Troubleshoot Address ACI Fault Code F0467: invalid-vlan, invalid-path, encap-already-in-use

Contents

Introduction

This document describes next steps for remediation of ACI fault F0467; invalid-vlan, invalid-path or encap-already-in-use.

Background Information

ACI Fault F0467 is flagged in different scenarios, but shows a distinct 'cause' for each one.

The most common 'cause' values seen with ACI Fault F0467 are:

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

All causes of ACI Fault F0467 can affect the deployment of vlans on the switch node interfaces.

Intersight Connected ACI Fabrics

This fault is actively monitored as part of **Proactive ACI Engagements**.

If you have an Intersight connected ACI fabric, a Service Request was generated on your behalf to indicate that instances of this fault were found within your Intersight Connected ACI fabric.

ACI Fault F0467 Scenarios

Invalid VLAN Configuration: invalid-vlan

Scenario

- New EPG configured with encap VLAN 421
- Physical Domain assigned to EPG
- Static Port Binding for VLAN 421 on EPG
- Fault F0467 - flagged against the switch node with a pointer to the EPG
- Fault debug message contains: **invalid-vlan:vlan-x :Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it**

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

The fault description explicitly states "**Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it**".

<#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
```

Potential Cause: Associated VLAN Pool does not contain the required VLAN

Access Encap VLAN 421 is not deployed on the leaf node.

<#root>

```
Node-103#
```

show vlan encap-id

421

 extended

<<< Empty >>>

The Static path to EPG association is not created.

<#root>

APIC#

moquery -c l2RtDomIfConn | grep lc_EPG | grep dn

<<< Empty >>>

Domain **lc_phys_dom** is associated it to the lc_EPG EPG.

<#root>

APIC#

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

rn : rsdomAtt-[uni/

phys-lc_phys_dom

]

Domain to Vlan Pool association exists.

<#root>

APIC# moquery -c infraRsVlanNs | grep -A 15

lc_phys_dom

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

lc_vlan_pool

]-static

Vlan Pool lc_vlan_pool is ranged to only include 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 is not in the previous pool, hence the error "**invalid-vlan: vlan-421** :**Either the EpG is not associated with a domain or the domain does not have this vlan assigned to it**"

In the block diagram referenced earlier, this specfic vlan pool reference is highlighted
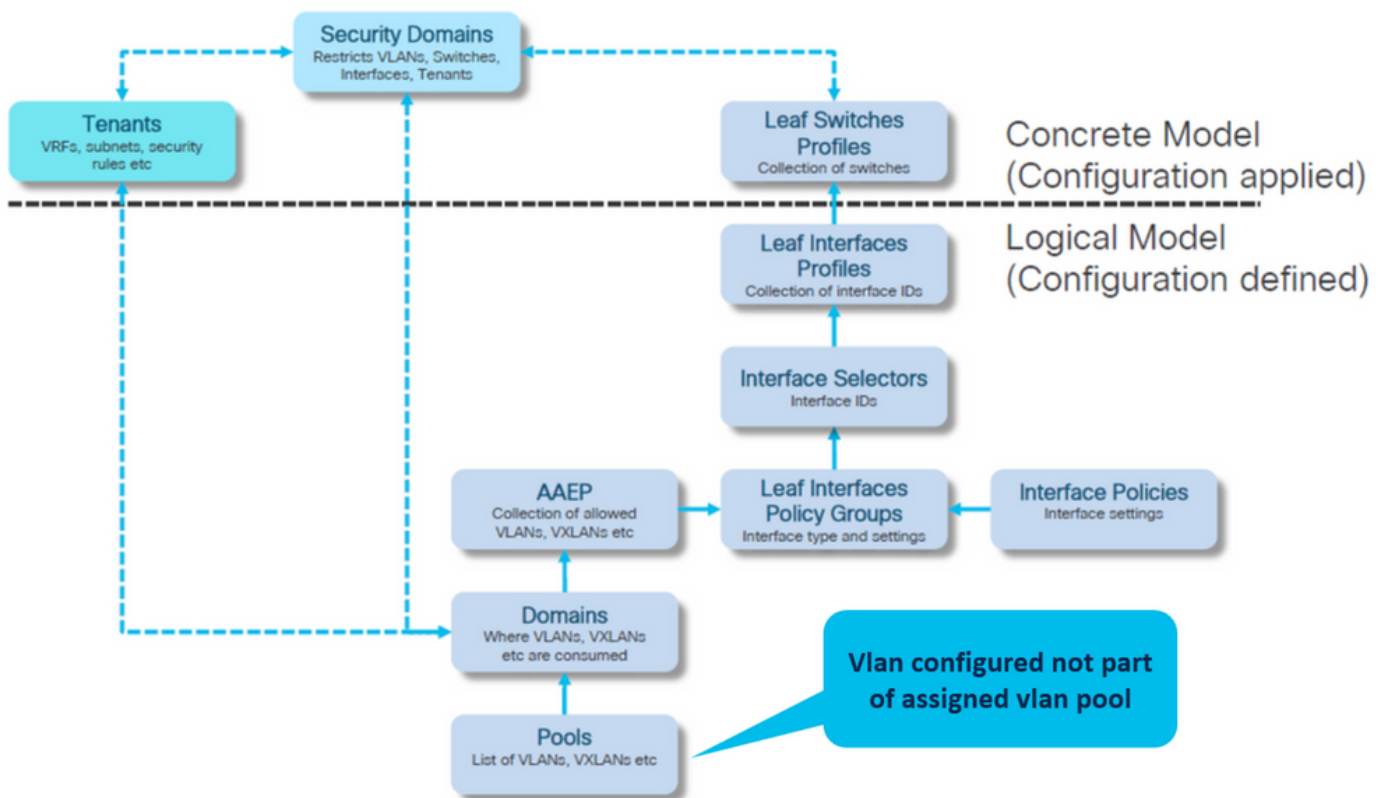
Add the missing vlan 421 to the specific vlan range

Vlan Pool to Encap and Domain associations (Fabric > Access Policies > Pool > 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
[421]		Static Allocation	External or On the wire encapsulations

Domains:

▲ Name	Type
lc_phys_dom	Physical Domain

Vlan pool range verification after adding vlan 421

<#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

]

Potential Cause: VLAN Pool with required VLAN not associated to Domain

Fabric > Access Policies > Physical and External Domains> Physical Domains > lc_phys_dom

[+] Domain to Vlan Pool association

<#root>

APIC# moquery -c infraRsVlanNs | grep -A 15

lc_phys_dom

 | grep tDn

<< EMPTY >>

Fix : Include Missing vlan association
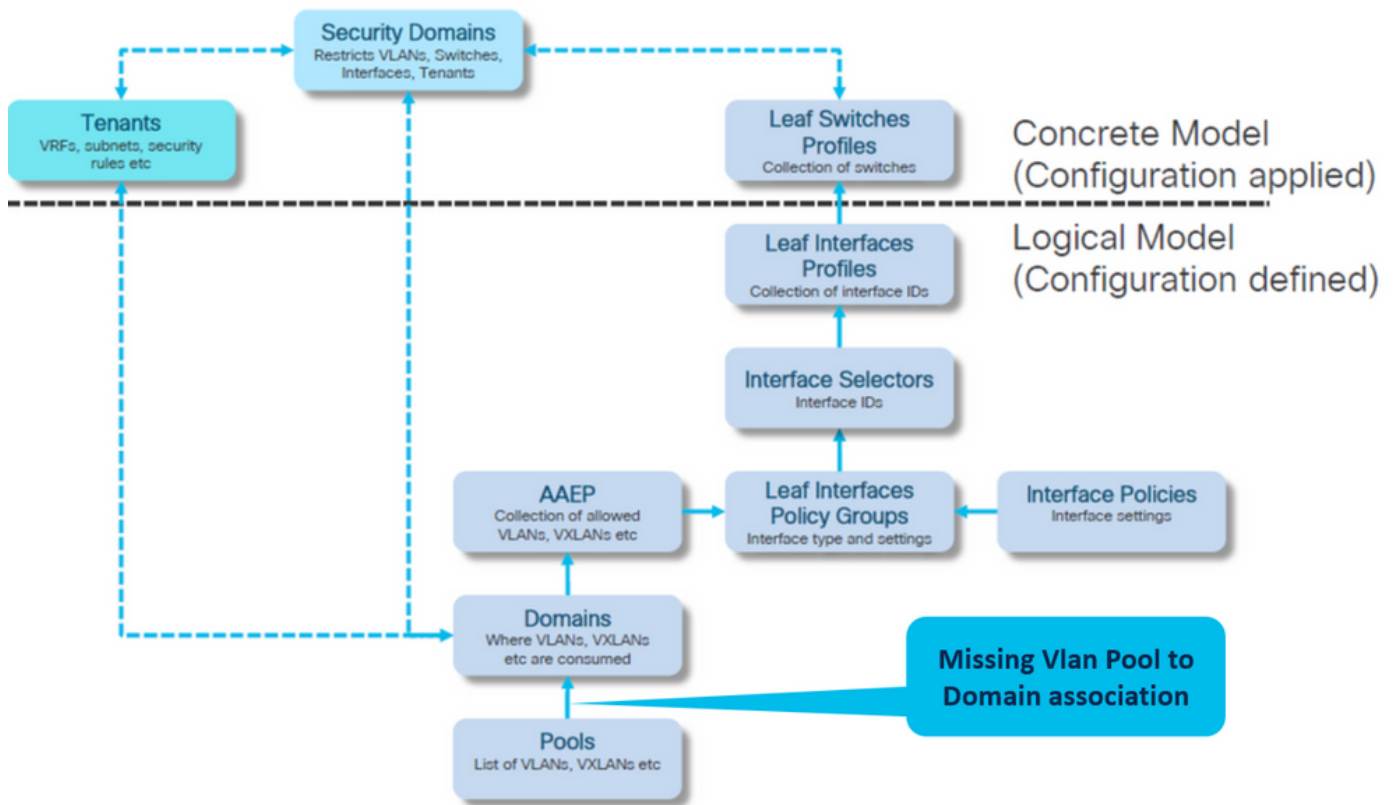
Fabric > Access Policies > Physical and External Domains> Physical Domains > lc_phys_dom

Physical Domain - lc_phys_dom

Policy   Faults   History

Properties

Name: lc_phys_dom

Associated Attachable ▾ Name
Entity Profiles:
    lc_AAEP

VLAN Pools: lc_vlan_pool(static)

Security Domains:

Select   Name   Description

Invalid Path Configuration: invalid-path

Scenario

- EPG configured
- Domain assigned to EPG
- Static Port Binding created on EPG for VLAN 420, node 103 eth 1/13
- Fault F0467 - flagged against the switch node with a pointer to the EPG
- Fault debug message contains: **invalid-path:Either the EpG/L3Out is not associated with a domain or the domain does not have this interface assigned to it**

This fault is raised when a switch/port/VLAN declaration is made without the corresponding access policies in place to allow that configuration to be applied properly.

Depending on the description of this fault, a different element of the access policy relationship is possibly missing.

EPG - lc_EPG to Fault association at Tenants > lc_TN > lc_AP > lc_EPG > Faults > Fault

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

The affected EPG, switch node id and port number are in the fault description and dn:

