

# **Performing REST API Tasks**

- Cisco ACI Virtual Machine Networking, on page 1
- Cisco ACI with VMware VDS Integration, on page 2
- Custom EPG Names and Cisco ACI, on page 12
- Microsegmentation with Cisco ACI, on page 14
- Intra-EPG Isolation Enforcement with Cisco ACI, on page 15
- Cisco ACI with Cisco UCSM Integration, on page 16
- Cisco ACI with Microsoft SCVMM, on page 17

# **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:

</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:

# **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</pre> in vCenter>"> <vmmRsAcc tDn="uni/vmmp-VMware/dom-productionDC/usracc-admin"/> </vmmCtrlrP> </vmmDomP> </vmmProvP>

```
<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

#### **Step 4** Create a switch profile.

#### Example:

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

#### **Step 5** Configure the VLAN pool.

#### **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.

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

#### **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.

```
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="nlkv" 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 <i>vmmDom1</i> with the VMM domain you have previously configured as read-only.  |
|        | Example:   |
|        | <pre>POST URL: https://<apic-ip>/api/policymgr/mo/.xml</apic-ip></pre>   |
|        | <vmmdomp <br="" accessmode="&lt;b&gt;read-write&lt;/b&gt;" dn="uni/vmmp-VMware/dom-&lt;i&gt;vmmDom1&lt;/i&gt;" prefencapmode="unspecified">enfPref="hw"&gt;<br/></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 LAG and associate it with a load-balancing algorithm.

#### Example:

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.

```
<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"/>

</fvRsDgLagPolAtt>

</fvRsDomAtt>

</fvAEPgS

</fvAEPg>

</fvAps

</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.

```
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'</pre>
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>
        </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|epgor 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">

<fvTenant name="App1">

<fvAEPg name="Epg1">

<fvRsDomAtt tDn="uni/vmmp-VMware/dom-dvs1"

customEpgName='My|Port-group_Name!XYZ'

/>

</fvAEPg>

</fvAEPg>

</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.

#### Example:

This example is for an application EPG with microsegmentation enabled.

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 XM structures in the body of the POST message.  |
|        | Example:  |
|        | The following example is for VMware VDS:  |
|        | <fvtenant name="Tenant_VMM"><br/><fvap name="Web"><br/><fvaepg name="IntraEPGDeny" pcenfpref="enforced"><br/><fvaepg <="" fvaepg="" name="IntraEPGDeny" pcenfpref="enforced"><br/>&lt;fvAEpg name="IntraEPGDeny" pcEnfPref="enforced"&lt;/fvAepg name="IntraEPGDeny" pcEnfPref="enforced"&lt;/fvAepg name="IntraEPGDeny" pcEnfPref="enforced"&lt;/fvAepg name="IntraEPGDeny" pcEnfPref="enforced"&lt;/fvAepg name="Int&lt;/td&gt;</fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvaepg></fvap></fvtenant> |
|        | <pre>/fvAEPg&gt; </pre>   |
|        |   |

#### **Example:**

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

</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.

```
<extdevGroupP name="GROUP">
            <extdevMgrP deviceAddress="172.23.138.144:11000" inventoryTrigSt="untriggered"</pre>
 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"</pre>
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 name="scvMM1" hostOrIp="172.21.120.21" rootContName="rootCont01"> -->
</vmmCtrlrP>
</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

#### **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-Scvmml.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", "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":{"ctrlrName":"S cale-Scvmml.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","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-Scvmml.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-Scvmml.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-Scvmml.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-Scvmml.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":"","doAttr":"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-Scvmml.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":"","compWvDn":"","compWmDn":"","containerName":"ExtConn 1002 EPG17 003","ctrlrNa me":"Scale-Scvmml.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-SCVM/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
DQEBAQUAA4IBDwAwqqEKAoIBAQCzQS3rvrIdxiHfeAUqtX68CdjIL1+nDtqBH8LzDk0RBVb0KU6V
9cYjCAMwW24FJo0PMt4XblvFJDbZUfjWgEY1JmDxqHIAhKIujGsyDoSZdXaKUUv3ig0bzcswEGvx
khGpAJB8BCnODhD3B7Tj00D8G18asd1u24x0y/8MtMDuan/2b32QRmn1uiZhSX3cwjnPI2JQVIif
n68L12yMcp1kJvi6H7RxVOiES33uz00qjxcPbFhsuoFF1eMT1Ng41sTzMTM+xcE6z72zgAYN6wFq
T1pTCLCC+0u/q1yghYu0LBnARCYwDbe2xoa8ClVcL3XYQlEFlp1+HFfd//p1ro+bAgMBAAGjWjBY
MBIGA1UdEwEB/wQIMAYBAf8CAQAwEwYDVR01BAwwCgYIKwYBBQUHAwEwHQYDVR00BBYEFGuzLCG5
4DEcP+bPiFbiDjMDQ3tMMA4GA1UdDwEB/wQEAwIBBjANBgkqhkiG9w0BAQ0FAAOCAQEANc5kKvN4
Q62tIYa1S2HSyiwjaMq7bXoqIH/ICPRqEXu1XE6+VnLnYqpo3TitLmU4G99uz+aS8dySNWaEYghk
8jgLpu39HH6yWxdPiZlcCQ17J5B5vRu3Xjnc/2/ZPqlQDEElobrAOdTko4uAHG4lFBHLwAZA/f72
5fciyb/pjNPhPgpCP0r7svElQ/bjAP1wK8PhCfd7k2rJx5jHr+YX8SCoM2jKyzaQx1BAdufspX3U
7AWH0aF7ExdWy/hW6Cdu09NJf+98XNQe0cNH/2oSKYCl9qEK6FesdOBFvCjlRYR9ENqiY4q7xpyB
tqDkBm80V0Js1U2xXn+G0yCWG03VRQ==
----END CERTIFICATE----
```

```
PS C:\Program Files (x86)\ApicVMMService>
```

I