Performing REST API Tasks

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Cisco ACI Virtual Machine Networking

Configuring a NetFlow Exporter Policy for VM Networking Using the REST API

The following example XML shows how to configure a NetFlow exporter policy for VM networking using the REST API:

```
<polUni>
    <infraInfra>
        <netflowVmmExporterPol name="vmExporter1" dstAddr="2.2.2.2" dstPort="1234"
srcAddr="4.4.4.4"/>
    </infraInfra>
</polUni>
```

Consuming a NetFlow Exporter Policy Under a VMM Domain Using the REST API for VMware VDS

The following example XML shows how to consume a NetFlow exporter policy under a VMM domain using the REST API:

```
<polUni>
    <vmmProvP vendor="VMware">
        <vmmDomP name="mininet">
            <vmmVSwitchPolicyCont>
                <vmmRsVswitchExporterPol tDn="uni/infra/vmmexporterpol-vmExporter1"
activeFlowTimeOut="62" idleFlowTimeOut="16" samplingRate="1"/>
            </vmmVSwitchPolicyCont>
```

```
        </vmmDomP>
    </vmmProvP>
</polUni>
```

Enabling NetFlow on an Endpoint Group for VMM Domain Association for VMware VDS

The following example XML shows how to enable NetFlow on an endpoint group for VMM domain association using the REST APIs:

```
<polUni>
    <fvTenant name="t1">
        <fvAp name="a1">
            <fvAEPg name="EPG1">
                <fvRsDomAtt tDn="uni/vmmp-VMware/dom-mininet" netflowPref="enabled" />
            </fvAEPg>
        </fvAp>
    </fvTenant>
</polUni>
```

Cisco ACI with VMware VDS Integration

Creating a VMware VDS Domain Profile

Creating a vCenter Domain Profile Using the REST API

Procedure

Step 1 Configure a VMM domain name, a controller, and user credentials.

Example:

```
 POST URL: https://<api-ip>/api/node/mo/.xml

<polUni>
<vmmProvP vendor="VMware">
<!-- VMM Domain -->
<vmmDomP name="productionDC">
<!-- Association to VLAN Namespace -->
<infraRsVlanNs tDn="uni/infra/vlanns-VlanRange-dynamic"/>
<!-- Credentials for vCenter -->
<vmmUsrAccP name="admin" usr="administrator" pwd="admin" />
<!-- vCenter IP address -->
<vmmCtrlrP name="vcenter1" hostOrIp="<vcenter ip address>" rootContName="<Datacenter Name
in vCenter>">
<vmmRsAcc tDn="uni/vmmp-VMware/dom-productionDC/usracc-admin"/>
</vmmCtrlrP>
</vmmDomP>
</vmmProvP>
```

Example:

```
<polUni>
<vmmProvP vendor="VMware">
    <vmmDomP name="mininet" delimiter="@" >
   </vmmDomP>
</vmmProvP>
</polUni>
```

Step 2 Create an attachable entity profile for VLAN namespace deployment.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml
<infraInfra>
<infraAttEntityP name="profile1">
<infraRsDomP tDn="uni/vmmp-VMware/dom-productionDC"/>
</infraAttEntityP>
</infraInfra>
```

Step 3 Create an interface policy group and selector.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml

<infraInfra>
    <infraAccPortP name="swprofile1ifselector">
        <infraHPortS name="selector1" type="range">
            <infraPortBlk name="blk"
             fromCard="1" toCard="1" fromPort="1" toPort="3">
            </infraPortBlk>
     <infraRsAccBaseGrp tDn="uni/infra/funcprof/accportgrp-group1" />
        </infraHPortS>
    </infraAccPortP>

    <infraFuncP>
        <infraAccPortGrp name="group1">
            <infraRsAttEntP tDn="uni/infra/attentp-profile1" />
        </infraAccPortGrp>
    </infraFuncP>
</infraInfra>
```

Step 4 Create a switch profile.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml

<infraInfra>
    <infraNodeP name="swprofile1">
        <infraLeafS name="selectorswprofile11718" type="range">
            <infraNodeBlk name="single0" from_="101" to_="101"/>
            <infraNodeBlk name="single1" from_="102" to_="102"/>
        </infraLeafS>
        <infraRsAccPortP tDn="uni/infra/accportprof-swprofile1ifselector"/>
    </infraNodeP>
</infraInfra>
```

Step 5 Configure the VLAN pool.

Example:

```
 POST URL: https://<apic-ip>/api/node/mo/.xml

<polUni>
<infraInfra>
<fvnsVlanInstP name="VlanRange" allocMode="dynamic">
   <fvnsEncapBlk name="encap" from="vlan-100" to="vlan-400"/>
</fvnsVlanInstP>
</infraInfra>
</polUni>
```

Step 6 Locate all the configured controllers and their operational state.

Example:

```
GET:
https://<apic-ip>/api/node/class/compCtrlr.xml?
<imdata>
<compCtrlr apiVer="5.1" ctrlrPKey="uni/vmmp-VMware/dom-productionDC/ctrlr-vcenter1"
deployIssues="" descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1" domName="
productionDC"
hostOrIp="esx1" mode="default" model="VMware vCenter Server 5.1.0 build-756313"
name="vcenter1" operSt="online" port="0" pwd="" remoteOperIssues="" scope="vm"
usr="administrator" vendor="VMware, Inc." ... />
</imdata>
```

Step 7 Locate the hypervisor and VMs for a vCenter with the name 'vcenter1' under a VMM domain called 'ProductionDC'.

Example:

```
GET:
https://<apic-ip>/api/node/mo/comp/prov-VMware/ctrlr-productionDC-vcenter1.xml?query-target=children

<imdata>
<compHv descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/hv-host-4832" name="esx1"
state="poweredOn" type="hv" ... />
<compVm descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/vm-vm-5531" name="AppVM1"
state="poweredOff" type="virt" .../>
<hvsLNode dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/sw-dvs-5646" lacpEnable="yes"
lacpMode="passive" ldpConfigOperation="both" ldpConfigProtocol="lldp" maxMtu="1500"
mode="default" name="apicVswitch" .../>
</imdata>
```

Step 8 (Optional) Configure a retention time for detached endpoints:

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

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml
<vmmProvP vendor="VMware" >
<vmmDomP name="mininetavs" mode="n1kv" enfPref="sw" epRetTime=”60”>
<infraRsVlanNs tDn="uni/infra/vlanns-inst-dynamic"/>
<vmmUsrAccP
name="defaultAccP"
usr="administrator"
pwd="admin"
/>
</vmmDomP>
</vmmProvP>
```

Creating a Read-Only VMM Domain Using the REST API

You can use REST API 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 Configure a VMM domain name, a controller, and user credentials.