```
<#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 assign
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
```

Quick Start Isolation

Confirm if the vlan is deployed. If not, these commands can be run to isolate the configuration error.

In these commands, **lc_EPG** is the EPG name used for output filtering.

Encap-vlan is NOT deployed on the leaf node

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

[1] Static path to EPG association policy is empty.

APIC# **moquery -c l2RtDomIfConn | grep lc_EPG | grep dn**
<<< Empty >>>

[2] Domain to EPG association

```
<#root>

APIC#

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

rn : rsdomAtt-[uni/

phys-lc_phys_dom

]
```

[3] Domain to Vlan Pool association

```
<#root>

APIC#

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

tDn : uni/infra/vlanns-[

lc_vlan_pool

]-static
```

[4] Vlan pool range verification

```
<#root>

APIC#

moquery -c fvnsEncapBlk | grep lc_vlan_pool

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

vlan-420

]-to-[

vlan-420

]
```

[5] Domain to AAEP association

```
<#root>

APIC#

moquery -c infraRtDomP | grep lc_phys_dom

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

```
lc_AAEP
```

]

[6] AAEP to Interface Policy Group association(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 to Interface Selector association

<#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
```

[8] Interface Profile to Switch Profile association

<#root>

APIC#

moquery -c infraRsAccPortP | grep leaf103_IP | grep dn

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

leaf103_SP

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

The invalid-path cause is seen if any of the required Access Policy assocaited are missing given the static path configuration. Walk through the potential causes in this order to verify the Access Policies hop by hop.
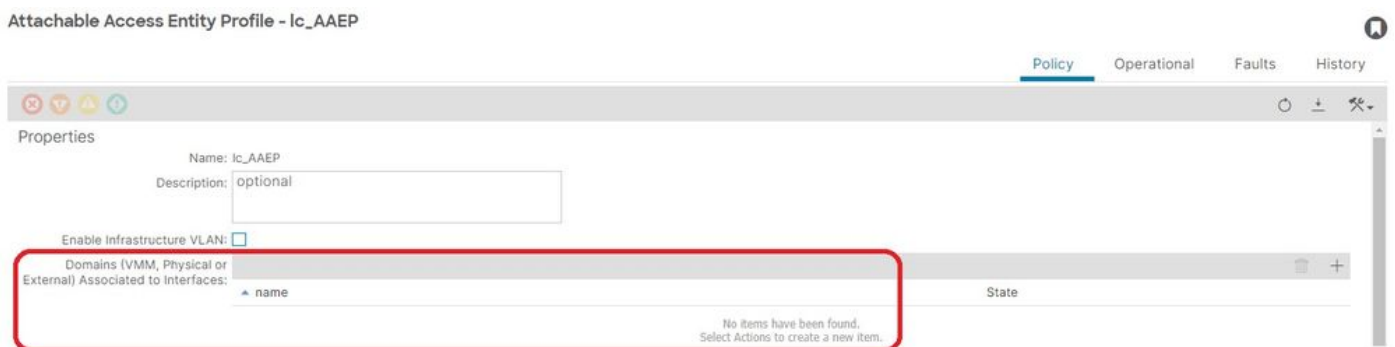
    1. Missing Domain to AAEP association

2. Missing AAEP to IPG association
3. Missing IPG to Interface Selector association
4. Missing Interface Selector to Interface Profile association
5. Missing Interface Profile to Switch Profile association

Potential Cause: Missing Domain to AAEP association
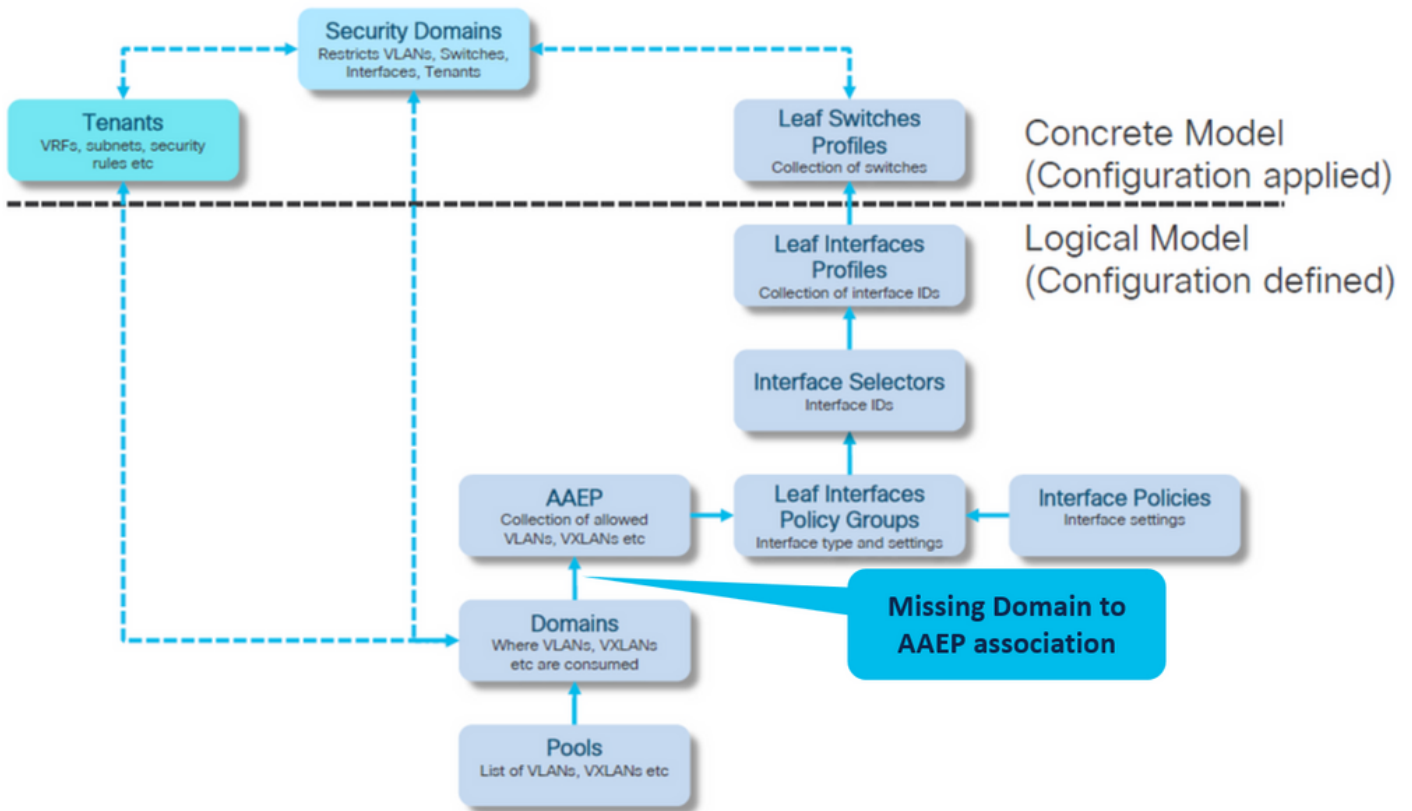
Fabric > Access Policies > Policies > Global > AAEP > lc_AAEP

[+] Static path to EPG association policy is empty

<#root>

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

<< EMPTY >>
```
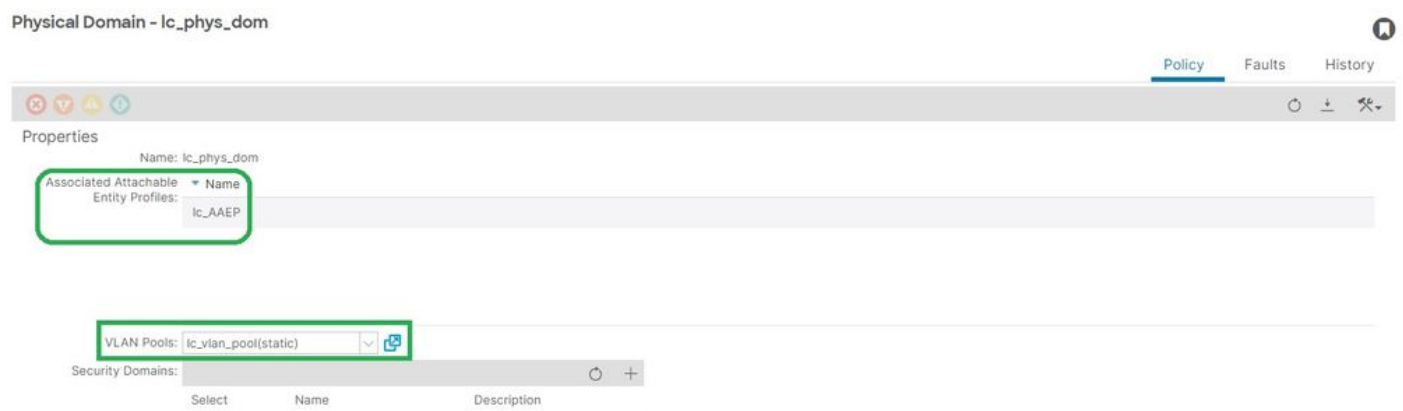
[+] Domain to AAEP association

```
<#root>

APIC# moquery -c infraRtDomP | grep

lc_phys_dom


<< EMPTY >>
```
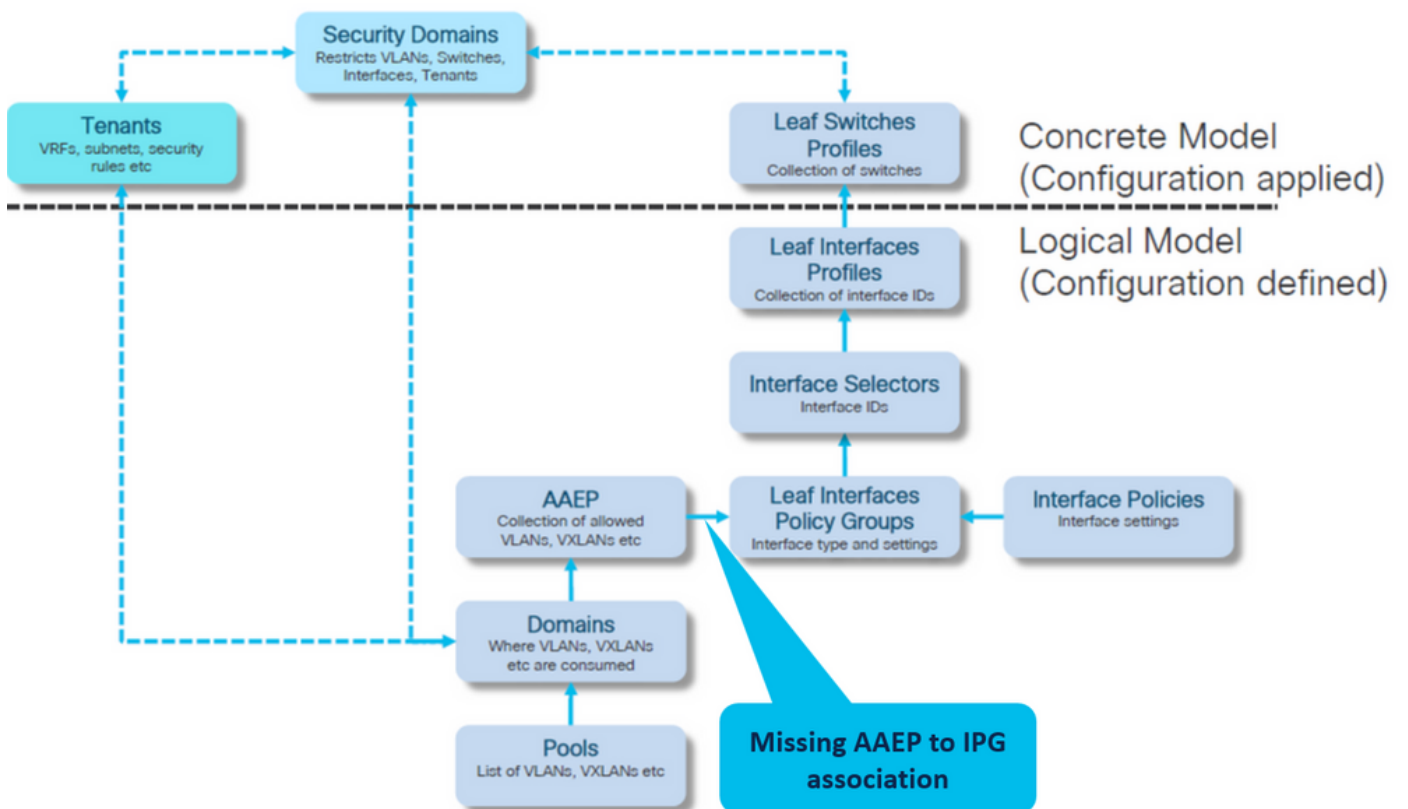
Fix : Include Missing Domain association

