# Performing NX-OS CLI Tasks


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# Cisco ACI Virtual Machine Networking

## Configuring a NetFlow Exporter Policy for Virtual Machine Networking Using the NX-OS-Style CLI

The following example procedure uses the NX-OS-style CLI to configure a NetFlow exporter policy for virtual machine networking.

### Procedure

**Step 1** Enter the configuration mode.

**Example:**

```
apic1# config
```

**Step 2** Configure the exporter policy.

**Example:**

```
apic1(config)# flow vm-exporter vmExporter1 destination address 2.2.2.2 transport udp 1234
apic1(config-flow-vm-exporter)# source address 4.4.4.4
apic1(config-flow-vm-exporter)# exit
apic1(config)# exit
```

# Consuming a NetFlow Exporter Policy Under a VMM Domain Using the NX-OS-Style CLI for VMware VDS

The following procedure uses the NX-OS-style CLI to consume a NetFlow exporter policy under a VMM domain.

### Procedure

**Step 1** Enter the configuration mode.

**Example:**

```
apic1# config
```

**Step 2** Consume the NetFlow exporter policy.

**Example:**

```
apic1(config)# vmware-domain mininet
apic1(config-vmware)# configure-dvs
apic1(config-vmware-dvs)# flow exporter vmExporter1
apic1(config-vmware-dvs-flow-exporter)# active-flow-timeout 62
apic1(config-vmware-dvs-flow-exporter)# idle-flow-timeout 16
apic1(config-vmware-dvs-flow-exporter)# sampling-rate 1
apic1(config-vmware-dvs-flow-exporter)# exit
apic1(config-vmware-dvs)# exit
apic1(config-vmware)# exit
apic1(config)# exit
```

# Enabling or Disabling NetFlow on an Endpoint Group Using the NX-OS-Style CLI for VMware VDS

The following procedure enables or disables NetFlow on an endpoint group using the NX-OS-style CLI.

### Procedure

**Step 1** Enable NetFlow:

**Example:**

```
apic1# config
apic1(config)# tenant tn1
apic1(config-tenant)# application app1
apic1(config-tenant-app)# epg epg1
apic1(config-tenant-app-epg)# vmware-domain member mininet
apic1(config-tenant-app-epg-domain)# flow monitor enable
apic1(config-tenant-app-epg-domain)# exit
apic1(config-tenant-app-epg)# exit
apic1(config-tenant-app)# exit
apic1(config-tenant)# exit
apic1(config)# exit
```

**Step 2** (Optional) If you no longer want to use NetFlow, disable the feature:

**Example:**

```
apic1(config-tenant-app-epg-domain)# no flow monitor enable
```

# Cisco ACI with VMware VDS Integration

## Creating a VMware VDS Domain Profile

## Creating a vCenter Domain Profile Using the NX-OS Style CLI

### Before you begin

This section describes how to create a vCenter domain profile using the NX-OS style CLI:

### Procedure

**Step 1** In the CLI, enter configuration mode:

**Example:**

```
apic1# configure
apic1(config)#
```

**Step 2** Configure a VLAN domain:

**Example:**

```
apic1(config)# vlan-domain dom1 dynamic
apic1(config-vlan)# vlan 150-200 dynamic
apic1(config-vlan)# exit
apic1(config)#
```

**Step 3** Add interfaces to this VLAN domain. These are the interfaces to be connected to VMware hypervisor uplink ports:

**Example:**

```
apic1(config)# leaf 101-102
apic1(config-leaf)# interface ethernet 1/2-3
apic1(config-leaf-if)# vlan-domain member dom1
apic1(config-leaf-if)# exit
apic1(config-leaf)# exit
```

**Step 4** Create a VMware domain and add VLAN domain membership:

**Example:**

```
apic1(config)# vmware-domain vmmdom1
apic1(config-vmware)# vlan-domain member dom1
apic1(config-vmware)#
```

Create the domain with a specific delimiter:

**Example:**

```
apic1(config)# vmware-domain vmmdom1 delimiter @
```

**Step 5** Configure the domain type to DVS:

**Example:**

```
apic1(config-vmware)# configure-dvs
apic1(config-vmware-dvs)# exit
apic1(config-vmware)#
```

**Step 6** (Optional) Configure a retention time for detached endpoints:

You can choose a delay of between 0 and 600 seconds. The default is 0.