Example:

```
POST URL: https://<api-ip>/api/node/mo/.xml
<polUni>
<vmmProvP vendor="VMware">
<!-- VMM Domain -->
<vmmDomP name="productionDC" accessMode="read-only">
<!-- Association to VLAN Namespace -->
<infraRsVlanNs tDn="uni/infra/vlanns-VlanRange-dynamic"/>
<!-- Credentials for vCenter -->
<vmmUsrAccP name="admin" usr="administrator" pwd="admin" />
<!-- vCenter IP address -->
<vmmCtrlrP name="vcenter1" hostOrIp="<vcenter ip address>" rootContName="<Datacenter Name
in vCenter>">
<vmmRsAcc tDn="uni/vmmp-VMware/dom-productionDC/usracc-admin"/>
</vmmCtrlrP>
</vmmDomP>
</vmmProvP>
```

Example:

```
<polUni>
<vmmProvP vendor="VMware">
    <vmmDomP name="mininet" delimiter="@" >
   </vmmDomP>
</vmmProvP>
</polUni>
```

Step 2 Create an attachable entity profile for VLAN namespace deployment.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml
<infraInfra>
<infraAttEntityP name="profile1">
<infraRsDomP tDn="uni/vmmp-VMware/dom-productionDC"/>
</infraAttEntityP>
</infraInfra>
```

Step 3 Create an interface policy group and selector.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml

<infraInfra>
    <infraAccPortP name="swprofile1ifselector">
        <infraHPortS name="selector1" type="range">
            <infraPortBlk name="blk"
             fromCard="1" toCard="1" fromPort="1" toPort="3">
            </infraPortBlk>
     <infraRsAccBaseGrp tDn="uni/infra/funcprof/accportgrp-group1" />
        </infraHPortS>
    </infraAccPortP>

    <infraFuncP>
        <infraAccPortGrp name="group1">
            <infraRsAttEntP tDn="uni/infra/attentp-profile1" />
        </infraAccPortGrp>
    </infraFuncP>
</infraInfra>
```

Step 4 Create a switch profile.

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml

<infraInfra>
    <infraNodeP name="swprofile1">
        <infraLeafS name="selectorswprofile11718" type="range">
            <infraNodeBlk name="single0" from_="101" to_="101"/>
            <infraNodeBlk name="single1" from_="102" to_="102"/>
        </infraLeafS>
        <infraRsAccPortP tDn="uni/infra/accportprof-swprofile1ifselector"/>
    </infraNodeP>
</infraInfra>
```

Step 5 Configure the VLAN pool.

Example:

```
 POST URL: https://<apic-ip>/api/node/mo/.xml

<polUni>
<infraInfra>
<fvnsVlanInstP name="VlanRange" allocMode="dynamic">
   <fvnsEncapBlk name="encap" from="vlan-100" to="vlan-400"/>
</fvnsVlanInstP>
</infraInfra>
</polUni>
```

Step 6 Locate all the configured controllers and their operational state.

Example:

```
GET:
https://<apic-ip>/api/node/class/compCtrlr.xml?
<imdata>
<compCtrlr apiVer="5.1" ctrlrPKey="uni/vmmp-VMware/dom-productionDC/ctrlr-vcenter1"
deployIssues="" descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1" domName="
productionDC"
hostOrIp="esx1" mode="default" model="VMware vCenter Server 5.1.0 build-756313"
name="vcenter1" operSt="online" port="0" pwd="" remoteOperIssues="" scope="vm"
```

```
usr="administrator" vendor="VMware, Inc." ... />
</imdata>
```

Step 7 Locate the hypervisor and VMs for a vCenter with the name 'vcenter1' under a VMM domain called 'ProductionDC'.

Example:

```
GET:
https://<apic-ip>/api/node/mo/comp/prov-VMware/ctrlr-productionDC-vcenter1.xml?query-target=children

<imdata>
<compHv descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/hv-host-4832" name="esx1"
state="poweredOn" type="hv" ... />
<compVm descr="" dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/vm-vm-5531" name="AppVM1"
state="poweredOff" type="virt" .../>
<hvsLNode dn="comp/prov-VMware/ctrlr-productionDC-vcenter1/sw-dvs-5646" lacpEnable="yes"
lacpMode="passive" ldpConfigOperation="both" ldpConfigProtocol="lldp" maxMtu="1500"
mode="default" name="apicVswitch" .../>
</imdata>
```

Step 8 (Optional) Configure a retention time for detached endpoints:

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

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml
<vmmProvP vendor="VMware" >
<vmmDomP name="mininetavs" mode="n1kv" enfPref="sw" epRetTime=”60”>
<infraRsVlanNs tDn="uni/infra/vlanns-inst-dynamic"/>
<vmmUsrAccP
name="defaultAccP"
usr="administrator"
pwd="admin"
/>
</vmmDomP>
</vmmProvP>
```

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 REST API

You can use REST API 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 Configure a VMM domain name, a controller, and user credentials.

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

Example:

```
POST URL: https://<apic-ip>/api/policymgr/mo/.xml

<vmmDomP dn="uni/vmmp-VMware/dom-vmmDom1" accessMode="read-write" prefEncapMode="unspecified"
 enfPref="hw">
</vmmDomP>
```

Step 2 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 REST API, on page 8.

Otherwise, you can skip this step.

Step 3 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 REST API, on page 9.

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 REST API

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 REST API.

Before you begin

You must have created a VMware vCenter virtual machine manager (VMM) domain for VMware VDS or Cisco Application Centric Infrastructure (ACI) Virtual Edge.

Procedure

Step 1 Create the the LAG and associate it with a load-balancing algorithm.