Fabric > Access Policies > Physical and External Domains> Physical Domains > lc_phys_dom

Potential Cause: Missing AAEP to IPG association

IPG to AAEP association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc_IPG

[+] Static path to EPG association policy is empty

<#root>

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

<< EMPTY >>

[+] IPG to AAEP association is empty

<#root>

APIC# moquery -c infraRsAttEntP | grep -A 15

lc_IPG

 | grep tDn

<< EMPTY >>

Fix:Missing AAEP to IPG association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc_IPG

[+] IPG to AAEP association

<#root>

APIC# moquery -c infraRsAttEntP | grep -A 15

lc_IPG

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

lc_AAEP

Potential Cause: Missing IPG to Interface Selector association

Interface Selector to Interface Policy Group association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103_IP > lc_Interface_Selector

[+] IPG to Interface Selector association

<#root>

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

lc_IPG

```
 | grep dn
```

<< EMPTY >>

Fix:Interface Selector to Interface Policy Group association

[+] IPG to Interface Selector association

<#root>

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

lc_IPG

```
 | grep dn
dn : uni/infra/accportprof-lead103_IP/hports-
```
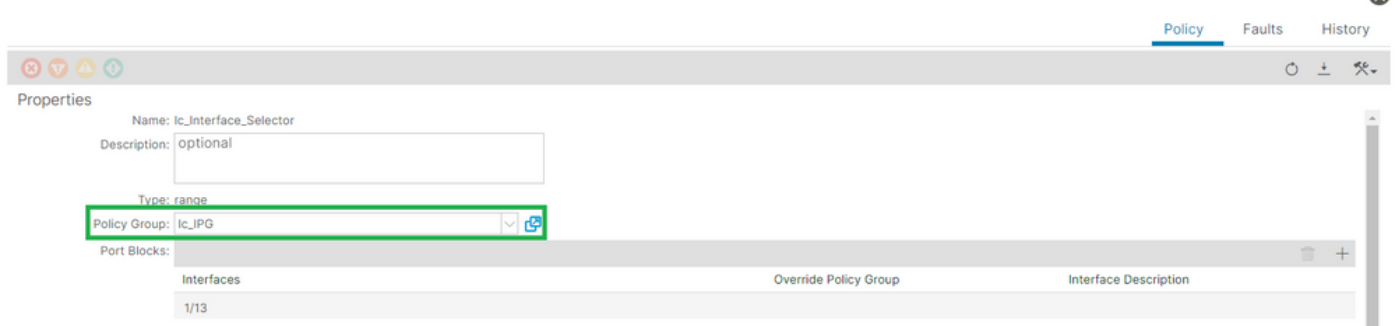
lc_Interface_Selector