**Example:**

```
apic1(config)# vmware-domain <domainName>

apic1(config-vmware)# ep-retention-time <value>
```

**Step 7** Configure a controller in the domain:

**Example:**

```
apic1(config-vmware)# vcenter 192.168.66.2 datacenter prodDC
apic1(config-vmware-vc)# username administrator
Password:
Retype password:
apic1(config-vmware-vc)# exit
apic1(config-vmware)# exit
apic1(config)# exit
```

**Note**
When configuring the password, you must precede special characters such as '$' or '!' with a backslash ('\$') to avoid misinterpretation by the Bash shell. The escape backslash is necessary only when configuring the password; the backslash does not appear in the actual password.

**Step 8** Verify configuration:

**Example:**

```
apic1# show running-config vmware-domain vmmdom1
# Command: show running-config vmware-domain vmmdom1
# Time: Wed Sep  2 22:14:33 2015
  vmware-domain vmmdom1
    vlan-domain member dom1
    vcenter 192.168.66.2 datacenter prodDC
      username administrator password *****
    configure-dvs
      exit
    exit
```

# Creating a Read-Only VMM Domain Using the NX-OS Style CLI

You can use the NX-OS style CLI to create a read-only VMM domain.

### Before you begin

- Fulfill the prerequisites in the section Prerequisites for Creating a VMM Domain Profile.
- In the VMware vCenter, ensure that under the **Networking** tab, the VDS is contained by a folder.

  Also ensure that the folder and the VDS have the exact same name of the read-only VMM domain that you plan to create.

### Procedure

**Step 1** In the CLI, enter configuration mode:

**Example:**

```
apic1# configure
apic1(config)#
```

**Step 2** Configure a controller in the domain:

**Example:**

**Note**
The name of the read-only domain (labVDS) must be the same as the name of the VDS and the folder that contains in the VMware vCenter.

```
apic1(config)# vmware-domain labVDS access-mode readonly
apic1(config-vmware)# vcenter 10.1.1.1 datacenter prodDC
apic1(config-vmware-vc)# username administrator@vpshere.local
Password:
Retype password:
apic1(config-vmware-vc)# exit
apic1(config-vmware)#  configure-dvs
apic1(config-vmware-dvs)# exit
apic1(config-vmware)# end
```

**Note**
When configuring the password, you must precede special characters such as '$' or '!' with a backslash ('\$') to avoid misinterpretation by the Bash shell. The escape backslash is necessary only when configuring the password; the backslash does not appear in the actual password.

**Step 3** Verify the configuration:

**Example:**

```
apic1# show running-config vmware-domain prodVDS
# Command: show running-config vmware-domain prodVDS
# Time: Wed Sep  2 22:14:33 2015
  vmware-domain prodVDS access-mode readonly
      vcenter 10.1.1.1 datacenter prodDC
      username administrator@vsphere.local password *****
    configure-dvs
      exit
```

```
exit
```

### What to do next

You can attach an EPG to the read-only VMM domain and configure policies for it. However, those policies are not pushed to the VDS in the VMware vCenter.

# Promoting a Read-Only VMM Domain Using the NX-OS Style CLI

You can use the NX-OS style CLI to promote a read-only VMM domain.

### Before you begin

Instructions for promoting a read-only VMM domain to a managed domain assume you have completed the following prerequisites:

- Fulfill the prerequisites in the section Prerequisites for Creating a VMM Domain Profile.
- Configure a read-only domain as described in Creating a Read-Only VMM Domain.
- In the VMware vCenter, under the **Networking** tab, ensure that the VDS is contained by a network folder of the exact same name of the read-only VMM domain that you plan to promote.