Example:

```
<polUni>
<vmmProvP vendor="VMware">
    <vmmDomP name="mininetlacpavs">
        <vmmVSwitchPolicyCont>
            <lacpEnhancedLagPol name="lag2" mode="passive" lbmode="vlan" numLinks="4">
            </lacpEnhancedLagPol>
        </vmmVSwitchPolicyCont>
   </vmmDomP>
</vmmProvP>
</polUni>
```

Step 2 Repeat the step to create other LAGs for the DVS.

What to do next

If you are using VMware VDS, associate endpoint groups (EPGs) to the domain with the enhanced LACP policy. If you are using Cisco Application Centric Infrastructure (ACI) Virtual Edge, associate internally created inside and outside port groups with the enhanced LACP policy, then associate EPGs to the domain with the policy.

Associate Application EPGs to VMware vCenter Domains with Enhanced LACP Policies Using REST API

Associate application endpoint groups (EPGs) with the VMware vCenter domain with LAGs and a load-balancing algorithm. You can perform this task using REST API. 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 EPG to a VMware vCenter domain with LAGs associated to a load-balancing algorithm.

Example:

```
<polUni>
  <fvTenant
    dn="uni/tn-coke"
    name="coke">
    <fvCtx name="cokectx"/>
    <fvAp
      dn="uni/tn-coke/ap-sap"
      name="sap">
```

```
      <fvAEPg
        dn="uni/tn-coke/ap-sap/epg-web3"
        name="web3" >
          <fvRsBd tnFvBDName="cokeBD2" />
          <fvRsDomAtt resImedcy="immediate" switchingMode="native"
            tDn="uni/vmmp-VMware/dom-mininetlacpavs">
            <fvAEPgLagPolAtt >
              <fvRsVmmVSwitchEnhancedLagPol
tDn="uni/vmmp-VMware/dom-mininetlacpavs/vswitchpolcont/enlacplagp-lag2"/>
            </fvAEPgLagPolAtt>
          </fvRsDomAtt>
      </fvAEPg>
    </fvAp>
  </fvTenant>
</polUni>
```

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

Endpoint Retention Configuration

Configuring Endpoint Retention Using the REST API

Before you begin

You must have configured a vCenter domain.

Procedure

Configure a retention time for detached endpoints:

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

```
POST URL: https://<apic-ip>/api/policymgr/mo/uni.xml
<vmmProvP vendor="VMware" >

<vmmDomP name="mininetavs" epRetTime=”60”>
</vmmDomP>
</vmmProvP>
```

Creating a Trunk Port Group

Creating a Trunk Port Group Using the REST API

This section describes how to create a trunk port group using the REST API.

Before you begin

- Trunk port groups must be tenant independent.

Procedure

Create a trunk port group:

Example:

```
<vmmProvP vendor="VMware">
 <vmmDomP name=”DVS1">
  <vmmUsrAggr name="EPGAggr_1">
   <fvnsEncapBlk name="blk0" from="vlan-100” to="vlan-200"/>
  </vmmUsrAggr>
 </vmmDomP>
</vmmProvP>
```

Working with Blade Servers

Setting Up an Access Policy for a Blade Server Using the REST API

Procedure

Set up an access policy for a blade server.

Example:

```
POST: https://<ip or hostname APIC>/api/node/mo/uni.xml

<polUni>
                <infraInfra>
                <!-- Define LLDP CDP and LACP policies -->
                <lldpIfPol name="enable_lldp" adminRxSt="enabled" adminTxSt="enabled"/>
                <lldpIfPol name="disable_lldp" adminRxSt="disabled" adminTxSt="disabled"/>
                <cdpIfPol name="enable_cdp" adminSt="enabled"/>
                <cdpIfPol name="disable_cdp" adminSt="disabled"/>
<lacpLagPol name='enable_lacp' ctrl='15' descr='LACP' maxLinks='16' minLinks='1'
mode='active'/>
                <lacpLagPol name='disable_lacp' mode='mac-pin'/>


        <!-- List of nodes. Contains leaf selectors. Each leaf selector contains list of
node blocks -->
        <infraNodeP name="leaf1">
                <infraLeafS name="leaf1" type="range">
                <infraNodeBlk name="leaf1" from_="1017" to_="1017"/>
            </infraLeafS>
            <infraRsAccPortP tDn="uni/infra/accportprof-portselector"/>
        </infraNodeP>


        <!-- PortP contains port selectors. Each port selector contains list of ports. It
also has association to port group policies -->
        <infraAccPortP name="portselector">
                <infraHPortS name="pselc" type="range">
               <infraPortBlk name="blk" fromCard="1" toCard="1" fromPort="39" toPort="40">
```

```
                </infraPortBlk>
                <infraRsAccBaseGrp tDn="uni/infra/funcprof/accbundle-leaf1_PC"/>
            </infraHPortS>
        </infraAccPortP>

        <!-- FuncP contains access bundle group policies -->
        <infraFuncP>
                <!-- Access bundle group has relation to PC, LDP policies and to attach
entity profile -->
            <infraAccBndlGrp name="leaf1_PC" lagT='link'>
                <infraRsLldpIfPol tnLldpIfPolName="enable_lldp"/>
                <infraRsLacpPol tnLacpLagPolName='enable_lacp'/>
                <infraRsAttEntP tDn="uni/infra/attentp-vmm-FI2"/>
            </infraAccBndlGrp>
        </infraFuncP>

        <!-- AttEntityP has relation to VMM domain -->
        <infraAttEntityP name="vmm-FI2">
                <infraRsDomP tDn="uni/vmmp-VMware/dom-productionDC"/>
            <!-- Functions -->
            <infraProvAcc name="provfunc"/>
            <!-- Policy overrides for VMM -->
            <infraAttPolicyGroup name="attpolicy">
                <!-- RELATION TO POLICIES GO HERE -->
                <infraRsOverrideCdpIfPol tnCdpIfPolName="enable_cdp"/>
                <infraRsOverrideLldpIfPol tnLldpIfPolName="disable_lldp"/>
                <infraRsOverrideLacpPol tnLacpLagPolName="disable_lacp"/>
            </infraAttPolicyGroup/>
        </infraAttEntityP>

        </infraInfra>
</polUni>

OUTPUT:
<?xml version="1.0" encoding="UTF-8"?>
<imdata></imdata>
```

Custom EPG Names and Cisco ACI

Configure or Change a Custom EPG Name Using REST API

You can configure or change a custom endpoint group (EPG) name using REST API. You can configure the name as part of `fvRsDomAtt` in a REST post.