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


Potential Cause: Missing Interface Selector to Interface Profile association
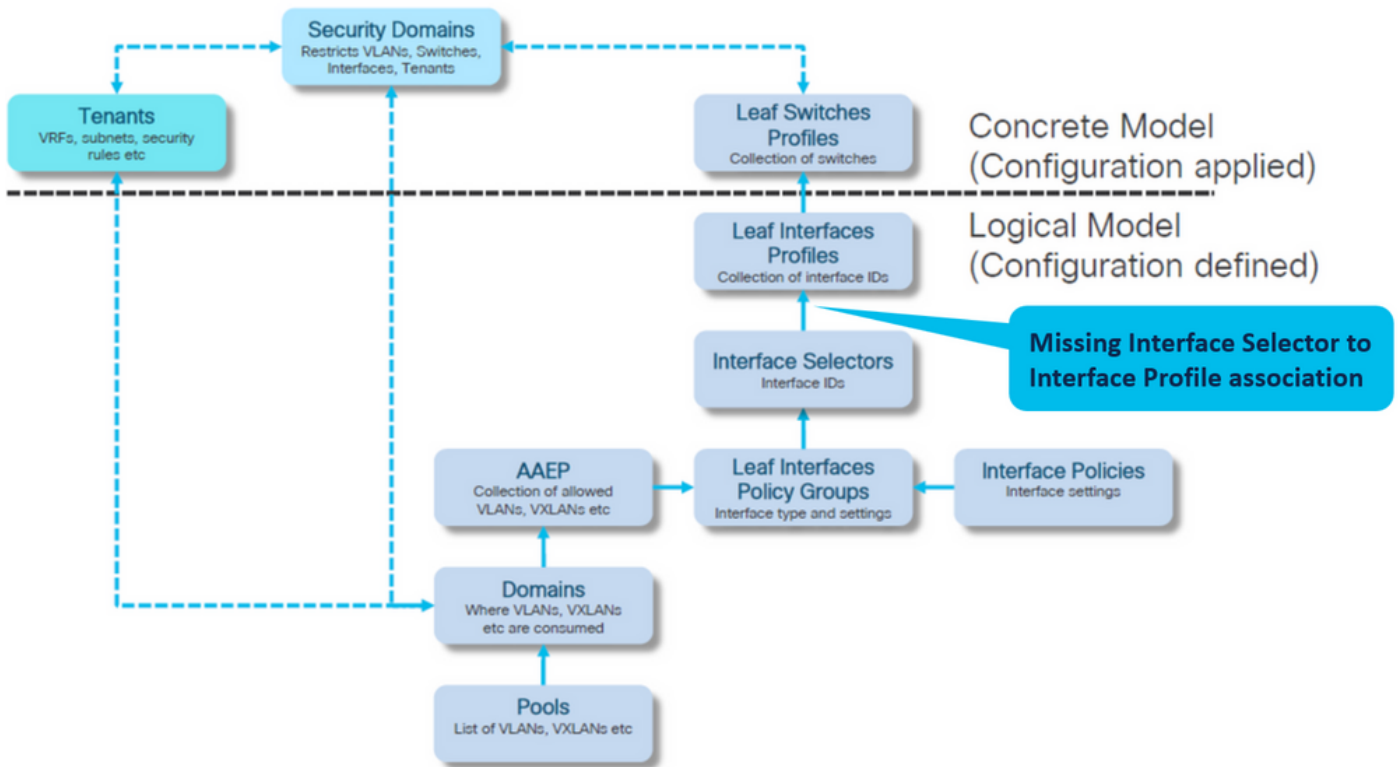
Interface Profile to Interface Selector association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103_IP

Troubleshooting:

<#root>

APIC# moquery –c infraHPortS | grep leaf103_IP

<< EMPTY >>

Fix Interface Profile to Interface Selector association

Leaf Interface Profile - leaf103_IP

<#root>

APIC# moquery -c infraHPortS | grep

leaf103_IP

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

lc_Interface_Selector

-typ-range

Potential Cause: Missing Interface Profile to Switch Profile association

Interface Profile to Switch Profile association

Fabric > Access Policies > Switches > Leaf Switches > Profiles > leaf103_SP

Leaf Profile - leaf103_SP

<#root>

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

<< EMPTY >>

Fix Leaf Profile to Interface Selector Profiles Association

Leaf Profile - leaf103_SP

[+] Interface Profile to Switch Profile association

<#root>

APIC# moquery -c infraRsAccPortP | grep

leaf103_IP

 | grep dn
dn : uni/infra/nprof-

leaf103_SP

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

Encap Already Used in Another EPG: encap-already-in-use

Scenario

By default, VLANs have a global scope. A given VLAN ID can only be used for a single EPG on a given leaf switch.

Any attempt to re-use the same VLAN on multiple EPGs within a given leaf switch results in an encap-already-in-use F0467 fault.

EPG to Fault association at Tenants > lc_TN > lc_AP > lc_EPG > Faults > Fault


```
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
descr : Configuration failed for uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG node 103 eth1/13 due to Encap Already
dn : topology/pod-1/node-103/local/svc-policyelem-id-0/uni/epp/fv-[uni/tn-lc_TN/ap-lc_APP/epg-lc_EPG]/no
```

Quick Start Isolation

[+] You can confirm the encap already in use on a different tenant lc_TN_Dup

```
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
```

Remediation Options

Option 1:
Use a different vlan number no in use on the leaf or VPC pair.

Option 2:
Use the same vlan on a different leaf or VPC pair that does not have Vlan trying to be deployed.

Option 3:
Remove static port association on duplicated EPG , this allows the new deployment.

Option 4:

In ACI versions prior to the v1.1 release, a given VLAN encapsulation maps to only a single EPG on a leaf switch. If there is a second EPG which has the same VLAN encapsulation on the same leaf switch, the ACI raises this fault.

Starting with the v1.1 release, you can deploy multiple EPGs with the same VLAN encapsulation on a given leaf switch (or FEX), in the Per Port VLAN configuration

Per Port VLAN configuration guide
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_chapter

Additional Details

Successful Configuration Reference

This section can be used as a reference guide for what a complete configuration with a functional setup looks like.

EPG to Static Path association

Tenants > lc_TN > lc_AP > lc_EPG > Static Ports

[+] Static port to EPG association policy

<#root>

```
APIC# moquery -c l2RtDomIfConn | grep lc_EPG | grep dn
dn : topology/pod-1/node-103/sys/ctx-[vxlan-2195458]/bd-[vxlan-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 to AAEP association

Fabric > Access Policies > Policies > Global > AAEP > lc_AAEP

<#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 to Domain association

Tenants > lc_TN > lc_AP > lc_EPG > Domains

[+] Domain lc_phys_dom has been associated it to EPG.