### Procedure

**Step 1** In the CLI, enter configuration mode.

**Example:**

```
apic1# configure
apic1(config)#
```

**Step 2** Change the VMM domain's access mode to managed.

In the following example, replace *vmmDom1* with the VMM domain you have previously configured as read-only.

**Example:**

```
apic1(config)# vmware-domain vmmDom1 access-mode readwrite
apic1(config-vmware)# exit
apic1(config)# exit
```

**Step 3** Create a new Link Aggregation Group (LAG) policy.

If you are using vCenter version 5.5 or later, you must create a LAG policy for the domain to use Enhanced LACP feature, as described in Create LAGs for DVS Uplink Port Groups Using the NX-OS Style CLI, on page 7.

Otherwise, you can skip this step.

**Step 4** Associate the LAG policy with appropriate EPGs.

If you are using vCenter version 5.5 or later, you must associate the LAG policy with the EPGs to use Enhanced LACP feature, as described in Associate Application EPGs to VMware vCenter Domains with Enhanced LACP Policies Using the NX-OS Style CLI, on page 7.

Otherwise, you can skip this step.

### What to do next

Any EPGs you attach to the VMM domain and any policies you configure will now be pushed to the VDS in the VMware vCenter.

# Enhanced LACP Policy Support

## Create LAGs for DVS Uplink Port Groups Using the NX-OS Style CLI

Improve distributed virtual switch (DVS) uplink port group load balancing by putting the port groups into link aggregation groups (LAGs) and associating them with specific load-balancing algorithms. You can perform this task using the NX-OS style CLI.

### Before you begin

You must have created a VMware vCenter virtual machine manager (VMM) domain for VMware VDS.

### Procedure

Create or delete an enhanced LACP policy.

**Example:**

```
apic1(config-vmware)# enhancedlacp  LAG name
apic1(config-vmware-enhancedlacp)# lbmode loadbalancing mode
apic1(config-vmware-enhancedlacp)# mode mode
apic1(config-vmware-enhancedlacp)# numlinks max number of uplinks
apic1(config-vmware)# no enhancedlacp LAG name to delete
```

### What to do next

If you are using VMware VDS, associate endpoint groups (EPGs) to the domain with the enhanced LACP policy.

## Associate Application EPGs to VMware vCenter Domains with Enhanced LACP Policies Using the NX-OS Style CLI

Associate application endpoint groups (EPGs) with the VMware vCenter domain with LAGs and a load-balancing algorithm. You can perform this task using NX-OS style CLI. You can also deassociate application EPGs from the domain.

### Before you begin

You must have created link aggregation groups (LAGs) for distributed virtual switch (DVS) uplink port groups and associated a load-balancing algorithm to the LAGs.

### Procedure

**Step 1** Associate an application EPG with the domain or deassociate it from the domain.

**Example:**

```
apic1(config-tenant-app-epg-domain)#  lag-policy name of the LAG policy to associate
apic1(config-tenant-app-epg-domain)# no  lag-policy name of the LAG policy to deassociate
```

**Step 2** Repeat Step 1 for other application EPGs in the tenant as desired.

# Endpoint Retention Configuration

## Configure Endpoint Retention Using the NX-OS Style CLI

### Before you begin

You must have created a vCenter domain.

### Procedure

**Step 1** In the CLI, enter configuration mode:

**Example:**

```
apic1# configure
apic1(config)#
```

**Step 2** Configure a retention time for detached endpoints:

You can choose a delay of between 0 and 600 seconds. The default is 0.

**Example:**

```
apic1(config)# vmware-domain <domainName>

apic1(config-vmware)# ep-retention-time <value>
```

# Creating a Trunk Port Group

## Creating a Trunk Port Group Using the NX-OS Style CLI

This section describes how to create a trunk port group using the NX-OS Style CLI.

### Before you begin

- Trunk port groups must be tenant independent.