Before you begin

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

Procedure

Configure the custom EPG name.

Example:

```
<fvTenant name="Tenant1">
    <fvAp name="App1">
        <fvAEPg name="Epg1">
            <fvRsDomAtt tDn="uni/vmmp-VMware/dom-dvs1"
    customEpgName='My|Port-group_Name!XYZ'
     />
        </fvAEPg>
    </fvAp>
</fvTenant>
```

What to do next

Verify the name, using one of the following procedures in this chapter:

- Verify the Port Group Name in VMware vCenter
- Verify a VM Network Name Change in Microsoft SCVMM

Delete a Custom EPG Name Using REST API

You can delete a custom endpoint group (EPG) name using REST API. Doing so renames the port group in the Virtual Machine Manager (VMM) domain to the default format *tenant|application|epg*or the Microsoft VM network to the default format *tenant|application|epg|domain*.

Procedure

Delete the custom EPG name by setting the `customEpgName` to empty.

Example:

```
<fvTenant name="Tenant1">
    <fvAp name="App1">
        <fvAEPg name="Epg1">
            <fvRsDomAtt tDn="uni/vmmp-VMware/dom-dvs1"
    customEpgName='My|Port-group_Name!XYZ'
     />
        </fvAEPg>
    </fvAp>
</fvTenant>
```

What to do next

Verify the name, using one of the following procedures in this chapter:

- Verify the Port Group Name in VMware vCenter
- Verify a VM Network Name Change in Microsoft SCVMM

Microsegmentation with Cisco ACI

Configuring Microsegmentation with Cisco ACI Using the REST API

This section describes how to configure Microsegmentation with Cisco ACI for Cisco ACI Virtual Edge, VMware VDS, or Microsoft Hyper-V Virtual Switch using the REST API.

Procedure

Step 1 Log in to the Cisco APIC.

Step 2 Post the policy to `https://apic-ip-address/api/node/mo/.xml`.

Example:

This example configures a uSeg EPG with the attributes VM Name containing "vm" and Operating System attributes containing values of "CentOS" and "Linux," with matching for all attributes and with an EPG Match Precedence of 1.

```
<fvAEPg name="Security" isAttrBasedEPg="yes" pcEnfPref="unenforced" status="">
      <fvRsBd tnFvBDName="BD1" />
      <fvRsDomAtt tDn="uni/vmmp-VMware/dom-mininet”/>
       <fvCrtrn name="default" match="all” prec="1”>
                  <fvVmAttr name="foo" type="vm-name" operator="contains" value="vm"/>
                <fvSCrtrn name="sub-def" match="any”>
                       <fvVmAttr name="foo1" type="guest-os" operator="contains"
value="CentOS"/>
                       <fvVmAttr name="foo2" type="guest-os" operator="contains"
value="Linux"/>
                    </fvSCrtrn>
       </fvCrtrn>
 </fvAEPg>
```

Example:

This example is for an application EPG with microsegmentation enabled.

```
<polUni>
  <fvTenant dn="uni/tn-User-T1" name="User-T1">
      <fvAp dn="uni/tn-User-T1/ap-Application-EPG" name="Application-EPG">
         <fvAEPg dn="uni/tn-User-T1/ap-Application-EPG/applicationEPG” name="applicationEPG”
 pcEnfPref="enforced” >
               <fvRsBd tnFvBDName="BD1" />
               <fvRsDomAtt tDn="uni/vmmp-VMware/dom-cli-vmm1" classPref="useg”/>
           </fvAEPg>
        </fvAp>
   </fvTenant>
</polUni>
```

In the example above, the string `<fvRsDomAtt tDn="uni/vmmp-VMware/dom-cli-vmm1" classPref="useg”/>` is relevant only for VMware VDS and not for Cisco ACI Virtual Edge, or Microsoft Hyper-V Virtual Switch.

Example:

This example attaches a uSeg EPG to a Cisco ACI Virtual Edge VMM domain to add the switching mode.

```
<fvRsDomAtt resImedcy="immediate" instrImedcy="immediate" switchingMode="AVE" encapMode="auto"
 tDn="uni/vmmp-VMware/dom-AVE-CISCO" primaryEncapInner="" secondaryEncapInner=""/>
```

Intra-EPG Isolation Enforcement with Cisco ACI

Configuring Intra-EPG Isolation for VMware VDS or Microsoft Hyper-V Virtual Switch using the REST API

Procedure

Step 1 Send this HTTP POST message to deploy the application using the XML API.

Example:

```
POST https://apic-ip-address/api/mo/uni/tn-ExampleCorp.xml
```

Step 2 For a VMware VDS or Microsoft Hyper-V Virtual Switch deployment, include one of the following XML structures in the body of the POST message.

Example:

The following example is for VMware VDS:

```
<fvTenant name="Tenant_VMM" >
  <fvAp name="Web">
    <fvAEPg name="IntraEPGDeny" pcEnfPref="enforced">
          <!-- pcEnfPref="enforced" ENABLES ISOLATION-->
          <fvRsBd tnFvBDName="bd" />
          <!-- STATIC ENCAP ASSOCIATION TO VMM DOMAIN-->
          <fvRsDomAtt encap="vlan-2001" instrImedcy="lazy" primaryEncap="vlan-2002"
resImedcy="immediate" tDn="uni/vmmp-VMware/dom-DVS1”>
    </fvAEPg>
 </fvAp>
</fvTenant>
```

Example:

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

```
<fvTenant name="Tenant_VMM" >
  <fvAp name="Web">
    <fvAEPg name="IntraEPGDeny" pcEnfPref="enforced">
          <!-- pcEnfPref="enforced" ENABLES ISOLATION-->
          <fvRsBd tnFvBDName="bd" />
         <!-- STATIC ENCAP ASSOCIATION TO VMM DOMAIN-->
       <fvRsDomAtt tDn="uni/vmmp-Microsoft/dom-domain1”>
 <fvRsDomAtt encap="vlan-2004" instrImedcy="lazy" primaryEncap="vlan-2003"
 resImedcy="immediate" tDn="uni/vmmp-Microsoft/dom-domain2”>
   </fvAEPg>
 </fvAp>
```

```
</fvTenant>
```

Cisco ACI with Cisco UCSM Integration

Integrating Cisco UCSM Using REST API

You can use REST API to integrate Cisco UCS Manager (UCSM) into the Cisco Application Centric Infrastructure (ACI) fabric.