```
<#root>

APIC# moquery -c fvRsDomAtt | grep -A 25

lc_EPG

 | grep rn
rn : rsdomAtt-[uni/

phys-lc_phys_dom

]
```

Domain to AAEP and vlan pool associations

Fabric > Access Policies > Physical and External Domains> Physical Domains > lc_phys_dom

[+] Domain to AAEP association

```
<#root>

APIC# moquery -c infraRtDomP | grep

lc_phys_dom

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

lc_AAEP
```

]

[+] Domain to Vlan Pool association

<#root>

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

lc_phys_dom

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

lc_vlan_pool

```
]-static
```


Vlan Pool to Encap Block and Domain associations

Fabric > Access Policies > Pool > VLAN > lc_vlan_pool

[+] Vlan pool range verification

<#root>

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

lc_vlan_pool

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

vlan-420

```
]-to-[
```

vlan-420

```
]
```

[+] Domains where the lc_vlan_pool is been used

```
<#root>

APIC# moquery -c fvnsRtVlanNs | grep

lc_vlan_pool

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

phys-lc_phys_dom

]
```

AAEP to Domain association

Fabric > Access Policies > Policies > Global > AAEP > lc_AAEP


```
<#root>

APIC# moquery -c infraRsDomP | grep

lc_AAEP

dn : uni/infra/attentp-lc_AAEP/rsdomP-[uni/phys-

lc_phys_dom

]
```

IPG to AAEP association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Policy Groups > Leaf Access Port > lc_IPG

Leaf Access Port Policy Group - lc_IPG

[+] IPG to AAEP association

```
<#root>

APIC# moquery -c infraRsAttEntP | grep -A 15

lc_IPG

 | grep tDn
tDn : uni/infra/attentp-

lc_AAEP
```

Leaf Profile to Interface Selector association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103_IP

Leaf Interface Profile - leaf103_IP

```
<#root>

APIC# moquery -c infraHPortS | grep

leaf103_IP

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

lc_Interface_Selector

-typ-range
```

Interface Selector to Interface Policy Group association

Fabric > Access Policies > Interfaces > Leaf Interfaces > Profiles > leaf103_IP > lc_Interface_Selector

Access Port Selector - lc_Interface_Selector

Policy | Faults | History

Properties

Name: lc_Interface_Selector
Description: optional

Type: range
Policy Group: lc_IPG
Port Blocks:

Interfaces	Override Policy Group	Interface Description
1/13		
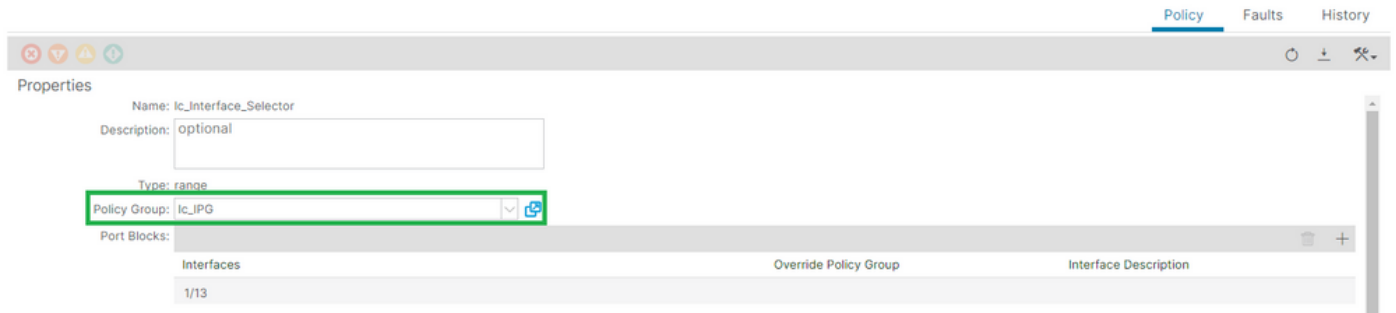
[+] IPG to Interface Selector association

<#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

<h4">Leaf Interface Profile to Interface Selectors and Leaf Switch Profile associations

Fabric > Access Policies > Switches > Leaf Switches > Profiles > leaf103_SP
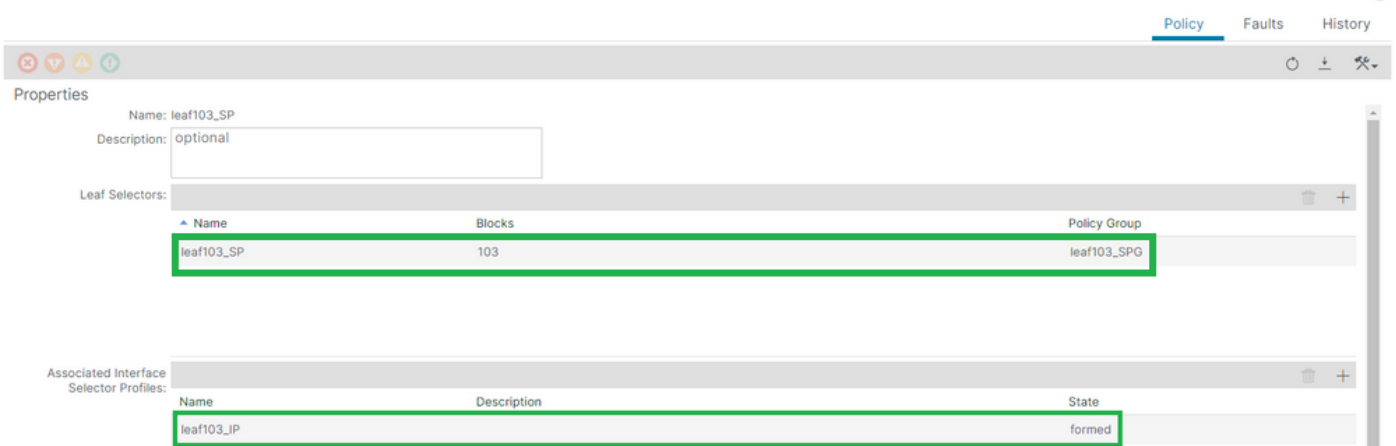
Leaf Profile - leaf103_SP

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
leaf103_IP		formed

[+] Leaf Interface Profile to Switch Profile association

<#root>

APIC# moquery -c infraRsAccPortP | grep

leaf103_IP

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

leaf103_SP

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

leaf103_IP

```
]
```

[+] Switch Profile to Switch Prolicy Group association

<#root>

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

leaf103_SP

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

leaf103_SPG

Vlan Deployment Verification

Scenario

- Access Encap VLAN 420 is deployed on node 103 - E1/13
- All relevent Access Policy and EPG configuration deployed

Check ACI Fabric VLAN Deployment via APIC

A moquery against class fvIcConn can be filtered on VLAN encaps of interest to show every EPG/Switch/Interface combination where the VLAN has been deployed.

<#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

```
/stpathatt-[
```

eth1/

13

```
]/conndef/conn-[
```

```
vlan-

420

]-[0.0.0.0]
```

Check VLAN Deployment via Switch CLI

'show vlan extended' can be run on any switch to check which VLANs are currently deployed on a switch, along with which EPG and Interface the VLAN is tied to.

The 'encap-id xx' filter is available on ACI Release 4.2 and later.