### Procedure

**Step 1** Go to the vmware-domain context, enter the following command:

**Example:**

```
apic1(config-vmware)# vmware-domain ifav2-vcenter1
```

**Step 2** Create a trunk port group, enter the following command:

**Example:**

```
apic1(config-vmware)# trunk-portgroup trunkpg1
```

**Step 3** Enter the VLAN range:

**Example:**

```
apic1(config-vmware-trunk)# vlan-range 2800-2820, 2830-2850
```

**Note**
If you do not specify a VLAN range, the VLAN list will be taken from the domain's VLAN namespace.

**Step 4** The mac changes is accept by default. If you choose to not to accept the mac changes, enter the following command:

**Example:**

```
apic1(config-vmware-trunk)# no mac-changes accept
```

**Step 5** The forged transmit is accept by default. If you choose to not to accept the forged transmit, enter the following command:

**Example:**

```
apic1(config-vmware-trunk)# no forged-transmit accept
```

**Step 6** The promiscuous mode is disable by default. If you choose to enable promiscuous mode on the trunk port group:

**Example:**

```
apic1(config-vmware-trunk)# allow-promiscuous enable
```

**Step 7** The trunk port group immediacy is set to on-demand by default. If you want to enable immediate immediacy, enter the following command:

**Example:**

```
apic1(config-vmware-trunk)# immediacy-immediate enable
```

**Step 8** Show the VMware domain:

**Example:**

```
apic1(config-vmware)# show vmware domain name mininet
Domain Name                        : mininet
Virtual Switch Mode                : VMware Distributed Switch
Switching Encap Mode               : vlan
```

```
Vlan Domain                          : mininet (2800-2850, 2860-2900)
Physical Interfaces                  :
Number of EPGs                       : 2
Faults by Severity                   : 0, 2, 4, 0
LLDP override                        : no
CDP override                         : no
Channel Mode override                : no

vCenters:
Faults: Grouped by severity (Critical, Major, Minor, Warning)
 vCenter               Type      Datacenter            Status    ESXs   VMs    Faults

 --------------------  --------  --------------------  --------  -----  -----  ---------------

 172.22.136.195        vCenter   mininet               online    2      57     0,0,4,0


Trunk Portgroups:
 Name                                          VLANs

 --------------------------------------------  --------------------------------------------

 epgtr1                                        280-285

 epgtr2                                        280-285

 epgtr3                                        2800-2850


apic1(config-vmware)# show vmware domain name mininet trunk-portgroup

 Name                           Aggregated EPG
 -----------------------------  ---------------------------------------------
 epgtr1                         test|wwwtestcom3|test830
 epgtr2
 epgtr3                         test|wwwtestcom3|test830
                                test|wwwtestcom3|test833


apic1(config-vmware)# )# show vmware domain name ifav2-vcenter1 trunk-portgroup name trunkpg1
Name                           Aggregated EPG                  Encap
 -----------------------------  ------------------------------  ------------
 trunkpg1                       LoadBalance|ap1|epg1            vlan-318
                                LoadBalance|ap1|epg2            vlan-317
                                LoadBalance|ap1|failover-epg    vlan-362
                                SH:l3I:common:ASAv-HA:test-     vlan-711
                                rhi|rhiExt|rhiExtInstP
                                SH:l3I:common:ASAv-HA:test-     vlan-712
                                rhi|rhiInt|rhiIntInstP
                                test-dyn-ep|ASA_FWctxctx1bd-    vlan-366
                                inside|int
                                test-dyn-ep|ASA_FWctxctx1bd-    vlan-888
                                inside1|int
                                test-dyn-ep|ASA_FWctxctx1bd-    vlan-365
                                outside|ext
                                test-dyn-ep|ASA_FWctxctx1bd-    vlan-887
                                outside1|ext
                                test-inb|FW-Inbctxtrans-        vlan-886
                                vrfinside-bd|int
                                test-inb|FW-Inbctxtrans-        vlan-882
                                vrfoutside-bd|ext
                                test-inb|inb-ap|inb-epg         vlan-883
                                test-pbr|pbr-ap|pbr-cons-epg    vlan-451
                                test-pbr|pbr-ap|pbr-prov-epg    vlan-452
```

```
                                    test1|ap1|epg1                  vlan-453
                                    test1|ap1|epg2                  vlan-485
                                    test1|ap1|epg3                  vlan-454
                                    test2-scale|ASA-                vlan-496
                                    Trunkctxctx1bd-inside1|int
                                    test2-scale|ASA-                vlan-811
                                    Trunkctxctx1bd-inside10|int
```

```
apic1(config-vmware)# show running-config vmware-domain mininet
# Command: show running-config vmware-domain mininet
# Time: Wed May 25 21:09:13 2016
  vmware-domain mininet
    vlan-domain member mininet type vmware
    vcenter 172.22.136.195 datacenter mininet
      exit
    configure-dvs
      exit
    trunk-portgroup epgtr1 vlan 280-285
    trunk-portgroup epgtr2 vlan 280-285
    trunk-portgroup epgtr3 vlan 2800-2850
    exit
```