Before you begin

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

Procedure

Create the integration group and 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:

```
<extdevGroupP name="GROUP">
            <extdevMgrP deviceAddress="172.23.138.144:11000" inventoryTrigSt="untriggered"
 isAppManaged="yes" name="UCSM_00" srcDevType="uni/infra/devCont/devt-Cisco-UCSM"
usr="username" pwd="password">
               <extdevUplinkProf apicControlled="yes" externalId="fabric/lan/B/pc-1"
name="FI-B"/>
               <extdevUplinkProf apicControlled="yes" externalId="fabric/lan/A/pc-1"
name="FI-A"/>
               <extdevSwMgrPolCont>
                  <extdevSwMgrFlags encapDeployMode="preprovision"
nicProfCfgPreserveMode="preserve"/>
               </extdevSwMgrPolCont>
               <extdevAssociatedAppsCont>
                  <extdevRsFromDevMgrToApp isDefaultConn="yes"
tDn="pluginContr/plugin-Cisco_ExternalSwitch"/>
               </extdevAssociatedAppsCont>
            </extdevMgrP>
```

```
            <aaaDomainRef name="MySecDomain"/>
</extdevGroupP>
```

Cisco ACI with Microsoft SCVMM

Creating a SCVMM Domain Profile Using the REST API

This section describes how to create a SCVMM domain profile using the REST API.

Procedure

Step 1 Configure a VMM domain name and System Center Virtual Machine Manager (SCVMM) Controller.

Example:

```
 https://<apic-ip>/api/node/mo/.xml

<polUni>
<vmmProvP vendor="Microsoft">
<!-- VMM Domain -->
<vmmDomP name="productionDC">
<!-- Association to VLAN Namespace -->
<infraRsVlanNs tDn="uni/infra/vlanns-VlanRange-dynamic"/>
<!-- SCVMM IP address information
<vmmCtrlrP name="SCVMM1" hostOrIp="172.21.120.21" rootContName="rootCont01"> -->
</vmmCtrlrP>
</vmmDomP>
</vmmProvP>
```

Step 2 Create an attachable entity profile for VLAN namespace deployment.

Example:

```
https://<apic-ip>/api/policymgr/mo/uni.xml
<infraInfra>
<infraAttEntityP name="profile1">
<infraRsDomP tDn="uni/vmmp-Microsoft/dom-productionDC"/>
</infraAttEntityP>
</infraInfra>
```

Step 3 Create an interface policy group and selector.

Example:

```
https://<apic-ip>/api/policymgr/mo/uni.xml

<infraInfra>
    <infraAccPortP name="swprofile1ifselector">
        <infraHPortS name="selector1" type="range">
            <infraPortBlk name="blk"
             fromCard="1" toCard="1" fromPort="1" toPort="3">
            </infraPortBlk>
     <infraRsAccBaseGrp tDn="uni/infra/funcprof/accportgrp-group1" />
        </infraHPortS>
    </infraAccPortP>
```

```
    <infraFuncP>
        <infraAccPortGrp name="group1">
            <infraRsAttEntP tDn="uni/infra/attentp-profile1" />
        </infraAccPortGrp>
    </infraFuncP>
</infraInfra>
```

Step 4 Create a switch profile.

Example:

```
https://<apic-ip>/api/policymgr/mo/uni.xml <infraInfra>
    <infraNodeP name="swprofile1"> <infraLeafS
    name="selectorswprofile11718" type="range"> <infraNodeBlk name="single0"
    from_="101" to_="101"/> <infraNodeBlk name="single1" from_="102"
    to_="102"/> </infraLeafS> <infraRsAccPortP
    tDn="uni/infra/accportprof-swprofile1ifselector"/> </infraNodeP>
    </infraInfra>
```

Step 5 Configure the VLAN pool.

Example:

```
 https://<apic-ip>/api/node/mo/.xml

<polUni>
<infraInfra>
<fvnsVlanInstP name="VlanRange" allocMode="dynamic">
   <fvnsEncapBlk name="encap" from="vlan-100" to="vlan-400"/>
</fvnsVlanInstP>
</infraInfra>
</polUni>
```

Step 6 Locate all the configured controllers and their operational state.

Example:

```
GET:
https://<apic-ip>/api/node/class/vmmAgtStatus.xml

<imdata totalCount="11">
<vmmAgtStatus HbCount="9285" childAction="" dn="uni/vmmp-Microsoft/dom-productionDC
/ctrlr-SCVMM1/AgtStatus-172.21.120.21" lastHandshakeTime="2015-02-24T23:02:51.800+00:00"
lcOwn="local"
modTs="2015-02-24T23:02:53.695+00:00" monPolDn="uni/infra/moninfra-default"
name="172.21.120.21"
operSt="online" remoteErrMsg="" remoteOperIssues="" status="" uid="15374"/>
</imdata>
```

Step 7 Get the Hyper-Vs under one controller.