```
<#root>

Node-103#

show vlan encap-id

420


 extended



 VLAN Name                                Encap            Ports
 ---- -------------------------------- --------------- ------------------------
 2    lc_TN:lc_APP:lc_EPG               vlan-420         Eth1/13
```

Check Platform Independent VLAN Deployment via Switch CLI

Every VLAN in an ACI Switch Node is mapped to some Platform Independent (PI) VLAN which is a value local to each Switch Node.

Access Encaps are mapped to a PI VLAN called an 'FD VLAN', whereas Bridge Domains are mapped to a PI Vlan called a 'BD VLAN'.

"show system internal epm vlan all" can be run on a switch to display the list of vlans deployed on the leaf.

```
<#root>

Node-103#

show vlan extended | egrep

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


 VLAN Name                                Encap            Ports
 ---- -------------------------------- --------------- ------------------------

2

    lc_TN:lc_APP:lc_EPG
```

```
vlan-

420

        Eth1/13                        --> FD vlan 2

18

   lc_TN:lc_BD                      vxlan-16416666   Eth1/13                        --> BD vlan 18
```

The FD vlan and BD vlan to interface porogramming can be validated with a 'show interface' command.

<#root>

Node-103#

show interface eth

1/13 trunk | grep -A 2


```
 Allowed

 Port          Vlans Allowed on Trunk
--------------------------------------------------------------------------------
 Eth1/13
```

2,18

Check SVI VLAN Deployment

If validating a layer-3 vlan with a BD SVI, moquery class fvSubnet to get the IP address of the subnet.

<#root>

APIC#

moquery -c fvSubnet | grep lc_BD


```
dn : uni/tn-lc_TN/BD-lc_BD/subnet-[10.10.10.254/24]
```

Then check 'show ip interface brief' against and check for the matching ip address to validate the vlan and expected VRF.

In this example, validation is for BD VLan 18 from the previous CLI output example.

<#root>

Node-103#

show ip interface brief

```
...

IP Interface Status for VRF "
```

lc_TN:lc_VR

```
F"(16)
Interface              Address                Interface Status
```

vlan18