# Custom EPG Names and Cisco ACI

## Configure or Change a Custom EPG Name Using the NX-OS Style CLI

You can use the NX-OS Style CLI to configure or change a custom endpoint group (EPG) name. Execute the following command in configuration mode for the application EPG domain.

**Note** You can use the NX-OS Style CLI to configure or change a custom EPG name only for VMware vCenter-based domains. If you use Microsoft System Center Virtual Machine Manager, you can use the Cisco Application Policy Infrastructure Controller (APIC) GUI or the REST API to configure or change a custom EPG name.

**Note** Make sure to attach the EPG to the Virtual Machine Manager (VMM) using a single CLI under the following circumstances:

- You attach the EPG and specify a custom EPG name.
- You intend that the attachment takes over an existing EPG in VMware vCenter with the same name as the custom EPG name.

If you fail to attach the EPG and specify a custom EPG name in a single CLI line, you may create duplicate EPGs.

### Before you begin

You must have performed the tasks in the section Prerequisites for Configuring a Custom EPG Name in this chapter.

### Procedure

Add or modify the custom EPG name for port-groups in VMM domain;

**Example:**

```
apic1(config-tenant-app-epg-domain)# custom-epg-name My\|Port-group_Name\!XYZ
apic1(config-tenant-app-epg-domain)# show running-config
# Command: show running-config tenant Tenant1 application App1 epg Epg1 vmware-domain member
 dvs1
# Time: Tue Nov 12 07:33:00 2019
  tenant Tenant1
    application App1
      epg Epg1
        vmware-domain member dvs1
          custom-epg-name My|Port-group_Name!XYZ
          exit
        exit
      exit
    exit
```

### What to do next

Verify the port group name, using Verify the Port Group Name in VMware vCenter in this chapter.

# Delete a Custom EPG Name Using the NX-OS Style CLI

You can delete a custom endpoint group (EPG) name using the NX-OS Style CLI. Doing so renames the port group in the Virtual Machine Manager domain to the default format: *tenant|application|epg*.

**Note** You can use the NX-OS Style CLI to delete a custom EPG name only for VMware vCenter-based domains. If you use Microsoft System Center Virtual Machine Manager, you can use the Cisco Application Policy Infrastructure Controller (APIC) GUI or the REST API to delete a custom EPG name.

### Procedure

Remove the custom EPG name, applying the default name format to the port group in the VMM domain.

**Example:**

```
apic1(config-tenant-app-epg-domain)# no custom-epg-name
apic1(config-tenant-app-epg-domain)# show running-config
# Command: show running-config tenant Tenant1 application App1 epg Epg1 vmware-domain member
 dvs1
# Time: Tue Nov 12 07:51:38 2019
```

```
tenant Tenant1
  application App1
    epg Epg1
      vmware-domain member dvs1
        exit
      exit
    exit
  exit
```

### What to do next

Verify the change, using Verify the Port Group Name in VMware vCenter in this chapter.