Example:

```
https://<apic-ip>/api/node/class/opflexODev.json?query-target-filter=and(eq(opflexODev.
ctrlrName,'Scale-Scvmm1.inscisco.net'),eq(opflexODev.domName,'Domain1'),ne(opflexODev.isSecondary,'true'))

{"totalCount":"8","subscriptionId":"72057718609018900","imdata":[{"opflexODev":{"attributes":{"childAction"
:"","ctrlrName":"Scale-Scvmm1.inscisco.net","devId":"167807069","devOperIssues":"","devType":"hyperv","dn":"
topology/pod-1/node-191/sys/br-[eth1/43]/odev-167807069","domName":"Domain1","encap":"unknown","features":"0
","hbStatus":"valid-dvs","hostName":"Scale-Hv2.inscisco.net","id":"0","ip":"0.0.0.0","ipAddr":"10.0.136.93",
"isSecondary":"false","lNodeDn":"","lastHandshakeTime":"2015-04-15T17:10:25.684-07:00","lastNumHB":"19772","
lcOwn":"local","mac":"00:00:00:00:00:00","maxMissHb":"0","modTs":"2015-04-15T17:12:09.485-07:00","monPolDn":
"uni/fabric/monfab-default","name":"","numHB":"19772","operSt":"identified","pcIfId":"1","portId":"0","state
```

":"connected","status":"","transitionStatus":"attached","uid":"15374","updateTs":"0","uuid":"","version":""}
}},{"opflexODev":{"attributes":{"childAction":"","ctrlrName":"Scale-Scvmm1.inscisco.net","devId":"167831641"
,"devOperIssues":"","devType":"hyperv","dn":"topology/pod-1/node-191/sys/br-[eth1/43]/odev-167831641","domNa
me":"Domain1","encap":"unknown","features":"0","hbStatus":"valid-dvs","hostName":"Scale-Hv6.inscisco.net","i
d":"0","ip":"0.0.0.0","ipAddr":"10.0.232.89","isSecondary":"false","lNodeDn":"","lastHandshakeTime":"2015-04
-15T17:10:26.492-07:00","lastNumHB":"15544","lcOwn":"local","mac":"00:00:00:00:00:00","maxMissHb":"0","modTs
":"2015-04-15T17:12:10.292-07:00","monPolDn":"uni/fabric/monfab-default","name":"","numHB":"15544","operSt":
"identified","pcIfId":"1","portId":"0","state":"connected","status":"","transitionStatus":"attached","uid":"
15374","updateTs":"0","uuid":"","version":""}}},{"opflexODev":{"attributes":{"childAction":"","ctrlrName":"S
cale-Scvmm1.inscisco.net","devId":"167831643","devOperIssues":"","devType":"hyperv","dn":"topology/pod-1/nod
e-191/sys/br-[eth1/43]/odev-167831643","domName":"Domain1","encap":"unknown","features":"0","hbStatus":"vali
d-dvs","hostName":"Scale-Hv3.inscisco.net","id":"0","ip":"0.0.0.0","ipAddr":"10.0.232.91","isSecondary":"fal
se","lNodeDn":"","lastHandshakeTime":"2015-04-15T17:10:23.268-07:00","lastNumHB":"15982","lcOwn":"local","ma
c":"00:00:00:00:00:00","maxMissHb":"0","modTs":"2015-04-15T17:12:07.068-07:00","monPolDn":"uni/fabric/monfab
-default","name":"","numHB":"15982","operSt":"identified","pcIfId":"1","portId":"0","state":"connected","sta
tus":"","transitionStatus":"attached","uid":"15374","updateTs":"0","uuid":"","version":""}}},{"opflexODev":{
"attributes":{"childAction":"","ctrlrName":"Scale-Scvmm1.inscisco.net","devId":"167807070","devOperIssues":"
","devType":"hyperv","dn":"topology/pod-1/node-191/sys/br-[eth1/43]/odev-167807070","domName":"Domain1","enc
ap":"unknown","features":"0","hbStatus":"valid-dvs","hostName":"Scale-Hv8.inscisco.net","id":"0","ip":"0.0.0
.0","ipAddr":"10.0.136.94","isSecondary":"false","lNodeDn":"","lastHandshakeTime":"2015-04-15T17:10:26.563-0
7:00","lastNumHB":"14219","lcOwn":"local","mac":"00:00:00:00:00:00","maxMissHb":"0","modTs":"2015-04-15T17:1
2:10.364-07:00","monPolDn":"uni/fabric/monfab-default","name":"","numHB":"14219","operSt":"identified","pcIf
Id":"1","portId":"0","state":"connected","status":"","transitionStatus":"attached","uid":"15374","updateTs":
"0","uuid":"","version":""}}},{"opflexODev":{"attributes":{"childAction":"","ctrlrName":"Scale-Scvmm1.inscis
co.net","devId":"167831642","devOperIssues":"","devType":"hyperv","dn":"topology/pod-1/node-191/sys/br-[eth1
/43]/odev-167831642","domName":"Domain1","encap":"unknown","features":"0","hbStatus":"valid-dvs","hostName":
"Scale-Hv4.inscisco.net","id":"0","ip":"0.0.0.0","ipAddr":"10.0.232.90","isSecondary":"false","lNodeDn":"","
lastHandshakeTime":"2015-04-15T17:10:24.978-07:00","lastNumHB":"13947","lcOwn":"local","mac":"00:00:00:00:00
:00","maxMissHb":"0","modTs":"2015-04-15T17:12:08.778-07:00","monPolDn":"uni/fabric/monfab-default","name":"
","numHB":"13947","operSt":"identified","pcIfId":"1","portId":"0","state":"connected","status":"","transitio
nStatus":"attached","uid":"15374","updateTs":"0","uuid":"","version":""}}},{"opflexODev":{"attributes":{"chi
ldAction":"","ctrlrName":"Scale-Scvmm1.inscisco.net","devId":"167807071","devOperIssues":"","devType":"hyper
v","dn":"topology/pod-1/node-190/sys/br-[eth1/43]/odev-167807071","domName":"Domain1","encap":"unknown","fea
tures":"0","hbStatus":"valid-dvs","hostName":"Scale-Hv7.inscisco.net","id":"0","ip":"0.0.0.0","ipAddr":"10.0
.136.95","isSecondary":"false","lNodeDn":"","lastHandshakeTime":"2015-04-15T17:12:10.057-07:00","lastNumHB":
"5708","lcOwn":"local","mac":"00:00:00:00:00:00","maxMissHb":"0","modTs":"2015-04-15T17:12:09.659-07:00","mo
nPolDn":"uni/fabric/monfab-default","name":"","numHB":"5708","operSt":"identified","pcIfId":"1","portId":"0"
,"state":"connected","status":"","transitionStatus":"attached","uid":"15374","updateTs":"0","uuid":"","versi
on":""}}},{"opflexODev":{"attributes":{"childAction":"","ctrlrName":"Scale-Scvmm1.inscisco.net","devId":"167
807067","devOperIssues":"","devType":"hyperv","dn":"topology/pod-1/node-190/sys/br-[eth1/43]/odev-167807067"
,"domName":"Domain1","encap":"unknown","features":"0","hbStatus":"valid-dvs","hostName":"Scale-Hv1.inscisco.
net","id":"0","ip":"0.0.0.0","ipAddr":"10.0.136.91","isSecondary":"false","lNodeDn":"","lastHandshakeTime":"
2015-04-15T17:12:08.637-07:00","lastNumHB":"17659","lcOwn":"local","mac":"00:00:00:00:00:00","maxMissHb":"0"
,"modTs":"2015-04-15T17:12:08.240-07:00","monPolDn":"uni/fabric/monfab-default","name":"","numHB":"17659","o
perSt":"identified","pcIfId":"1","portId":"0","state":"connected","status":"","transitionStatus":"attached",
"uid":"15374","updateTs":"0","uuid":"","version":""}}},{"opflexODev":{"attributes":{"childAction":"","ctrlrN
ame":"Scale-Scvmm1.inscisco.net","devId":"167831644","devOperIssues":"","devType":"hyperv","dn":"topology/po
d-1/node-190/sys/br-[eth1/43]/odev-167831644","domName":"Domain1","encap":"unknown","features":"0","hbStatus
":"valid-dvs","hostName":"Scale-Hv5.inscisco.net","id":"0","ip":"0.0.0.0","ipAddr":"10.0.232.92","isSecondar
y":"false","lNodeDn":"","lastHandshakeTime":"2015-04-15T17:12:09.093-07:00","lastNumHB":"15433","lcOwn":"loc
al","mac":"00:00:00:00:00:00","maxMissHb":"0","modTs":"2015-04-15T17:12:08.695-07:00","monPolDn":"uni/fabric
/monfab-default","name":"","numHB":"15433","operSt":"identified","pcIfId":"1","portId":"0","state":"connecte
d","status":"","transitionStatus":"attached","uid":"15374","updateTs":"0","uuid":"","version":""}}}]}