```
 10.10.10.254/24
```

protocol-up/link-up/admin-up

Reference Diagrams

High Level Programming Sequence for a Static Path Binding

This high level sequence summarizes the steps involved from VLAN Static Path API call, to Switch Node VLAN Deployment.
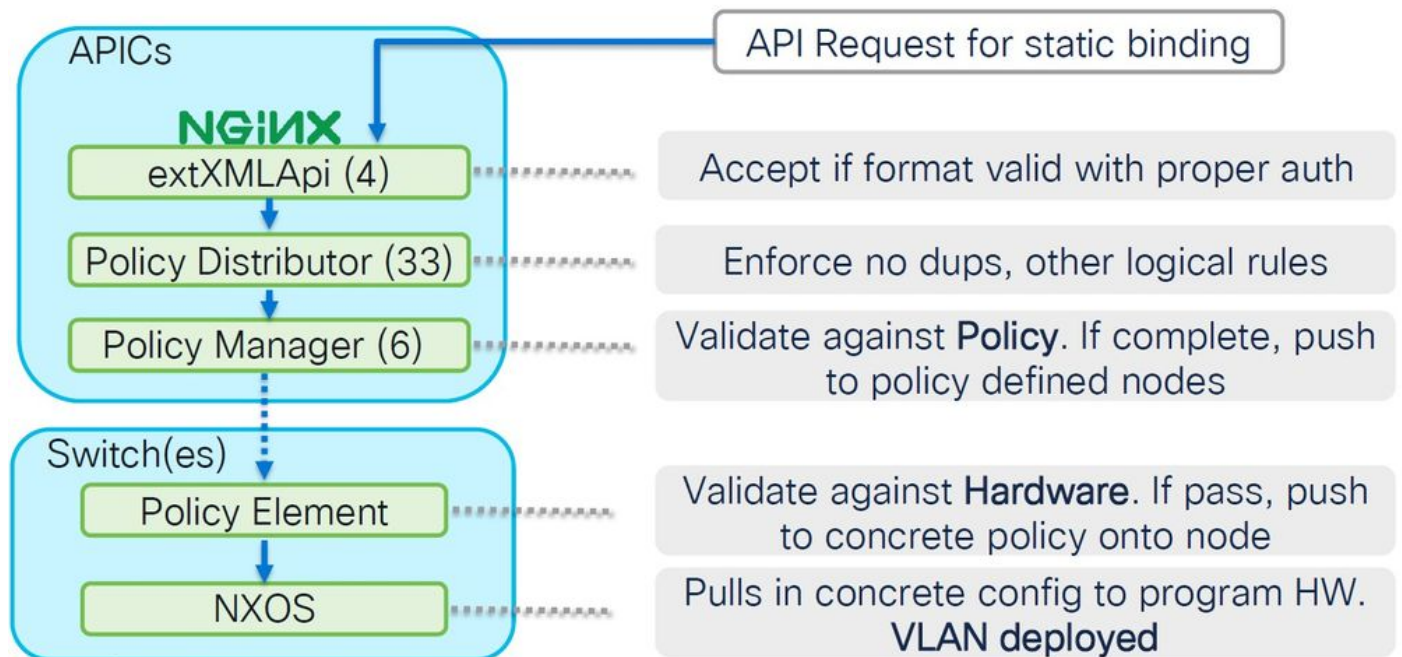
Access Policy Relationship Block Diagram

This block diagram shows the relationship between Access Policies to ensure a successful Switch Node VLAN deployment.

Standalone NXOS Commands mapped to Access Policies

Every network engineer has actually been working with the idea of access policies; only they have been defined as text in a file via a CLI interface of a standalone device.
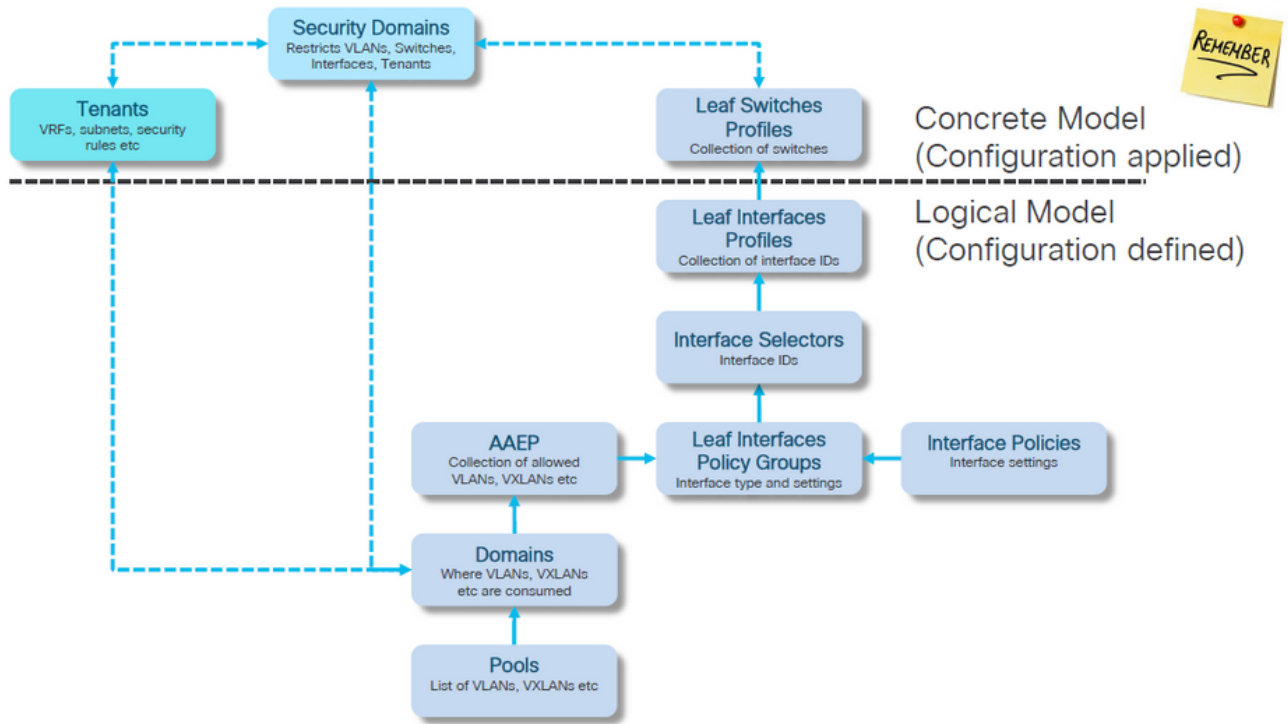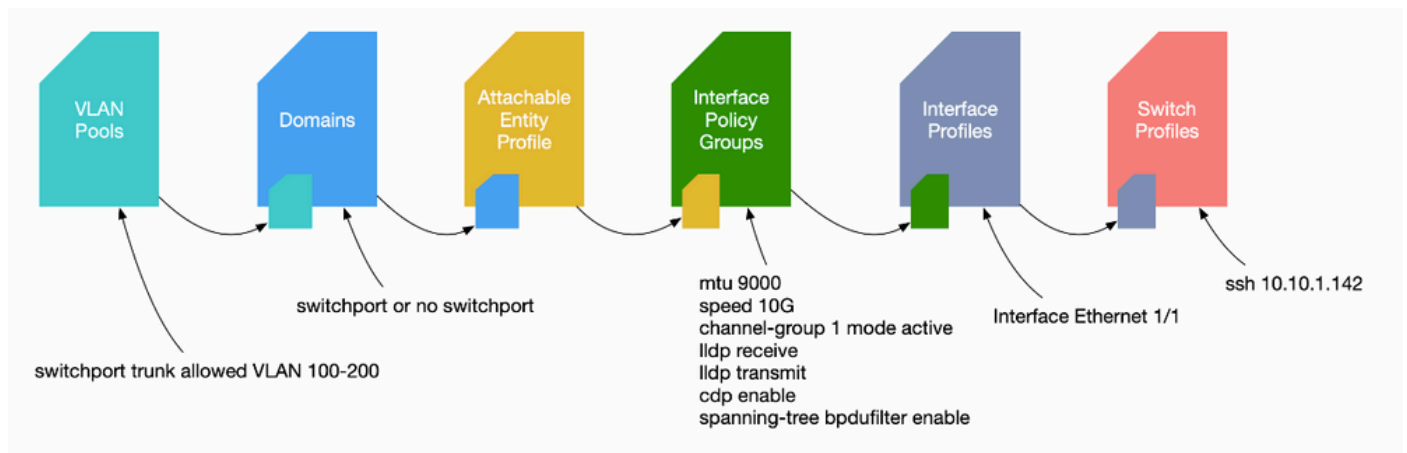

When a fault F0467 is seen, it is important to first understand the access policies and ensure they are configured correctly.

VLAN Verification Command Cheatsheet

Each command output provides a variable that is used for the next command in the list.

These commands were referenced throughout this document to troubleshoot the different scenarios.

Node	Commands	Purpose
APIC	moquery -c faultInst -f 'fault.Inst.code=="F0467"'	Lists out all the F0467 faults currently active in the fabric
	moquery -c l2RtDomIfConn | grep <epg_name> | grep dn	Shows the static/dynamic paths associated with the specfic epg.

	moquery -c fvRsDomAtt | grep -A 25<epg_name> | grep rn	Shows the domains associated to the EPG
	moquery -c infraRsVlanNs | grep -A 15 <dom_name> | grep tDn	Shows the vlan pool name associated with the domain. The domain name is extracted from the previous command
	moquery -c fvnsEncapBlk | grep <vlan_pool_name>	Shows the vlan numbers associated with the specfic vlan pool
	moquery -c infraRtDomP | grep <dom_name>	Shows the AEP associated with the domain
	moquery -c infraRtAttEntP | grep <AEP_name>	Shows the interface profile group (IPG) associated with the domain
	moquery -c infraRsAccBaseGrp | grep -B 15 <IPG_name> | grep dn	Shows the interface profile group (IPG) to Interface Selector association
	moquery -c infraRsAccPortP | grep <Interface_Sector> | grep dn	Shows the Interface Profile to Switch Profile association
	moquery -c fvIfConn -f 'fv.IfConn.encap=="<encap_vlan>"' | grep dn	Shows all the interfaces where the specfic encap vlan is deployed on the fabric
	moquery -c fvnsRtVlanNs | grep <vlan_pool_name> | | grep dn	Shows the domain associated with the vlan pool
	moquery -c fvSubnet | grep <BD_name>	Shows the svi IP associated with the domain
Switch	show vlan encap-id <encap_vlan> extended	Shows details of the PI vlans and Tenant, App Profile and EPG name
	show vlan extended | egrep "Encap|----|<port:example 1/13>"	Shows details of the vlan on the specfic port.
	show int eth <port> trunk | grep -A 2 Allowed	Shows the vlans being forwarded on specfic port. Note that the vlan numbers are internal vlan numbers.
	show ip int bri vrf <vrf>	Show the Layer 3 interfaces deployed for the specific vrf
	show vpc brief	Shows the vpc related information if this switch is part of a VPC pair.

Related Information

- 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