# Microsegmentation with Cisco ACI

## Configuring Microsegmentation with Cisco ACI Using the NX-OS-Style CLI

This section describes how to configure Microsegmentation with Cisco ACI for VMware VDS or Microsoft Hyper-V Virtual Switch using VM-based attributes within an application EPG.

### Procedure

**Step 1** In the CLI, enter configuration mode:

**Example:**

```
apic1# configure
apic1(config)#
```

**Step 2** Create the uSeg EPG:

**Example:**

This example is for an application EPG.

**Note**
The command to allow microsegmentation in the following example is required for VMware VDS only.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-baseEPG1
apic1(config-tenant-app-epg)# bridge-domain member cli-bd1
apic1(config-tenant-app-epg)# vmware-domain member cli-vmm1 allow-micro-segmentation
```

**Example:**

(Optional) This example sets match EPG precedence for the uSeg EPG:

```
apic1(config)# tenant Coke
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# bridge-domain member cli-bd1
apic1(config-tenant-app-uepg)# match-precedence 10
```

**Example:**

This example uses a filter based on the attribute VM Name.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# bridge-domain member cli-bd1
apic1(config-tenant-app-uepg)# attribute-logical-expression 'vm-name contains <cos1>'
```

**Example:**

This example uses a filter based on an IP address.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# bridge-domain member cli-bd1
apic1(config-tenant-app-uepg)# attribute-logical-expression 'ip equals <FF:FF:FF:FF:FF:FF>'
```

**Example:**

This example uses a filter based on a MAC address.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# bridge-domain member cli-bd1
apic1(config-tenant-app-uepg)# attribute-logical-expression 'mac equals <FF-FF-FF-FF-FF-FF>'
```

**Example:**

This example uses the operator AND to match all attributes and the operator OR to match any attribute.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# attribute-logical-expression 'hv equals host-123 OR (guest-os
 equals "Ubuntu Linux (64-bit)" AND domain contains fex)'
```

**Example:**

This example uses a filter based on the attribute VM-Custom Attribute.

```
apic1(config)# tenant cli-ten1
apic1(config-tenant)# application cli-a1
apic1(config-tenant-app)# epg cli-uepg1 type micro-segmented
apic1(config-tenant-app-uepg)# bridge-domain member cli-bd1
apic1(config-tenant-app-uepg)# attribute-logical-expression 'custom <Custom Attribute Name>
 equals <Custom Attribute value>'
```

**Step 3** Verify the uSeg EPG creation:

**Example:**

The following example is for a uSeg EPG with a VM name attribute filter

```
apic1(config-tenant-app-uepg)# show running-config
# Command: show running-config tenant cli-ten1 application cli-a1 epg cli-uepg1 type
micro-segmented # Time: Thu Oct 8 11:54:32 2015
  tenant cli-ten1
    application cli-a1
      epg cli-uepg1 type micro-segmented
        bridge-domain cli-bd1
        attribute-logical-expression 'vm-name contains cos1 force'
        {vmware-domain | microsoft-domain} member cli-vmm1
```

```
        exit
     exit
exit
```

# Intra-EPG Isolation Enforcement and Cisco ACI

## Configuring Intra-EPG Isolation for VMware VDS or Microsoft Hyper-V Virtual Switch using the NX-OS Style CLI

### Procedure

**Step 1** In the CLI, create an intra-EPG isolation EPG:

**Example:**

The following example is for VMware VDS:

```
apic1(config)# tenant Test_Isolation
apic1(config-tenant)# application PVLAN
apic1(config-tenant-app)# epg EPG1
apic1(config-tenant-app-epg)# show running-config
# Command: show running-config tenant Tenant_VMM application Web epg intraEPGDeny
  tenant Tenant_VMM
    application Web
      epg intraEPGDeny
        bridge-domain member VMM_BD
        vmware-domain member PVLAN encap vlan-2001 primary-encap vlan-2002 push on-demand
        vmware-domain member mininet
          exit
        isolation enforce
        exit
      exit
    exit
apic1(config-tenant-app-epg)#
```

**Example:**

The following example is for Microsoft Hyper-V Virtual Switch:

```
apic1(config)# tenant Test_Isolation
apic1(config-tenant)# application PVLAN
apic1(config-tenant-app)# epg EPG1
apic1(config-tenant-app-epg)# show running-config
# Command: show running-config tenant Tenant_VMM application Web epg intraEPGDeny
  tenant Tenant_VMM
    application Web
      epg intraEPGDeny
        bridge-domain member VMM_BD
        microsoft-domain member domain1 encap vlan-2003 primary-encap vlan-2004
        microsoft-domain member domain2
          exit
        isolation enforce
        exit
      exit
```

```
    exit
apic1(config-tenant-app-epg)#
```

**Step 2** Verify the configuration:

**Example:**

```
 show epg StaticEPG detail
Application EPg Data:
Tenant              : Test_Isolation
Application         : PVLAN
AEPg                : StaticEPG
BD                  : VMM_BD
uSeg EPG            : no
Intra EPG Isolation : enforced
Vlan Domains        : VMM
Consumed Contracts  : VMware_vDS-Ext
Provided Contracts  : default,Isolate_EPG
Denied Contracts    :
Qos Class           : unspecified
Tag List            :
VMM Domains:
Domain                Type       Deployment Immediacy  Resolution Immediacy  State
   Encap       Primary
Encap
 --------------------  ---------  --------------------  --------------------  --------------
  ----------  ----------
 DVS1                  VMware     On Demand             immediate             formed
    auto        auto

Static Leaves:
 Node        Encap             Deployment Immediacy  Mode                Modification Time

----------  ----------------  --------------------  ------------------
-------------------------------

Static Paths:
 Node        Interface                       Encap             Modification Time

 ----------  ------------------------------  ----------------  ------------------------------

 1018        eth101/1/1                      vlan-100          2016-02-11T18:39:02.337-08:00

 1019        eth1/16                         vlan-101          2016-02-11T18:39:02.337-08:00


Static Endpoints:
 Node        Interface          Encap             End Point MAC      End Point IP Address
         Modification Time
 ----------  ------------------------------  ----------------  ------------------
------------------------------  ------------------------------

Dynamic Endpoints:
Encap: (P):Primary VLAN, (S):Secondary VLAN
 Node        Interface            Encap             End Point MAC      End Point IP Address
         Modification Time
 ----------  ------------------------------  ----------------  ------------------
------------------------------  ------------------------------
1017        eth1/3              vlan-943(P)       00:50:56:B3:64:C4  ---
      2016-02-17T18:35:32.224-08:00
                                vlan-944(S)
```

# Cisco ACI with Cisco UCSM Integration

## Integrating Cisco UCSM Using the NX-OS Style CLI

You can use the NX-OS style CLI to integrate Cisco UCS Manager (UCSM) into the Cisco Application Centric Infrastructure (ACI) fabric.

### Before you begin

You must have fulfilled the prerequisites in the section Cisco UCSM Integration Prerequisites in this guide.

### Procedure

Create the integration group, the integration for the integration group, and choose the Leaf Enforced or the Preprovision policy.

If you choose the default **Pre-provision** policy, Cisco Application Policy Infrastructure Controller (APIC) detects which virtual machine manager (VMM) domain that you use. Cisco APIC then pushes all VLANs associated with that domain to the target Cisco UCSM.

If you choose the **Leaf Enforced** policy, Cisco APIC detects only the VLANS that are deployed to the top-of-rack leaf nodes. Cisco APIC then filters out any undeployed VLANs, resulting in fewer VLANs pushed to the Cisco UCSM.

**Note**
The following example includes an example of specifying the uplink port channel, which your deployment might require. For example, Layer 2 disjoint networks require that you make that specification.

**Example:**