Step 8 Get the VMs under one Hyper-V.

Example:

```
https://<apic-ip>/api/node/mo/topology/pod-1/node-190/sys/br-[eth1/43]/odev-167807067.
json?query-target=children&target-subtree-class=opflexOVm&subscription=yes
```

{"totalCount":"1","subscriptionId":"72057718609018947","imdata":[{"opflexOVm":{"attributes":{"childAction":"
","ctrlrName":"Scale-Scvmm1.inscisco.net","dn":"topology/pod-1/node-190/sys/br-[eth1/43]/odev-167807067/ovm-

ExtConn_1002_EPG17_003","domName":"Domain1","id":"0","lcOwn":"local","modTs":"2015-04-14T17:36:51.512-07:00"
,"name":"ExtConn_1002_EPG17_003","state":"Powered On","status":"","uid":"15374"}}}]}

Step 9 Get VNICs under one VM.

Example:

```
https://<apic-ip>/api/node/class/opflexIDEp.json?query-target-filter=eq(opflexIDEp.
containerName,'ExtConn_1002_EPG17_003')
```

{"totalCount":"4","subscriptionId":"72057718609018983","imdata":[{"opflexIDEp":{"attributes":{"brIfId":"eth1
/43","childAction":"","compHvDn":"","compVmDn":"","containerName":"ExtConn_1002_EPG17_003","ctrlrName":"Scal
e-Scvmm1.inscisco.net","dn":"topology/pod-1/node-190/sys/br-[eth1/43]/idep-00:15:5D:D2:14:84-encap-[vlan-139
8]","domName":"Domain1","domPDn":"","dpAttr":"0","encap":"vlan-1398","epHostAddr":"http://10.0.136.91:17000/
Vleaf/policies/setpolicies","epPolDownloadHint":"all","epgID":"","eppDownloadHint":"always","eppdn":"uni/epp
/fv-[uni/tn-ExtConn_1002/ap-SCVMM/epg-EPG17]","gtag":"0","handle":"0","hypervisorName":"Scale-Hv1.inscisco.n
et","id":"0","instType":"unknown","ip":"0.0.0.0","lcC":"","lcOwn":"local","mac":"00:15:5D:D2:14:84","mcastAd
dr":"0.0.0.0","modTs":"2015-04-14T17:36:50.838-07:00","monPolDn":"uni/fabric/monfab-default","name":"00155DD
21484","pcIfId":"1","portId":"0","scopeId":"0","state":"up","status":"","transitionStatus":"attached","uuid"
:"","vendorId":"Microsoft","vmAttr":"vm-name","vmAttrDn":"","vmAttrOp":"equals","vmAttrOverride":"0","vmmSrc
":"msft"}}},{"opflexIDEp":{"attributes":{"brIfId":"eth1/43","childAction":"","compHvDn":"","compVmDn":"","co
ntainerName":"ExtConn_1002_EPG17_003","ctrlrName":"Scale-Scvmm1.inscisco.net","dn":"topology/pod-1/node-190/
sys/br-[eth1/43]/idep-00:15:5D:D2:14:85-encap-[vlan-1438]","domName":"Domain1","domPDn":"","dpAttr":"0","enc
ap":"vlan-1438","epHostAddr":"http://10.0.136.91:17000/Vleaf/policies/setpolicies","epPolDownloadHint":"all"
,"epgID":"","eppDownloadHint":"always","eppdn":"uni/epp/fv-[uni/tn-ExtConn_1002/ap-SCVMM-Domain1/epg-EPG1]",
"gtag":"0","handle":"0","hypervisorName":"Scale-Hv1.inscisco.net","id":"0","instType":"unknown","ip":"0.0.0.
0","lcC":"","lcOwn":"local","mac":"00:15:5D:D2:14:85","mcastAddr":"0.0.0.0","modTs":"2015-04-14T17:36:51.025
-07:00","monPolDn":"uni/fabric/monfab-default","name":"00155DD21485","pcIfId":"1","portId":"0","scopeId":"0"
,"state":"up","status":"","transitionStatus":"attached","uuid":"","vendorId":"Microsoft","vmAttr":"vm-name",
"vmAttrDn":"","vmAttrOp":"equals","vmAttrOverride":"0","vmmSrc":"msft"}}},{"opflexIDEp":{"attributes":{"brIf
Id":"eth1/43","childAction":"","compHvDn":"","compVmDn":"","containerName":"ExtConn_1002_EPG17_003","ctrlrNa
me":"Scale-Scvmm1.inscisco.net","dn":"topology/pod-1/node-191/sys/br-[eth1/43]/idep-00:15:5D:D2:14:84-encap-
[vlan-1398]","domName":"Domain1","domPDn":"","dpAttr":"0","encap":"vlan-1398","epHostAddr":"http://10.0.136.
91:17000/Vleaf/policies/setpolicies","epPolDownloadHint":"all","epgID":"","eppDownloadHint":"always","eppdn"
:"uni/epp/fv-[uni/tn-ExtConn_1002/ap-SCVMM/epg-EPG17]","gtag":"0","handle":"0","hypervisorName":"Scale-Hv1.i
nscisco.net","id":"0","instType":"unknown","ip":"0.0.0.0","lcC":"","lcOwn":"local","mac":"00:15:5D:D2:14:84"
,"mcastAddr":"0.0.0.0","modTs":"2015-04-14T17:36:50.731-07:00","monPolDn":"uni/fabric/monfab-default","name"
:"00155DD21484","pcIfId":"1","portId":"0","scopeId":"0","state":"up","status":"","transitionStatus":"attache
d","uuid":"","vendorId":"Microsoft","vmAttr":"vm-name","vmAttrDn":"","vmAttrOp":"equals","vmAttrOverride":"0
","vmmSrc":"msft"}}},{"opflexIDEp":{"attributes":{"brIfId":"eth1/43","childAction":"","compHvDn":"","compVmD
n":"","containerName":"ExtConn_1002_EPG17_003","ctrlrName":"Scale-Scvmm1.inscisco.net","dn":"topology/pod-1/
node-191/sys/br-[eth1/43]/idep-00:15:5D:D2:14:85-encap-[vlan-1438]","domName":"Domain1","domPDn":"","dpAttr"
:"0","encap":"vlan-1438","epHostAddr":"http://10.0.136.91:17000/Vleaf/policies/setpolicies","epPolDownloadHi
nt":"all","epgID":"","eppDownloadHint":"always","eppdn":"uni/epp/fv-[uni/tn-ExtConn_1002/ap-SCVMM-Domain1/ep
g-EPG1]","gtag":"0","handle":"0","hypervisorName":"Scale-Hv1.inscisco.net","id":"0","instType":"unknown","ip
":"0.0.0.0","lcC":"","lcOwn":"local","mac":"00:15:5D:D2:14:85","mcastAddr":"0.0.0.0","modTs":"2015-04-14T17:
36:50.932-07:00","monPolDn":"uni/fabric/monfab-default","name":"00155DD21485","pcIfId":"1","portId":"0","sco
peId":"0","state":"up","status":"","transitionStatus":"attached","uuid":"","vendorId":"Microsoft","vmAttr":"
vm-name","vmAttrDn":"","vmAttrOp":"equals","vmAttrOverride":"0","vmmSrc":"msft"}}}]}

