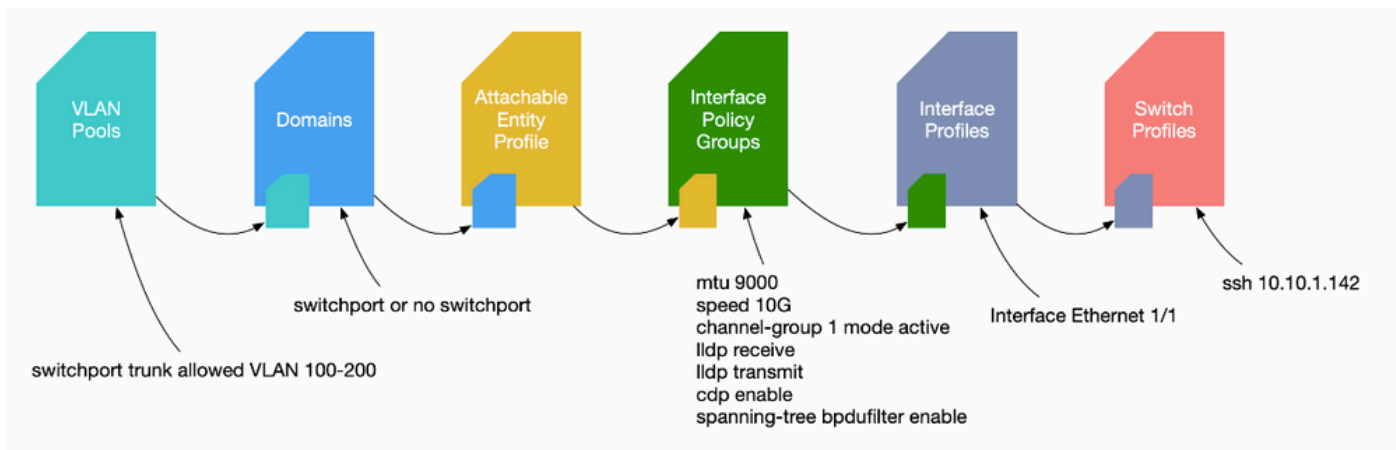
訪問策略關係框圖

此方框圖顯示了訪問策略之間的關係，以確保成功部署交換機節點VLAN。



對映到訪問策略的獨立NXOS命令

實際上，每個網路工程師都一直在研究訪問策略的思想；只有訪問策略通過獨立裝置的CLI介面被定義為檔案中的文本。



當出現故障F0467時，首先瞭解訪問策略並確保正確配置這些策略非常重要。

## VLAN驗證命令檢查表

每個命令輸出都將提供一個變數，該變數將用於清單中的下一個命令。

本文檔中引用了這些命令來排除不同方案的故障。

節點	指令	目的
APIC	<code>moquery -c faultInst -f 'fault.Inst.code=="F0467"'</code>	列出交換矩陣中當前處於活動狀態的所有F0467故障
	<code>moquery -c l2RtDomIfConn   grep &lt;epg_name&gt;   grep dn</code>	顯示與特定epg關聯的靜態/動態路徑。
	<code>moquery -c fvRsDomAtt   grep -A 25&lt;epg_name&gt;   grep rn</code>	顯示與EPG關聯的域
	<code>moquery -c infraRsVlanNs   grep -A 15 &lt;dom_name&gt;   grep tDn</code>	顯示與域關聯的vlan池名稱。域名是從上一個命令提取的
	<code>moquery -c fvnsEncapBlk   grep &lt;vlan_pool_name&gt;</code>	顯示與特定vlan池關聯的vlan編號
	<code>moquery -c infraRtDomP   grep &lt;dom_name&gt;</code>	顯示與域關聯的AEP
	<code>moquery -c infraRtAttEntP   grep &lt;AEP_name&gt;</code>	顯示與域關聯的介面配置檔案組(IPG)
	<code>moquery -c infraRsAccBaseGrp   grep -B 15 &lt;IPG_name&gt;   grep dn</code>	顯示介面配置檔案組(IPG)與介面選擇器的關聯
	<code>moquery -c infraRsAccPortP   grep &lt;Interface_Sector&gt;   grep dn</code>	顯示介面配置檔案與交換機配置檔案的關聯
	<code>moquery -c fvIfConn -f 'fv.IfConn.encap=="&lt;encap_vlan&gt;"   grep dn</code>	顯示交換矩陣上部署特定封裝VLAN的所有介面
	<code>moquery -c fvnsRtVlanNs   grep &lt;vlan_pool_name&gt;     grep dn</code>	顯示與VLAN池關聯的域

	moquery -c fv子網   grep <BD_name>	顯示與域關聯的svi IP
交換器	show vlan encap-id <encap_vlan> extended	顯示PI VLAN和租戶、應用配置檔案和EPG名稱的 詳細資訊
	show vlan extended   egrep "Encap -- -- <port:example 1/13>"	顯示特定埠上VLAN的詳細資訊。
	show int eth <port> trunk   grep -A 2允 許	顯示在特定埠上轉發的vlan。請注意，VLAN編號是 內部VLAN編號。
	show ip int bri vrf <vrf>	顯示為特定vrf部署的第3層介面
	show vpc brief	顯示此交換機是VPC對的一部分時的vpc相關資訊 。

## 相關資訊

- <https://www.ciscolive.com/on-demand/on-demand-library.html?&currentTab=session&search=BRKDCN-3900>
- <https://www.ciscolive.com/on-demand/on-demand-library.html?&currentTab=session&search=BRKACI-2770>
- [https://www.cisco.com/c/dam/en/us/td/docs/switches/datacenter/aci/apic/sw/4-x/troubleshooting/Cisco\\_TroubleshootingApplicationCentricInfrastructureSecondEdition.pdf](https://www.cisco.com/c/dam/en/us/td/docs/switches/datacenter/aci/apic/sw/4-x/troubleshooting/Cisco_TroubleshootingApplicationCentricInfrastructureSecondEdition.pdf)

## 關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。