```
APIC-1# config terminal
APIC-1(config)# integrations-group GROUP-123
APIC-1(config-integrations-group)# integrations-mgr UCSM_001 Cisco/UCSM
APIC-1(config-integrations-mgr)#
APIC-1(config-integrations-mgr)# device-address 1.1.1.2
APIC-1(config-integrations-mgr)# user admin
Password:
Retype password:
APIC-1(config-integrations-mgr)#
APIC-1(config-integrations-mgr)# encap-sync preprovision
APIC-1(config-integrations-mgr)# nicprof-vlan-preserve ?
overwrite overwrite
preserve preserve
APIC-1(config-integrations-mgr)# nicprof-vlan-preserve preserve
APIC-1(config-integrations-mgr)#
  exit
```

# Cisco ACI with Microsoft SCVMM

## Creating a Static IP Address Pool Using the NX-OS Style CLI

### Procedure

**Step 1** In the CLI, enter configuration mode:

**Example:**

```
apic1# config
```

**Step 2** Create the Static IP Address Pool:

**Example:**

```
apic1(config)# tenant t0
apic1(config-tenant)# application a0
apic1(config-tenant-app)# epg e0
apic1(config-tenant-app-epg)# mic
microsoft  microsoft-domain
apic1(config-tenant-app-epg)# microsoft static-ip-pool test_pool gateway 1.2.3.4/5
apic1(config-tenant-app-epg-ms-ip-pool)# iprange 1.2.3.4 2.3.4.5
apic1(config-tenant-app-epg-ms-ip-pool)# dns
dnssearchsuffix  dnsservers  dnssuffix
apic1(config-tenant-app-epg-ms-ip-pool)# dnssuffix testsuffix
apic1(config-tenant-app-epg-ms-ip-pool)# exit
apic1(config-tenant-app-epg)# no mi
microsoft  microsoft-domain
apic1(config-tenant-app-epg)# no microsoft static-ip-pool ?
 test_pool
apic1(config-tenant-app-epg)# no microsoft static-ip-pool test_pool gateway ?
 gwAddress  gwAddress
apic1(config-tenant-app-epg)# no microsoft static-ip-pool test_pool gateway 1.2.3.4/5
apic1(config-tenant-app-epg)#
```

**Step 3** Verify the Static IP Address Pool:

**Example:**

```
apic1(config-tenant-app-epg-ms-ip-pool)# show running-config
# Command: show running-config tenant t0 application a0 epg e0 microsoft static-ip-pool
test_pool gateway 1.2.3.4/5
# Time: Thu Feb 11 23:08:04 2016
  tenant t0
    application a0
      epg e0
        microsoft static-ip-pool test_pool gateway 1.2.3.4/5
          iprange 1.2.3.4 2.3.4.5
          dnsservers
          dnssuffix testsuffix
          dnssearchsuffix
          winservers
          exit
        exit
```

```
exit
```

# Creating a SCVMM Domain Profile Using the NX-OS Style CLI

This section describes how to create a SCVMM domain profile using the command-line interface (CLI).

**Procedure**

**Step 1** In the NX-OS Style CLI, configure a vlan-domain and add the VLAN ranges:

**Example:**

```
apic1# configure
apic1(config)# vlan-domain vmm_test_1 dynamic
apic1(config-vlan)# vlan 150-200 dynamic
apic1(config-vlan)# exit
```

**Step 2** Add interfaces to the vlan-domain:

**Example:**

```
apic1(config)# leaf 101
apic1(config-leaf)# interface ethernet 1/2
apic1(config-leaf-if)# vlan-domain member vmm_test_1
apic1(config-leaf-if)# exit
apic1(config-leaf)# exit
```

**Step 3** Create the Microsoft SCVMM domain and associate it with the previously created vlan-domain. Create the SCVMM controller under this domain:

**Example:**

```
apic1(config)# microsoft-domain mstest
apic1(config-microsoft)# vlan-domain member vmm_test_1
apic1(config-microsoft)# scvmm 134.5.6.7 cloud test
apic1#
```