Displaying the Certificate Information to be Used on APIC Using the REST API

This section describes how to display the certificate information to be used on APIC using the REST API.

Procedure

To display the certificate information to be used on the APIC.

```
PS C:\Program Files (x86)\ApicVMMService> $pfxpassword = ConvertTo-SecureString "MyPassword"
-AsPlainText -Force
PS C:\Program Files (x86)\ApicVMMService> Read-ApicOpflexCert -PfxFile
"C:\Program Files (x86)\ApicVMMService\OpflexAgent.pfx" -PfxPassword $pfxpassword
-----BEGIN CERTIFICATE-----
MIIDojCCAoqgAwIBAgIQHz+F2luuOpFKK0p3jxWRfjANBgkqhkiG9w0BAQ0FADBfMRwwGgYJKoZI
hvcNAQkBFg10MEBkb21haW4uY29tMQ4wDAYDVQQKDAVNeU9yZzELMAkGA1UECAwCQ0ExDDAKBgNV
BAYTA1VTQTEUMBIGA1UEAwwLT3BmbGV4QWdlbnQwHhcNMTUwMTAxMDAwMDAwWhcNMjAwMTAxMDAw
MDAwWjBfMRwwGgYJKoZIhvcNAQkBFg10MEBkb21haW4uY29tMQ4wDAYDVQQKDAVNeU9yZzELMAkG
A1UECAwCQ0ExDDAKBgNVBAYTA1VTQTEUMBIGA1UEAwwLT3BmbGV4QWdlbnQwggEiMA0GCSqGSIb3
DQEBAQUAA4IBDwAwggEKAoIBAQCzQS3rvrIdxiHfeAUqtX68CdjIL1+nDtqBH8LzDk0RBVb0KU6V
9cYjCAMwW24FJo0PMt4XblvFJDbZUfjWgEY1JmDxqHIAhKIujGsyDoSZdXaKUUv3ig0bzcswEGvx
khGpAJB8BCnODhD3B7Tj0OD8Gl8asd1u24xOy/8MtMDuan/2b32QRmn1uiZhSX3cwjnPI2JQVIif
n68L12yMcp1kJvi6H7RxVOiES33uz00qjxcPbFhsuoFF1eMT1Ng41sTzMTM+xcE6z72zgAYN6wFq
T1pTCLCC+0u/q1yghYu0LBnARCYwDbe2xoa8ClVcL3XYQlEFlp1+HFfd//p1ro+bAgMBAAGjWjBY
MBIGA1UdEwEB/wQIMAYBAf8CAQAwEwYDVR0lBAwwCgYIKwYBBQUHAwEwHQYDVR0OBBYEFGuzLCG5
4DEcP+bPiFbiDjMDQ3tMMA4GA1UdDwEB/wQEAwIBBjANBgkqhkiG9w0BAQ0FAAOCAQEANc5kKvN4
Q62tIYa1S2HSyiwjaMq7bXoqIH/ICPRqEXu1XE6+VnLnYqpo3TitLmU4G99uz+aS8dySNWaEYghk
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-----END CERTIFICATE-----
PS C:\Program Files (x86)\ApicVMMService>
```

Performing REST API Tasks